BSC GROUP
BUILD | SUPPORT | CONNECT

Engineers
Environmental Scientists
Software Developers
Landscape Architects
Planners
Surveyors

www.bscgroup.com

OCTOBER 31, 2023

Rebecca Tepper, Secretary
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: **A1/B2 Asset Refurbishment Project**
Draft Environmental Impact Report, EEA #16607

Dear Secretary Tepper,

On behalf of The New England Power Company ("NEP"), BSC Group, Inc. is pleased to submit this Draft Environmental Impact Report ("DEIR") for general maintenance and system improvements along the Massachusetts (MA) portion of the A1/B2 Electric Transmission Lines (A1/B2 Lines). Proposed activities include various general maintenance and system improvements for 733 structures, including 575 structures on the A1/B2 Mainline, and 158 structures on the Athol and Crystal Lake Tap Lines in MA. A1/B2 Lines extend approximately 53.5 miles from Vernon Substation to Pratts Junction Substation; however, the length of the A1/B2 Lines in Massachusetts is approximately 47 miles through the municipalities of Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, and Sterling in MA. NEP is committed to completing the required system improvements to address the poor asset condition, mitigate potential risks of electrical failure, and to provide long-term reliable delivery of electrical service and maintenance of the A1/B2 Line. NEP's goal is to meet the projected future demand on the transmission system resulting from the electrification of the energy system, essential to achieving the Commonwealth's decarbonization goals.

This DEIR responds to the October 31, 2022, Certificate issued by the Executive Office of Energy and Environmental Affairs ("EEA") on the Expanded Environmental Notification Form for the A1/B2 Asset Condition Refurbishment ("ACR") Project in Massachusetts ("EENF") (EEA No. 16607). This DEIR addresses the Scope outlined in the Certificate, and responds to comments received, as required per the Massachusetts Environmental Policy Act ("MEPA") (M.G.L. c. 30 §§ 61-62I) and MEPA regulations (301 CMR 11.00). The DEIR was prepared in accordance with the general guidelines for outline and content found in Section 11.07 of the MEPA regulations.

Please publish the Notice of Availability for this DEIR in the November 8th Environmental Monitor to initiate the 30-day public review and comment period. In accordance with the Secretary's Certificate and 301 CMR 11.16 of the MEPA regulations, the DEIR has been circulated to those who commented on the EENF, the state and local agencies from which permits or approvals will be sought, and the Distribution List and EJ Reference List.

Please do not hesitate to contact me at (469) 679-2975 or pshrestha@bscgroup.com or Mike Tyrrell with NEP at 603-801-4140 or michael.tyrrell@nationalgrid.com with any questions or comments.

Sincerely,
BSC Group, Inc.

Priyanka Shrestha

Priyanka Shrestha
Environmental Permit Specialist

cc: Mike Tyrrell, NEP
DEIR Circulation List (see Appendix B)

Draft Environmental Impact Report

A1/B2 Asset Refurbishment Project – MA

Warwick, Royalston, Athol, Winchendon, Gardner, Westminster, Fitchburg, Leominster, and Sterling, MA

EEA No. 16607
October 31, 2023

FILED IN ACCORDANCE WITH THE
MASSACHUSETTS ENVIRONMENTAL POLICY ACT
301 CMR 11.00

Prepared for:



NEW ENGLAND POWER COMPANY
170 DATA DRIVE
WALTHAM, MA 02451

Prepared by:



1 MERCANTILE STREET, SUITE 610
WORCESTER, MA 01608
BSC PROJECT NUMBER: 89620.66

Table of Contents

1 Project Overview 1

1.1 Introduction 1

1.2 Project Description 2

1.3 Project Need & Benefit 5

1.3.1 Project Need 5

1.3.2 Project Benefits 6

1.4 Project Schedule 6

1.5 Summary of Alternatives 7

1.6 Project Cost 8

1.7 MEPA History & Scope of DEIR 8

1.8 Project Changes since the EENF 9

1.8.1 Overall Project Changes since Submission of the EENF 9

1.8.2 Reductions in Tree Removal Impacts since Submission of the EENF 11

1.8.3 Changes in Wetland Resource Area Impacts since Submission of the EENF 14

1.9 Summary of Existing Conditions 17

1.10 Summary of Proposed Conditions 19

1.11 Updated Status of Project Permits and Other Legal Instruments 20

1.12 Summary of Project Impacts 22

1.13 Summary of Project Mitigation Measures 23

2 Alternatives 25

2.1 Introduction 25

2.2 Expanded Alternative Analysis 25

2.3 69 kV and 115 kV Designs 27

2.4 Tree Removal Alternatives 28

2.5 Assessment of Access Alternatives 29

2.6 Assessment of Work Area Alternatives 30

3 Land Alteration, Stormwater, and Hazardous Waste 31

3.1 Summary of Land Alteration 31

3.1.1 Summary of GHG Impacts from Land Alteration 32

3.1.2 Summary of Environmental Justice (“EJ”) Implications related to Land Alteration 32

3.2 Land Alteration from Forest Conversion / Tree Removals....32
3.2.1 Land Alteration from Construction Access....36
3.2.2 Access Construction and Improvements within-ROW....36
3.2.3 OFF-ROW Access Construction and Improvements....37
3.2.4 Construction of Work Areas and Staging/Laydown Areas....37
3.2.5 Installation of Foundations and Structures....38
3.2.6 Permanent Stream Crossings for Access....38
3.2.7 Retaining Walls....38
3.2.8 DCR and Article 97 Properties....39
3.3 Stormwater Management....41
3.3.1 Introduction....41
3.3.2 Stormwater Management during Construction....41
3.3.3 Post-Construction Stormwater Management....43
3.3.4 Low Impact Development and Integrated Management Practices....43
3.4 Hazardous Waste....43
3.4.1 Massachusetts Contingency Plan....43
3.4.2 Construction BMPs for Hazardous Waste....44
3.5 Avoidance, Minimization and Mitigation for Land Alteration....44
4 Wetlands, Waterways and Water Resources....46
4.1 Updated Wetlands Impacts Assessment....46
4.2 Cumulative Wetland Impacts Identified by Municipality....47
4.2.1 Vernal Pools....53
4.2.2 Waterways....54
4.2.3 Land Under Water Bodies and Waterways....54
4.2.4 Coldwater Fisheries Resources....55
4.2.5 Riverfront Area....58
4.2.6 Bordering Land Subject to Flooding....59
4.3 Avoidance, Minimization, and Mitigation Measures....60
4.3.1 Construction BMPs for Wetlands and Stream Crossings....60
4.3.2 Construction BMPs for Vernal Pools....63

4.3.3 Construction BMPs for Tree Removals 64
4.3.4 In Situ Restoration of Temporary Wetland Impacts 65
4.3.5 Compensatory Mitigation for Permanent Wetland Loss 66
4.3.6 BLSF/Floodplain Compensation 67
4.4 Waterways and Chapter 91 Compliance 67
4.5 Water Supply Protection 71
4.5.1 Proposed Work Within Surface Water Protection Areas 71
4.5.2 Proposed Work Within Wellhead Protection Areas 72
4.5.3 Potential Impacts to Water Supply and Wellhead Protection Areas 72
4.5.4 Avoidance, Minimization and Mitigation Measures for Water Supply Protection 73
5 Rare Species 75
5.1 Background 75
5.2 NHESP Operation and Maintenance Plan 75
5.3 NHESP Consultation since EENF 76
5.4 Proposed Impacts in NHESP Priority & Estimated Habitat 76
5.5 Impact Avoidance and Minimization Measures 77
5.5.1 Specific Design Changes 78
5.5.2 Contractor Education and Awareness Program 78
5.5.3 Construction Timing and Restrictions 79
5.5.4 Monitoring 79
5.5.5 Vegetation Management 80
5.5.6 Construction and Best Management Practices (BMPs) 80
5.5.7 Specialized Construction and Restoration Measures 81
5.6 Conclusion 81
6 Historic and Archaeological Resources 82
6.1 Background 82
6.2 Section 106 and Tribal Consultations 83
6.3 Avoidance, Minimization and Mitigation Measures for Archaeological Resources 84
7 Climate Change Adaptation and Resiliency 87
7.1 Climate Change Risk 87

7.2 Watershed-Scale Climate Change Projections 88
7.3 Greenhouse Gas Emissions 89
7.3.1 Estimation of GHG Emissions from Land Alteration 90
7.4 Climate Change Adaptation and Resiliency 93
7.4.1 Precipitation Resiliency 93
7.4.2 Temperature Resiliency 94
7.4.3 Extreme Weather Resiliency 95
7.4.4 Municipal Vulnerability Preparedness Program 95
8 Environmental Justice 97
8.1 Summary 97
8.2 Environmental Justice Populations within 1-Mile of the Project Location (DGA) 97
8.3 Compliance with MEPA EJ Public Involvement Protocol 99
8.3.1 Initial Public Involvement (Pre-EENF Filing) 99
8.3.2 Feedback from Public Meeting Pursuant to the Public Involvement Protocol 100
8.3.3 Public Involvement After Filing the EENF 100
8.3.4 Public Involvement Conducted Pre-DEIR Filing: 101
8.4 Compliance with MEPA Interim Protocol for the Analysis of Environmental Justice Impacts. 103
8.4.1 Assessment of 'Existing Unfair or Inequitable Burden' 103
8.4.2 Conclusion on 'Existing Unfair or Inequitable Burden' 107
8.4.3 Analysis of Project Impacts to Determine *Any Disproportionate Adverse Effect* 107
8.4.4 Short-Term Impacts 108
8.4.5 Long-Term Impacts 108
8.4.6 Comparable Benefits for EJ and non-EJ Communities 109
8.4.7 Conclusion of Analysis of Project Impacts to Determine *Any Disproportionate Adverse Effect* 110
8.5 Project Benefits 110
8.6 Avoidance, Minimization and Mitigation 111
9 Construction 112
9.1 Introduction 112
9.2 Construction Phases 112

9.2.1 Tree Removal, ROW Mowing and Removal of Vegetation in Advance of Construction .112
9.2.2 Installation of Soil Erosion and Sediment Controls and BMPs 113
9.2.3 Construction and Improvement of Access 113
9.2.4 Construction of Work Pads, Pulling Pads, and Staging/Laydown Areas 115
9.2.5 Installation of Foundations and Structures 115
9.2.6 Installation of Conductor and OPGW Installation 116
9.2.7 Removal and Disposal of Existing Transmission Line Components 117
9.2.8 Restoration and Stabilization of ROW 117
9.3 Construction Traffic and Equipment 117
9.3.1 Construction Traffic 117
9.3.2 Construction Equipment 118
9.4 Safety and Public Health Considerations 119
9.5 Solid Waste and Recycling 119
9.6 Hazardous Waste 119
9.7 Construction and Demolition Air/Noise Pollution 120
9.7.1 Air Quality 120
9.7.2 Noise and Vibration 121
9.8 Invasive Species 122
9.8.1 Invasive Species Considerations 122
9.8.2 Invasive Species Management during Project Construction 123
9.9 Dewatering 124
9.10 Concrete Washout 125
9.11 Construction Best Management Practices 125
10 Mitigation 126
10.1 Summary of Avoidance and Minimization Measures 126
10.2 Compensatory Mitigation Overview 131
10.2.1 Mitigation Requirement Review 131
10.3 Tree Removal Compensatory Mitigation Requirements Review 133
10.4 Proposed Mitigation for Wetland Impacts 135
10.4.1 *In Situ* Restoration for Temporary Impacts 135

10.4.2 Mitigation for Secondary Impacts 135
10.4.3 Compensatory Mitigation for Permanent Discharge of Fill Material/Wetland Loss....136
10.4.4 Compensatory Flood Storage....136
10.4.5 Rare Species Mitigation....136
10.4.6 Environmental and Public Health Impacts and Proposed Mitigation....136
10.4.7 Impact and Mitigation Summary....137
10.5 Mitigation Costs and Responsible Parties....138
11 Draft Section 61 Findings....140
12 Regulatory Compliance....168
12.1 Permit Requirements & Status....168
12.2 Agency Interactions since EENF....170
12.3 State Regulatory Reviews....170
12.3.1 Section 401 Water Quality Certification....170
12.3.2 Massachusetts Wetlands Protection Act....174
12.3.3 Massachusetts Stormwater Standards....188
12.3.4 Massachusetts Endangered Species Act....188
12.3.5 MassDOT Access Permits for Crossing Over of State Roads with Utility Lines....189
12.3.6 Surface Water Discharge Permit....189
12.3.7 Waterways Permitting – Chapter 91 Licensing....190
12.3.8 Massachusetts Historical Commission & Section 106 Consultation....190
12.3.9 Energy Facilities Siting Board....191
12.3.10 Easements and Article 97 Land Disposition....191
12.4 Federal Regulatory Reviews....192
12.4.1 Section 404 of the Clean Water Act....192
12.4.2 Environmental Protection Agency (EPA)....193
12.4.3 U.S. Fish and Wildlife Service (USFWS)....193
12.4.4 Section 106 and the National Historic Preservation Act....193
13 Response to Comments....195

List of Tables

Table 1-1: A1/B2 Lines by State....1
Table 1-2: Project Route Components: Approximate ROW Widths and Mileage....3
Table 1-3: Anticipated Project Schedule....7
Table 1-4: MEPA Thresholds....8
Table 1-5: Summary of Project Changes Since Submission of the EENF....10
Table 1-6: Comparison of Tree Removal Impacts – EENF & DEIR....14
Table 1-7: Comparison of Wetland Impacts – EENF & DEIR....16
Table 1-8: MassDOT Roadways within the Project Corridor....19
Table 1-9: Permitting and Legal Status Updates Since the EENF....20
Table 1-10: Examples of Mitigation Measures....24
Table 3-1: Summary of Land Alteration Impacts Associated with the Project....31
Table 3-2: Summary of Total Tree Removal in Each Resource Area by Town....34
Table 3-3: Summary of Land Alteration Impacts....36
Table 3-4: Summary of Impacts in DCR Properties....40
Table 3-5: Disposal Sites with RTNs....44
Table 4-1: Summary of Impacts to Resource Areas....46
Table 4-2: Cumulative BVW Impacts by Municipality....47
Table 4-3: Permanent Impacts to BVW for Concrete Caisson Foundations and Direct Embed....48
Table 4-4: Impacts to Wetland Resource Areas by Municipality....51
Table 4-5: Vernal Pool Habitat Identified within the Project ROW by Municipality....52
Table 4-6: Coldwater Fisheries Resource Impacts and Avoidance, Minimization and Mitigation Measures....55
Table 4-7: Anticipated Grading in RA in Each Municipality....57
Table 4-8: Anticipated Grading in BLSF in Each Municipality....58
Table 4-9: Jurisdictional Streams Under Chapter 91....68
Table 4-10: Public Water Supplies Traversed by the Project....70
Table 4-11: Construction Activities within Surface Water Supply Protection Zones and Wellhead Protection Areas....71
Table 5-1: Proposed Impacts in NHESP Priority and Estimated Habitat, by Habitat Polygon and Town....76
Table 7-1: RMAT Climate Resilience Design Standards Tool - Project Outputs....86
Table 7-2: Watershed Scale Climate Projections for 2070....87
Table 8-1: EJ Populations Within 1 Mile of the Project Route....95
Table 8-2: Languages Spoken in Municipalities Within DGA....97
Table 8-3: EJ Populations and DPH Vulnerable Health Criteria....101
Table 8-4: Air-Related EPA EJ Screen Indices....103
Table 8-5: Project EJ Populations Exposure to EPA EJ Screen Indices....103
Table 8-6: Project Site Proximity and Proposed Activities....104
Table 9-1: Typical Overhead Transmission Line Construction Equipment....116

Table 9-2: Common Invasive Species Found in Project Area Wetlands 121
Table 10-1: Avoidance and Minimization Measures, BMPs and Schedule Matrix 125
Table 10-2: A1/B2 ACR Activities Subject to Compensatory Mitigation Requirements 129
Table 10-3: Compensatory Mitigation Requirements 130
Table 10-4: Wetland Replication Requirements for Towns Along the A1/B2 Project Route 134
Table 10-5: Summary of Project Impacts and Proposed Mitigation 135
Table 11-1: Wetlands & Waterways Mitigation Strategies for the Project 141
Table 12-1: Status of Regulatory Requirements 166
Table 12-2: Agency Consultations Since EENF 168
Table 13-1: Responses to Comments 194

List of Appendices

Appendix A: Project Figures and Plans
Figure 1 USGS Site Location Map
Figure 2 MEPA General Purpose Plans (DEIR Plans)
Figure 2A A1/B2 Mainline (Pages 1 to 137; and 1A to 137A - Off ROW Access)
Figure 2B A1/B2 Mainline Centerline Change (Pages 1 to 33; 1A to 33A – Off ROW Access)
Figure 2C Athol Tap Lines (Pages 1 to 25; 1A-25A – Off ROW Access)
Figure 2D Crystal Lake Tap Lines (Pages 1 to 5; 1A-5A – Off ROW Access)
Figure 3 Water Supply Protection Areas
Figure 4 Proposed Tree Removal in Environmental Justice Communities and Hot Spots
Figure 5 Typical Cross Sections - Figure of 69 kV and 115 kV Structure Designs
Appendix B: DEIR Circulation List
Appendix C: Agency Correspondence
Appendix D: A1/B2 Carbon Accounting
Appendix E: 2050 Transmission Study
Appendix F: Best Management Practices (BMPs)
National Grid's Environmental Guidance for ROW Access, Maintenance and Construction Best Management Practices (EG 303), Release Notification in Massachusetts (EG-501MA), Spill Response Procedures and Notification (EG-502MA), and Excess Soil Management from Construction Projects on Rights-of-Way (EG-1707).
Appendix G: NHESP Operation and Maintenance Plan
Appendix H: Environmental Justice Reference List
Appendix I: Annotated Secretary's Certificate and Comment Letters

Glossary

Acronym	Description
AADT	Average Annual Daily Traffic
ACEC	Areas of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
ACI	American Concrete Institute
ACR	Asset Condition Refurbishment
ACSS	Aluminum Conductor Steel Supported
ANSI	American National Standards Institute
APR	Agricultural Preservation Restriction
ASCE	American Society of Civil Engineers
Bank	Inland Bank
BESS	Battery Energy Storage Systems
BLSF	Bordering Land Subject to Flooding
BMPs	Best Management Practices
BSC	Build Support Connect Group, Inc.
BVW	Bordering Vegetated Wetland
CAP	Construction Access Permit
CFR	Coldwater Fisheries Resources
CGP	Construction General Permit
CMP	Conservation Management Plan
CMR	Common Massachusetts Regulation
CR	Conservation Restriction
CVP	Certified Vernal Pool
CWA	Clean Water Act
DCR	Massachusetts Department of Conservation and Recreation

Acronym	Description
DEIR	Draft Environmental Impact Report
DER	Distributed Energy Resources
DFW/WMA	Division of Fisheries and Wildlife/ Wildlife Management Areas
DGA	Designated Geographic Area
DPH	Massachusetts Department of Health
DPU	Department of Public Utilities
DPW	Department of Public Works
EEA	Executive Office of Energy and Environmental Affairs
EENF	Expanded Environmental Notification Form
EFI	Environmental Field Issue
EFSB	Energy Facilities Siting Board
EG	Environmental Guidance
EIR	Environmental Impact Report
EJ	Environmental Justice
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
ESCs	Erosion and Sediment Controls
FEMA	Federal Emergency Management Act
GHG	Greenhouse Gas
GIS	Geographical Information Systems
IEEE	Institute of Electrical and Electronic Engineers
ILSF	Isolated Land Subject to Flooding
ISCP	Invasive Species Control Plan
ISO-NE	Independent System Operator – New England
IVW	Isolated Vegetated Wetland

Acronym	Description
IWPAs	Interim Wellhead Protection Areas
km	kilometer
kV	Kilovolt
LID	Low Impact Development
LiDAR	Light Detection and Ranging
LUST	Leaking Underground Storage Tank
LUWW	Land Under Water Bodies and Waterways
MA DFG	Massachusetts Department of Fish and Game
MA WPA	Massachusetts Wetlands Protection Act
MAPC	Metropolitan Area Planning Council
MassDEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation
MCCA	Massachusetts Climate Change Assessment
MCM	Thousands of Circular Mils
MCP	Massachusetts Contingency Plan
MEPA	Massachusetts Environmental Policy Act
MESA	Massachusetts Endangered Species Act
MHC	Massachusetts Historical Commission
mT	Metric Ton
MV	Megavolt
MVA	Mega Volt Amp
MVP	Municipal Vulnerability Preparedness
NEP	New England Power Company d/b/a National Grid (also referred to as the Company)
NEPA	National Environmental Policy Act

Acronym	Description
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
NESHAP	National Emission Standards for Hazardous Pollutants
NHESP	Natural Heritage and Endangered Species
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OMP	Operation and Maintenance Plan
OOC	Order of Conditions
OPGW	Optical Ground Wires
ORWs	Outstanding Resource Waters
PCN	Pre-Construction Notification
PEM	Palustrine Emergent
PFO	Palustrine Forested
PH	Priority Habitat
PSS	Palustrine Scrub Shrub
PV	Photovoltaic
PVP	Potential Vernal Pool
RA	Riverfront Area
RAO	Response Action Outcome
RCP	Representative Concentration Pathway
RDG	Regenerative Design Group
RMAT	Resilient Massachusetts Action Team
ROW	Right-of-Way

Acronym	Description
RTN	Release Tracking Number
SCADA	Supervisory Control and Data Acquisition
SEIR	Single Environmental Impact Review
SHMCAP	Massachusetts State Hazard Mitigation and Climate Adaptation Plan
SHPO	State Historic Preservation Offices
EFSB	Energy Facilities Siting Board
SMP	Stormwater Management Permit
ISO-NE	Independent System Operator – New England
SWCA	SWCA Environmental Consultants
SWPA	Surface Water Protection Area
SWPPP	Stormwater Pollution Prevention Plan
SWPZ	Surface Water Supply Protection Zones
THPO	Tribal Historic Preservation Officer
TMP	Traffic Management Plan
TOY	Time-of-Year
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USFWS IPaC	United States Fish and Wildlife Service Information for Planning and Consultation
USGS	United States Geological Survey
UST	Underground Storage Tanks
VELCO	Vermont Electric Power Company
VMP	Vegetation Management Plan

Acronym	Description
WHE	Wildlife Habitat Evaluations
WPA	Wellhead Protection Areas
WQC	Water Quality Certificate

1 PROJECT OVERVIEW

1.1 INTRODUCTION

New England Power Company ("NEP" or the "Proponent") has prepared this Draft Environmental Impact Report ("DEIR") in response to the October 31, 2022, Certificate of the Secretary of Energy and Environmental Affairs (the "Certificate") on the Expanded Environmental Notification Form ("EENF") for the A1/B2 Asset Condition Refurbishment Project ("A1/B2 ACR" or "the Project") (EEA No. 16607). This DEIR addresses the Scope outlined in the Certificate, responds to comments received, as required per the Massachusetts Environmental Policy Act ("MEPA") (M.G.L. c. 30 §§ 61-62I) and MEPA regulations (301 CMR 11.00), and was prepared in accordance with the general guidelines for outline and content found in Section 11.07 of the MEPA regulations.

NEP is proposing a refurbishment of the A1 and B2 69 kilovolt ("kV") double circuit overhead electrical utility lines ("A1/B2 Lines" or "the Lines"). The A1/B2 Lines are located within an existing Right-of-Way ("ROW") corridor which begins at Vernon #12 Switchyard in Vernon, Vermont, crosses through a portion of New Hampshire ("NH"), enters Massachusetts ("MA") in Warwick, and terminates at the Pratts Junction #225 Substation located in Sterling (refer to Figure 1-1). *Table 1-1* summarizes the approximate mileage of the entire A1/B2 ROW in each state.

Table 1-1: A1/B2 Lines by State

State	Municipality	Approx. Mileage
Vermont	Vernon	2.5
New Hampshire	Hinsdale and Winchester	4
Massachusetts	Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling	54
		Approx. Total – 60.5

The information presented in the EENF is incorporated by reference. A glossary of acronyms and technical terms is located at the beginning of this document. Appendices A through I include relevant supplemental information, e.g., figures and plans, the DEIR circulation list and the annotated response to comment letters.

1.2 PROJECT DESCRIPTION

The Project description is largely unchanged from the EENF. Proposed activities include various general maintenance and system improvements for 733 structures, including 575 structures on the A1/B2 mainline, and 158 structures on the Athol and Crystal Lake Tap Lines.

Project activities in MA will be located within the municipalities of Warwick, Royalston, Athol, Winchendon, Gardner, Westminster, Fitchburg, Leominster, and Sterling. Refer to the MEPA General Purpose Plans in **Appendix A** (the "DEIR Plans"). The Project ROW is generally oriented northwest-to-southeast from Warwick to Sterling, MA. The existing A1/B2 mainline consists of two (2) 69 kV overhead electric transmission lines ("wires") that are supported primarily on lattice towers ("structures"). The 69 kV tap lines[1] consist of the existing Athol Taps 1 and 2 in Athol and Royalston and the existing Crystal Lake Tap in Gardner. Tap lines are comprised of wood pole structures.

Specifically, refurbishment activities will include:

- Performing vegetation management (mowing and tree removals) to provide access to the proposed structure locations, to facilitate safe vehicular and equipment passage, to provide safe work sites for personnel, and to meet the conductor clearance requirements.
- Performing access improvements, including grading and the addition of stone to existing access, as well as the construction of new access routes (where required).
- Replacing the existing double circuit lattice tower structures with weathering steel, double circuit, davit arm monopole structures. The replacement structures will provide improved reliability and climate resilience. Structures will either be supported by concrete caisson foundations or directly embedded into the ground. A total of 158 caisson foundations are proposed, including 107 on the mainline, 15 on the Athol Taps and 36 on the Crystal Lake Taps. A total of 560 direct embed is proposed, including 404 on the mainline and 156 on the Athol Taps. There are no direct embed proposed in Crystal Lake Taps.
- Replacing the existing copper conductor with 795 Thousands of Circular Mils ("MCM") Aluminum Conductor Steel Supported ("ACSS") conductor which will improve system reliability and allow the lines to operate at 115 kV voltage at a future date.
- Replacing the existing shield wire with two Optical Ground Wires (OPGWs)[2]. These serve the dual function of providing shielding for the conductor, as well as allowing for high-speed communications between substations.

[1] Tap Lines, in terms of utility infrastructure, refer to transmission lines that serve as a connection between a primary utility transmission line (i.e., the mainline) and a substation facility.

[2] An optical ground wire or an optical fiber composite overhead ground wire is a type of cable that combines the functions of grounding and communications.

- Relocation of approximately 5.2 miles of centerline[3], located in Leominster, where there is sufficient space to accommodate longer spans and fewer structures, as well as more efficient construction methodologies. The Lines will be relocated approximately 41.5 feet north, towards the I135S/J136S transmission lines within the existing ROW. The Line relocation will require tree removals and tree pruning off-ROW, as well as structure relocations and realignments.

The Project is located entirely within existing ROW corridors held in fee or easement by NEP. Apart from the establishment of two new, off-ROW access routes, Project construction is contained within existing NEP ROWs and along historically utilized access routes. 11The Project involves the removal of the existing double circuit towers, conductors, shield wire and related transmission components and the subsequent rebuilding of the A1/B2 Lines (referred to as the "Existing Lines" and the "Rebuilt Lines"). The Project also includes the rebuilding of two tap lines associated with the A1/B2 Lines totaling 7.2 miles: the Athol Tap Lines and the Crystal Lake Tap Lines[4] (referred to as the "Existing Taps" and the "Rebuilt Taps"). A breakdown of ROW lengths and widths is provided in *Table 1-2*. Figure 1-1 depicts the location of the Existing Lines and Taps, which are also shown on the United States Geological Survey ("USGS") quadrangle base map in Figure 1, **Appendix A**.

Table 1-2: Project Route Components: Approximate ROW Widths and Mileage

Project Route Component	Existing ROW Width (ft)	Average Maintained ROW Width (ft)	Approximate Mileage (rounded to tenth)
Existing A1/B2 Line ROW	Varied Width: 100 to 450-ft* Average Width: 100-ft	Varied Width: 80 to 100-ft Average Existing Width: 85-ft Proposed Width: 100 ft	47
Existing Athol Tap Lines ROW	125-ft	Varied Width: 105 to 125-ft Average Existing Width: 115-ft Proposed Width: 125-ft	6
Existing Crystal Lake Tap Lines ROW	100-ft	Varied Width: 85 to 90-ft Average Existing Width: 85-ft Proposed Width: 100-ft	1.2
Total			**54.2 miles**

*The existing maintained width of the A1/B2 transmission corridor is generally 100 feet. However, in Sterling and Leominster, the A1/B2 Lines are collocated with a number of other transmission and distribution lines including the 69 kV U21 and V22 Lines, 115 kV I135S and J136S Lines, and the 230 kV E205E Line as shown in the DEIR Plans, Figure 2B in **Appendix A**. The corridor is wider to accommodate the additional circuits in these locations.

[3] The centerline in terms of utility lines is the midpoint or central axis of a ROW, used for design, planning, and mapping purposes.

[4]The other tap lines that are not being rebuilt as part of the Project include the Westminster Tap Lines that connect the A1/B2 Lines to the Westminster Substation #602 in Westminster, the Templeton Tap Line, that connects the A1/B2 Lines to the North Baldwinville Substation (Templeton Municipal), and the East Westminster Tap Lines that connect the A1/B2 Lines to the Westminster Substation #609 in Westminster.

File Location: G:\GISPrj\8962066\Output\Maps\MXD\ReportMaps\RouteAnalysis\A1B2_OverviewUpdate_20230720.mxd
Date Saved: 10/26/2023 7:16:59 PM

VERNON SUBSTATION
HINSDALE
WINCHESTER
VERNON
VT
NH
MA
ROYALSTON SUBSTATION
ROYALSTON
OTTER RIVER SWITCHING STATION
NORTHFIELD
WARWICK
WINCHENDON
ASHBY
ASHBURNHAM
CHESTNUT HILL SUBSTATION
ERVING
ORANGE
ATHOL
NORTH BALDWINVILLE SUBSTATION
FITCHBURG
LUNENBURG
TEMPLETON
GARDNER
WESTMINSTER
PHILLIPSTON
CRYSTAL LAKE SUBSTATION
WESTMINSTER SUBSTATION
LEOMINSTER
EAST WESTMINSTER SUBSTATION
HUBBARDSTON
LANCASTER
PRINCETON
STERLING
PRATTS JUNCTION SUBSTATION

Legend
- Substations
- Existing A1/B2 Transmission Line
- Existing Athol and Crystal Lake Tap Lines
- State Boundary
- Town Boundary

1 inch = 3 miles
0 1.5 3
Miles
N

A1/B2 Asset Condition Refurbishment Project

nationalgrid
BSC GROUP

Figure 1-1 Overview of the Project Route

1.3 PROJECT NEED & BENEFIT

1.3.1 Project Need

NEP is committed to completing the required system improvements to address the poor asset condition, mitigate potential risks of electrical failure, and to provide long-term reliable delivery of electrical service and maintenance of the Existing Lines. NEP's goal is to meet the projected future demand on the transmission system resulting from the electrification of the energy system, essential to achieving the Commonwealth's decarbonization goals.

The Existing Lines, which were originally constructed in 1909, reconductored in the 1920s and reinsulated in 2004, are among the oldest transmission lines in New England and are supported by the original lattice structures. They are the sole transmission source for approximately 24,000 customers in twelve Massachusetts municipalities. The Existing Lines must be replaced, as they are approaching the end of their asset life and have intrinsic flaws in their structural configuration, which has resulted in poor reliability. The Existing Lines are among NEP's worst performing transmission lines, consistently experiencing an unusually high rate of outages associated with lightning strikes, downed trees, thunderstorms, and probable avian interactions (bird nesting/roosting). The Existing Lines have experienced 35 outage events during the five-year period between 2017 and 2021, including two that resulted in extended customer outages. This poor performance is due in large part to the original structure design, which makes the Existing Lines particularly susceptible to lightning damage and avian interaction. In the span of 2020 to 2023 alone, a total of nine (9) tree-related incidents have resulted in power outages. NEP has also identified physical issues on a large number of structures on both the Existing Lines and Taps, contributing to poor performance. In addition, the Existing Lines and Taps do not have sufficient thermal capacity to support the connection of proposed and future distributed energy resources ("DER") to the electric grid. DER are small-scale energy resources usually situated near sites of electricity use, such as solar photovoltaic ("PV") and battery energy storage systems ("BESS"). Lastly, the Independent System Operator – New England ("ISO-NE") found in its Western and Central Massachusetts 2029 Needs Assessment ("2029 Needs Assessment"), issued in May 2020, that even without proposed DER, equipment at multiple substations served by the Existing Lines would be subject to low voltage conditions under certain contingencies. Thus, the need for the Rebuilt Lines is imminent.

The Existing Lines and Taps must be replaced to allow NEP to continue to meet regional demands for a reliable supply of electricity. The Project will support connection of increasing amounts of renewable energy in central and western Massachusetts, consistent with the Commonwealth's and region's carbon reduction targets. Accordingly, as discussed above, the Existing Lines and Taps must be replaced in the near term.

Additionally, the initial results of the ISO-NE 2050 Transmission Study ("ISO Study") support upgrading the line to 115 kV. Since the Project proposes a complete refurbishment, all new or replacement structures will be constructed at a 115 kV capacity but operated at 69 kV. Based on current ISO Study assumptions and forecasts, renewable energy connections and customer needs will ultimately require the system to operate at the higher voltage at some point in the future. To

reduce the impacts of a large-scale refurbishment on the environment, the community and its customers, NEP proposes to "future proof" the A1/B2 Lines as part of this Project by constructing lines with 115 kV capacity but operating the lines at 69 kV until the additional capacity is needed.

1.3.2 Project Benefits

The Project will improve transmission system infrastructure and comply with comprehensive regional plans for improving electric transmission reliability in New England. Benefits of the Project include the following:

- Increased resiliency of the Lines and Taps. By installing improved foundations, more robust structures with improved lightning protection, and higher strength conductor and OPGW, the proposed infrastructure will be better suited to withstand strong winds and storm events.
- The Rebuilt Lines will be larger in capacity and size which will allow more electricity to flow during times of high usage, such as extreme heat events, which are anticipated to increase in frequency due to climate change.
- The installation of OPGW will allow better communication between substations, resulting in improved response time during storm-related emergencies and outages, which will increase public safety.
- Designing for future needs reduces the frequency of disturbance to wetland resource areas, rare species habitat and adjacent landowners over time by reducing the likelihood of multiple repeat projects, thereby reducing environmental impacts and costs to NEP's customers.
- The comprehensive refurbishment will have the added benefit of allowing more renewable energy resources to connect into the system. Addressing the climate change crisis requires a major expansion of renewable energy and the infrastructure necessary to support and deliver that energy. NEP is actively taking steps to ensure that its system is ready to meet this critical challenge, and refurbishing aging infrastructure helps to accomplish this goal. Although the operation on the Rebuilt Lines and Taps will remain at 69 kV for the foreseeable future, the 115 kV capacity proposed for the Project can support higher volumes of renewable energy resources in the future.

1.4 PROJECT SCHEDULE

A summary of the major Project elements and their corresponding target milestone dates is provided in *Table 1-3*, below.

Table 1-3: Anticipated Project Schedule

Project Component	Estimated Start Date	Estimated End Date
Access Route Construction, Reestablishment, and Improvements	September 2025	June 2029
Rebuild Existing Lines and Taps	January 2026	December 2029
Removal of Existing Lines and Taps	January 2026	December 2029
ROW Restoration Where Required	Spring 2026	Fall 2030

Conventional overhead electric transmission line construction techniques will be used to construct the Rebuilt Lines and Taps. The work will be completed in a progression of activities that will generally proceed as follows:

1. Removal of vegetation and ROW mowing in advance of construction.
2. Installation of soil erosion and sediment controls.
3. Construction of access routes and access route improvements.
4. Construction of work pads and staging areas.
5. Installation of foundations and structures.
6. Installation of conductor, OPGW, and shield wire.
7. Removal and disposal of existing transmission line components.
8. Restoration and stabilization of the ROW.

1.5 SUMMARY OF ALTERNATIVES

Section 2 summarizes the expanded analyses used to identify and evaluate alternative means of meeting the identified Project need summarized in *Section 1.3.1*. The EENF alternatives evaluation included: (1) a No-Build Alternative; (2) a Critical Asset Repair Alternative; (3) a Repair and Reconductor Alternative; and (4) a Rebuild Alternative. After determining in the EENF that the Rebuild Alternative (Existing Lines and Taps) was the only alternative that could meet all the identified needs, NEP has added the assessment of two transmission structure design options for the Rebuilt Lines - rebuilding the Existing Lines to operate at 69 kV or rebuilding the Existing Lines to support future operation at 115 kV. NEP determined that the Project as proposed – rebuilding the Existing Lines to support future operation at 115 kV along the existing ROW – will most effectively provide a reliable energy supply with the least impact on the environment at the lowest reasonable cost, as well as support long term electric load growth. NEP also considered options for reducing tree removal, alternative access routes, and work area (i.e., work pads and pull pad) scenarios while evaluating these alternatives to avoid and minimize environmental impacts and tree removal within sensitive resource areas.

Consequently, NEP concluded that the No-Build, Critical Asset Replacement Alternatives, and a Repair and Reconductor Alternative were rejected because they would neither address the asset condition and reliability issues of the Existing Lines and Taps, nor provide additional capacity to interconnect proposed DER or meet the future projected demand on the transmission system resulting from the electrification of the energy system required to meet the Commonwealth's decarbonization goals. It was determined that the replacement of the Existing Lines and Taps in

the existing ROW, using a 115 kV structure design, would best address the identified Project needs, meet future proposed demand on the transmission system that would ultimately help achieve the Commonwealth's decarbonization goals. A full description of alternatives considered for each component of the Project was provided in the Energy Facilities Siting Board ("EFSB") filing to the Massachusetts EFSB (Docket No. EFSB 23-45).

1.6 PROJECT COST

NEP estimates that the total cost of rebuilding the Existing Lines and Taps across all three states is approximately $347.3 million. This estimate is provided with an assumed accuracy level of –25%/+50%. Based on the line length alone, NEP estimates that approximately $304 million of this cost will be incurred in Massachusetts.

1.7 MEPA HISTORY & SCOPE OF DEIR

The Project is undergoing MEPA review because it requires one or more state permits and exceeds the MEPA thresholds identified in *Table 1-4* (below).

Table 1-4: MEPA Thresholds

MEPA EIR ("Environmental Impact Report") Threshold	
11.03(1)(a)	**EIR: Land:** *Direct alteration of 50 or more acres of land, unless the Project is consistent with an approved conservation farm plan or forest cutting plan or other similar generally accepted agricultural or forestry practices.*
11.03(3)(a)(1)(a)	**EIR: Wetlands, Waterways and Tidelands:** *Alteration of one or more acres of bordering vegetated wetlands ("BVW").*
11.03(3)(a)(1)(b)	**EIR: Wetlands, Waterways and Tidelands:** *Alteration of ten or more acres of any other wetlands.*
11.06(7)(b)	**EIR: Environmental Justice:** *The Secretary shall require an EIR for any Project that is located within a Designated Geographic Area around an Environmental Justice Population.*
MEPA ENF Thresholds	
11.03(3)(b)(1)(b)	**ENF: Wetlands, Waterways and Tidelands:** *Alteration of 500 or more linear feet ("lf") of bank along a fish run or Inland Bank ("Bank").*
11.03(3)(b)(1)(f)	**ENF: Wetlands, Waterways and Tidelands:** *Alteration of one half or more acres of any other wetlands.*
11.03(2)(b)(2)	**ENF: Rare Species:** *Taking of an endangered or threatened species or species of special concern, provided that the Project site is two or more acres and includes an area mapped as a Priority Site of Rare Species Habitats and Exemplary Natural Communities. (Potential-ongoing consultations.)*

NEP submitted the EENF to MEPA on September 12, 2022, and it was publicly noticed in the September 23, 2022, Environmental Monitor. The EENF included a request that NEP be allowed to file a SEIR ("Single Environmental Impact Review") in accordance with 301 CMR 11.06(8).

The Secretary's Certificate, issued on October 31, 2022, required the preparation of an EIR and requested the Proponent to prepare a DEIR. This submittal addresses the Scope outlined in the EENF Certificate and the requirements of 301 CMR 11.07.

In accordance with the Secretary's Certificate and 301 CMR 11.16 of the MEPA regulations, electronic copies of the DEIR will be circulated to those who commented on the EENF, state and local agencies from which permits or approvals will be sought, and the public libraries in Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling. Please refer to the DEIR Circulation List presented in **Appendix B**.

1.8 PROJECT CHANGES SINCE THE EENF

1.8.1 Overall Project Changes since Submission of the EENF

Planning and design of a utility project is a dynamic process involving a balance of environmental, regulatory, and engineering considerations. The Project's design standard parameters are unchanged since the EENF filing, but refinements to the Project's design have resulted in changes to structure locations, access routes, and work pad dimensions. These modifications and updates do not significantly alter the analyses and conclusions provided in the EENF, but in general have resulted in less impact to regulated and sensitive resources. Please refer to *Table 1-5* for a general overview of Project changes, *Table 1-6* for updated tree removal impacts, and *Table 1-7* for updated wetland resource area impacts.

NEP has designed the Project to avoid environmental impacts to the maximum extent practicable and as the Project design has progressed, the extent of proposed tree removal has been significantly minimized and the potential impacts to resource areas have been generally reduced. Descriptions of existing wetland resource areas and the anticipated extent of impacts to resource areas are provided in *Section 4*. Updated DEIR Plans are provided in **Appendix A.**

Table 1-5: Summary of Project Changes Since Submission of the EENF

Activity	Type of Change	Description of Change	Change in Impact
Tree removal	Refined tree removal calculations	Since submission of the EENF, tree removal calculations have been refined to provide a clearer break-down of tree removals within each resource area, as well as a break-down of within-ROW and off-ROW tree removals.	Tree removal impacts have been reduced by approximately 1,428,768 SF (~20%) Project-wide in MA, including approximately 262,666 SF (~39%) in Bordering Vegetated Wetland ("BVW"), approximately 143,748 SF (~19%) in Riverfront Area ("RA"), and approximately 727,452 SF (28%) in Open Space.
Access Routes	Reduced access improvements within rare species habitat	Proposed access improvements (e.g., access establishments, widening and refreshing with stone) were reduced, relocated, or temporarily matted in rare species habitat.	Access impacts have been reduced by approximately 8,328 SF in rare species habitat.
	The alignment, grading, or matting of access	Field reviews were conducted to evaluate where changes in alignment of access and/or shifts in work pads could be conducted to minimize impacts while still providing safe access. Access alignments were modified where feasible to span streams in the narrowest location, minimize work pad sizes in locations where only structure removals are needed and work pads were minimized to reduce excessive grading.	No permanent alteration associated with access widening and improvement and grading is proposed within BVW, Isolated Vegetative Wetland ("IVW"), Land Under Water Bodies and Waterways ("LUWW"), and Inland Bank ("Bank"). Impacts associated with access and grading within RA have been reduced by approximately 374,616 SF (8.6 acres) in RA and ~252,648 SF (5.8 acres) in Bordering Land Subject to Flooding ("BLSF").
	The relocation of off-ROW access	Field reviews were conducted to evaluate the elimination of off-ROW access through Department of Conservation and Recreation ("DCR") lands and where to follow existing/historic access. Through comprehensive field reviews, NEP evaluated effective strategies to minimize impacts off-ROW in steep and challenging areas such as between structures 213-215. One access route within DCR lands was eliminated.	Access impacts have been reduced by a total of approximately 114,923 SF (2.6 acres) in DCR properties. A significant reduction in Warwick State Forest (~44,797 SF) was achieved due to re-location of off-ROW access.
Design and Structure Modifications	Changes to structure locations	75 proposed structures along the mainline were relocated due to difficulty of terrain, grading challenges, vertical clearance issues, and field located obstacles.	A total of 14 concrete caisson foundations (~1,106 SF) were removed from BVW. In addition, 13 concrete caisson foundations (~1,027 SF) were removed in RA. No foundations were added to sensitive areas.
	Athol Tap Design Changes	To address challenges in the Athol Taps southernmost portion along Miller's River, NEP conducted a detailed engineering review. After evaluating safe access, work areas, and reliability implications it was determined that reconstructing a select portion of the single circuit tap lines as double circuit structures was the most cost efficient, constructible, and reliable approach. Further field reviews and team discussions led to an alternative design for work and pull pads along the Athol Tap. In challenging terrain, NEP reduced the standard work pad to 60 feet on the proposed structure side and 40 feet on the existing structure side, maintaining a 100-foot width where possible. This strategy helped minimize overall impacts and grading within the ROW.	A total of 141 concrete caisson structures (~11,139 SF) were eliminated from the Athol Tap resulting from a change in the structure design. Additionally, net reduction of construction matting (~48,780 SF) and access improvement (~1,555 SF) was achieved.
Construction Work pads and Pull Pads	Reduction in construction work pad size where grading beyond ROW limits, grading or matting within resource areas, and/or extensive grading for removal of structures	Following field reviews and team discussions, work pads were reduced where feasible, and corners were trimmed on the standard work pad size (160 feet x 80 feet or 160 feet x 100 feet) to eliminate/reduce impacts outside of the ROW, reduce disturbance to resources areas, and where extensive grading was proposed for structure removal. In challenging areas, construction planning assisted in the development of an alternative work pad size of 75 feet x 80 feet to aide in grading limitations.	A reduction of approximately 13 acres in BVW, 1.5 acres in RA and 1.4 acres in Bank from temporary matting was achieved. Additionally, a total of approximately 5.2 acres reduction in rare species habitat for Eastern Whip-poor-will was achieved due to reduction in overall work pad dimensions.
	Crystal Lake Tap	Following field reviews, it was determined to reduce the standard work pad size along Crystal Lake Tap to 100 feet by 80 feet, considering the existing conditions of the ROW and proposed alignment adjacent to existing ROW.	Net reduction of construction matting (~13,309 SF) and cut/fill (103,350 SF) within wetlands was achieved.
Retaining Walls	Eliminated retaining walls along the mainline	Following field reviews and team discussions, proposed retaining walls were removed along the mainline portion of the Project. An alternative solution such as reducing or reconfiguring the work pad, pull pads was considered to eliminate retaining walls.	A significant reduction from the initial count of 101 retaining walls proposed in the EENF to two potential retaining walls located on the Athol Tap. Consequently, the design change eliminated 19 retaining walls within RA.

1.8.2 Reductions in Tree Removal Impacts since submission of the EENF

Since the EENF, NEP has refined its designs and taken into consideration different alternatives to address the tree removal and clearance requirements to minimize impacts. The required tree removals are primarily based on regulatory requirements pertaining to line voltages (described in the paragraph below) and the current extent of hazard tree encroachment into the A1/B2 ROW as described in detail in *Section 3.2*. Since the filing of the EENF, NEP has completed additional assessments of the current extents of hazard tree encroachment based on Light Detection and Ranging ("LiDAR"), aerial and field data. Refer to *Section 3* for more information about NEP's updated analysis of tree removal requirements. *Table 1-6* compares tree removal estimates in the EENF and in this DEIR. To more accurately account for the extent of proposed tree removal, NEP has classified tree removal into three groups – tree removal, selective tree removal, and tree pruning. "Tree removal" includes the removal of trees that would be required to ensure conformance with the appropriate vegetation management on ROW and off-ROW. A "selective tree removal" methodology will be conducted along off-ROW historically used access routes. Trees adjacent to each access way will be evaluated in the field to determine the need for tree removals. With the approval of landowners, only trees required to safely accommodate passage of construction equipment and vehicles will be removed. "Tree pruning" includes areas where complete removals are not required to achieve the required clearance between the transmission structure and vegetation, and in work areas for construction work pads and access. These three categories of tree removal have been depicted in Figure 1-1 and Figure 2-2 below, as well as in the DEIR Plans (Figure 2) within **Appendix A**.

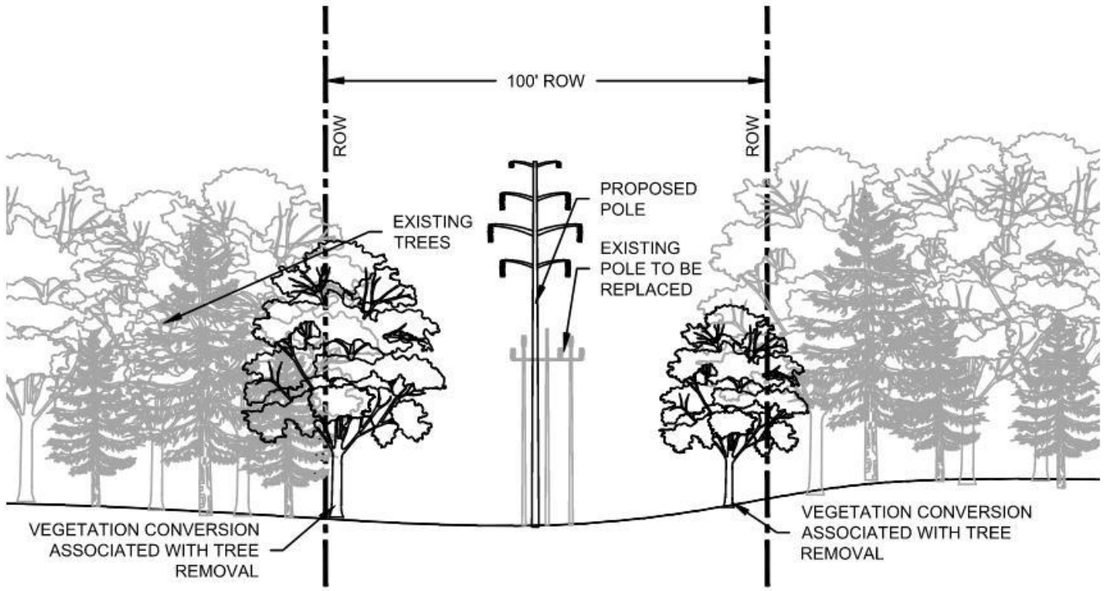
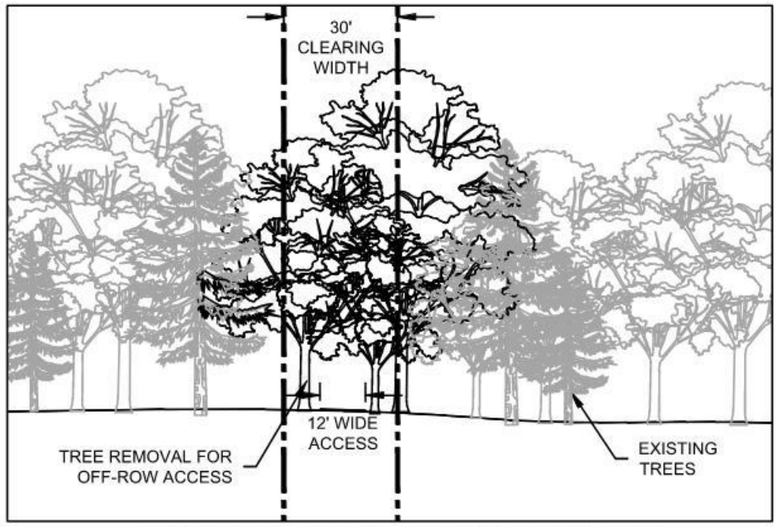
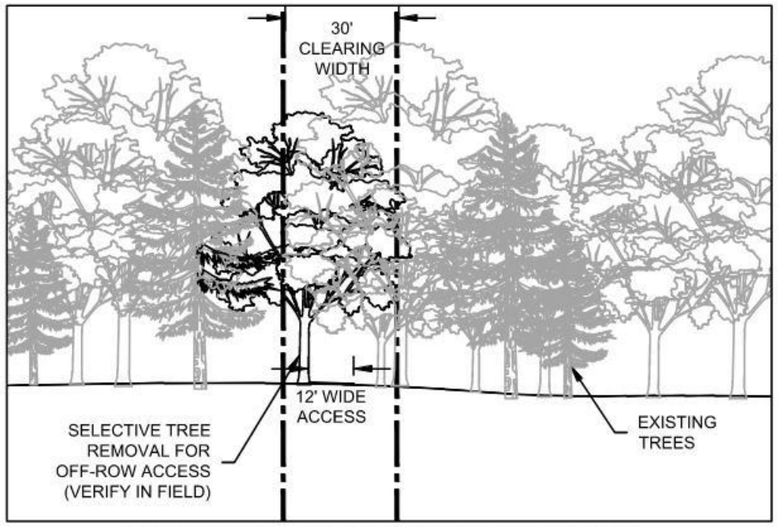


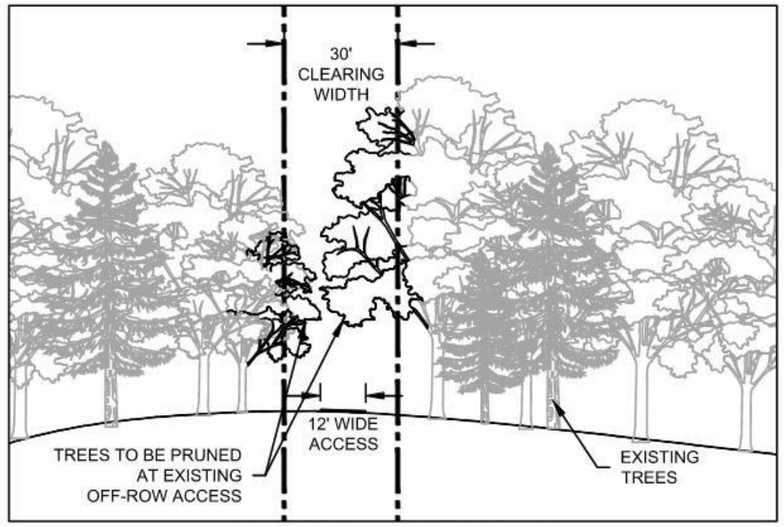
FIGURE 1-2: TYPICAL MAINLINE ROW TREE REMOVAL



TYPICAL OFF-ROW ACCESS
TREE REMOVAL



TYPICAL OFF-ROW ACCESS
SELECTIVE TREE REMOVAL



TYPICAL OFF-ROW
ACCESS TREE PRUNING







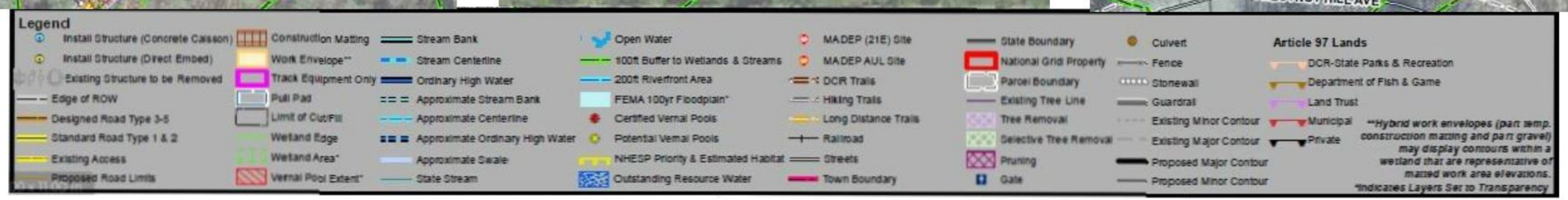


FIGURE 1-3: CATEGORIES OF TYPICAL OFF-ROW TREE REMOVAL

Generally, tree removal is required to provide a safe area for construction, future maintenance, and operation, and to ensure the reliability of the Rebuilt Lines and Taps. Therefore, NEP will remove trees in select locations along the edges of the existing Project ROWs. In order to operate the Rebuilt Lines and Taps in accordance with the North American Electric Reliability Corporation ("NERC") document FAC-003-4 "Transmission Vegetation Management" with the conductors under "blowout" conditions (six pounds per square foot of wind on wire), approximately 131 acres of "tree removal", including 9.2 acres within wetlands, will be required. Approximately 31 acres of tree removal is proposed off-ROW (including 0.73 acres within wetlands), while 100 acres will occur within the ROW. Of the 31 acres of off-ROW tree removal proposed, 15 acres fall within the "selective tree removal" criteria and 16 acres fall within the "tree removal" criteria[5]. Coordination with the landowners and outreach efforts regarding the tree removal program are ongoing. These efforts may further reduce the tree removal impacts as the tree removal extents are more clearly defined.

Table 1-6: Comparison of Tree Removal Impacts – EENF & DEIR

	EENF (Acres)			DEIR (Acres)*			Change (+/- acres)	Change (%)
Tree Removal Location	**On-ROW**	**Off-ROW**	**Total**	**On-ROW**	**Off-ROW**	**Total**		
Project Wide in MA	109	55	164	100	31.2	131.2	-33	-20%
Wetlands	14	2	16	8.5	0.73	9.2	-6.8	-42.5%
Open Space	50	9	59	41.09	1.26	42.3	-16.7	-28%
State Article 97 Land (DCR Property)	18	1	19	10.7	4.1	14.8	-4.2	-22%
Municipal Article 97 Lands	10	2	12	6.4	4.2	10.6	-1.6	-13.3%
Private Article 97 Lands	2	<0.25	2	1.4	0.37	1.77	-0.23	-11.5%
Federal Property	2	3	5	1.6	3.8	5.4	-0.4	8%
Land Trust Property	3	1.5	4.5	2.3	0.25	2.5	-2	-44.4%
Division of Fisheries and Wildlife/ Wildlife Management Areas ("DFW/WMA")	14	1	15	4.6	1.04	5.64	-9.3	-62%

*These impacts are conservative estimates. Coordination with the landowners and outreach efforts regarding the tree removal program are ongoing. These efforts may further reduce the tree removal impacts as the tree removal extents are more clearly defined.

1.8.3 Changes in Wetland Resource Area Impacts since submission of the EENF

The Project is subject to a variety of environmental permits and authorizations that refer to "impacts" in different ways. The definition and categorization of "impact" varies between these regulatory programs (see *Table 10-2* for a list of regulatory definitions of "impact"). Since the EENF, NEP has refined the categories of impacts to align with regulatory definitions. Throughout the following sections, NEP has presented impacts to resource areas as temporary alteration (generally associated with the placement of construction matting, and with ground or soil disturbance that will be restored to pre-construction conditions at the completion of the Project), permanent impact (generally associated with the structure installations), and permanent alteration

[5] Additionally, NEP will conduct an additional ~0.08 acres of "tree pruning" along off-ROW access.

(consisting of permanent conversion of vegetation cover type associated with tree removal, and with access improvements and grading in upland resource areas).

The Project design has been developed to fulfill the overall requirements while avoiding and minimizing impacts wherever practicable by using an existing transmission ROW to the greatest extent practicable. Significant improvements have been incorporated into the Project designs to minimize both temporary and permanent alterations within resource areas since the EENF filing.

Design changes associated with the temporary placement of construction matting within BVW, IVW, Bank and LUWW have resulted in notable reduction in temporary alteration within these wetlands. Furthermore, NEP conducted comprehensive analysis and implemented strategies to reduce the overall permanent alteration associated with tree removal within these sensitive resource areas to the extent practicable. The Existing Lines and Taps are situated entirely within existing ROWs comprised of NEP easements or land owned in fee. Construction and operation of the Project will avoid sensitive environmental resources to the extent practicable. Where impacts are unavoidable, they will be minimized to the extent practicable based on extensive field reviews and careful attention to design, particularly for wetlands, vernal pools, and wildlife habitat. A detailed description of the impacts in wetlands and measures to avoid, minimize and mitigate those impacts is provided in *Section 4* of this DEIR.

Since the EENF, NEP has completed additional field investigations, constructability reviews, and design refinements. These efforts have resulted in revised wetland resource area impacts. *Table 1-7* below presents a comparative overview of the EENF and DEIR wetland impacts, and *Table 1-8* summarizes the impact changes (SF and %) since the EENF. The impacts presented in *Table 1-7* are based on work occurring simultaneously; please refer to *Section 4* for additional information.

Table 1-7: Comparison of Wetland Impacts – EENF & DEIR

Impact Type (SF) Resource Area[1]	Temporal Alteration (Matting)			Permanent Impact (Structure)*			Permanent Alteration[2]								
							Tree Removal			Access			Grading		
	EENF	DEIR	Change (+/- SF & %)	EENF	DEIR	Change (+/- SF & %)	EENF	DEIR	Change (+/- SF & %)	EENF	DEIR	Change (+/- SF & %)	EENF	DEIR	Change (+/- SF & %)
BVW	2,200,651	1,645,153	- 555498 (-25%)	1,896	2,246*	350 (+18%)	666,032	403,366	- 262666 (-39%)	0	0	0	0	0	0
IVW	73,181	50,767	- 22414 (-31%)	79	79	2167 (+ 2742%)	11,761	5,808	- 5953 (51%)	0	0	0	0	0	0
Inland Bank	67,954	3,378	- 64576 (-95%)	0	0	0	26,572	28,714	2142 (+8%)	0	0	0	0	0	0
RA	513,137	451,840	- 61297 (-12%)	3,479	3561	- 1233 (-35%)	748,796	605,048	-143748 (-19%)	171,544	118,330	- 53214 (-31%)	1,177,862	892,150	-285,712 (-24%)
BLSF	13,939	223,662	+ 209723 (88%)	632	726	1614 (+255%)	81,022	106,286	25264 (+31%)	56,521	11,981	- 44540 (-79%)	237,402	53,992	-183,410 (-77%)
LUWW	32,206	17,217	- 14989 (-47%)	158	79	2088 (+1322%)	0	0**	0	0	0	0	0	0	0

*The DEIR impacts were calculated conservatively to include both direct embed and caisson structures.
**Canopy cover removal from within the ROW does not result in a direct impact to the LUWW.
[1] Wetland resource types overlap in many locations: aggregate tallies are not feasible.
[2] Impacts have been refined since the submission of the EENF, to include tree removal, access improvement, and grading into one category under "permanent alteration" for context and clarity in this DEIR. Consequently, the way in which the impacts are represented may vary from their representation in the EENF. The EENF table on the left has been taken from Page xxiv of the EENF Form.

As shown in *Table 1-8* above, temporary impacts associated with construction matting have been reduced by 25% in BVW, 31% in IVW, 95% in Inland Banks, 12% in RA, and 47% in LUWW, since the filing of the EENF. Permanent alteration due to change in vegetative cover type (i.e., tree removal), has been reduced by 39% in BVW, 51% in IVW, 8% in Inland Bank, and 19% in RA. Additionally, since the filing of EENF, there have been significant reduction in the overall impacts associated with access construction and improvements in RA and BLSF, 31% and 79% reduction, as well as grading (24% reduction in RA and 77% in BLSF). To minimize permanent alteration associated with grading within BLSF, additional construction mating was proposed, contributing to the increase in temporary impacts since the filling of EENF. *Note – due to the overlapping nature of the RA, BLSF and Buffer Zone resource areas, the "total" area of impact is not the sum of these numbers.*

1.9 SUMMARY OF EXISTING CONDITIONS

The total land area of the Project ROW in MA is approximately 844.4 acres. The existing ROW is currently used for electric utility operations for multiple overhead electric transmission lines[6] and, as such, contains an extensive network of existing utility structures. Existing unpaved access extends throughout the ROW, along with some off-ROW access routes. The entire width of the ROW is generally maintained to low-growth vegetation. NEP holds easement rights rather than land ownership over most of the ROW.

Adjacent land uses include agricultural, recreational, as well as commercial and residential development. The ROW crosses numerous streams, rivers, and wetland systems as well as multiple reservoirs and ponds.

As noted in the EENF (*Section 3 - Land Use*), predominate land uses within a 300-foot buffer to the ROW are exempt properties[7] (46.38%), residential (27.79%), and industrial (9.76%). Numerous areas of public open space are located adjacent to the Project. Land associated with two sensitive receptors also falls within the 300-foot buffer. These are a police station and a fire station within Royalston, located in the same building, within the 300-foot buffer. The distance from the edge of the stations to the 300 feet buffer is approximately 55 feet.

The Project ROW is generally comprised of moderately level terrain, as well as steeply sloping river terraces and cliffs. Most of the upland within the maintained portion of the ROW consists of closed-scrub and open heath communities interspersed with an herbaceous pioneering community. Where undeveloped, the vegetative community occupying the edge of the ROW is best characterized as typical southern New England transitional upland forest and forested wetland.

[6] A majority of which is the A1/B2 transmission line, except in Sterling and Leominster, where the A1/B2 Lines are collocated with a number of other transmission and distribution lines including the 69 kV U21 and V22 Lines, 115 kV I135S and J136S Lines, and the 230 kV E205E Lines.

[7] Exempt Property are properties that qualify from exemption from taxation under various provisions of the law and include public land and facilities, hospitals, schools, churches, and cultural institutions, M.G.L. c. 59 §5.

The ROW passes through fifteen areas classified as protected lands of open space and recreation, located in the municipalities of Athol, Fitchburg, Gardner, and Leominster (Refer to Table 7 in the EENF, *Page 32*). These include local and state areas of conservation, recreation, and water supply protection. No Areas of Critical Environmental Concern ("ACEC") are located within proximity of the Project ROW.

Along the Project route, the ROW intersects eight (8) mapped Surface Water Supply Protection Zones ("SWPZ") in Gardner and Leominster. These are the Perley Brook Reservoir and Crystal Lake in Gardner, and the Goodfellow Reservoir, Notown Reservoir, Simonds Pond, Morse Reservoir and Fall Brook Reservoir in Leominster. Please refer to *Section 4* of the DEIR for further details of work proposed within SWPZ Areas.

Wetlands, Waterways and Water Resources are discussed in detail in *Section 4* and depicted in **Appendix A:** DEIR Plans (Figure 2). Wetlands identified within the Project area include the following:

- 375 wetlands (including BVW, IVW, and Potential Vernal Pool ("PVP") on the Project ROW and Off-ROW)
- 64 perennial streams, 80 intermittent streams (Land Under Water body and Waterways), and associated Bank (within ROW and off ROW);
- RA associated with perennial streams;
- BLSF;

All watercourses that the Project crosses are currently spanned by NEP's existing overhead transmission lines, and all 64 perennial streams are presumed to be "normally navigable" by canoe, kayak, raft, or rowboat, for the purposes of Chapter 91 jurisdiction. None of the rivers crossed by the Project are designated as a National Wild and Scenic River pursuant to the National Wild and Scenic Rivers Act (16 U.S.C. 1271-1287).

The results of the United States Fish and Wildlife Service Information for Planning and Consultation ("USFWS IPaC") determined that four federally listed species may be present within the Project area. One species is a threatened mammal, one species is a candidate insect, one species is an endangered plant, and one species is a threatened plant. Additionally, based on Natural Heritage and Endangered Species Program ("NHESP") data layers and information, the Project route contains habitat for nine state-listed species (two reptiles, one amphibian, two invertebrates, three birds, and one plant), along portions of the Project route in Warwick, Royalston, Winchendon, Athol, Fitchburg, and Leominster. Specific species are not identified herein at the agency's request. For more information, please refer to *Section 5: Rare Species.*

Cultural resources in the Project area have been identified and evaluated, as described in the EENF (*Section 6*), and in *Section 6* of this DEIR. Approximately 60 archaeological sites were recorded within the study area, including 14 Native American sites and 46 historic archaeological sites.

Along its length, the ROW crosses multiple Massachusetts Department of Transportation ("MassDOT") roadways, as listed in *Table 1-8*.

Table 1-8: MassDOT Roadways within the Project Corridor

MassDOT Jurisdictional Roadway	Municipality
Route 202 (Baldwinville State Road)	Winchendon
Route 140	Gardner
State Road East	Westminster
Depot Road/Narrows Road	Westminster
Route 2	Westminster
Route 2 and associated ramps (Exit 94)	Westminster/ Fitchburg
Route 2 and associated ramps (Exit 95)	Fitchburg
Route 31 (Princeton Road)	Fitchburg
Route 2	Fitchburg/Leominster
Central Street	Leominster

NEP anticipates requiring access from state highways along the ROW at approximately ten existing access points. The Project's impacts relative to MassDOT are associated with the installation of new overhead wires across state highways by a non-municipal utility. Please refer to *Section 12.3.5* for additional information.

One site with a Release Tracking Number ("RTN") was identified along the Project route, at the Pratt's Junction Substation. An RTN indicates there has been a release to the environment of oil and/or hazardous material that is regulated under M.G.L. c. 21E, and the Massachusetts Contingency Plan ("MCP") 310 CMR 40.0000. No soil disturbance is proposed within this area. Please refer to *Section 3.4* for additional information.

1.10 SUMMARY OF PROPOSED CONDITIONS

The proposed conditions are consistent with the existing use of the Project area as an active electrical transmission utility ROW. The Project involves the removal of the existing double circuit towers and the rebuilding of the A1/B2 Lines. The new structures will be weathering steel, double circuit, davit arm monopole structures, with an average height of 95 feet. The new structures will be constructed slightly offset from the centerline of the Existing Lines within the existing ROW. NEP will replace the existing 2/0 copper conductor with 795 MCM ACSS conductor and the existing shield wire with two OPGWs, which will increase the reliability and capacity of the Existing Lines and improve communication between stations. Additionally, the Existing Taps are currently supported on wood pole single circuit structures and will be replaced generally with steel pole single circuit structures.[8] The Rebuilt Taps will also be reconductored with 795 MCM ACSS with two OPGWs and will operate at 69 kV but will be designed to support future operation at 115 kV.

[8] The southernmost portion of the Athol Taps will be reconstructed on double circuit structures to reduce overall project impacts and enhance constructability.

Vegetation on the existing ROW will continue to be maintained to prevent the growth of tall woody species that could interfere with reliable operation of the transmission line. This is critical to retain reliability and provide unrestricted access to the ROW and structures for construction, maintenance, and operation of the Lines. During construction, general vegetation management practices typically include mowing and hand-cutting, tree pruning and removal, and wood disposal and management. Within the Project ROWs, mowing or other vegetation management is required prior to the start of construction to provide access to the proposed structure locations, to facilitate safe vehicular and equipment passage, and to provide safe work sites for personnel. Mowing will be completed primarily by mechanical means. Small trees and shrubs will be mowed as necessary with the intent of preserving root systems to the extent practical. Where the Project route crosses streams and brooks, any necessary vegetation mowing along the stream bank will be minimized to the extent practicable to reduce disturbance of soils and the potential for construction-related erosion. Vegetation management and tree removals are discussed further in *Section 3.2*.

In preparation for construction, NEP will establish the physical access required to construct, inspect, and maintain the Rebuilt Lines and Taps through improvement of existing or historic access routes, temporary placement of construction mats, and construction of new access where necessary. Existing and proposed access is shown on the DEIR Plans in Figure 2 within **Appendix A**. Most of the access proposed is within the ROW, but there are two new access routes being constructed off-ROW and will be used per NEP's agreements with individual property owners. Access travel widths are generally 12 feet, but the constructed footprint may be wider in some locations to accommodate grading and stormwater best management practices ("BMPs"), such as swales, stone check dams, water bars, or other similar measures. Post-construction, NEP will continue to maintain access in order to facilitate operation and future maintenance of the Rebuilt Lines.

1.11 UPDATED STATUS OF PROJECT PERMITS AND OTHER LEGAL INSTRUMENTS

Table 1-9 (below) provides an updated list of the Project's required and potential Permits and other legal instruments, and the status of each.

Table 1-9: Permitting and Legal Status Updates Since the EENF

Agency	Permit/Review/Approval	Status
Federal		
U.S. Army Corps of Engineers ("USACE")	Section 404 General Permits Pre-Construction Notification ("PCN") Authorization and consultations under Section 106 of National Historic Preservation Act and Section 7 of the Endangered Species Act	Filed September 2023
United States Environmental Protection Agency ("EPA")	National Pollutant Discharge Elimination System ("NPDES") General Permit for Stormwater Discharges and Construction Dewatering Activities/Stormwater Pollution Prevention Plan ("SWPPP") – WM 15 permit application	To be filed at least 14 days prior to the start of construction

Agency	Permit/Review/Approval	Status
State		
Executive Office of Energy and Environmental Affairs ("EEA")	MEPA Review / Certificate of the Secretary	Filed EENF October 2022 (EEA 16607)
MassDEP	Section 401 Individual Water Quality Certificate and Variance	Targeted November 2023
NHESP	Massachusetts Endangered Species Act ("MESA") – Determination of Take or No Take; Conservation Permit (if needed)	MESA Checklist filed in August 2023. Consultation with NHESP is ongoing
Massachusetts Historical Commission ("MHC")	Consultation under M.G.L. c. 9 § 27C in accordance with 950 CMR 70-71	Consultation with MHC is ongoing
EFSB[9]	M.G.L. c. 164, §69J Petition for Approval to Construct Transmission Lines	In Progress. Filed EFSB May 2023
Massachusetts Department of Public Utilities ("DPU")	M.G.L. c. 164, §72 Petition for Determination of Public Necessity and Convenience	In Progress. Filed with EFSB May 2023
DCR	Construction Access Permit ("CAP")	In Progress. Consultation with DCR is ongoing
MassDOT	Permit to Access State Highway/Non-Municipal Utility Permits for crossing over of state roads with utility lines.	Targeted Q4 2023
Local		
Conservation Commissions in Athol, Fitchburg, Gardner, Leominster, Royalston, Sterling, Warwick, Westminster, and Winchendon	Order of Conditions ("OOC") per the Massachusetts Wetlands Protection Act ("MA WPA")[10] and local bylaws.	Q1/Q2 2024
Fitchburg Commissioner of Public Works	Stormwater Permit	Q1/Q2 2024
Fitchburg Tree Warden	Tree Trimming/Removal Permit	Q1/Q2 2024
Gardner Zoning Board of Appeals	Special Permit – Earthmoving & earth alteration	Q1/Q2 2024
Royalston Conservation Commission	Stormwater Management Permit	Q1/Q2 2024
Royalston Board of Selectmen	Written Permission for soil removal activities	Q1/Q2 2024
Sterling Conservation Commission	Stormwater Management Permit	Q1/Q2 2024

[9] Concurrently with its Petition to the Siting Board, NEP filed Petitions with the Department of Public Utilities (DPU) in accordance with G.L. c. 164, § 72 and requested exemptions from the Zoning Ordinances of the communities pursuant to G.L. c. 40A, § 3, other than those noted above.

[10] MA WPA Orders of Conditions are local permits unless and until a superseding OOC issued by MassDEP.

Agency	Permit/Review/Approval	Status
Sterling Zoning Board of Appeals	Earth Removal Permit	Q1/Q2 2024
Westminster Zoning Board of Appeals	Earth Removal Permit	Q1/Q2 2024
Winchendon Zoning Board of Appeals	Earth Removal Permit	Q1/Q2 2024

1.12 SUMMARY OF PROJECT IMPACTS

The Project design achieves the overall need while avoiding and minimizing impacts wherever practicable by using an existing transmission ROW. Construction and operation of the Project will avoid sensitive environmental resources to the extent practicable. Where impacts are unavoidable, NEP has planned construction based on extensive field reviews and careful attention to design and will employ BMPs to minimize impacts to the extent practicable, particularly when working in or adjacent to wetlands, vernal pools, and wildlife habitat. Please refer to *Section 4* for further details of anticipated wetland impacts, *Section 5* for rare species, and *Section 6* for cultural and archaeological impacts.

Throughout the entire 844-acre Project area, the primary impact to wetland resource areas is the temporary alteration (38 acres) associated with the placement of construction matting for access and construction areas (i.e., work areas). Consistent with long standing BMP practices, NEP anticipates temporary alterations to wetland resource areas associated with the placement of temporary construction matting to be moderate during construction and insignificant over the long-term. NEP has designed the Project to minimize permanent fill within BVW. The permanent impact within BVW is associated with fill for replacement structure foundations only, resulting in less than 5,000 SF of fill (approximately 2,246 SF of fill is proposed due to installation of 10 concrete caisson and 52 direct embed structures). The Project will result in a permanent conversion of the vegetation cover type within resource areas associated with tree removal as discussed in detail in *Section 3*. The location of temporary and permanent impact and alteration within wetland resource areas are shown on the DEIR Plans (Figure 2) provided in **Appendix A**.

According to NHESP, the A1/B2 Line ROWs contain Priority/Estimated Habitat for six state-listed wildlife species, consisting of two invertebrate species, two amphibian species, and two reptile species. Where intersected by the ROW, these Priority/Estimated Habitats are regularly

maintained under cyclical vegetation management programs reviewed and approved by NHESP[11] and the Operation and Maintenance Plan ("OMP") Guidelines[12] discussed in *Section 5.2*.

NEP conducts utility maintenance work under an existing Operations and Maintenance Plan with NHESP (NHESP file number 22-40898). Routine maintenance, including the replacement of existing structures, is typically conducted under the guidelines and conditions of the OMP Plan. However, NEP's proposed construction of access and work areas is a non-routine maintenance activity and NEP anticipates working with NHESP under the MA Endangered Species Act ("MESA") review process. Please refer to *Section 5* for more information. MassDOT jurisdictional roadways may experience temporary impacts during construction, but work will occur in accordance with MassDOT-approved Traffic Management Plans ("TMP"). NEP does not anticipate the Project will result in significant or permanent change to current conditions (see *Section 12.3.5*) where the Lines cross MassDOT roadways. NEP will also coordinate with municipalities where local roadway crossings are required to ensure potential construction-phase impacts to traffic conditions or roadways are mitigated, as appropriate.

NEP will continue consultations with the MHC, the USACE, and Tribal Historic Preservation Officers ("THPOs") regarding potential impacts to historic and cultural resources along the ROW. Please refer to *Section 6* for more information.

1.13 SUMMARY OF PROJECT MITIGATION MEASURES

NEP's mitigation measures fall into three primary categories: avoidance/minimization measures implemented in Project planning and design, construction-phase BMPs to be implemented in the field to minimize impacts, and compensatory mitigation where impacts are unavoidable. Efforts to avoid impacts have been a major design consideration for NEP, as noted throughout this document. Where avoidance will not be practicable, appropriate construction BMPs to minimize impacts and/or compensatory mitigation will be implemented. Avoidance and minimization are discussed by subject matter in each section of this DEIR, and mitigation measures proposed for the Project are then presented comprehensively in *Section 10*. *Table 1-10* (below) includes a few examples of each type of mitigation.

[11] NEP has historically cooperated with state Natural Heritage programs to protect known sites where Endangered, Threatened, and Special Concern species (state-listed species) are known to occur. NEP recognizes the importance of the MESA, M.G.L. c. 131A, and its significance to ROW vegetation management and complies with all applicable portions of this act and the regulations promulgated there under. 321 CMR 10.14, MESA regulations, Part II Exemptions and 333 CMR 11.04(3) (a-c) exempts utility ROW management from the permit process provided that the management is carried out in accordance with vegetation management programs approved in writing by the NHESP prior to the commencement of work. NEP and contract personnel follow the appropriate vegetation management treatment methods within these sensitive areas, taking all practical means and measures to modify ROW vegetation management procedures to avoid damage to state-listed species and their habitat.

[12] NEP maintains an annual Operation and Maintenance Plan, reviewed and approved by NHESP. NEP performs all maintenance work in accordance with the MESA regulations (321 CMR 10.14(7)), which exempts Projects and activities from review that include "routine operation and maintenance are part of an operation and maintenance plan approved by the Division of Fisheries and Wildlife."

Table 1-10: Examples of Mitigation Measures

Avoidance/ Minimization	• The Project utilizes an existing transmission line ROW, and the majority of the work will be within the ROW (some off-ROW access routes are required). • Existing access routes will be utilized to the fullest extent practicable, reducing the need for disturbance of new areas. • During Project design, detailed constructability reviews were conducted to avoid/minimize work pads within resource areas. • Where practicable, replacement structures will be located close to existing structures, reducing the area of new disturbance. • Where possible, replacement structures will be relocated outside of wetlands (the ability to relocate structures is limited by the span between structures, and other site constraints). • No permanent stream crossings or wetland crossings are proposed.
Construction BMPs	• Use of temporary soil erosion and sediment controls. • Use of temporary construction matting for access and work areas within wetlands, to protect soils and rootstock. • Restoration of wetlands and other ecologically sensitive areas to pre-construction configurations and contours, to the extent practicable. • TOY restrictions, rare species sweeps, and other avoidance measures required by NHESP, for work within rare species habitats.
Compensatory Mitigation	• Where permanent impacts to wetland resource areas are unavoidable, NEP will work with the state and local regulatory programs to provide compensatory mitigation. • Off-ROW compensatory mitigation includes in-lieu fees and other projects as determined in discussions with MassDEP and local Conservation Commissions (in-lieu fees will include those to USACE for wetland impacts). • If a determined to be necessary, development of a Conservation Management Plan ("CMP"), and mitigation as required under MESA to achieve net benefit in order to offset unavoidable impacts within rare species habitat.

The MEPA regulations at 301 CMR 11.07(6)(k) require that the DEIR contain the proposed *Section 61 Findings*. In accordance with this requirement, NEP's proposed *Section 61 Findings* for the Project are presented in *Section 11*.

Since the EENF filing, NEP has consulted with relevant federal, and state regulatory agencies as required in the Certificate (please refer to *Section 12.1* of this DEIR). The mitigation measures presented herein have been developed to satisfy regulatory requirements and fully mitigate the impacts of the Project. In the aggregate, NEP proposed measures will avoid or minimize most environmental impacts and will meet applicable regulatory requirements to compensate for the remaining unavoidable impacts.

2 ALTERNATIVES

This section addresses the request in the Certificate to provide an expanded alternatives analysis that provides full justification for dismissing the 69 kV Rebuild Alternative and evaluates alternatives that consider reducing the amount of tree removals, alternative access routes, and work area scenarios that avoid and minimize environmental impacts and tree removal within sensitive resource areas.

2.1 INTRODUCTION

As stated in the EENF, NEP evaluated a no-build, critical asset repair alternative, a 69 kV rebuild alternative and 115 kV structure design alternatives, however none of these alternatives meet the purpose and need of the Project described in *Section 1.3.1.* The No-Build and Critical Asset Replacement Alternatives were rejected because they would neither address the asset condition and reliability issues of the Existing Lines, nor provide additional capacity to interconnect proposed DER or meet the future projected demand on the transmission system resulting from the electrification of the energy system required to meet the Commonwealth's decarbonization goals. The 69 kV Rebuild Alternative was also rejected because refurbishing the Lines with 69 kV carrying capacity would not meet the identified need and therefore, was not considered feasible alternative.

In addition, NEP compared the cost, environmental impact, and reliability benefits associated with the use of a 69 kV structure design and a 115 kV structure design and concluded that the additional capacity and flexibility provided by the 115 kV design outweighed the minor additional costs and visual impacts. NEP therefore determined that the needs identified in *Section 1.3.1* could only be met by replacing both the existing structures and the existing conductor. Consequently, NEP concluded that the replacement of the Existing Lines in the existing ROW, using a 115 kV structure design, would best address the identified needs at a low cost while minimizing environmental impact. A full description of alternatives considered for each component of the Project was provided in the A1/B2 Asset Refurbishment Project filing to the Massachusetts Energy Facilities Siting Board (Docket No. EFSB 23-45). The language below has been excerpted from the EFSB filing to reiterate and expand on the Rebuild Alternative[13] as requested in the Certificate.

2.2 EXPANDED ALTERNATIVE ANALYSIS

As stated in the scope of the EENF, NEP conducted a thorough evaluation of the Rebuild Alternative. Under the Rebuild Alternative[14], NEP would rebuild the Existing Lines and Taps[15] within existing ROWs, completely replacing the existing structures, conductor, and shield wire. Key components of this alternative include:

[13] Referred as 69 kV Rebuild Alternative in the EENF, *Page 29*.
[14] Referred as "69 kV Rebuild Alternative" in the EENF, *Section 2.4, Page 28*.
[15] This section focuses on the Existing Lines, but key design components of the Rebuild Alternative also apply to the Taps.

- Installing new double circuit, davit arm, monopole structures along the ROW between the Vernon (in VT) and Pratts Junction Substations (in Sterling, MA) and subsequently removing the existing double circuit lattice structures.
- Replacing the existing copper conductor on both the Existing Lines with 795 MCM ACSS conductor.
- Replacing existing shield wire with OPGW.
- Conducting vegetation management, upgrading existing access, and creating new access as required to construct and maintain the Rebuilt Lines.

Rebuilding the Existing Lines on new double circuit, davit arm, monopole structures would address all the needs identified in *Section 1.3.1*. The new monopoles would have a shielding angle of approximately 15 degrees, as compared to approximately 40 degrees for the existing structures; they would also elevate conductors well above their current height and would reduce opportunities for bird nesting. Taken together, these design changes would significantly reduce the frequency of outages on the Existing Lines. Upgraded access would improve NEP's ability to quickly repair damage to the lines when it does occur, and also facilitate future maintenance activities such as visual inspections, footer inspections, repair work, and address issues associate with vandalism (shot insulators).

Replacing the existing copper conductor with 795 MCM ACSS conductor provides the additional thermal capacity needed both to interconnect currently proposed DER, and to support projected electric load growth, without the need for additional line upgrades in the foreseeable future. As discussed above, the Project also addresses the voltage issues identified in ISO-NE's 2029 Needs Assessment. Replacing the existing shield wire with OPGW allows for high-speed communication between substations along the Rebuilt Lines, which can be used to support protective relaying schemes and expansion of National Grid's private fiber network, which provides communications to support voice, land mobile radio, Supervisory Control and Data Acquisition ("SCADA"), online monitoring cyber and physical security, and other potential future uses. Additionally, the OPGW will allow for further networking between National Grid assets along the Deerfield River to the south and the Vermont Electric Power Company ("VELCO") system to the north.

Because the Rebuild Alternative is the only alternative that improves performance by addressing all the underlying concerns about system performance, reliability and safety and provides the additional thermal capacity and voltage support required to interconnect proposed DER and support future load growth, NEP selected it and dismissed other alternatives from further consideration. NEP then turned to the question of whether a 69 kV structure design or a 115 kV structure design would best meet the identified need while minimizing cost and environmental impacts and provide for the long-term reliability of the electric transmission system.

2.3 69 KV AND 115 KV DESIGNS

NEP considered two transmission structure design alternatives: one that complies with NEP's 115 kV design standards ("115 kV Design"), and second that complies with NEP's 69 kV design standards ("69 kV Design"). Both structure designs are able to support NEP's proposed 795 MCM ACSS conductors and can be contained within NEP's existing A1/B2 ROW. Both designs elevate the new conductors above the existing structures so that old and new conductors can be operated simultaneously during construction. However, the 115 kV Design provides additional insulation and, more importantly, the ability to operate at 115 kV in the future if conditions warrant.

The 69 kV and 115 kV Designs both address the design issues associated with the poor performance record of the Existing Lines. The 69 kV and 115 kV Designs both use double circuit, vertically configured, davit arm, monopole structures with a lowest conductor attachment point at an elevation such that the appropriate clearance is maintained between the conductor (both existing and proposed) and the existing structures supporting the Existing Lines to facilitate re-energization as needed during construction. However, as seen in Figure 5 – Typical Cross Sections in **Appendix A**, each insulator string on the 69 kV structure carries seven insulators, while the 115 kV insulators strings carry ten insulators. The additional spacing required to accommodate the longer insulator strings and larger required phase-to-phase clearance results in an approximately 5.5-foot increase in structure height for the 115 kV Design. Overall, either design should result in significant improvements in line performance. Nonetheless, use of the 115 kV Design standard would provide both near-term and longer-term transmission system reliability benefits. In the short term, the increased insulation and phase spacing associated with the 115 kV Design would further improve lightning performance, and the additional structure height, while limited, may further reduce the probability of off-ROW vegetation striking the energized conductor.

NEP anticipates that use of the 69 kV Design would not significantly reduce any of the environmental impacts. The minor reduction in structure height would be unlikely to change either the number of structures installed or their location. The same construction techniques would be used, and, as a result, construction-related impacts, including vegetative clearing, access improvements, wetlands and water resource impacts, and construction noise and traffic, would be similar or identical. In order to operate the Lines in accordance with the NERCdocument FAC-003-4 "Transmission Vegetation Management" with the conductors under "blowout" conditions (six pounds per square foot of wind on wire), both 69 kV and 115 kV Design will be required to provide a safe area for construction, future maintenance, and operation, and to ensure the reliability of the Lines. However, the use of the 115 kV Design for the Project obviates the identical possible need for a future project within the ROW to upgrade the lines to 115 kV at a later date. A future upgrade to 115 kV from 69 kV-designed structures would necessitate the replacement of all existing structures and concrete foundations, as the structures and foundations would not have the appropriate phase-to-phase separation to allow for insulation or operation at 115 kV. This would also require a re-mobilization and significant redundant construction efforts, which would place a repeat burden on the abutters along this ROW, as well as create negative and redundant environmental impacts. On balance, the 115 kV Design will have fewer environmental impacts

than the 69 kV Design. The initial environmental impacts of the Project would be similar regardless of the structure design but the future upgrade to 115 kV would result in more impacts.

In short, constructing the Project to 115 kV Design standards will allow NEP to adapt its transmission network to future demands, such as interconnecting DER, without causing the additional environmental impacts that would occur if the Lines were upgraded at a later date. Moreover, the 2050 Transmission Study (**Appendix E**) highlights the need for additional transmission capacity across New England to accommodate the electrification of heating and transportation systems and the large-scale integration of on-shore and off-shore wind, solar, and storage resources. The 115 kV Design provides NEP with the flexibility to convert the A1/B2 circuits to 115 kV in the future if needed to support large-scale electrification and interconnection of renewable energy sources throughout the Commonwealth. It also provides NEP with the ability to integrate the lines into the larger 115 kV transmission system when necessary, and to provide 115 kV service to its customers in the future, without a costly upgrade project. The 69 kV Design does not provide any of these benefits. For these reasons, NEP selected the 115 kV Design for its new monopole transmission structures and rejected the 69 kV Design.

2.4 TREE REMOVAL ALTERNATIVES

As stated in *Section 1.8.2*, the determination of the required amount of tree removal for the A1/B2 Lines is primarily based on the regulatory requirements pertaining to line voltages, and the current extent of hazard tree encroachment into the A1/B2 ROW (based on LIDAR and field data). NERC FAC-003-4 requires all Transmission Owners, "*To maintain a reliable electric transmission system by using a defense-in-depth strategy to manage vegetation located on transmission rights-of-way and minimize encroachments from vegetation-related outages that could lead to Cascading*." This means that NEP is required to have a Vegetation Management Plan ("VMP") developed by personnel knowledgeable in utility vegetation management, fully implement this plan, and fully inspect the lines and work annually. In accordance with these regulations, high voltage transmission lines, such as NERC regulated 115 kV, are allowed the least amount of risk of interruptions from danger trees. Per NEP's transmission line engineering standards, the optimal width of 'cleared[16]' ROW for two 115 kV circuits is 120 feet. On average, the ROW easement for the A1/B2 mainline corridor is 100 feet. Therefore, in accordance with NERC FAC-003-4 and the VMP, NEP is proposing for the Project to selectively remove trees from the full legal width of ROW easement to minimize the risk of vegetation encroachment on the proposed transmission lines.

Tree removal requirements are primarily dictated by the line voltage, and distance between the lines and the edge of ROW; however, NEP considers additional construction constraints when determining tree removal requirements. Clearance requirements were evaluated for transmission structure design alternatives. NEP considered two transmission structure design alternatives, one

[16] Note that 'cleared' ROW refers only to the fact that it is clear from tall-growing trees – herbaceous, shrub, and low-growing tree species will still be present.

that complies with NEP's 115 kV Design, and a second that complies with NEP's 69 kV Design. NEP's alternatives evaluation demonstrated that constructing the Project to comply with National Grid Standards for 115 kV construction and allowing the lines to be operated at 115 kV in the future, while addressing the load-at-risk constraints requires a design that maintains appropriate clearances, not just between the Rebuild A1 and B2 Lines, but also between each rebuilt circuit and the two existing circuits.

To meet this need, NEP has designed the rebuilt circuits to maintain the appropriate vertical and horizontal clearances as required by the National Electrical Safety Code ("NESC") between each other (A1 Line and B2 Line) throughout construction. In addition, during construction NEP will need to meet required vertical and horizontal clearances between the conductors of the Rebuilt Lines and Existing Lines and new and existing structures so that NEP can return the A1/B2 Lines to service within the mandatory restoration window. Additionally, the design at a higher voltage, 115 kV, and using current code increases the conductor elevation above ground. This reduces the probability of off-ROW vegetation striking the energized conductor. Therefore, NEP anticipates that use of the 69 kV Design would not significantly reduce any impacts. The minor reduction in structure height would be unlikely to change either the number of structures installed or their location. The same construction techniques would be used, and, as a result, construction-related impacts, including vegetative clearing, access improvements, wetlands and water resource impacts, and construction noise and traffic, would be similar or identical.

2.5 ASSESSMENT OF ACCESS ALTERNATIVES

As requested in the Certificate for the DEIR Scope, NEP evaluated alternatives to the development of new access routes. Access to the Existing ROW will primarily use existing and historic access routes, many of which have been in place since the Lines' construction in 1909. Due to the poor condition of many of the access routes, extensive improvements are required (refer to *Section 3.3.2* of the DEIR and attached mapping for details of access route improvements). Wherever feasible throughout the Project ROW, efforts were made during design to maintain existing or construct new access within the existing cleared ROW, thus reducing the need for additional tree removal. NEP has made every effort to reduce the limit of disturbance required for access to the project ROW but is constrained by the locations of existing access routes and utility infrastructure, the presence of existing easements, and the need to provide a safe travel surface for specialist utility equipment, both during Project work and for future repairs/emergency responses. As such, the access proposed for the Project is the best alternative that provides the most practicable and permittable route. Access is proposed outside of the ROW only where it is necessary.

Conditions which dictated the need for access outside of the existing cleared ROW include water bodies spanning the width of the ROW, extreme terrain preventing construction of safe access, and lack of feasible access from a public road ROW. Where necessary to access structures from outside of the ROW, efforts have been made to utilize historic access routes to reduce new impacts and tree removal. Access will be required for large construction vehicles including flatbed trucks for delivery of materials, concrete trucks for foundations, and cranes to erect the new structures; therefore, access widths required are in some cases wider than the historically utilized access paths

which have grown in from the sides over the years of minimal use or lack of use by modern construction equipment. Where extreme terrain prevents continued access within the ROW up or down steep slopes, loops or switchbacks are proposed. These impacts outside of the ROW generally include real estate rights negotiations and additional tree removal and construction efforts; therefore, this approach is only utilized where necessary. Through comprehensive field reviews and commitment to minimize impacts in resource areas, NEP has taken significant steps to reduce access improvement impacts on resource areas such as rare species habitat, and open spaces. NEP evaluated effective strategies to minimize impacts off-ROW in steep and challenging areas, such as between structures 213 to 215 where an access was eliminated within the DCR lands. Since the EENF, proposed access has been reduced by approximately 5,825 LF (~69,898 SF) on-ROW and approximately 7,758 LF (~93,094 SF) off-ROW.

2.6 ASSESSMENT OF WORK AREA ALTERNATIVES

Construction work pads, pull pad envelopes, and guard structure work pads will support the equipment needed to complete the structure maintenance and improvements. NEP has utilized work areas that are located within the existing maintained ROW to the greatest extent practicable. Following field reviews and team discussions, alternatives to construction work pad and pull pad size was evaluated and changes to the designs were made to reduce the size of the work pads where grading beyond the ROW limits was proposed to eliminate disturbance to resource areas. NEP strategized the overall design of the work areas to allow the reduction of overall impacts to keep the disturbance as minimal and within the ROW. For instance, NEP evaluated alternatives such as reduction of work areas and trimming of the corners on the standard work area size (160 feet x 80 feet or 160 feet x 100 feet) in the Tap Lines to eliminate use of retaining walls. Similarly, in challenging areas, construction planning assisted in the development of an alternative work pad size of 75 feet x 80 feet to aide in grading limitations. A detailed description of design changes associated with work areas in both the Existing Lines and Taps is provided in *Table 1-3* of *Section 1.*

3 LAND ALTERATION, STORMWATER, AND HAZARDOUS WASTE

As noted in the EENF, the Project site is currently an active utility ROW varying between 100 and 450 feet wide[17] and supporting two 69 kV overhead transmission circuits known as the A1 and B2 transmission lines, and the Athol Tap Line and Crystal Lake Tap Line extending approximately 54.2 miles through the municipalities of Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling. The Project will result in conditions that are consistent with these existing facilities and land uses. Land alteration associated with the Project is associated with the conversion of forested land along the edges of the ROW to managed vegetation, with access widening and improvements, work area construction within areas historically used for these purposes, and construction of new access routes.

3.1 SUMMARY OF LAND ALTERATION

Table 3-1 provides a summary of impacts due to land alteration in upland areas and wetland areas associated with the different project elements that will disturb land.

Table 3-1: Summary of Land Alteration Impacts Associated with the Project

Impact Type	Upland Areas	Wetland Resource Areas
Temporary Matting	609,509 SF (buffer zone) 353,714 SF (upland)	1,644,826 SF (BVW) 451,840 SF (RA) 223,662 SF (BLSF) 50,767 SF (IVW) 17,217 SF (LUWW) 3,378 SF (Bank)
Access Improvements	56,778 LF (buffer zone) 109,357 LF (upland)	9,861 LF (RA) 998 LF (BLSF)
Grading	3,273,434 SF (buffer zone) 5,729,882 (upland)	892,150 SF (RA) 53,992 SF (BLSF)
Foundations	10,160 SF (buffer zone) 14,824 SF (upland)	2,246 SF (BVW) 3,561 SF (RA) 726 SF (BLSF) 79 SF (IVW) 79 SF (LUW)

[17] The existing maintained width of the A1/B2 transmission corridor is generally 100 feet. However, in Sterling and Leominster, the A1/B2 Lines are collocated with a number of other transmission and distribution lines including the 69 kV U21 and V22 Lines, 115 kV I135S and J136S Lines, and the 230 kV E205E Line, therefore the corridor is wider to accommodate the additional circuits in these locations.

3.1.1 Summary of GHG Impacts from Land Alteration

NEP hired Regenerative Design Group ("RDG") and SWCA Environmental Consultants ("SWCA") to develop an estimate for the greenhouse gas ("GHG") Emissions from Land Alteration. This analysis was completed on May 24, 2023. NEP also consulted the MEPA Office on February 7, 2023, prior to finalizing the methodology for conducting this analysis (please see **Appendix D** for this correspondence). The analysis and finalized methodology have been provided in **Appendix D** and described in *Section 7.* Overall, RDG's analysis estimates that up to 12,164 metric tons ("mt") of carbon would be released or not sequestered due to proposed land alterations over the next 30 years. As a result of the analysis, SWCA estimated the overall change in GHG emissions associated with the project and found that the Project will result in a net reduction in CO2e emissions of 117,424 metric tons (refer to *Section 7.3.1* for detailed discussion).

3.1.2 Summary of Environmental Justice ("EJ") Implications related to Land Alteration

Compared to project alternatives discussed in *Section 2*, the Project generally minimizes land alteration impacts on EJ populations by refurbishing an existing line within an existing transmission line corridor. As outlined in the EENF Certificate Scope Letter, NEP conducted additional analysis on Project impacts and the increased risks of land alteration on EJ populations. The analysis demonstrated that tree removal activities that will occur near EJ populations will be as minimal as those occurring along the entire ROW. Additionally, since much of the land adjacent to the ROW is forested, the extent of tree removal represents an overall negligible impact on canopy cover. Further, the land will remain vegetated and therefore will not have the surface temperature increase that pavement or buildings would near EJ communities. A detailed description of the analysis is provided in *Section 8.*

3.2 LAND ALTERATION FROM FOREST CONVERSION / TREE REMOVALS

To provide a safe area for construction, future maintenance, and operation, and to ensure the reliability of the Rebuilt Lines and Tap Lines, NEP will remove trees in select locations along the edges of the existing Project ROWs as follows:

- The A1/B2 ROW is currently cleared of tall woody vegetation to approximately 85 feet wide on average throughout the corridor[18]. NEP is proposing to remove trees in select locations to maintain approximately 100 feet of its 100-to-450-foot-wide ROW.
- The Athol Taps ROW is currently cleared of tall woody vegetation to approximately 115 feet wide on average throughout the corridor. NEP is proposing to remove trees in select locations to maintain approximately 125 feet of its 125-foot-wide ROW.

[18] The existing maintained width of the A1/B2 transmission corridor is generally 100 feet. However, in Sterling and Leominster, the A1/B2 Lines are collocated with a number of other transmission and distribution lines including the 69 kV U21 and V22 Lines, 115 kV I135S and J136S Lines, and the 230 kV E205E Line, therefore the corridor is wider to accommodate the additional circuits in these locations.

- The Crystal Lake Taps ROW is currently cleared of tall woody vegetation to approximately 85 feet wide on average throughout the corridor. NEP is proposing to remove trees in select locations to maintain approximately 100 feet of its 100-foot-wide ROW.

In order to operate the Rebuilt Lines and Tap Lines in accordance with the NERC document FAC-003-4 "Transmission Vegetation Management" with the conductors under "blowout" conditions (six pounds per square foot of wind on wire) approximately ~4,356,000 SF (100 acres) of trees will be removed along the forested edges of the Project ROW, including ~3,985,740 SF (91.5 acres) in uplands and ~ 351,880 SF (8.5 acres) in wetlands. Additionally, up to approximately 31.2 acres of off-ROW tree removals will be required to accommodate new, improved, or re-established access ways, of which ~31,893 SF (0.73 acres) are in wetland. Where historic access requires widening or grading, or new access is required to accommodate modern equipment, more extensive tree removal will be required. In Project planning, NEP sited and designed off-ROW access to avoid some areas where on-ROW access would result in greater wetland and traffic impacts (Refer to DEIR Plans (Figure 2) in **Appendix A**). Two new off ROW access routes are proposed to limit future impacts to an extensive wetland system and state highway traffic patterns. *Table 3-2* provides a summary of total tree removal proposed within Project ROW in each town the Rebuilt Lines and Tap Lines cross.

Table 3-2: Summary of Total Tree Removal in Each Resource Area by Town[19]

Municipality	BVW (SF)		LUW (SF)		Inland Bank (LF)		Buffer Zone (SF)		RFA (SF)		NHESP Habitat (SF)		DCR Land (SF)		Article 97 Land (SF)		EJ communities (SF)	
	on-ROW	off-ROW	on-ROW	off-ROW	on-ROW	off-ROW	on-ROW	off-ROW	on-ROW	off-ROW	on-ROW	off-ROW	on-ROW	off-ROW	on-ROW	off-ROW	on-ROW	off-ROW
Warwick	25,169	21,609	4,153	1,508	661	446	282,311	118,384	165,313	49,486	0	0	298,787	173,395	305,177	173,395	0	0
Royalston	85,296	11,122	944	463	302	129	397,419	110,709	81,904	0	19,386	94,665	99,029	14,865	213,820	31,245	0	0
Winchendon	47,060	0	344	0	66	0	185,681	13,931	50,713	10,512	86,999	95,576	5,255	0	31,937	0	0	0
Gardner	120,854	100	4,546	11	569	14	378,629	94,987	57,758	34,132	0	0	0	0	186,976	105,012	705,473	80,161
Westminster	44,588	0	1,925	0	130	0	113,894	13,575	34,592	2,322	0	0	0	0	60,378	0.09	347	0
Fitchburg	6,721	150	0	0	0	0	19,768	10,296	7,615	2,763	0	0	40,650	0	40,650	0	46,467	29,693
Leominster	809	47	0	0	0	0	41,444	33,965	0	15,776	0	3,252	57,888	0	57,888	40,988	25,821	0
Athol	20,851	0	259	0	77	0	111,595	8,364	67,112	4,691	1,873	0	0	0	150,741	27,934	7,750	0
Sterling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**351,347**	**33,028**	**12,171**	**1,982**	**1,805**	**588**	**1,530,743**	**404,211**	**465,007**	**119,682**	**108,258**	**193,492**	**501,609**	**188,260**	**1,047,567**	**378,575**	**785,858**	**109,854**

[19] These impacts are conservative estimates. Coordination with the landowners and outreach efforts regarding the tree removal program are ongoing. These efforts may further reduce the tree removal impacts as the tree removal extents are more clearly defined.

As noted in *Section 1*, since the filing of the EENF NEP has reduced the estimated extent of tree removal needs while meeting NERC requirements. For tree removal within the Project ROWs, NEP used LiDAR data to measure, digitize, and assess vegetation heights. This analysis, coupled with field reviews, allowed NEP to determine more precisely where tree removal would be required to ensure conformance with the appropriate vegetation management operating criteria within the ROWs, and where pruning, or other management techniques would be sufficient. During vegetation management activities, NEP will preserve lower growing shrubs identified during this analysis in areas not required for construction work pads and access. Where work areas and access are required in wetlands, NEP will not mow or trim herbaceous vegetation and preserve shrubs and woody vegetation except in cases where more robust woody vegetation will impede matting placement.

For tree removal off-ROW where access is located along historically used access routes and minimal improvements are required, NEP foresters will evaluate trees adjacent to each access route in the field. With the approval of landowners, NEP will only remove trees required to safely accommodate passage of construction equipment and vehicles. Of the 31.2 acres of tree removal proposed for access improvements, 14.5 acres will be evaluated using this selective tree removal methodology.

The alteration of land associated with tree removal consists of the conversion of one vegetation cover type to another. Currently, NEP manages vegetation within the cleared areas of the A1/B2 ROW to promote the growth of herbaceous and scrub-shrub or lower growing woody vegetation in both uplands and regulated wetland resource areas. The ROW currently provides a perpetual transitional meadow habitat primarily defined by open, scrubby habitat interspersed with wetlands, streams, and open water. NEP proposes to remove trees along the current forested edge of the ROW while preserving the existing undergrowth to the extent feasible. Based on general existing conditions and for the purposes of environmental permitting impact analyses, NEP is assuming that tree removal will result in a conversion of the aerial extent of removed tree canopy from forested to scrub-shrub vegetation with the exception of access routes where temporary construction matting is proposed. On average, this conversion will extend the vegetatively managed transitional meadow by approximately seven to eight feet on each edge of the ROW. Because the Project is within an existing utility ROW, tree removal will not result in fragmentation of forested habitat but will instead change the habitat type along the margins of an existing corridor.

As discussed in the EENF, NEP requested BSC perform Wildlife Habitat Evaluations ("WHE") to quantify and characterize available wildlife habitat areas within the Project area, WHE are required for work within wetland resource areas per the MA WPA (310 CMR 10.60(1)) due to the extent of proposed alteration of the Project within jurisdictional resource areas. BSC surveyed a number of parameters specific to forested environments during this process. NEP provided a summary of WHE in *Section 4: Wetlands and Wildlife* in the EENF, and applicable portions were presented in *Appendix F* of the EENF.

Based on preliminary evaluations, temporary impacts to wildlife are anticipated in association with tree removal along the forested edge of the Project route. However, large blocks of intact woodland will not be impacted and will remain for wildlife use. Larger, more mobile species such as large mammals (*white-tailed deer*) are expected to temporarily relocate from construction areas but are unlikely to be permanently impacted by the displacement. Small mammals such as gray squirrels (*Sciurus carolinensis*), woodchucks (*Marmota monax*), and possibly furbearers (skunks and raccoons), as well as herpetofauna, are also likely to be temporarily displaced; however, upon the recovery of the habitat, the increased availability of maintained, early seral stage habitat will enhance habitat diversity for herptiles and other cold-blooded fauna (insects and other invertebrates). Depending upon the time of year, some avifauna may also be temporarily displaced, possibly affecting breeding and nesting activities; however, these species are likely to return after construction and in subsequent years.

3.2.1 Land Alteration from Construction Access

NEP requires safe and reliable access to each transmission structure for equipment and crews to clear and grade the work areas, create a stable work platform, install structures, and string the overhead wires. In order to achieve this, some new within-ROW and off-ROW permanent impacts are required, including the re-establishment/improvement of access, and creation of permanent work areas. *Table 3-3* provides a summary of land alteration impacts from construction access.

Table 3-3: Summary of Land Alteration Impacts

Municipality	Proposed Access Roads (LF)		Cut & Fill (SF)	
	On ROW	Off ROW	On ROW	Off ROW
Athol	16,041	498	978,458	14,439
Fitchburg	4,998	1,431	346,817	31,283
Gardner	21,098	4,050	1,139,310	22,020
Leominster	22,239	881	1,216,374	44,731
Royalston	34,923	6,212	2,153,816	39,463
Sterling	1,239	0	83,249	0
Warwick	26,714	2,699	1,551,267	44,210
Westminster	9,430	1,506	763,999	47,621
Winchendon	19,600	243	1,196,251	7,958
Total	**156,281**	**17,521**	**9,429,542**	**251,726**

3.2.2 Access Construction and Improvements within-ROW

Environmental and construction planning specialists have carefully evaluated access routes to ensure necessary safety and accessibility factors are considered and impacts to sensitive resources are avoided, where practicable, and minimized where impacts are unavoidable. As noted in the EENF, historic access/paths will require improvement to meet the access requirements for the Project. NEP will establish the physical access required to construct, inspect, and maintain the Rebuilt Lines and Taps through improvement of existing or historic accessways, temporary

placement of construction mats, and construction of new access where necessary. Existing and proposed access routes are shown on the DEIR Plans (Figure 2) in **Appendix A**.

Access routes are categorized as either Standard Road Type 1-2 or Designed Road Type 3-5 as shown on the DEIR Plans (Figure 2) in **Appendix A**. Standard Road assumes the conditions are not particularly challenging (e.g., relatively gentle slopes) and the risk of erosion of the constructed access will be low. Designed Roads are generally located in relatively steep or challenging terrain where erosion of the constructed gravel access could be a risk. Designed Roads have been optimized to minimize cut/fill to the extent feasible and consider management of stormwater runoff including construction of stormwater BMPs, as appropriate.

Where access currently exists, the travel lane is generally 8-feet wide (or less). Access for the construction vehicles anticipated for the Project will generally require a 12 foot wide travel lane, but the constructed footprint may be wider in some locations to accommodate side slopes and stormwater management features such as swales, stone check dams, water bars, or other BMP measures.

3.2.3 OFF-ROW Access Construction and Improvements

The majority of these off-ROW access routes have been historically utilized for access to the Existing Lines and Taps, but improvements will be required for construction. Where access to structures cannot be obtained on ROW due to challenging terrain or avoidance of environmentally sensitive areas, select off-ROW locations are proposed. New access routes have been designed to avoid or minimize disturbance to wetland resources to the extent feasible, to follow the existing contours of the land as closely as possible, and where practicable, to avoid severe slopes. Consistent with in-ROW access routes, off-ROW access routes will generally be 12-feet, but the extent of earthwork associated with access construction may be wider in some locations to accommodate grading and stormwater BMPs, such as swales, stone check dams, water bars, or other similar measures.

NEP plans to construct two new access ways (near existing structure 109 and structure 545) to avoid future impacts to an extensive wetland system and state highway traffic. While off-ROW access will be designed in coordination with the property owners, most will be constructed of gravel, timber construction mats, or a combination thereof depending on site specific conditions.

3.2.4 Construction of Work Areas and Staging/Laydown Areas

Work pads will be placed at structures where work is proposed. Work pads are necessary to accommodate the removal of existing structures, installation of new or replacement structures and their appurtenant features. Similarly, pull pads are being used to install overhead transmission wire. Pull pads are necessary to stage equipment being used to install new conductor and OPGW by pulling it from one structure to the next (see **Appendix A**: DEIR Plans (Figure 2)).

Work pad improvements will depend upon site topography and existing conditions at each structure location. Where site topography and stability of existing ground allows, work areas will be mowed only. Where topography is steeper or the ground surface is unstable, work areas will require grading and the placement of stone (gravel) to provide a stable work surface. Within BVW

or IVW no grading will be conducted, and temporary matting will be placed in order to create a stable and safe work surface. Where construction matting is placed in BVW, RA or BLSF, this will be removed once construction is complete. Outside of sensitive wetland resource areas, work areas will remain in place to provide permanent work platforms for future maintenance/emergency work. In total, 63 acres of temporary land alteration within the defined work pads are proposed.

3.2.5 Installation of Foundations and Structures

Rebuilding the Existing Lines and Taps requires replacing steel and wood pole structures, including monopole, H-Frame and Chair Frame structures, with engineered weathered steel monopole structures. Monopole structures will be self-supporting (direct embedded) or supported by concrete caisson foundations. Alternative foundation types such as helical piles, steel vibratory caisson foundations, or micro pile foundations may be utilized if warranted by site conditions or other factors. *Section 9* of the DEIR describes the construction methods and impacts associated with structure installations.

Within Massachusetts, the Existing Lines consist of a total of approximately 575 structures within the existing ROW extending from the New Hampshire/Massachusetts border to Pratts Junction Substation. Physical issues were identified on 221 out of the 575 existing structures inspected on the Existing Lines in Massachusetts. In addition, physical issues were identified on 139 out of the 201 existing structures on the Athol Tap Line, and 12 out of the 48 existing structures on the Crystal Lake Tap Line. Of these structures, 64 are within BVW, 89 are in RA, and 16 are within BLSF. *Section 4* of the DEIR describes the impacts and avoidance, minimization, and mitigation measures proposed for structure installations within BVW, RA and BLSF.

3.2.6 Permanent Stream Crossings for Access

The Project has no proposed permanent stream crossings for access. Proposed stream crossings will be temporary in nature and will be bridged using construction mats or equivalent installed to not impact the hydrology, bed or bank of streams.

3.2.7 Retaining Walls

NEP has eliminated proposed retaining walls from the Project design along the A1/B2 mainline. For the Athol Tap Line, two retaining walls are currently proposed, which is a significant reduction from 101 retaining walls that were proposed in the EENF. NEP evaluated alternatives such as reduction of work areas and trimming of the corners on the standard work area size (160 feet x 80 feet or 160 feet x 100 feet) to eliminate construction of retaining walls throughout the Project ROW, where feasible. The two retaining walls are proposed to protect existing structures and/or features, protect adjacent wetland resource areas, and to limit the work to the bounds of the ROW in areas where work pads are required along extremely steep terrain on the Athol Tap.

3.2.8 DCR and Article 97 Properties

The Existing Lines and Tap Lines cross four DCR Properties, the Leominster State Forest in Leominster and Fitchburg, the Royalston State Forest in Royalston, the Otter River State Forest in Royalston and Winchendon, and the Warwick State Forest in Warwick (refer to the DEIR Plans in **Appendix A** for a depiction of Project activities in relation to Article 97 boundaries). NEP's easements for the Existing Lines and Tap Lines in these areas predate the establishment of DCR properties and state forests. Activities proposed within these Article 97 Lands include structure maintenance and replacements, access improvements and construction, work area grading, tree removals, and the use of temporary construction matting. NEP's easements provide all legal rights necessary to perform these activities. No additional easements or other permanent grant of rights are necessary to perform the activities. *Table 3-4* provides a summary of impacts in DCR properties.

Additionally, the Rebuilt Lines ROW and associated off-ROW access routes transect a public trail, the New England Trail in Warwick State Forest. NEP is proposing tree removal, access construction and grading in areas where the Project transacts the trail. NEP will work closely with DCR to ensure the safety of trail users, and to minimize project impacts to trail access, and as necessary, to obtain the appropriate authorization through a Construction Access Permit.

Table 3-4: Summary of Impacts in DCR Properties

Impacts	Leominster State Forest			Royalston State Forest			Otter River State Forest			Warwick State Forest			TOTAL
	on-ROW	off-ROW	Total	on-ROW	off-ROW	Total	on-ROW	off-ROW	Total	on-ROW	off-ROW	Total	
Temporary Impacts													
Construction Matting (SF)	21,631	0	21,631	13,544	558	14,102	26,868	0	26,868	83,912	23,907	107,819	**170,420**
Permanent Impacts													
Foundations (SF)	484	0	484	293	0	293	359	0	359	1,202	0	1,202	**2,338**
Permanent Alteration													
Access Road Improvements (LF)	3,180	2	3,183	923	524	1,447	3,312	0	3,312	11,365	353	11,718	**19,660**
Cut/fill (SF)	195,298	350	195,648	99,072	12,834	111,906	185,102	0.18	1,85,102	666,888	11,534	678,422	**985,976**
Tree Removal (SF)	31,332	0	31,332	17,517	11,605	29,122	21,619	0	21,619	85,646	9,901	95,547	**177,620**

3.3 STORMWATER MANAGEMENT

This section discusses how NEP will manage stormwater during construction and measures to manage stormwater along constructed access that will remain following construction. A discussion of the Stormwater Management Standards is provided in *Section 12*. Stormwater management BMPs are addressed in *Section 9.2.2*.

3.3.1 Introduction

Stormwater permitting and approvals will be required for access and work areas (including grading, structure replacement, work pads and pull pads) that will be created along the ROW to support construction. NEP will submit a Notice of Intent ("NOI") to the EPA under the NPDES Stormwater Construction General Permit ("CGP") for Stormwater Discharge from Construction Activities, as well as Bureau of Water Resources Surface Water Discharge Permitting Program WM 15 permit application. As required under this program, a construction SWPPP will be developed to ensure that BMPs are implemented during construction to minimize potential for erosion or release of eroded sediments from the ROW.

The SWPPP establishes a construction period contact list, presents a description of the proposed work, and identifies stormwater controls, erosion controls, spill prevention, and inspection practices to be implemented for the management of construction-related storm water discharges from the Project. The SWPPP clearly identifies parties responsible for monitoring and reporting any activities out of compliance with the SWPPP, and for handling extraordinary situations. The SWPPP also defines monitoring to occur until disturbed areas on the site have been stabilized using standard BMPs. Please refer to National Grid's Environmental Guidance ("EG") Document EG-303NE in **Appendix F** for additional information on procedures and policies implemented during construction to identify and control environmental impacts of activities.

Stormwater Management Permits will also be obtained in accordance with the Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Sterling, and Athol Municipal Bylaws. For each municipality, a NOI and Stormwater Management Permit ("SMP") application (where required) will be concurrently developed and submitted.

3.3.2 Stormwater Management during Construction

During construction, stormwater management BMPs will be utilized to prevent erosion of construction areas and adjacent undisturbed areas and to prevent sedimentation of wetland resource areas and watercourses. Stormwater management will be accomplished through stabilization and structural control BMPs, as well as good housekeeping practices.

One potential source of stormwater pollution during the construction phase of the Project includes erosion and sedimentation resulting from land disturbing activities. Land disturbing activities associated with the Project include structure replacements, grading of work pads and access improvements. General work activities, such as travel to and from job site, also have the potential to result in erosion, fugitive dust, and sediment tracking.

Temporary and permanent erosion and sediment controls will be employed to minimize erosion and transport of sediment into wetland and stream resource areas during construction. Proposed sediment control barriers for the Project may include, but are not limited to, any combination of the following: straw wattles, compost socks, straw bales and silt fence. Excess excavated soil will be spread over upland areas outside of applicable wetland buffer zones or other wetland resource areas or removed from the site in accordance with NEP's policies and procedures. Additional controls, such as watertight spin off boxes or geotextile filter fabric, may be used for saturated stockpile management in work areas in wetlands (e.g., construction mat platforms) where sediment-laden runoff would pose a risk to the surrounding wetland. Temporary filter inserts (e.g., silt sacks) may be installed in catch basins or similar drainage structures as needed. Erosion and sediment control measures will be installed prior to construction and will be maintained through the construction period until final stabilization is achieved. Construction of long-term access that will remain following completion of the Project will be stabilized as it is constructed. Please refer to *Section 9.2.2* and EG-303NE in **Appendix F** for additional information regarding sediment and erosion control BMPs during construction.

Dust controls will be evaluated and implemented as needed throughout the duration of the Project on disturbed soils that are subject to surface dust movement and dust blowing. Water or application of calcium chloride or other NEP approved equivalent in accordance with the manufacturer's guidelines may be used for dust control. During application of water for dust control, care shall be taken to ensure that water does not create runoff or cause erosion.

Structural measures will also be implemented to divert flows away from exposed soils and stockpiled soils or otherwise limit runoff and minimize the discharge of pollutants from the site. Structural measures shall be installed on upland soils. Structural measures include, but are not limited to, temporary diversion swales, water bars, fill berms and sediment traps. Stone tracking pads will also be installed at construction entrances to prevent soil tracking onto public roadways.

Other potential stormwater pollutants that may be present during construction include petroleum-based products, hydraulic fluids, gasoline, diesel fuel, and antifreeze and coolant. Management of hazardous materials is discussed in more detail in *Section 3.4* and will be described in detail in the SWPPP. Good housekeeping and product specific practices will be implemented to prevent the accidental release of hazardous materials.

Inspection of work areas will occur on a pre-determined schedule until the Project is stabilized as well as after triggering rainfall or snow melt amounts. Documentation identifying deficiencies of erosion control measures will be forwarded to the construction supervisor for implementation of corrective measures. As a proactive approach to ensure compliance with environmental permit requirements, construction personnel will be briefed on the Project's environmental issues and permit obligations prior to construction. Field staff will also be trained to recognize and respond to changing field conditions as they relate to protecting wetland and stream resource areas and preventing sedimentation and stormwater runoff. Regular progress meetings will be held to reinforce the contractor's awareness of these issues.

3.3.3 Post-Construction Stormwater Management

Stormwater management practices in the form of permanent drainage swales, plunge pools, splash pads, vegetated filter strips, or other management BMPs may be installed on a case-by-case basis as warranted to ensure stormwater is controlled and risk of erosion mitigated. SWPPP inspections will cease following permanent site stabilization as defined by the applicable federal, state, and local permit requirements and regulations.

Final stabilization is achieved after construction activities are complete. Typically, the following general requirements must be met:

- Adequate vegetative and non-vegetative stabilization is observed at work areas.
- Construction materials, waste and temporary stormwater controls have been removed and properly disposed of.
- Potential pollutants and pollutant-generating activities associated with construction have been removed from the Project area.

3.3.4 Low Impact Development and Integrated Management Practices

Consistent with the SWPPP, areas where soil disturbing activities have occurred will be stabilized with seed and straw mulch to facilitate rapid revegetation. The nature of the Project is relatively low impact compared to typical development considering the use of gravel to construct access along the ROW and the minimal additional impervious area. Where appropriate, NEP has proposed swales, check dams, and plunge pools to control stormwater runoff, promote infiltration, prevent erosion, and minimize changes to the existing hydrology of the ROW. Through promoting infiltration and spreading stormwater flows into vegetated areas of the ROW, the proposed BMPs are consistent with the intent of Low Impact Development (LID) and integrated management practices.

3.4 HAZARDOUS WASTE

3.4.1 Massachusetts Contingency Plan

A disposal site is a location where there has been a release to the environment of oil and/or hazardous material that is regulated under M.G.L. c. 21E, and the MA Contingency Plan (310 CMR 40.0000). NEP identified one disposal site with RTNs near the Project route. The location of the one disposal site is described below in *Table 3-5* and shown on the MEPA General Plans. RTN 2-0012349 is included on the General Plans as work will be conducted within the limits of the Disposal Site Boundary; however, work will not disturb the subsurface soils as only overhead work is proposed.

Table 3-5: Disposal Sites with RTNs

RTN	Site Name	Site Address	Municipality	Compliance Status	Compliance Date
2-0012349	Pratts Junction Substation	Pratts Junction Rd	Sterling	RAO	8/9/2002

RAO= Response Action Outcome

3.4.2 Construction BMPs for Hazardous Waste

Please refer to EG-303, EG-501, EG-502, and EG-1707 in **Appendix F** for a description of NEP's procedures for managing hazardous waste and contaminated soils, and NEP's spill response procedures. If oil and/or hazardous materials are identified within the Project area during the implementation of this Project, notification will be made to MassDEP, if necessary, in accordance with the MCP 310 CMR 40.0000. To prevent impacts from project related hazardous materials, if refueling and maintenance in the field are necessary, vehicles and equipment will be brought to an access area greater than 100 feet away from sensitive environmental features and all reasonable environmental precautions will be taken, to the extent practical. A paved area, such as a parking lot or roadway is preferred to minimize the possibility of spill or release to the environment. Refueling precautions will include frequent checks for fuel spills, drips, or seeps during the refueling operation. Vehicles are also equipped with spill kits to provide immediate response action, if needed. If it is not practicable to move equipment to a suitable area, special precautions will be employed to prevent oil or hazardous material release to the environment. These precautions include, but are not limited to, deployment of portable basins or similar secondary containment devices, use of ground covers such as plastic tarpaulins, and precautionary placement of absorbent materials.

3.5 AVOIDANCE, MINIMIZATION AND MITIGATION FOR LAND ALTERATION

The Project design reflects NEP's significant efforts first to avoid and then to minimize adverse impacts to the land surrounding the Project site to the extent practicable. For example, NEP located the Project entirely within an existing ROW. Where feasible, the new foundations have been located to avoid adverse impacts. Also, the proposed design locates proposed structures in proximity to existing structures, whenever feasible; places proposed structures so that the transmission wires span several resource areas; removes incompatible vegetation only where necessary for safe operation; and utilizes existing/upland roadways for construction purposes. Overall, the Project is not expected to change or significantly impact land uses within the ROW or areas within 300 feet of the ROW during construction or operation as it is an existing transmission line.

Access construction and improvements will be carried out in compliance with the conditions and approvals of the appropriate federal, state, and local regulatory agencies. Dust suppression measures, including water trucks, will be used as required to minimize fugitive dust from construction vehicle travel along the ROW. Crushed stone aprons/tracking pads will be used at access entrances to public roadways as needed to minimize the migration of soils off-site from construction equipment. Additionally, stormwater BMPs will be installed as necessary as part of

the access construction and improvement phase of the Project. NEP will also submit a SWPPP in compliance with the EPA's NPDES program under the Stormwater CGP, as well as Bureau of Water Resources Surface Water Discharge (NPDES) Permitting Program WM 15 permit application.

Some wildlife habitat functions associated with forested areas will be permanently altered as a result of tree removal; however, they will be replaced with the increasingly scarce scrub/shrub habitat. In most instances, it is a narrow fringe of trees that will be removed or pruned along the edge of the existing ROW, such that species using the existing forest border will continue to use the new forest border. Shrub scrub habitats play a vital role in stabilizing the surface topography, offering essential support to the ecosystem. These habitats are crucial for the survival of various wildlife species, including small mammals, reptiles, birds, amphibians, and invertebrates. It also serves as a migration pathway for many species facilitating their movement and dispersal. In addition, these habitats act as a natural barrier and buffer against strong winds, storms, and avalanches (Götmark, Götmark, & Jensen, 2016)[20]. These habitats are highly adaptive to their environment, thus are resilient to climate change. Post-construction stabilization and restoration of the ROWs will also facilitate natural revegetation on the ROW and reestablish available wildlife habitats on the ROW.

As discussed in further detail in the Sections that follow, NEP will mitigate both permanent and temporary impacts related to land alteration in wetland resource areas (*Section 4*), traffic and transportation (*Section 9.3 in Section 9*), priority habitat (*Section 5*), and noise and vibration (*Section 9.7 in Section 9*). With the implementation of these measures, the anticipated impacts of the Project on protected, open space, and recreational lands will be minimized.

[20] Source - Götmark, F., Götmark, E., & Jensen, A. M. (2016). Why be a shrub? A basic model and hypotheses for the adaptive values of a common growth form. *Frontiers in Plant Science*, *7*. doi:10.3389/fpls.2016.01095

4 WETLANDS, WATERWAYS AND WATER RESOURCES

4.1 UPDATED WETLANDS IMPACTS ASSESSMENT

As noted in *Section 1* and described in *Section 1.6*, since the EENF, NEP has completed additional field investigations, constructability reviews, and design refinements. As a result of these efforts, NEP has reduced and refined anticipated impacts to wetland resource areas to show more clearly within-ROW vs. off-ROW impacts associated with forest conversion/tree removals. NEP has avoided and minimized impacts to wetland, watercourses, and vernal pools to the greatest extent practicable by utilizing ROWs associated with the Existing Lines and Taps and existing access where feasible. However, given the scale and landscape setting of the Project, NEP cannot avoid certain wetland impacts.

Additional review of Geographical Information Systems ("GIS") and United States Geographical Survey ("USGS") StreamStats was conducted in 2023 to map hydrological connections along the Project route to refine information regarding perennial and intermittent streams. As a result, the number of perennial and intermittent streams was refined. Specifically, the EENF identified 68 perennial streams and 60 intermittent streams on-ROW and off-ROW. Since the EENF, stream tallies have been updated and now includes 64 perennial and 80 intermittent streams.

The majority of impacts to wetland resource areas are temporary alteration that will result from the placement of construction matting for access and construction areas (i.e., work areas). Overall, NEP anticipates temporary alterations to wetland resource areas to be moderate during construction and insignificant over the long-term. Temporary alterations are anticipated within BVW, Isolated Wetlands, Bank, RA, BLSF, and LUWW. Permanent impact within BVW includes fill associated with the structure installation. NEP is not proposing to construct permanent access or work areas within BVW, IVW, Bank and LUWW but is proposing some permanent alterations in RA, BLSF and Buffer Zone associated with proposed grading and other access improvements.

As discussed in *Section 3, Section 3.2*, the Project will result in a permanent conversion of the vegetation cover type within resource areas associated with tree removal. Vegetation cover type conversion does not result in the loss of BVW, but may change the species composition, plant density and community structure along wetlands currently located at the edge of a cleared ROW. The area of tree removal will become more consistent with the remainder of the maintained ROW, consisting of scrub-shrub and "transitional meadow" habitat.

A summary of impacts to state and locally jurisdictional resource areas is presented in *Table 4-1* (below). This is followed by a break-down of these impacts by municipality in *Table 4-2*, and by individual wetland in *Table 4-3*. These impacts will result from the construction practices and procedures outlined in *Section 9*. Details of NEP's efforts to provide avoidance, minimization, and mitigation measures are provided in the following sections.

Table 4-1: Summary of Impacts to Resource Areas

Impact Type	Activity	Impact Area (SF)[1]					
		BVW	Bank	LUWW	BLSF	200-foot RA	100-ft Buffer Zone of BVW
Temporary Alteration	Construction Matting	1,645,153	3,378	17,217	223,662	451,840	609,509
Permanent Alteration	Tree Removal – Conversion of Vegetative Cover Type	403,366	28,714	0[3]	106,286	605,048[4]	2,021,185
	Access Improvement/ Grading	0	0	0	65,973	1,010,480	3,954,772
Permanent Impact	Structure Replacements	2,246[2]	0	79	726	3,561	10,160

[1] Note these impacts are not additive within each column. Impact types vary by ROW and overlap in areas of the Project.
[2] The EENF did not account for fill associated with installation of direct embed; however, the refined impacts show the overall footprint of installation of structures that includes both direct embed and caisson structures.
[3] The existing canopy cover to be removed as a result of trees being removed from within the ROW does not result in a direct impact to the LUWW.
[4] Tree removal approximations determined by GIS analysis of LiDAR imagery, ROW Survey and Riverfront Area Polygons. These impact assessments are based on conservative estimates and considers overlapping canopy cover both on and off ROW of the RFA parcel.

4.2 CUMULATIVE WETLAND IMPACTS IDENTIFIED BY MUNICIPALITY

Table 4-2 provides a break-down of wetland resource area impacts by municipality, including permanent impacts (i.e., fill associated with structures), and temporary alteration (i.e., construction matting). *Table 4-3* describes the area and cause of permanent wetland impacts (i.e., the structure foundation type). Municipalities are presented as mapped in the DEIR Plans (Figure 2) *in* **Appendix A** for ease of reference. *Table 4-4* presents a summary of all permanent and temporary impacts to each individual wetland resource area, by municipality.

Table 4-2: Cumulative BVW Impacts by Municipality

Municipality	Total Permanent Impact (SF)*	Total Temporary Alteration (SF)
Warwick	214	158,281
Royalston	517	418,278
Winchendon	140	127,492
Gardner	517	312,101
Westminster	196	187,823
Fitchburg	0	20,857
Leominster	79	179,701

Municipality	Total Permanent Impact (SF)*	Total Temporary Alteration (SF)
Sterling	0	11,904
Athol	504	181,883
Total	**2,167**	**1,598,320**

*Due to alteration associated with structure installation.

Table 4-3: Permanent Impacts to BVW for Concrete Caisson Foundations and Direct Embed

MUNICIPALITY	WETLAND ID	MAINLINE OR TAP NAME	STRUCTURE #	Area (SF)	INSTALL TYPE
ATHOL	AT-W2	ATHOL TAP 2	732	28	DIRECT EMBED
ATHOL	AT-W5	ATHOL TAP 2	738	28	DIRECT EMBED
ATHOL	AT-W7	ATHOL TAP 2	742	28	DIRECT EMBED
ATHOL	AT-W8	ATHOL TAP 2	745	28	DIRECT EMBED
ATHOL	AT-W15A	ATHOL TAP 2	762	28	DIRECT EMBED
ATHOL	AT-W17	ATHOL TAP 1 & 2	774	28	DIRECT EMBED
ATHOL	AT-W2	ATHOL TAP 1	832	28	DIRECT EMBED
ATHOL	AT-W5	ATHOL TAP 1	838	28	DIRECT EMBED
ATHOL	AT-W5	ATHOL TAP 1	839	28	DIRECT EMBED
ATHOL	AT-W8	ATHOL TAP 1	844	28	DIRECT EMBED
ATHOL	AT-W15A	ATHOL TAP 1	861	28	DIRECT EMBED
ATHOL	AT-W15B	ATHOL TAP 1	866	28	DIRECT EMBED
ATHOL	AT-W2	ATHOL TAP 2	733	28	DIRECT EMBED
ATHOL	AT-W5	ATHOL TAP 2	739	28	DIRECT EMBED
ATHOL	AT-W7	ATHOL TAP 2	741	28	DIRECT EMBED
ATHOL	AT-W8	ATHOL TAP 2	744	28	DIRECT EMBED
ATHOL	AT-W15B	ATHOL TAP 2	767	28	DIRECT EMBED
ATHOL	AT-W19	ATHOL TAP 1 & 2	777	28	DIRECT EMBED

MUNICIPALITY	WETLAND ID	MAINLINE OR TAP NAME	STRUCTURE #	Area (SF)	INSTALL TYPE
GARDNER	GA-W2	MAINLINE	377	79	CONCRETE CAISSON
GARDNER	GA-W3	MAINLINE	382	28	DIRECT EMBED
GARDNER	GA-W5A	MAINLINE	387	28	DIRECT EMBED
GARDNER	GA-W6	MAINLINE	390	28	DIRECT EMBED
GARDNER	GA-W6	MAINLINE	391	28	DIRECT EMBED
GARDNER	GA-W6	MAINLINE	392	28	DIRECT EMBED
GARDNER	GA-W11	MAINLINE	401	79	CONCRETE CAISSON
GARDNER	GA-W13	MAINLINE	406	28	DIRECT EMBED
GARDNER	GA-W14	MAINLINE	409	28	DIRECT EMBED
GARDNER	GA-W14	MAINLINE	410	79	CONCRETE CAISSON
GARDNER	GA-W20	MAINLINE	427	28	DIRECT EMBED
GARDNER	GA-W23	MAINLINE	430	28	DIRECT EMBED
GARDNER	GA-W26	MAINLINE	432	28	DIRECT EMBED
GARDNER	GA-S40	CRYSTAL LAKE TAP	CLW 14	79	CONCRETE CAISSON
LEOMINSTER	LE-W17	MAINLINE	561	79	CONCRETE CAISSON
ROYALSTON	RO-W4A	MAINLINE	177	28	DIRECT EMBED
ROYALSTON	RO-W5	MAINLINE	180	28	DIRECT EMBED
ROYALSTON	RO-W6	MAINLINE	181	28	DIRECT EMBED
ROYALSTON	RO-W6	MAINLINE	182	28	DIRECT EMBED
ROYALSTON	RO-W6	MAINLINE	183	28	DIRECT EMBED
ROYALSTON	RO-W6	MAINLINE	184	28	DIRECT EMBED

MUNICIPALITY	WETLAND ID	MAINLINE OR TAP NAME	STRUCTURE #	Area (SF)	INSTALL TYPE
ROYALSTON	RO-W11	MAINLINE	198	79	CONCRETE CAISSON
ROYALSTON	RO-W26	MAINLINE	225	79	CONCRETE CAISSON
ROYALSTON	RO-W26	MAINLINE	226	79	CONCRETE CAISSON
ROYALSTON	RO-W28	MAINLINE	229	28	DIRECT EMBED
ROYALSTON	RO-W59	ATHOL TAP 2	710	28	DIRECT EMBED
ROYALSTON	RO-W49	MAINLINE	276	28	DIRECT EMBED
ROYALSTON	RO-W59	ATHOL TAP 1	810	28	DIRECT EMBED
WARWICK	WA-W22	MAINLINE	137	79	CONCRETE CAISSON
WARWICK	WA-W24	MAINLINE	141	28	DIRECT EMBED
WARWICK	WA-W29	MAINLINE	148	79	CONCRETE CAISSON
WARWICK	WA-W29	MAINLINE	149	28	DIRECT EMBED
WESTMINSTER	WE-W1	MAINLINE	444	28	DIRECT EMBED
WESTMINSTER	WE-W3	MAINLINE	459	28	DIRECT EMBED
WESTMINSTER	WE-W3	MAINLINE	460	28	DIRECT EMBED
WESTMINSTER	WE-W5	MAINLINE	465	28	DIRECT EMBED
WESTMINSTER	WE-W10	MAINLINE	474	28	DIRECT EMBED
WESTMINSTER	WE-W11	MAINLINE	477	28	DIRECT EMBED
WESTMINSTER	WE-W11	MAINLINE	478	28	DIRECT EMBED
WINCHENDON	WIN-W14	MAINLINE	330	28	DIRECT EMBED
WINCHENDON	WIN-W33	MAINLINE	365	28	DIRECT EMBED

MUNICIPALITY	WETLAND ID	MAINLINE OR TAP NAME	STRUCTURE #	Area (SF)	INSTALL TYPE
WINCHENDON	WIN-W33	MAINLINE	366	28	DIRECT EMBED
WINCHENDON	WIN-W33	MAINLINE	367	28	DIRECT EMBED
WINCHENDON	WIN-W34	MAINLINE	370	28	DIRECT EMBED
ROYALSTON	RO-W10	MAINLINE	191	79	CONCRETE CAISSON

Table 4-4: Impacts to Wetland Resource Areas by Municipality

Municipality	BVW (SF)		Bank (LF)		200-foot RA (SF)		BLSF (SF)		LUWW (SF)		IVW (SF)		Buffer Zone (SF)	
	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary
Warwick	214	158,281	0	1,015	341,431	82,715	1,827	14,064	0	6,871	0	62	690,097	91,061
Royalston	517	418,278	0	635	103,544	138,017	15,809	78,593	0	10,346	79	17,880	1,039,662	170,888
Winchendon	140	127,492	0	157	89,411	47,000	21,257	94,813	0	0	0	0	427,656	67,902
Gardner	517	312,101	0	750	114,197	48,599	3001	11,120	79	0	0	8,338	674,022	84,096
Westminster	196	187,823	0	0	60,845	10,759	0	0	0	0	0	3,895	188,936	50,274
Fitchburg	0	20,857	0	0	26,909	23,713	20,567	13,996	0	0	0	1,734	197,974	29,646
Leominster	79	179,701	0	505	169,403	53,692	6,720	11,075	0	0	0	17,932	583,556	65,025
Sterling	0	11,904	0	56	27,162	7955	0	0	0	0	0	0	41,392	6,250
Athol	504	181,883	0	261	205,002	39,391	0	0	0	0	0	926	544,632	44,369
Total	**2,167**	**1,598,320**	**0**	**3,378**	**1,137,905**	**510,123**	**69,182**	**447,325**	**79**	**17,217**	**79**	**50,767**	**4,387,836**	**609,511**

4.2.1 Vernal Pools

Vernal Pool Habitat assessments were conducted in Spring 2020, Summer 2021, Spring 2022, and Spring 2023 to field-confirm the locations of Certified Vernal Pools ("CVPs") and PVPs, identify any additional PVPs, and gather information necessary to understand and adequately protect the habitat associated with these pools. As stated in the EENF, based on desktop evaluation and field investigations, no CVPs were identified along the Project route. One field delineated on-ROW PVP, and one off-ROW PVP was identified in Warwick. The locations of vernal pools are illustrated on the DEIR Plans (Figure 2) in **Appendix A**.

As noted in the Scope, a vernal pool identified in Warwick, MA that is partially within the proposed off-ROW access to Structure 154 was evaluated. Six egg masses of the Spotted Salamander, *Ambystoma maculatum,* and Wood Frog, *Lithobates sylvaticus*, tadpoles were found in the pool. The pool is approximately 80 feet by 60 feet with a maximum depth of 12 inches and average depth of approximately eight inches. There is an overflow from the main body of the pool into the adjacent cart path that is proposed for access. No evidence of amphibian breeding was seen in the standing water within the cart path. NEP will coordinate with DCR for official certification of this vernal pool through the Massachusetts Division of Fisheries & Wildlife, as applicable.

The PVP was identified between Structures 169 and 170 was evaluated to confirm whether it meets the criteria for certification. The wetland demonstrates evidence of ponding in early spring based upon vegetation characteristics within the wetland but was observed dry at a time that is critical for amphibian larval development in Massachusetts. There was no evidence of aquatic organisms found in a thorough search of the wetland, indicating that there is insufficient duration of flooding on a regular basis to support vernal pool function.

Table 4-5 (below) summarizes the location details for each vernal pool within the vicinity of the Project, and any impacts proposed within 100 feet of the vernal pools. The expected temporary alteration from the placement of construction mats in BVW associated with a PVP is approximately 0.02 acres. Please refer to *Section 4.3.2* for a review of BMPs implemented while working within and near vernal pools.

Table 4-5: Vernal Pool Habitat Identified within the Project ROW by Municipality

Municipality	Type of Pool	Nearest Structure	Wetland ID	Description
Warwick	PVP	154	WA-VP1	A small, field delineated vernal pool located off-ROW. No fill or permanent alteration is proposed.
Warwick	PVP	170	WA-VP2	A small, field delineated vernal pool located on-ROW, approximately 37-ft from the closest construction activities. Field evaluation shows this PVP does not support vernal pool function.

After the completion of the vernal pool habitat studies, constructability field reviews and engineering evaluations were conducted to assess the locations of the vernal pools in relation to the Line. Based on the results of these analyses, new transmission line structures, access, and work pads were adjusted to avoid or minimize direct adverse effects to vernal pools to the extent practicable, taking into consideration engineering design requirements for the new transmission lines and the need to maintain safe working conditions during construction. Every effort has been made to comply with 314 CMR 9.06 (4).

4.2.2 Waterways

The Existing Lines and Tap Lines cross or are in proximity to 64 perennial streams and 80 intermittent streams. Delineation teams identified 13 perennial streams and 23 intermittent streams along off-ROW access. Perennial and intermittent streams are displayed on the DEIR Plans (Figure 2) in **Appendix A** and are described in more detail in the EENF (*Section 4.4.1*). NEP has designed the Project to avoid impacts to waterways and the associated resource areas of LUWW and Bank to the extent practicable. Anticipated impacts within waterways are limited to the permanent loss/fill associated with installation of a single structure within LUWW associated with an intermittent stream[21], and with temporary alteration associated with the placement of construction matting spanning streams or placed within LUWW in beaver impoundments.

Once NEP has installed the Rebuilt Lines, crews will remove the existing structures, including one structure currently within LUWW. As described in *Section 9*, removal of the structure will depend on the configuration and existing concrete foundation. For a structure in LUWW, NEP typically will cut steel lattice structures at or below grade and restore the surface to meet surrounding conditions.

4.2.3 Land Under Water Bodies and Waterways

NEP is proposing the installation of a single structure within LUWW, associated with an intermittent stream (GA-S40) on the Crystal Lake Tap in Gardner, MA (refer to DEIR Plans in **Appendix A**). NEP is unable to shift the structure to avoid replacement of the existing structure within LUWW due to the wide width of the stream and bordering wetlands in the area, the physical space constraints between the tap lines and the edge of the ROW, and constructability constraints associated with leaving the existing lines in service during construction of the Rebuilt Lines. NEP is proposing to place a concrete caisson structure, resulting in 79 SF of permanent impact in LUWW.

[21] The stream is a non-navigable intermittent stream. NEP does not anticipate the replacement structure foundations size to impair the carrying capacity, ground or surface water quality, or wildlife habitat value of the LUWW. Therefore, the proposed activity does not fall under Chapter 91 jurisdiction. Refer to Section 12.3.3 for detailed description.

4.2.4 Coldwater Fisheries Resources

As noted in the EENF (*Section 4.4.1*), there are 15 streams that have been designated by the Massachusetts DFW as significant Coldwater Fisheries Resources ("CFRs"). These are: Pauchaug Brook/Lovers Retreat, Kidder Brook, Collar Brook, Fish Brook, Tully Brook, East Branch Tully River, Lawrence Brook, Boyce Brook, West Gulf Brook, Mellen Brook, Bailey Brook, Fall Brook, Slack Brook, Burnt Mill, Pond Brook, and Lemerise Brook.

NEP will avoid permanent impacts that would result from structure installation within CFRs and will minimize temporary disturbance, since NEP's construction procedures require spanning of streams, thereby avoiding direct impacts to the stream bed and banks. Impacts to wetland resource areas associated with CFRs, including impacts within the 100 feet Buffer Zone to Bank and 200 feet RA, are described in *Table 4-6*. Temporary alteration (due to the use of construction matting for stream spans), and permanent indirect conversion of vegetation type (due to tree removals), to stream resource areas are anticipated due to the comprehensive nature of the refurbishment project[22].

[22] CFR that are LUW i.e., Collar Brook and Kidder Brook only have temporary impact due to temporary construction matting. There are no permanent impact or alteration proposed in these streams.

Table 4-6: Coldwater Fisheries Resource Impacts and Avoidance, Minimization and Mitigation Measures

Stream Name	Town	Activities within Stream and/or Associated BVW	Activities within 100-ft BZ and 200-ft RFA	Activities within 200-ft RFA only	Avoidance, Minimization and Mitigation Measures
Kidder Brook	Warwick	Matting within BVW and spanning stream	Five direct embed replacement structures	Two direct embed replacement structures	Use of construction matting to protect Bank and BVW soils and rootstock.
			Two caisson foundation replacement structures	Tree removals	Sediment and Erosion controls
			Tree removals		Soil / spoil pile management
			Cut/Fill for access and work areas		BMPs for dewatering
			Work areas		Environmental monitoring & reporting
					Stabilization & restoration of disturbed areas
Tully Brook	Warwick	Matting within BVW and spanning stream	Tree removals	One structure removal	Use of construction matting to protect Bank and BVW soils and rootstock.
			Cut/Fill for access and work areas	Work area	Sediment and Erosion controls
				Tree removals	Soil / spoil pile management
					Environmental monitoring & reporting
					Stabilization & restoration of disturbed areas
Fish Brook	Royalston	Matting within BVW and spanning stream	Tree removals	Two direct embed replacement structures	Use of construction matting to protect Bank and BVW soils and rootstock.
		Tree removals within BVW	Cut/Fill for access	Cut/Fill for access and work areas	Sediment and Erosion controls
				Work areas	Soil / spoil pile management
				Tree removals	Environmental monitoring & reporting
					Stabilization & restoration of disturbed areas
Collar Brook	Royalston	Matting within BVW and spanning stream	Tree removals	Tree removals	Use of construction matting to protect Bank and BVW soils and rootstock.
			Matting within BVW		Sediment and Erosion controls
			One caisson foundation replacement structure		Soil / spoil pile management
					BMPs for dewatering
					Environmental monitoring & reporting
					Stabilization & restoration of disturbed areas
East Branch Tully River	Royalston	None	None	None	N/A
Boyce Brook	Royalston	Matting within BVW and spanning stream	Matting within BVW	Matting within BVW	Use of construction matting to protect Bank and BVW soils and rootstock.
Lawrence Brook	Royalston	None	One direct embed replacement structures	None	Use of construction matting to protect Bank and BVW soils and rootstock.
			Tree removals		Sediment and Erosion controls
			Cut/Fill for work area		Soil / spoil pile management
			Work area		Environmental monitoring & reporting
					Stabilization & restoration of disturbed areas
Mellen Brook	Winchendon	Tree removals in BVW	Matting within BLSF for work area	Two direct embed replacement structures	Use of construction matting to protect Bank and BVW soils and rootstock.

			Tree removals	Cut/Fill for work areas	Sediment and Erosion controls
			Work areas (portions of)	Work areas (portions of)	Soil / spoil pile management
				Tree removals	Environmental monitoring & reporting
					Stabilization & restoration of disturbed areas
Bailey Brook	Gardner	None	Tree removals	Work area	Use of construction matting to protect Bank and BVW soils and rootstock.
			Cut/Fill for access	Cut/Fill for access and work areas	Sediment and Erosion controls
				Tree removals	Soil / spoil pile management
					Environmental monitoring & reporting
					Stabilization & restoration of disturbed areas
Lemerise Brook	Westminster	None	Matting for work areas	Cut/Fill for access and work areas	Use of construction matting to protect Bank and BVW soils and rootstock.
			One direct embed replacement structure	Tree removals	Sediment and Erosion controls
			Two caisson foundation replacement structures		Soil / spoil pile management
			Tree removals		BMPs for dewatering
			Work areas		Environmental monitoring & reporting
					Stabilization & restoration of disturbed areas
Burnt Mill Pond Brook	Westminster	Tree removals in BVW	Tree removals	Tree removals	Sediment and Erosion controls
					Soil / spoil pile management
					Environmental monitoring & reporting
					Stabilization & restoration of disturbed areas
Slack Brook	Leominster	Matting within BVW and spanning stream	One structure removal	One caisson foundation replacement structure	Use of construction matting to protect Bank and BVW soils and rootstock.
			Cut/Fill for access and work areas	Cut/Fill for access and work areas	Sediment and Erosion controls
			Work area	Work area	Soil / spoil pile management
					Environmental monitoring & reporting
					Stabilization & restoration of disturbed areas
Fall Brook	Leominster	Matting within BVW and spanning stream	One caisson foundation replacement structure	None	Use of construction matting to protect Bank and BVW soils and rootstock.
			One structure removal		Sediment and Erosion controls
			Work areas		Soil / spoil pile management
					BMPs for dewatering
					Environmental monitoring & reporting
					Stabilization & restoration of disturbed areas
West Gulf Brook	Athol	Matting within BVW	Matting within BVW associated with the Brook	Matting within BVW associated with the Brook	Use of construction matting to protect Bank and BVW soils and rootstock.
				One direct embed replacement structure	Sediment and Erosion controls
				Cut/Fill for access and work areas	Soil / spoil pile management
				Work areas	Environmental monitoring & reporting
					Stabilization & restoration of disturbed areas

4.2.5 Riverfront Area

The Project will result in both temporary alteration and permanent alteration within RA. Temporary alteration in RA will result from the placement of construction mats to establish stable work and access areas. Permanent alteration is associated with access improvements and grading, and the conversion of forested vegetation cover type to scrub-shrub vegetation cover along the forested edge of the ROW and along off-ROW access. Permanent impacts include fill associated with structure installation. Total impacts within RA are shown in *Table 4-4.* Only 1.3% of the total RA parcel within the ROW is impacted by construction matting, less than 0.01% by structure installation, 3% by tree removal, 0.3% by access improvement or re-establishment and 4.4% by grading within 200 feet of the RA. In addition, total anticipated impacts to RA in each municipality are presented in *Table 4-6*, above.

Of the anticipated permanent alteration, most impacts to RA are associated with the improvement and construction of access. Currently there is over 14,500 LF (174,000 SF) of existing access within RA that is serviceable, and NEP does not need to improve or grade. An additional 313 LF (3,756 SF) of access within RA will need improvements such as gravel additions, but no grading is required. NEP will need to grade approximately 9,650 LF (115,800 SF) of access within RA in order to accommodate vehicle and equipment required to construct the Project and to facilitate longer term operations and maintenance of the Rebuilt Lines. In addition to the grading associated with access, work pad areas with existing site constraints (e.g., steep slopes, rocky outcrops, etc.) will also be graded. Approximately, 853,200 SF of grading is proposed within the RA. The total amount of anticipated grading (cut and fills) associated with access improvements and construction in RA is in *Table 4-7*, below.

Table 4-7: Anticipated Grading in RA in Each Municipality

Municipality	Cut & Fill (SF)		
	On ROW	Off ROW	Total
Warwick	254,971	3,510	258,481
Royalston	77,282	34	77,315
Winchendon	70,246	1,561	71,806
Gardner	68,765	7,198	75,963
Westminster	49,219	291	49,510
Fitchburg	17,687	3,165	20,852
Leominster	144,136	1,025	145,160
Sterling	25,209	0	25,209
Athol	161,012	6,841	167,853
Total	**868,526**	**23,624**	**892,150**

The impact to RA from improvement or construction of access and work areas includes the temporary loss of vegetation due to grading of the ground surface and the permanent alteration of the ground surface per the construction methods described in *Section 9.2.3* and *9.2.4*. Generally, NEP proposes to construct access routes and work pads with stone/gravel. Following construction,

NEP will loam and seed in disturbed areas and over the established work pads to promote the growth of low-growing herbaceous vegetation to offset the permanent alteration from construction activities. NEP is also proposing to install permanent stormwater management BMPs along portions of the access in the adjacent uplands, typically along steep slopes where stormwater has the potential to wash out the access, to control stormwater runoff and reduce potential for erosion.

NEP recognizes that maintaining/reestablishing the natural vegetation within the RA is critical to protecting water supplies, providing flood control, preventing pollution and protecting wildlife and fisheries habitat within RA. As needed, NEP will coordinate with the Conservation Commissions of the applicable municipalities to design a final mitigation package that appropriately addresses state and local requirements for RA.

4.2.6 Bordering Land Subject to Flooding

Within BLSF, NEP is proposing to replace 15 structures, conduct approximately 998 LF of access improvements and construction, and remove trees on and off-ROW.

NEP is proposing nine direct embed structure replacements located within BLSF, which will have *de minimis* impacts on flood storage capacity. Additionally, seven structures will be replaced with a new foundation. The new concrete caisson foundations within BLSF will protrude approximately 1-foot above ground level / normal high-water elevation. The structures installation will occur throughout the ROW, thus resulting in minimal amounts of permanent fill relative to the total extent of resource areas on the Project site. As such, there will be little change in impacts to BLSF, and *de minimis* impacts to flood storage capacity, flow, or water displacement.

NEP is not proposing access grading that will result in fill and the loss of flood storage areas within BLSF. NEP has designed access improvements to result in a net zero change in flood storage volume. Excess material removed during construction will be reused as fill in areas outside of BLSF. The total amount of anticipated grading (cut and fills) associated with access improvements and construction in BLSF is shown in *Table 4-8*, below.

Table 4-8: Anticipated Grading in BLSF in Each Municipality

Municipality	Cut/Fill (SF)		
	On ROW	Off ROW	Total
Warwick	1,221	0	1,221
Royalston	8,488	0	8,488
Winchendon	17,563	0	17,563
Gardner	2,440	0	2,440
Westminster	0	0	0
Fitchburg	17,415	173	17,588
Leominster	6,692	0	6,692
Sterling	0	0	0
Athol	0	0	0
Total	**53,819**	**173**	**53,992**

In addition, approximately, 103,672 SF (2.38 acres) of tree removal area is proposed within BLSF. Tree removal will not result in the loss of flood storage, and in most locations, NEP will remove cut trunks and branches from the ROW in BLSF. Construction matting within BLSF is a temporary BMP to protect wetland resource areas. NEP will remove matting following the completion of the Project. As appropriate on a case-by-case basis, NEP will anchor matting within BLSF to avoid migration of the mats during flood events.

4.3 AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

Throughout the planning and preliminary design process, NEP has incorporated measures to avoid and minimize potential wetland impacts from construction of the Project to the greatest extent possible. Whenever feasible, NEP sited proposed structures in proximity to the existing structures being removed or has relocated structures from wetlands into upland areas. NEP will use existing ROW access routes wherever possible and is proposing upgrades in upland portions of wetland resource areas (Riverfront Area, BLSF) only where required to meet the requirements of construction vehicles and equipment that will be used to construct the Project. Using delineation and survey data, NEP designed access and work areas to avoid the most sensitive wetland resource areas throughout the ROW wherever possible. Specifically, NEP has planned several one-way or "dead-end" access ways to be able to access the structures and work back out along the same matted access, so as to not impact additional wetland areas by continuing through with one long access route. Trees and vegetation will only be removed or mowed where necessary for safe operation. As the Project design evolved, the engineering team coordinated with environmental and construction team members to refine construction techniques to further reduce impacts. Avoidance and mitigation measures associated with Project work in wetland and waterway resources are detailed below.

4.3.1 Construction BMPs for Wetlands and Stream Crossings

4.3.1.1 Wetland Crossings

When crossing or working in wetland resource areas and the 100-Foot Buffer Zone, NEP will undertake the measures described below, as appropriate, to minimize wetland impacts:

- Install, inspect, and maintain temporary soil erosion and sediment controls, and other applicable construction BMPs, around work sites in or near wetlands to minimize the potential for erosion and sedimentation, mark the limits of wetlands, and restrict crew access, as appropriate.
- Install temporary construction matting for access across wetlands to reduce soil disturbance and protect water quality, where necessary.
- Restore wetlands, after refurbishment, to pre-construction configurations and contours to the extent practicable.

- Comply with the conditions of local, state, and federal permit conditions related to wetlands.
- Avoid or minimize access through wetlands to the extent practicable. Where access must be improved or developed (such as in Riverfront Area, BLSF, or the Buffer Zone), the access would be designed, where practical, so as not to interfere with surface water flow or the functions of the wetland.
- Refuel construction equipment (apart from equipment that cannot practically be moved) 100 feet or more from a wetland. If refueling must occur within a wetland, secondary containment will be provided.
- Restore structure work sites in, and temporary access ways through wetlands following the completion of line installation activities.
- Prior to moving to other work locations, remove plant matter, soil, or other deleterious material from equipment and construction matting when working at the sites containing invasive species.
- During structure replacement, any excavated material will be temporarily stockpiled next to the excavation; however, this material will not be placed directly into resource areas. If the stockpile is near wetlands, it will be enclosed by straw wattles or other erosion controls. Additional controls, such as watertight mud boxes will be considered for saturated stockpile management in work areas in wetlands (i.e., placed on construction mats) where sediment-laden runoff would pose an issue for the surrounding wetland. Following the backfilling operations, excess soil will be spread over unregulated upland areas or removed from the site in accordance with NEP policy.

4.3.1.2 Stream Crossings

NEP is proposing to span perennial and intermittent streams with temporary construction matting, or equivalent, where access crosses streams. Impacts to Bank associated with these spanned crossings will be minimal, and temporary in nature. In total, 3,378 LF of temporary impacts are proposed associated with the use of construction mats to span Banks. Approximately 17,217 SF of matting is proposed in LUWW for access and work areas. Mats will be placed to completely span both Bank and LUWW, and as such no ground disturbance is anticipated within these resource areas. Please refer to NEP's BMP details in **Appendix F** for a depiction of typical construction mat placement, anchoring, and water spans. Temporary impacts to Bank and LUWW associated with matting may include temporary disturbance of stream side vegetation, changes in shading over the water, and some reduction in wildlife passage (although mats will not obstruct the flow of water). Mats will be removed as soon as construction is complete, and any Bank disturbance (for example, loss of vegetation due to shading, or ground disturbance from mat placement/recovery), will be restored and stabilized. If vegetation cover has been impacted, the area will be seeded with an appropriate seed mix and monitored until restored to pre-construction conditions.

One structure will be replaced within a stream. Please refer to *Section 9* for discussion of structure replacement construction methodology and BMPs.

4.3.1.3 Coldwater Fisheries Resources

No streams designated as CFRs will have their flow velocity, water depth or width, substrate characteristics or bank integrity temporarily or permanently altered as a result of the proposed work. It will be necessary to remove tall woody vegetation in the ROW that may be a hazard or safety concern. At access crossings where mat bridges will be installed, woody vegetation would be cut at the ground surface, and roots would be left in place. Once the mats are removed, shrub species will revegetate the stream banks. Since the majority of access crossings are narrow (12 feet), only a small length of stream will experience short-term changes in shading resulting from the shrub removal and mat placement. CFRs will be spanned with construction mats and will experience the same light vegetation management as other stream crossings. BMPs will be employed in areas adjacent to CFR streams to minimize the potential for sedimentation from erosion and dewatering activities and to reduce the potential for accidental spills of fuels and lubricants to reach the CFR streams. Specific design requirements will ensure that bridge matting spans do not cause stream banks to collapse or destabilize, and that vegetation and disturbed soils are fully restored. Wherever possible, vegetation management outside of an access crossing will avoid mowing up to the banks of streams, thereby preserving the shading that results from shrubs and saplings growing along the stream banks. Taller trees, which present a hazard to the transmission lines, will be selectively removed.

4.3.1.4 Land Under Water Bodies and Waterways – Impoundments

NEP is proposing to use construction mats to provide access and work area in wetlands that are impounded by beaver activity and currently function as open water wetlands. Generally, NEP crews will follow the wetland BMPs outlined above when working within either BVW or LUWW associated with the impoundments. Impacted areas will be returned to pre-construction configurations and contours to the greatest practicable extent. For example, following construction, construction mats will be removed. ROW vegetation management BMPs will be implemented.

4.3.1.5 Land Under Water bodies and Waterways – Structure Replacement

NEP will replace one structure within LUWW of an intermittent stream. To the extent feasible, NEP will perform replacement work in the dry season when water is not flowing within the stream channel. If work is required when the stream is flowing, NEP will isolate the structure work area through the use of straw wattle, sandbags, silt fence, straw bales, or other methods appropriate to flow conditions. Following installation of the direct embed structure, the temporary exclusion structures will be removed, and no further work will take place within LUWW.

4.3.1.6 Riverfront Area

When working within RA, NEP will implement appropriate BMPs, including sediment and erosion controls, to ensure that the adjacent and overlapping resource areas are protected. Sediment and erosion controls will be installed around work areas, or between work areas and adjacent vegetated wetland resource areas, to minimize the potential for run-off. Sediment and erosion controls will

also perform the secondary function of demarking the limit of work, restricting unauthorized access in wetlands. Controls will be regularly inspected and maintained until the site has reached final stabilization.

Where work within RA overlaps with wetlands (i.e., access or work areas are required within wetlands), BMPs discussed above for vegetated wetlands will be employed, such as temporary construction matting will be used to protect wetland soils and rootstock. Once work is complete and matting is removed, and disturbed areas within vegetated wetlands will be stabilized and restored. The type of stabilization measures used in wetlands will depend on soil saturation and depth of organic matter. Once soils have been stabilized, any disturbed wetland areas will be restored to pre-construction conditions to the extent practicable. If necessary, any areas where vegetation has been impacted will be seeded with an appropriate wetland seed mix (if natural regeneration is not sufficient to restore vegetation covert). Over time, RA will return to scrub-shrub habitat or another non-forested habitat and in the short term may also include active seeding with either an annual ryegrass or conservation seed mix and mulch.

4.3.2 Construction BMPs for Vernal Pools

In total, 1,003 SF of temporary alterations are proposed within a PVP, associated with the use of construction matting for off-ROW access and tree removal. No permanent impacts are proposed within PVPs, although some access improvements, including grading and/or access widening, will occur within the 100 feet Buffer Zone to wetland resources areas that contain PVPs. Please see *Table 4-5* for further details.

NEP has identified the measures described below to minimize adverse Project impacts on vernal pools.

- Except in areas where access and work pads must be installed, existing scrub-shrub vegetation within 25 feet of vernal pools will be maintained, consistent with ROW vegetation management requirements.
- If low-growth (scrub-shrub) vegetation must be removed adjacent to vernal pools, the cut vegetation ("slash") will be left in place to serve as recruitment for leaf litter and coarse woody debris.
- Soil erosion and sediment controls BMPs will be installed and maintained along construction access and around work areas as necessary to protect water quality and to limit the potential for soil deposition into vernal pools. Sediment built up behind these BMPs will periodically be removed and placed in upland areas, in a manner that will preclude the potential for subsequent deposition into the pools. (Note: The specific types of controls will be determined in the field, in accordance with NEP policies and procedures and consistent with stormwater management requirements for the Project.)

- Where existing on-ROW access adjacent to vernal pools must be improved, construction mats or corduroy will preferentially be used if practicable; otherwise, clean materials will be used (e.g., clean riprap, gravel, stone or equivalent and rock fords).
- For Project activities that must occur adjacent to or within vernal pools during amphibian migration periods, measures will be implemented on a site-specific basis as necessary to facilitate unencumbered amphibian access to and from vernal pools. Mitigation measures will be identified after taking into consideration site-specific conditions, including the type of construction activity in proximity to a vernal pool, the amphibian species known to occur in the vernal pool, and seasonal conditions. Options to be evaluated to allow amphibian access to vernal pools may include, but not be limited to, placing wood chip ramps at intervals along sediment control fencing in the immediate vicinity of vernal pools; leaving gaps in or staggering the installation of soil erosion and sediment controls; and aligning soil erosion and sediment controls to avoid bifurcating vernal pool habitat (refer to EG303-NE BMP#AA-22-24). Installation of any mitigation measures will be based on field and seasonal conditions and will depend on species-specific requirements. Further, in some cases, the objective may be to fence off construction areas near vernal pools, restricting amphibian access to the construction area.
- Construction activities that must occur in or near CVPs and PVPs will conform to the BMPs described in *Section 8* to avoid or minimize the potential for the spread of invasive species to vernal pool habitat.

In addition to these measures, NEP may use a geo-grid (or similar)[23] for access adjacent to vernal pools containing rare species to prevent a change in grade and/or the use of erosion and sediment controls that may create barriers to migration. Soil erosion and sediment control BMPs will be promptly removed upon final re-vegetation and stabilization of the ROW. The specific measures that will be implemented to protect amphibians will be defined in consultation with the involved regulatory agencies.

4.3.3 Construction BMPs for Tree Removals

Where tree removals are proposed within wetlands resulting in a permanent conversion of vegetation (from forested to scrub/shrub or emergent communities), proposed mitigation will involve the restoration (as far as practicably possible), of impacted wetlands. Due to the nature of the Project, it is not possible to allow areas impacted by tree removal to return to forested conditions, as this would be incompatible with the overhead transmission lines. Instead, wetlands subject to selective tree removal will be restored to create scrub-shrub or emergent habitats. NEP proposes to remove trees along the current forested edge of the ROW while preserving the existing undergrowth to the extent feasible. Measures to protect non-target vegetation may include hand cutting of trees, or the use of reaching equipment (such as feller bunchers or tree handlers), to

[23] Soil reinforcement products.

reduce ground disturbance within wetlands. If construction matting is required in order to access wetlands and perform tree removals, matting will be placed on top of understory vegetation, to protect root balls and reduce ground disturbance. Depending on the extent of understory/ground cover vegetation present, wetlands will either be left to naturally revegetate (except for trees) or will be stabilized and seeded with an appropriate wetland conservation seed mix.

While tree removal will result in permanent conversion to the vegetative community of select wetlands, it will not result in net loss of wetlands and does not require compensatory mitigation under either Section 401 or MA WPA regulations. Furthermore, impacted wetlands will naturally revegetate into transitional forest/shrub/emergent communities, an increasingly uncommon wetland type in Massachusetts, which will help to enhance wetland functional diversity along the ROW[24].

4.3.4 *In Situ* Restoration of Temporary Wetland Impacts

NEP will provide mitigation for temporary wetland impacts via *in-situ* restoration. Restoration measures will include restoration of the soil surface (addressing rutting resulting from mat placements), post-mat-removal inspections, seeding and mulching, removal of erosion controls, invasive species control, and post-restoration inspections.

4.3.4.1 Construction Mat Removal

Once construction mats are removed, environmental monitors will inspect wetlands for buildup of sand or other materials that may have fallen through the construction mat access/work area. Environmental monitors will inspect wetland crossings carefully as mat removal is occurring to ensure any materials on top of the mats are properly removed and disposed of outside of wetland resource areas or off-site. The environmental monitor will conduct a follow up inspection within five business days of swamp mat removal.

4.3.4.2 Restoration of Soil Surface

Although construction mats displace the weight load of equipment, depressional grooves or furrows (i.e., rutting) in the wetland soil may still result. It is important to note that rutting is not the normal circumstance that results from the use of construction mats. The extent of this temporary impact is a direct function of many factors, including but not limited to soil texture; soil saturation levels; type of construction mat; and time of year. If the rutting is greater than approximately six inches deep, NEP will carefully re-grade or back-blade these areas to reestablish pre-existing topography and maintain existing wetland hydrology.

4.3.4.3 Seeding and Mulching

Where root and seed stock are absent within disturbed sites, NEP will promptly stabilize these areas by applying a appropriate seed mix and mulching with straw to reduce erosion and visual impact as soon as possible following completion of work at the site. Seed mixes for RA or Buffer

[24] Classification and Types of Wetlands. (n.d.). Retrieved from https://www.epa.gov/wetlands/classification-and-types-wetlands#undefined

Zone would be different than seed mixes for vegetated wetland areas. Wetland areas where adequate root and seed stock are absent will be seeded using a approved wetland native seed mix. Seed mixes will meet NEP specifications for weed-free requirements.

4.3.4.4 Removal of Erosion Controls

Following restoration and stabilization of soil surfaces, NEP will remove erosion control barriers. NEP will remove and dispose of non-biodegradable materials such as strings and stakes from straw wattles/bales. Crews will break up and lightly scatter straw wattles/bales as mulch. Siltation fencing, strings, and stakes will be removed and disposed of as ordinary waste. Wattles will be cut open, the mesh removed, and the wattle material spread as a soil stabilization measure. Where required based on grades and soil disturbance, NEP will leave erosion controls in place until suitable vegetation is established to prevent erosion into downgradient resource areas.

4.3.4.5 Post-Restoration Inspections

The environmental monitor will inspect restored areas following restoration to ensure no noticeable adverse effects to the plant community, soil characteristics, and micro-topography. Should the environmental monitor observe adverse effects, NEP will perform additional corrective actions, such as hand grading, seeding, or mulching. NEP will work with each community's Conservation Commission or authorized representative (i.e., Agent), as well as MassDEP andUSACE to ensure observed restoration complies with all performance standards in applicable wetlands regulations, permits, as well as each municipal OOC.

4.3.5 Compensatory Mitigation for Permanent Wetland Loss

Wherever possible, NEP has attempted to avoid or minimize wetland impacts, in accordance with the MA Inland Wetland Replication Guidelines. Measures including minimizing the size of work areas within wetlands, moving work pads to reduce wetland impacts, and adjusting pole replacement locations to avoid wetland areas, were implemented to reduce the area of wetland impacts as far as practicably possible (refer to *Table 1-3*). However, in some areas, wetland impacts are unavoidable.

To mitigate for unavoidable loss of wetlands associated with structure installations in BVW, NEP will work with the USACE, the MassDEP, and local Conservation Commissions to develop compensatory mitigation plans. Specific details will be provided at a later date pending further development of mitigation requirements and opportunities, and discussions with regulators. Additional mitigation measures required by state and local agencies will be determined in the consultation and permitting with these agencies.

One structure replacement is proposed within LUWW (refer to *page 4* of the Crystal Lake Tap Lines – DEIR Plans (Figure 2) in **Appendix A**) NEP is not able to avoid placement of this structure within an intermittent stream due to the alignment, width, and extent of the stream within the ROW in this location and the maximum allowable distance between structures (based on conductor span design standards and requirements). NEP will work with the USACE, the MassDEP, and local

Conservation Commissions to develop appropriate mitigation for any permanent loss of LUWW associated with the structure foundation.

4.3.6 BLSF/Floodplain Compensation

While some permanent fill associated with concrete caisson foundations is proposed within areas identified as BLSF, structure replacements will result in *de minimis* change in flood storage, flood flow, flood displacement characteristics in these locations. Additionally, grading work along access routes and work areas in BLSF will involve over-excavation of the area, and no loss of flood storage areas. Similarly, tree removals will not reduce flood storage area, and since the proposed removals are in a narrow, linear arrangement along the edge of the ROW, there will be no significant change to flood flow velocity.

Currently, the Project is in the design stage and NEP has not yet approached individual Conservation Commissions to initiate pre-application consultation. However, Conservation Commissions have been made aware of the Project through permitting activities for the geotechnical phase of the Project. NEP will consult with each municipality to determine appropriate BLSF compensatory mitigation. Where required, NEP will design compensatory storage such that the storage area will have unrestricted hydraulic connection to waterway or water body displaced by the Project in compliance with 310 CMR 10.57 (4)(a) and that the storage area will be above seasonal high ground water or below the elevation of which the compensatory flood storage will be provided.

4.4 WATERWAYS AND CHAPTER 91 COMPLIANCE

NEP identified the following Chapter 91 jurisdictional areas (see 310 CMR 9.04):

Perennial Streams: Based on field reviews conducted in Spring 2020, Summer 2021, and Spring 2022, 49 perennial streams were identified within or immediately adjacent to the Project ROW. Since the EENF, stream tallies have been updated and now includes 64 perennial streams. Perennial stream crossings that intersect with the Existing Lines and Taps, were assumed, for purposes of determining Chapter 91 jurisdiction, to be "normally navigable" by canoe, kayak, raft, or rowboat.

Intermittent Streams: Since the EENF, stream tallies have been updated. There are now 80 intermittent streams. All other streams delineated within or immediately adjacent to the ROW are not shown on the most recent USGS topographic maps as intermittent or are depicted as intermittent waterways. According to the field reviews conducted in Spring 2020, Summer 2021, and Spring 2022, bank heights and width are variable.

In accordance with comments received from MassDEP on the EENF (dated 2/10/23), Pursuant to 310 CMR 9.05(3)(g)(1), the Department determined that portions of said work (including but not limited to the overhead wire maintenance, and replacement of overhead wire with optical ground-wire), may be exempt from Chapter 91 licensing, provided that a final Wetlands OOC is issued for the said work under M.G.L. Chapter 131, § 40 and 310 CMR 10.00. It is anticipated that Wetlands

OOCs will be obtained for Chapter 91 jurisdictional water crossings prior to the commencement of work. This will include OOCs from the municipalities of Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg and Leominster and Athol. Additionally, in accordance with comments receive from MassDEP on the EENF, NEP has provided details on the scope of work within each waterway in Chapter 91 jurisdiction in *Table 4-9*.

This page intentionally left blank

Table 4-9: Jurisdictional Streams Under Chapter 91

Municipality	Associated Resource ID	Resource Area	Perennial / Intermittent (P/I)	Cowardin Code*	Direction of Flow	Approx. Width (ft)**	Est. Depth (in)***	Nearest Strs	Project Work in / over LUWW	Anticipated Chapter 91 Approval
Warwick	WA-W1	Lovers Retreat Brook	P	Unconsolidated Bottom, Unknown Perennial, Riverine	S to N	200-ft	>12	99 - 100	Replace OH line; Matting	OOC
	WA-S11	Black Brook	P	Unconsolidated Bottom, Unknown Perennial, Riverine	S to N	180-ft	8 to 16	118 - 119	Replace OH line; Matting	OOC
	WA-S17	Mirey Brook	P	Unconsolidated Bottom, Unknown Perennial, Riverine	S to N	18-ft	12-in	129 - 130	Replace OH line; Matting	OOC
	WA-S22	Kidder Brook	P	Unconsolidated Bottom, Unknown Perennial, Riverine	N to S	18-ft	5 to 24	147 - 148	Replace OH line; Matting	OOC
	WA-S22	Kidder Brook	Pond	Persistent, Emergent, Palustrine	E to W	200-ft	>12-in	143 - 144	Replace OH line; Matting	OOC
	WA-S28	Black Brook	Reservoir	L2ABH	N/A - Reservoir	600-ft	Unknown	158 - 159	Replace OH line; Matting	OOC
	WA-S34	Tully Brook	P	Unconsolidated Bottom, Unknown Perennial, Riverine	N to S	14-ft	12-in	176 - 177	Replace OH line; Matting	OOC
	RO-S11	Collar Brook	P	Persistent, Emergent, Palustrine	N to S	430-ft	>12-in	216	Replace OH line; Matting; Replace Str 216; Pull Pad	OOC
Royalston	RO-S19	E Branch Tully River	P	Persistent, Emergent, Palustrine	N to S	26-ft	24-in	235-1	Replace OH line	OOC
	RO-S26	Spirit Brook	P	Needle-Leaved Evergreen, Scrub-Shrub, Palustrine	N to S	25-ft	Unknown	254A - 255-1	Replace OH line; Matting	OOC
	RO-S33	Lawrence Brook	P	Needle-Leaved Evergreen, Scrub-Shrub, Palustrine	N to S	56-ft	24-in	271 - 272	Replace OH line	OOC
	RO-S41	Beaver Brook	P	Persistent, Emergent, Palustrine	N to S	230-ft	12-in	288 - 289	Replace OH line	OOC
Winchendon	WIN-S9	Millers River	P	Unconsolidated Bottom, Lower Perennial, Riverine	N to S	95-ft	48-in	345-1 - 346-1	Replace OH line	OOC
	WIN-S23	Mill Glen Pond	Pond	Unconsolidated Bottom, Limnetic, Lacustrine	N to S	430-ft	Unknown	364 - 365	Replace OH line	OOC

Municipality	Associated Resource ID	Resource Area	Perennial / Intermittent (P/I)	Cowardin Code*	Direction of Flow	Approx. Width (ft)**	Est. Depth (in)***	Nearest Strs	Project Work in / over LUWW	Anticipated Chapter 91 Approval
Gardner	GA-S1	Bailey Brook	P	Unconsolidated Bottom, Unknown Perennial, Riverine	N to S	13-ft	12-in	399-400	Replace OH line	OOC
	GA-S3	Wilder Brook	P	Broad-Leaved Deciduous, Forested, Palustrine	N to S	30-ft	12-in	408-409	Replace OH line	OOC
	GA-W7	Perley Brook	P	Persistent, Emergent, Palustrine	S to N	150-ft	12-in	422	Replace OH line; Matting	OOC
Westminster	WE-S1	WE-S1	Pond	Persistent, Emergent, Palustrine	N to S	580-ft	12-in	482 - 483	Replace OH line	OOC
	WE-S2	WE-S2	Pond	Persistent, Emergent, Palustrine	S to N	270-ft	12-in	483 - 484-1	Replace OH line	OOC
	WE-S16	Burntmill Brook	P	Unconsolidated Bottom, Unknown Perennial, Riverine	S to N	18-ft	18-in	523 - 524	Replace OH line	OOC
Fitchburg	F1-S3	Sawmill Pond	Pond	Persistent, Emergent, Palustrine	S to N	220-ft	24-in	548-2 - 549-2	Replace OH line	OOC
				Unconsolidated Bottom, Limnetic, Lacustrine	S to N	520-ft	24-in	549-2 - 550-2	Replace OH line	OOC
	LE-S3	Notown Reservoir	Reservoir	Persistent, Emergent, Palustrine	N to S	450-ft	12-in	564-564B	Replace OH line; Remove structure	OOC
Leominster	LE-S21	Fall Brook	P	Unconsolidated Bottom, Unknown Perennial, Riverine	SW to NE	25-ft	12-in	626 - 627	Replace OH line; Matting	OOC
Athol	AT-S25	Millers River	P	Unconsolidated Bottom, Lower Perennial, Riverine	N to S	255-ft	54-in	97/ 96	No work proposed	OOC

*Cowardin Code from National Wetlands Inventory (if available).
** Measured from A1/B2 ArcGIS map (distance between field delineated bank lines at the point where the wires cross the stream).
*** From StreamStats estimate (if field data from old table was not available).

4.5 WATER SUPPLY PROTECTION

The Rebuilt Lines and Taps ROW transects two types of water supply protection areas: Surface Water Protection Area ("SWPA") and Wellhead Protection Areas ("WPA[25]"). SWPAs are areas designated to protect surface waters used as sources of drinking water supply from contamination. They fall into three Zones (A, B and C), which are defined by distance from the surface water. WPAs are designated to protect the recharge area around public water supply groundwater sources, and fall into three zones: Zone I, Zone II, and Interim Wellhead Protection Areas ("IWPAs"). These are defined by lateral distance (in the case of Zone I), hydro-geologic modeling (in the case of Zone II), or by well pumping rate or a default value (IWPA).

Public water supply information and aquifer locations for the Project route are provided in Figure 3 – Water Supply Protection Areas in **Appendix A** and summarized in *Table 4-10* (below).

Table 4-10: Public Water Supplies Traversed by the Project

Resource Areas	Name	Project route (acres)
Zone II	469 Athol Department of Public Works ("DPW") Water Division, 435 Leominster Water Division	148
Aquifers	Miller River Basin	26
Outstanding Resource Waters ("ORWs")	Crystal Lake, Goodfellow Pond, Simonds Pond, Notown Reservoir, Morse Reservoir, Fall Brook Reservoir, and Perley Brook Reservoir	412
Water Supply Watersheds	Nashua, Miller	988.5
Reservoirs	Crystal Lake, Fall Brook Reservoir, Notown Reservoir, Perley Brook Reservoir	1

4.5.1 Proposed Work Within Surface Water Protection Areas

Along the Project route, the ROW intersects three (3) mapped SWPAs in Gardner and Leominster. These are the Perley Brook Reservoir in Gardner, the Notown Reservoir Watershed, and Fall Brook reservoir in Leominster. *Table 4-11* provides further details of construction activities proposed in each location.

Work within BVW that coincides with Surface Water Supply Protection Zones will be limited to the placement of temporary construction matting for access, and the removal of three existing structures. BMPs will be implemented to protect these areas during construction. Work in upland areas within the SWPAs will consist of vegetation management, temporary soil disturbance, and in small areas, potential creation of access or work areas with clean gravel. Long term, the project does not include any activity or facility that will generate pollutants or contaminants that might affect the surface water supply.

[25] In this document, we have used the abbreviation "MA WPA" to refer to Massachusetts Wetland Protection Area and "WPA" for Wellness Protection Area to ensure clear distinction.

4.5.2 Proposed Work Within Wellhead Protection Areas

The Rebuilt Lines and Taps crosses two Zone II WPAs, located in Athol and Leominster, respectively (*Table 4-11*). Three wells are associated with the Zone II WPA in Athol, and four are associated with the Zone II WPA in Athol. The Rebuilt Lines and Taps ROW does not transect the Zone I WPA associated with these wells. Work within BVW that coincides with WPAs will be limited to the placement of temporary construction matting for access.

Table 4-11: Construction Activities within Surface Water Supply Protection Zones and Wellhead Protection Areas

Site Name	Location/Owner	Construction Activity
Surface Water Supply Protection Zones (A and B)		
Perley Brook Reservoir	Gardner Water Dept.	Access improvement, Caisson foundation installation, Direct embed pole installation, Matting of wetlands and streams.
Notown Reservoir Watershed	Leominster Water Div.	Access improvement, Caisson foundation installation, Direct embed pole installation, Matting of wetlands and streams.
Fall Brook Reservoir	Leominster Water Div.	Caisson foundation installation, Direct embed pole installation, Matting of wetlands and streams.
Wellhead Protection Areas		
Zone II Associated Wells	**Location/Owner**	**Construction Activity**
S.E Well #'s 110, 120 & 160, S.E Corner*	Leominster Water Div.	Access improvement, Caisson foundation installation, Direct embed pole installation, Matting of wetlands and streams.
South St Gravel Packed Well & Tully Well #'s 1, 2 & 3.	Athol DPW Water Div.	Access improvement, Caisson foundation installation, Direct embed pole installation, Matting of wetlands and streams.

*Note that the *Rebuilt Lines transect Zone II Wellhead Protection Area, but not the Zone I Area associated with these wells.*

4.5.3 Potential Impacts to Water Supply and Wellhead Protection Areas

Due to the linear nature of the ROW and the extent of existing ORWs along the Existing ROW, NEP is proposing work within ORWs. Specifically, NEP is proposing Project activities within wetlands mapped as ORW associated with Goodfellow Pond, Simonds Pond, Notown Reservoir, Morse Reservoir, Fall Brook Reservoir, and Perley Brook Reservoir. Fall Brook Reservoir and Notown Reservoir are Class A Public Water Supplies (Class A Surface Water Source). Activities proposed within ORWs include structure replacements, overhead line work, tree removals, and the use of construction matting for temporary work areas. In total, NEP is proposing to discharge 191 SF of permanent fill within waterbodies and waterways designated as ORWs. Permanent fill is associated with one (1) caisson-supported structure replacement within BVW (in the Perley Brook Reservoir ORW), and five (5) in-kind (i.e., direct embed), structure replacements within BVW designated as ORW. Temporary discharge of fill material will involve the use of approximately 7

acres of construction matting to provide access and work areas within BVW designated as ORW. Temporary impact additionally includes the removal of eight (8) existing structures that are currently located within BVW designated as ORW and will be relocated to upland buffer zones. No other ORWs will be impacted by the Project.

Please refer to *Section 9* for a detailed description of construction procedures for the activities listed in *Table 4-11.* Potential risks to water supplies could occur during construction from the use of hazardous materials and dewatering. Each of these issues is discussed below.

Hazardous materials used during construction are primarily limited to field refueling and maintenance operations. When refueling or maintenance is required within a SWP or WPA, construction BMPs and appropriate mitigation measures will be implemented to prevent adverse impacts to the sensitive environmental feature. During construction, the BMPs will include spill prevention, control and countermeasures that will serve to minimize the potential for impacts in the event of an accidental spill or release of fuel, lubricants, or hydraulic fluid.

Replacement of structures with concrete caisson foundations involves drilling a vertical subsurface shaft, installing the steel reinforcing cage, placing steel anchor bolts, pouring concrete, and backfilling as needed. Bentonite or polymer slurry may be used to support the sides of foundation excavations.[26] The structure will then be placed on and attached to the anchor bolts. Mud boxes or other appropriate controls will be used to contain the drilling mud and excess soil. These soil materials will be removed regularly from the work site and disposed of properly. With the implementation of these BMPs and the mitigation measures described below, no adverse impacts to water supply are anticipated from the Project.

4.5.4 Avoidance, Minimization and Mitigation Measures for Water Supply Protection

Equipment used for the construction of the Rebuilt Lines and Tap Lines will be properly maintained and operated to reduce the chances of accidental spill or releases of petroleum products. Refueling equipment will be required to carry spill containment and prevention BMPs (i.e., drip pans, absorbent pads, etc.) and fueling of equipment will only occur in upland areas, unless equipment cannot be moved. Since the Project will consist of direct embedded steel structures along most of the route length, if ledge is encountered, it is generally preferable to drill for the required structure embedment depth than to blast. No blasting will occur within the two Zone IIs along the Project route.

Proposed structures and work areas for the Project have been sited and will be constructed to avoid permanent impacts to ORWs to the extent practicable. In locations where ORWs cannot be avoided, sediment and erosion controls will be implemented to minimize sediment migration outside of the limits of disturbance. Any temporary construction matting will be removed immediately after the construction activities are complete. Any required restoration or

[26] Polymer based slurries and additives may only be used when approved by NEP and MassDEP.

stabilization, after the mat removal, will be completed as the equipment and vehicles de-mobilize from the ROW.

It is anticipated that most tree and vegetation removal will be done mechanically. The Project will comply with the National Pollutant Discharge Elimination System Construction General Permit and SWPPP requirements, requirements of the Section 401 Water Quality Certification, MA WPA and implementing regulations, and other restrictions as may be applied by the local Conservation Commissions in accordance with the MA WPA.

Following construction, the normal operation and maintenance of the transmission line facilities will have no impact on public water supply resources. Vegetation management within sensitive areas, including public water supply areas, will follow the same procedures as are currently used on the ROW and described in National Grid's Vegetation Management Plan.

5 RARE SPECIES

5.1 BACKGROUND

The Project ROW contains Priority/Estimated Habitat for nine (9) state-listed species tracked by NHESP, consisting of one (1) plant, three (3) invertebrates, one (1) amphibian, one (1) reptile, and three (3) bird species. NEP regularly maintains the upland portions of these Priority/Estimated habitats within the ROW, per the approved NHESP VMP[27], and the OMP Guidelines discussed in *Section 5.2,* below.[28]

Project related activities resulting in permanent alteration associated with the construction of work areas needed to safely install structures, and the improvement and widening of access routes to allow for safe passage of construction equipment and materials is not covered by the OMP and will therefore be submitted for review under MESA. Other project activities are consistent with the routine operation and maintenance of the utility line and are covered by the OMP. NEP has already submitted a MESA Checklist and has been in on-going consultation discussions with NHESP since May of 2022.

5.2 NHESP OPERATION AND MAINTENANCE PLAN

National Grid has a yearly OMP plan approved by NHESP in accordance with 321 CMR 10.14. The current OMP is attached (**Appendix G)**. As established in the OMP and through coordination with NHESP, National Grid has BMPs and other guidelines that it is required to follow when working within rare species habitat and other sensitive habitats. The OMP identifies the proposed utility work needed to operate and maintain NEP's transmission line system. To protect state-listed species, the OMP and its associated GIS data layers are annually reviewed by NHESP pursuant to MESA (321 CMR 10.00). This review focuses on proposed utility work within Priority Habitat for state-listed species. Following review and approval, NHESP issues procedures that are incorporated into the OMP and implemented within Priority Habitat where work will occur. To avoid harm to state-listed species and their habitats, operation and maintenance activities occurring anywhere within Priority Habitat follow the strictest BMPs and conform to procedures identified by NHESP during its review of the OMP.

---

[27] NEP has historically cooperated with state Natural Heritage programs to protect known sites where Endangered, Threatened, and Special Concern species (state-listed species) are known to occur. NEP recognizes the importance of the MESA, M.G.L. c. 131A, and its significance to right-of-way vegetation management and complies with all applicable portions of this act and the regulations promulgated there under. 321 CMR 10.14, MESA regulations, Part II Exemptions and 333 CMR 11.04(3)(a-c) exempts utility rights-of-way vegetation management from the permit process provided that the management is carried out in accordance with a VMP approved in writing by the NHESP prior to the commencement of work. NEP and contract personnel follow the appropriate vegetation management treatment methods within these sensitive areas, taking all practical means and measures to modify right-of-way vegetation management procedures to avoid damage to state-listed species and their habitat.

[28] NEP implements an annual OMP, reviewed and approved by NHESP. NEP performs all maintenance work in accordance with the MESA regulations (321 CMR 10.14(7)), which exempts certain Projects and activities from review that include "routine operation and maintenance are part of an operation and maintenance plan approved by the Division of Fisheries and Wildlife."

5.3 NHESP CONSULTATION SINCE EENF

NEP initiated pre-consultation discussions with NHESP for the Project on May 12, 2022, which was prior to when the EENF for the Project was submitted in September 2022. Since introducing the project to NHESP, NEP has maintained on-going discussions with the Agency regarding the type and extent of impacts that will occur in mapped Priority Habitats. Discussion with NHESP is ongoing regarding the effects of these impacts on listed wildlife. The Project proponent submitted a Checklist on August 15, 2023, to address MESA compliance (refer to **Appendix C** for correspondence).

5.4 PROPOSED IMPACTS IN NHESP PRIORITY & ESTIMATED HABITAT

The total area of the Priority Habitat that intersects the Project ROW (including off-ROW access) is approximately 6,267 acres, of which approximately 0.09% will be temporarily altered due to the placement of construction matting, and 0.26% will be permanently altered due to the construction/improvement of gravel access, grading, and gravel work pads. Additionally, 0.04% of the total area will be associated with vegetation conversion from one cover type to another (including tree removal, as well as activities covered under the OMP - routine mowing, placement of construction mats, and vehicle access not requiring access improvements). Approximately 0.0006% of the total area of Priority Habitat available will be permanently impacted due to installation of structures. A summary of the proposed impacts by town and by Priority Habitat polygon is provided in *Table 5-1*[29].

[29] Note that multiple species are present in Priority Habitat 2055, and some parts of this Priority Habitat are mapped for multiple species. Therefore, impacts can be calculated by species, or by Priority Habitat.

Table 5-1: Proposed Impacts in NHESP Priority and Estimated Habitat, by Habitat Polygon and Municipality

Habitat ID	Species	Town	Permanent Impacts	Permanent Alteration				Temporary Impacts
			Structure Foundations (SF)	Gravel Access (SF) assumes 12' wide	Gravel Work Pad (SF)	Cut/Fill (SF)	Tree Removal (SF)	Construction Matting
PH 2060 EH 1313	Invertebrate #1	Warwick	None – no work will occur in this mapped habitat	None – no work will occur in this mapped habitat	None – no work will occur in this mapped habitat	None – no work will occur in this mapped habitat	None – no work will occur in this mapped habitat	None – no work will occur in this mapped habitat
PH 2005 EH 1311	Amphibian #1	Royalston	79	90	11579	1738	3963	4602
	Bird #1		79	0	1966	331	1485	5598
	Reptile #1		79	3650	12698	8886	4609	33554
	Invertebrate #2		158	5442	21216	11220	7668	69609
PH 1956	Plant #1	Royalston	28	120	3473	511	2928	0
PH 1952	Plant #1	Royalston	56	4109	22373	7323	7943	68
PH 1890	Bird #2	Winchendon	955	72920	250112	136805	86999	101073
PH 1668, EH 1127	Bird #3	Fitchburg	107	3132	10974	7172	0	14791
PH 1566, EH 1077	Bird #3	Leominster	107	0	0	0	0	29464
PH 1954, EH 1254	Invertebrate #3	Athol	0	0	2728	10688	1873	0
PH 1560, EH 1071	Reptile #1	Leominster	84	21801	35724	48306	0	5068
TOTAL Including Habitat Overlap			**1,732**	**111,263**	**372,843**	**232,981**	**117,468**	**263,828**
TOTAL Excluding Habitat Overlap			**1,523**	**107,524**	**346,601**	**220,901**	**108,258**	**220,073**

5.5 IMPACT AVOIDANCE AND MINIMIZATION MEASURES

This discussion summarizes the measures that will be implemented to avoid and minimize impacts to state-listed species, including design and the BMPs that will be implemented during the construction-phase. These BMPs apply to the permanent upgrades to access routes and work areas, as well as the temporary placement of construction matting. As previously mentioned, post-construction, Project-wide maintenance activities will be conducted under the existing approved OMP and VMP.

The proposed BMPs are compliant with the first two performance standards of eligibility for a MESA permit (321 CMR 10.23(2)(a) &(b)), in which:

1. The applicant has adequately assessed alternatives to both temporary and permanent impacts to State-listed Species; and
2. An insignificant portion of the local population would be impacted by the Project or Activity.

Since the proposed activities are being implemented specifically to upgrade existing utility lines in existing ROWs, there are no alternatives for relocating the Project. A no-build alternative would not serve the Project purpose for continuing reliability of the region's electric system. Therefore, avoidance and minimization must be achieved by considering access route alternatives within the ROW, size of work areas, use of temporary construction matting, and construction methods used.

5.5.1 Specific Design Changes

The following specific design changes have been made in Priority Habitat:

- Work pads located within Priority Habitat that require permanent stone have been reduced in size to the extent practicable.
- No permanent stone for work pads or access will be placed in rare plant habitats. Instead of permanent stone for these areas, construction matting or temporary stone that will be removed when construction is complete, will be used to create safe, level work surfaces.
- In the Priority Habitat area for Bird #2, during restoration, stone will be removed within a portion of the work pad to reduce the extent of permanent impacts.

5.5.2 Contractor Education and Awareness Program

The following measures will be implemented to ensure contactors conducting construction-related activities in Priority Habitat areas understand their responsibility to minimize and avoid impacts to the habitat and rare species that may be present:

- Contractors working in state-listed species habitat will be trained in identification and general life history of the species present.
- If a state-listed species is encountered, contractors will be instructed to notify NEP and the approved wildlife monitor.
- Increased human activity in the vicinity of amphibian and reptile habitat can lead to an increase of potential predator species such as raccoons and skunks. In order to discourage any increase in the predator population, contractors will be required to practice good housekeeping and securely dispose of food wrappers and waste.
- Mapped habitat areas for the protected species will be delineated/identified on the project construction plans provided with the National Grid Environmental Field Issue ("EFI"). These features will also be flagged or demarcated in the field.

5.5.3 Construction Timing and restrictions

The following measures construction timing and restrictions will be implemented:

- Per the OMP, maintenance activities in the ROW pose minimal to no risk to the state-listed reptiles during their inactive season (November 1st through March 31st). Therefore, work pad mowing, matting, grading and structure work can occur during this time with minimal restrictions.
- Per the OMP, activities resulting in an open excavation in Priority Habitat for rare reptiles during the active reptile season must be completed or filled in by the end of workday to ensure no animals become trapped. Alternatively, exclusion fencing can be installed to prevent animals from accessing open excavations.
- Full-time monitoring for protected reptiles will be provided by an approved wildlife monitor for construction work that occurs within Priority Habitat for those species during the active season, as described below.
- Per the OMP, construction mats must be used for equipment access for work activities occurring in wetland habitat where state-listed species are present.
- Per the VMP, mowing in the Priority Habitat for Bird #2 will not occur during the nesting season, May 15 to August 15.

5.5.4 Monitoring

In the Priority Habitat areas mapped for reptiles, the following monitoring measures will be implemented to maximize avoidance of reptiles during the April 1 – October 30 active reptile season:

- An NHESP-approved monitor will be onsite whenever work is conducted in Priority Habitat mapped for reptiles.
- Approved monitors will visually sweep the established access routes and work areas each workday morning prior to any equipment access for additional work in the specified location during the active season. Contractors will also remain vigilant when traveling along access routes at all times of day.
- Approved monitors will visually sweep impact areas prior to equipment access for earthwork (work pad grading, access route upgrades, staging area improvements), and placement of construction matting during the active season for the listed reptiles.
- If a state-listed reptile is encountered, an approved monitor will:
    - Record observations on an NHESP Rare Animal Observation Form, including standard morphological measurements and characteristics, as well as a description of the surrounding microhabitat.
    - Photo-document the reptile and note the exact location on mapping and/or with a Global Positioning System ("GPS") device.

- Relocate the reptile in the direction it is traveling to a safe location, not across/in the vicinity of paved roads.
- Within 10 days of observation, submit the Rare Animal Observation Form to NHESP.

5.5.5 Vegetation Management

Per the VMP and OMP, the requirements for vegetation management activities are as follows:

- Areas dominated by low-growing shrub species (e.g., lowbush blueberry, huckleberry, sheep laurel, New Jersey tea, sweet fern, and scrub oak) should be encouraged and restored.
- Mechanical clearing/mowing related to access upgrades will be avoided during sensitive breeding/dispersal period(s) in state-listed amphibian habitat.
- As practicable, mechanical clearing/mowing related to access upgrades will be avoided during the active season for state-protected reptile species in mapped habitat. Clearing/mowing should be avoided during nesting season for work activities.
- When vegetative management is unavoidable during the active season, blades should be set no lower than seven inches off the ground (preferably 12 inches). Mowing will occur in low gear or at slow speeds to allow individuals time to react. Visual sweeps will occur as described above in the monitoring subsection.
- Construction mats will be used for wetland access. This practice retains the root systems and seed stock and facilitates revegetation post-construction.

5.5.6 Construction and Best Management Practices (BMPs)

The following construction BMPs will be implemented Project-wide, including within Priority Habitat areas:

- As needed, erosion and sediment controls will be installed and regularly maintained to protect water quality. Erosion and sediment controls will not contain plastic mesh, and all erosion and sedimentation control material will be removed and disposed of appropriately off-site when post-construction site stabilization is achieved.
- Dewatering discharge will be pumped into settling basin which will be located in an upland area (preferably well vegetated whenever feasible).
- Parking of contractor vehicles will be limited or avoided when feasible in the Priority Habitat areas.
- Equipment will be monitored regularly for leaks and secondary containment will be used under equipment that will be parked in the habitat for lengths of time. When feasible, refueling will not occur within 100 feet of wetlands or waterways. When refueling must occur within 100 feet of wetlands/waterways for more stationary equipment (e.g., drill rigs), secondary containment will be used.

5.5.7 Specialized Construction and Restoration Measures

Construction will follow applicable actions listed above. NEP is currently consulting with NHESP to define the specific restoration measures that will be implemented to reduce impacts.

5.6 CONCLUSION

NEP is currently consulting with NHESP to meet MESA permitting requirements. Proposed BMPs discussed in the above paragraphs have been approved by NHESP for prior, similar projects, and NEP anticipated that these BMPs will contribute to the Projects' avoidance and minimization measures. NEP will continue to work closely with NHESP throughout the MESA review process, including continued coordination and preparation of a CMP in the event a "take" cannot be avoided.

6 HISTORIC AND ARCHAEOLOGICAL RESOURCES

6.1 BACKGROUND

The EENF (*Section 6*) presented an overview of the cultural resources due diligence conducted by the SWCA on the Project. In September 2020, SWCA conducted a due diligence review and documented known historic and archaeological sites within and in proximity to the Project ROW. The analysis included a review of the State Historic Preservation Offices ("SHPO") site files for archaeological sites and aboveground resources. For archaeological and cultural resources, the study area was established at one kilometer ("km") from the A1/B2 centerline within Massachusetts, as well as one km from the centerline of the tap lines. The area of potential effect ("APE") for aboveground historic resources includes areas adjacent to the ROW where visual impacts may occur. The APE for archaeological resources is defined as any areas of ground disturbance that may occur as a result of implementing the Project.

Approximately 60 archaeological sites were recorded within this study area. Out of these, 14 are Native American sites and 46 are historic archaeological sites. Using MHC's online database, Royalston, Winchendon, and Fitchburg were found to have denser concentrations of archaeological sites. Additionally, eight NRHP properties fall within the study area, although only two intersect with the Project route. The Existing Lines cross through Royalston Historic District around Structures 260-263.

Based on the results of the cultural resources due diligence, SWCA recommended conducting an archaeological sensitivity assessment along the Existing Lines to define areas of high archaeological sensitivity that might be impacted by the proposed work. The sensitivity assessment was completed on January 6, 2021, and formed the basis for developing a field-testing plan related to the structure replacement locations. SWCA developed a research proposal based on the background research and sensitivity assessment, which was submitted to the MHC in April 2021.

Archaeological survey fieldwork for the Project structure replacement portion was conducted between June 28 and September 1, 2021, in Massachusetts. Additional fieldwork was conducted on December 6, 2021. Testing consisted of excavating 1,501 50-x-50- cm test pits 1,094 of which were in Massachusetts. In total, 150 pieces of cultural material were recovered (11 Native American and 139 Historic period), of which 142 came from Massachusetts. Five archaeological resources were identified. Four sites were identified in Massachusetts: three pre-contact and one post-contact. None of the sites in Massachusetts are considered significant and no further survey was recommended.

Additional testing was completed in 2022 for proposed new and/or re-established access routes. This additional field testing was sent in a research proposal to MHC on March 28, 2022. MHC modified permit #4100 to include the access route testing on April 8, 2022. Field testing for access road improvements was coordinated with the Tribes and conducted from May to July of 2022, including a monitor from the Aquinnah Tribe for much of the fieldwork.

SWCA prepared an Intensive (locational) Archaeological Survey Report (volume I and II) in February 2023, and this was submitted to MHC in March 2023. SWCA received an MHC report review letter and concurrence on March 31, 2023.

Coordination with the Royalston Historic District occurred April through July 2023, resulting in a shift to Structure 262 to mitigate visual impacts within the area which corresponded to a shift in Structure 261 as well (please refer to *page 48* of the A1/B2 Mainline - DEIR Plans). The location of archaeological resources is sensitive and protected information per G.L. c. 9, §26A.

Additionally, the Franklin Regional Council of Governments ("FRCOG") recommended that NEP consider documenting portions of the historical mainline, such as the Vernon Dam. The Vernon Dam is a 32.4 MW ("megawatt") Vernon hydroelectric project that came into operation in 1909. Vernon Dam was built 100 years ago to meet the growing demand for electricity in Massachusetts. The project was driven by a sole purpose to develop remote hydroelectric generating facilities in northern New England that would deliver electricity via long-distance transmission lines to industrial customers in Massachusetts.[30] NEP recognizes the significance of the Vernon Dam. While the Lines originate at the Vernon Dam, no modifications to the dam are proposed with the Project.

6.2 SECTION 106 AND TRIBAL CONSULTATIONS

Section 106 of the National Historic Preservation Act of 1966 ("NHPA" or "Section 106") requires that federal undertakings include consultation with interested parties that might be affected by the project. The lead federal agency is obligated to identify and engage with consulting parties. This includes the SHPO, Native American tribes, local governments, and other individuals and organizations with a demonstrated interest in the project area.

On behalf of the USACE, SWCA provided project information and a research proposal to the MHC to receive input on the archaeological approach to the project. MHC issued State Archaeologist's Permit No. 4100 for the survey. In Massachusetts, tribes with interests in eastern Franklin County and Worcester County are the Wampanoag Tribe of Gay Head (Aquinnah) and the Narragansett Indian Tribe. SWCA informally contacted both tribes in order to inform them of the proposed archaeological survey and to receive comment and input. No communication was received from the Narragansett Tribe. The Aquinnah Tribal Historic Preservation Office monitor coordinated extensively with SWCA and was present in the field for most of the survey. On days that he was not present, updates were provided to him. In the field, the office monitor observed the testing, discussed the testing strategy, landforms, archaeological sites, Aquinnah priorities, and the results of the project.

SWCA and NEP coordinated and consulted with the DCR Staff Archaeologist. Archaeologically sensitive areas are identified within four DCR owned properties transected by the A1/B2 Line

[30] https://www.hydroreview.com/world-regions/hydro-hall-of-fame/#gref (retrieved 12/20/2022).

ROW – Warwick State Forest, Royalston State Forest, Otter River State Forest, and Leominster State Forest. NEP and SWCA will continue to coordinate with the DCR Staff archaeologist throughout future permitting and site visits, and a CAP will be submitted prior to Project construction.

SWCA also reached out to the town historical commissions of all nine towns, but because of the largely remote location of the line and limited knowledge of the history of most of the corridor, received no significant feedback. The NEP stakeholder engagement team made significant additional efforts in each of the Massachusetts towns to coordinate with municipal agencies, commissions, personnel, and individual landowners, providing information to SWCA as useful to the project.

The Project will be subject to review under Section 106. The Project will also be subject to review by the MHC under G.L. c. 9, §§ 26–27C. NEP will coordinate with the USACE and MHC to incorporate avoidance and/or minimization measures as needed to avoid adverse effects to potential NRHP-eligible or -listed cultural resources. As part of the USACE Section 404 permit review, and pursuant to Section 106, the USACE will also consult with federally recognized Native American Indian Tribes that express an interest in the cultural resources that may be affected by the Project.

NEP will continue to coordinate with SWCA, in consultation with MHC and the USACE, to identify historic, archaeological, or cultural resources prior to construction and to avoid, minimize, or mitigate impacts to cultural and historic resources. Any protection or avoidance measures required to avoid or minimize impacts to significant resources will be outlined in an Avoidance and Protection Plan. Procedures to handle unanticipated discoveries during construction will be specified as part of a Post Review Discoveries Plan.

6.3 AVOIDANCE, MINIMIZATION AND MITIGATION MEASURES FOR ARCHAEOLOGICAL RESOURCES

The Project route is located within established ROWs associated with the Existing Lines and Taps. For the majority of the Project route, the Rebuilt Lines and Taps and associated tree removals are not expected to impact the existing viewshed from abutting above-ground resources. Construction within the ROW has the potential to impact archaeological sites depending on the depth and extent of planned ground disturbance in relation to archaeological resources.

Details on NEP's cultural avoidance and protection measures were included in **Appendix F** of the EENF (BMPs – EG-303NE). Measures employed within historically/archaeologically sensitive areas include:

- The use of construction fence to demarcate sensitive areas for crews to avoid.
- Demarcation of sensitive areas on site maps and plans, with accompanying on-site training for crews working in proximity to these areas.
- Restrictions on site grading within/adjacent to sensitive areas.

- Cataloging and reporting of any unexpected archaeological finds to MHC and/or tribes. In such an event, construction work within the sensitive area would cease until further advice has been provided by MHC and/or the tribes.
- Detailed procedures to be followed in the event of discovering human remains or burial sites.

As requested in the Scope, NEP has considered stone walls and proposed ways to avoid, minimize and mitigate impacts to stone walls. As noted in the EENF (*Section 6*), NEP's cultural and archaeological consultant SWCA performed due diligence review of the Project ROW in 2020. Aboveground resources (including stone walls) were recorded in the field and flagged by GPS. Wall locations along the entire Project ROW (and any off-ROW access routes, where applicable), were mapped, and are depicted on the DEIR Plans (Figure 2) in **Appendix A**. During the constructability review for the Project, NEP considered stone walls (along with other sensitive resource areas) and made efforts to configure access and work areas to avoid these features, wherever possible.

During Project design, NEP carefully considered the location of stone walls (as well as other sensitive resource areas), and made every effort to avoid, minimize, or mitigate impacts to stone walls. Mitigation measures for stone walls are described below, in order of priority:

1. Stone walls within Project work areas will be identified on mapping (provided to crews/contractors) and flagged/demarked in the field.
2. Wherever possible, access routes will be configured to avoid stone walls. Work areas will be sized and orientated to avoid walls, as far as practicably possible.
3. Where a stone wall must be crossed for access and/or work areas, NEP's first choice will be to bridge the stone wall using construction mats. Mats will be stacked on either side of the wall, allowing the passage of equipment over the wall, without causing disturbance to the stones.
4. Where bridging is not possible (due to the height of the wall, or site topography/ground conditions), NEP may need to temporarily dismantle the stone wall. If this is necessary, NEP will:
    a. The stone wall will be flagged in the field and the Project team will be notified that a site visit is required to review the wall.
    b. Site visit with the Project Environmental Scientist, Property Legal Representative, and/or Cultural/Historical Consultant will be conducted. This team will assess the feasibility of dismantling and re-assembling the wall, as well as any further permitting or permissions which would be required.
    c. Full documentation of wall dimensions (measurements and photographs) shall be submitted to the National Grid Environmental Scientist. Documentation of the wall dimensions shall be marked onto a copy of the applicable EFI access plan (or

equivalent plan) with a useful reference for future locating such as GPS coordinates and/or measurement from a permanent reference point (closest structure location or closest cross street, etc.). The wall shall be photographed from all sides with a written description of the photograph (i.e., the southern side of the wall looking north). In addition, documentation of the length of wall to be dismantled shall be recorded. Take special care to note if granite property bounds (or other marker) are located within the wall so additional survey can be accomplished prior to dismantling in cases where the stone wall represents a property boundary. Site visits by project team (which shall include the National Grid Environmental Scientist) are a mandatory requirement prior to dismantling.

d. Once appropriate documentation has been submitted, the wall will be dismantled. Stones from the wall shall be removed from the work area and temporarily stored nearby, away from any sensitive environmental or cultural resource areas.

e. Dismantling shall be conducted either by hand, with stones stacked as they are removed, or on less "sensitive" walls to use an excavator with a thumb to grab each stone and build a stockpile. Significant ground disturbance below the wall shall be avoided.

f. Once construction and access in the area has been completed, the wall shall be rebuilt to pre-dismantled conditions or better. If the rebuilt stone wall cannot be placed in its previous alignment, approval from the National Grid Environmental Scientist and Property Legal is required. *Note that if the wall represents a legal property boundary or is historically or culturally significant (or was previously determined to be in a very high-quality condition), a professional stone masonry company may be required to document wall alignment and conduct the dismantling and rebuilding*.

By employing the above measures, NEP will substantially avoid, minimize, or mitigate impacts to stone walls. Please refer to EG-303NE for further details of stone wall protection and avoidance.

NEP is committed to the protection of cultural and archaeological resources within its ROWs. NEP shall continue to coordinate with the MHC, tribes, and DCR Staff archaeologist to avoid archaeological and other cultural resources. If this is not practicable, NEP shall work with the federal and state agencies and the tribes to develop appropriate strategies to address impacts.

7 CLIMATE CHANGE ADAPTATION AND RESILIENCY

NEP is committed to improving the resiliency of its transmission line system to the impacts of climate change. The project is aligned with priorities in the MA State Hazard Mitigation and Climate Adaptation Plan ("SHMCAP") and the MA Climate Change Assessment ("MCCA") to ensure that NEP continues to provide safe and reliable electricity to its customers.

The approximate lifespan of the proposed utility assets (e.g., structures) is 50 years. Therefore, analysis of climate change impacts, adaptation, and resilience, as described in the following sections, will primarily focus on mid-late century (2060-2079) climate change projections.

7.1 CLIMATE CHANGE RISK

NEP consulted the Resilient MA Action Team ("RMAT") Climate Resilience Design Standards Tool for the Project. A copy of the output report generated by the Tool ("RMAT Report") was provided in the EENF (refer to *Appendix G*) and has been summarized in *Table 7-1* (below). The Tool assigns climate risks based on three variables: sea level rise and storm surge, extreme precipitation including urban flooding and riverine flooding, and extreme heat. According to the preliminary analysis, the Project is at high risk from extreme precipitation and extreme heat. It is not exposed to sea level rise/storm surge. The RMAT Output report assigned "high exposure" to Extreme Precipitation – Riverine Flooding along the extent of the project area due to the location's history of riverine flooding. Further, the Project is within 500 feet of a waterbody, less than 20 feet above the waterbody and intersects with a mapped Federal Emergency Management Act ("FEMA") floodplain in multiple locations.

Table 7-1: RMAT Climate Resilience Design Standards Tool - Project Outputs

Climate Variable	Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge	N/A – Not exposed			
Extreme Precipitation	2070	N/A	50-yr (2%)	Tier 3
Extreme Heat	2070	90th	N/A	Tier 3

The MCCA identifies the most urgent climate impacts that will affect the Commonwealth given projected changes in temperature, precipitation, and sea level rise. In addition to the Project's risk from extreme precipitation and extreme heat, as identified by the RMAT tool, the MCCA describes extreme weather as a natural hazard which is expected to be exacerbated by future climate change due to temperature change and the moisture holding capacity of the atmosphere. This includes hurricanes, severe winter storms, and strong windstorms.[31] The MCCA identifies *Damage to Electric Transmission and Utility Distribution Infrastructure associated with heat stress and extreme events* as an urgent impact for the infrastructure sector. By 2070, the annual economic i[32]

[31] MA Executive Office of Energy and Environmental Affairs (2022). Massachusetts Climate Change Assessment. p.15. https://www.mass.gov/doc/2022-massachusetts-climate-change-assessment-december-2022-volume-ii-statewide-report/download

[32] MA Executive Office of Energy and Environmental Affairs (2022). Massachusetts Climate Change Assessment. p.65. https://www.mass.gov/doc/2022-massachusetts-climate-change-assessment-december-2022-volume-ii-statewide-report/download

mpact of climate change to electric grid infrastructure, primarily additional repair costs, capital costs, and operating costs, is expected to be $17 million for the Greater Connecticut River Valley and $19.4 million for the Central region of Massachusetts.

7.2 WATERSHED-SCALE CLIMATE CHANGE PROJECTIONS

The Massachusetts Climate and Hydrologic Risk Project (Phase 1)[33,34] provides new climate projections for temperature and precipitation. This work was led by the Massachusetts EEA, in partnership with Cornell University, U.S. Geological Survey and Tufts University. These projections are downscaled for Massachusetts at the HUC 8[35] watershed scale using Global Climate Models and a Stochastic Weather Generator developed at Cornell University. The temperature and precipitation projections reflect a warming scenario linked to the Representative Concentration Pathway ("RCP") 8.5[36], a comparatively high GHG emissions scenario. Other types of climate change that are plausible (e.g., changes in the frequency or location of storms and their associated impacts) were not considered in Phase 1 but will be addressed in Phase 2. Timing for release of Phase 2 data is not known to NEP at time of filing.

The watershed scale climate projections presented below in *Table 7-2* have been prepared using the Massachusetts Climate and Hydrologic Risk Project (Phase 1) data accessed through the Resilient MA Climate Change Projections Dashboard.[37] They identify 2070 climate projections, correlating with the end of useful life of the project asset, compared to a baseline period (1971-2000).

[33] Steinscneider, S., Najibi, N. (2022). A weather-regime based stochastic weather generator for climate scenario development across Massachusetts: Technical documentation. https://eea-nescaum-dataservices-assets-prd.s3.amazonaws.com/cms/GUIDELINES/FinalTechnicalDocumentation_WGEN_20220405.pdf

[34] Steinscneider, S., Najibi, N. (2022). Future Projections of Extreme Precipitation across Massachusetts: a Theory-Based Approach: Technical documentation. https://eea-nescaum-dataservices-assets-prd.s3.amazonaws.com/cms/GUIDELINES/FinalTechnicalDocumentation_IDF_Curves_Dec2021.pdf

[35] EPA EnviroAtlas Fact Sheet: Hydrologic Unit Codes: HUC 4, HUC 8, and HUC 12. https://enviroatlas.epa.gov/enviroatlas/datafactsheets/pdf/Supplemental/HUC.pdf

[36] RCPs refer to a scenario set containing emission, concentration, and land-use trajectories. RCP 8.5 assumes the continuance of the current emissions trajectory.

[37] Resilient MA Climate Change Projections Dashboard (2022). https://mass-eoeea.maps.arcgis.com/apps/dashboards/2e8534bc2a7849b0aa6f64d0f79a8937

Table 7-2: Watershed Scale Climate Projections for 2070

Watershed	Nashua River Watershed		Middle Connecticut Watershed		Miller Watershed	
Project Municipalities	Gardner, Westminster, Fitchburg, Leominster, and Sterling		Warwick		Warwick, Royalston, Winchendon, Gardner, and Athol	
Variable	Observed Value 1971-2000 Average	2070	Observed Value 1971-2000 Average	2070	Observed Value 1971-2000 Average	2070
Annual Maximum temperature (°F)	85.2	93.3	82.8	91.8	82.6	89.7
Days above 95 degrees (°F)	0	14	0	17	0	13
Days above 100 degrees (°F)	0	2	0	3	0	2
Annual Minimum temperature (°F)	-4.7	3.4	-9.9	-0.9	-13.4	21.5
Days below 32 degrees (°F)	154	94	166	96	171	107
Annual Average temperature (°F)	47.4	55.5	46.1	55.1	45.3	53.4
Heating degree-days per year (HDD)	6,884	4,805	7,294	4,957	7,526	5,333
Cooling degree-days per year (CDD)	449	1,321	382	1,326	338	1,110
Total precipitation per year (in)	45	49.6	43.5	47.8	45.1	49.4

7.3 GREENHOUSE GAS EMISSIONS

Pursuant to the Global Warming Solutions Act (2008), as amended in 2021 by An Act Creating A Next-Generation Roadmap for Massachusetts Climate Policy ("Roadmap"), the Secretary of the EEA has adopted the interim 2025 statewide GHG emissions and the interim 2030 GHG emissions; the emissions limits increased to at least 50% below the 1990 baseline by 2030, at least 75% below the 1990 baseline by 2040, and at least 85% below the 1990 baseline by 2050. The Plan expresses the Commonwealth's vision for a future in which there is minimal reliance on fossil fuels, as well as the Commonwealth's confidence that Massachusetts can help lead the clean energy transition which will mean more well-paying jobs, improved public health, reduced consumer costs, and better quality of life for residents. This Project furthers objectives of the Roadmap as it addresses existing system capacity shortages and increased demand; and supports future interconnections from approximately 20.5 MW of solar generation and battery energy storage system (BESS) projects that are presently on hold because the existing A1/B2 Lines would experience thermal overloads if the new projects were tied into the Lines. These include the 8 MW Crystal Lake BESS project, the 4.99 MW East Westminster solar and BESS project, and the 7.5 MW Royalston solar and BESS project. Together these projects are assumed to represent no less than 6 MW of new generation capacity. The A1/B2 Asset Condition Refurbishment Project is designed to accommodate these proposed solar generation and BESS projects, as well as potential future clean energy projects.

NEP has conducted analysis of the Project's potential for GHG emissions as part of the MEPA GHG Protocol. The Project does not have any emissions sources that require analysis under the

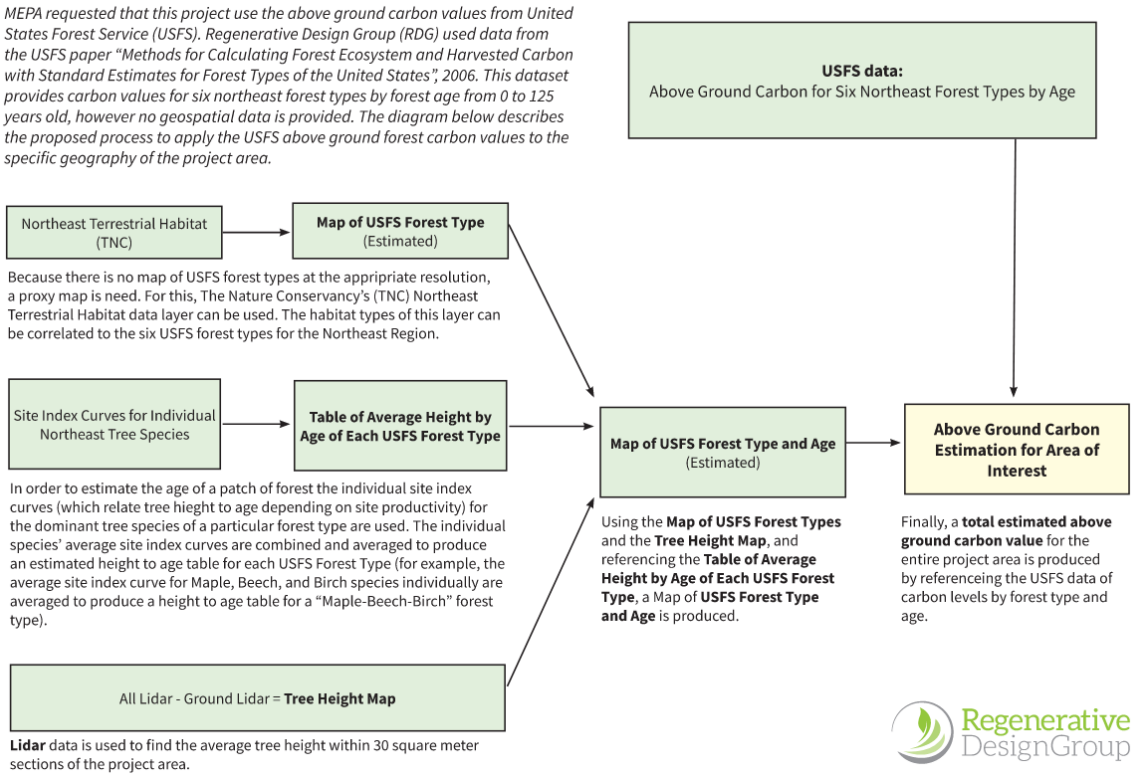
GHG emission Quantification Protocol. However, the protocol provides the Secretary with discretion, on a case-by-case basis, to require GHG analysis of certain types of other project impacts, including projects that will result in alteration of land greater than 50 acres. NEP engaged the services of RDG and SWCA to analyze GHG emissions associated with proposed land alteration.

7.3.1 Estimation of GHG Emissions from Land Alteration

Using the GIS polygons showing the location and type of the land alteration, RDG used desktop GIS software to estimate the impact of the disturbance on both above ground (e.g., trees) and below ground (e.g., soil) carbon stocks and sequestration potential losses with a thirty-year time horizon. NEP and RDG consulted with the MEPA Office on February 7, 2023, prior to finalizing the methodology for this analysis, which took into account the differences in forest type and age, as well as soil types, when calculating carbon emissions and sequestration potential. Figure 7-1 (below) describes the Project methodology for estimating above ground carbon.

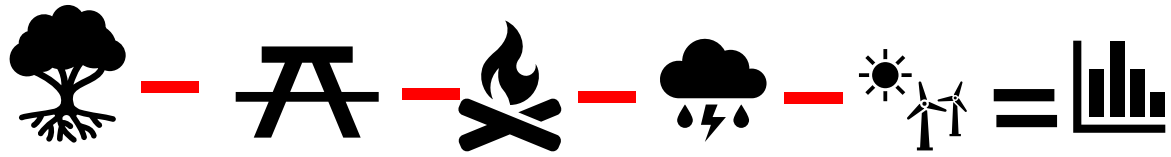
The analysis found that the Project would result in a one-time loss of 11,199 mt of carbon from the removal of trees and the short-term effects of that removal on soil and forest floor carbon. Over the next thirty years the area is expected to recover through sequestration 1,338 mt of carbon resulting in an estimated net loss of 9,861 mt of carbon. Additionally, the removal of trees and maintenance of much of the area as shrubland results in a loss in sequestration potential over thirty years of 2,302 mt of carbon. Within the combined 131-acre footprint where tree removals are proposed, we estimate that up to 12,164 mt of carbon would be released or not sequestered over the next 30 years. A detailed description on the methodology and results can be found in **Appendix D**.

Figure 7-1: Project Methodology to Estimate Above Ground Carbon for Northeast Forests



Building upon the estimation of GHG emissions from land alteration, SWCA estimated the overall change in GHG emissions associated with the project and found that the Project will result in a net reduction in CO2e emissions of 117,424 metric tons as show in Figure 7-2. A summary of the methodology is described below and is detailed in **Attachment D**.

Figure 7-2: Project-related CO2e Release After Adjusting for NEP's Programmatic Efforts and Increased Grid Reliability and Resiliency



Maximum potential release of carbon from soil and non-soil sources was estimated by RDG as 44,571 mt CO2e. This is the sum of the one-time loss associated with forest disturbance (41,035 mt CO2e) and the loss of future carbon sequestration due to habitat conversion (3,536 mt CO2e).	An ongoing survey suggests that 31% of landowners will wish to retain felled wood for private use. So long as the wood is used for some useful enterprise, it will displace some of the wood that would have been produced ***but for*** the Project. To account for this source of leakage, the maximum potential release of carbon associated with the one-time loss (41,035 mt CO2e) is reduced by 15.5%.	NEP is working with organizations to donate trees for firewood. It is assumed that 1.7% of the felled trees will reach local firewood organizations (this is their maximum capacity to process donations). The donated firewood will displace some of the wood that would have been harvested ***but for*** the Project. To account for this source of leakage, the maximum potential release of carbon associated with the one-time loss (41,035 mt CO2e) is reduced by 0.85%.	The Project would significantly reduce outages and flickers associated with the A1/B2 Lines. When power interruptions occur, less-efficient back-up-generation units are dispatched, food spoils, and partially finished products are lost. Improving the reliability of the A1/B2 Lines will prevent the release of 25 mt CO2e annually, or 750 mt CO2e over the 30-year time horizon.	The Project would facilitate a reduction in the overall carbon intensity of electricity in Massachusetts by enabling increased utilization of low carbon electric generation and storage facilities. By facilitating the incorporation of 6 MW of solar-generation plus BESS, the Project will reduce sector related emissions by 5,152 mt CO2e annually, or 154,557 mt CO2e over the 30-year time horizon.	Due to NEP's programmatic efforts, the one-time loss associated with forest disturbance is reduced by 16.3%, from 41,035 mt CO2e to 34,347 mt CO2e. The loss of future carbon sequestration (3,536 mt CO2e) is unchanged. Improved reliability and resiliency of the A1/B2 Lines will further reduce emissions by 155,307 mt CO2e over the 30-year time horizon. Thus, the net effect of the Project will be to reduce CO2e emissions by approximately 117,424 mt CO2e over the 30-year time horizon.

SWCA's analysis was guided by asking three questions:

1. From a biological perspective, what is the maximum potential release of carbon arising from forest disturbance?

   The maximum potential release of carbon, calculated as the one-time loss plus the net loss in future sequestration from disturbed forest acres was estimated by RDG and is detailed in the section 7.3.1 above.

2. How will NEP's programmatic efforts reduce the release of carbon relative to the maximum potential release?

NEP is working with landowners, its contractors, local organizations, and the state to ensure that marketable timber and biomass suitable for use as firewood is utilized. These actions reduce the level of GHG emission that will actually occur when the forest is disturbed. To determine the actual change in carbon emission brought about by Project-related Forest disturbance, it is necessary to consider if and how people will use the trees felled as a result of the Project. This analysis identified four potential fates for these trees: 1) retained by landowners, 2) taken to sawmills, 3) donated for use as firewood, and 4) left to decay. Because National Grid does not require its contractors to remove wood to sawmills or other commercial wood users, the assessment conservatively assigns Fate 2 to none of the wood felled as a result of the Project. The Project-related GHG implications of the remaining three fates are identified in Figure 7-2.

3. How will the Project-related increases in grid reliability and grid resiliency act to further reduce the level of GHG emissions relative to the maximum potential release?

The Project is designed to increase A1/B2 reliability by significantly reducing outages and flickers and so acting to reduce GHG emissions associated with the use of backup generators and food loss. Further, the project is designed to accommodate a series of solar generation and electric storage projects that are currently on hold because the existing A1/B2 lines would experience thermal overloads if the new projects were tied into them. The Project-related increase in grid resiliency will reduce the use of higher carbon intensity generation assets and so act to reduce GHG emissions.

7.4 CLIMATE CHANGE ADAPTATION AND RESILIENCY

This Project is part of NEP's efforts to ensure the long-term longevity and reliability of the region's electrical infrastructure in the face of growing demand for electricity and the changing climate. The Project will result in a more climate-ready and resilient transmission system that can withstand more extreme weather events; address existing system capacity shortages and increased demand; and support future interconnections from renewable energy projects.

7.4.1 Precipitation Resiliency

As noted previously, the RMAT Climate Resilience Design Standard Tool Output report assigned "high exposure" to Extreme Precipitation – Riverine Flooding along the extent of the project area

due to the location's history of riverine flooding. Further, the Project is within 500 feet of a waterbody, less than 20 feet above the waterbody and intersects with a mapped Federal Emergency Management Act ("FEMA") floodplain in multiple locations. Consistent with the guidance from the RMAT Tool, the Project will improve resilience to riverine flooding from a 2070 50-year (2%) storm event through design and material selection of foundations and structures that can withstand the effects of flooding. First, the replacement of wooden and steel structures with engineered steel structures will harden the infrastructure, making it more resilient to water damage and decay. The installation of structures reinforced with caisson foundation will also increase infrastructure resiliency, particularly in wetland resource areas increasingly susceptible to inundation. This foundation type, designed for wet environments, coupled with engineered structures eliminates the need to elevate foundations above any particular base flood elevation as they can withstand inundation. The project also proposes installation of new conductors that are designed to withstand corrosion. Local compensatory flood storage shall be provided in accordance with the WPA Regulations for any proposed fill in BLSF, as needed.

Proposed tree clearing is also intended to improve resiliency to future storm events. Trees pose an additional risk to the resiliency of the Existing Lines and Taps. Trees that are not specifically evolved to withstand prolonged periods of flooding are more prone to weakened stability and decay due to extended root and trunk submersion. Weakened and decayed trees pose a significant risk to utility assets because fallen trees and branches cause power outages, fires, and restrict access. Removing trees located within and along the ROW improves storm resilience by reducing outage risk and improves storm restoration response times. The proposed improvements to the ROW access routes and work pads will create a safer, more reliable network of travel surfaces that can better withstand flooding.

The installation of stormwater management features (e.g., stone check dams, water bars, or other similar measures) will be installed as necessary. Civil engineering evaluation and design of the access has been provided for the Project specifically to evaluate drainage patterns following construction of the proposed gravel access in order to reduce potential for erosion and washouts during future storm events, including the 2070 50-year (2%) storm event. Lastly, the refurbishment of the Existing Lines and Taps will reduce the frequency at which future maintenance work and transmission line upgrades are needed. By reducing the likelihood of repeated impacts in environmentally sensitive areas, there will be less disturbance to vegetation and soil thereby decreasing the potential of erosion and repeated impacts in environmentally sensitive wetland resources due to the use of temporary matting.

7.4.2 Temperature Resiliency

The Rebuilt Lines and Taps will be made more resilient to gradually rising and extreme temperature through the installation of state-of-the-art conductors which operate at higher maximum operating temperatures. Additionally, the replacement lines will have higher kilovolt ratings that will support higher volumes of currently active and forecasted renewable energy resources in this region during times of high usage, such as extreme heat events, which are

anticipated to increase in frequency due to climate change. The Rebuilt Lines and Taps will be designed with additional thermal capacity to meet known and anticipated future requirements, including the interconnection of modern DER and increasing transfers of power over time to support electrification within the Commonwealth. This will allow the A1/B2 corridor to interconnect with multiple future proposed PV and BESS projects. This longer-term view aligns with the State Hazard Mitigation & Climate Adaptation Plan, which projects electricity consumption during summer may triple, as well as initial results of the ISO-NE 2050 study, where an upgrade to 115 kV is necessary based on the current study assumptions and long-term forecasts for the Commonwealth.

7.4.3 Extreme Weather Resiliency

The Project's engineering design used structure loading criteria required by the NESC and National Grid Design Loads for Overhead Transmission Structures. The NESC load criteria require consideration of combined ice and wind district loading, extreme wind conditions, and extreme ice with concurrent wind conditions. NEP's standards also include consideration and contingency for heavy load imbalances and heavy ice conditions. By installing improved foundations, more robust structures with improved lightning protection, and higher strength conductor and OPGW, the proposed infrastructure will be better suited to withstand strong winds and storm events. The installation of OPGW will allow better communication between substations, resulting in improved response time during storm-related emergencies and outages, which will increase public safety.

Tree removal improves storm resilience by reducing outage risk and improves storm restoration response time. Access improvements drastically improve storm restoration response times. It can take days to locate a single tree–caused outage, clear the tree off the wires, and restore the line when there is not safe equipment access during an emergency – this is currently the case for most of the Project's Existing Lines and Tap Lines. Adding gravel and widening access surfaces will provide greater support for maneuverability of utility equipment.

7.4.4 Municipal Vulnerability Preparedness Program

The Municipal Vulnerability Preparedness Grant Program ("MVP") provides support for Massachusetts municipalities to plan for climate change and implement priority projects to enhance local resiliency. Grant funding allows communities to conduct vulnerability assessments and implement priority resilience building actions. Vulnerability assessments include an analysis of climate related hazards, vulnerabilities and strengths, and opportunities to enhance resiliency via action. Communities become certified as an MVP community after completing the MVP program and are eligible for MVP Action grant funding. Communities work closely with MVP certified providers that are trained to provide technical assistance for the development of vulnerability assessments.

NEP has been involved in the MVP program across the state, including in municipalities where the Existing Lines are located. By working with communities, NEP has developed key strategies

for improving the resiliency of its electrical system to the impacts of climate change. All nine municipalities along the ROW have achieved MVP designation. All nine identified power outages as a vulnerability in their communities during Community Resilience Building workshops and associated Summary of Findings reports and sought to identify ways to improve power utility resilience. Vulnerability due to high winds, snow and ice loads, and trees were common concerns resulting in frequent and/or long duration power outages. While this project does not address local distribution, transmission line and structure replacements are intended to result in a more reliable and resilient transmission system supporting these communities.

8 ENVIRONMENTAL JUSTICE

8.1 SUMMARY

This section provides a summary of NEP's public involvement activities, as well as its analyses regarding the MEPA Public Involvement Protocol for EJ Populations & the MEPA Interim Protocol for Analysis of Project Impacts on EJ Populations - for the Designated Geographic Area ("DGA") of the Project i.e., within 1 mile of all outer boundaries of the ROW. The Project has been designed with awareness of the Project's proximity to EJ populations, to minimize impacts to both human and natural environments. Additionally, this section demonstrates compliance with these two Protocols: first, by enumerating the past and future meaningful public involvement activities, and second, by presenting the analysis of existing unfair or inequitable environmental burden as well as an analysis of Project impacts which could result in a disproportionate adverse effect on EJ populations. An updated Massachusetts 2020 EJ Populations Maps (November 2022) was used to assess the EJ populations, whereas the EENF filing reflected the use of the most up-to-date data available at the time – Preliminary Massachusetts 2020 Environmental Justice Populations Maps (July 2022). In total, there are 19 EJ populations (per the Massachusetts Environmental Justice Maps Update 2022) within the DGA, in the municipalities of Athol, Fitchburg, Gardner, Leominster, and nearby Lancaster.

8.2 ENVIRONMENTAL JUSTICE POPULATIONS WITHIN 1-MILE OF THE PROJECT LOCATION (DGA)

NEP identified the EJ communities within the DGA of the Project, as well as the languages spoken in these communities, per the *updated* Massachusetts 2020 EJ Populations Maps (November 2022). Within the 1-mile radius of the Project route are 19 EJ populations distributed throughout five municipalities: Athol, Fitchburg, Gardner, Lancaster, and Leominster. *Table 8-1* (below) identifies these 19 census block groups.

Table 8-1: EJ Populations Within 1 Mile of the Project Route

Municipality	Census Tracts	Criteria	Minority Population	Language Isolation	Population	Median Income
Athol	Tract 7031 – Block Group 1	Income	17.9%	1.9%	1,032	$40,750
	Tract 7031 – Block Group 2	Income	18.4%	1.6%	1,275	$48,576
	Tract 7033 – Block Group 1	Income	15.4%	1.2%	2,153	$32,227
Fitchburg	Tract 7102 – Block Group 3	Minority and English Isolation	36.4%	39.0%	991	$76,591
	Tract 7103 – Block Group 2	Minority	34.8%	0.0%	1,858	$66,648
Gardner	Tract 7071 – Block Group 2	Income	16.0%	0.8%	2,232	$47,460
	Tract 7072 – Block Group 2	Income	19.6%	6.6%	1,125	$30,947

	Tract 7073 – Block Group 1	Income	16.8%	3.7%	1,168	$30,972
	Tract 7073 – Block Group 2	Income	18.4%	1.2%	1,829	$36,219
	Tract 7073 – Block Group 3	Income	24.5%	0.0%	1,059	$38,994
	Tract 7074 – Block Group 2	Income	17.5%	0.0%	1,196	$50,074
	Tract 7075 – Block Group 1	Income	21.3%	4.1%	2,053	$49,097
	Tract 7075 – Block Group 2	Minority	35.0%	2.1%	2,123	$67,941
Lancaster	Tract 7131 – Block Group 4	Minority	36.0%	0.0%	3,316	$108,676
Leominster	Tract 7092.01 - Block Group 2	Minority and Income	34.6%	0.0%	1,183	$48,654
	Tract 7092.01 - Block Group 3	Minority and Income	41.7%	3.1%	2,604	$54,180
	Tract 7092.03 - Block Group 1	Minority	31.2%	0.0%	779	$120,833
	Tract 7092.03 - Block Group 2	Minority and Income	50.1%	15.7%	1,715	$40,121
	Tract 7092.04 - Block Group 1	Minority	43.8%	14.7%	1,189	$92,567

The “Languages Spoken in Massachusetts” map has language data at the county municipal level for some areas, and at the block group level in others.

Text in **bold** designates languages spoken by 5% or more of the population, in all of the municipalities located in whole or in part within the DGA, regardless of whether they contain any designated EJ populations. In municipalities where a language (other than English) is spoken by more than 5% of households, the spoken languages are Spanish and/or Portuguese.

Table 8-2 summarizes languages spoken by 5% or more in EJ population within the DGA of the Project.

Table 8-2: Languages Spoken in Municipalities Within DGA

Municipality	Languages Spoken
Athol	% of Households Speaking Language Other Than English - 3.5% Languages Spoken in 1% of More of Households - 3.5% Spanish
Fitchburg	% of Households Speaking Language Other Than English - 29.4% Languages Spoken in 1% of More of Households • **26.9% Spanish** • 1.4% Hmong • 1% Haitian Creole
Gardner	% of Households Speaking Language Other Than English - 8.3% Languages Spoken in 1% of More of Households - **8.3% Spanish**
Lancaster	% of Households Speaking Language Other Than English - 6.3% Languages Spoken in 1% of More of Households • 3.5% Portuguese • 2.8% Spanish
Leominster	% of Households Speaking Language Other Than English - 25.5% Languages Spoken in 1% of More of Households • **16.6% Spanish** • **6.2% Portuguese** • 1.3% Haitian Creole

8.3 COMPLIANCE WITH MEPA EJ PUBLIC INVOLVEMENT PROTOCOL

8.3.1 Initial Public Involvement (Pre-EENF Filing)

NEP conducted *initial public involvement,* which is documented in the EENF (*see pages 67-68, 76 of the EENF*). As the MEPA EJ Public Involvement Protocol ("Public Involvement Protocol") requires NEP to maintain the same level of meaningful outreach and community engagement, a summary of the public involvement activities conducted prior to filing the EENF are as follows:

- Advance Notification of the Project was sent via electronic mail on June 14, 2022, to the contacts on the EJ Reference List (provided by the MEPA Office on February 23, 2022).
    - The Advance Notification consisted of the EJ Screening Form, as provided by the Public Involvement Protocol.
    - Efforts were made to ensure that the language used in the Form was understandable to the reader; that is, that 'technical' language was replaced with plain language, and legal jargon was omitted to the extent feasible.
- NEP undertook measures to incorporate community involvement prior to filing the EENF.
    - Community engagement strategies were determined by existing NEP stakeholder outreach methods, as well as the community engagement strategies provided in the Public Involvement Protocol.
        - These involvement methods were discussed and supported by the MEPA Office during a Pre-Filing Consultation held on April 7, 2022.

- A public website was created - available in Spanish and English – which provides details of the Project, an interactive mapper, and contact information. The website address (https://www.newenglanda1b2.com) was provided on the EJ Screening Form.
- NEP established a Project-specific email address (info@newenglandA1B2.com) for community members to ask any questions they may have.
- A project hotline was established (844-500-3536).
- NEP hosted a virtual public meeting on July 11, 2022; information pertaining to the meeting was advertised in the Athol Daily News, Sentinel & Enterprise, Gardner News, Greenfield Recorder and Winchendon Courier, and was also provided to the EJ Reference List via electronic mail and to the abutters of the Rebuilt Lines within EJ block groups via mail.
- Repositories for hard copies of Project materials were established at public libraries within each of the municipalities within the DGA, which were updated regularly as additional Project documents became available.
- The EJ Screening Form, meeting invitation, and meeting invitation advertisement were translated into Spanish. Interpretation services were provided at the public meeting.
- NEP maintained a Distribution List of contacts from the EJ Reference List and any additional contacts that were identified during the virtual meetings and the public engagement process.
    - Contacts received notifications of the MEPA Site Visit, summaries of supplemental information submitted to the MEPA office, and other relevant notices and materials issued during the course of MEPA review.

8.3.2 Feedback from Public Meeting Pursuant to the Public Involvement Protocol

No issues or concerns were raised during the virtual public meeting held on July 11, 2022. A recording of the Virtual Public Meeting is available on the Project website.

8.3.3 Public Involvement After Filing the EENF

In addition to the public outreach conducted before filing the EENF (s*ee pages 67-68, 76 of the EENF*), NEP conducted further public engagement activities prior to filing the DEIR and will continue to conduct further public engagement activities prior to filing the final EIR, as required by the Public Involvement Protocol.

The following statements identify the public involvement activities conducted up to the DEIR filing and the plan for future meaningful public involvement, all of which maintain the same level of outreach and community engagement noted in the EENF filing, as required by the Public Involvement Protocol.

8.3.4 Public Involvement Conducted Pre-DEIR Filing:

- The Distribution List is actively maintained for continued engagement.
    - The revised Distribution List was requested on 2/21/2023 and received on 2/24/2023.
- In response to the *updated* Massachusetts 2020 Environmental Justice Populations Maps (November 2022), the list of all languages spoken by 5% or more of residents who have limited English proficiency was expanded such that NEP is aware of the potential need for future Spanish (Fitchburg, Gardner, Leominster) and Portuguese (Leominster) translation/interpretation services.
    - Should there be any additional meetings requested by the public, NEP will request that individuals request interpretation services in advance of meeting dates.
    - NEP will make best efforts to translate the documents provided to EJ populations and provide any requested interpretation.
    - Leominster Public Schools as well as the Leominster Mayor's Office were proactively contacted (in June 2023) to get more information on households that speak Portuguese, since a Portuguese translator will be provided at the Leominster Open House.
        - The information gathered provided guidance for translation services at the Open House; primarily, that Brazilian Portuguese is more common than European Portuguese.
- The website address (www.newenglandA1B2.com), which is publicly available in English and Spanish, has been updated and will be maintained throughout the MEPA review process.
    - Once the DEIR is filed and submitted to the MEPA Office, a PDF of the DEIR will be uploaded to the website.
        - A targeted notice of the DEIR filing will be sent to all abutters in environmental justice block groups specifically, as well as other abutters and Distribution List participants, including mention of where the DEIR can be reviewed as an online PDF (project website) or hard copy.
            - The same will be conducted for the Final Environmental Impact Report ("FEIR"), once completed and filed.
- The project email address (info@newenglandA1B2.com), has been maintained and monitored throughout the MEPA review process.
- The project hotline (844-500-3536) will be maintained throughout the MEPA review process.

- A project contact form was developed, allowing site visitors to contact NEP with any concerns or questions – including translation of project materials, and more information on public involvement initiatives as well as project details, including current activities, the construction schedule, and open houses.
- Offers for Open Houses have been extended to municipalities within the DGA. Various municipalities have agreed to coordinate with NEP on meetings and open houses, including the following:
    - In-person open houses were held in Athol, Warwick and Royalston on 08/22/23; Gardner, Winchendon, and Westminster on 8/24/2023; and Fitchburg, Leominster, and Sterling on 08/28/2023. A Spanish interpreter in Latin- American dialect was provided for the open house conducted on 8/24/2023 and 8/28/2023.
- Outreach to the public will be communicated in clear, understandable language and in a user-friendly format.
- Should there be any request for additional meetings, NEP shall conduct additional meetings.
    - NEP will evaluate and implement best communication practices to inform the public about any additional meetings.
    - For instance, similar to the EENF, NEP will publish information about the meeting in local newspapers within municipalities with EJ populations.
    - Should individuals request interpretation services in advance of meeting dates, NEP will make best efforts to translate the documents provided to EJ populations and provide any requested interpretation.
        - NEP shall provide translation services for Spanish and Portuguese at Open Houses in municipalities where those languages are spoken by more than 5% of households.
- As part of the local review process, NEP will file a NOI within each municipality for review under the Wetlands Protection Act and local wetland protection bylaws.
- As part of the NOI process, abutters of the Project shall be notified prior to the public hearing and will be provided contact information on who to submit questions to as well as how to attend/participate in the public hearing.
    - Abutters and members of the public will be able to participate in those local hearings.
    - NEP shall publish a legal notice in the newspaper of local circulation prior to the public hearing, and the Conservation Commission shall post the agenda of the meetings in advance.

- To maximize reach and create alignment with local information sharing processes, the Project website will be shared by various municipalities through their own websites and channels.
    - Additional outreach channels, such as Facebook pages/groups and apps like Next Door – which are actively utilized by residents of certain municipalities – are being considered as part of this aligned information sharing effort (as suggested by Public Involvement Protocol best practices, with regard to community-specific media outlets).

8.4 COMPLIANCE WITH MEPA INTERIM PROTOCOL FOR THE ANALYSIS OF ENVIRONMENTAL JUSTICE IMPACTS

8.4.1 Assessment of 'Existing Unfair or Inequitable Burden'

8.4.1.1 Initial Assessment

NEP reviewed MA DPH EJ Tool data layers and provided an initial assessment of existing unfair or inequitable environmental burden, including assessments on vulnerable health EJ criteria in the EENF. The assessment concluded that the designated geographical areas exhibit "vulnerable health EJ criteria," and therefore, potentially bear an unfair or inequitable environmental burden and related public health consequences. Please refer to *Section 8.2* (*pages 70 through 74*) of the EENF for the initial assessment of existing unfair or inequitable burden.

8.4.1.2 Updated Assessment since EENF, by Tool - DEPH Vulnerable Health Criteria

Table 8-3 (below) summarizes the municipalities and specific census tracts that exhibit "vulnerable health EJ criteria" that are measured to be 110% above state-wide averages. The four (4) vulnerable health criteria include: Low Birth Weight Rate, Pediatric Asthma Ed Visits Rate per 10,000, Heart Attack Rate, and Lead Poisoning Rate for each census track and municipality[38]

Table 8-3: EJ Populations and DPH Vulnerable Health Criteria

Municipality	Census Tract	Category	Statistical Significance	Year	Case Count	BLL Prevalence per 1,000	Statewide Rate per 10,000	110% Statewide Rate per 10,000
Gardner	Block Group 1, Census Tract 7075, Worcester County, Massachusetts	Elevated Blood Lead Prevalence per 1000	Statistically significantly higher	2016-2020	12	28.6	14.985	16.484
	Block Group 2, Census Tract 7075, Worcester County, Massachusetts	Elevated Blood Lead Prevalence per 1000	Statistically significantly higher	2016-2021	12	28.6	14.985	16.484
	Block Group 1, Census Tract 7075, Worcester County, Massachusetts	Heart Attack Rate per 10,000	Statistically significantly higher	2013-2017	50	N/A	26.423	29.065

[38] Four vulnerable health EJ criteria are tracked in the DPH EJ Viewer, of which two (heart attack hospitalization and childhood asthma) are tracked on a municipal level, and two (childhood blood lead, and low birth weight) are tracked on a census tract level.

	Block Group 2, Census Tract 7075, Worcester County, Massachusetts	Heart Attack Rate per 10,001	Statistically significantly higher	2013-2017	50	N/A	26.423	29.065
	Block Group 1, Census Tract 7075, Worcester County, Massachusetts	Pediatric Asthma ED Visits	Statistically significantly higher	2013-2017	28	N/A	132.1	91.4
	Block Group 2, Census Tract 7075, Worcester County, Massachusetts	Pediatric Asthma ED Visits	Statistically significantly higher	2013-2017	28	N/A	132.1	91.4
Athol	Block Group 1, Census Tract 7033, Worcester County, Massachusetts	Elevated Blood Lead Prevalence per 1000	Statistically significantly higher	2016-2020	6	28.5	14.985	16.485
	Block Group 2, Census Tract 7031, Worcester County, Massachusetts	Elevated Blood Lead Prevalence per 1001	Statistically significantly higher	2016-2021	6	28.5	14.985	16.485
	Block Group 1, Census Tract 7031, Worcester County, Massachusetts	Elevated Blood Lead Prevalence per 1002	Statistically significantly higher	2016-2022	6	28.5	14.985	16.485
	Block Group 1, Census Tract 7033, Worcester County, Massachusetts	Heart Attack Rate per 10,000	Statistically significantly higher	2013-2017	31	N/A	26.423	29.065
	Block Group 2, Census Tract 7031, Worcester County, Massachusetts	Heart Attack Rate per 10,000	Statistically significantly higher	2013-2017	31	N/A	26.423	29.065
	Block Group 1, Census Tract 7031, Worcester County, Massachusetts	Heart Attack Rate per 10,000	Statistically significantly higher	2013-2017	31	N/A	26.423	29.065
	Block Group 1, Census Tract 7033, Worcester County, Massachusetts	Pediatric Asthma ED Visits	Statistically significantly higher	2013-2017	19	N/A	83.1	91.4
	Block Group 2, Census Tract 7031, Worcester County, Massachusetts	Pediatric Asthma ED Visits	Statistically significantly higher	2013-2017	19	N/A	83.1	91.4
	Block Group 1, Census Tract 7031, Worcester County, Massachusetts	Pediatric Asthma ED Visits	Statistically significantly higher	2013-2017	19	N/A	83.1	91.4
Fitchburg	Block Group 2, Census Tract 7103, Worcester County, Massachusetts	Elevated Blood Lead Prevalence per 1002	Statistically significantly higher	2016-2020	23	20.4	14.985	16.484
	Block Group 2, Census Tract 7103, Worcester County, Massachusetts	Heart Attack Rate per 10,000	Statistically significantly higher	2013-2017	98	N/A	26.4	29.06

	Block Group 2, Census Tract 7103, Worcester County, Massachusetts	Pediatric Asthma ED Visits Rate 10,000	Statistically significantly higher	2013-2017	51	N/A	83.1	91.4

8.4.1.3 EPA EJ Screen

The Scope states that the "DEIR should also survey the air-related environmental indicators identified in EPA EJ Screen to determine whether any of the identified EJ populations within the DGA are subject to elevated environmental burdens measured at 80th percentile of statewide average or higher. For any EJ population corresponding to that metric, the DEIR should describe in detail the proximity of the project site to those neighborhoods and discuss the specific activities, including the extent of forest clearing and construction activity, that will take place near those neighborhoods." All of the EJ populations within the DGA were analyzed, by census block group, for the 10 air-related environmental indicators, compared to statewide averages.

The environmental indicators are listed below in *Table 8-4*, and have been coded for review in *Table 8-5,* according to the following two-letter acronyms:

Table 8-4: Air-Related EPA EJ Screen Indices

Indicator	Details	Key Medium	Acronym
Particulate Matter 2.5	PM2.5 levels in air, µg/m3 annual avg.	Air	PM
Ozone	Ozone summer seasonal avg. of daily maximum 8-hour concentration in air in parts per billion	Air	OZ
Diesel Particulate Matter	Diesel particulate matter level in air, µg/m3	Air	DP
Air Toxics Cancer Risk	Lifetime cancer risk from inhalation of air toxics	Air	CA
Air Toxics Respiratory Hazard Index ("HI")	Ratio of exposure concentration to health-based reference concentration	Air	RH
Traffic Proximity and Volume	Count of vehicles AADT ("Average Annual Daily Traffic") at major roads within 500 meters, divided by distance in meters (not km)	Air	TP
Superfund Proximity	Count of proposed or listed NPL - also known as superfund - sites within 5 km (or nearest one beyond 5 km), each divided by distance in kilometers	Waste/Water/Air	SP
Risk Management Program ("RMP") Facility Proximity	Count of RMP (potential chemical accident management plan) facilities within 5 km (or nearest one beyond 5 km), each divided by distance in kilometers	Waste/Water/Air	RM
Hazardous Waste Proximity	Count of hazardous waste facilities (TSDFs and LQGs) within 5 km (or nearest beyond 5 km), each divided by distance in kilometers	Waste/Water/Air	HW
Underground Storage Tanks ("UST") and Leaking UST ("LUST")	Count of LUSTs (multiplied by a factor of 7.7) and the number of USTs within a 1,500-foot buffered block group	Waste/Water/Air	US

Source: EPA Environmental Justice Screening and Mapping Tool

Table 8-5: Project EJ Populations Exposure to EPA EJ Screen Indices*

Community	Census Tracts	PM	OZ	DP	CA	RH	TP	SP	RM	HW	US
Athol	Tract 7031 – Block Group 1	/	/	/	/	/	/	/	0.88	/	/
	Tract 7031 – Block Group 2	/	/	/	/	/	/	/	0.89	/	0.80
	Tract 7033 – Block Group 1	/	/	/	/	/	/	/	/	/	/
Fitchburg	Tract 7102 – Block Group 3	/	/	/	/	/	/	/	/	/	/
	Tract 7103 – Block Group 2	/	/	/	/	/	/	/	/	/	/
Gardner	Tract 7071 – Block Group 2	/	/	/	/	/	/	/	/	/	/
	Tract 7072 – Block Group 2	/	/	/	/	/	/	/	/	/	0.90
	Tract 7073 – Block Group 1	/	/	/	/	/	/	/	/	/	0.87
	Tract 7073 – Block Group 2	/	/	/	/	/	/	/	/	/	/
	Tract 7073 – Block Group 3	/	/	/	/	/	/	/	/	/	0.85
	Tract 7074 – Block Group 2	/	/	/	/	/	/	/	/	/	/
	Tract 7075 – Block Group 1	/	/	/	/	/	/	/	/	/	/
	Tract 7075 – Block Group 2	/	/	/	/	/	/	/	/	/	/
Lancaster	Tract 7131 – Block Group 4	/	/	/	/	/	/	/	/	/	/
Leominster	Tract 7092.01 - Block Group 2	/	/	/	/	/	/	/	/	/	/
	Tract 7092.01 - Block Group 3	/	/	/	/	/	/	/	/	/	/
	Tract 7092.03 - Block Group 1	/	/	/	/	/	/	/	/	/	/
	Tract 7092.03 - Block Group 2	/	/	/	/	/	/	/	/	/	/
	Tract 7092.04 - Block Group 1	/	/	/	/	/	/	/	/	/	/

*Values represent percentiles, as compared to statewide averages.

Source: EPA Environmental Justice Screening and Mapping Tool

Table 8-6 (below), summarizes the five (5) EJ populations scored at or above 0.80 (80%, as compared to state averages) for one or more of the air-related indicators, proximity of the project site to these neighborhoods and the specific activities, including the extent of forest clearing and proposed activities near these neighborhoods.

Table 8-6: Project Site Proximity and Proposed Activities

Town	Census Tract	Indicator	Nearest Structure	Distance from ROW	Proposed Activities
Athol	Tract 7031, Block Group 1	RMP Facility Proximity	Athol Tap Sub	~250-ft	None
	Tract 7031, Block Group 2	RMP Facility Proximity; Underground Storage Tanks	Athol Tap Sub	~820-ft	None
Gardner	Tract 7072, Block Group 2	Underground Storage Tanks	Crystal Lake Tap: 24 - Sub	0.5 miles	None
	Tract 7073, Block Group 1	Underground Storage Tanks	Crystal Lake Tap: 24 - Sub	0.56 miles	None
	Tract 7073, Block Group 3	Underground Storage Tanks	Crystal Lake Tap: 24 - Sub	0.57 miles	None

8.4.2 Conclusion on Existing Unfair or Inequitable Burden

The analysis concludes there is an existing unfair or inequitable burden experienced by some of the EJ populations within the DGA; however, the Project will not result in any significant adverse effects on EJ populations nor any other residents within the DGA. The Project will provide residents with numerous benefits, including more reliable and safe electricity transmission. An analysis of Project impacts and benefits is provided in the below sub-sections.

8.4.3 Analysis of Project Impacts to Determine *Any Disproportionate Adverse Effect*

The Project generally minimizes impacts on all populations by refurbishing an existing line within an existing transmission line corridor. Because of this, the Project does not result in any significant long-term environmental or public health impacts for any population, including EJ populations. Therefore, the DEIR reaffirms that the short-term environmental or public health impacts of the Project as identified will be mitigated, and that there are no long-term environmental or public health impacts. The potential impacts (both short-term and long-term) are outlined in the below sub-sections.

Temporary and permanent alterations from pre- and post- construction will be mitigated through BMPs. Therefore, construction period activities shall not result in any public health impacts to any population. There are no disproportionate adverse effects or increased risks of climate change in the EJ communities.

8.4.4 Short-Term Impacts

The short-term impacts of the project and mitigation measures are described in *Section 8.3.1.1* of the EENF (*please refer to pages 76, 77*). Additionally, mitigation strategies for short-term impacts are proposed and discussed in draft Section 61 in *Section 11*.

8.4.5 Long-Term Impacts

8.4.5.1 Tree Removal

The tree removal designs have been refined since the EENF submission; updated tree removals are estimated at approximately 131 acres compared to 216 acres at the time of the EENF submission.

BSC conducted an analysis of the implications of heat island effects; the possible temperature change impacts of tree removal will be minimal to none given the revised tree removal designs which substantially reduce overall tree removal, retain the cleared areas as vegetated areas, and leave substantial remaining canopy.

Proposed tree removal improves storm resilience by reducing outage risk by trees or limbs that may fall due to prolonged periods of flooding, heavy snow and ice, or strong winds. Improvements in access routes further support resiliency by reducing storm restoration response time. The Project's engineering design used structure loading criteria required by the NESC and National Grid Design Loads for Overhead Transmission Structures. The NESC load criteria require consideration of combined ice and wind district loading, extreme wind conditions, and extreme ice with concurrent wind conditions. NEP's standards also include consideration and contingency for heavy load imbalances and heavy ice conditions. By installing improved foundations, more robust structures with improved lightning protection, and higher strength conductor and OPGW, the proposed infrastructure will be better suited to withstand strong winds and storm events. See *Section 7.4*, *Climate Change Adaptation and Resiliency*, for further discussion and assessment of future climate scenarios and measures to adapt the project to those conditions.

Additionally, BSC analyzed where the ROW experiences "Hot Spots" - areas that register the 5% Highest Land Surface Temperature Index within their respective Regional Planning Authority regions – according to statewide data by the EEA and the Metropolitan Area Planning Council ("MAPC"). There are a small number of locations along the ROW that are near or adjacent to both EJ populations and Hot Spots. Please refer to **Appendix A -** Figure 3, to review the proposed tree removal in EJ block groups and Hot Spots within the 1-mile DGA utilized in the analysis.

- There is one location in Leominster with Hot Spots along the ROW within about 200 feet of an EJ population, but no tree removal activities will be conducted there.
- A portion of the ROW overlaps with a Hot Spot and an EJ population in East Gardner, but no tree removal activities will be conducted there, either.

- In West Gardner near Mount Wachusett Community College, a Hot Spot (which is likely a result of the high concentration of concrete buildings and parking lots of the college) overlaps with one EJ population; no tree removal will occur in the existing Hot Spot.
- In Fitchburg, there are some Hot Spots along the ROW which overlap with one EJ population – in that region, approximately 6 trees will be removed over the distance of about 1 mile.
- In Athol, at the end of the line, approximately 5 trees will be cleared in a portion of the ROW that overlaps with one EJ population and a Hot Spot.

The analysis demonstrated that the tree removal activities that will occur near EJ populations will be as minimal as those occurring along the whole ROW and that there will be no disproportionate impact to EJ populations.

Since much of the land adjacent to the ROW is forested, the tree removal design represents an overall negligible impact on canopy cover. Further, the land will remain vegetated and therefore will not have the surface temperature increase that pavement or buildings would.

Lastly, NEP is currently reviewing opportunities to donate cleared trees (that abutters and residents do not wish to keep on their own properties for personal use) for use as firewood and as milled lumber, per processing (and coordination) with DCR and Massachusetts Community Wood Banks.

8.4.5.2 Loss of Open Space, Loss of Recreational Opportunities

As stated in *Section 8.3.1.1.* of the EENF under Land Protection and Open Space, there is one (1) EJ Population with Municipal Open Space (Gardner Municipal Golf Course) within the Project ROW specifically, Block Group 1, Census Tract 7075 in Gardner. Access to the golf course will not be impacted by the Project as the activities will be limited to within the existing ROW. The A1 and B2 Lines pass through several State Forests owned and maintained by DCR. There is one (1) EJ Population within the Project ROW, Block Group 2, Census Tract 7103, located within a DCR Property (Leominster State Forest). This property does not have access to roads, trails, or parking for public access. Additionally, Project activities will be limited to the existing ROW. Access to Protected Land and Open Space within EJ Populations will not be impacted.

8.4.6 Comparable Benefits for EJ and non-EJ Communities

The MEPA Protocol for Analysis of EJ Impacts states that "the Proponent should also analyze whether the impacts on the EJ population are greater or less than those on non-EJ populations. The purpose of this analysis is to assess whether the Project is adding impacts to an already burdened area in a "targeted" way that is disproportionate when compared to non-EJ populations." Due to the nature of this Project, there is no disproportionate impact on EJ populations within the DGA.

The Project generally minimizes impacts on all populations by refurbishing an existing line within an existing transmission line corridor. Because of this, the Project does not result in any significant long-term environmental or public health impacts for any population, including EJ populations. Impacts from construction are temporary and insignificant. They will not result in any public health

impacts to any population. Other impacts, such as temporary impacts to wetlands, do not directly affect any population or affect any populations disproportionately.

8.4.7 Conclusion of Analysis of Project Impacts to Determine *Any Disproportionate Adverse Effect*

The Project will not result in any significant adverse effects on EJ populations nor any other residents within the DGA. The Project will provide residents with numerous benefits, including more reliable and safe electricity transmission. A summary of Project benefits is provided in the below sub-section.

8.5 PROJECT BENEFITS

The Project will improve transmission system infrastructure and comply with comprehensive regional plans for improving electric transmission reliability in New England. Benefits of the Project include the following:

- Increased resiliency of the Lines and Taps. By installing improved foundations, more robust structures with improved lightning protection, and higher strength conductor and optical ground wires ("OPGW"), the proposed infrastructure will be better suited to withstand strong winds and storm events.
- The Rebuilt Lines will be larger in capacity and size which will allow more electricity to flow during times of high usage, such as extreme heat events, which are anticipated to increase in frequency due to climate change.
- The installation of OPGW will allow better communication between substations, resulting in improved response time during storm-related emergencies and outages, which will increase public safety.
- Designing for future needs reduces the frequency of disturbance to wetland resource areas, rare species habitat and adjacent landowners over time by reducing the likelihood of multiple repeat projects, thereby reducing environmental impacts and costs to NEP's customers.
- The comprehensive refurbishment will have the added benefit of allowing more renewable energy resources to connect into the system. Addressing the climate change crisis requires a major expansion of renewable energy and the infrastructure necessary to support and deliver that energy. NEP is actively taking steps to ensure that its system is ready to meet this critical challenge, and refurbishing aging infrastructure helps to accomplish this goal. Although the operation on the Rebuilt Lines and Taps will remain at 69 kV for the foreseeable future, the 115 kV capacity proposed for the Project can support higher volumes of renewable energy resources in the future.

The increased resilience, reliability, capacity, and communication will provide numerous public health benefits to those served by the Lines, since consistent electricity flow supports the many needs of NEP's customers, including the following: power to home cooling systems during

extreme heat events; power to refrigeration systems and cooking systems necessary for food safety; and power to necessary, lifesaving home medical supplies.

Additionally, since the Project supports the transition to utilization renewable energy resources, the Project promotes public health with regard to future reduction of air pollution, as well as water and soil contamination. Generating energy from renewable sources reduces the amount of energy generated from fossil fuels, the latter of which is associated with harmful gases that contribute to respiratory diseases such as emphysema and asthma[39]. Renewable electricity and energy efficiency have been shown to provide health benefits as well as reductions in health spending, in the form of lowered health care bills.[40]

8.6 AVOIDANCE, MINIMIZATION AND MITIGATION

The DEIR reaffirms that the short-term environmental or public health impacts of the Project will be mitigated, and that there are no long-term environmental or public health impacts. The Project generally minimizes impacts on all populations by refurbishing an existing line with an existing transmission line corridor. Because of this, the Project does not result in any significant long-term environmental or public health impacts for any populations, including EJ populations. Temporary impacts, permanent impacts and permanent alterations from pre- and post- construction will be mitigated through BMPs detailed throughout this document within each section and described in detail in *Section 10.* Therefore, construction period activities will not result in any adverse or public health impacts to any population.

[39] Buonocore, J. J., Luckow, P., Norris, G., Spengler, J. D., Biewald, B., Fisher, J., & Levy, J. I. (2016). Health and climate benefits of different energy-efficiency and renewable energy choices. *Nature Climate Change*, *6*(1), 100-105; Air pollution and your health. (n.d.). https://www.niehs.nih.gov/health/topics/agents/air-pollution/index.cfm

[40]Office of Energy Efficiency and Renewable Energy. (n.d.). *Health and safety benefits of Clean Energy*. Energy.gov. https://www.energy.gov/eere/health-and-safety-benefits-clean-energy#:~:text=Fossil%20fuels%20also%20cause%20air,and%20lower%20health%20care%20bills

9 CONSTRUCTION

9.1 INTRODUCTION

NEP has established procedures that employees accessing and performing construction and maintenance activities on distribution and transmission ROWs must follow. These are collectively referred to as BMPs and are discussed in EG documents such as EG-303 (see **Appendix F**). Consistent implementation ensures that projects are completed in accordance with applicable environmental laws and regulations as well as company policies and compliance objectives. While many procedures were presented in previous sections relative to specific parameters (e.g., stormwater, wetlands, and rare species), this section is intended to provide a comprehensive overview. Project-specific information is integrated into the discussion, where appropriate, but to avoid duplication the reader is encouraged to reference previous sections of this DEIR for additional detail.

9.2 CONSTRUCTION PHASES

Construction is expected to proceed through the following phases:

- Removal of vegetation and ROW mowing in advance of construction.
- Installation of soil erosion and sediment controls.
- Construction of access routes and access route improvements.
- Construction of work pads and staging areas.
- Installation of foundations and structures.
- Installation of conductor, OPGW, and shield wire.
- Removal and disposal of existing transmission line components.
- Restoration and stabilization of the ROW.

During each phase of construction within the ROW there is a potential for impacts to the sensitive environmental resources discussed in previous sections of this DEIR, e.g., wetlands, Priority and Estimated Habitat, or water supply areas. These potential impacts are described in *Sections 3* through *8* and largely addressed through the implementation of the BMPs also discussed in those sections. While the following material provides a narrative for construction methodology, *Section 10* incorporates BMPs and mitigation measures to be implemented into each appropriate Section 61 findings in *Section 11*. The DEIR Plans (Figure 2) in **Appendix A** show the location of access routes and work areas that will require mowing or other improvements prior to the start of work.

9.2.1 Tree Removal, ROW Mowing and Removal of Vegetation in Advance of Construction

Within the Project ROWs, mowing or other vegetation management is required prior to the start of construction to provide access to the proposed structure locations, to facilitate safe vehicular and equipment passage, and to provide safe work sites for personnel. Mowing will be completed by mechanical means. Small trees and shrubs will be mowed as necessary with the intent of

preserving root systems to the extent practical. Where the Project route crosses streams and brooks, any necessary vegetation mowing along the stream bank will be minimized to the extent practicable to reduce disturbance of soils and the potential for construction-related erosion.

Tree removal and pruning is also necessary to maintain required clearances between vegetation and the transmission line structures and conductors for reliable operation of the transmission facilities. The wood from trees removed within the ROWs will be offered to individual landowners, donated to a community wood bank, or chippedand removed from the site or applied to upland areas. In certain environmentally sensitive areas, such as wetland resource areas and buffer zones, it may be necessary and desirable to leave felled trees and/or snags to decompose in place.

Temporary laydown areas will be established along the ROW to serve as locations to load timber, temporarily stage a wood-chipper, and park tree removal vehicles and equipment. Generally, trees to be removed will be cut close to the ground, leaving the stumps and roots in place, which will reduce soil disturbance and erosion. In locations where grading is required for accessibility and structure installation, stumps will be removed.

9.2.2 Installation of Soil Erosion and Sediment Controls and BMPs

Following vegetation removal activities, erosion, and sediment control BMPs such as straw bales, straw wattles, siltation fencing, compost socks, and/or chip bales will be installed in accordance with National Grid's BMPs and approved plans and permit requirements. Installation of erosion and sediment controls may occur concurrently with installation of work pads, pulling pads, and/or access route construction. The installation of these erosion and sediment control BMPs will be supervised by NEP contractors and reviewed by NEP Construction Supervisors and/or designated environmental monitors. Erosion and sediment controls will be installed between the work site and environmentally sensitive areas such as wetlands, streams, drainage courses, roads, and adjacent properties when work activities will disturb soil and result in the potential for soil erosion and sedimentation. Erosion and sediment control BMPs will function to mitigate construction-related soil erosion and sedimentation and will also serve as a physical boundary to delineate resource areas and to contain construction activities within approved areas. NEP contractors, supervisors, and environmental monitors will regularly monitor installed controls.

In addition to those locations described above, erosion and sediment control BMPs will be installed along the perimeter of identified wetland resource areas prior to the onset of soil disturbance activities to ensure that stockpiles and other disturbed soil areas are confined and do not result in downslope sedimentation of wetland resources. Where structures requiring concrete foundations are located near wetlands, sedimentation controls will be installed to prevent transport of materials to these downgradient resource areas.

9.2.3 Construction and Improvement of Access

In preparation for construction, NEP will establish the physical access required to construct, inspect, and maintain the Rebuilt Lines and Taps through improvement of existing or historic

accessways, temporary placement of construction mats, and construction of new access where necessary. Existing and proposed access routes are shown on the DEIR Plans in **Appendix A**.

In order to minimize construction impacts, NEP plans to move construction equipment on the existing ROWs to the maximum extent practicable, and to make use of existing access wherever feasible. However, in many cases, historic access ways will require significant improvement to meet the access requirements for the Project, ranging from a light resurfacing with clean gravel to full reestablishment, including mowing, grading, and addition of stone. Stabilized construction entrances will also need to be installed or refreshed where the ROWs cross public roadways.

In addition, new on- and off-ROW access will be needed for construction, inspection and maintenance of the Rebuilt Lines and Taps. New access routes have been designed to avoid or minimize disturbance to wetland resources to the extent feasible, to follow the existing contours of the land as closely as possible, and where practicable, to avoid severe slopes. Access way travel widths are generally 12 feet, but the constructed footprint may be wider in some locations to accommodate grading and stormwater BMPs, such as swales, stone check dams, water bars, or other similar measures.

Where access to structures cannot be obtained on the ROW due to challenging terrain or avoidance of environmentally sensitive areas, select off-ROW access alignments are proposed. The majority of these off-ROW access routes have been historically utilized for access to the Existing Lines and Taps, but improvements will be required for construction. NEP also plans to construct two new access ways to avoid future operation-related impacts to an extensive wetland system and state highway traffic. While off-ROW access will be designed in coordination with the property owners, most will be constructed of gravel, construction mats, or a combination thereof depending on site-specific conditions.

Where upland access is not available, access across wetlands and streams will be accomplished by the temporary placement of construction mats. The use of construction mats allows for heavy equipment access within wetland areas, minimizes the need to remove vegetation beneath the access way, and helps to reduce the degree of soil disturbance, soil compaction, and rutting in soft wetland soils. Construction mats most often used by NEP are wooden timbers bolted together typically into 4-foot by 16-foot sections. Typically, construction mats are installed on top of the existing vegetation; however, in some instances cutting or mowing woody vegetation may be required. Construction mats will be removed following completion of construction, and areas will be restored to reestablish pre-existing topography and hydrology, as necessary.

Access construction and improvements will be carried out in compliance with the conditions and approvals of the appropriate federal, state, and local regulatory agencies. Dust suppression measures, such as the use of water trucks to spray access surfaces, will be implemented as required to minimize fugitive dust from construction vehicle travel along the ROW. Crushed stone aprons/tracking pads will be used at access entrances to public roadways as needed to minimize the migration of soils off-site from construction equipment. Additionally, stormwater BMPs will be installed as necessary as part of the access construction and improvement phase of the Project.

These BMPs will reduce adverse impacts from stormwater flows, maintain the longevity of the access routes, and reduce overall maintenance needs.

9.2.4 Construction of Work Pads, Pulling Pads, and Staging/Laydown Areas

Work pads will be constructed to provide a safe and level work area for construction equipment to undertake foundation work and structure assembly, and to provide adequate space for the live line construction associated with the Project. Mowing of low growing woody vegetation and brush, and grading, may be necessary to create a work pad of approximately 160 feet by 80 to 100 feet at each proposed structure location. The work pads may be slightly smaller or larger depending on terrain, equipment, and overall site conditions at each structure location. Upland work pads will be constructed by grading and/or adding gravel or crushed stone to provide a stabilized work surface. Within agricultural areas and wetlands, work pads will consist of temporary construction matting placed on top of existing vegetation where feasible. Once construction is complete, some work pad locations (e.g., those located in environmentally sensitive areas, such as Riverfront Area, floodplain, and potentially rare species habitat) will be stabilized with topsoil and seeded to allow vegetation to re-establish.

Construction of wire stringing and pulling sites will be required at angle points in the Rebuilt Lines and at dead-end structures to provide a level workspace for equipment and personnel. Upland stringing and pulling sites may require mowing and grading to create a level work surface. Sites in agricultural and sensitive resource areas, such as wetlands and rare species habitat, will consist of construction matting placed on top of vegetation, where feasible. These temporary wire stringing and pulling sites will be stabilized and allowed to revegetate.

Temporary storage areas, staging areas, and laydown areas will also be needed to support construction. NEP and/or their designated contractor(s) will be responsible for selecting these areas and making arrangements with property owners for use of the land during construction. Selected staging areas and contractor laydown areas will typically be previously developed properties, where environmental resources can be avoided.

9.2.5 Installation of Foundations and Structures

Rebuilding the Existing Lines and Taps requires replacing steel and wood pole structures, including monopole, H-Frame and Chair Frame structures, with engineered weathering steel monopole structures to support the Rebuilt Lines and Taps. Monopole structures will be directly embedded into the ground or set upon reinforced concrete caisson foundations. Alternative foundation types such as helical piles, steel vibratory caisson foundations or micro pile foundations may be utilized, if warranted by site conditions or other factors.

Structures supported by concrete caisson foundations will result in approximately 79 SF of fill (approximately 10 feet in diameter). Structures installed through direct embedment will result in approximately 28 SF of fill (approximately 72 inches in diameter). Excavation will be performed using augers or rock drills, and depending on field conditions, backhoes, and excavators.

For direct embedment structures, a corrugated metal pipe will be placed vertically into the hole and backfilled. The annular space between the pole and the steel casing will then be backfilled with crushed stone. Caissons will be constructed by drilling a vertical shaft, installing a steel reinforced bar cage, placing anchor bolts clusters, pouring concrete, and backfilling as needed. The poles will be field assembled and lifted by cranes, then placed on the anchor bolts and into the embedded corrugated metal pipe.

Excavated material will be temporarily stockpiled next to the excavation; however, this material will not be placed directly into wetland resource areas. If a stockpile is in close proximity to wetlands, the excavated material will be enclosed by straw bales or other sediment controls. Additional controls, such as watertight spin off boxes or geotextile filter fabric, may be used for saturated stockpile management in work areas in wetlands (e.g., construction mat platforms) where sediment-laden runoff would pose an issue for the surrounding wetland. Excess excavated soil will be spread over upland areas outside of any applicable wetland buffer zones or other wetland resource areas or removed from the site in accordance with NEP's policies and procedures. Dewatering may be required during the foundation installation. Groundwater pumped from an excavation would be discharged to an upland area if there is adequate vegetation to function as a filter medium. Where conditions are not adequate for infiltration, water would be pumped into a sediment filter bag within a straw bale/silt fence corral (basin) located within an upland area. The basin and accumulated sediment would be removed following dewatering operations and the area would be restored, as needed. Rock that is encountered during foundation excavation will generally be removed by means of drilling with rock coring augers rather than a standard soil auger. This method allows the same drill rig to be used and maintains a constant diameter hole. However, in some cases, rock hammering and excavation may be used to break up the rock. No blasting is currently anticipated for the Project.

9.2.6 Installation of Conductor and OPGW Installation

Following the construction of transmission line structures, insulators will be installed on the structures. The insulators isolate the energized power conductors from the structure. OPGW and power conductors will then be installed using stringing blocks and wire stringing equipment. The wire stringing equipment is used to pull the conductors from a wire reel on the ground through stringing blocks attached to the structures to achieve the desired sag and tension condition. During the stringing operation, temporary guard structures or boom trucks will be placed at road and highway crossings, and at crossings of existing utility lines. These guard structures, and similar practices, are used to ensure public safety and uninterrupted operation of other utilities by keeping the wire away from other utility wires and clear of the traveled way.

Helicopter work is not anticipated at this time but may be considered depending on the work methods proposed by the construction vendors. In the event helicopters are used, NEP would develop a Project-specific health and safety plan and hazard analysis in coordination with its contractor(s). NEP would notify municipal officials, fire, and police departments, and affected landowners, particularly those with livestock, in advance of any helicopter work.

9.2.7 Removal and Disposal of Existing Transmission Line Components

After the Rebuilt Lines and Taps have been placed into service, the existing structures will be removed. The majority of the existing structures are comprised of steel lattice towers. To facilitate their removal, a hydraulic shear will be used to cut and remove the steel lattice towers supporting the Existing Lines, and the steel will be salvaged. Conductors and insulators will also be salvaged and any equipment and debris that cannot be recycled will be transported to an appropriate off-site disposal facility. Handling of such materials will be performed in compliance with applicable laws and regulations and in accordance with NEP policy.

Wood pole structures will be removed in their entirety unless the complete removal of the pole will create an adverse impact to environmentally sensitive areas. The resulting hole will be backfilled and thoroughly tamped to minimize settling, then capped with native topsoil and allowed to revegetate. NEP will transport used wood poles to the nearest ROW street crossing that is accessible by truck for subsequent pick up. Treated wood poles will be transported for disposal at a licensed landfill or incinerator. Cross-arms, braces, and other hardware shall be removed from site and disposed of properly.

9.2.8 Restoration and stabilization of ROW

Restoration efforts, including removal of construction debris, final grading, and stabilization of disturbed soil, will be completed following construction. Disturbed areas around structure work pads and other graded locations will either be stabilized with a gravel surface or vegetated. Erosion control blankets, or similar, may be used to stabilize the soils in accordance with applicable regulations.

Temporary sediment control BMPs will be removed following the stabilization of disturbed areas. Existing stone walls and fences will be restored in accordance with property owner agreements and applicable local ordinances. Where authorized by property owners, permanent gates and access route blocks will be installed at key locations to restrict access onto the ROW by unauthorized persons or vehicles. Regulated environmental resource areas temporarily or permanently disturbed by construction will be restored or replicated in accordance with applicable permit conditions.

9.3 CONSTRUCTION TRAFFIC AND EQUIPMENT

9.3.1 Construction Traffic

Intermittent construction-related traffic will occur over the entire construction period. Construction equipment will typically gain access to the Project route from public roadways crossing the ROW in various locations. Because each of the construction tasks will occur at different times and locations over the course of construction, traffic will be intermittent at these entry roadways. Traffic will consist of vehicle types ranging from pick-up trucks to heavy construction equipment.

NEP's contractors will coordinate closely with state transportation authorities to develop acceptable traffic management plans for work within state highway layouts. NEP will coordinate with local authorities for work on local streets and roads. At locations where construction equipment must be staged in a public way, the contractors will follow a pre-approved work zone traffic control plan. Further traffic information is provided in *Section 12.3.5*. NEP will notify affected landowners in advance of any use of off-ROW access and will work on a case-by-case basis with any abutting landowners that express concern.

9.3.2 Construction Equipment

Table 9-1 lists the equipment that is likely to be required to install the new overhead transmission line and to remove the existing structures. Diesel-powered non-road construction equipment with engine horsepower ratings of 50 and above to be used for 30 or more days over the course of Project construction will have EPA-verified (or equivalent) emission control BMPs, such as oxidation catalysts or other comparable technologies (to the extent that they are commercially available) installed on the exhaust system side of the diesel combustion engine. In addition, vehicle idling will be minimized in accordance with MA Anti-idling law, M.G.L. c. 90, § 16A, c. 111, §§ 142A – 142M, and 310 CMR 7.11. NEP requires the use of ultra-low sulfur diesel fuel in its diesel-powered construction equipment and limits idling time to five minutes except when engine power is necessary for the delivery of materials or to operate accessories to the vehicle such as power lifts.

Table 9-1: Typical Overhead Transmission Line Construction Equipment

Construction Phase	Typical Equipment/Materials Required
Site Preparation	Pickup and other small trucks Flatbed trucks, brush hogs, bulldozers, bucket trucks for tree canopy pruning, woodchippers Erosion and sediment control BMPs Equipment for tree pruning and/or cutting
General Activities	Vehicles to transport personnel Side booms, forklifts and cranes to handle materials. Trucks to haul sanitary/solid wastes from construction sites. Pickup trucks for supplies
Tree Removal	Mechanized mower Chainsaws Tree handler Feller buncher
Access Routes	Bulldozer or front-end loader Excavators Dump trucks for hauling crushed stone or gravel. Vibratory rollers Pickup or stake body trucks for culverts, tooling, and personnel
Structure Upgrades	Trucks to haul out old hardware (roll off dumpsters) Cranes Trucks with welding equipment to cut steel supports or components. Dump trucks to haul smaller components, gravel or spoils. Digging equipment such as back hoes or excavators
Installation of Replacement and New Structures	Bulldozer or front-end loader All-terrain vehicles (ATVs) Tracked carrier (marooka) or a Skidder Flatbed trucks and tractor trailers for hauling structure components Augers Excavators and backhoes Cranes Bucket trucks Conductor pulling and tensioning rigs

	Helicopters Large-bore foundation drill rigs for caissons foundations Concrete trucks Pickups and other small trucks
Restoration	Pickup and other small trucks Excavators and backhoes Skidsteer/bulldozer Dump Trucks

9.4 SAFETY AND PUBLIC HEALTH CONSIDERATIONS

NEP will construct and maintain the facilities for the Project such that the health and safety of the public are protected. This will be accomplished through adherence to federal, state, and local regulations, and industry standards and guidelines established for protection of the public. Specifically, the Project's improvements will be designed, constructed, and maintained in accordance with the NESC Standards. The facilities will be designed in accordance with sound engineering practices using established design codes and guides published by, among others, the American Society of Civil Engineers ("ASCE"), the American Concrete Institute ("ACI"), Institute of Electrical and Electronics Engineers ("IEEE"), and the American National Standards Institute ("ANSI"). Practices which will be used to protect the public during construction will include, but not be limited to, establishing traffic control plans for construction traffic on busy streets to maintain safe driving conditions, restricting public access to potentially hazardous work areas, and use of temporary guard structures at road and electric line crossings to prevent accidental contact with the conductor during installation.

Following construction, transmission structures will be clearly marked with warning signs to alert the public of potential hazards if climbed or entered. Installation of signs, gates and/or other types of barriers (e.g., large stones) at access points from public roads will notify the public that trespassing on the ROW is prohibited.

9.5 SOLID WASTE AND RECYCLING

Proposed refurbishment activities will generate solid waste, primarily from the removal of steel and wood structures and sediment and erosion controls. Wood and metal will be segregated from other construction debris and recycled: other debris will be disposed of as non-banned construction waste in accordance with waste facility management regulations at 310 CMR 19.017. Waste will be properly managed and dispose of, pursuant to 310 CMR 16.00 and 310 CMR 19.000, including the regulations at 310 CMR 19.017 (waste ban).

9.6 HAZARDOUS WASTE

Any hazardous wastes generated will be properly managed in accordance with 310 CMR 30.0000. Hazardous waste, including waste oil, will be managed in accordance with 310 CMR 30.0000, and disposed of at a licensed MassDEP facility. NEP will retain a Licensed Site Professional to review

MassDEP's oil and/or hazardous material disposal sites list and associated files periodically throughout the duration of the Project, to determine the current status of existing sites, and if there are any newly listed contaminated sites within or adjacent proposed activities. The MCP details procedures to follow for the parties conducting work in these areas. In particular, in accordance with 310 CMR 40.1070 (2), activities conducted near sites with an Active Use Limitation ("AUL") must be consistent with the obligations and conditions specified within the AUL. In addition, a spills contingency plan addressing prevention and management of potential releases of oil and/or hazardous materials from pre- and post-construction will be presented to workers at the site and enforced. The plan will include (but not be limited to), refueling of machinery, storage of fuels, and potential releases.

9.7 CONSTRUCTION AND DEMOLITION AIR/NOISE POLLUTION

9.7.1 Air Quality

Demolition and construction work will be performed in accordance with applicable sections of the MassDEP Air Pollution Control Regulations at 310 CMR 7.02 and 310 CMR 7.09. Specific air quality mitigation measures include:

- Use of appropriately designed construction entrances and wheel wash facilities as necessary to prevent off-site migration of soils;
- Mechanical street sweeping of construction areas and surrounding streets and sidewalks;
- Removal of demolition and construction waste in covered or enclosed trailers;
- Wetting of exposed soils and stockpiles to prevent dust generation;
- Minimizing stockpiling of materials on site;
- Turning off construction equipment when not in use and minimizing idling times;
- Minimizing the storage of demolition and construction wastes on site; and
- Minimizing the duration that soils are left exposed.

Many of these measures are intended to minimize potential impacts associated with construction activities that may generate fugitive dust, which will result in localized increases in airborne particulate levels. Fugitive dust emissions from construction activities will depend on such factors as the properties of the emitting surfaces (e.g., moisture content and volume of spoils), weather variables, and construction practices employed.

Although fugitive dust may be generated during demolition and construction activities, the distance to off-site receptors makes it unlikely that the migration of dust will result in off-site impacts. Nonetheless, the contractor will implement dust control measures during active demolition and construction that will primarily consist of using wetting agents regularly to control and suppress dust that may come from the Project activities. The contractor will comply with the

National Emission Standards for Hazardous Pollutants ("NESHAP") throughout the duration of the Project.

Site preparations involving construction haul roads, soil stockpiles, and vehicles exiting the Project site have the greatest potential to create fugitive dust. As necessary, haul roads will be routinely misted to suppress dust generation. Soil stockpiles can either be covered or vegetated, depending on how long the stockpile will remain. Dust from construction traffic exiting the Project site onto public roads will be controlled with the use of vehicle tracking pads, which remove soil from the tires of construction vehicles. Paved construction entrances will also be routinely swept by street sweepers to remove accumulated soils. At no time will visible soils be permitted on public streets that could result in fugitive dust issues.

NEP will prepare a SWPPP to comply with the EPA's CGP for stormwater discharges. The SWPPP will implement EPA and MassDEP BMPs for controlling and reducing sediments and dust in stormwater discharges.

In addition, NEP will investigate compliance with MassDEP's Diesel Retrofit Program and the use of ultra-low sulfur diesel in off-road engines. The Diesel Retrofit Program, formerly called the Clear Air Construction Initiative of the Clean Construction Equipment Initiative, originated as an air quality mitigation measure for the Central Artery/Tunnel Project. The program encourages users of diesel construction equipment to install exhaust emission controls such as oxidation catalysts or particulate filters on their diesel engines. While MassDEP requires participation in the Diesel Retrofit Program by municipalities applying for funding under the State Revolving Fund for water and wastewater projects, there is no requirement for participation by other project Proponents. Non-road engines shall be operated using only ultra-low sulfur diesel ("ULSD") with a sulfur content of no greater than 15 ppm pursuant to 40 CFR 80.510.

Proper emission controls, use of clean fuels, control of truck and equipment idling times, and conducting operations without affect to neighbors' clean air are NEP priorities. NEP requires the use of ultra-low sulfur diesel fuels exclusively in its diesel-powered construction equipment. Contractors will be directed to retrofit any diesel-powered non-road construction equipment rated 50 horsepower or above to be used for 30 or more days over the course of the Project with EPA-verified (or equivalent) emission control BMPs (e.g., oxidation catalysts or other comparable technologies).

9.7.2 Noise and Vibration

While intermittent increases in noise levels are expected during construction activities, NEP is committed to minimizing these impacts. Construction-related noise levels will comply with applicable sections of MassDEP's Air Quality Regulations at 310 CMR 7.10, and every reasonable effort will be made to minimize noise impacts from construction activities. Noise mitigation measures include:

- Minimizing the amount of work conducted outside of typical construction hours;

- Ensuring that appropriate mufflers are installed and maintained on construction equipment;
- Ensuring appropriate maintenance and lubrication of construction equipment to provide the quietest performance;
- Turning off construction equipment when not in use and minimizing idling times in compliance with state law (G.L. c. 90, § 161A) and MassDEP regulations (310 CMR 7.11(1)(b)); and
- Mitigating the impact of noisy equipment on sensitive locations by using shielding or buffering distance to the extent practical.
- Notifying landowners in advance of construction and providing a point of contact for noise-related questions and concerns.

Although excavation activities may create noticeable vibrations in the immediate vicinity, it is unlikely that these activities will have off-site impacts. Blasting is not expected to be required, but if needed will comply with local, state, and federal regulations including MassDEP's September 15, 2008, memorandum on "Potential Environmental Contamination from the Use of Perchlorate-Containing Explosive Products" and will be conducted by appropriately licensed blasting companies. Certain construction practices, such as rock hammering, may result in vibrations extending beyond demarcated construction zones. If these construction activities are required, vibration mitigation measures include:

- Implementation of a proactive system of notification to potentially affected abutters prior to the start of vibration-causing construction practices;
- Monitoring vibration levels at the limits of construction and, if necessary, beyond the construction zone; and
- Using alternative construction methods that do not produce as much vibration whenever reasonably possible.

9.8 INVASIVE SPECIES

9.8.1 Invasive Species Considerations

Overall, the objective of NEP's wetland invasive species management procedures is to protect the ecological conditions of wetlands within the Project ROW, specifically focusing on minimizing the potential spread of invasive species within affected wetlands and avoiding the introduction of invasive species to those wetlands in which invasive species are not currently present.[41]

Invasive species control is also considered important when construction is proposed because construction-related activities could potentially influence the spread of invasive plant species in wetlands under the following circumstances:

[41] Certain wetlands containing invasive plants extend well beyond the Project ROWs and outside of areas in which any Project activities are proposed. Therefore, attempting to eradicate invasive species from portions of such wetlands within the proposed work areas within the ROWs is unlikely to be successful and is not considered a practical goal of this program.

- Vegetation management within wetlands for the construction and subsequent operation and maintenance of the transmission lines.
- Temporary or permanent improvements to existing access routes crossing wetlands.
- The use of temporary access routes across wetlands to facilitate the movement of utility clearing.
- The installation of temporary work pads in wetlands.
- Drilling or other types of excavation for transmission line structure foundations within wetlands containing invasive plant species (soil disturbance).
- The removal of temporary fills (e.g., access routes, work pads) and the restoration of affected wetlands.

NEP may encounter the following common wetland invasive species in the Project area during the Project, shown in *Table 9-2*:

Table 9-2: Common Invasive Species Found in Project Area Wetlands

Common Name	Latin Name
Purple loosestrife	Lythrum salicaria L.
Common reed	Phragmites australis
Multiflora rose	Rosa multiflora
Asiatic bittersweet	Celastrus orbiculatus
Japanese barberry	Berberis thunbergii
Glossy Buckthorn	Frangula alnus
Tatarian honeysuckle	Lonicera tatarica
Autumn olive	Elaeagnus umbellata
Reed canary grass	Phalaris arundinacea L.
Japanese knotweed	Polygonum *cuspidatum*
Privet	Ligustrum vulgare
Spurge (leafy)	E*uphorbia esula L.*

9.8.2 Invasive Species Management during Project Construction

NEP has developed a set of procedures that will be implemented during the Project to minimize the spread of invasive species in wetlands within the Project ROWs during construction when the above-described circumstances are present. The procedures conform to the USACE Northeast District's "*Invasive Species Control Plan ("ISCP") Guidance*", which can be found online at http://www.nae.usace.army.mil/Regulatory/ISP/ISCP_Guidance.pdf. The procedures include the following measures:

- Pre-construction training of workers so that BMPs are implemented consistently.
- Requiring contractors check that construction equipment, vehicles, and materials (e.g., equipment mats) be clean and free of excess soil, debris, and vegetation before being mobilized to the Project ROWs.
- Cleaning any equipment working in or traversing a wetland containing invasive plant species prior to relocating to another work site. Cleaning of vehicles and other equipment

(including the tracks and tires) will involve removal of visible dirt, debris and vegetation using brooms, shovels, and, if needed, compressed air.

- Use of construction mats or equivalent at wetland crossings so construction vehicles that frequently travel along on-ROW access routes, such as pickups carrying personnel or material delivery trucks, can avoid direct wetland interaction.
- Use of straw, or alternative BMP erosion and sedimentation controls, will be used in and near wetlands.
- Mats used in wetlands containing invasive species will be cleaned prior relocation to other work areas or wetlands. Cleaning of matting will involve dropping mats one on top of another to loosen any sediment and debris. The matting will then be swept to remove loose soil and any plant material.
- Construction equipment and excavated soil material will be contained within the approved limits of work areas within the ROW; these limits of work will be defined on Project plans.
- Soils excavated from wetlands or riparian areas containing a predominance of target invasive plants will be stockpiled separately (to the extent that there is sufficient workspace) and contained within staked bales, silt fence or other approved erosion and sedimentation control BMP to minimize the potential of spreading these soils elsewhere onto the ROW.
- Final restoration of the ROW will be performed in accordance with National Grid's EG Document EG-303.
- NEP field monitors will perform site inspections and oversee the contractors' compliance with applicable federal, state, and local permit conditions, Project plans (e.g., SWPPP), and NEP policies.

9.9 DEWATERING

Dewatering may be necessary during excavations for pole structures within or adjacent to wetland areas. Water trucks or fractionation tanks may be used if watertight containers are desired for controlled on-site discharge or for off-site discharge into an approved dewatering area when site restrictions make it difficult to utilize other dewatering methods on site. Dewatering discharge water will never be directed into wetlands streams, other sensitive resource areas, catch basins or stormwater BMPs. Dewatering flow will be controlled so that it does not cause scouring or erosion using a dewatering basin, filter sock, or equivalent. If there is adequate vegetation in upland areas to function as a filter medium, the water will be discharged to the vegetated land surface. Where vegetation is absent or where slope prohibits, water will be pumped into a dewatering basin consisting of a filter bag with straw bale or other perimeter controls in NEP-approved areas outside wetland resource areas. During initial installation of the pump intake hose, any slack in the hose will be removed to reduce the chance of the hose setting on the bottom of the excavation. The hose will be frequently monitored and adjusted so that it does not set on the bottom of the excavation

throughout dewatering. Dewatering basins will be constructed on level ground and monitored throughout the dewatering process to prevent water from flowing, unfiltered, over the top of the basin walls. The basin and accumulated sediment will be removed following dewatering operations and the area will be seeded and mulched. Please refer to EG-303 in **Appendix F** for a more complete description of dewatering procedures and BMPs.

NEP has conducted an initial assessment to determine dewatering locations prior to construction. Dewatering locations are determined based on site specific conditions and proximity to wetland resource areas. Unless restricted by site conditions, dewatering basins will be placed on level ground in vegetated upland areas. The initial assessment of dewatering locations will be refined after coordination with Conservation Commissions during the local permitting process.

9.10 CONCRETE WASHOUT

Concrete washouts will be used to manage concrete waste associated with the installation of caisson foundations for three-pole structures. Concrete and concrete washout water will not be discharged directly on the ground, in wetlands or waterbodies, or in catch basins or other drainage structures. Where possible, concrete washouts will be located away from wetlands or other sensitive areas. Concrete washout areas will be regularly inspected by an environmental monitor. Please refer to EG-303 in **Appendix F** for a more complete description and detail of concrete washout procedures.

9.11 CONSTRUCTION BEST MANAGEMENT PRACTICES

Construction BMPs involve the uniform application of practices and procedures to be implemented throughout the construction phase of the Project which avoid or minimize impacts to environmental resources. Per existing NEP Policy, an EFI will be developed the Project. The EFI provides a single, comprehensive document that outlines permit conditions and requirements for the Project. A copy of the EFI is kept on file at the NEP office, at the site trailer and/or site supervisor's vehicle. The EFI details the scope of the Project, approved access routes, permit deliverables, sensitive areas to be avoided, detailed soil erosion and sedimentation controls, notifications and expiration dates, a list of Project contacts, training requirements/documentation, a copy of EG-303 (see **Appendix F**), permit application plans, and copies of all permits.

Contractors and environmental monitors will be required to participate in EFI training before beginning work on site. In accordance with a schedule specified in the EFI, regular construction progress meetings will provide the opportunity to reinforce the contractor and crew awareness of these matters. The comprehensive mitigation measures presented in *Table 10-1* incorporates construction BMPs, as appropriate.

10 MITIGATION

10.1 SUMMARY OF AVOIDANCE AND MINIMIZATION MEASURES

As noted throughout this document, NEP has incorporated an approach to the siting, design, and construction means and methods that avoids and minimizes impacts wherever practicable. For example, the proposed design utilizes existing utility corridors. Whenever practicable, NEP proposes locating replacement pole structures close to existing structures, relocating replacement pole structures to maximize spanning of wetland resource areas, vegetation management and tree removal only where necessary to allow for safe construction activities and safe operation, and utilizes historical or existing access for construction purposes.

NEP has also evaluated alternative construction methodologies designed to reduce impacts to environmentally sensitive areas. Specifically, NEP and their consultant team assessed the constructability of the Project to identify ways to minimize impacts from installation of access and construction work areas. Access and construction work areas have been designed such that permanent changes in substrate and grade are limited to only where required for safety.

Mitigation measures proposed for construction include appropriate BMPs such as erosion control barriers, use of construction mats, minimizing areas of disturbance, and restoration when necessary. NEP has established BMPs that will be followed by NEP employees and contractors for accessing sites and performing construction activities on transmission ROWs. These procedures, outlined in *Section 9* and **Appendix F**, strive to ensure that the Project will be completed in accordance with applicable environmental laws and regulations as well as with NEP policies and compliance objectives. Impact avoidance and minimization measures that NEP will implement throughout construction are summarized in *Table 10-1*, below.

Table 10-1: Avoidance and Minimization Measures, BMPs and Schedule Matrix

		Construction Activity						
Parameter	**Avoidance and Minimization Measures and BMPs**	**Vegetation removal & mowing**	**Erosion & sediment controls**	**Access improvement**	**Structure removal / disposal**	**Structure installation**	**Wire replacement**	**ROW restoration**
General	An Environmental Field Issue (EFI) document will be developed for the Project and used for training contractors and environmental monitors. The EFI is a comprehensive document that outlines permit conditions, includes NEP BMPs and specifies the expectations and requirements that NEP will hold construction personnel responsible for compliance with. A copy of the EFI is kept on file at the NEP office, at the site trailer and/or site supervisor's vehicle. Contractor training will be an ongoing process, as needed, when new personnel arrive on site.	X	X	X	X	X	X	X
Land Disturbance and Stormwater	Erosion and sediment controls will be installed and maintained. The SWPPP will be implemented to ensure that BMPs are utilized during construction to address potential impacts from erosion and stormwater runoff. Stormwater management and pollution prevention will be accomplished through stabilization and structural control BMPs, as well as good housekeeping practices. A component of the SWPPP will include requirements for spill control, clean up and reporting.	X	X	X	X	X	X	X
	Disturbed areas on the site will be stabilized using standard BMPs, which can include seeding and mulching, hydroseeding, water bars, slope breakers, amongst others, to be presented in the EFI document.	X	X	X	X	X	X	X
	Tree removal will be conducted using methods and equipment which minimize ground disturbance, such as feller bunchers or other tree handling equipment (where possible). To the extent feasible, NEP forestry crews will preserve understory scrub-shrub and herbaceous vegetation to avoid and minimize creating areas of bare soil surfaces.	X						
	Where tree removal and/or new access is proposed in areas of steep slopes or high erosive potential, additional precautions will be taken to ensure soil stability is maintained. These may include installation of water bars, plunge pools, diversion channels, and/or check dams, as appropriate to site specific conditions.	X	X	X				X
	Dust controls will be implemented as needed throughout the duration of the Project, on disturbed soils that are subject to surface dust movement and dust blowing.	X	X	X	X	X	X	X
Tree removal	Where tree removal is proposed within the ROW (i.e., in areas which will be permanently maintained as low growing, herbaceous or scrub/shrub communities), appropriate conservation seed mixes will be applied in areas of bare soil surfaces, to promote biodiversity, provide pollinator habitat, and replace lost forest habitats with alternative ecologically valuable community types. Where tree clearance occurs within NHESP Habitat areas, guidelines from NHESP will be followed. *NEP is a member of the Monarch CCAA and is currently undergoing a bio-audit to benchmark the habitat and ecosystem quality of the ROW. Further details of the on-going bio-audit are available here: https://bioaudit.acrt.com/national-grid/.*	X						X
	Where conditions are suitable, a portion of the wood generated during tree removal activities might remain on-site as standing snags, brush piles, log piles, and decaying large woody debris. Optimal locations for these habitat features will be determined in coordination with NHESP (in the case of rare species habitat), and by professional ecologists and wildlife biologists (BSC), for areas outside of designated rare species habitat.	X						X
	Within NEP fee-owned parcels, wood collected during tree removal shall be committed to reuse in long-lived wood products or will be donated to wood banks in MA. *Outside of NEP fee-owned parcels, the trees within the ROW belong to the respective private landowners. As such, it will not be possible to provide a detailed break-down of how all wood is distributed/disposed of by parties other than NEP.*	X						
Wetlands and Waterways	Install, inspect, and maintain temporary erosion and sediment controls, and other applicable construction BMPs, around work sites in or near wetlands. These will minimize the potential for erosion and sedimentation, mark the limits of wetlands, and restrict crew access, as appropriate.		X	X	X	X	X	X
	Within jurisdictional resource areas, limit grading for access and work areas to the extent necessary to provide a safe workspace.			X		X		X
	Avoid or minimize access through wetlands to the extent practicable. Where access must be improved or developed outside of vegetated wetlands, the access would be designed (where practical), so as not to interfere with surface water flow or the functions of the wetland.	X	X	X	X	X	X	X
	Once construction is complete, restore wetlands to pre-construction configurations and contours, to the extent practicable. RA will be allowed to return to shrub habitat.							X
	Comply with the conditions of local, state, and federal permit conditions related to wetlands.	X	X	X	X	X	X	X
	Store petroleum products more than 100 feet from a wetland.	X	X	X	X	X	X	X
	Proposed stream crossings with be temporary in nature and will be bridged using construction mats laid to not impact the hydrology or the bed of the stream.	X	X	X	X	X	X	X
	Limit disturbance for structure foundations in wetlands to the amount necessary to perform the installations.					X		
	Do not pile cut woody wetland vegetation to block surface water flows or otherwise to adversely affect the integrity of the wetland.	X						
	Attempt to schedule activities located near waterways during low-flow periods, to the extent practicable. Some crossings may have to be installed outside of typical low-flow periods to adhere to Project construction schedules and to conform to any transmission line outage windows that must be coordinated to maintain the reliability of the transmission grid.	X		X				
	Overhead crossings designed to avoid conflicts.					X	X	

		Construction Activity						
Parameter	**Avoidance and Minimization Measures and BMPs**	**Vegetation removal & mowing**	**Erosion & sediment controls**	**Access improvement**	**Structure removal / disposal**	**Structure installation**	**Wire replacement**	**ROW restoration**
Vernal Pool	Except in areas where access is required, existing scrub-shrub vegetation within 25 feet of vernal pools will be maintained, consistent with ROW vegetation management requirements.	X						X
	If low-growth (scrub-shrub) vegetation must be cut adjacent to vernal pools, the cut vegetation ("slash") will be left in place to serve as recruitment for leaf litter and coarse woody debris.	X						X
	Soil erosion and sediment control BMPs will be installed and maintained along access within (or in close proximity to) vernal pools. Sediment built up behind these BMPs will periodically be removed and placed in upland areas, in a manner that will preclude the potential for subsequent deposition into the pools.		X	X	X	X	X	X
	To the extent that circuit outage and other construction timing constraints allow, NEP will attempt to schedule work within the vicinity of vernal pool habitats so as not to interfere with amphibian breeding and migration seasons.	X	X	X	X	X	X	X
	Construction activities that must occur in or near vernal pools will conform to the measures described in *Section 9.8.2* to avoid or minimize the potential for the spread of invasive species to vernal pool habitat.	X	X	X	X	X	X	X
	For Project activities that must occur adjacent to vernal pools during amphibian migration periods, measures will be implemented on a site-specific basis as necessary to facilitate unencumbered amphibian access to and from vernal pools, e.g., placing wood chip ramps at intervals along sediment control fencing, leaving gaps in or staggering the installation of soil erosion and sediment controls, and aligning soil erosion and sediment controls to avoid bifurcating vernal pool habitat.	X	X	X	X	X	X	X
	Where existing on-ROW access adjacent to vernal pools must be improved, construction mats will be used if practicable; otherwise, clean materials will be used (e.g., clean riprap, gravel, stone, or equivalent and rock fords).			X	X	X	X	X
Water Supply Protection	Where dewatering is necessary during excavations for structures within or adjacent to SWPZs, water will be pumped into appropriate dewatering basins.					X		
	Where drilling is necessary for the installation of caisson foundations, the mud boxes or similar containment BMPs used to contain the drilling mud and excess soil will be removed regularly from the work site.					X		
	Post-construction restoration and stabilization will be implemented.							X
	Design changes have been incorporated to minimize impacts within rare species habitat, particularly in terms of access and work area sizes and locations, and the use of temporary construction matting to protect particularly sensitive upland areas.	X		X				
Rare Species Contractor Education and Awareness	Contractors working in state-listed species habitat will be trained in species identification and general life history/behavioral notes.	X	X	X	X	X	X	X
	If a state-listed species is encountered, contractors will be instructed to notify NEP and the approved wildlife monitor.	X	X	X	X	X	X	X
	Contractors will be required to practice good housekeeping and securely dispose of food wrappers and waste to discourage any increase in the predator population.	X	X	X	X	X	X	X
Construction Timing and Restrictions for Rare Species	Per the OMP, any maintenance activities resulting in an open excavation during the active reptile season must be completed or filled in by the end of workday. Alternatively, exclusion fencing can be installed.					X		
	If permanent access upgrades are unavoidable within protected reptile habitat areas during the active season, full-time monitoring will be provided by an approved wildlife biologist. If OMP activities occur during the reptile active season, visual inspections must be performed by trained personnel (see below).			X				
	Per the OMP, a Wetland Work Form must be submitted to NHESP within one month of maintenance-related work activities commencing in wetland habitat for state-listed reptile #1. Construction mats must be used for equipment access.	X	X	X	X	X	X	X
	Important habitat areas for the protected species will be delineated/identified on the project construction plans provided with the EFI. These features will also be flagged or demarcated in the field.	X	X	X	X	X	X	X
	An approved wildlife monitor will perform daily sweeps of the area/be present on site whenever construction activities or equipment access occur in mapped polygons of state-listed reptile habitat during the active season (April 1st - October 31st). For maintenance activities, this may be performed by trained personnel. For new access construction/upgrades, monitoring will be performed by qualified biologists.	X	X	X	X	X	X	X
	If a state-listed species is encountered, the monitor will: Record observations on NHESP "animal observation form"; Photo-document the species; If outside of nesting season, move reptiles in the direction they are traveling (not across paved roads); or if during nesting season, not disturb the nest site and identify nest location with flagging.	X	X	X	X	X	X	X
Monitoring for Rare Species	Weather forecasts will also be monitored carefully during the inactive season, as instances of unseasonably warm weather can trigger early activity. NEP will assume and prepare for the potential of protected reptiles entering work areas during certain weather conditions. Monitors will be available to sweep during sunny days, warmer than 50 degrees Fahrenheit, when snow cover is absent.	X	X	X	X	X	X	X
	During the breeding/dispersal seasons for state-listed amphibians, sediment-control barriers located in mapped habitat polygons will be checked daily for trapped individuals. If any amphibians are found, these will be relocated by an approved wildlife monitor to the closest suitable area that is free from work disturbance.	X	X	X	X	X	X	X
	Per the OMP, NHESP will provide specific management requirements where cutting is required for maintenance activities in wetland resources areas located within mapped state-listed species habitat.	X	X	X	X	X	X	X
	Per the OMP, areas dominated by low-growing shrub species (lowbush blueberry, huckleberry, sheep laurel, New Jersey tea, sweet fern and scrub oak) should be encouraged and restored if disturbance is necessary for maintenance-related activities.							X
Vegetation Management for Rare Species	NHESP mapped habitats within the ROW are subject to the special conditions established in NEP's VMP.	X						
	Mechanical clearing/mowing related to permanent access upgrades will be avoided during sensitive breeding/dispersal period(s) in state-listed amphibian habitat.	X		X				
	As practicable, mechanical clearing/mowing will be avoided during the active season for state-protected reptile species in mapped habitat. When vegetative management is unavoidable during the active season, blades should be set no lower than 7 inches off the ground (preferably 12 inches). Mowing will occur in low gear or at slow speeds to allow individuals time to react. Visual sweeps will occur as described in the monitoring subsection.	X		X				
	As practicable, a minimum 50-foot-wide vegetated buffer strip (of ROW-compatible species), will be left undisturbed around the edge of vernal pools in mapped habitat for state-listed amphibians and invertebrate species #1. This will provide habitat for protected amphibian species, and further reduce the risk of surface run-off into sensitive vernal pool habitats.	X						
	Construction mats will be used for wetland access. This practice retains the root systems and seed stock and facilitates revegetation post-construction.	X	X	X	X	X	X	X
	Erosion and Sediment Controls will be installed and regularly maintained to protect water quality in wetland resource areas, vernal pools, and other waterbodies. During the breeding/dispersal and active seasons, the barriers deployed in state-listed species habitat will be checked daily for trapped amphibians and reptiles, respectively. If individuals are found, they will be relocated by an approved wildlife monitor to the closest suitable area that is free from work disturbance.		X	X	X	X	X	X

		Construction Activity						
Parameter	**Avoidance and Minimization Measures and BMPs**	**Vegetation removal & mowing**	**Erosion & sediment controls**	**Access improvement**	**Structure removal / disposal**	**Structure installation**	**Wire replacement**	**ROW restoration**
	Per the OMP, monofilament encased barriers/controls will not be used in state-listed amphibian habitat. Refer to National Grid EG-303 details AA-22, AA-24, & AA-25. Details also provide guidance for wood chip ramps and overlapping controls to avoid complete barriers to and from breeding pools.		X	X	X	X	X	X

		Construction Activity						
Parameter	**Avoidance and Minimization Measures and BMPs**	**Vegetation removal & mowing**	**Erosion & sediment controls**	**Access improvement**	**Structure removal / disposal**	**Structure installation**	**Wire replacement**	**ROW restoration**
BMP's for Rare Species	Exclusion fencing will be installed around work areas and staging areas in state-listed reptile habitat, when open excavation activities cannot be completed in one day during the active season.					X		
	Dewatering discharge will be pumped into a straw bale or silt fence settling basin to be located in an upland area (preferably well-vegetated whenever practicable).					X		
	Foundation excavations will be covered when left unattended.					X		
	Per the OMP, materials will not be stockpiled in CVPs or wetland resource areas.	X	X	X	X	X	X	X
	Parking of contractor vehicles will be limited or avoided, when practicable, in specified areas within the ROW.	X	X	X	X	X	X	X
	Equipment will be monitored regularly for leaks and secondary containment will be used under equipment that will be parked in habitat areas during construction. Refueling will not occur within 100 feet of wetlands or waterways.	X	X	X	X	X	X	X
	Per the OMP, silt fence placed in state-listed reptile habitat will be removed immediately following site stabilization to prevent barriers to movement.		X					X
	Where tree removal is proposed within NHESP habitat, NEP will coordinate with NHESP to provide a comprehensive mitigation plan for tree removal activities. This may include species-specific habitat enhancement and creation measures, both on and off-ROW.	X						X
	Access improvements within protected amphibian and/or reptile habitat areas will include appropriate contouring and reduced "curb/shoulder" slopes, to facilitate migration across access routes.			X				
	Upon completion of the Project activities, work areas for maintenance activities will be restored to existing condition. These areas will be allowed to progressively vegetate with typical regular management.							X
Specialized Construction and Restoration Measures for Rare Species	Per the OMP, areas dominated by low-growing shrub species should be restored in-kind if disturbance is necessary for maintenance-related activities.							X
	Native vegetation should be preserved in and adjacent to wetlands whenever practicable. Use of construction mats allows for the preservation of root stock by tamping down existing vegetation. Construction matting within wetlands in Priority/Estimated Habitat (for either protected invertebrate species), will be removed immediately after completion of work, to reduce impacts to emergent vegetation and facilitate revegetation.	X	X	X	X	X	X	X
	In compliance with the VMP and OMP, vegetation and maintenance activities will continue to be managed regularly in NHESP habitat using restrictions and measures that avoid adverse impacts to protected species.	X	X	X	X	X	X	X
Invasive Species	Identification of the wetlands containing invasive species will be shown on Project plans provided to contractors.	X	X	X	X	X	X	X
	Environmental training of workers so that BMPs are implemented consistently.	X	X	X	X	X	X	X
	Requiring contractors check that construction equipment, vehicles, and materials (e.g., equipment mats) be clean and free of excess soil, debris, and vegetation before being mobilized to the Project ROWs.	X	X	X	X	X	X	X
	Cleaning any equipment working in or traversing a wetland containing invasive plant species prior to relocating to another work site. Cleaning of vehicles and other equipment (including the tracks and tires) will involve removal of visible dirt, debris and vegetation using brooms, shovels, and, if needed, compressed air.	X		X	X	X	X	X
	Use of construction mats at wetland crossings so construction vehicles that frequently travel along on-ROW access routes, such as pickups carrying personnel or material delivery trucks, can avoid direct wetland interaction.	X	X	X	X	X	X	X
	Use of straw, or alternative BMP erosion and sedimentation controls will be used in and near wetlands.		X	X		X		X
	Mats used in wetlands containing invasive species will be cleaned prior relocation to other work areas or wetlands. Cleaning of matting will involve dropping mats one on top of another to loosen any sediment and debris. The matting will then be swept to remove loose soil and any plant material.	X	X	X	X	X	X	X
	Construction equipment and excavated soil material will be contained within the approved limits of work areas within the ROW; these limits of work will be defined on Project plans.	X	X	X	X	X	X	X
	Soils excavated from wetlands or riparian areas containing a predominance of invasive plants will be stockpiled separately (to the extent that there is sufficient workspace) and contained within staked bales, silt fence or other approved erosion and sedimentation control BMPs to minimize the potential of spreading these soils elsewhere onto the ROW.					X		
	Final restoration of the ROW will be performed in accordance with National Grid's Environmental Guidance Document EG-303.							X
	NEP field monitors will perform site inspections and oversee the contractors' compliance with applicable federal, state, and local permit conditions, Project plans (e.g., SWPPP), and NEP policies.	X	X	X	X	X	X	X
	Soil and vegetation disturbance will be minimized to the extent practicable.	X	X	X	X	X	X	X
	Erosion and sedimentation controls will be installed and maintained, per the SWPPP.		X	X	X	X	X	X
	Prior to moving to other work areas, remove plant matter, soil, or other deleterious material from equipment and construction matting when working at the sites containing invasive species.	X		X	X	X	X	X
Historic Resources	Mitigation will be determined in consultation with MHC, THPOs, DCR, any other consulting parties and Advisory Council on Historic Preservation ("ACHP"), as appropriate. If determined to be necessary, data collection activities will occur prior to any construction activities. If the site is to be protected in place, appropriate protective measures will be taken when earth-disturbing construction activities occur in the vicinity.	X	X	X	X	X	X	X

		Construction Activity						
Parameter	**Avoidance and Minimization Measures and BMPs**	**Vegetation removal & mowing**	**Erosion & sediment controls**	**Access improvement**	**Structure removal / disposal**	**Structure installation**	**Wire replacement**	**ROW restoration**
Hazardous Waste	Work will be completed in accordance with EG-303, EG-501, EG-502, and EG-1707 which describe NEP's procedures for managing hazardous waste and contaminated soils, and NEP's spill response and reporting procedures.	X	X	X	X	X	X	X
	If oil and/or hazardous material are identified during the implementation of this Project, notification will be made to MassDEP, per reporting requirements, and the necessary precautions outlined in NEPs BMPs and relevant permits will be followed.	X	X	X	X	X	X	X
	Develop a spill prevention and response plan with procedures to be used during construction to minimize the potential for a fuel spill and, if a spill occurs, to control and minimize potential effects.	X	X	X	X	X	X	X
	If refueling and maintenance in the field are necessary, vehicles and equipment will be brought to an area greater than 100 feet away from sensitive environmental features, and Reasonable environmental precautions will be taken.	X	X	X	X	X	X	X
General Decarbonization Benefits	Improved transmission system infrastructure will provide improved electric transmission reliability, increased line capacity, and more opportunities for the interconnection of renewable energy generating facilities. Additionally, since the Project supports the transition to utilization renewable energy resources, the project promotes public health with regard to future reduction of air pollution, as well as water and soil contamination. Generating energy from renewable sources reduces the amount of energy generated from fossil fuels, the latter of which is associated with harmful gases that contribute to respiratory diseases such as emphysema and asthma					X	X	
Climate Change Adaptation & Resiliency	**Precipitation Resiliency**: Replacement steel structures and caisson foundations are more resilient to weather extremes than the existing structures. A 2019 review of the condition of the Existing Lines found physical issues on 221 out of 575 existing structures in MA. In light of these concerns, the Rebuilt Lines and Taps will be designed with additional capacity to meet known and anticipated future requirements. Access improvements will better withstand flood conditions and will reduce the potential for erosion impacts during future maintenance. Improved line clearances (tree removal) will reduce the risk of outages due to trees falling on the lines, which is likely to become more frequent with climate change (due to both temperature stress and increased precipitation destabilizing upland trees). Mitigation measures for work within BLSF and wetlands (described below) also facilitates precipitation resiliency.			X		X	X	
	Temperature Resiliency: Upgrades to infrastructure, e.g., insulators and conductors, will allow the system to handle greater electrical loads during heat waves.					X	X	
	Inland Flooding Resiliency: Replacement steel structures and caisson foundations are more resilient to inundation. Structures within the floodplain are not expected to restrict flows or cause an increase in flood stage or velocity. Impacts to peak runoff rates (from tree removal and increases in impervious surface area), will be mitigated through a combination of hard and soft engineering techniques.					X		X
Traffic	Consult with MassDOT to review proposed plans for overhead crossings (including the use of guard structures) and to review plans to access the NEP ROW via state highways; develop a Transportation Management Plan (TMP) to addresses impacts and MassDOT concerns to ensure a safe working environment and safe passage for highway traffic			X			X	
Emissions	Diesel-powered non-road construction equipment with engine horsepower ratings of 50 and above to be used for 30 or more days over the course of Project construction will have USEPA-verified (or equivalent) emission control BMPs, such as oxidation catalysts or other comparable technologies (to the extent that they are commercially available) installed on the exhaust system side of the diesel combustion engine. Vehicle idling will be minimized in accordance with Massachusetts' Anti-idling law, M.G.L. c. 90, § 16A, c. 111, §§ 142A – 142M, and 310 CMR 7.11. NEP requires the use of ultra-low sulfur diesel fuel in its diesel-powered construction equipment and limits idling time to five minutes except when engine power is necessary for the delivery of materials or to operate accessories to the vehicle such as power lifts.	X	X	X	X	X	X	X
	Dust controls will be evaluated and implemented as needed throughout the duration of the Project on disturbed soils that are subject to surface dust movement and dust blowing.	X	X	X	X	X	X	X

10.2 COMPENSATORY MITIGATION OVERVIEW

After feasible and practicable available measures to avoid or minimize Project impacts have been implemented (as described in the "*Avoidance and Minimization*" sections of each preceding Section, and summarized in *Table 10-4*), NEP will provide appropriate compensatory mitigation for Project impacts, in line with the requirements of the various regulatory programs under which the Project is being permitted. NEP will incorporate elements of both *in-situ* restoration and off-site compensatory mitigation approaches into its mitigation packages to comprehensively address potential impacts that cannot be avoided or minimized associated with the proposed work on the A1/B2 Lines.

NEP will work with the appropriate regulatory agencies during permitting to finalize mitigation proposals as required by federal, state, and local regulation. Under most regulatory programs, NEP proposes *in situ* restoration as the primary means of providing one-to-one restoration of impacts associated with construction matting and work areas involving soil disturbance, such as around the base of structure installation and/ removal sites. Where required by statute and in areas of permanent impact, such as where structures will be installed in resource areas, NEP will provide compensatory mitigation. As approved in consultation with regulatory agencies, compensatory mitigation may include off-site preservation of forested land or wetlands, and culvert and stream enhancements, or other replication, restoration, or preservation packages.

10.2.1 Mitigation Requirement Review

The Project is subject to a variety of environmental permits and authorizations that may require compensatory mitigation for "impacts" to jurisdictional/regulated areas that cannot be avoided or minimized. The definition and categorization of "impact" varies between these regulatory programs. For clarity and common understanding, these variations applicable to the Project are summarized in *Table 10-2*:

Table 10-2: A1/B2 ACR Activities Subject to Compensatory Mitigation Requirements

Activity/Area	Type of Impact	As defined by…
Temporary placement of construction matting within wetlands and waterways	"temporal loss"	WPA
	"temporary impact – temporary discharge of fill material"	CWA, Sections 404 and 401
Construction of new or replacement structures within wetlands	"loss of resource areas"	WPA
	"permanent impact - discharge of fill material"	CWA, Sections 404 and 401
Tree removal within wetlands	"secondary impact"	CWA, Section 404
Construction activities within NHESP Priority Habitat for rare species including structure installations and replacements, access and work area construction/improvements, temporary matting of wetland areas, and tree removals	"Alteration" of Priority Habitat, identified as areas where there is the potential that a Take of any Endangered, Threatened, or Special Concern species may occur as a result of any Project or Activity	MESA
Construction activities within state or federally Registered or Listed sites or properties	"Adverse effects" on historic properties	M.G.L. c. 9 Sections 26B and Section 106 of the NHPA

In consultation and permitting with regulatory agencies, NEP will provide compensatory mitigation for unavoidable impacts in order to comply with the various permit programs that have jurisdiction over work planned as part of the Project. NEP is working with federal, state, and local agencies to determine appropriate approaches to compensatory mitigation required by these permit programs. Compensatory mitigation standards and requirements fall under several jurisdictional programs as outlined in *Table 10-3*, below.

Table 10-3: Compensatory Mitigation Requirements

Regulatory Program and Permitting Agency	Regulatory Citation(s)
CWA Section 401 WQC MassDEP	314 CMR 9.06(2)(a) - For discharges to bordering or isolated vegetated wetlands, such steps shall include a minimum of 1:1 restoration or replication.
Massachusetts WPA, MassDEP & local Conservation Commissions	Limited Projects: 310 CMR 10.53(3) - *…the Issuing Authority may issue an Order of Conditions and impose such conditions as will contribute to the interests identified in M.G.L. c. 131, § 40 permitting the following limited projects (although no such project may be permitted which will have any adverse effect on specified habitat sites of Rare Species, as identified by procedures established under 310 CMR 10.59). In determining whether to exercise its discretion to approve the limited projects listed in 310 CMR 10.53(3), the Issuing Authority shall consider the following factors: the magnitude of the alteration and the significance of the project site to the interests identified in M.G.L. c. 131, § 40, the availability of reasonable alternatives to the proposed activity, the extent to which adverse impacts are minimized, and the extent to which mitigation measures, including replication or restoration, are provided to contribute to the protection of the interests identified in M.G.L. c. 131, § 40.* Wetland Loss: 310 CMR 10.55(4)(b) - *Notwithstanding the provisions of 310 CMR 10.55(4)(a), the issuing authority may issue an Order of Conditions permitting work which results in the loss of up to 5000 square feet of Bordering Vegetated Wetland when said area is replaced in accordance with the following general conditions…1. the surface of the replacement area to be created ("the replacement area") shall be equal to that of the area that will be lost ("the lost area").* BLSF Loss: 310 CMR 10.57(4)(a)1. - *Compensatory storage shall be provided for all flood storage volume that will be lost as the result of a proposed project within Bordering Land Subject to Flooding, when in the judgment of the issuing authority said loss will cause an increase or will contribute incrementally to an increase in the horizontal extent and level of flood waters during peak flows.* RA: 310 CMR 10.58(5)(g) - *When an applicant proposes mitigation either on-site or in the riverfront area within the same general area of the river basin, alteration may be allowed notwithstanding the criteria of 310 CMR 10.58(5)(c), (d), or (e) at a ratio in square feet of at least 2:1 of mitigation area to area of alteration not conforming to the criteria or an equivalent level of environmental protection where square footage is not a relevant measure. Alteration not conforming to the criteria shall begin at the riverfront area boundary. Mitigation may include off-site restoration of riverfront areas, conservation restrictions under M.G.L. c. 184, §§ 31 through 33 to preserve undisturbed riverfront areas that could be otherwise altered under 310 CMR 10.00, the purchase of development rights within the riverfront area, the restoration of bordering vegetated wetland, projects to remedy an existing adverse impact on the interests identified in M.G.L. c. 131, § 40 for which the applicant is not legally responsible, or similar activities undertaken voluntarily by the applicant which will support a determination by the issuing authority of no significant adverse impact. Preference shall be given to potential mitigation projects, if any, identified in a River Basin Plan approved by the Secretary of the Executive Office of Energy and Environmental Affairs.*
CWA Section 404* USACE	Federal "Mitigation Rule" at 33 C.F.R. Part 332 - *Compensatory Mitigation for Losses of Aquatic Resources: Compensatory mitigation can be carried out through four methods: the restoration of a previously existing wetland or other aquatic site, the enhancement of an existing aquatic site's functions, the establishment (i.e., creation) of a new aquatic site, or the preservation of an existing aquatic site. There are three mechanisms for providing compensatory mitigation: permittee-responsible compensatory mitigation, mitigation banks and in-lieu fee mitigation. Permittee-responsible mitigation is the most traditional form of compensation and continues to represent the majority of compensation acreage provided each year.* Note that although Section 404 Authorization and Section 401 Certification are both regulatory programs under the Clean Water Act, the preferred instrument for compensatory mitigation under Section 404

Regulatory Program and Permitting Agency	Regulatory Citation(s)
	authorization, the In Lieu Fee Program sponsored by the MA DFG, typically is not accepted as compensatory mitigation under the Massachusetts 401 WQC regulatory program.
MESA NHESP	*321 CMR 10.23 - The general mitigation standards to be applied by the Director when issuing individual and general conservation and management permits are set forth in 321 CMR 10.23(7).* And: *2. The applicant shall provide off-site mitigation, or a combination of on-site and off-site mitigation subject to the Division's approval, that achieves the long-term Net Benefit standard in 321 CMR 10.23(1), as determined by the Division. Any off-site mitigation provided by the applicant in the form of a financial contribution will be used to fund habitat management or the protection of land or other appropriate mitigation within one or more conservation protection zones established in the conservation plan issued by the Division pursuant to 321 CMR 10.26.*
State Historic Preservation Act (M.G.L. c. 9 Sections 27C) Historical Review And NHPA Section 106 (36 CFR Part 800)* MHC	*The state body undertaking the project or the private entity proposing the project shall adopt all prudent and feasible means to eliminate, minimize, or mitigate the adverse effects.* And: *The agency official shall consult with the SHPO/THPO and other consulting parties, including Indian tribes and Native Hawaiian organizations, to develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize or mitigate adverse effects on historic properties.*
Municipal Wetland Protection Ordinance or Bylaw Local Conservation Commissions	At the local level, some Municipal Ordinances and Bylaws require a greater ratio of wetland replacement area-to-loss area. Local Ordinances and Bylaws may regulate additional resource areas (such as the buffer zone) or implement additional requirements for wetland replacement areas. NEP will work with each Town's Conservation Commission during later stages of permitting to ensure that mitigation meets all local, as well as State, requirements.

*While MEPA Review is primarily concerned with State regulatory requirements, some federal and/or local regulatory requirements overlap with those promulgated by the State. These are included in this table, for reference.

At this stage of Project planning, design, and permitting, exact details of the anticipated mitigation packages have not been finalized. Currently, NEP is in consultation with regulatory agencies to ensure that the final Project design, construction methods and anticipated mitigation measures will meet applicable mitigation criteria. Given the overlap in jurisdiction over resource areas in many locations (for example, wetlands within NHESP Habitat or DCR land), NEP anticipates that some mitigation packages will be able to address multiple Project impact types within the same comprehensive package. In other cases, mitigation may be more tailored to specific concerns or specific jurisdictions.

10.3 TREE REMOVAL COMPENSATORY MITIGATION REQUIREMENTS REVIEW

Within wetlands, tree removal, while defined as an "alteration" or a "secondary impact" under state and federal regulation, does not constitute a loss of BVW or a discharge of fill material into Water of the United States ("WOTUS"). There is no requirement in the WPA or the 401 WQC regulations to compensate for conversion of wetlands from one vegetation cover type to another, as no BVW or WOTUS within the Commonwealth is "lost" following vegetation removal. The

WPA regulations require NEP to mitigate for the reduction or loss of the capacity of a wetland to provide for any of the Statutory Interests for specific regulated resource areas. As described in *Section 4*, NEP has documented existing conditions within jurisdictional wetlands along the Project route and assessed potential impacts from Project construction. Per this analysis, the Project will not impair the integrity of the wetland or ability of the wetland to provide for the statutory interests as provided in M.G.L. c. 131, §40.

Additionally, pursuant to 310 CMR 10.60, BSC scientists performed Detailed Wildlife Habitat Evaluations to determine the current habitat value of the forested edges within wetlands along the ROW and have assessed potential post-construction habitat value. These assessments concluded that the overall habitat structure of the portions of the ROW subject to tree removal will remain the same, i.e., a long narrow shrubby habitat bordered by a forest edge, and the shrub habitat will be only incrementally wider, relative to the expansive forested landscape that surrounds it. This change should have no long-term impact on how resident wildlife use these habitats within the evaluated resource areas.

While tree removal will not result in permanent loss of BVW, this activity is considered permanent wetland alteration, and will result in a change in community type from palustrine forested ("PFO") wetland to palustrine scrub-shrub ("PSS") or palustrine emergent ("PEM"). Tree removals will be selective and will only remove tall-growing species which have the potential to interfere with the overhead transmission lines, or trees which are directly obstructing access to the ROW. Trees will be cut near the ground surface, and root balls left intact to maintain soil stability. Cut stumps will be treated with herbicide during the next routine maintenance cycle, reducing regrowth and the need for future tree cutting. Understory shrub and emergent wetland vegetation will be left intact and maintained under long term vegetation management cycles as PSS or transitional PFO/PSS systems. As discussed in *Section 3*, these transitional systems can be a beneficial natural resource as they provide wetland functional diversity in an otherwise forested area and provide valuable and important wildlife habitat as PSS/PEM wetland types.

Accordingly, NEP does not anticipate providing compensatory BVW mitigation under the WPA or 401 WQC regulatory programs for the selective removal of trees within wetlands along the existing ROW edge. However, compensatory mitigation for tree removal within resource areas may be required under the discretionary authority granted to the Conservation Commission under the Limited Project provisions, or the Project otherwise will be subject to special conditions applied under a municipal bylaw or ordinance. NEP anticipates addressing mitigation requirements with local Conservation Commissions in the course of WPA permitting.

Some tree removal will take place within RA. NEP recognizes that maintaining/reestablishing vegetation within the RA is critical to protecting water supplies, providing flood control, preventing pollution, and protecting wildlife and fisheries habitat. Therefore, NEP is proposing in situ restoration of disturbed soil surface to promote soil stabilization and rapid revegetation. Additionally, NEP will loam and seed work areas with native grass and herbaceous species following construction to reestablish vegetative cover.

Under federal Section 404 regulation, tree removal, more specifically defined as a conversion of wetland vegetation cover type, is a "Secondary Impact." Secondary impacts are effects on wetlands that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material (see 40 CFR 230.11(h)). NEP anticipates providing compensatory mitigation for secondary impacts through the USACE's In-Lieu Fee Program.

10.4 PROPOSED MITIGATION FOR WETLAND IMPACTS

10.4.1 *In-Situ* Restoration for Temporary Impacts

NEP anticipates *in-situ* restoration will be the primary means of mitigation for temporary impacts associated with construction matting within wetlands under both Section 404 and WPA. A detailed description of NEP's standard procedure is presented in *Section 4* and summarized below.

As construction mats are removed, wetlands will be inspected for sediment deposited from work and access areas. If rutting or soil compaction is observed following construction mat removal, the area shall be returned to pre-existing conditions / conditions consistent with the surrounding area, by light hand raking or by back-blading with machinery. Deep ruts (greater than 12 inches) shall be graded using available, loose soil from the work area. Depending on vegetation conditions, disturbed wetland areas will either be allowed to revegetate naturally or will be seeded with an appropriate wetland conservation seed mix.

Restored areas will be monitored until at least 75% revegetation cover of native species is achieved. Where appropriate, native species plantings, and creation of woody debris and log piles, will be implemented. Any additional site-specific mitigation will be determined during future permitting, in coordination with the local Conservation Commissions, and (if applicable), NHESP.

Construction debris will be removed from the Project site and disposed of in accordance with applicable laws and regulations. Siltation fencing, strings and stakes shall be removed and disposed of as ordinary waste.

10.4.2 Mitigation for Secondary Impacts

In addition to *in-situ* restoration, the USACE will require mitigation for "secondary" wetland impacts resulting from permanent wetland conversion. Per the USACE stated preference for compensatory mitigation, NEP proposes to use the In-Lieu Fee program to mitigate for secondary impacts related to permanent wetland vegetation conversion. NEP's proposed mitigation for secondary impacts will comply with the USACE's New England District Compensatory Mitigation Guidance (the "USACE Guidance")[42].

[42]https://www.nae.usace.army.mil/portals/74/docs/regulatory/Mitigation/2016 New England Compensatory Mitigation Guidance.pdf.

10.4.3 Compensatory Mitigation for Permanent Discharge of Fill Material/Wetland Loss

To mitigate for unavoidable permanent impacts associated with installation of new or replacement structures in wetlands, NEP will work with the USACE, the MassDEP, and local Conservation Commissions to develop compensatory mitigation plans. NEP is currently anticipating in-lieu fee payment under Section 404. Additional mitigation measures required by state and local agencies will be determined during the consultation and permitting processes with these agencies.

For wetlands permanently impacted by fill (resulting in a loss of wetland), 1:1 replication will be provided for the area that is filled. Replication will be provided at a higher ratio within Towns which specify this in their Bylaws (please refer to *Table 10-4*, below).

Table 10-4: Wetland Replication Requirements for Towns Along the A1/B2 Project Route

Municipality	Wetland Replication Ratio
Warwick	No Wetlands Protection Bylaw
Royalston	No Wetlands Protection Bylaw
Winchendon	Defers to WPA (1-to-1)
Gardner	1-to-1 or 2-to-1, as Determined Necessary by the Commission
Westminster	1.5 to 1
Fitchburg	Defers to WPA (1-to-1)
Leominster	No Wetlands Protection Bylaw
Sterling	No Wetlands Protection Bylaw
Athol	No Wetlands Protection Bylaw

10.4.4 Compensatory Flood Storage

The Project will result in the loss of 76.6 cubic yards of flood storage capacity, due to the installation of caisson supported structures with larger concrete foundations. NEP will work with the applicable Conservation Commission(s), to design suitable compensatory flood storage areas. If possible (within the confines of the NEP ROW), compensatory flood storage will aim to provide on-site replication at the same incremental elevations as the lost flood storage, at a 2:1 ratio.

10.4.5 Rare Species Mitigation

NEP is in the process of consulting with the NHESP regarding Project impacts to rare wildlife and plants, and the potential for the Project to result in a "take". Should it be determined, the Project cannot avoid a "take", NEP will coordinate with NHESP to implement a CMP. However, recent data and consultations suggest that a potential "take" might be avoided altogether. This assessment will be further discussed in the FEIR.

10.4.6 Environmental and Public Health Impacts and Proposed Mitigation

The Project will occur within the existing ROW, thereby minimizing adverse environmental impacts to the nature of the Project, outage constraints in the region, and NEP's efforts to reduce impacts to the natural and human environment, Project activities will be sequenced in both the mainline and tap lines. No long-term impacts on soil, bedrock, vegetation, surface water,

groundwater, wetland resources or air quality will occur. Any potential sedimentation impacts, and other short-term construction impacts to wetlands and surface waters, will be mitigated through the use of soil erosion and sediment control best management practices ("BMPs") and temporary construction mats to protect wetland soils, vegetation root stock, and streams. As part of the Project, an environmental monitor will be part of the Project team to ensure compliance with regulatory programs and permit conditions, and to oversee the proper installation and maintenance of the soil erosion and sediment control BMPs. Project activities will be limited to the existing ROW. Additionally, access to protected land and open space within EJ populations will not be impacted.

10.4.7 Impact and Mitigation Summary

Impacts to the environment, including land, stormwater, wetlands, rare species, and historic/archeological resources, are discussed in detail in *Sections 3* through *6*. *Table 10-5* (below) presents a summary of anticipated Project impacts, and the proposed mitigation (where required).

Table 10-5: Summary of Project Impacts and Proposed Mitigation

Resource Area	Impact Type	Impact Area	Potential Mitigation
Wetlands & LUWW	Secondary Impacts / Permanent Alteration (Tree Removals)	~9 acres	In-Lieu Fee (USACE), and any special conditions of Conservation Commissions.
	Permanent Discharge of Fill Material / Loss of Resource Areas (Structure Foundations)	~2,246 SF	Compensatory Mitigation as determined in state and local permitting
	Temporary Discharge of Fill Material / Temporal Loss (Construction Matting)	~38 acres	In-Lieu Fee (USACE) and 1:1 in situ restoration. See also Avoidance & Minimization sections for details on the use of construction matting.
RA	Secondary Impacts (Tree Removals)	~14 acres	*In-situ* restoration, including loam and seed as applicable. The habitat will remain vegetated and continue to function as wildlife habitat.
	Permanent Fill (Structure Foundations)	3,561 SF	Mitigation as determined in state and local permitting.
	Temporary Fill (Construction Matting, Gravel Work Areas and Access to be Removed Post Construction)	13 acres	*In-situ* restoration.
Bank	Secondary Impacts (Tree Removals)	0.65 acres	N/A - Vegetation alteration will be minimal, and understory will remain in place and/or quickly re-establish.
	Permanent Fill (Structure Foundations, and Gravel Work Areas & Access)	0	N/A – no permanent impact to bank
	Temporary Fill (Construction Matting)	3,025 LF	*In-situ* restoration.
Floodplain / BLSF	Secondary Impacts (Tree Removals)	2.4 acres	N/A – No flood storage lost.
	Permanent Fill (Structure Foundations)	726 SF	NA – the flood storage loss is *de minimis* within each BLSF where structures are replaced, and the foundations will not impact flood storage capacity.
	Temporary Fill (Construction Matting)	5 acres	*In-situ* restoration.

Resource Area	Impact Type	Impact Area	Potential Mitigation
NHESP Priority Habitats	Secondary Impacts (Tree Removals)	7 SF	As required by NHESP. Consultation is ongoing, and mitigation will be determined during MESA permitting.
	Permanent Fill (Structure Foundations, and Gravel Work Areas & Access)	16 acres	
	Temporary Fill (Construction Matting)	5 acres	

10.5 MITIGATION COSTS AND RESPONSIBLE PARTIES

At this early stage in Project permitting, NEP has not yet developed comprehensive compensatory mitigation proposals. Some generalized costs and responsible parties for broad-scale Project mitigation are listed below. These are pre-construction estimates based on available information and experience with other recent projects.

Avoidance and Minimization Measures:

- Construction mats for access and work areas within sensitive resource areas (including wetlands, and select areas of rare species Priority Habitat, agricultural land, and archaeologically sensitive sites): ~**$50/linear foot**. *NEP is responsible for the cost, and NEP Contractor(s) are responsible for installation and implementation.*

Wetland Mitigation Measures:

- Wetland protection and *in-situ* restoration, including: sediment and erosion controls, mitigation for wetlands, waterbodies, vernal pools, invasive species controls, and ROW restoration (upland & wetland). **approximately $200,000/mile**. *NEP is responsible for the cost, and NEP Contractor(s) are responsible for installation and implementation.*
- Wetland Replication: **approximately $10/square foot**. *NEP is responsible for the cost, and NEP Contractor(s) are responsible for installation and implementation.*

In-Lieu Fee Mitigation and Land acquisition:

- USACE In-Lieu fee mitigation (for impacts to wetlands/Waters of the United States ("WOTUS")) will be provided at the appropriate percentage of the standard ratio dependent upon the impact category.
- Land acquisition at the cost per proposed parcel (if applicable/required by permitting authority).

Detailed mitigation packages will be developed in coordination with federal, state, and local permitting authorities, and will be designed to satisfy applicable permitting requirements.

NEP will be responsible for funding and land acquisition (if required), and NEP and their contractor will be mutually responsible for overseeing the implementation of all required mitigation measures. As applicable, wetlands replication, compensatory flood storage, and enhancement area plantings would occur according to schedule determined during permitting.

Land preservation involves a property transfer that could occur at any point during Project permitting or construction.

This page intentionally left blank.

11 DRAFT SECTION 61 FINDINGS

MEPA requires state agencies to make findings on environmental damage and mitigation measures before issuing a state permit for a Project requiring an EIR (301 CMR 11.07 - so-called Section 61 Findings). The MEPA regulations at 301 CMR 11.07(6)(k) require that the DEIR contain the proposed Section 61 Findings. In accordance with this requirement, NEP's proposed Section 61 Findings for the Project are presented in the following section.

These proposed findings incorporate consultations with various state agencies. While NEP will continue to consult with certain agencies concerning mitigation, this DEIR contains the most up-to-date information on the Project's mitigation measures, including those to which NEP has committed to and those under discussions with agencies. Each Section 61 Finding is essentially a stand-alone document, so it does not incorporate previously defined acronyms.

Proposed Section 61 Findings for MassDEP

DRAFT FINDINGS PURSUANT TO G.L. CHAPTER 30, SECTION 61

Project Name: A1/B2 Transmission Lines Asset Condition Refurbishment ("ACR") Project

Project Location: Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling.

Project Proponent: New England Power Company ("NEP")

EEA Number: 16607

Agency Actions: Massachusetts Department of Environmental Protection Section 401 Water Quality Certification

Intent of These Section 61 Findings: MEPA regulations *301 CMR 11.12(5)* stipulate that in "accordance with *M. G.L. c. 30, §61*, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that all practicable measures have been taken to avoid or minimize the damage to the environment." The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with *M.G.L. c. 30, §61*. These Findings are limited to the subject matter jurisdiction of the Section 401 Water Quality Certification sought from the Massachusetts Department of Environmental Protection.

Project Description: The Project includes complete refurbishment of 53.5 miles of 69 kV Transmission Line assets, including structures replacements and installations, access improvements or re-establishment and construction of new access, and vegetation management. New construction is proposed for this Project.

Comprehensive inspections have identified structures and wires in need of replacement due to asset condition and aging infrastructure, and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, and in order to extend asset life, the following activities are proposed:

- ROW vegetation management and tree removals: approximately 100 acres of within-ROW tree removals are required to obtain the optimal cleared ROW widths of 100 feet (mainline and Crystal Tap Line), and 125 feet (Athol Tap Line). These clearance widths are necessary to meet the NERC safety standards for a 115 kV Transmission Line.[43]

[43] Upgrading the A1/B2 Line to 115 kV is required to improve system capacity, and future-proof the system for anticipated increases in demand and new renewable energy interconnections.

- Tree removals to accommodate construction access: approximately 31 acres of off-ROW tree removals are required for access.
- Construction/re-establishment of approximately 33 miles of access routes (30 miles within-ROW, and 3 miles off-ROW).
- Replacement/installation of 580 direct embed structures, and 162 concrete caisson supported structures.
- Reconductoring of both the A1 and B2 circuits with 795 Aluminum-conductor steel-supported conductor ("ACSS"), and installation of two optical ground wires ("OPGW"). The new ACSS will be capable of being operated at 115 kV capacity, compared to the existing 69 kV capacity lines.
- Relocation of approximately 5.2 miles of centerline, approximately 41.5 feet north towards the I135S/J136S Transmission Lines within an existing ROW, in Leominster.

This Project requires an Individual Section 401 Water Quality Certification, primarily due to the discharge of fill material in Waters of the United States within the Commonwealth which require a permit from the United States Army Corps of Engineers (USACE). The Project also requires a Variance per the provisions of 314 CMR 9.08 due to structures located within wetlands that are located within the 400 feet OWHM of Class A Public Water Supply along two sections of the A1/B2 Line (refer to *Section 12.3.1* for further information). NEP will file a Water Quality Certificate application with MassDEP for review under *314 CMR 9.00*. MassDEP evaluation criteria for applications are the incorporation of appropriate and practicable measures for avoiding and minimizing impacts to wetland resource areas. NEP additionally will apply for a Variance under *314 CMR 9.08.* The Project's design avoids, minimizes, and mitigates adverse impacts, as described in *Section 10* of this DEIR, and summarized at the end of each Section 61 Draft Findings.

MEPA History: Pursuant to *M.G.L. c. 30 §61- §62A-I*, of the Massachusetts Environmental Policy Act ("MEPA") and its implementing regulations at *301 CMR 11.00*, the Proponent (NEP) has prepared and submitted this DEIR to the MEPA office. The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- ENF and an EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be alteration of one or more acres of bordering vegetated wetlands (*301 CMR 11.03(3)(a)(1)(a)*).
- EIR for Land because there is expected to alter 50 or more acres of land (*301 CMR 11.03(1)(1)*).
- EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be an alteration of ten or more acres of other wetlands (*301 CMR 11.03(3)(a)(1)(b*).
- EIR for Environmental Justice Populations as the Project is located within a Designated Geographic Area around an Environmental Justice Population (*301 CMR 11.06(7)(b*).

Additionally, the proposed Project requires state permits from the Massachusetts Department of Environmental Protection, Massachusetts Division of Fisheries & Wildlife Natural Heritage and Endangered Species Program, Department of Conservation and Recreation, Energy Facilities Siting Board, Department of Public Utilities, and Massachusetts Department of Transportation.

Project Impacts: Impacts relative to the Section 401 Water Quality Certificate include the permanent fill of approximately 2,302 SF of BVW and 79 SF of LUWW due to structure foundations, approximately 9.2 acres (400,752 SF) of forested wetland conversion due to tree removals (on and off-ROW), and approximately 38 acres (1,645,153 SF) of BVW temporarily altered by construction mats, as well as the anticipated "take" for work within rare species habitat by NHESP.

Project Mitigation: Mitigation was considered as a matter of course during the planning and design process as an overall approach to avoiding impacts whenever possible. In terms of mitigation during construction, NEP has established best management Practices ("BMPs") that are to be followed by NEP employees and its contractors for accessing sites and performing construction activities on transmission ROWs. These BMPs ensure that this Project will be completed in accordance with applicable environmental laws and regulations, as well as with NEP policies and compliance objectives. NEP completed field investigations and a constructability review along the Project route to determine access routes and construction techniques to be implemented during construction of the Project to provide an accurate impact assessment and to design work to avoid and minimize impacts within wetlands and other sensitive resources (e.g., cultural resources) to the greatest extent practicable. Accordingly, commitments listed in *Table 11-1* below are to be carried out by NEP, to ensure that proposed wetlands and waterways mitigation strategies will be implemented as the Project proceeds.

Table 11-1: Wetlands & Waterways Mitigation Strategies for the Project

Wetland Resource Area	Impact	Mitigation Measures*	Responsible Party / Implementation
Waters of the U.S. within the Commonwealth - Wetlands	Temporary alterations during construction; Permanent fill for structure foundations; Permanent conversion from PFO to PEM/PSS vegetation types.	*In-situ* restoration for construction matting. Restoration of impacted wetlands through seeding and plantings, as necessary. Compensatory Mitigation for wetlands permanently impacted by fill. Implementation of SWPPP.	Contractor / Construction / NEP Post-construction monitoring of wetland restorations and replications will be provided.
Waters of the U.S. within the Commonwealth - Waterways	Temporary alteration for access, work areas, and pull pads; Permanent impacts from one concrete caissons; Potential impacts to non-tidal waterways from overhead wires.	Use construction mats to minimize compression of soils, rutting, and disturbance of vegetation. Overhead crossings designed to avoid conflicts and allow for unimpeded access by foreseeable watercraft.	Contractor / Construction NEP / Planning

*Final Plans TBD with State and Local Regulatory Agencies

Findings: After the draft findings herein have been reviewed by MassDEP and revised by the Proponent, as appropriate, MassDEP will make a finding that the foregoing information adequately describes the environmental impacts associated with the Project, and that with the implementation of the mitigation measures described above, practicable means will have been taken to avoid or minimize adverse environmental impacts subject to MassDEP authority. Implementation of avoidance, minimization, and mitigation measures will occur in accordance with the terms and conditions set forth in the 401 Water Quality Certification.

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

WATER QUALITY CERTIFICATION

BY_____ DATE_____

Proposed Section 61 Findings for Natural Heritage and Endangered Species

DRAFT FINDINGS PURSUANT TO G.L. CHAPTER 30, SECTION 61

Project Name: A1/B2 Transmission Lines Asset Condition Refurbishment (ACR) Project

Project Location: Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling.

Project Proponent: New England Power Company ("NEP")

EEA Number: 16607

Agency Actions: Conservation and Management Permit from the Natural Heritage and Endangered Species Program of the Massachusetts Division of Fisheries and Wildlife under *321 CMR 10.23*.

Intent of These Section 61 Findings: MEPA regulations *301 CMR 11.12(5)* stipulate that in "accordance with *M.G.L. c. 30, §61*, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that practicable measures have been taken to avoid or minimize the damage to the environment." The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with *M.G.L. c. 30, §61*. These Findings are limited to the subject matter jurisdiction of the Conservation and Management Permit sought from the Natural Heritage and Endangered Species Program of the Massachusetts Division of Fisheries and Wildlife under *321 CMR 10.23*. However, recent consultations suggest that a potential "take" might be avoided altogether. This assessment will be further discussed in the FEIR.

Project Description: The Project includes complete refurbishment of 53.5 miles of 69 kV Transmission Line assets, including structure replacements and installations, access improvements or re-establishment and construction of new access, and vegetation management. New construction is proposed for this Project.

Comprehensive inspections have identified structures and wires in need of replacement due to asset condition and aging infrastructure, and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, and in order to extend asset life, the following activities are proposed:

- ROW vegetation management and tree removals: approximately 100 acres of within-ROW tree removals are required to obtain the optimal cleared ROW widths of 100 feet (Mainline

and Crystal Tap Line), and 125 feet (Athol Tap Line). These clearance widths are necessary to meet the NERC safety standards for a 115 kV Transmission Line[44].

- Tree removals to accommodate construction access: approximately 31 acres of off-ROW tree removals are required for access.
- Construction/re-establishment of approximately 33 miles of access routes (30 miles within-ROW, and 3 miles off-ROW).
- Replacement/installation of 580 direct embed structures, and 162 concrete caisson supported structures.
- Reconductoring of both the A1 and B2 circuits with 795 Aluminum-conductor steel-supported conductor ("ACSS"), and installation of two optical ground wires ("OPGW"). The new ACSS will be capable of being operated at 115 kV capacity, compared to the existing 69 kV capacity lines.
- Relocation of approximately 5.2 miles of centerline, approximately 41.5 feet north towards the I135S/J136S Transmission Lines within an existing ROW, in Leominster.

The Project includes installation of structures and access routes tree removals, and the use of temporary construction matting within wetlands, within NHESP Priority/Estimated Habitats for nine rare species. These include one plant, three invertebrates, one amphibian, one reptile, and three bird species.

MEPA History: Pursuant to *M.G.L. c. 30 §61- §62A-I*, of the Massachusetts Environmental Policy Act ("MEPA") and its implementing regulations at *301 CMR 11.00*, the Proponent (NEP) has prepared and submitted this DEIR to the MEPA office. The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- ENF and an EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be alteration of one or more acres of bordering vegetated wetlands (*301 CMR 11.03(3)(a)(1)(a)*).
- EIR for Land because there is expected to alter 50 or more acres of land (*301 CMR 11.03(1)(1)*).
- EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be an alteration of ten or more acres of other wetlands (*301 CMR 11.03(3)(a)(1)(b*).
- EIR for Environmental Justice Populations as the Project is located within a Designated Geographic Area around an Environmental Justice Population (*301 CMR 11.06(7)(b*).

[44] Upgrading the A1/B2 Line to 115 kV is required to improve system capacity, and future-proof the system for anticipated increases in demand and new renewable energy interconnections.

Additionally, the proposed Project requires state permits from the Massachusetts Department of Environmental Protection, Massachusetts Division of Fisheries & Wildlife Natural Heritage and Endangered Species Program, Department of Conservation and Recreation, Energy Facilities Siting Board, Department of Public Utilities, and Massachusetts Department of Transportation.

Project Impacts: Specifically, Project activities within NHESP Priority/Estimated habitats will result in approximately 2.7 acres of permanent conversion of vegetation from one cover type to another (tree removal), approximately 16 acres of permanent alteration due to graded stone access and work areas, and approximately 6 acres of temporary alteration associated with construction matting within wetlands and waterways.

Consultations suggest that a potential "take" might be avoided altogether. This assessment will be further discussed in the FEIR.

Project Mitigation: Mitigation was considered as a matter of course during the planning and design process as an overall approach to avoiding impacts whenever possible. In terms of mitigation during construction, NEP has established procedures that are to be followed by all NEP employees and its contractors for accessing sites and performing construction activities on transmission ROWs. These procedures ensure that this Project will be completed in accordance with applicable environmental laws and regulations as well as with NEP policies and compliance objectives. NEP completed field investigations and a constructability review along the Project route to determine access routes, clearing techniques, and construction techniques to be implemented during construction of the Project to provide an accurate impact assessment and to design work to avoid and minimize impacts within sensitive resources to the greatest extent practicable.

NEP is working closely with NHESP to develop mitigation measures for each species, and consultation is ongoing. The Project will implement the necessary actions to avoid, minimize, and mitigate Project-related impacts to comply with the Massachusetts Endangered Species Act ("MESA") permit issued for the Project.

At this time, proposed mitigation includes, but is not limited to, the following:

- Preparation of a CMP for the rare reptile for which a "take" is anticipated.
- Specialized construction measures and commitments to avoid impacts in specific locations. These are tailored to the species of concern in each location and are outlined in *Section 5* of this DEIR.
- *In-situ* habitat restoration of temporarily disturbed areas.
- Construction windows/Time-of-year restrictions (specific to each species of concern).
- Protective fencing and enclosures/exclusions (where applicable).
- Extensive "sweeps" and monitoring during construction (where applicable).
  Training on species biology, identification, and mitigation requirements for construction personnel working within rare species habitat areas.

A detailed mitigation plan will be prepared in conjunction with NHESP during the MESA Review, which is currently (as of August 15, 2023) in progress. Initial consultation with NHESP began in May 2022, prior to the filing of the EENF in October 2022. Consultation has been ongoing throughout the Project permitting process.

Findings: After the draft findings herein have been reviewed by Massachusetts Division of Fisheries and Wildlife, Natural Heritage and Endangered Species Program, and revised by the Proponent, as appropriate, the Natural Heritage and Endangered Species Program will make a finding that the foregoing information adequately describes the environmental impacts associated with the Project, and that with the implementation of the mitigation measures described above, practicable means will have been taken to avoid or minimize adverse environmental impacts subject to NHESP authority.

NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM

MASSACHUSETTS DIVISION OF FISHERIES AND WILDLIFE

BY_____ DATE_____

Proposed Section 61 Findings for MassDOT

DRAFT FINDINGS PURSUANT TO G.L. CHAPTER 30, SECTION 61

Project Name: A1/B2 Transmission Lines Asset Condition Refurbishment (ACR) Project

Project Location: Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling.

Project Proponent: New England Power Company ("NEP")

EEA Number: 16607

Agency Action: Massachusetts Department of Transportation Permit to Access State Highway

Intent of These Section 61 Findings: MEPA regulations *301 CMR 11.12(5)* stipulate that in "accordance with *M.G.L. c. 30, §61*, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that practicable measures have been taken to avoid or minimize the damage to the environment." The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with *M.G.L. c. 30, §61*. These Findings are limited to the subject matter jurisdiction of the State Highway Access Permit sought from the Massachusetts Department of Transportation ("MassDOT").

Project Description: The Project includes complete refurbishment of 53.5 miles of 69 kV Transmission Line assets, including structure replacements and installations, access improvements or re-establishment and construction of new access, and vegetation management. New construction is proposed for this Project.

Comprehensive inspections have identified structures and wires in need of replacement due to asset condition and aging infrastructure, and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, and in order to extend asset life, the following activities are proposed:

- ROW vegetation management and tree removals: approximately 100 acres of within-ROW tree removals are required to obtain the optimal cleared ROW widths of 100 feet (Mainline and Crystal Tap Line), and 125 feet (Athol Tap Line). These clearance widths are necessary to meet the NERC safety standards for a 115 kV Transmission Line[45].

[45] Upgrading the A1/B2 Line to 115 kV is required to improve system capacity, and future-proof the system for anticipated increases in demand and new renewable energy interconnections.

- Tree removals to accommodate construction access: approximately 31 acres of off-ROW tree removals are required for access.
- Construction/re-establishment of approximately 33 miles of access routes (30 miles within-ROW, and 3 miles off-ROW).
- Replacement/installation of 580 direct embed structures, and 162 concrete caisson supported structures.
- Reconductoring of both the A1 and B2 circuits with 795 Aluminum-conductor steel-supported conductor ("ACSS"), and installation of two optical ground wires ("OPGW"). The new ACSS will be capable of being operated at 115 kV capacity, compared to the existing 69 kV capacity lines.
- Relocation of approximately 5.2 miles of centerline, approximately 41.5 feet north towards the I135S/J136S Transmission Lines within an existing ROW, in Leominster.

The Project includes installation of structures and access routes within the highway layout, as well as temporary access to pull conductor across the highway subject to *700 CMR 13.00*.

MEPA History: Pursuant to *M.G.L. c. 30 §61- §62A-I*, of the Massachusetts Environmental Policy Act ("MEPA") and its implementing regulations at *301 CMR 11.00*, the Proponent (NEP) has prepared and submitted this DEIR to the MEPA office. The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- ENF and an EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be alteration of one or more acres of bordering vegetated wetlands (*301 CMR 11.03(3)(a)(1)(a)*).
- EIR for Land because there is expected to alter 50 or more acres of land (*301 CMR 11.03(1)(1)*).
- EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be an alteration of ten or more acres of other wetlands (*301 CMR 11.03(3)(a)(1)(b*).
- EIR for Environmental Justice Populations as the Project is located within a Designated Geographic Area around an Environmental Justice Population (*301 CMR 11.06(7)(b*).

Additionally, the proposed Project requires state permits from the Massachusetts Department of Environmental Protection, Massachusetts Division of Fisheries & Wildlife Natural Heritage and Endangered Species Program, Department of Conservation and Recreation, Energy Facilities Siting Board, Department of Public Utilities, and Massachusetts Department of Transportation.

Project Impacts: Project impacts relevant to MassDOT are associated with the replacement of overhead wires across state highways by a non-municipal utility. In addition, a new access route is proposed from the highway to the ROW, as well as the installation of several structures within the highway layout. Guard structures will be used to ensure the safe removal and replacement of the overhead wires. Guard structures will be situated within the NEP ROW at state roadway

crossings (specific locations currently under review). Activities at state roadway crossings could temporarily affect traffic flow, but no permanent physical modifications to the roadway are proposed. Access to the NEP ROW from state highways will occur via existing approved access points.

Project Mitigation: Mitigation was considered as a matter of course during the planning and design process as an overall approach to avoiding impacts whenever possible. In terms of mitigation during construction, NEP has established procedures that are to be followed by NEP employees and its contractors for accessing sites and performing construction activities on NEP transmission ROWs. These procedures ensure that this Project will be completed in accordance with applicable environmental laws and regulations as well as with NEP policies and compliance objectives. NEP completed field investigations and conducted a constructability review along the Project route to determine access routes, clearing techniques, and construction techniques to be implemented during construction of the Project to provide an accurate impact assessment and to design work to avoid and minimize impacts within wetlands and other sensitive resources (e.g., cultural resources) to the greatest extent practicable.

MassDOT Districts 2 and 3 will be contacted to discuss specific design information and anticipated Project activities within highway jurisdiction. With MassDOT input, a Traffic Management Plan ("TMP") will be developed and submitted for review and approval prior to the start of construction. Enforceable commitments in the TMP will be carried out by NEP to ensure that proposed traffic mitigation strategies will be implemented as the Project proceeds. Such strategies may include, as appropriate, traffic management procedures; construction time restrictions; signage; installation of track pads to minimize soil in roadways; and/or restoration of vegetation along soft shoulders after construction. Work will occur in accordance with NEP Policy for ROW Access, Maintenance and Construction Best Management Practices.

Findings: After the draft findings herein have been reviewed by Massachusetts Department of Transportation, and revised by the Proponent, as appropriate, the Massachusetts Department of Transportation will make a finding that the foregoing information adequately describes the traffic impacts associated with the Project, and that with the implementation of the mitigation measures described above, practicable means will have been taken to avoid or minimize adverse environmental impacts subject to Massachusetts Department of Transportation's authority. Appropriate conditions consistent with this Section 61 Finding are included in the State Permit to Access State Highway issued by Massachusetts Department of Transportation to describe more fully and ensure implementation of said measures.

DEPARTMENT OF TRANSPORTATION

BY_____ DATE_____

Proposed Section 61 Findings for Department of Conservation and Recreation (DCR)

TO BE UPDATED BY LEGAL

DRAFT FINDINGS PURSUANT TO G.L. CHAPTER 30, SECTION 61

Project Name: A1/B2 Transmission Lines Asset Condition Refurbishment (ACR) Project

Project Location: Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling.

Project Proponent: New England Power Company ("NEP")

EEA Number: 16607

Agency Action: Department of Conservation and Recreation Construction Access Permits

Intent of These Section 61 Findings: MEPA regulations *301 CMR 11.12(5)* stipulate that in "accordance with *M.G.L. c. 30, §61*, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that practicable measures have been taken to avoid or minimize the damage to the environment." The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with *M.G.L. c. 30, §61*. These Findings are limited to the subject matter jurisdiction of the Construction Access Permit sought from the Massachusetts DCR.

Project Description: The Project includes complete refurbishment of 53.5 miles of 69 kV Transmission Line assets,including structure replacements and installations, access improvements or re-establishment and construction of new access, and vegetation management. New construction is proposed for this Project.

Comprehensive inspections have identified structures and wires in need of replacement due to asset condition and aging infrastructure, and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, and in order to extend asset life, the following activities are proposed:

- ROW vegetation management and tree removals: approximately 100 acres of within-ROW tree removals are required to obtain the optimal cleared ROW widths of 100 feet (Mainline and Crystal Tap Line), and 125 feet (Athol Tap Line). These clearance widths are necessary to meet the NERC safety standards for a 115 kV Transmission Line[46].

[46] Upgrading the A1/B2 Line to 115 kV is required to improve system capacity, and future-proof the system for anticipated increases in demand and new renewable energy interconnections.

- Tree removals to accommodate construction access: approximately 31 acres of off-ROW tree removals are required for access.
- Construction/re-establishment of approximately 33 miles of access routes (30 miles within-ROW, and 3 miles off-ROW).
- Replacement/installation of 580 direct embed structures, and 162 concrete caisson supported structures.
- Reconductoring of both the A1 and B2 circuits with 795 Aluminum-conductor steel-supported conductor ("ACSS"), and installation of two optical ground wires ("OPGW"). The new ACSS will be capable of being operated at 115 kV capacity, compared to the existing 69 kV capacity lines.
- Relocation of approximately 5.2 miles of centerline, approximately 41.5 feet north towards the I135S/J136S Transmission Lines within an existing ROW, in Leominster.

The Project includes on and off-ROW tree removal and construction activities within DCR properties of the Commonwealth under the care, custody, and control of the DCR under 302 CMR 11.00.

MEPA History: Pursuant to M.G.L. c. 30 §61- §62A-I, of the Massachusetts Environmental Policy Act ("MEPA") and its implementing regulations at *301 CMR 11.00*, the Proponent (NEP) has prepared and submitted this DEIR to the MEPA office. The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- ENF and an EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be alteration of one or more acres of bordering vegetated wetlands (301 CMR 11.03(3)(a)(1)(a)).
- EIR for Land because there is expected to alter 50 or more acres of land (301 CMR 11.03(1)(1)).
- EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be an alteration of ten or more acres of other wetlands (301 CMR 11.03(3)(a)(1)(b).

  EIR for Environmental Justice Populations as the Project is located within a Designated Geographic Area around an Environmental Justice Population (301 CMR 11.06(7)(b).

Additionally, the proposed Project requires state permits from the Massachusetts Department of Environmental Protection, Massachusetts Division of Fisheries & Wildlife Natural Heritage and Endangered Species Program, Department of Conservation and Recreation, Energy Facilities Siting Board, Department of Public Utilities, and Massachusetts Department of Transportation.

Project Impacts: Impacts relevant to the DCR Construction Access Permits ("CAP") include approximately 3.5 acres of within-ROW and 0.5 acres of off-ROW permanent conversion of vegetation from one cover type to another (tree removals within DCR Land), access

construction/improvement of approximately 879.6 LF off-ROW and 80 LF within-ROW access and grading of approximately 26 acres on-ROW and 0.5 acres off-ROW within DCR Land. 14 concrete caisson foundations and 44 direct embed structures (58 structures total), resulting in 2,338 SF of impacts are proposed within DCR Land.

Project Mitigation: Mitigation was considered as a matter of course during the planning and design process as an overall approach to avoiding impacts whenever possible. In terms of mitigation during construction, NEP has established procedures that are to be followed by NEP employees and its contractors for accessing sites and performing construction activities on NEP transmission ROWs. These procedures ensure that this Project will be completed in accordance with applicable environmental laws and regulations as well as with NEP policies and compliance objectives. NEP completed field investigations and conducted a constructability review along the Project route to determine access routes, clearing techniques, and construction techniques to be implemented during construction of the Project to provide an accurate impact assessment and to design work to avoid and minimize impacts within wetlands and other sensitive resources (e.g., cultural resources) to the greatest extent practicable.

At this time, proposed mitigation may include, but is not limited to, the following:

- Any and work will be conducted according to the CAP terms and conditions.
- Work will be performed in accordance with applicable statutes, regulations, codes, or standards.
- NEP will coordinate with the DCR Staff Archaeologist and Ecologist prior to the commencement of work.
- Appropriate mitigation and/or in-lieu fees will be provided for activities which result in disruption to DCR properties.

Coordination with DCR is ongoing.

Findings: After the draft findings herein have been reviewed by DCR, and revised by the Proponent, as appropriate, DCR will make a finding that the foregoing information adequately describes the environmental impacts associated with the Project, and that with the implementation of the mitigation measures described above, practicable means will have been taken to avoid or minimize adverse environmental impacts subject to DCR authority.

DEPARTMENT OF CONSERVATION AND RECREATION

BY_____ DATE_____

Proposed Section 61 Findings for the Executive Office of Energy and Environmental Affairs Environmental Justice

DRAFT FINDINGS PURSUANT TO G.L. CHAPTER 30, SECTION 61

Project Name: A1/B2 Transmission Lines Asset Condition Refurbishment (ACR) Project

Project Location: Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling.

Project Proponent: New England Power Company ("NEP")

EEA Number: 16607

Agency Action: Executive Office of Energy and Environmental Affairs ("EOEEA") - Environmental Justice

Intent of These Section 61 Findings: MEPA regulations *301 CMR 11.12(5)* stipulate that in "accordance with *M.G.L. c. 30, §61*, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that practicable measures have been taken to avoid or minimize the damage to the environment." The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with *M.G.L. c. 30, §61*. These Findings are limited to the subject matter jurisdiction of the MEPA Interim Protocol for Analysis of Environmental Justice (EJ) Impacts, which implements requirements related to the content of Environmental Impact Reports (EIRs) as set forth in Section 58 of the Act.

Project Description: The Project includes complete refurbishment of 53.5 miles of 69 kV Transmission Line assets, including structure replacements and installations, access improvements or re-establishment and construction of new access, and vegetation management. New construction is proposed for this Project.

Comprehensive inspections have identified structures and wires in need of replacement due to asset condition and aging infrastructure, and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, and in order to extend asset life, the following activities are proposed:

- ROW vegetation management and tree removals: approximately 100 acres of within-ROW tree removals are required to obtain the optimal cleared ROW widths of 100 feet (Mainline

and Crystal Tap Line), and 125 feet (Athol Tap Line). These clearance widths are necessary to meet the NERC safety standards for a 115 kV Transmission Line[47].

- Tree removals to accommodate construction access: approximately 31 acres of off-ROW tree removals are required for access.
- Construction/re-establishment of approximately 33 miles of access routes (30 miles within-ROW, and 3 miles off-ROW).
- Replacement/installation of 580 direct embed structures, and 162 concrete caisson supported structures.
- Reconductoring of both the A1 and B2 circuits with 795 Aluminum-conductor steel-supported conductor ("ACSS"), and installation of two optical ground wires ("OPGW"). The new ACSS will be capable of being operated at 115 kV capacity, compared to the existing 69 kV capacity lines.
- Relocation of approximately 5.2 miles of centerline, approximately 41.5 feet north towards the I135S/J136S Transmission Lines within an existing ROW, in Leominster.

MEPA History: Pursuant to *M.G.L. c. 30 §61- §62A-I*, of the Massachusetts Environmental Policy Act ("MEPA") and its implementing regulations at *301 CMR 11.00*, the Proponent (NEP) has prepared and submitted this DEIR to the MEPA office. The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- ENF and an EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be alteration of one or more acres of bordering vegetated wetlands *(301 CMR 11.03(3)(a)(1)(a))*.
- EIR for Land because there is expected to alter 50 or more acres of land *(301 CMR 11.03(1)(1))*.
- EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be an alteration of ten or more acres of other wetlands *(301 CMR 11.03(3)(a)(1)(b)*.
- EIR for Environmental Justice Populations as the Project is located within a Designated Geographic Area around an Environmental Justice Population *(301 CMR 11.06(7)(b)*.

Additionally, the proposed Project requires state permits from the Massachusetts Department of Environmental Protection, Massachusetts Division of Fisheries & Wildlife Natural Heritage and Endangered Species Program, Department of Conservation and Recreation, Energy Facilities Siting Board, Department of Public Utilities, and Massachusetts Department of Transportation.

[47] Upgrading the A1/B2 Line to 115 kV is required to improve system capacity, and future-proof the system for anticipated increases in demand and new renewable energy interconnections.

Project Impacts: Impacts relevant to the EOEEA EJ Populations include approximately 19 acres of tree removal within the EJ Populations, 8.6 acres of temporary alteration associated with construction matting, and 5.7 acres of permanent fill/loss associated with establishment of access routes, work areas and pull pads, and structure installation. Overall, just 3.2% of the Project area and impacts will occur within EJ Communities. As such, NEP anticipates that the Project will not have unfair or inequitable impacts on the EJ Populations within the designated geographic area.

Project Mitigation: The Project will occur within the existing ROW, thereby minimizing adverse environmental impacts, outage constraints in the region, and NEP's efforts to reduce impacts to the natural and human environment, Project activities will be sequenced in both the mainline and tap lines. No long-term impacts on soil, bedrock, vegetation, surface water, groundwater, wetland resources or air quality will occur. Any potential sedimentation impacts, and other short-term construction impacts to wetlands and surface waters, will be mitigated using soil erosion and sediment control best management practices ("BMPs") and temporary construction mats to protect wetland soils, vegetation root stock, and streams. As part of the Project, an environmental monitor will be part of the Project team to ensure compliance with regulatory programs and permit conditions, and to oversee the proper installation and maintenance of the soil erosion and sediment control BMPs. At this time, proposed mitigation includes, but is not limited to, the following:

Air Quality: Construction-period activities, such as grading, vehicle travel, and other earth-disturbing work may result in a temporary increase in airborne dust. Impacts to air quality will be minimized by managing the control of dust movement with practices such as spreading wood mulch or straw and using water trucks to spray dried soil to keep it moist. The potential for dust generation is only anticipated during the construction period. Post construction, soil will be stabilized and re-vegetated.

In addition, diesel-powered equipment is required to use ultra-low sulfur diesel fuel. Any diesel-powered non-road construction equipment rated 50-horsepower or more that will be used on the Project for 30 days or more will be required to install emission control BMPs. The impacts from these emissions will be minimal and are not anticipated to cause impacts to public health. Additionally, idling times are limited to five minutes except when engine power is necessary for the delivery of materials or to operate accessories to the vehicle such as power lifts. Vehicle idling is to be minimized during construction activities and be in compliance with the Massachusetts Anti-idling Law, M.G.L. c. 90 § 16A, c. 111 §§ 142A – 142M, and 310 CMR 7.11.

Water Quality: The project will incorporate protective and preventative measures to minimize and avoid impacts to water quality. The ROWs cross many wetland areas, streams, and rivers. To protect water quality and these sensitive areas, temporary access will be constructed using construction mats. Construction mats are comprised of wooden beams, bolted together, and are typically 4 feet wide by 16 feet long. They are laid temporarily on top of the ground and vegetation. These mats allow heavy machines and vehicles to cross sensitive areas without damaging the soil or roots of vegetation and are also placed in a manner that do not affect the flow of water in streams. These mats will be removed when construction is completed, and the wetlands will be restored. In addition, BMPs, such as the use of straw wattles, compost socks, stormwater management features,

and other control measures will be used to prevent soil and other material from being transported into wetlands and streams. Using these BMPs, any impacts to water quality will be negligible and temporary and are not anticipated to cause impacts to public health.

Land Protection and Open Space: Access to Protected Land and Open Space within EJ Populations will not be impacted.

Noise: Noise impacts associated with construction-period activities are temporary in nature and expected to be minimal. Where construction will occur adjacent to residences, NEP will notify landowners prior to the commencement of work. Noise-generating activities will be conducted in accordance with any local and state requirements and are not anticipated to cause impacts to public health.

Traffic: Impacts to traffic during the construction of the Project will be minor and intermittent. The work areas will be accessed primarily from NEP-owned access routes or minor town roadways. NEP will obtain the necessary permits from Massachusetts Department of Transportation for access. Once on-site, vehicle traffic will be limited to within or in proximity to the ROW. Since the ROW is an un-manned facility, there will be no permanent impacts to traffic patterns or use of existing roadways and no impacts to public health are anticipated from traffic.

Findings: After the draft findings herein have been reviewed by the EOEEA - EJ Program, and revised by the Proponent, as appropriate, the EOEEA - EJ Program will make a finding that the foregoing information adequately describes the environmental impacts to the EJ Populations associated with the proposed Project, and that with the implementation of the mitigation measures described above, feasible means will have been taken to avoid or minimize adverse environmental impacts subject to EOEEA's EJ authority.

DEPARTMENT OF EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS

BY_____ DATE_____

Proposed Section 61 Findings for Climate Protocol

DRAFT FINDINGS PURSUANT TO G.L. CHAPTER 30, SECTION 61

Project Name: A1/B2 Transmission Lines Asset Condition Refurbishment (ACR) Project

Project Location: Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling.

Project Proponent: New England Power Company ("NEP")

EEA Number: 16607

Agency Action: Executive Office of Energy and Environmental Affairs ("EOEEA") – Climate Change

Intent of These Section 61 Findings: MEPA regulations 301 CMR 11.12(5) stipulate that in "accordance with M.G.L. c. 30, §61, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that all practicable measures have been taken to avoid or minimize the damage to the environment." The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with M.G.L. c. 30, §61. These Findings are limited to the subject matter jurisdiction of the Massachusetts Environmental Policy Act ("MEPA") Interim Protocol on Climate Change Adaptation and Resiliency ("Interim Protocol") which complies with Executive Order 569.

Project Description: The Project includes complete refurbishment of 53.5 miles of 69 kV Transmission Line assets, including structure replacements and installations, access improvements or re-establishment and construction of new access, and vegetation management. New construction is proposed for this Project.

Comprehensive inspections have identified structures and wires in need of replacement due to asset condition and aging infrastructure, and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, and in order to extend asset life, the following activities are proposed:

- ROW vegetation management and tree removals: approximately 100 acres of within-ROW tree removals are required to obtain the optimal cleared ROW widths of 100 feet (Mainline and Crystal Tap Line), and 125 feet (Athol Tap Line). These clearance widths are necessary to meet the NERC safety standards for a 115 kV Transmission Line[48].

[48] Upgrading the A1/B2 Line to 115 kV is required to improve system capacity, and future-proof the system for anticipated increases in demand and new renewable energy interconnections.

- Tree removals to accommodate construction access: approximately 31 acres of off-ROW tree removals are required for access.
- Construction/re-establishment of approximately 33 miles of access routes (30 miles within-ROW, and 3 miles off-ROW).
- Replacement/installation of 580 direct embed structures, and 162 concrete caisson supported structures.
- Reconductoring of both the A1 and B2 circuits with 795 Aluminum-conductor steel-supported conductor ("ACSS"), and installation of two optical ground wires ("OPGW"). The new ACSS will be capable of being operated at 115 kV capacity, compared to the existing 69 kV capacity lines.
- Relocation of approximately 5.2 miles of centerline, approximately 41.5 feet north towards the I135S/J136S Transmission Lines within an existing ROW, in Leominster.

MEPA History: Pursuant to M.G.L. c. 30 §61- §62A-I, of the Massachusetts Environmental Policy Act ("MEPA") and its implementing regulations at 301 CMR 11.00, the Proponent (NEP) has prepared and submitted this DEIR to the MEPA office. The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- ENF and an EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be alteration of one or more acres of bordering vegetated wetlands (301 CMR 11.03(3)(a)(1)(a)).
- EIR for Land because there is expected to alter 50 or more acres of land (301 CMR 11.03(1)(1)).
- EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be an alteration of ten or more acres of other wetlands (301 CMR 11.03(3)(a)(1)(b).
- EIR for Environmental Justice Populations as the Project is located within a Designated Geographic Area around an Environmental Justice Population (301 CMR 11.06(7)(b).

Additionally, the proposed Project requires state permits from the Massachusetts Department of Environmental Protection, Massachusetts Division of Fisheries & Wildlife Natural Heritage and Endangered Species Program, Department of Conservation and Recreation, Energy Facilities Siting Board, Department of Public Utilities, and Massachusetts Department of Transportation.

Project Impacts: NEP hired Regenerative Design Group ("RDG") to develop an estimate for the carbon impact (removals and losses) from Land Alteration. The analysis found that the Project would result in a one-time loss of 11,199 mt of carbon from the removal of trees and the short-term effects of that removal on soil and forest floor carbon. Over the next thirty years the area is expected to recover through sequestration 1,338 mt of carbon resulting in an estimated net loss of 9,861 mt of carbon. Additionally, the removal of trees and maintenance of much of the area as shrubland results in a loss in sequestration potential over thirty years of 2,302 mt of carbon. Within

the combined 131-acre footprint where tree removals are proposed, we estimate that up to 12,164 mt of carbon would be released or not sequestered over the next 30 years. Building upon the estimation of GHG emissions from land alteration, SWCA estimated the overall change in GHG emissions associated with the project and found that the Project will result in a net reduction in CO2e emissions of 117,424 metric tons.

Project Mitigation: NEP has taken steps to promote climate change adaptation and resiliency in the design of the Project and continues to consider climate change and long-term infrastructure resiliency an important goal in its long-term infrastructure planning. The Project will result in a more climate-ready and resilient transmission system that can withstand more extreme weather events; address existing system capacity shortages and increased demand; and support future interconnections from renewable energy projects. In addition, NEP's preferred solution uses substantial portions of the existing ROW, thereby minimizing alteration of new land resources to construct the Project. The purpose of the Project is to address existing asset conditions along the A1/B2 Lines that pose a threat to electrical reliability. Furthermore, NEP is also working with landowners, its contractors, local organizations, and the state to ensure that marketable timber and biomass suitable for use as firewood is utilized. These actions reduce the level of GHG emission that will actually occur when the forest is disturbed.

Findings: After the draft findings herein have been reviewed by the EOEEA - Climate Change Program, and revised by the Proponent, as appropriate, the EOEEA - Climate Change Program will make a finding that the foregoing information adequately describes the environmental impacts to the climate associated with the proposed Project, and that with the implementation of the mitigation measures described above, feasible means will have been taken to avoid or minimize adverse climate impacts subject to the MEPA Interim Protocol on Climate Change Adaptation and Resiliency.

DEPARTMENT OF EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS

BY_____ DATE_____

Proposed Section 61 Findings for the Energy Facilities Siting Board

DRAFT FINDINGS PURSUANT TO G.L. CHAPTER 30, SECTION 61

Project Name: A1/B2 Transmission Lines Asset Condition Refurbishment (ACR) Project

Project Location: Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling.

Project Proponent: New England Power Company ("NEP")

EEA Number: 16607

Agency Action: Massachusetts Energy Facilities Siting Board (EFSB)

Intent of These Section 61 Findings: MEPA regulations *301 CMR 11.12(5)* stipulate that in "accordance with *M.G.L. c. 30, §61*, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that practicable measures have been taken to avoid or minimize the damage to the environment." The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with *M.G.L. c. 30, §61*. These Findings are limited to the subject matter jurisdiction of the Energy Facilities Siting Board ("EFSB").

Project Description: The Project includes complete refurbishment of 53.5 miles of 69 kV Transmission Line assets, including structure replacements and installations, access improvements or re-establishment and construction of new access, and vegetation management. New construction is proposed for this Project.

Comprehensive inspections have identified structures and wires in need of replacement due to asset condition and aging infrastructure, and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, and in order to extend asset life, the following activities are proposed:

- ROW vegetation management and tree removals: approximately 100 acres of within-ROW tree removals are required to obtain the optimal cleared ROW widths of 100 feet (Mainline and Crystal Tap Line), and 125 feet (Athol Tap Line). These clearance widths are necessary to meet the NERC safety standards for a 115 kV Transmission Line[49].
- Tree removals to accommodate construction access: approximately 31 acres of off-ROW tree removals are required for access.

[49] Upgrading the A1/B2 Line to 115 kV is required to improve system capacity, and future-proof the system for anticipated increases in demand and new renewable energy interconnections.

- Construction/re-establishment of approximately 33 miles of access routes (30 miles within-ROW, and 3 miles off-ROW).
- Replacement/installation of 580 direct embed structures, and 162 concrete caisson supported structures.
- Reconductoring of both the A1 and B2 circuits with 795 Aluminum-conductor steel-supported conductor ("ACSS"), and installation of two optical ground wires ("OPGW"). The new ACSS will be capable of being operated at 115 kV capacity, compared to the existing 69 kV capacity lines.
- Relocation of approximately 5.2 miles of centerline, approximately 41.5 feet north towards the I135S/J136S Transmission Lines within an existing ROW, in Leominster.

The Project includes installation of structures and access routes within the highway layout, as well as temporary access to pull conductor across the highway subject to *700 CMR 13.00*.

MEPA History: Pursuant to *M.G.L. c. 30 §61- §62A-I*, of the Massachusetts Environmental Policy Act ("MEPA") and its implementing regulations at *301 CMR 11.00*, the Proponent (NEP) has prepared and submitted this DEIR to the MEPA office. The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- ENF and an EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be alteration of one or more acres of bordering vegetated wetlands (*301 CMR 11.03(3)(a)(1)(a)*).
- EIR for Land because there is expected to alter 50 or more acres of land (*301 CMR 11.03(1)(1)*).
- EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be an alteration of ten or more acres of other wetlands (*301 CMR 11.03(3)(a)(1)(b*).
- EIR for Environmental Justice Populations as the Project is located within a Designated Geographic Area around an Environmental Justice Population (*301 CMR 11.06(7)(b*).

Additionally, the proposed Project requires state permits from the Massachusetts Department of Environmental Protection, Massachusetts Division of Fisheries & Wildlife Natural Heritage and Endangered Species Program, Department of Conservation and Recreation, Energy Facilities Siting Board, Department of Public Utilities, and Massachusetts Department of Transportation.

Project Impacts: The Energy Facilities Siting Board ("EFSB") evaluated the Project to determine public necessity and environmental impacts. Project impacts relevant to EFSB include natural resources impacts such as permanent and temporary impact associated with structure replacements, access improvements, and construction matting, and social impacts such as Environmental Justice considerations, traffic impacts, and historic or archaeological impact. A full description of Project impact analysis was provided in the EFSB filing to the Massachusetts EFSB (Docket No. EFSB 23-45).

Project Mitigation: NEP considered avoidance and minimization as a matter of course during the planning and design process, with an overall approach of avoiding impacts whenever possible. Avoidance, minimization and mitigation was provided in the EFSB filing to the Massachusetts EFSB (Docket No. EFSB 23-45).

Findings: Providing significant consideration to the unique scope of the Project and the significant length, cost, and reliability concerns, NEP conducted a route analysis in the EFSB filing. Route evaluation relied heavily on NEP's responsibility to ensure that no clearly superior route was overlooked. As a result of the in-depth screening process, no candidate routes were found to meet the route evaluation criteria and/or provide benefits comparable to rebuilding the Existing Lines and Tap Lines within their existing ROWs, the Project Route. NEP concluded that, consistent with the Siting Board's statutory mandate, the construction of the Project along the Project Route properly minimizes environmental impacts and achieves an appropriate balance among conflicting environmental concerns, as well as among environmental impacts, cost, and reliability.

ENERGY FACILITIES SITING BOARD

BY_____ DATE_____

Proposed Section 61 Findings for the Department of Public Utilities

DRAFT FINDINGS PURSUANT TO G.L. CHAPTER 30, SECTION 61

Project Name: A1/B2 Transmission Lines Asset Condition Refurbishment (ACR) Project

Project Location: Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling.

Project Proponent: New England Power Company ("NEP")

EEA Number: 16607

Agency Action: Massachusetts Department of Public Utilities (DPU)

Intent of These Section 61 Findings: MEPA regulations *301 CMR 11.12(5)* stipulate that in "accordance with *M.G.L. c. 30, §61*, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that practicable measures have been taken to avoid or minimize the damage to the environment." The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with *M.G.L. c. 30, §61*. These Findings are limited to the subject matter jurisdiction of the Department of Public Utilities.

Project Description: The Project includes complete refurbishment of 53.5 miles of 69 kV Transmission Line assets, including structure replacements and installations, access improvements or re-establishment and construction of new access, and vegetation management. New construction is proposed for this Project.

Comprehensive inspections have identified structures and wires in need of replacement due to asset condition and aging infrastructure, and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, and in order to extend asset life, the following activities are proposed:

- ROW vegetation management and tree removals: approximately 100 acres of within-ROW tree removals are required to obtain the optimal cleared ROW widths of 100 feet (Mainline and Crystal Tap Line), and 125 feet (Athol Tap Line). These clearance widths are necessary to meet the NERC safety standards for a 115 kV Transmission Line[50].
- Tree removals to accommodate construction access: approximately 31 acres of off-ROW tree removals are required for access.

[50] Upgrading the A1/B2 Line to 115 kV is required to improve system capacity, and future-proof the system for anticipated increases in demand and new renewable energy interconnections.

- Construction/re-establishment of approximately 33 miles of access routes (30 miles within-ROW, and 3 miles off-ROW).
- Replacement/installation of 580 direct embed structures, and 162 concrete caisson supported structures.
- Reconductoring of both the A1 and B2 circuits with 795 Aluminum-conductor steel-supported conductor ("ACSS"), and installation of two optical ground wires ("OPGW"). The new ACSS will be capable of being operated at 115 kV capacity, compared to the existing 69 kV capacity lines.
- Relocation of approximately 5.2 miles of centerline, approximately 41.5 feet north towards the I135S/J136S Transmission Lines within an existing ROW, in Leominster.

The Project includes installation of structures and access routes within the highway layout, as well as temporary access to pull conductor across the highway subject to *700 CMR 13.00*.

MEPA History: Pursuant to *M.G.L. c. 30 §61- §62A-I*, of the Massachusetts Environmental Policy Act ("MEPA") and its implementing regulations at *301 CMR 11.00*, the Proponent (NEP) has prepared and submitted this DEIR to the MEPA office. The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- ENF and an EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be alteration of one or more acres of bordering vegetated wetlands (*301 CMR 11.03(3)(a)(1)(a)*).
- EIR for Land because there is expected to alter 50 or more acres of land (*301 CMR 11.03(1)(1)*).
- EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be an alteration of ten or more acres of other wetlands (*301 CMR 11.03(3)(a)(1)(b*).
- EIR for Environmental Justice Populations as the Project is located within a Designated Geographic Area around an Environmental Justice Population (*301 CMR 11.06(7)(b*).

Additionally, the proposed Project requires state permits from the Massachusetts Department of Environmental Protection, Massachusetts Division of Fisheries & Wildlife Natural Heritage and Endangered Species Program, Department of Conservation and Recreation, Energy Facilities Siting Board, Department of Public Utilities, and Massachusetts Department of Transportation.

Project Impacts: The EFSB evaluated the Project to determine public necessity and environmental impacts. Project impacts relevant to EFSB include natural resources impacts such as permanent and temporary impact associated with structure replacements, access improvements, and construction matting, and social impacts such as Environmental Justice considerations, traffic impacts, and historic or archaeological impact. A full description of Project impact analysis was provided in the Energy Facilities Siting Board ("EFSB") filing to the Massachusetts EFSB (Docket No. EFSB 23-45).

Project Mitigation: NEP considered avoidance and minimization as a matter of course during the planning and design process, with an overall approach of avoiding impacts whenever possible. Avoidance, minimization and mitigation was provided in the EFSB filing to the Massachusetts EFSB (Docket No. EFSB 23-45).

Findings: Providing significant consideration to the unique scope of the Project and the significant length, cost, and reliability concerns, NEP conducted a route analysis in the EFSB filing. Route evaluation relied heavily on NEP's responsibility to ensure that no clearly superior route was overlooked. As a result of the in-depth screening process, no candidate routes were found to meet the route evaluation criteria and/or provide benefits comparable to rebuilding the Existing Lines and Tap Lines within their existing ROWs, the Project Route. NEP concluded that, consistent with the Siting Board's statutory mandate, the construction of the Project along the Project Route properly minimizes environmental impacts and achieves an appropriate balance among conflicting environmental concerns, as well as among environmental impacts, cost, and reliability. NEP filed a petition with the Department of Public Utilities ("DPU") requesting a determination that the Project is necessary and will serve the public convenience and be consistent with the public interest in accordance with G.L. c. 164, § 72 ("Section 72 Petition").

DEPARTMENT OF PUBLIC UTILITIES

BY_____ DATE_____

12 REGULATORY COMPLIANCE

12.1 PERMIT REQUIREMENTS & STATUS

NEP will obtain environmental approvals and permits required by federal, state, and local agencies for the Project, and the Project will be constructed and operated to comply fully with state and local environmental performance standards and/or issued permits and authorizations. *Table 12-1* notes the filing status of the permits, reviews, and approvals required for the Project.

Table 12-1: Status of Regulatory Requirements

Agency	Permit/Review/Approval	Status
Federal		
USACE	Section 404 PCN Permit and consultations under Section 106 of National Historic Preservation Act and Section 7 of the Endangered Species Act	Filed May 2023
EPA	NPDES General Permit for Stormwater Discharges and Construction Dewatering Activities/SWPPP	To be filed at least 14 days prior to the start of construction.
State		
EEA	MEPA Review/ Certificate of the Secretary	Filed the EENF September 2022. Received Certificate October 2022 (EEA 16607).
MassDEP	Section 401 Individual WQC and Variance	Targeted filing November 2023
NHESP	MESA – Determination of Take or No Take; CMP (if needed)	MESA Checklist filed on August 15, 2023.Consultation with NHESP is ongoing.
MHC	Consultation under M.G.L. c. 9 in accordance with 950 CMR 70-71	Consultation with MHC is ongoing.
EFSB	M.G.L. c. 164, §69J Petition for Approval to Construct Transmission Lines	Filed EFSB May 2023
DPU	M.G.L. c. 164, §72 Petition for Determination of Public Necessity and Convenience	The Company filed motions with the Siting Board and the Department requesting that the Section 72 Petition be referred to the Siting Board and consolidated for hearing with the Section 69J Petition.
DCR	CAP	In progress. Consultation with DCR is ongoing.
MassDOT	Permit to Access State Highway/Non-Municipal Utility Permits for crossing over of state roads with utility lines.	Targeted Q4 2023
Local		

Agency	Permit/Review/Approval	Status
Conservation Commissions in Athol, Fitchburg, Gardner, Leominster, Royalston, Sterling, Warwick, Westminster, and Winchendon	OOC per the WPA[2] and local bylaws.	Q1/Q2 2024
Fitchburg Commissioner of Public Works	Stormwater Permit	Q1/Q2 2024
Fitchburg Tree Warden	Tree Trimming/Removal Permit	Q1/Q2 2024
Gardner Zoning Board of Appeals	Special Permit – Earthmoving & Earth Alteration	Q1/Q2 2024
Royalston Conservation Commission	Stormwater Management Permit	Q1/Q2 2024
Royalston Board of Selectmen	Written Permission for Soil Removal Activities	Q1/Q2 2024
Sterling Conservation Commission	Stormwater Management Permit	Q1/Q2 2024
Sterling Zoning Board of Appeals	Earth Removal Permit	Q1/Q2 2024
Westminster Zoning Board of Appeals	Earth Removal Permit	Q1/Q2 2024
Winchendon Zoning Board of Appeals	Earth Removal Permit	Q1/Q2 2024

12.2 AGENCY INTERACTIONS SINCE EENF

Table 12-2 summarizes the primary consultations with federal, state, and local agencies that have occurred since the EENF was submitted to MEPA. Additional consultations with agencies are ongoing, or will be undertaken, as appropriate. For example, meetings with local Conservation Commissions (or the Commission's agent) are anticipated prior to filings in the municipalities along the route.

Table 12-2: Agency Consultations Since EENF

Agency	Date(s)	Notes
DCR	10/17/22	Virtual Meeting focused on ROW access proposal
USACE	11/02/22	Pre-filing/consultation meeting. Consultations have been ongoing since November 2022.
MHC[51]	03/07/23	Submission of MHC report, volume I and II by SWCA
NHESP	Ongoing	Meetings to discuss Project impacts in more detail, avoidance of important habitat features, species specific BMPs and potential mitigation options.
Mass DEP	6/2/23	401 WQC Pre-Filing Consultation
DCR	08/14/23	A virtual meeting was held with DCR to discuss access, easement, and Article 97 issues.

12.3 STATE REGULATORY REVIEWS

NEP will design, construct, and maintain the facilities for the Project in accordance with relevant federal, state, and local regulations, including those listed in *Table 12-2* (above). The Project will comply with the performance standards and/or permit requirements of each permit or Agency Action required. NEP believes that this information, in conjunction with the implementation of the proposed avoidance and minimization measures along with the mitigation measures described in *Section 10*, will be sufficient for permitting agencies to make informed decisions.

12.3.1 Section 401 Water Quality Certification, MassDEP

In conjunction with the Section 404 Massachusetts General Permit filing, NEP will file an application for Individual WQC under 314 CMR 9.00 with MassDEP. MassDEP evaluates applications to certify that discharges of dredged or fill material comply with the Surface Water Quality Standards at 314 CMR 4.00 and to determine whether applicants have incorporated all practicable measures for avoiding and minimizing impacts to wetland resource areas.

The Project requires an individual WQC because project-related alterations, including both temporary alteration and permanent fill/loss, cumulatively will exceed 5,000 square feet. The statutory standards and requirements for projects requiring a 401 WQC application are listed in 314 CMR 9.06. The seven criteria for evaluation and a brief description of how the Project's design

[51] SWCA has submitted revised research designs and additional permits, such as state archaeologist permit and permit modification to include access improvements since then, and MHC permit modification acceptance letter was received on April 8, 2022. Received an MHC report review letter and concurrence on March 31, 2023.

avoids or minimizes adverse impacts to wetlands, and meets the relevant criteria for evaluation, are outlined below.

1. *No discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences (314 CMR 9.06(1)).*

NEP completed alternatives analyses that included an evaluation of environmental and community impacts, engineering feasibility, and constructability analysis of Project alternatives. NEP conducted an initial Project alternatives analysis for the Project as presented in the EENF, *Section 2*. The original analysis sought to identify the best solution for maintaining and improving the existing transmission line assets. The alternatives initially included an evaluation of the No Build Alternative, Critical Asset Repair Alternative, 69 kV Rebuild Alternative and Targeted Refurbishment Alternative. After the EENF filing, NEP provided an expanded alternatives analysis in the EFSB filing to the Massachusetts EFSB (Docket No. EFSB 23-45). The expanded alternatives assessment included an evaluation of the No Build Alternative, a Critical Asset Repair Alternative, a Reconductoring and Repair of Existing Lines Alternative, and the Line Rebuild Alternative. The expanded alternatives assessment has also been incorporated into this DEIR. As a result of both the original and expanded analyses, NEP has demonstrated that there is no practicable alternative to the Project that would have less adverse impact on the aquatic ecosystem that does not have other significant adverse environmental consequences.

There will be no discharge of dredged material as part of the Project. Although the discharge of temporary and permanent fill material could not be avoided in all cases, NEP implemented several design alternatives, such as changes to structure locations, relocation of off-ROW access, alignment, grading, or matting of access, reduction in the size of work areas to reduce the total discharge of temporary and permanent fill to the extent practicable. Please refer to *Table 10-1* in *Section 10* for examples of design alternatives implemented to avoid and minimize discharges of fill material within wetlands and streams. As a result of this multi-phased alternatives analysis, NEP has demonstrated that the Project provides the best solution for refurbishment of the existing transmission line assets while avoiding and/or minimizing adverse environmental impacts. In sum, there is no practicable alternative to the Project that would have less adverse impacts on the aquatic environment.

2. *No discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will avoid and minimize potential adverse impacts to the bordering or isolated vegetated wetland (314 CMR 9.06(2)).*

    a. *For discharges to bordering or isolated vegetated wetlands, such steps shall include a minimum of 1:1 restoration or replication.*

Upon selection of the proposed Project and identification of the complete list of engineering needs at each structure, NEP focused its efforts on avoidance and minimization. NEP and its consultants

reviewed the structure locations and subsequently proposed shifts or reconfigurations to some of the work areas to avoid wetland resource areas. NEP made these shifts to avoid discharges of temporary and permanent fill wherever feasible, while taking into consideration engineering and safety requirements. Although NEP could not feasibly design the Project to avoid discharges of fill within resource area in all cases, NEP implemented several design alternatives, such as changes to structure locations, relocation of off-ROW access, alignment, grading, or matting of access, reduction in the size of work area size to reduce impacts in resource areas, to avoid and reduce discharges to the extent practicable. Please refer to *Table 1-5* in *Section 1* for some examples of design alternatives implemented to avoid discharges of fill material to wetlands.

Despite the extensive avoidance and minimization measures described above, construction of the Project will result in some unavoidable discharges to wetlands and water resources within the Project ROW. In all, across the 844.4 acres of Project area, and out of the 329 wetlands within the ROW (equivalent to 164 acres), the Project will involve discharges to 208 wetlands. Impacts include 0.05 acres (2,246 SF) of permanent discharge of fill material within BVW for structure foundations and 38 acres of temporary discharge associated with the use of construction matting for access and work areas.

Following construction, NEP will remove construction matting and restore wetland resource areas to pre-construction conditions at a 1:1 ratio in accordance with applicable permit conditions. As required for compliance with 401 WQC certification and the WPA, NEP anticipates mitigation for temporary and permanent discharges will be provided through a combination of *in-situ* wetland restoration and compensatory mitigation as required by these regulatory programs. Please refer to *Section 10* for details of proposed wetland mitigation measures.

3. *No discharge of dredged or fill material shall be permitted to Outstanding Resource Waters, except for the activities specified in 314 CMR 9.06 (3) (a) through (k)…(f) Construction of utilities (314 CMR 9.06(3)).*

The Project will be constructed under the provisions of 314 CMR 9.06 (3) (c), which allows for the "maintenance, repair, replacement or reconstruction but not substantial enlargement of existing and lawfully located structures or facilities including buildings, roads, railways, utilities, dams, and coastal engineering structures."

4. *Discharge of dredged or fill material to an Outstanding Resource Water specifically identified in 314 CMR 4.06(1)(d) (e.g., vernal pools, within 400 feet of a water supply reservoir and any other areas so designated) is prohibited as provided therein unless a variance is obtained under 314 CMR 9.08 (314 CMR 9.06(4)).*

There are two sections of the A1/B2 Lines which currently contain structures located within wetlands that are located within the 400 feet OWHM of Class A Public Water Supply. This includes Structure 579 (LE-W4) near the Notown Reservoir and Structure 624 (LE-W19) near the Fall Brook Reservoir. Refer to Figure 2 - *A1/B2 Mainline Centerline Change*, **Attachment A** for the existing structure locations relative to Notown and Fall Brook Reservoir located within

Leominster. These structures will be removed from these wetlands once the Rebuilt Lines have been installed. Existing structure 623 and 571, while both located within an upland, will require the placement of temporary fill within a wetland (LE-W18 and LE-W5, respectively) located adjacent to the structure to provide the necessary work area to remove the structure. The temporary fill is also within 400 feet of the OHWM of Fall Brook Reservoir.

5. *No discharge of dredged or fill material is permitted for the impoundment or detention of stormwater for purposes of controlling sedimentation or other pollutant attenuation (314 CMR 9.06(5)).*

NEP is not proposing to place fill material in wetlands or waterways to impound or detain stormwater.

6. *Except as otherwise provided in 314 CMR 9.06, stormwater discharges shall be provided with best management practices to attenuate pollutants and to provide a setback from the receiving water or wetlands in accordance with the following Stormwater Management Standards as further defined and specified in the Massachusetts Stormwater Handbook (314 CMR 9.06(6)).*

NEP has designed the Project to comply with the applicable Massachusetts Stormwater Standards to the extent practicable and will be subject to the standards and conditions of the NPDES CGP. During construction, NEP will use soil erosion and sediment control BMPs to manage stormwater and protect sensitive resource areas from stormwater run-off. Specific stormwater management practices, procedures, and BMPs are outlined in *Section 3.3* in *Section 3*. Please also refer to **Appendix F** for a presentation of NEP's BMPs.

During construction of improved or new access, NEP will incorporate stormwater management features such as water bars, check dams, and swales to redivert stormwater flows from access into surrounding vegetation. NEP has designed these BMPs to reduce the potential for adverse impacts such as washouts and erosion due to concentrated stormwater flows.

7. *No discharge of dredged or fill material shall be permitted in the rare circumstances where the activity meets the criteria for evaluation but will result in substantial adverse impacts to the physical, chemical, or biological integrity of surface Waters of the Commonwealth (314 CMR 9.06(7)).*

One of NEP's most important goals in Project design was to avoid and/or minimize adverse impacts on wetlands and water resources. The current design reflects the result of constructability field reviews and due diligence reviews NEP has undertaken to implement construction-phase and operational measures to avoid and/or minimize adverse impacts to wetland and WOTUS. This includes measures to minimize the number of required structures located within wetland resource areas, minimize the extent of temporary matting used to access and work on structures within

wetland resource areas, and BMPs to minimize impacts where work within wetland resource areas cannot be avoided. Where NEP cannot avoid temporary and permanent discharges to wetlands and water resources, NEP will provide appropriate mitigation, including *in situ* restoration for temporary alteration and compensatory mitigation for permanent fill/loss. Please refer to *Section 10* for details.

Because of the measures NEP has taken to avoid, minimize, and mitigate for impacts, the Project will not result in substantial adverse impacts to the physical, chemical, or biological integrity of wetlands and waterways within the Project ROW.

8. *Notwithstanding the provisions of 314 CMR 9.06 (1) through (7), the Department may allow a project which will restore or otherwise improve the natural capacity of any wetland or other water of the Commonwealth.*

This evaluation criterion is not applicable. While NEP is proposing restoration measures to mitigate for construction-phase impacts, NEP proposes the A1/B2 Project to refurbish existing utility infrastructure and not as a stand-alone restoration project.

12.3.2 Massachusetts Wetlands Protection Act

The Project will require approvals under the MA WPA and the implementing regulations at 310 CMR 10.00. These regulations govern state-defined wetland resource areas that include BVW, RA, Bank, and BLSF. Project-related impacts to these resource areas require an official finding of approval by the appropriate jurisdictional authority in the form of an OOC.

The MA WPA and its regulations are administered by municipal Conservation Commissions and MassDEP. Conservation Commissions are delegated the authority to implement the MA WPA, including issuance of OOCs. MassDEP has the authority to intervene in a project and to act on appeals of the OOCs. NEP will file permit applications (NOIs) with Conservation Commissions in Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling. These NOIs will detail the proposed asset improvements, the short-term and long-term impacts, and the proposed avoidance, minimization, and mitigation measures for those impacts. The wetlands review process is focused on how the Project and the proposed mitigation conform to the performance standards for each affected MA WPA resource area.

In the communities with local wetlands bylaws and ordinances, the application and hearing process will also address how the Project elements and proposed mitigation measures conform to the requirements of those bylaws. NEP will coordinate with the Conservation Commissions of Winchendon, Gardner, Westminster, and Fitchburg to design a final mitigation package that appropriately addresses MA WPA and local requirements.

The sections below summarize the Project's compliance with the General Performance Standards of the MA WPA.

12.3.2.1 Consistency of the Project with MA WPA - Limited Project provisions (310 CMR 10.53(3)(d))

The Project is eligible for "limited project" status, as defined in 310 CMR 10.53(3)(d) because it involves the "*construction, reconstruction, operation and maintenance of underground and overhead public utilities.*" Proposed Project refurbishment activities include the removal and replacement of existing electrical utility structures and overhead lines, and both the reconstruction of existing access and work areas, and the construction of new access in off-ROW within upland resource areas. Maintaining ROW corridors with functional access and work areas is an integral part of the public overhead electrical utility facility – access and work areas are essential for the safe and reliable operation of the lines, performance of inspection and maintenance work, and performance of emergency repairs. As such, all components of the proposed Project meet the definition of "*operation, maintenance, and construction of public utilities*", because the ROW corridor, access, work areas, and structures are all integral to the overall public utility.

Under the Limited Project provisions, the issuing authority may approve a project that does not satisfy the performance standards for the affected resource areas, although no such project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species (as identified by procedures established under 310 CMR 10.59). Thus, Limited Projects may, under certain circumstances, be permitted without meeting the performance standards for jurisdictional resource areas. While the Project qualifies as a Limited Project, NEP's policy is to make reasonable efforts to meet applicable performance standards and minimize impacts, and the Project will meet the Limited Project general conditions specified in 310 CMR 10.53(3)(d).

In issuing an OOC for a Limited Project, a Conservation Commission is directed to consider the magnitude of the proposed alteration and the significance of the Project site to the statutory interests of the MA WPA. For the A1/B2 Project, the need to permit the Project under the Limited Project provisions is because of the amount of construction matting required. The amount of temporary construction matting required to both facilitate access along the ROW and protect the underlying wetland resource areas is well over the 5,000 square foot threshold allowable under the performance standards for BVW at 310 CMR 10.55(4)(b). While employed as a BMP, regulatory agencies consider the placement of construction matting a temporary "loss" of BVW. Although NEP proposes to fully replace the temporary loss of BVW through *in situ* restoration of these areas, Conservation Commissions cannot issue an OOC for proposed matting in excess of 5,000 square feet unless the Project is permitted under the Limited Project provisions. Construction matting is regularly used to protect wetland resource areas during utility maintenance Projects both exempted and permitted under the MA WPA. The extent of proposed matting for the Project is significant due to the size of the Project (54 miles of a linear corridor) matting is a BMP protective of resource areas, the alteration is temporary, and NEP will fully restore the underlying resource area following construction. The magnitude of the proposed temporary alteration associated with the use of matting and requiring review under the Limited Project provisions is not significant and the use of matting will not impair the ability of resource areas to provide for the statutory interests of the MA WPA.

NEP is proposing to construct the Project within the existing A1/B2 ROW, which was established in the early 1900s. Because of the length of the ROW and the location within remote or largely undeveloped areas, there are numerous wetland resource areas within and crossing the corridor. As an existing electrical transmission utility corridor, the ROW is subject to cyclical vegetation management and the removal of tall woody vegetation incompatible with the overhead lines. The ROW is additionally subject to cyclical and periodic inspection, maintenance, and repair activities that involve the placement of temporary construction matting at wetland crossings. NEP has designed the Project to avoid or minimize permanent loss or alteration of wetland resource areas to the extent practicable, including in the planning of construction mat access roads and work areas across wetlands. Temporary construction matting required within wetlands for Project construction is not significantly greater than what would be required for standard maintenance and operations of the lines. Thus, while there are numerous wetland crossings along the Project ROW, the "Project Site" is an existing utility corridor, and the proposed Project does not change this use nor the current ability of wetlands on the ROW to provide for the statutory interests of the MA WPA.

NEP is currently consulting with the NHESP regarding Project impacts to rare wildlife and whether the Project will result in a "take".

The Project will meet the other general conditions for a limited Project as described below:

1. *The issuing authority may require a reasonable alternative route with fewer adverse effects for a local distribution or connecting line not reviewed by the Energy Facilities Siting Council;*

The Project is not a local distribution or connecting line and is currently being reviewed by the EFSB. This evaluation criteria are not applicable.

2. *Best available measures shall be used to minimize adverse effects during construction;*

Throughout design and permitting, NEP has made extensive efforts to comprehensively assess constructability and minimize adverse effects, wherever practicable. Since the EENF, NEP revised designs to reduce wetlands impacts. Details on impact reduction due to the change in tree removal scope and design scopes are provided in *Section 1*. Where impacts cannot be avoided or further minimized, NEP will implement appropriate mitigation. These efforts are referenced throughout this document, particularly in *Section 4*. Additionally, NEP performs construction and maintenance work in accordance with strict BMP practices and procedures serving to minimize adverse effects during construction, described in EG-303NE. This document was submitted as *Appendix C* on the EENF.

3. *The surface vegetation and contours of the area shall be substantially restored; and*

As detailed in *Section 4 and 10*, NEP is proposing *in situ* restoration as a primary means of mitigating for construction-phase impacts. *In situ* restoration measures include stabilizing bare soil surfaces and promoting the regeneration of vegetative cover. Generally, NEP will meet this standard for restoration by applying *in situ* restoration measures to areas disturbed by construction

activities. Specific restoration practices associated with vegetation management and access and work area improvements are provided below.

NEP is proposing vegetation management activities within MA WPA regulated resource areas as part of the Project, including the removal of select trees for access, and along the forested edges of the ROW for line clearance. Mowing and pruning of vegetation is also required along on and off-ROW access, and within work areas within the maintained ROW. Tree removal within the ROW is limited to "danger trees" that pose either a fall hazard or conductor clearance hazard to the existing and/or proposed lines. Vegetation management practices proposed for the Project, including measures to avoid and minimize impacts to wetlands, are provided in *Section 4*. As described in *Section 4*, NEP will preserve understory vegetation to the extent feasible during tree removal activities. Because NEP will preserve the understory, the removal of trees along the ROW edge will not result in a loss of vegetation that creates bare soil conditions. When mowing the ROW for construction-phase access, NEP will avoid mowing in wetland areas and instead place matting directly over the existing vegetation. Following construction, NEP anticipates that areas where trees have been removed and areas that have been mowed or trimmed will readily and swiftly re-vegetate from existing root and seed stock. Finally, NEP will implement *in situ* restoration measures to promote stabilization and revegetation following construction. As such, the ROW will become substantially revegetated following project construction.

NEP is proposing to improve and/or construct new access to facilitate construction-phase movement of vehicles and machinery and operational access to facilities along the ROW. NEP will additionally construct level work areas at structure locations. NEP is not proposing these access and work areas improvement activities in BVW but will perform grading within some location in RA and BLSF where existing access and work areas will not meet the operational needs of construction vehicles and equipment and the use of temporary construction matting is not a feasible alternative. Grading will result in both temporary and permanent alteration of the ground surface within RA and BLSF.

In BLSF, NEP has designed access and work area improvements to avoid fill and will primarily grade or cut significant slopes in these areas. Where stone is to be placed in BLSF for access and work areas, permanent alterations are not anticipated to occur as these areas will be over-excavated resulting in no loss of flood storage. Access and work area construction methods are fully described in *Chapter 9.2.3 and 9.2.4*.

Following construction, NEP will restore disturbed and/or altered areas within RA through seeding and mulching, and through the installation of permanent stormwater management BMPs where necessary. Along the surface of improved access and work areas in RA, NEP will spread loam and seed to promote herbaceous vegetation growth within these areas. Access and work area improvements will improve the accessibility of the ROW for long term operations and maintenance of the Rebuilt Lines while maintaining the general land use, character, and topography of the ROW relative to the surrounding area. NEP will restore surfaces disturbed by construction and provide stormwater management improvements along access by diverting

concentrated flow off of access and into surrounding vegetated areas. As such, the contours of the area will be restored, and the Project will meet this standard.

4. *All sewer lines shall be constructed to minimize inflow and leakage;*

This standard does not apply because no sewer lines are proposed.

In addition to meeting the general performance standards for a Limited Project, NEP has designed the Project to conform with the wider performance standards of the MA WPA, wherever possible. Except for the total area of temporary matting required to protect wetland resource areas, the Project generally meets the performance standards for proposed temporary and permanent alteration of resource areas. The Project's consistency with the specific resource area performance standards is presented in the sections below.

12.3.2.2 Inland Bank (310 CMR 10.54)

Bank is defined by 310 CMR 10.54(2)(a) as "*the portion of the land surface, which normally abuts and confines a water body*". Where Bank is encountered within the Project area, the following applicable MA WPA general performance standards apply:

1. *Where the presumption set forth in 310 CMR 10.54(3) is not overcome, any proposed work on a Bank shall not impair the following:*
    - *the physical stability of the Bank;*
    - *the water carrying capacity of the existing channel within the Bank;*
    - *ground water and surface water quality;*
    - *the capacity of the Bank to provide breeding habitat, escape cover and food for fisheries; and*
    - *the capacity of the Bank to provide important wildlife habitat functions.*

Pursuant to 310 CMR 10.54(s), where a proposed activity involves the removing, filling, dredging, or altering of a Bank, the issuing authority shall presume that such area is significant to the interests specified in 310 CMR 10.54(1). This presumption is rebuttable and may be overcome upon a clear showing that the Bank does not play a role in the protection of said interests.

As detailed in *Section 4*, NEP is proposing temporary alteration of Bank associated with the placement of construction matting, and permanent conversion associated with tree removal and the conversion of vegetation cover type along the Bank. NEP is not proposing to install replacement structures, perform access and work area grading, or discharge permanent fill within Bank.

Selective tree removals are required in some areas of Bank to allow construction of new access off-ROW. NEP will cut trees at stump and leave root balls in place to maintain soil stability. Crews will remove cut trees from access and work areas in a manner that avoids or minimizes ground and vegetation disturbance. NEP will avoid disturbance of non-target vegetation to the extent practicable and the understory will be left to naturally regenerate once construction is complete.

Because of these protective measures, NEP's vegetation management activities will not impair the physical stability of the bank or impact water quality. Preserving understory vegetation will not impact the capacity of the Bank to provide habitat.

Where access across streams/banks is required, construction mats will be used to minimize direct impacts to Bank stability from compaction, bank erosion, and loss of vegetation. Where possible, matting will be placed on top of existing vegetation (woody vegetation may require mowing), and any impacted areas will be restored once construction is complete. While the slight reduction in canopy cover will somewhat alter Bank habitat during construction, NEP anticipates that conditions at stream level will be minimally impacted – understory vegetation will be maintained wherever possible, and any areas requiring pruning or mowing of woody vegetation (for the placement of matting), will be limited to the 16 feet width of the matting. Following removal of matting where NEP has trimmed woody vegetation along the Bank, woody vegetation will regenerate from preserved root masses. As such, no overall impacts to groundwater, surface water, breeding habitat, escape cover, food for fisheries, or other wildlife habitat functions are anticipated following completion of the Project. Impacts to Bank will not impair the physical stability of the bank or the ability of the bank to provide the functions described above. For these reasons, the Project satisfies *310 CMR 10.54(4)(a)*.

2. *Notwithstanding the provisions of 310 CMR 10.54(4)(a), structures may be permitted in or on a Bank when required to prevent flood damage to facilities, buildings and roads constructed prior to the effective date of 310 CMR 10.51 through 10.60 or constructed pursuant to a Notice of Intent filed prior to the effective date of 310 CMR 10.51 through 10.60 (April 1, 1983).*

This standard does not apply because no structures will be located on a Bank.

3. *Notwithstanding the provisions of 310 CMR 10.54(a) or (b), no project may be permitted which will have any adverse effect on specified habitat sites or rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.59.*

NEP will continue to coordinate with NHESP pursuant to MESA (M.G.L. c. 131A) and the local Conservation Commissions (M.G.L. c. 131, § 40) to avoid and minimize impacts to listed species and their habitat, and to provide mitigation for any unavoidable impacts. Please refer to *Section 5* for additional details on mitigation proposed in NHESP Priority and Estimated Habitat.

12.3.2.3 Bordering Vegetated Wetland (310 CMR 10.55)

BVW, as defined by 310 CMR 10.55(2) (a) and (c), are "*freshwater wetlands that border on creeks, rivers, streams, ponds, and lakes*". BVW is prevalent throughout the Project area. Areas within the ROW delineated as BVW are shown on the DEIR Plans in **Appendix A**. Performance standards for BVW are noted below, followed by a discussion of how the Project will satisfy each performance standard.

NEP has designed the Project to avoid and minimize wetland impacts to the maximum extent practicable. Nevertheless, some unavoidable permanent wetland loss will occur resulting from installation of replacement structure foundations in BVW (2,246 SF). Compensatory mitigation for wetland loss will be provided as described in *Section 10*.

Where NEP is proposing work in BVW, the following MA WPA General Performance Standards apply:

a. *Where the presumption set forth in 310 CMR 10.55(3) is not overcome, any proposed work in a Bordering Vegetated Wetland shall not destroy or otherwise impair any portion of said area.*

The Project will result in temporary alteration of BVW associated with temporary matting, permanent loss of wetland associated with structure replacements, and permanent conversion of vegetation type in BVW associated with tree removal.

While employed as a BMP, regulatory agencies consider the placement of construction matting a temporal or temporary "loss" of BVW. NEP has designed the Project to avoid or minimize loss or alteration of wetland resource areas to the extent practicable, including in the planning of construction mat access and work areas across wetlands. Temporary construction matting required within wetlands for Project construction is not significantly greater than what would be required for standard maintenance and operations of the lines. Thus, while there are numerous wetland crossings along the Project ROW, the Project is along an existing utility corridor, and the proposed Project does not change this use nor the current capacity of wetlands on the ROW to provide for the statutory interests of the MA WPA. As Project siting and design becomes more granular, the scope and potential impacts on the resources within the limit of work will also likely be reduced through improved sequencing. Additionally, NEP is proposing *in situ* restoration following the completion of construction to mitigate for temporary impacts to BVW. Please refer to *Sections 4 and 10* for descriptions of *in situ* restoration practices.

Permanent fill for replacement structure foundations will provide compensatory mitigation measures. Please refer to *Section 10* for more detail on the proposed mitigation.

While the Project will result in permanent conversion of wetland vegetation, in areas where trees have been removed from wetland areas NEP will maintain these areas to promote the growth of low-growing scrub-shrub vegetation. Following completion of the Project, wetlands will revegetate from existing understory and seed and root stock. As is usually the case, the species composition, plant density and community structure within the wetland may differ somewhat from pre-construction conditions due to the absence of trees. However, hydrology will remain essentially unchanged.

Accordingly, tree removal along the edges of the ROW and along off-ROW access will not reduce either the short or long term amount of wetland present or impair the integrity of the wetland or ability of the wetland to provide for the statutory interests, specifically including the ability to remove or detain sediments, recycle nutrients (such as nitrogen and phosphorous) and sequester

toxic substances (such as heavy metal compounds) that occur in run-off and flood waters. The wetland will also still retain the ability to provide habitat to wildlife consistent with the requirements in 310 CMR 10.60.

b. Notwithstanding the provisions of 310 CMR 10.55(4) (a), the issuing authority may issue an OOC permitting work which results in the loss of up to 5,000 SF of BVW when said area is replaced in accordance with the following general conditions and any additional, specific conditions the issuing authority deems necessary to ensure that the replacement area will function in a manner similar to the area that will be lost:

- *the surface of the replacement area to be created ("the replacement area") shall be equal to that of the area that will be lost ("the lost area");*
- *the ground water and surface elevation of the replacement area shall be approximately equal to that of the lost area;*
- *the overall horizontal configuration and location of the replacement area with respect to the bank shall be similar to that of the lost area;*
- *the replacement area shall have an unrestricted hydraulic connection to the same water body or waterway associated with the lost area;*
- *the replacement area shall be located within the same general area of the water body or reach of the waterway as the lost area;*
- *at least 75% of the surface of the replacement area shall be reestablished with indigenous wetland plant species within two (2) growing seasons, and prior to said vegetative reestablishment any exposed soil in the replacement area shall be temporarily stabilized to prevent erosion in accordance with standard U.S. Soil Conservation Service methods; and*
- *the replacement area shall be provided in a manner which is consistent with all other General Performance Standards for each resource area in Part III of 310 CMR 10.00.*

The Project qualifies as a Limited Project for the "*construction, reconstruction, operation and maintenance of underground and overhead public utilities*" as described *in Section 12.3.1 – Consistency of the Project with MA WPA - Limited Project status (310 CMR 10.53(3)(d)) of* this section. Under the Limited Project status, NEP will have temporary construction matting impacts that well exceed the 5,000 SF maximum for which Conservation Commissions can issue an OOC under the standards for BVW at 310 CMR 10.55[52] NEP will mitigate temporary alteration a

[52] While employed as a BMP, regulatory agencies consider the placement of construction matting a temporal or temporary "loss" of BVW. NEP proposes to fully replace the temporary or temporal loss of BVW through in situ restoration of these areas.

ssociated with construction matting within BVW for access and work areas through *in situ* wetland restoration.

The Project will result in the loss of 2,246 SF of BVW, due to fill associated with replacement structure foundations. In addition, the Project will incur 9.2 acres of alteration to BVW due to tree removals. Tree removal will not result in a loss of BVW. As such, NEP is not proposing compensatory mitigation for the conversion of vegetation cover type. NEP is proposing to provide compensatory mitigation for the 2,246 SF of wetland loss that will meet the general standards for replacement area, as applicable. Additional details of NEP's proposed mitigation are provided in *Section 10*.

c. *Notwithstanding the provisions of 310 CMR 10.55(4)(a), (b) or (c), no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.59.*

NEP will continue to coordinate with NHESP pursuant to MESA (M.G.L. c. 131A) and MA WPA (M.G.L. c. 131, § 40) to avoid and minimize impacts to listed species and their habitat, and to provide mitigation for any unavoidable impacts. Based on consultation meetings with NHESP, the Project will likely avoid a "take" for rare species and/or their habitats, provided that certain conditions are met. Please refer to *Section 5* for additional details on mitigation proposed in NHESP Priority and Estimated Habitat.

d. *Any proposed work shall not destroy or otherwise impair any portion of BVW that is within an Area of Critical Environmental Concern designated by the Secretary of Environmental Affairs under M.G.L. c.21A, § 2(7) and 301 CMR 12.00.*

Not Applicable – No portion of the Project is located within an ACEC.

12.3.2.4 Land Under Water Bodies and Waterways (310 CMR 10.56)

LUWW is defined by 310 CMR 10.56(2)(a), as "*the land beneath any creek, river, stream, pond or lake*". LUWW is associated with numerous perennial and intermittent streams and water bodies within the Project area. Where LUWW is encountered, the following applicable MA WPA general performance standards apply:

a. *Where the presumption set forth in 310 CMR 10.56(3) is not overcome, any proposed work within LUWW shall not impair the following:*

   1. *The water carrying capacity within the defined channel, which is provided by said land in conjunction with the banks;*
   2. *Ground and surface water quality;*
   3. *The capacity of said land to provide breeding habitat, escape cover and food for fisheries; and*
   4. *The capacity of said land to provide important wildlife habitat functions.*

The Project will result in the permanent loss/fill of approximately 79 SF of LUWW associated with a single replacement structure foundation located within an intermittent stream. In addition, NEP anticipates temporary impacts of approximately 17,217 SF to LUWW associated with the placement of construction matting to provide access and work areas within open water wetlands impounded by beaver activity.

The intermittent stream as identified on the ROW is at the headwaters of the drainage area for the stream. There are two branches – an eastern branch that originates in a wetland on the ROW and a western branch that originates at the Gardner Municipal Golf Course. The western branch of the unnamed intermittent stream channel near the replacement structure is relatively wide (23 feet) with shallow (1 to 5 inches) and diffuse flow patterns where the stream collects water from the surrounding wetland along the ROW. Because of the stream morphology and intermittent flow pattern of the western branch of this stream, NEP does not anticipate the replacement structure foundations size to impair the carrying capacity, ground or surface water quality, or wildlife habitat value of the LUWW. The stream channel on the ROW is intermittent and shallow, so no fisheries habitat is provided by this channel (the eastern branch originates within the golf course). Seasonal stream flow will divert around the foundation without overtopping the current Banks. Once installed, the structure foundation will not contribute to scour or otherwise impair water quality, as the velocity of flows at this origination point of the western branch of the intermittent stream is low. Following construction, this section of the ROW will continue to be managed to promote low growing scrub-shrub and herbaceous vegetative cover next to the stream. Since the size of the foundation is minimal when compared to the surrounding LUWW, the intermittent stream bed in the area will continue to provide wildlife habitat functions as provided under current conditions.

NEP will remove construction matting within LUWW associated with beaver impoundments as soon as construction is complete. NEP does not anticipate permanent or temporary impairment to water carrying capacity, ground or surface water quality, or fisheries and wildlife habitat. As needed, NEP will work with municipalities during local permitting to determine construction-phase protection measures to manage seasonal high flow when working in impoundments, such as anchoring mats so they do not float away.

b. *Notwithstanding the provisions of 310 CMR 10.56(4)(a), the issuing authority may issue an Order in accordance with M.G.L. c. 131, § 40 to maintain or improve boat channels within Land under Water Bodies and Waterways*

Not Applicable. NEP is not proposing to maintain or improve boat channels.

c. *Notwithstanding the provisions of 310 CMR 10.56(4)(a) or (b), no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.59.*

NEP is not proposing permanent loss/fill of LUWW within areas designated as NHESP Priority or Estimated Habitat for rare species. Where NEP anticipates temporary impacts to LUWW (due

to the placement of temporary construction matting), NEP will implement necessary protection measures outlined by NHESP to avoid, minimize, and mitigate for potential adverse effects.

12.3.2.5 Land Subject to Flooding (310 CMR 10.57)

BLSF as defined by 310 CMR 10.57(2)(a), is "an area with low, flat topography adjacent to, and inundated by, flood waters rising from creeks, rivers, streams, ponds or lakes". ILSF as defined by 310 CMR 10.57(2)(b), is "an isolated depression or closed basin without an inlet or an outlet. It is an area which at least once a year confines standing water to a volume of at least ¼ acre-feet and to an average depth of at least six inches". BLSF is present throughout the Project area. Where BLSF is encountered, the following MA WPA general performance standards apply:

1. *Compensatory storage shall be provided for all flood storage volume that will be lost as the result of a proposed project within BLSF, when in the judgment of the issuing authority said loss will cause an increase or will contribute incrementally to an increase in the horizontal extent and level of flood waters during peak flows. Compensatory storage shall mean a volume not previously used for flood storage and shall be incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation, which would be displaced by the proposed Project. Such compensatory volume shall be provided within the same reach of the river, stream or creek (310 CMR 10.57(4)(a)(1)).*

Where NEP is proposing to improve or construct work areas and access within BLSF, these areas will be over-excavated (cut) and will not result in the loss of flood storage area. New structures in BLSF will result in minimal amounts of permanent fill relative to the total extent of resource areas on the Project site. Structure replacements will not result in a significant increase in fill/change in conditions within BLSF so as to contribute to flood flows.

2. Work within BLSF, including that work required to provide the above-specified compensatory storage, shall not restrict flows so as to cause an increase in flood stage or velocity.

Not Applicable – Activities within BLSF will not result in demonstratable loss of flood storage capacity. NEP is not proposing compensatory storage for BLSF.

4. *Work in those portions of BLSF found to be significant to the protection of wildlife habitat shall not impair its capacity to provide important wildlife habitat functions. Except for work which would adversely affect vernal pool habitat, a project or projects on a single lot, for which a Notice(s) of Intent is filed or after November 1, 1987, that (cumulatively) alter(s) up to 10% or 5,000 SF (whichever is less) or land in this resource area found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat function. Additional alterations beyond the above threshold, or altering vernal pool habitat, may be permitted if they will have no adverse effects on wildlife habitat, as determined by procedures contained in 310 CMR 10.60.*

The proposed work is located in the managed portions of the existing ROW and will not result in significant land use changes to current conditions. Therefore, the Project will not impair the current capacity of BLSF to provide important wildlife habitat functions. NEP is consulting with NHESP to address and permit work within protected rare species habitat and will implement construction-phase protection measures as deemed necessary by NHESP.

Where Isolated Land Subject to Flooding ("ILSF") is encountered, the following MA WPA general performance standards apply:

> *(b) A proposed project in Isolated Land Subject to Flooding shall not result in the following:*
>
> 1. *Flood damage due to filling which causes lateral displacement of water that would otherwise be confined within said area.*
> 2. *An adverse effect on public and private water supply or ground water supply, where said area is underlain by pervious material.*
> 3. *An adverse effect on the capacity of said area to prevent pollution of the ground water, where the area is underlain by pervious material which in turn is covered by a mat of organic peat and muck.*
> 4. *An impairment of its capacity to provide wildlife habitat where said area is vernal pool habitat, as determined by procedures contained in 310 CMR 10.60.*

Not applicable. There are no ILSF present within the Project area.

12.3.2.6 Riverfront Area (310 CMR 10.58)

The 200-foot jurisdictional RA pursuant to 310 CMR 10.58(4) for all perennial streams located within the Project area is shown on the DEIR Plans (refer to **Appendix A**). The Project does not cross municipalities that regulate a 25-foot RA per 310 CMR 10.58(2)(a)(3). The Project will result in temporary alteration associated with the placement of construction mats to establish stable access and work areas, permanent fill/loss from structure installations, access construction, and permanent conversion of forested habitat due to tree removals.

Where the Project transects RA, NEP maintains these areas as a working overhead electrical utility ROW, which has been previously cleared to a defined width and subsequently managed regularly for compatible vegetation in accordance with an approved VMP and local, state, and federal law and regulation. Maintenance of existing structures occurs on a routine basis, also in compliance with local, state, and federal law and regulation. Although utility ROWs do not meet the regulatory requirements of a "previously developed" Riverfront Area, the RA on the Project is a regularly "disturbed" corridor subject to periodic operation of equipment or ground disturbance during operation and maintenance activities. As discussed in *Section 4.2.5*, proposed Project activities will result in permanent alteration of the RA associated with access and work area improvements and tree removal along the ROW edge (or selective removal along off-ROW access). These activities within RA are consistent with the current use of the land as a maintained ROW and will not impede the ability of the RA to "*protect the private or public water supply; to protect the*

groundwater; to provide flood control; to prevent storm damage; to prevent pollution; to protect land containing shellfish; to protect wildlife habitat; and to protect fisheries" as currently provided.

NEP recognizes that maintaining/reestablishing vegetation within the RA is critical to protecting water supplies, providing flood control, preventing pollution, and protecting wildlife and fisheries habitat. Therefore, NEP is proposing *in situ* restoration of disturbed soil surface to promote soil stabilization and rapid revegetation through seeding and mulching. Additionally, NEP will, as needed, loam and seed, and mulch work areas with native grass and herbaceous species following construction to reestablish vegetative cover.

General performance standards for RA are noted below, followed by a discussion of how the Project will meet that performance standard.

> *(a) Protection of Other Resource Areas. The work shall meet the performance standards for all other resource areas within the riverfront area as identified in 310 CMR 10.30 (coastal bank), 10.32 (salt marsh), 10.55 (BVW), and 10.57 (Land Subject to Flooding). When work in riverfront area is also within the buffer zone to another resource area, the performance standards for the riverfront area shall contribute to the protection of the interests of G.L. c. 131, s. 40 in lieu of any additional requirements that might otherwise be imposed on work in the buffer zone within riverfront area (310 CMR 10.58(4)(a)).*

During the construction phase of the Project, NEP will implement BMPs when working in RA to avoid and minimize impacts to adjacent watercourses, including sediment and erosion controls. The approach for accessing the site, establishing access and work areas, and performing construction activities is discussed in *Section 9*. NEP's BMPs and site restoration practices are described in *Section 4.*

> *(b) Protection of Rare Species. No project may be permitted within the riverfront area which will have any adverse effect on specified habitat sites of rare wetland or upland, vertebrate or invertebrate species, as identified by the procedures established under 310 CMR 10.59 or 10.37, or which will have any adverse effect on vernal pool habitat certified prior to the filing of the NOI (310 CMR 10.58(4)(b)).*

NEP has initiated consultation with NHESP in anticipation of permitting under MESA as described in *Section 5*. NEP will ensure that recommended/required measures are taken to protect rare species and their habitats.

> *(c) Practicable and Substantially Equivalent Economic Alternatives. There must be no practicable and substantially equivalent economic alternative to the proposed project with less adverse effects on the interests identified in M.G.L. c. 131, s. 40. 310 CMR 10.58(4)(c)).*

NEP has completed an Alternatives Analysis and provided the results in *Section 2.* As demonstrated, the Project, as proposed, is the most practicable with the least adverse effects and

there is no substantially equivalent economic alternative that achieves the required design, safety, and reliability objectives of the Project.

(d) No Significant Adverse Impact. The work, including proposed mitigation measures, must have no significant adverse impact on the riverfront area to protect the interests identified in M.G.L. c. 131, § 40.

1. Within 200 foot riverfront areas, the issuing authority may allow the alteration of up to 5000 square feet or 10% of the riverfront area within the lot, whichever is greater, on a lot recorded on or before October 6, 1997 or lots recorded after October 6, 1997 subject to the restrictions of 310 CMR 10.58(4)(c)2.b.vi., or up to 10% of the riverfront area within a lot recorded after October 6, 1997, provided that:

a. At a minimum, a 100-foot-wide area of undisturbed vegetation is provided. This area shall extend from mean annual high-water along the river unless another location would better protect the interests identified in M.G.L. c. 131 § 40. If there is not a 100-foot-wide area of undisturbed vegetation within the riverfront area, existing vegetative cover shall be preserved or extended to the maximum extent feasible to approximate a 100 foot wide corridor of natural vegetation. Replication and compensatory storage required to meet other resource area performance standards are allowed within this area; structural stormwater management measures may be allowed only when there is no practicable alternative. Temporary impacts where necessary for installation of linear site-related utilities are allowed, provided the area is restored to its natural conditions. Proposed work which does not meet the requirement of 310 CMR 10.58(4)(d)1.a. may be allowed only if an applicant demonstrates by a preponderance of evidence from a competent source that an area of undisturbed vegetation with an overall average width of 100 feet will provide equivalent protection of the riverfront area, or that a partial rebuttal of the presumptions of significance is sufficient to justify a lesser area of undisturbed vegetation

NEP has presented an assessment of impacts and proposed construction-phase avoidance and minimization measures as fully described in *Section 4 and* proposed *in situ* restoration and compensatory mitigation measures in *Section 10.*

NEP will provide restoration for alteration within RA per the requirement for *temporary impact where necessary for installation of linear site-related utilitie*s that *the area is restored to its natural conditions*. Following the completion of the Project, NEP will restore disturbed areas along the ROW through *in situ* restoration measures, which promote stabilization and rapid revegetation by compatible herbaceous and low-growing scrub-shrub vegetation. Generally, the ROW will provide a vegetated buffer within all 200 feet of the RA on site, with the exception of along the approximately 12 feet wide travel lane of existing and improved access. Conditions along the

ROW within RA following construction largely will meet pre-construction conditions, which is to say that the ROW will be restored to the "natural conditions" currently observed.

Although RA impacts resulting from the proposed Project are primarily temporary in nature, some permanent alteration associated with structure installations, components of access improvement, and conversion of forested habitat, is unavoidable. NEP will work with the Conservation Commissions in each municipality during MA WPA permitting and present anticipated impacts on a stream-by-stream basis. If proposed permanent alteration of the RA is greater than ten percent of the RA on the lot, filing the Project under the Limited Project Provisions, as discussed above in *Section 12.3.1,* is allowed.

The proposed Project will not result in a significant adverse impact or impairment or reduce the capacity of the RA to provide important wildlife habitat functions. A Wildlife Habitat Evaluation ("WHE") supporting this finding was provided in *Appendix F* of the EENF.

12.3.3 Massachusetts Stormwater Standards

MassDEP applies the MA Stormwater Management Standards (the "Standards") pursuant to the Wetlands Regulations (310 CMR 10.00) and the Water Quality Regulations (314 CMR 9.00) relating to stormwater. The Standards define ten stormwater management performance standards for development and redevelopment projects. Generally, these standards have not been applied to similar cross-country utility maintenance projects, as the work does not have a substantial impact on watershed hydrology or drainage patterns. Stormwater and access construction BMPs that are proposed to control stormwater run-on to and runoff from the proposed access improvements are displayed on the DEIR Plans in **Appendix A**. The extent to which the Standards apply to the Project will be addressed as part of the MA WPA and 401 Water Quality permitting process. Additionally, NEP will submit an NOI and prepare a SWPPP for the Project in compliance with the EPA's NPDES program under the Stormwater CGP, as well as Bureau of Water Resources Surface Water Discharge (NPDES) Permitting Program WM 15 permit application.

NEP will employ BMPs for stormwater management including sediment and erosion controls. During the construction of the Project, stormwater will be managed through the use of additional stormwater management design features such as swales, water bars, plunge pools, and/or check dams.

12.3.4 Massachusetts Endangered Species Act

Coordination between NEP and NHESP is ongoing, and progress so far is described in *Section 5* of this DEIR (Rare Species). As stated throughout *Section 12*, rare species and their habitats are a component of the performance standards of a number of regulated resources, and to that end, NEP has incorporated into the project design and construction planning, a number of measures intended to avoid and minimize impacts.

Permanent impacts to mapped NHESP rare species habitat include tree removals, structure replacements, and access improvements. Temporary alteration is also proposed, due to the use of

construction matting for access and work areas within wetlands and sensitive upland habitat. Coordination with NHESP is ongoing, and it remains to be determined if there will be a "Take" for at least one rare species. The Project proponent submitted a Checklist on August 15, 2023 to address MESA compliance (refer to **Appendix C** for correspondence), and a CMP, if necessary, will be prepared for applicable species (as determined by NHESP), to ensure that appropriate avoidance and mitigation are employed. Please refer to *Section 5* for additional details on mitigation proposed within NHESP Priority and Estimated Habitat.

12.3.5 MassDOT Access Permits for Crossing Over of State Roads with Utility Lines

NEP will obtain a MassDOT Permit to Access State Highway/Non-Municipal Utility Permits for crossing over of state roads with utility lines for the Project. The Project's impacts relative to MassDOT are associated with the installation of a new overhead wire (the OPGW) across state roadways by a non-municipal utility, and construction/improvement of access routes leading from state highways into the ROW. Line installation could temporarily affect traffic flow of the roadway but does not involve physical modifications to the roadway or roadway ROW. Typical performance standards associated with the MassDOT permit include notification 48 hours prior to the beginning of work; submission of MassDOT's standard work notification form; compliance with MassDOT's requirements regarding traffic delays; and the use of police details as specified on the traffic management plans and required by MassDOT. The day of the week and time of day that the work will be performed could vary based on the roadway classification and historical traffic volumes. NEP will prepare and submit a TMP to MassDOT for its review and approval. The Project will comply fully with the performance standards specified in the permit to ensure a safe environment for traffic flow and construction crews in and around the roadways. No long-term roadway impacts are anticipated.

12.3.6 Surface Water Discharge Permit

Surface Water Discharge Permitting is required for a Project proposing to discharge pollutants to surface waters of the Commonwealth, including from stormwater discharges per 314 CMR 3.04(2)(a). However, NEP will be exempt from the requirement per 314 CMR 3.05(2), as the Project will require NPDES CGP authorization under 3 U.S.C. 1251 § 404.

Due to earth disturbing activities of more than one (1) acre, this Project will require a federal NPDES CGP and associated coverage pursuant to the Surface Water Discharge regulations specifically at 314 CMR 3.06. The NPDES CGP requires filing an NOI that provides information on the site and identifies the site's general operator, and development of a SWPPP that includes appropriate BMPs to minimize pollutant discharges.

The Project will comply with the requirements of the NPDES CGP. As a component to this compliance, a site-specific SWPPP will be prepared and implemented throughout the Project's construction and restoration phases. Implementation of this plan will include extensive use of erosion and sediment control measures designed to minimize site disturbance and prevent opportunities for sedimentation to occur offsite or toward wetland resource areas. The SWPPP will

also include measures to ensure post-construction revegetation and stabilization of disturbed soil areas, which will serve to minimize the potential for ongoing erosion and sedimentation. NEP will submit a SWPPP for the Project in compliance with the EPA's NPDES program under the Stormwater CGP, as well as Bureau of Water Resources Surface Water Discharge (NPDES) Permitting Program WM 15 permit application.

12.3.7 Waterways Permitting – Chapter 91 Licensing

The Project crosses several rivers and streams that are subject to waterways licensing jurisdiction by MassDEP under MGL. c. 91 and the implementing regulations, 310 CMR 9.00. In accordance with comments received from MassDEP on the EENF (dated February, 10, 2023), pursuant to 310 CMR 9.05(3)(g)(1), MassDEP determined that portions of said work (including but not limited to the overhead wire maintenance, and replacement of overhead wire with optical ground-wire), may be exempt from c.91 licensing, provided that a final Wetlands OOC is issued for said work under M.G.L. Chapter 131, § 40 and 310 CMR 10.00. Final Wetlands OOCs will be obtained for all c.91 jurisdictional water crossings prior to the commencement of work. This will include OOCs from the municipalities of Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg and Leominster and Athol. Please refer to *Table 4-9* in *Section 4* for details on the scope of work within each waterway subject to c.91 jurisdiction.

12.3.8 Massachusetts Historical Commission & Section 106 Consultation

Any projects that require funding, licenses, or permits from any state agency must be reviewed by MHC in compliance with M.G.L. c. 9, §26-27C. This law created the MHC, the office of the State Archaeologist, and the State Register of Historic Places, among other historic preservation programs. It provides for MHC review of state projects, State Archaeologist's Permits, the protection of archaeological sites on public land from unauthorized digging, and the protection of unmarked burials. The regulations that guide MHC review of state funded, licensed, or permitted projects are published in Section 9, Section 26-27C (950 CMR 70-71). These regulations set up a process that includes identification of listed historic properties in the vicinity of the proposed Project, assessment of effect; and consultation among interested parties to avoid, minimize, or mitigate any adverse effects. SWCA initiated consultation with the MHC by submitting a Project Notification Form, a Cultural Resources Due Diligence Report, and a State Archaeologist's permit application. Additional testing was completed in 2022.

If a project is found to have an adverse effect to a listed historic property or archaeological site, the applicant is required to consult with MHC and other parties, as appropriate, to determine the feasible measures to avoid, minimize or mitigate the adverse effect. NEP will continue to coordinate with SWCA, in consultation with MHC and the USACE, to identify historic, archaeological, or cultural resources prior to construction and to avoid, minimize, or mitigate impacts to cultural and historic resources.

12.3.9 Energy Facilities Siting Board

A Petition for Approval to Construct and Operate the Project was filed with the EFSB (or "Siting Board") pursuant to Chapter 164, Section 69J of the General Laws on May 2023 (Docket No. EFSB 23-45). Under Chapter 164, Section 69G, a "facility" requiring approval by the EFSB includes:

- A new electric transmission line having a design rating of 115 kV or more which is 10 miles long or more on an existing transmission corridor except reconductoring or rebuilding of transmission lines at the same voltage.
- An ancillary structure which is an integrated part of the operation of any transmission line.

This Project meets both requirements. The EFSB approval process includes filing the Petition followed by an extensive and lengthy adjudicatory process. The Siting Board has a statutory requirement to implement its policies in order "*to provide a reliable energy supply for the Commonwealth with a minimum impact upon the environment at the lowest possible cost*." (M.G.L. c. 164, §69H and 69J). Further, M.G.L. c. 164, §69J requires the Siting Board to review alternatives to planned projects, including "other site locations." A petitioner to the Siting Board must demonstrate that it has examined a reasonable range of practical siting alternatives, and that its "*proposed facilities are sited at locations that minimize costs and environmental impacts while ensuring supply reliability*". In addition to the initial alternatives analysis presented in the EENF, NEP provided an expanded alternatives analysis in the EFSB filing. This expanded analysis is summarized in *Section 2* of this DEIR, and included an evaluation of the No Build Alternative, a No-Wires Alternative, a Critical Asset Repair Alternative, a Reconductoring and Repair of Existing Lines Alternative, and the Line Rebuild Alternative. As a result of both the original and expanded analyses, NEP has demonstrated that there is no practicable Project Alternative to the Proposed Project that would have less adverse impacts on aquatic and terrestrial ecosystems that does not have other significant adverse environmental consequences.

NEP is confident that the Project represents the optimal solution because it meets the reliability needs; comparatively offers the best solution with the least number of adverse impacts and provides a cost-effective solution.

12.3.10 Easements and Article 97 Land Disposition

The A1/B2 Line ROW crosses eight (8) properties designated as Article 97 Lands. These include two (2) properties owned by the state, and six (6) owned by local authorities (Refer to Table 8, *page 35* in the EENF).

Where the Project crosses Article 97 lands, replacement of the Lines will be entirely located within NEP's existing transmission line ROWs, where utility easement rights have been long established. These existing ROWs encompass easements on privately held lands, as well as on properties owned by state and local governments (e.g., public road ROWs). In addition, portions of the ROW will extend across land owned in fee by NEP. The ROW is adequate to accommodate the proposed

maintenance and refurbishment activities, with no additional permanent ROW easements required. Therefore, work is within the scope of NEP's easement rights[53].

12.4 FEDERAL REGULATORY REVIEWS

12.4.1 Section 404 of the Clean Water Act

As noted in the discussion of state permits, the wetlands and streams along the ROW are subject to the jurisdiction of Sections 401 and 404 of the federal CWA. The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating water quality standards for surface waters. The Section 401 WQC, as administered by MassDEP, was discussed previously, and part of the regulations, jurisdiction includes confirming that federally issued permits will not result in violation of state water quality standards. In contrast, the Section 404 process is administered by the USACE and regulates dredge and fill activities in Waters of the U.S. ("WOTUS").

The USACE (Federal Register 1982) and the EPA (Federal Register 1980) jointly define wetlands as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas". Section 404 of the CWA establishes permit programs to regulate the discharge of dredged or fill material into waters of the United States, as well as discharges of dredged or fill material into wetlands adjacent to nominal waters (33 CFR 328). The Project qualifies for authorization under a Pre-Construction Notification (PCN) in accordance with the USACE Massachusetts General Permits for activities within federal wetlands as defined by Section 404 of the CWA, primarily due to the temporary BVW impacts associated with construction mats, which are considered "fill". NEP filed a PCN on September 1, 2023 and is continuing to consult with USACE through the permitting process.

The Project will meet the USACE's requirement that areas of permanent fill be mitigated. Mitigation will be determined using criteria defined in the 2016 New England District Compensatory Mitigation Guidance, and through consultation with the USACE New England District. Per the USACE stated preference for compensatory mitigation, NEP proposes to use the In-Lieu Fee program, as discussed in *Section 10*.

Permanent impacts to vernal pools have been avoided, and temporary alteration will be limited to the placement of construction matting (for access), within BVW associated with one (1) vernal

[53] NEP's easements for the Existing Lines and Taps predate the establishment of DCR properties and state forests in these areas. NEP holds easements that grant rights for the construction and maintenance of towers, poles, wires, and other structures for the transmission of electric power in these locations. The Project has been designed to utilize existing access within NEP easements wherever feasible. However, improvements to existing off-ROW access that has been historically used by NEP will be required within State Forest lands. The off-ROW access and any necessary improvements are within NEP's legal rights under its existing easements. Because of these existing easement rights, NEP does not need to obtain additional easements or proceed through the Article 97 disposition process to construct the Project.

pool. Use of construction BMPs will be employed to avoid and minimize indirect impacts to the vernal pools in the vicinity of the Project. Construction-related details will be provided in permit applications and are also addressed in *Section 9.*

12.4.2 Environmental Protection Agency (EPA)

As described previously, NEP will submit an eNOI to the EPA to notify them of the intent to have construction stormwater discharges on the project. As a component of the eNOI process, NEP will prepare a SWPPP for the Project in compliance with the EPA's NPDES program under the Stormwater CGP, as well as MassDEP Bureau of Water Resources Surface Water Discharge (NPDES) Permitting Program WM 15 permit application. Implementation of the SWPPP will include extensive use of erosion and sediment control measures designed to minimize site disturbance and prevent opportunities for sedimentation to occur offsite or toward wetland resource areas. The SWPPP will also have a component that consists of spill prevention, countermeasures and controls that addresses the accidental or unintended release or spill of pollutants, such as fuel, hydraulic fluid, or lubricants. The SWPPP will also be a component of the Project's EFI and will be included in the environmental training that construction contractor personnel will receive.

12.4.3 U.S. Fish and Wildlife Service ("USFWS")

Under Section 7 of the Endangered Species Act ("ESA"), any action requiring one or more federal permits or licenses must also consult with the USFWS to ensure that proposed actions do not jeopardize listed species or destroy or adversely modify critical habitat. Accordingly, the USFWS Endangered Species Consultation Procedure available on their website was followed. As a result of the USFWS Endangered Species Consultation Procedure, it was determined that four federally listed species may be present within the Project area. One species is a threatened mammal, one species is a candidate insect, one species is an endangered plant, and one species is a threatened plant. Review is ongoing to determine permitting requirements and/or impact avoidance and minimization measures. NEP is working with the USFWS to avoid a "Take" determination, which will be made as the project advances through the permitting process. Additional consultation may be required, pending the outcome of this process.

12.4.4 Section 106 and the National Historic Preservation Act

Section 106 of the NHPA requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation ("ACHP") a reasonable opportunity to comment (33 CFR 325 Appendix C and 36 CFR Part 800 and 33 CFR 325, Appendix C). Pursuant to 36 CFR 800.16, an undertaking consists of "*a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, those carried out with federal financial assistance, those requiring a federal permit, license or approval and those subject to State or local regulation administered pursuant to a delegation or approval by a federal agency*."

For the Project, the undertaking is the Section 404 Permit, and the responsible federal agency is the USACE. "Section 106 review" follows a specific process, which is guided by federal regulations (36 CFR 800 and 33 CFR 325, Appendix C). These regulations have created a series of steps by which federal agencies identify and evaluate historic properties that may be affected by their undertakings, assess adverse effects to those properties, and take prudent and feasible measures to avoid, minimize, or mitigate those effects.

This page intentionally left blank.

13 RESPONSE TO COMMENTS

This section presents the responses to the Certificate of the Secretary on the EENF, and each comment received, per 301 CMR 11.07(6)(1). The Secretary's Certificate for the EENF, along with the comment letters from state agencies, municipal officials, and other interested parties, have been annotated for ease of reference and are presented in **Appendix I**: Secretary's Certificate and Comment Letters (Annotated). *Table 13-1*, beginning on the following page, presents the comments and the Proponent's direct responses, as well as references to sections or figures within the SEIR or EENF where additional information can be found.

The annotated comment letters are numbered as listed below for ease of reference:

1. MEPA Certificate for the EENF, EEA #16607
2. Leominster Department of Public Works
3. Franklin Regional Council of Governments (FRCOC)
4. MassDOT, Public/Private Development Unit
5. MA Division of Fisheries & Wildlife, NHESP Program
6. MA DCR
7. MassDEP Waterways Regulation Program

Table 13-1: Responses to Comments

Ref. #	Comment	Response
	1. **SECRETARY'S CERTIFICATE ON THE EENF, EEA #16607, SEPTEMBER 23, 2022**	
	Project Description and Permitting	
CS-1	In particular, the DEIR should explore alternatives to reduce the extent of tree clearing so as to avoid or minimize impacts to environmental resources.	The determination of the required amount of tree removal for the A1/B2 lines is primarily based on the regulatory requirements pertaining to line voltages and the current extent of hazard tree encroachment into the A1/B2 ROW (based on LiDAR and field data). *Section 1.8.2, Page 11* and *Table 1-6* describe the tree removal impacts associated with the Project, and how these have been refined and reduced since the filing of the EENF. *Section 2.2*, *Page 25* expands on the tree removal requirements associated with different Project alternatives.
CS-2	The DEIR should discuss whether a Wetlands Variance or Article 97 legislation is needed, and if so, include a full description of how the project will comply with applicable requirements.	Wetland Variance under the MA WPA or Article 97 legislation is not anticipated. See *Section 12.3.2.1*, *Page 176* regarding the Project's compliance with the performance standards established for Limited Status Project, as defined in 310 CMR 10.53(3)(d) in *Section 12, Page 168*. See *Section 12.3.10 Page 192* regarding the Project's compliance with Article 97 legislation requirements.
CS-3	The Proponent should offer meaningful mitigation measures to offset the environmental impacts in project areas where impacts to wetlands and undisturbed forests cannot be avoided or minimized.	Mitigation measures are discussed in *Section 10, Page 126*. Final compensatory mitigation measures will be determined in the course of federal, state and local environmental permitting.
CS-4	As an adequate alternatives analysis is a central component of the MEPA review process, the request to file a Single EIR is denied.	A detailed description of the Project alternatives is provided in *Section 2, Page 25*, and in the EFSB filing with the Massachusetts EFSB (Docket No. EFSB 23-45).
CS-5	The project corridor includes mapped areas that are inundated during a 100-year storm as mapped on the FEMA Flood Insurance Rate Maps ("FIRMs"); however, the map legend color is not easily distinguishable on the plans included in the EENF	The plan set has been revised and provided in **Appendix A**.
	Environmental Impacts and Mitigation	
CS-6	The EENF does not identify acres of impact in Priority Habitat of state-listed rare species.	In total, approximately 6.1 acres of temporary alteration (temporary construction matting), 16.5 acres of permanent impacts (access installations and improvements, work pad, and cut/fill), and 2.7 acres of permanent conversion of vegetation (tree removal) are proposed within NHESP Priority Habitat. Please refer to *Table 5-1* for further details.
CS-7	The EENF does not describe tree clearing methods that might be used to minimize site disturbance such as clearing by hand in sensitive areas or use of feller bunchers (as recommended in comments from the Massachusetts Department of Environmental Protection (MassDEP)).	NEP utilizes a combination of mechanized and hand cutting/felling, mowing, selective pruning, and cut stump for tree removal methods. NEP typically will use hand cutting to selectively remove trees or smaller groups of trees, as this method will minimize disturbance/potential damage to other vegetation or structures. In some complex, uneven, or soft surface terrain, however, mechanical vegetation removal using equipment with a longer reach (such as feller bunchers or other tree handling equipment), may be necessary. In addition, NEP will consider the use of tree handlers, where applicable. *Section 9.2.1*, *Page 112* provides details on the proposed tree removal methods.
CS-8	A more comprehensive discussion of mitigation, including for the extensive tree clearing proposed by the project, should be provided in the DEIR.	A more comprehensive discussion of mitigation is provided in *Section 10, Page 126*. Impact avoidance and minimization measures are also discussed throughout the DEIR, in *Sections 3,4,5 & 6*.
	Review of the EENF	
	Alternatives Analysis	
CS-9	The EENF does not describe alternatives related to location of new access routes (where needed) or reduced or varying tree clearing widths, or a scenario that would avoid or reduce clearing within sensitive environmental resource areas.	A full description of the alternatives considered for location on new access routes is provided in *Section 2, Page 25*. Refer to comment CS-1 for alternatives for reducing the amount of tree removals.
CS-10	It does not discuss how the required clearing width was established related to site topography such that transmission lines would be located higher than the existing trees.	A discussion of tree removal requirements is provided in *Section 3.2*. Tree removal requirements are dictated by line voltages, regulatory and safety requirements, site topography, and tree height. It is essential that the entire span of line between structures is outside of striking distance of tall growing tree species. As such, tree removal is often still required in situations where the structure height is above the tree line, as the lowest point of the line (i.e., the "sag"), will be lower. NEP will selectively remove trees within the ROW, while preserving lower growing shrubs (in areas not required for construction work pads and access).
CS-11	As stated in the Scope, the DEIR should evaluate "Reduced Build" alternatives that avoid or minimize environmental impacts.	An expanded alternatives analysis is provided in *Section 2*, *Page 25* including "reduced build" Project alternatives such as a critical asset repair alternative, reconductoring and repair alternative, and 69 kV rebuild alternative.
CS-12	Based on this demonstration, a Variance to the MA WPA regulations may be required pursuant to 310 CMR 10.05(10). The Proponent should respond to the MassDEP comment letter incorporated by reference herein and the Scope below.	The Project is eligible for "limited project" status, as defined in 310 CMR 10.53(3)(d) because it involves the "*construction, reconstruction, operation and maintenance of underground and overhead public utilities.*" Please refer to *Section 12.3.2.1, Page 176* of the DEIR for further details on the Project's conformance with the Limited Project status.
	Environmental Justice	
CS-13	The Proponent should conduct further public engagement activities prior to filing the DEIR as outlined in the Scope.	*Section 8.3, Page 99* provides a description of public engagement associated with the Project.

CS-14	Within the project's DGA, the Proponent indicates that the communities of Gardner, Athol, Fitchburg, Leominster, and Lancaster meet at least one of the four "vulnerable heath EJ criteria"; however, the EENF does not identify which communities and census tracts exceed 110% of the statewide rate for each criteria: Heart Attack Rate, Pediatric Asthma Rate (available at the community level), Low Birth Weight, and Blood Lead Prevalence (available at the census tract level). The DEIR should provide additional analysis of impacts on EJ populations consistent with the MEPA Interim Protocol including fully analyzing the data available in the DPH tool at the municipal and census tract level.	*Table 8-3* identifies EJ communities which exceed 110% of the statewide rate for each vulnerable health criteria. *Section 8.4, Page 103* provides additional analysis of impacts on EJ populations.
CS-15	Based on the baseline assessment of existing burdens, the EENF does not conclude whether or not there is an existing "unfair or inequitable" burden; however, it asserts that the project will not result in disproportionate adverse effects on the EJ populations.	The analysis concludes there is an existing unfair or inequitable burden experienced by some of the EJ populations within the DGA. See *Section 8.4, Page 103 for* conclusions on existing unfair or inequitable burden.
CS-16	Where this occurs, the EENF notes that shade to these properties in the morning will be reduced, though not fully eliminated, and portions of the property near the ROW may experience a minor short-term increase in temperature; although it is not clear that the impact would be short-term if trees are not allowed to regrow, and the area will be maintained through the Proponent's VMP.	See *Section 8.4.5.1, Page 108* for details of the tree removal impacts within EJ communities.
CS-17	To the extent tree clearing will affect adjacent EJ populations with heightened vulnerabilities as shown by the DPH EJ Tool or EPA EJ Screen, specific mitigation should be considered.	See *Section 8.4.5.1, Page 108* for details of the tree removal impacts within EJ communities. The extent of tree removal within EJ population tracts is extremely limited, and as such no mitigation is proposed. *Table 10-1* provides further details on Project wide mitigation for tree removal impacts.
CS-18	Comments from DCR indicate concerns for recreational impacts to the access point in Warwick State Forest that is proposed to be co-located with the Metacomet Monadnock Trail and requests additional specific protection and restoration measures to be taken for sensitive natural and cultural resources on public conservation lands. These issues should be discussed in the DEIR.	See *Section 3.2.8, Page 39* for details of Project impacts within DCR Land. NEP will work closely with DCR to ensure the safety of trail users, and to minimize project impacts to trail access. Coordination with DCR is ongoing.
Land Alteration		
CS-19	The EENF also lists federal, municipal, and land trust properties adjacent to the ROW in each municipality but does not identify the acreage impacted by the project.	*Table 3-4* details the acreage of Project impacts in federal, municipal, and land trust properties.
Work pads/Areas and Pull Pads		
CS-20	Comments from MassDEP state that the area and extent of impacts of any proposed retaining wall within a resource area, or within the buffer zone of a resource area, should be identified, and should avoid, minimize and mitigate impacts to the maximum extent practicable.	NEP re-evaluated retaining walls to avoid, minimize and mitigate impacts to the maximum extent practicable. Designs have been revised to remove the majority of retaining walls previously proposed within resource areas. There are currently only two proposed retaining walls proposed (both along the Athol Tap Line ROW).
Vegetation Removal/Tree Clearing		
CS-21	Comments from MassDEP indicate concern for the increase in the peak runoff rate and land destabilization associated with tree clearing. The DEIR should provide greater detail regarding proposed mitigation to prevent erosion and stabilize soils in these areas. Further analysis of land alteration impacts, including GHG and EJ implications, should be conducted as indicated in the Scope. Appropriate mitigation should be provided, including in accordance with WQC permitting.	A detailed description on the proposed actions to prevent erosion and stabilize soils is provided in *Section 10.3, Page 133*. Analysis of GHG emissions is discussed in *Section 7.3*, *Page 93* and EJ implications in *Section 8.4, Page 103*.
Rare Species		
CS-22	The EENF does not detail the acres of designated Priority Habitat of state-listed rare species to be altered as a result of the project. The DEIR should identify both temporary and permanent impacts to Priority Habitat and the corresponding municipality in which habitat is located.	See response to Comment CS-6.
CS-23	Additional information should be provided in the DEIR in accordance with comments from NHESP and the Scope.	See *Section 5* of the DEIR for Project details relating to NHESP designated rare species habitats. Consultation with NHESP is ongoing, and NEP will prepare a CMP for species for which NHESP determines that a "Take" is likely.
Wetlands / Water Resources		
CS-24	The Proponent should document why the project qualifies for Limited Project status as requested by MassDEP and outlined in the Scope.	See response to Comment CS-12.
CS-25	Comments from MassDEP note that the MA WPA and associated regulations do not have a designation of "temporary impacts" to resource areas. The activities proposed in the EENF meet the definition of "Alter" contained in 310 CMR 10.04. The WQC regulations, 314 CMR 9.00 specifically include "temporary" activities as being subject to the regulations (310 CMR 9.02); however, MassDEP states temporal impacts to resource areas can be mitigated through "in-situ" replication and/or restoration, as well as via off-site consideration.	Temporary impacts to resource areas will be mitigated through a combination of *in-situ* restoration and in-lieu fee payments, as described in *Table 10-5*.
CS-26	Additional information regarding mitigation for permanent wetland impacts should be provided in the DEIR.	*Section 10.4, Page 135* of the DEIR summarizes proposed mitigation measures, including clear commitments to such measures. *Section 11, Page 140* includes proposed Section 61 Findings for each State Agency that will issue permits for the Project.
Section 91		
CS-27	Comments from MassDEP Waterways Program state that the exemption is limited to "placement in a non-tidal river or stream subject to jurisdiction under 310 CMR 9.04(1)(e) of fill or structures for which a final Order of Conditions has been issued under, and which does not reduce the space available for navigation; such fill or structures are limited to overhead wires, conduits, or cables to be attached to an existing bridge, without substantial alteration thereof, or constructed and maintained in accordance with the NESC." The EENF describes work that will occur within waterways in addition to the overhead wires, such as construction mats, work pads and pull pad areas, and fill for two new/or replacement structure foundations. Comments from MassDEP Waterways recommend that the DEIR include details on the scope of work within each waterway in c. 91 jurisdiction, in order for the to provide feedback on any c. 91 authorization that may be required. This information should be provided in the DEIR.	*Section 4.4, Page 67* includes details on the scope of work within each C.91 jurisdictional waterway.
Article 97		
CS-28	Comments from DCR, however, indicate the use and improvement of five woods roads outside of the ROW to enable access through DCR forest land to the ROW for project activities; four of the paths are in Warwick State Forest and one is in Royalston State Forest. Proposed changes to the access corridors include tree clearing and widening of the corridors, which will result in permanent impacts and potentially increase total off-ROW impacts on DCR land. Comments from DCR indicates that the proposed changes and the need to access DCR property in the future for ongoing maintenance appear to require permanent easements, triggering Article 97 of the Amendments to the Massachusetts Constitution and that additional information from the Proponent is required. DCR notes that if the improved woods roads are to be used for ongoing maintenance on the ROW, that change in use of DCR property would also trigger Article 97	See *Section 12.3.10 Page 192* for details on NEPs easement rights and Article 97 Land Disposition, including easement and access rights within DCR Land. No new easements are required, and Project activities (including the improvement of off-ROW access), are within NEPs existing easement rights.
Adaptation and Resiliency		
CS-29	However, the EENF does not assess how the proposed clearing or other design elements, such as the height of structures or foundations, would affect resiliency as measured by future storm scenarios.	See *Section 7.4, Page 93* for details on Project design and climate resiliency.

GHG Emissions from Land Alteration		
CS-30	The DEIR should provide an analysis consistent with the Scope included in this Certificate.	NEP hired a subconsultant, RDG, to conduct a GHG analysis. The finalized methodology is described in the GHG analysis memo provided in **Appendix D**.
CS-31	While the use of LiDAR data appears beneficial to characterize the age and height of trees along the project corridor, this approach does not appear to consider difference in forest and tree types that may be present in the entirety of the 216 acres of land alteration estimated for the project. In addition, it is unclear what "best available datasets" the Proponent intends to use to assume carbon stocks, and whether such datasets would take into account variations in tree types. The Proponent should revise its approach to carbon analysis to consider such variations, and should use data from the U.S. Forestry Service, as further specified in the Scope. The Proponent is directed to consult with the MEPA Office prior to finalizing the methodology for conducting this analysis.	NEP hired a subconsultant, RDG, to conduct a GHG analysis. NEP also consulted the MEPA Office on February 7, 2023, prior to finalizing the data sources and methodology for conducting this analysis (please see **Appendix C**). The finalized methodology is described in the GHG analysis memo provided in **Appendix D**.
Transportation		
CS-32	Comments from MassDOT indicate that permits will be required for temporary construction access, overhead wire crossings of the above listed state routes, and new access routes proposed within the state highway right-of-way.	*Table 12-1* lists the permit status of all regulatory requirements, including those required from MassDOT.
CS-33	The EENF did not quantify the extent of truck traffic that may be required and did not identify equipment that will be used to remove trees as a result of the project.	*Section 9.3, Page 117* provides a summary of anticipated project traffic and equipment needs. The number of trucks required for the Project, including during tree removal activities, has not yet been quantified. Due to the phased nature of the work, and extent of the Project ROW, it is not possible to accurately assess how many vehicles will be involved in tree removal activities at any one time, or in any one location. NEP will work with MassDEP to prepare TMPs, to ensure that all construction traffic is suitably managed throughout the duration of the Project.
Historic and Archaeological Resources		
CS-34	Comments from DCR request coordination with the Staff Archaeologist related to potential archaeological resources on DCR property.	Consultation with DCR is ongoing, and NEP will coordinate with the Staff Archaeologist.
CS-35	Comments from the Franklin Regional Council of Governments (FRCOG) recommends the Proponent consider documenting portions of the historical mainline19 as the Vernon Dam, which became operational in 1909, was the first power plant in the northeastern U.S. to transmit power across state lines to manufacturing centers in Gardner and Fitchburg, MA (in 1920).	NEP has documented Vernon Dam in *Section 6.1*.
Hazardous Materials		
CS-36	The Proponent is advised to retain a Licensed Site Professional (LSP) as outlined in the Scope.	NEP has a Licensed Site Professional ("LSP") under contract.
Conclusion		
CS-37	Comments from DCR indicate that additional information is required to determine whether proposed changes to DCR property will require permanent easements triggering Article 97, ensuring no net loss of protected lands.	No new easements are required. Project activities are within NEPs existing easement rights. Consultation with DCR is ongoing.
CS-38	Based on review of the EENF and consultation with Agencies, I hereby require the Proponent to submit a DEIR that provides further analysis of alternatives which avoid impacts to sensitive resources and describes a robust package of mitigation for project impacts. A carbon analysis of tree clearing activities should also be provided. The Proponent should submit a DEIR that provides updated project information and analyses as specified in the Scope below.	See *Section 2, Page 25* for a detailed alternatives analysis for the Project. Measures to avoid and minimize impacts to sensitive resource areas are described in *Sections 3,4,5 & 6*, while Project mitigation is discussed in *Section 10, Page 126*. A carbon analysis for tree removal activities is provided in **Appendix D**. NEP has provided an update on the project information since EENF filing and analyses, as specified in the Scope.
EENF Scope		
General		
CS-39	The DEIR should follow Section 11.07 of the MEPA regulations for outline and content, as modified by this Scope.	The DEIR followed Section 11.07 of the MEPA regulations for outline and content.
CS-40	Recommendations provided in this Certificate may result in a modified design that would further avoid, minimize, and/or mitigate Damage to the Environment.	An updated design has been provided in DEIR Plans in **Appendix A.**
CS-41	The DEIR should identify measures the Proponent will include to further reduce the impacts of the project since the filing of the EENF, or, if certain measures are infeasible, the DEIR should discuss why these measures will not be adopted.	See *Section 1.8, Page 9* for details of changes since the filing of the EENF.
Project Description and Permitting		
CS-42	The DEIR should describe the project and identify any changes to the project since the filing of the EENF.	See *Section 1.8, Page 9* for details of changes since the filing of the EENF.
CS-43	It should include updated site plans for existing and post-development conditions. Conceptual plans should be legible and provided at a reasonable scale. The current plans contain multiple overlapping layers making it difficult to identify resource areas and assess impacts. Plans should clearly identify: all major project components (structures, transmission lines, access routes, etc.); public areas; wetland resource areas; Priority Habitat; impervious areas; ownership of parcels including easements; and stormwater and utility infrastructure.	NEP has made significant efforts to enhance the clarity and comprehensibility of the site plans for both existing and post-development conditions. Conceptual plans have been revised to ensure legibility and have been provided at an appropriate scale. A planimetric and aerial split view of the 75% Design plans has been developed. The planimetric view shows the existing contours and proposed grades with a black and white background to make the contour lines clearer. Updated site plans have been provided in DEIR Plans in **Appendix A**.

CS-44	The DEIR should indicate alternative easements that were considered and any additional permanent and temporary easements that will be required to create access to the ROW.	NEP considered evaluating alternative access into its design and planning process. This evaluation has been discussed in *Section 2.5, Page 29*.
CS-45	The DEIR should provide a brief description and analysis of all applicable statutory and regulatory standards and requirements and describe how the project will meet those standards. It should include a list of required Agency Permits, Financial Assistance, or other state or local approvals and provide an update on the status of each.	See *Section 12, Page 168* for a description of the Project's conformance with all applicable regulatory standards. See *Table 12-1, Page 169* for the status of regulatory requirements.
	Alternatives Analysis	
CS-46	The EENF does not explore alternatives to clearing trees within a uniform width to the edge of the ROW (100 ft on the mainline and Crystal Lake Tap and 125 ft on the Athol Tap).	See responses to comments CS-1 and CS-10.
CS-47	The DEIR should include an expanded alternatives analysis that provides full justification for dismissing the Rebuild Alternative and evaluates alternatives that consider reduced or varying tree clearing widths, alternative access routes, and work area scenarios that avoid and minimizes environmental impacts and tree clearing within sensitive resource areas such as potential vernal pools, ORWs, wetlands, and rare species habitat. The DEIR should document proposed conditions for these alternatives, quantify environmental impacts and provide a conceptual plan. It should compare the environmental impacts with the Preferred Alternatives, in particular, with respect to land alteration, wetland resource areas, potential vernal pools, ORWs, rare species habitat, archaeological resources, GHG emissions impacts and climate resiliency.	See *Section 2, Page 25* for an expanded alternatives analysis and comparison of environmental impacts between different Project alternatives.
CS-48	Impacts should be reported in total and broken out for each community.	Refer to *Sections 3 and 4*, and in particular *Table 3-2*, *Table 4-2*, *Table 4-4*, *Table 4-7*, and *Table 4-8*, for a summary of impacts in total and broken out for each community.
CS-49	The DEIR should justify why, within the new area proposed to be cleared, it is likely that much of the non-target vegetation will also be cut or in some way impacted. The DEIR should describe how more vegetation could be preserved in more sensitive areas. The DEIR should consider and describe opportunities to vary the width of the clearing particularly in areas where the topography is low, and transmission wires are high.	See *Section 1.8.2, Page 11* and *Section 3.2, Page 32* for details of tree removal methods. NEP will remove trees within the ROW, while preserving lower growing shrubs (in areas not required for construction work pads and access).
CS-50	The DEIR should provide additional justification for the proposed new maintained ROW of 100 and 125 feet given the elevation of the new structures (93-110 ft above ground) in relation to the adjacent forested areas.	See responses to comments CS-1 and CS-10.
CS-51	This should include the identification of tall growing trees or other vegetation within the ROW that pose a risk of vegetation-related outages, to the extent this information is available.	See responses to comments CS-1 and CS-10.
CS-52	The DEIR should also indicate whether there are any alternatives that could proceed without a Wetlands Variance or Article 97 land disposition.	See response to comment CS-2.
	Environmental Justice	
CS-53	The DEIR should provide an update on efforts to conduct outreach and promote public involvement of nearby communities, including EJ populations to meaningfully engage those located within the DGA in decision-making for the project.	See response to comment CS-13.
CS-54	It should contain a full description of measures the Proponent intends to undertake to promote public involvement by such EJ populations during the remainder of the MEPA review process including a discussion of any of the best practices listed in the MEPA EJ Public Involvement Protocol that will be employed.	See response to comment CS-13.
CS-55	The DEIR should detail how public involvement efforts will continue throughout subsequent permitting and through the construction period for the project.	See response to comment CS-13.
CS-56	It should describe any outreach that will be conducted as part of local review processes, including the procedures for providing abutter notice and opportunities for public input into project design and timing.	See response to comment CS-13.
CS-57	The DEIR, or a summary thereof, should be distributed to the EJ Reference List, and an updated list should be obtained from the MEPA Office to ensure that outdated contacts are removed, and new ones added.	The DEIR will be distributed to all parties named on the most up-to-date EJ Reference List. A new reference list will be obtained from the MEPA Office once the DEIR has been finalized.
CS-58	The DEIR should provide an updated baseline assessment of any existing unfair or inequitable Environmental Burden and related public health consequences impacting EJ Populations in accordance with 301 CMR 11.07(6)(n)1 and the MEPA Interim Protocol for Analysis of EJ Impacts.	See response to comment CS-15.
CS-59	The DEIR should fully analyze the data available in the DPH tool at the municipal and census tract level to characterize existing unfair or inequitable Environmental Burdens.	See responses to comments CS-14 and CS-15.
CS-60	The DEIR should also survey the air-related environmental indicators identified in EPA EJ Screen to determine whether any of the identified EJ populations within the DGA are subject to elevated environmental burdens measured at 80th percentile of statewide average or higher. For any EJ population corresponding to that metric, the DEIR should describe in detail the proximity of the project site to those neighborhoods and discuss the specific activities, including the extent of forest clearing and construction activity, that will take place near those neighborhoods.	See *Table 8-4* for a survey of air-related environmental indicators for EJ communities.
CS-61	Based on the additional analyses required by the Scope included in this Certificate, the DEIR should provide an updated assessment of whether the project's impacts may result in disproportionate adverse effects, or increase the risks of climate change, on the identified EJ population, particularly in light of the GHG emissions, air pollutants, and heat island effects that may be associated with large-scale forest clearing activities.	See *Section 8.4.3, Page 107* for an analysis of Project impacts to determine 'disproportionate adverse effect', and *Section 8, Page 97* more broadly for details of Project impacts within EJ communities.
CS-62	The DEIR should consider any loss of open space or recreational opportunities that may affect EJ populations lacking access to such resources.	See *Section 8.4.5.2, Page 109* for details of Project impacts on open space.
CS-63	The DEIR should discuss what mitigation will be provided for any properties located directly adjacent to tree clearing activities, in light of the loss in shading and other impacts that may be anticipated.	See *Section 8.4.5.1, Page 108* for a discussion of tree removal impacts on EJ populations.
CS-64	As discussed below, the DEIR should contain a GHG analysis for the significant loss and conversion of forested land to a scrub-shrub habitat and a discussion of mitigation measures to reduce the GHG emissions of the project.	See response to comment CS-30.
CS-65	The DEIR should analyze land alteration associated with the project including implications for potential stormwater flooding and heat effects in surrounding neighborhoods. Analysis of the stormwater should specifically assess whether flooding risks may be exacerbated for nearby EJ populations, including under future climate conditions, and whether existing conditions would be worsened or improved by the project.	Analysis of potential stormwater, flooding, and heat effects is discussed in *Section 7*, *Page 87* including the risks to EJ populations.
CS-66	The DEIR should also analyze other short-term and long-term environmental or public health impacts of the project, including construction period activities. If any disproportionate adverse effects or increased risks of climate change are identified, the DEIR must include a discussion of proposed mitigation and include such measures in draft Section 61 findings.	Project-wide environmental impacts are summarized in *Section 1.12*, *Page 22* and mitigation in *Section 1.13, Page 23*. Environmental impacts are analyzed in detail in *Sections 3,4 & 5* (land impacts, wetland and waterways impacts, and rare species impacts), and mitigation details are provided in *Section 10, Page 126*. *Section 7, Page 87* details the climate change risks for the Project. *Section 8.4.1.2, Page 103* discusses health impacts from the Project, specific to EJ communities. Discussion of proposed mitigation is provided in *Section 8.6*, *Page 111* and Draft Section 61 findings are provided in *Section 11, Page 140*.

	Rare Species	
CS-67	The DEIR should provide an update on potential impacts to state-listed rare species habitat, including the acreage of Priority Habitat with the ROW and amount impacted by the project.	See response to Comment CS-6.
CS-68	The DEIR should include proposed measures to avoid, minimize and mitigate those impacts	See *Section 5.5, Page 77* for details of avoidance and minimization of rare species impacts. Mitigation measures are described in *Section 10.4.5, Page 136*.
CS-69	The DEIR should provide a summary of the outcome of continued consultation with NHESP and mitigation to be provided	Consultation with NHESP is ongoing, and a CMP will be prepared for species for which a "Take" is anticipated. Proposed rare species mitigation measures are described in *Section 5.5, Page 77.*
	Wetland Resource Areas	
CS-70	Should the Proponent file a NOI prior to the conclusion of MEPA review, MassDEP recommends the Proponent request that the local Conservation Commissions defer a decision on the filing and keep the meeting open until the Secretary has issued the final Certificate, and MassDEP has issued the WQC, to ensure consistency with any requirements in the Certificate and conditions of the WQC.	This comment has been noted. These requirements are included in *Table 12-1*.
CS-71	As indicated above, the Proponent should document why the project qualifies for Limited Project status given the magnitude of the alteration and the significance of the project site to the interests of the MA WPA; the proponent should provide a serious evaluation of reasonable alternatives to the proposed activity (including alternatives to reduce the full extent of the proposed cutting), an evaluation of the extent to which adverse impacts are minimized, and documentation that full mitigation is provided for unavoidable impacts. Based on this demonstration, a Variance to the MA WPA regulations may be required pursuant to 310 CMR 10.05(10).	The Project is eligible for "limited project" status, as defined in 310 CMR 10.53(3)(d) because it involves the "*construction, reconstruction, operation and maintenance of underground and overhead public utilities*". *Section 12.3.2.1, Page 176* provides further details on the Project's conformance with the Limited Project status. A complete evaluation of Project alternatives is provided in *Section 2, Page 25*, and in the Siting Report (Docket No. EFSB 23-45). Measures to avoid and minimize Project impacts are described throughout *Sections 3, 4, 5 & 6*. Mitigation is discussed in *Section 10, Page 126*. Please also refer to response to CS-2, regarding a variance from the MA WPA regulations.
CS-72	The DEIR should provide an update on the impact analysis for each resource area and demonstrate how the project will comply with performance standards outlined in the WPA as the project has the potential to result in significant changes to the hydrology of the affected resource areas and downstream reaches.	*Table 4-2*, *Table 4-4*, and *Table 4-5* provide an updated impact analysis for each wetland resource area. *Table 5-1* provides an updated impact analysis for rare species habitats. The Project's compliance with performance standards outlined in the MA WPA is provided in *Section 12.3.2, Page 189*.
CS-73	The DEIR should clearly indicate whether a Wetlands Variance will be needed for the project, and if so, discuss how the project will meet the requirements for the Variance.	See response to comment CS-2. A Wetland Variance or Article 97 legislation is not anticipated.
CS-74	The DEIR should consider impacts associated with surface and subsurface hydrology, wildlife habitat, and describe compliance with BMPs for stormwater management and sedimentation and erosion control.	Refer to *Section 3.3, Page 41* for details of stormwater management, and EG-303NE in **Appendix F** for details on sediment and erosion controls. Impacts on hydrology are considered in *Section 3.3.4, Page 43* and impacts and mitigation for wildlife habitat in *Section 5, Page 75* & *Section 10.4.5, Page 136*.
CS-75	The DEIR should ensure that estimates for impacts to wetland resource areas are conservative and account for all temporary impacts.	Please refer to *Table 1-7*, ***Error! Reference source not found.***, *Table* 4-1, *Table 4-3*, and *Table 4-4* for details of temporary and permanent impacts to wetland resource areas.
CS-76	The DEIR should describe tree clearing details, potential TOY restrictions, specific locations of proposed construction mats, and implementation sequencing.	*Section 9.2.1, Page 112* provides an overview of proposed tree removal methods, with additional details specific to tree removals within wetlands provided in *Section 4.3.3, Page 64*. *Table 1-6* and *Table 3-2* provide a break-down of the impacts associated with tree removals. *Section 5.5, Page 77* describes potential TOY restrictions in rare species habitat. Please refer to the DEIR Plans in **Appendix A** for construction mat locations. *Section 9.2, Page 112* describes the implementation sequencing for the Project.
CS-77	The EENF includes conservative estimates for temporary stream-crossings; however, the DEIR should describe to what extent the construction matting would necessitate alteration of Bank or LUW. The DEIR should also note whether any temporary or permanent stream crossings are proposed as requested in comments from MassDEP. If any crossings are proposed, the DEIR should include an alternatives analysis to ensure that the crossing will be designed to facilitate aquatic organism and wildlife passage, and not increase flood levels of the resource area. Any stream crossing should meet the criteria listed in 310 CMR 9.06(2)(b).	No permanent alteration of Bank or LUW is proposed due to stream crossings. Only temporary stream crossings (construction mats) will be installed, and these will completely span both Bank and LUW. Temporary alteration (shading under the matted crossings) will result in 3,024 LF of temporary alteration of Bank, and 17,217 SF within LUW. Refer to *Table 4-4* for a break-down of temporary matting requirements for stream spans. NEP does not anticipate permanent or temporary impairment to water carrying capacity, ground or surface water quality, or fisheries and wildlife habitat. In the event of high seasonal flows when matting is in place, NEP anticipated water to overtop or circumvent existing dams. As needed, NEP will work with municipalities during local permitting to determine construction-phase protection measures to manage seasonal high flow when working in impoundments. Please refer to *Section 12.3.2.2, Page 179* for a detailed discussion on Projects compliance with the requirement of Inland Bank (310 CMR 10.54), and *Section 12.3.2.4, Page 183* for Land Under Water Bodies and Waterways (310 CMR 10.56).
CS-78	As noted above, potential vernal pools should be analyzed to determine whether they are eligible to be certified (including the one potential vernal pool to be impacted) and the results presented in the DEIR.	NEP's subconsultant BSC Group evaluated the potential vernal pool to determine whether they are eligible to be certified. A full discussion is provided in *Section 4.2.1, Page 53*.
CS-79	MassDEP comments provide clarification that mitigation for impacts is a requirement of the 401 WQC regulations. The DEIR should propose appropriate mitigation measures in consultation with MassDEP to demonstrate consistency with the WQC regulations. The DEIR should discuss mitigation in the form of off-site preservation of forested land or wetlands, and culvert and stream enhancements. Temporary impacts to resource areas are subject to the MA WPA regulations (310 CMR 9.02) and can be mitigated through "in-situ" replication and/or restoration, as well as via off-site considerations.	See response to comment CS-26.
CS-80	The MassDEP comment letter states that the Proponent provides no mitigation for land alteration or wetland impacts beyond measures required by regulations associated with the MA WPA and related stormwater requirements. In light of the variety of indirect impacts that may flow from tree clearing, including stormwater runoff, GHG emissions and heat island effects for neighboring residences, the Proponent should offer additional meaningful mitigation measures to offset the environmental impacts in project areas where impacts to wetlands and undisturbed forests cannot be avoided or minimized.	As described in *Table 1-7* and ***Error! Reference source not found.***, Project impacts have been refined and reduced since the submission of the EENF. NEP will provide mitigation in accordance will applicable federal, state, and local requirements. Compensatory mitigation requirements and NEP's proposed mitigation are provided in *Section 10, Page 126*. Mitigation plans will be finalized during the final permitting and agency consultation stages of the Project.

CS-81	The DEIR should address the comments from the Franklin Regional Council of Governments (FRCOG) regarding wetland impacts, proposed mitigation (including pollinator habitat conservation), and invasive species management.	Wetland impacts by municipality, including within the Town of Franklin, are described in *Table 4-2, Table 4-4, Table 4-7,* and *Table 4-8*. Mitigation is described in *Section 10, Page 126,* and invasive species control is discussed in *Section 9.8, Page 122*.
CS-82	The DEIR should include an analysis of Stormwater Management as outlined in comments from MassDEP. Comments note that removal of trees increases the peak runoff rate, triggering compliance with 310 CMR 10.05(6)(k)2. and 314 CMR 9.06(6)(a)2. 10.05(6)(k)2. which apply to alterations in resource areas regardless of if the project qualifies as a limited project. In addition to traditional stormwater management as mitigation, MassDEP recommends the Proponent evaluate replacement of trees to reduce the peak runoff rate. Any trees replaced would need to be within the same sub-watershed to be considered as peak rate mitigation. A discussion should be included about canopy area lost due to the project and estimate the time period likely to recover the same or larger tree canopy.	Refer to *Section 3.3, Page 41* for a discussion of how NEP will manage stormwater during and post construction. Compliance with the applicable standards to components of the project which are subject to the jurisdiction of the MA WPA and 401 Water Quality Standards will be addressed during the MA WPA and 401 Water Quality Certification permitting process.
CS-83	The DEIR should include a discussion as to whether the proposed caissons or access routes will create new impervious area.	The replacement of existing structures with larger caisson supported structures will result in an increase in impervious areas. In total, ~0.3 acres of new impervious area due to proposed caissons are proposed across ~1,047.25 acres of the Project area. As such, the impact will be minimal. Access routes will be constructed using gravel and are not considered to be impervious.
CS-84	In addition, the DEIR should demonstrate that compensatory flood storage provided for permanent fill in BLSF has an unrestricted hydraulic connection to same waterway or water body displaced by the project as stated in 310 CMR 10.57(4)(a)1. The compensatory flood storage analyzed in the DEIR must be proposed near where the fill is proposed so as to provide an unrestricted connection to the same waterway. In addition, the Proponent must demonstrate that seasonal high groundwater is at or below the elevation which the compensatory flood storage will be provided. The DEIR should analyze alternatives to provide the compensatory flood storage and provide a cut-and-fill table for each alternative analyzed.	Refer to *Sections 4.3.6 and 10.4.4,* for details on impacts and mitigation within BLSF.
Chapter 91		
CS-85	As requested above, the DEIR should include details on the scope of work within each waterway in c. 91 jurisdiction in order for the MassDEP Waterways Program to provide feedback on any c. 91 authorization that may be required.	See response to comment CS-27.
Article 97 (DCR Land)		
CS-86	As noted previously, the project includes improvements to five woods roads outside of the ROW to enable access through DCR forest land to the ROW. The Proponent indicates that it may have existing rights to access the ROW through DCR property; however, as indicated in comments from DCR, additional information is needed to determine if new permanent easements are required which would require disposition of state-owned land protected by Article 97 of the Amendments to the Massachusetts Constitution.	See response to comment CS-28.
CS-87	The DEIR must identify impacts (temporary and permanent) to Article 97 Land and proposed measures to avoid, minimize and mitigate impacts. The alternatives analysis and proposed mitigation in the DEIR should address compliance with the EEA Article 97 Policy. As noted above, work activities on DCR property outside of existing easements associated with the ROW, or requiring access across DCR property, will require a CAP. As requested in comments, the Proponent should coordinate with DCR's Senior Ecologist and Staff Archaeologist related to wetlands, rare species habitat, and potential archaeological resources, including the amount of proposed tree clearing within the state forest sections of the ROW, and along access routes identified by the Proponent. Comments from DCR express concerns about recreational impacts at the access point in Warwick State Forest that is proposed to be co-located with the Metacomet Monadnock Trail for approximately 2,300 feet and impacts that may result in increased Off-Highway Vehicle (OHV) access to the state forests, potentially causing degradation of natural and cultural resources. DCR requests coordination with the Proponent to develop and implement strategies to deter this unauthorized trail use. The DEIR should provide an update on these consultations.	*Section 3.2.8, Page 39* details impacts proposed within Article 97 Land. Coordination with DCR is ongoing.
Climate Change		
Adaptation and Resiliency		
CS-88	While the EENF describes the general resiliency benefits of the project achieved by updating aging infrastructure to current design standards, it does not specifically address the design recommendations from the MA Resilience Design Tool.	*Section 7.1, Page 87 addresses* design recommendations from the RMAT.
CS-89	The DEIR should include a narrative explaining whether proposed tree clearing, and infrastructure improvements will make the project assets more resilient to risks associated with riverine flooding from a 50-year (2%) storm event estimated as of 2070.	Refer to DEIR *Section 7, Page 87* for details of the Project's climate and storm resiliency.
CS-90	The DEIR should discuss the extent to which existing electrical lines are exposed to riverine flooding, and what measures the Proponent is taking to improve asset resiliency over a longer-term horizon.	See *Section 7.1, Page 87* for the RMAT analysis of the existing exposure to riverine and urban flooding and extreme heat. *Section 7.4, Page 93* describes measures being undertaken to improve long-term asset resiliency.
CS-91	In particular, the DEIR should discuss whether new foundations are being elevated above any defined base flood elevations or other similar water/flood elevation measure to ensure that the structures are resilient to future flooding risks	Please see *Section 7.4, Page 93* for a discussion on how the foundations are resilient to precipitation and extreme events, such as future flooding. Foundations will result in minimal fill within BLSF and will not reduce the flood storage capacity of the area. As such, foundations do not need to be raised above base flood elevation.
CS-92	Where impervious area is created and stormwater management is required, the DEIR should address the recommendations from the MA Resilience Design Tool, including whether the stormwater management designs will be resilient to future climate conditions such as the 25-year or 50-yearstorm as of 2070.	See response to comment CS-88.
CS-93	The Tool now provides 24-hour rainfall volumes for various storm scenarios, which can be consulted as a resource. The DEIR should further describe mitigation in areas of tree clearing and access route creation where there are steep slopes and severe erosion potential including temporary and permanent stabilization methods.	Tree removal mitigation requirements are discussed in *Section 10.3, Page 133*. Sediment and erosion control measures, including those for use on steep slopes, are described in NEP's BMPs (**Appendix C**).
Land Alteration		
CS-94	The DEIR should provide a quantitative carbon analysis of tree clearing activities that should consider both the one-time direct emissions from tree cutting as well as loss of potential carbon sequestration over a certain time period (e.g., 30 or 40 years). To the extent tree cover is replaced with scrub-shrub habitat, the net loss in carbon sequestration potential may be estimated. As discussed above, the Proponent has proposed to use LiDAR data, confirmed with select sampling, to estimate the age and height of trees to be cleared and to assign carbon values to those trees based on "best available datasets." The Proponent should make use of the EVALIDator tool from the U.S. Forestry Service,20 which provides estimates of carbon stocks (including above ground and below ground biomass) specific to Massachusetts forests and considers variations among forest types based on region. To the extent the Proponent desires to use an alternative dataset, it should provide a justification for why such alternative data are appropriate and indicate whether the dataset considers variations in forest types that may be present over the entire 216 acres proposed for clearing. Any sampling methodology used to verify LiDAR results should similarly consider forest type variations to ensure that representative samples are collected. As the EVALIDator tool does not provide an estimate of annual carbon sequestration rates (carbon flux over time), the Proponent may rely on other sources of data, including the EPA GHG Emissions	See comment response to CS-31 and **Appendix D** for a full description of the result of the carbon analysis.

	Calculator, for this value and estimate annual rates over a 30 year time period from the date of construction. The DEIR should describe the methodology and data used to develop the analysis, identify associated impacts on GHG emissions, and identify measures to avoid, minimize and mitigate impacts. The DEIR should account for carbon sequestration from any trees that are removed and not replaced/converted to scrub shrub. The Proponent is directed to consult with the MEPA Office on the development of this analysis, and, in particular, sampling methodology, prior to filing the DEIR.	
CS-95	Given the extent of tree clearing proposed, I expect the DEIR to identify mitigation measures commensurate with the project's impacts on the project corridor's capacity to sequester and store carbon. Potential mitigation measures may include funding programs that add or maintain biomass for sequestration purposes (such as tree planting, carbon credits, forest conservation or commitments to implement forest restoration practices) and preserving/protecting forested land through a Conservation Restriction or other means. At a minimum, the Proponent should clearly explain its plan for disposition of the trees cleared through the project, including the process for identifying potential markets for reuse of wood and a process for tracking and reporting. The Proponent should commit to reuse of cleared trees for long-lived wood products to the greatest extent practicable and should indicate how the ultimate disposition of the trees will be tracked and documented. Potential mitigation for carbon emissions due to land alteration might include donation of harvested wood to benefit an affordable housing project; tree planting in EJ populations near the project area (recommendation of 50 trees/acre with a commitment to water and replace for two years); and donation of harvested wood (cut and split to a wood bank) in Massachusetts	GHG impacts associated with tree removals are discussed in *Sections 3.1.1 and 3.2*. Overall, it is estimated that up to 12,164 metric tons of carbon would be released or not sequestered due to proposed land alterations over the next 30 years however, SWCA estimated the overall change in GHG emissions associated with the project and found that the Project will result in a net reduction in CO2e emissions of 117,424 metric tons as described in *Section 7.3, Page 89*. Tree removal mitigation requirements are discussed in *Section 10.3, Page 133*. Compensatory mitigation for tree removal **within resource areas** may be required under the discretionary authority granted to the Conservation Commission under the Limited Project provisions, or the Project otherwise will be subject to special conditions applied under a municipal bylaw or ordinance. NEP anticipates addressing mitigation requirements with local Conservation Commissions in the course of MA WPA permitting.
Transportation		
CS-96	The Proponent should work with MassDOT to address the details of the permitting process and any traffic and construction management plans that may be required for temporary work within the state highway layout. The DEIR should describe the location of roadways under MassDOT jurisdiction. The DEIR should confirm that the Proponent will implement a traffic management plan consistent with MassDOT requirements. It should describe the outcome of any consultation with MassDOT. The DEIR should describe the extent of truck traffic that will result from refurbishment and tree clearing activities, including the number of truck trips required.	See response to comment CS-32.
Historic and Archaeological Resources		
CS-97	The EENF indicates that the Proponent will submit the archaeological locational survey technical report to MHC in October of 2022. MHC has indicated that comments will be provided following review of that report. The DEIR should provide an update on coordination with MHC.	An update on coordination with MHC is provided in **Appendix C**.
Mitigation and Section 61 Findings		
CS-98	The EENF included draft Section 61 Findings and proposed mitigation measures. The DEIR chapter should include an updated comprehensive list of all commitments made by the Proponent to avoid, minimize and mitigate the impacts of the project, and should include a separate section outlining mitigation commitments relative to EJ populations.	Avoidance and minimization for each impacted resource areas have been discussed throughout the Sections. *Section 10, Page 126* of the DEIR summarizes proposed mitigation measures, within which *Section 10.4.6, Page 136* specifically looks at EJ communities and mitigation for environmental and public health impacts. *Section 11, Page 140* includes proposed Section 61 Findings for each State Agency that will issue permits for the Project.
CS-99	The DEIR should contain clear commitments to implement these mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation. The list of commitments should be provided in a tabular format organized by subject matter (traffic, water/wastewater, GHG, EJ, etc.) and identify the Agency Action or Permit associated with each category of impact. Draft Section 61 Findings should be separately included for each Agency Action to be taken on the project.	*Section 10.5, Page 139* provides details of mitigation costs and responsible parties (see in particular *Table 10-1, Page 127*. Draft Section 61 Findings are presented separately in *Section 11, Page 140*.
Responses to Comments		
CS-100	The DEIR should contain a copy of this Certificate and a copy of each comment letter received. It should include a comprehensive response to comments on the EENF that specifically address each issue raised in the comment letter; references to a chapter or sections of the DEIR alone are not adequate and should only be used, with reference to specific page numbers, to support a direct response.	An annotated copy of the EENF Secretary's Certificate and comment letters received are provided in **Appendix I**. Responses to comments are provided in this table.
Circulation		
CS-101	2.	As shown in the Circulation List provided in **Appendix B**, NEP's distribution of the DEIR complies with this comment and 301 CMR 11. 06.
2. LEOMINSTER DEPARTMENT OF PUBLIC WORKS		
LPW-1	Page XI – Water Resources: The "NO" box is checked for ORW. Most of the Leominster potion of this project is located in the City's Water Supply Watershed.	This was an error. This comment has been noted and Public Water Supply has been listed in the DEIR.
LPW-2	Many parcels in the watershed are now encumbered with a Conservation Restriction which is held by the DCR. W.N.R.D. book 10309-252	This comment has been noted.
LPW-3	LE-W28 is shown as a wetland but is actually a detention basin serving Samoset Drive. There are also drainage pipes in the vicinity of proposed structures 577 and the associated Pull Pad.	In August 2023, additional field assessment on LE-W28 was conducted on LE-W28, which re-affirmed that its physical attribute, including hydrology, soil type, plants etc., meets the wetland criteria. The field assessment determined that LE-W28 does not appear to function as a stormwater management system (detention basin), it appears to be a purpose-built stormwater management system that has lacked proper maintenance.
LPW-4	There are sewer and water mains in the vicinity of Proposed structure 587	This comment has been noted.
LPW-5	There is a water diversion pipe in the vicinity of Existing structures 619 & 620.	This comment has been noted.

LPW-6	Ground disturbance should be minimized when existing structure is removed. It is at the base of the No-Town dam. Not only is it High Hazard Dam but it's also the dam to the City's largest drinking water source.	NEP is proposing to remove one (1) structure (Structure 570), which is located approximately 75-ft from the Notown Dam wall. The structure in question is a steel lattice structure supported by concrete footings. The impact area for each footing is very small (28 SF area), and the entire structure removal is anticipated to take less than one day. *Section 9.2.7, Page 117* addresses the removal process. Through the implementation of BMPs, combined with the very small area of disturbance required for the structure removal, ground disturbance close to the Notown Dam will be minimal, and will not pose a hazard to the structural integrity of the Dam or the Town's drinking water source.
3. FRANKLIN REGIONAL COUNCIL OF GOVERNMENTS (FRCOC)		
F-1	The EENF described several project alternatives. It would also be helpful during the EIR stage to evaluate sub-project alternatives that would look at reduced impacts to particularly sensitive resources. Sensitive locations to be avoided could include Priority Habitat for state-listed species, all wetland areas, Riverfront Areas, Coldwater Fisheries habitat, vernal pools, historical and culturally sensitive locations, wellhead protection areas, areas near private wells, national scenic trails, or combinations of any of these features.	*Table 10-1, Page 127* in *Section 10, Page 126* of the DEIR shows the measures that NEP have taken to avoid, minimize, and mitigate Project impacts to sensitive resource areas. Please also refer to **Appendix F** for details of NEP's Be BMPs, which will be employed during construction and restoration periods to ensure that sensitive resource areas are protected. Due to the location of existing transmission line infrastructure and access, the scope for avoiding sensitive resource areas is somewhat limited. Some examples of Project avoidance and minimization measures incorporated into the Project design are summarized here and described more fully in the respective Sections of the DEIR.
F-2	We request that more of the impacts be summarized by town in the EIR, so that it's clear what the impacts are in each community.	*Table 3-2* provides a break-down of Project tree removal impacts by Town. *Table* 4-2 provides a break-down of wetland impacts by Town. *Table 5-1* provides a break-down of rare species impacts by Town.
F-3	It would also be useful to know the forested acreage proposed to be cut in each town.	*Table 3-2* in *Section 3, Page 31* provides the forested acreage proposed to be cut in each town.
F-4	Appendix A Figure 2 maps shows proposed tree removal outside of the ROW in many areas, and it appears that the tree removal is not necessarily a consistent width as described in the narrative. FRCOG was unable to attend the MEPA virtual site visit. Perhaps this could be made more clear in the EIR.	A revised map set has been provided in **Appendix A** with clear depiction of the tree removal.
F-5	These diagrams are helpful, but it would also be helpful to include a diagram that justifies the vegetation management needs based on the height of the proposed towers (or lines) and the width of the proposed vegetation management.	The DEIR Plans in **Appendix A** have been revised to include the height of the proposed structures in each map section.
F-6	FRCOG requests that the proponent include information in an EIR about information about long-term vegetation management or construction impacts in the area of public drinking water or private wells	The Project is designed to prevent impacts to surface and groundwater resources. Construction impacts within Wellhead Protection Areas are described in *Table 4-11,* and largely addressed through the implementation of the BMPs also discussed in those sections.
F-7	The ROW crosses and comes in close contact with the New England Trail, a national scenic trail, in Warwick. The narrative in the EENF generally mentions trails, but we could not find a specific mention of this trail. We request the EIR include a description of the potential impacts on the trail, and whether or not trail access will be affected during and after construction.	The New England Trail has been documented and described in *Section 3.2.8, Page 39*.
F-8	The FRCOG requests that NEP consult the Regional Pollinator Plan and other documents such as EPRI's "Overview of Power Companies and Pollinators" published in 2018, and EPRI's "Conservation Actions for Electric Power Companies to Support Monarch Butterflies" published in 2019. These ideas should be incorporated into project planning.	NEP recognizes the importance of ROWs for providing uncommon open and successional habitat types for numerous plant, invertebrate, amphibian, and reptile species. NEP's integrated VMP incorporates measures to protect plants for pollinators and provide enhanced habitats within ROWs through the preservation of native vegetation and the application of pollinator-friendly seed mixes (during restoration activities).
F-9	As the power line towers being replaced were installed in 1909, FRCOG recommends that consideration be given to documenting the towers or allow for some kind of preservation of a representative small number of the towers.	NEP shall take this recommendation into consideration.
F-10	Stone walls are shown on some of the map sheets in Appendix A, Figure 2. It is not clear if any methods are proposed to avoid, minimize, or mitigate impacts to stone walls.	Where historic stone walls cross the ROW, NEP will make an effort to avoid impacts to these features wherever possible. Please refer to *Section 6.3* for detailed description on the BMPs and preventive measures for stone walls.
4. MASSDOT, PUBLIC/PRIVATE DEVELOPMENT UNIT		
MassDOT-1	The Proponent should coordinate with MassDOT Districts 2 and 3 to minimize traffic disruption during Project construction and prevent impacts on state jurisdictional roadways.	See response to comments CS-32. NEP will coordinate with MassDOT to produce appropriate TMPs.
5. MA DIVISION OF FISHERIES & WILDLIFE, NHESP PROGRAM		
DFW-1	The Division recommends that the Proponent continue to work proactively with the Division to avoid and minimize impacts to state-listed species. These include, but may not be limited to: (1) evaluating reductions to permanent habitat loss associated with gravel work pads and access routes within the ROW; (2) conducting botanical surveys suitable habitat in accordance with an approved botanical survey protocol; (3) providing calculations of temporary and permanent impacts to state-listed species habitat; (4) evaluating reductions to permanent habitat loss associated with gravel work pads and access routes within the ROW; and (5) developing robust rare-species protection plan(s) focusing on time of-year restrictions for active and breeding seasons, daily sweeps of the work area during any active season work, and if necessary, radio telemetry and tracking of state listed turtles. The Division notes that it may be possible to design the Project in order to avoid a Take, and the Division anticipates being able to resolve any outstanding concerns related to state-listed species during the MESA review process. We look forward to continued coordination with the Proponent to ensure that the Project addresses all issues related to state-listed species.	See *Section 5, Page 75* of the DEIR for Project details relating to NHESP designated rare species habitats. Consultation with NHESP is ongoing, and NEP will prepare a CMP for species for which NHESP determines that a "Take" is likely.
DFW-2	The Division will not render a final decision until the MEPA review process and associated public and agency comment period is completed, and until all required MESA filing materials are submitted to the Division. As our MESA review is ongoing, no alteration to the soil, surface, or vegetation and no work associated with the Project shall occur until the Division has made a final determination.	This comment was noted and it shall be addressed during the MEPA process.

6. MA DEPARTMENT OF CONSERVATION AND RECREATION		
DCR-1	To the extent the Proponent believes it may have rights to access their ROW from DCR property, a determination which DCR does not have sufficient information to make at this time, it appears that the Proponent's proposed changes to DCR property will require permanent easements, triggering Article 97 of the Amendments to the Massachusetts Constitution. DCR also notes that if the improved woods road is to be used for ongoing maintenance on the NEP ROW, that change in use of DCR property would also trigger Article 97	Consultation with DCR is ongoing.
DCR-2	DCR is coordinating with the Proponent to determine whether additional easement rights that would trigger an Article 97 disposition request will be needed.	Consultation with DCR is ongoing.
DCR-3	DCR requests coordination with DCR's Senior Ecologist and Staff Archaeologist related to wetlands, rare species habitat, and potential archaeological resources, including the amount of proposed tree clearing within the state forest sections of the ROW, and along access routes identified by the Proponent.	Consultation with DCR is ongoing.
DCR-4	The Senior Ecologist will review the flagged work limits and work with the Proponent to identify mitigation for the loss/conversion of forest habitat.	Consultation with DCR is ongoing.
DCR-5	The Staff Archaeologist will coordinate with the Proponent and their cultural resource consultant to develop and implement measures to avoid, minimize, or mitigate adverse effects to significant historic and archaeological resources within DCR property.	Consultation with DCR is ongoing.
DCR-6	DCR is concerned about recreational impacts of the access point in Warwick State Forest that is proposed to be co-located with the Metacomet Monadnock Trail for approximately 2,300 feet. DCR is also concerned that the Project may result in increased Off Highway Vehicle access to the state forests, potentially causing degradation of natural and cultural resources. The Department requests coordination with NEP to develop and implement strategies to deter this unauthorized trail use.	Consultation with DCR is ongoing.
7. MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION ("MASSDEP")		
Chapter 91		
DEP-1	The ENF describes work that will occur within waterways in addition to the overhead wires, such as construction mats, work pads and pull pad areas, and fill for two new/or replacement structure foundations. It is recommended that the EIR include details on the scope of work within each waterway in Chapter 91 jurisdiction, in order for the Department to provide feedback on any Chapter 91 authorization that may be required.	Please refer to comment response CS-27 above.
Wetlands Protection Act		
DEP-2	The proposed stream-crossings have the potential to alter Inland Bank and Land Under Waterbodies and Waterways.	The Project will not permanently alter Inland Bank and Land Under Waterbodies and Waterways.
DEP-3	In the event a municipal OOC is appealed to MassDEP, MassDEP cannot issue a Superseding OOC (or a Water Quality Certificate) until after the Project has received a final Certificate from the Secretary. Therefore, to ensure full opportunities for public involvement and to avoid any potential conflict with the final Certificate from the Secretary or the WQC, MassDEP recommends that no such filing occur until after the project has received a final Certificate from the Secretary.	This comment was noted, and it shall be addressed.
DEP-4	Should the Proponent choose to file Notices of Intent prior to the issuance of a final Certificate from the Secretary, MassDEP recommends that Proponent request that the local Conservation Commissions defer a decision and keep the meeting open until such time as a final Certificate from the Secretary has been issued, as well as the WQC.	This comment was noted, and it shall be addressed.
Limited Project Status		
DEP-5	The project may be eligible for review under the Limited Project provisions contained at 310 CMR 10.53(3)(d). As for all Limited Projects, allowance under these provisions is at the discretion of the local Commission and to the extent practicable, work must comply with the General Performance Standards.	Refer to response for comment CS-24.
DEP-6	The proposed project has the potential to result in significant changes to the hydrology of the affected resource areas and downstream reaches. Therefore, the WPA permit applications for this project should consider both surface and subsurface hydrology, wildlife habitat, and comply with BMPs for stormwater management and sedimentation and erosion control. Subsequent WPA permitting documents should include tree work details, time-of-year restrictions, specific locations of proposed construction mats, and implementation sequencing; as well as identifying appropriate mitigation for impacts to resource areas.	The Project's consistency with the performance standards established by the MA WPA are provided in *Section 12.3.2, Page 175*. These will be further evaluated, discussed with the appropriate regulatory agencies, and refined as necessary, as part of the MA WPA permit application process.
401 Water Quality Certification		
DEP-7	During the WQC permitting process the Proponent will be required to document efforts to avoid, minimize, and mitigate impacts as required by regulation. Mitigation for any unavoidable impacts is a requirement of the regulations.	Please refer to response to comment CS-99.
DEP-8	In accordance with the MEPA process, some Resource Areas and Waters of the Commonwealth impacts are listed as "temporary" in the EENF; the Proponent should be aware that the MA WPA and associated regulations do not have a designation of "temporary impacts" to resource areas. The activities proposed in the EENF meet the definition of "Alter" contained in 310 CMR 10.04. The WQC regulations, 314 CMR 9.00 specifically include "temporary" activities as being subject to the regulations (310 CMR 9.02).	NEP acknowledged and evaluated the definition and categorization of "impact" under different regulatory programs. For clarity and common understanding, these variations applicable to the Project are summarized in *Table 10-2- Mitigation Requirement Review*, and the impacts categorization has been presented in accordance with the MA WPA and associated regulations.
DEP-9	MassDEP recommends that the Proponent ensure that the SWPPP includes clear, concise, and enforceable provisions specific to the management and protection of the wetland resource areas and their buffer zones within the project site.	NEP shall ensure that the work SWPPP includes clear, concise, and enforceable provisions specific to the management and protection of the wetland resource areas and their buffer zones within the project site.
DEP-10	MassDEP wishes to clarify that the area and extent of impacts of any proposed retaining wall within a resource area, or within the buffer zone of a resource area, should be identified, all impacts disclosed and should avoid, minimize and mitigate impacts to the greatest extent practicable.	Please refer to comment response CS-20.
Outstanding Resource Waters		
DEP-11	In the Water Resources Section of the EENF Form, the Proponent checked the box indicating that no ORWs are present on or within a ½ mile of the project site; however, the Proponent then lists relevant ORW and the narrative sections describe work in ORWs. It appears this box was checked in error. MassDEP recommends the Proponent review and ensure that the correct box is checked.	This comment was noted, and it will be addressed in the DEIR.
DEP-12	The Proponent has identified one PVP where temporary construction mats are proposed. Because the estimated project commencement date is 2025, MassDEP recommends that the Proponent assess the area in question prior to any MA WPA or WQC filing (i.e., during Spring of 2023) to determine if the area in question meets the criteria for classification as a certified vernal pool.	Please refer to comment response CS-78.

Bureau of Water Resources – Boston Office		
Wetlands		
DEP-13	The proposed activities will substantially change and/or enlarge an existing service, and therefore the activity does not qualify as exempt from the MA WPA as maintenance pursuant to 310 Code of Massachusetts Regulations (CMR) 10.02(a)2. The project may qualify to be permitted as a limited project pursuant to 310 CMR 10.53(3)(d) provided that no such project may be permitted which will have any adverse effect on specified habitat sites of Rare Species, as identified by procedures established under 310 CMR 10.59 (unless a variance is issued). Additionally, the proponent should document why the project qualifies for limited project status per 310 CMR 10.53(3) given the magnitude of the alteration and the significance of the project site to the interests of the Wetlands Protection Act; and the proponent should provide a serious evaluation of reasonable alternatives to the proposed activity (including alternatives to reduce the full extent of the proposed cutting), an evaluation of the extent to which adverse impacts are minimized, and documentation that full mitigation is provided for unavoidable impacts. Based on this demonstration, a Variance to the MA WPA regulations may be required pursuant to 310 CMR 10.05(10).	Refer to response for comment CS-2, CS-12, and CS-24.
DEP-14	Based on the information provided in the EENF, a WQC application for Major Fill/Excavation (BRP WW 10) will be required since the Project is proposed to result in the loss of more than 5000 square feet cumulatively of ordering vegetated wetland (BVW) and land under water (LUW) (314 CMR 9.04(1)) and since there will be a discharge of dredge or fill material to Outstanding Resource Waters including Goodfellow Pond, Simonds Pond, Notown Reservoir, Distributing Reservoir, Morse Reservoir, Fall Brook Reservoir, and Perley Brook Reservoir. Furthermore, a Variance to the 401 WQC will be required pursuant 314 CMR 9.08 since the project will result in a discharge of dredged or fill material in wetlands or waters of the Commonwealth within 400 feet of Class A surface water (314 CMR 9.06(4)).	Please refer to *Section 12.3.1, Page 171* for Projects consistency with the performance standards for a 401 WQC.
DEP-15	The Applicant must demonstrate that all efforts have been made to avoid adverse impacts to BVW. When avoidance is not possible, demonstration must be made that the impacts have been minimized and that unavoidable impacts have been mitigated. The Draft Environmental Impact Report must identify all temporary and permanent roads and/or routes in relation to resource areas that will be utilized for mechanized equipment to be engaged in tree clearing and on-going vegetation management. The proposed route bed should be identified (e.g., swamp mats to be placed at-grade, gravel roads, etc.). The Environmental Impact Reports should analyze alternatives to avoid and minimize adverse impacts to BVW and propose alternatives to mitigate resource area alteration.	Refer to *Section 4.3, Page 60* for a discussion of wetland resource area impacts, and their minimization and mitigation. Further mitigation details are provided in *Section 10, Page 126*.
DEP-16	Erosion and sediment control is required during the tree clearing and land destabilization phase pursuant to 310 CMR 10.05(6)(b) and Stormwater Management Standard 8 (310 CMR 10.05(6)(k)8. and 314 CMR 9.06(6)(a)8.). As such, a plan must be submitted with the NOI and WQC application to control construction related impacts including erosion, sedimentation, and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan (CP/PP Plan)). The CP/PP should include measures to reduce potential impacts to resource areas from areas used to store swamp mats and felled trees. Use of feller-bunchers during clearing, trimming, and removal operations should be analyzed as one alternative to reduce erosion and sediment control impacts to resource areas. Working from swamp mats should also be considered. However, any temporary impacts caused to resource area from swamp mats must be proposed to be fully mitigated. The proponent should note that the requirements at 310 CMR 10.05(6)(b), 10.05(6)(k)8., and 314 CMR 9.06(6)(a)8. to provide erosion and sediment controls apply even if the project qualifies as a limited project. The Environmental Impact Reports should include a conceptual level Erosion and Sediment control plan for comment. Note that any land disturbance greater than 1-acre requires coverage under the EPA's CGP. The Stormwater Pollution Prevention Plan (SWPPP) required by the CGP may serve as the CP/PP Plan, if it includes measures required to be in the CP/PP Plan in addition to the measures specifically required by the EPA CGP. The CP/PP Plan or SWPPP will need to be approved in the Final OOC and WQC prior to the commencement of any tree clearing and disturbance within resource areas.	A plan shall be submitted with the NOI and WQC application. Stormwater Management and Erosion control is described in *Section 3.3*, *Page 41* as well as in *Section 9.2.2*, *Page 113* and *12.3.3*.
DEP-17	If a project is within Estimated Habitat indicated on the most recent habitat map of State-Listed Rare Species published by the NHESP, the applicant must demonstrate no short- or long-term adverse effects of habitat of local species in accordance with 310 CMR 10.59. The Environmental Impact Reports should overlay the proposed scope of work atop the Estimated Habitat maps. Where tree clearing and disturbance is proposed within Estimated Habitat of Rare Species, the Environmental Impact Reports should analyze alternatives to avoid adverse impacts.	*Table 5-1, Page 77* in *Section 5, Page 75* shows impact in Priority Habitat overlaying the proposed scope of work atop the Estimated Habitat maps.
DEP-18	The project activities including on-going vegetation management through numerous areas of Habitat of Potential Regional or Statewide Importance (MassDEP Important Habitat Maps can be found at: https://umasscaps.org/data_maps/massdep-maps.html); therefore, the applicant must submit a Detailed Habitat Evaluation and demonstrate no adverse impacts in accordance with 310 CMR 10.60 and MassDEP's Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands at: https://www.mass.gov/doc/massachusetts-wildlife-habitat-protection-guidance-for-inland-wetlands/download.	NEP has conducted a Wildlife Habitat Evaluation for the Project in accordance with 310 CMR 10.60 and MassDEP's Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands. The locations assessed included areas mapped as Habitat of Potential Regional or Statewide Importance. Town-specific results will be provided in the individual NOIs submitted to the Towns.
DEP-19	Although a Detailed Evaluation is required for permitting, the Environmental Impact Reports should include an alternatives analysis to avoid adverse impacts that may be caused by on-going vegetation management. This shall include an analysis of Potential Vernal Pools and NHESP Certified Vernal Pools in each Resource Area and identify those that are presumed significant in accordance with the Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands. Certified Vernal Pools are classified as Outstanding Resource Waters of the Commonwealth. Potential Vernal Pools should be analyzed by the proponent to determine whether they are eligible to be certified and present the results of this analysis in the Environmental Impact Reports.	Please refer to comment response CS-78.
DEP-20	The Applicant must demonstrate that seasonal high groundwater is at or below the elevation which the compensatory flood storage will be provided. The Environmental Impact Reports should analyze alternatives to provide compensatory flood storage and provide a cut-and-fill table for each alternative analyzed. The Applicant shall demonstrate that the proposed compensatory flood storage has an unrestricted hydraulic connection to same waterway or water body displaced by the Project as stated in 310 CMR 10.57(4)(a)(1). The compensatory flood storage analyzed in the Environmental Impact Reports must be proposed near where the fill is proposed so as to provide an unrestricted connection to the same waterway.	Currently, the Project is in the planning and design stage and NEP has not yet approached individual Conservation Commissions to initiate pre-application consultation. For MA WPA permitting, NEP will consult with each municipality to determine appropriate BLSF compensatory mitigation. Where required, NEP will design compensatory storage such that the storage area will have unrestricted hydraulic connection to waterway or water body displaced by the Project in compliance with 310 CMR 10.57 (4)(a) and that the storage area will be above seasonal high ground water or below the elevation of which the compensatory flood storage will be provided.
DEP-21	The Draft Environmental Impact Report must include an analysis about Stormwater Management. Removal of trees increases the peak runoff rate, triggering compliance with 310 CMR 10.05(6)(k)2. and 314 CMR 9.06(6)(a)2. 10.05(6)(k)2. applies to alterations in resource areas regardless of if the project qualifies as a limited project. Alternatives must be analyzed in the Draft Environmental Impact Report to reduce the peak runoff rate from the proposed alterations, including tree clearing. Tree clearing increases the peak runoff rate. Besides traditional methods to provide mitigation such as detention basins, replacement of trees should be analyzed as an alternative to reduce the peak runoff rate. Any trees replaced would need to be within the same sub-watershed to be considered as peak rate mitigation. A discussion should be included about canopy area lost due to the project and estimate the time period likely to recover the same or larger tree canopy. The recharge and TSS treatment standards apply when impervious area is being created or redeveloped. Towards those requirements, a discussion should be included in the Draft Environmental Impact Report about whether the proposed caissons or access routes will create new impervious area. Special requirements apply to Critical Areas, such as Outstanding Resource Waters (310 CMR 10.05(6)(k)6. and 314 CMR 9.06(6)(a)6.).	Stormwater Management and Erosion control is described in *Section 3.3*, *Page 41* as well as in *Section 9.2.2, Page 113* and *12.3.3*.
DEP-22	The Draft Environmental Impact Report should note whether any temporary or permanent stream crossings are proposed. If any crossings are proposed, the Draft Environmental Impact Report should include an alternatives analysis to ensure that the crossing will be designed to facilitate aquatic organism and wildlife passage, and not increase flood levels of the resource area. Any stream crossing should meet the criteria listed in 310 CMR 9.06(2)(b).	The Project has no proposed permanent stream crossings for access. Proposed stream crossings will be temporary in nature and will be bridged using construction mats or equivalent installed to not impact the hydrology, bed, or bank of the stream.

DEP-23	The Alternatives Analysis provided by the Proponent does not discuss whether the Rebuild Alternative can be accomplished with fewer impacts to the environment. MassDEP requests that the Proponent consider additional alternatives of the Rebuild Alternative that further reduce impacts to wetlands, forests, and water resources.	Please refer to response comment CS-11.
DEP-24	*Section 4.4.1* of the EENF lists fifteen streams that have been designated by the Massachusetts Division of Fisheries and Wildlife as cold-water fishery resources. The Proponent should provide additional measures to avoid and minimize impacts to these streams both during construction and in the long-term maintenance of the A1/B2 Transmission line and associated easement. In addition, cold-water fishery resources are designated as Critical Areas in the Massachusetts Stormwater Handbook. The Proponent must account for the presence of these streams in the stormwater analyses of the project.	Refer to *Section 4.2.4, Page 55* and *Table 4-6* for details of BMPs for work within Coldwater Fisheries Resources. The presence of these streams shall be accounted for within the Stormwater Analysis.
Construction Activities		
DEP-25	Construction activity must conform to current Air Pollution Control Regulations. The Proponent should implement measures to alleviate dust, noise, and odor nuisance conditions that may occur. Such measures must comply with the MassDEP's Bureau of Air and Waste (BAW) Regulations 310 CMR 7.01, 7.09, and 7.10.	Construction activity shall conform to current Air Pollution Control Regulations. See *Section 9.7.1, Page 120* for further description.
DEP-26	All non-road engines shall be operated using only ultra-low sulfur diesel (ULSD) with a sulfur content of no greater than 15 ppm pursuant to 40 CFR 80.510.	NEP has already committed to using ultra-low sulfur diesel fuel.
Solid Waste		
DEP-27	The Proponent shall properly manage and dispose of all solid waste generated by this proposed project pursuant to 310 CMR 16.00 and 310 CMR 19.000, including the regulations at 310 CMR 19.017 (waste ban).	NEP will properly manage and dispose of solid waste generated by this proposed project pursuant to 310 CMR 16.00 and 310 CMR 19.000, including the regulations at 310 CMR 19.017 (waste ban)
DEP-28	Any hazardous wastes generated must be properly managed in accordance with 310 CMR 30.0000. If any hazardous waste, including waste oil, is generated at any of the sites, the Proponent must ensure that such generation is properly registered with MassDEP and managed in accordance with 310 CMR 30.0000.	NEP will manage any hazardous waste generated in accordance with 310 CMR 30.0000.
DEP-29	The proponent shall ensure that all material is handled in accordance with all applicable state and federal regulations regarding asbestos handling, including testing prior to handling.	NEP ensures that material is handled in accordance with applicable state and federal regulations regarding asbestos handling, including testing prior to handling.
DEP-30	The Proponent is advised to retain a Licensed Site Professional to review MassDEP's oil and/or hazardous material disposal sites list and associated files periodically throughout the duration of the project to determine the current status of existing sites and if there are any newly listed contaminated sites within or adjacent proposed activities.	Please refer to comment CS-36.
GHG Emissions		
DEP-31	The Proponent indicates that GHG emissions from the project will be below the applicable reporting threshold and that during the construction phase of the project, short-term localized air quality effects will be minimal. GHG impacts should be submitted in the Draft and Final EIR. MassDEP recommends distinguishing both short term (construction) and any long-term impacts from the proposed work.	NEP hired Regenerative Design Group ("RDG") to develop an estimate for the GHG Emissions from Land Alteration. This analysis was completed on May 24, 2023. NEP also consulted the MEPA Office on February 7, 2023, prior to finalizing the methodology for conducting this analysis (please see **Appendix C** for this correspondence). The analysis and finalized methodology have been provided in **Appendix D** and are described in *Section 7, Page 87*.
Draft Section 61 Findings		
DEP-32	The Proponent provides no mitigation for land alteration or wetland impacts beyond measures required by regulations associated with the Massachusetts Wetlands Protection Act and related stormwater requirements. MassDEP requests that the Proponent offer additional meaningful mitigation measures to offset the environmental impacts in project areas where impacts to wetlands and undisturbed forests cannot be avoided or minimized.	An updated mitigation measures section is provided in *Section 10, Page 126* and Section 61 findings in *Section 11, Page 140*.

APPENDIX A

Project Figures and Plans

Figure 1 - USGS Site Location Map
Figure 2 - MEPA General Purpose Plans (DEIR Plans)
Figure 2A - A1/B2 Mainline (Pages 1 to 137; and 1A to 137A - Off ROW Access)
Figure 2B - A1/B2 Mainline Centerline Change (Pages 1 to 33; 1A to 33A – Off ROW Access)
Figure 2C - Athol Tap Lines (Pages 1 to 25; 1A-25A – Off ROW Access)
Figure 2D - Crystal Lake Tap Lines (Pages 1 to 5; 1A-5A – Off ROW Access)
Figure 3 Water Supply Protection Areas
Figure 4 - Proposed Tree Removal in Environmental Justice Communities and Hot Spots
Figure 5 - Typical Cross Sections - Figure of 69 kV and 115 kV structure designs

Figure 1 - USGS Site Location Map

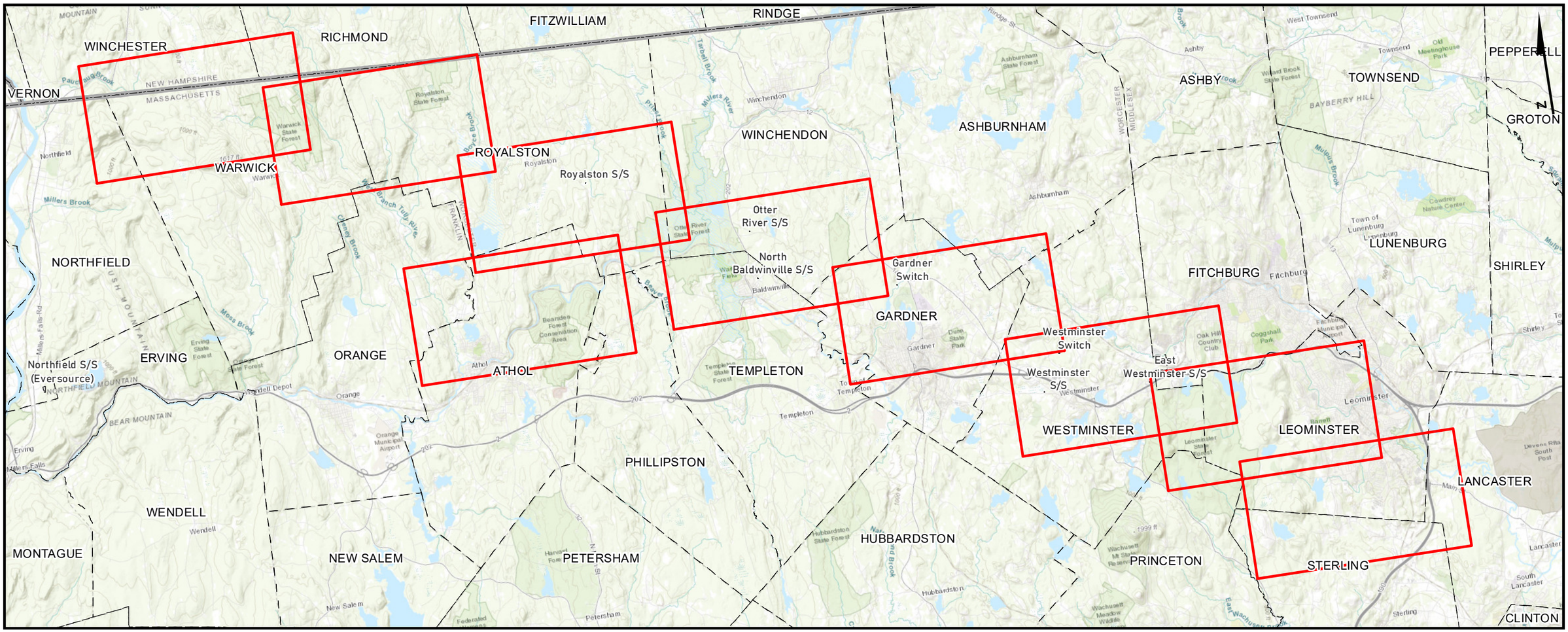
BSC Project Number: 89620.66

A1/B2 Asset Condition Refurbishment Project

Warwick, Royalston, Athol, Wichendon, Gardner, Westminster, Fitchburg, Leominster, & Sterling, MA

USGS Locus Maps

April 25, 2023



PREPARED FOR:

nationalgrid

170 Data Drive
Waltham, MA 02451

INDEX OF FIGURES

T1 - TITLE SHEET
1 - 9 - MAP SHEETS

ISSUED FOR PERMITTING
NOT CONSTRUCTION

PREPARED BY:

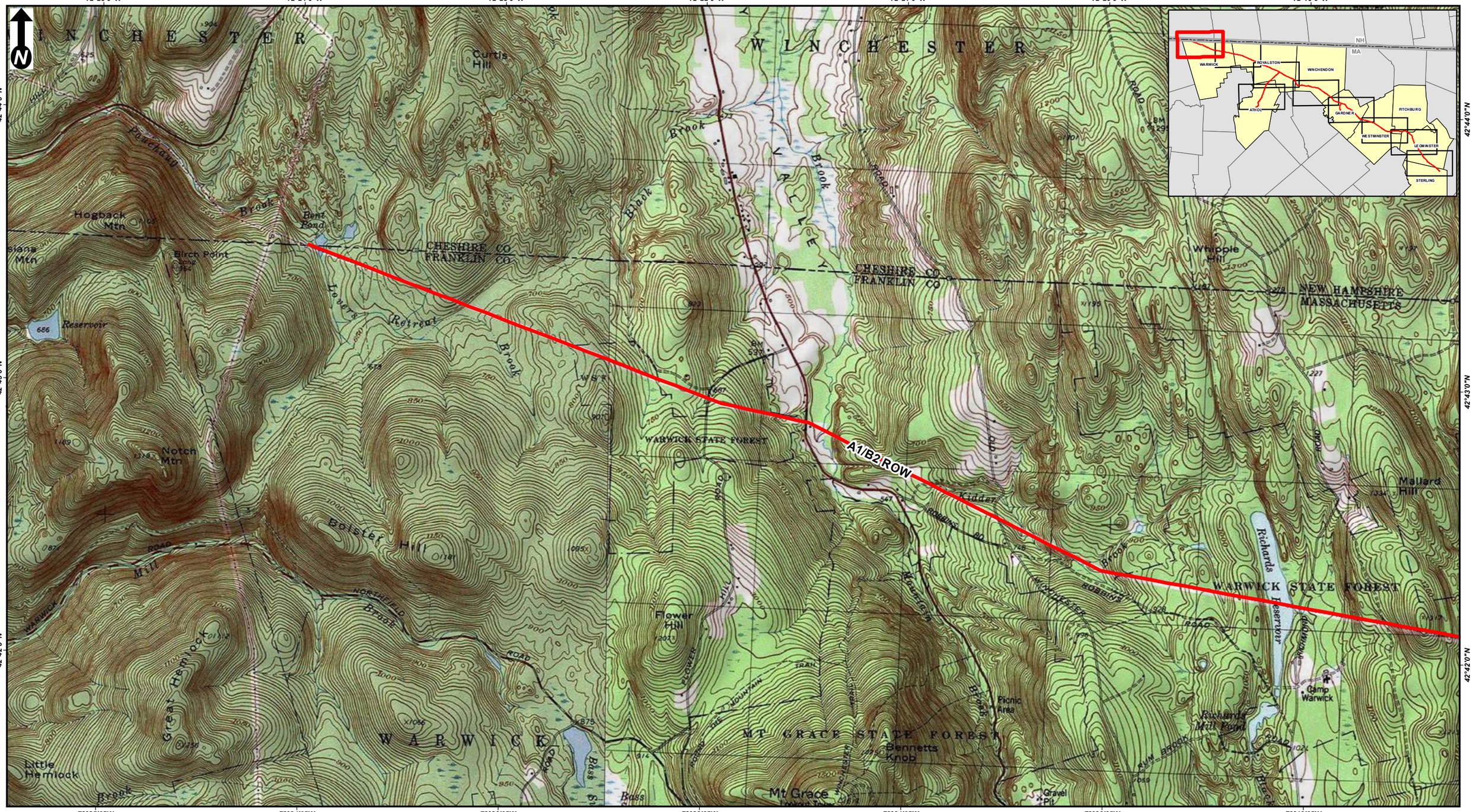
BSC GROUP

1 Mercantile Street
Worcester, MA 01608

Document Path: G:\GISPrj\8962066\Output\Maps\MXD\ReportMaps\RouteAnalysis\USGSLocus\A1B2_USGSLocus_20230419.mxd
Date Saved: 4/24/2023 3:24:11 PM

72°25'0"W | 72°24'0"W | 72°23'0"W | 72°22'0"W | 72°21'0"W | 72°20'0"W | 72°19'0"W

42°44'0"N | 42°43'0"N | 42°42'0"N



Scale:
1:24,000
(page size: 11 X 17)
0 2,000 4,000
Feet

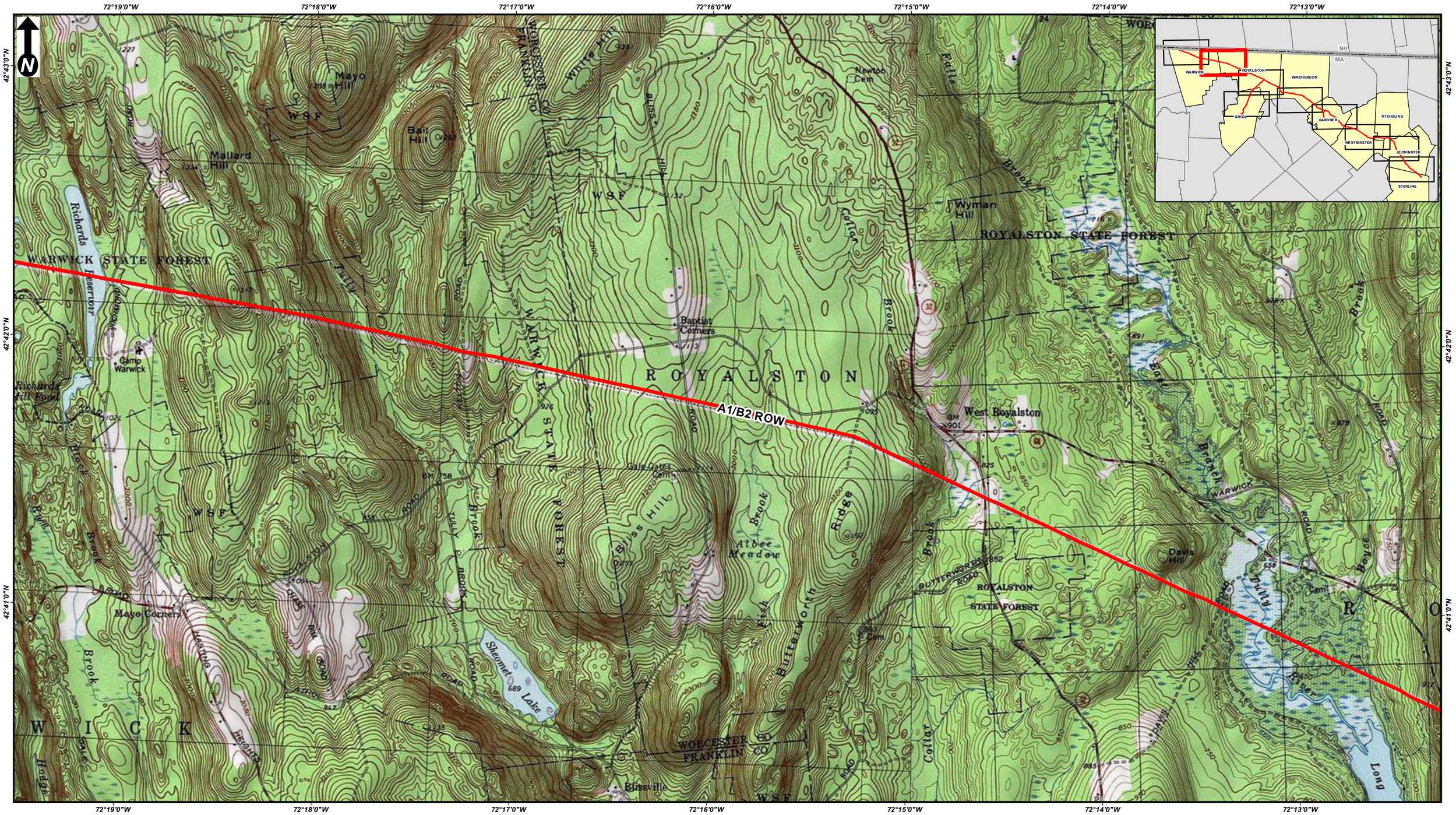
A1/B2 ASSET CONDITION REFURBISHMENT PROJECT
USGS Site Location Maps
Warwick, MA
Page 1 of 9

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

Document Path: G:\GISPrj\8962066\Output\Maps\MXD\ReportMaps\RouteAnalysis\USGSLocus\A1B2_USGSLocus_20230419.mxd
Date Saved: 4/24/2023 3:24:11 PM



Scale:
1:24,000
(page size: 11 X 17)
0 2,000 4,000
Feet

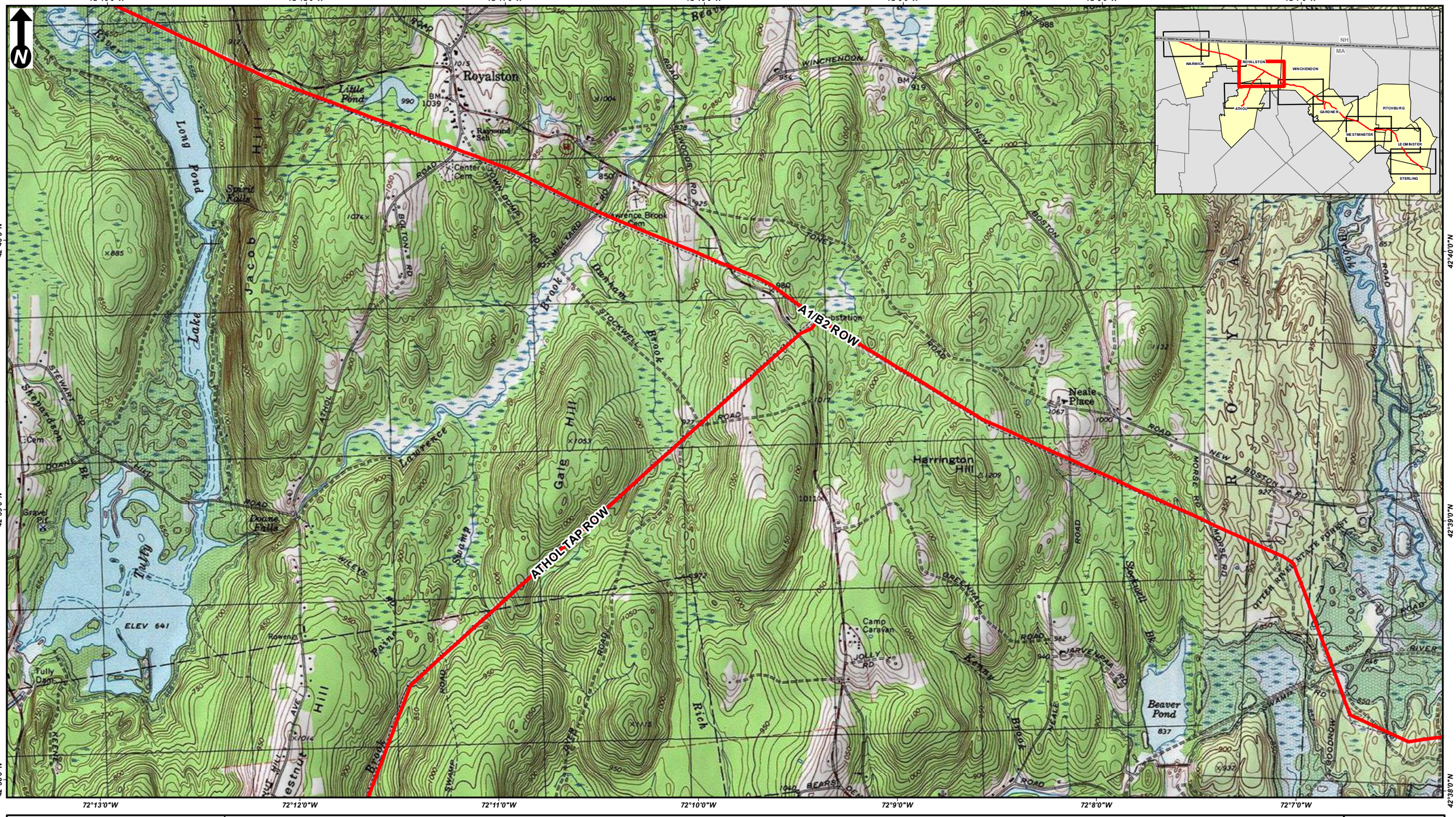
A1/B2 ASSET CONDITION REFURBISHMENT PROJECT
USGS Site Location Maps
Warwick & Royalston, MA
Page 2 of 9

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

Document Path: G:\GISPrj\8962066\Output\Maps\MXD\ReportMaps\RouteAnalysis\USGSLocus\A1B2_USGSLocus_20230419.mxd
Date Saved: 4/24/2023 3:24:11 PM



Scale:
1:24,000
(page size: 11 X 17)
0 2,000 4,000
Feet

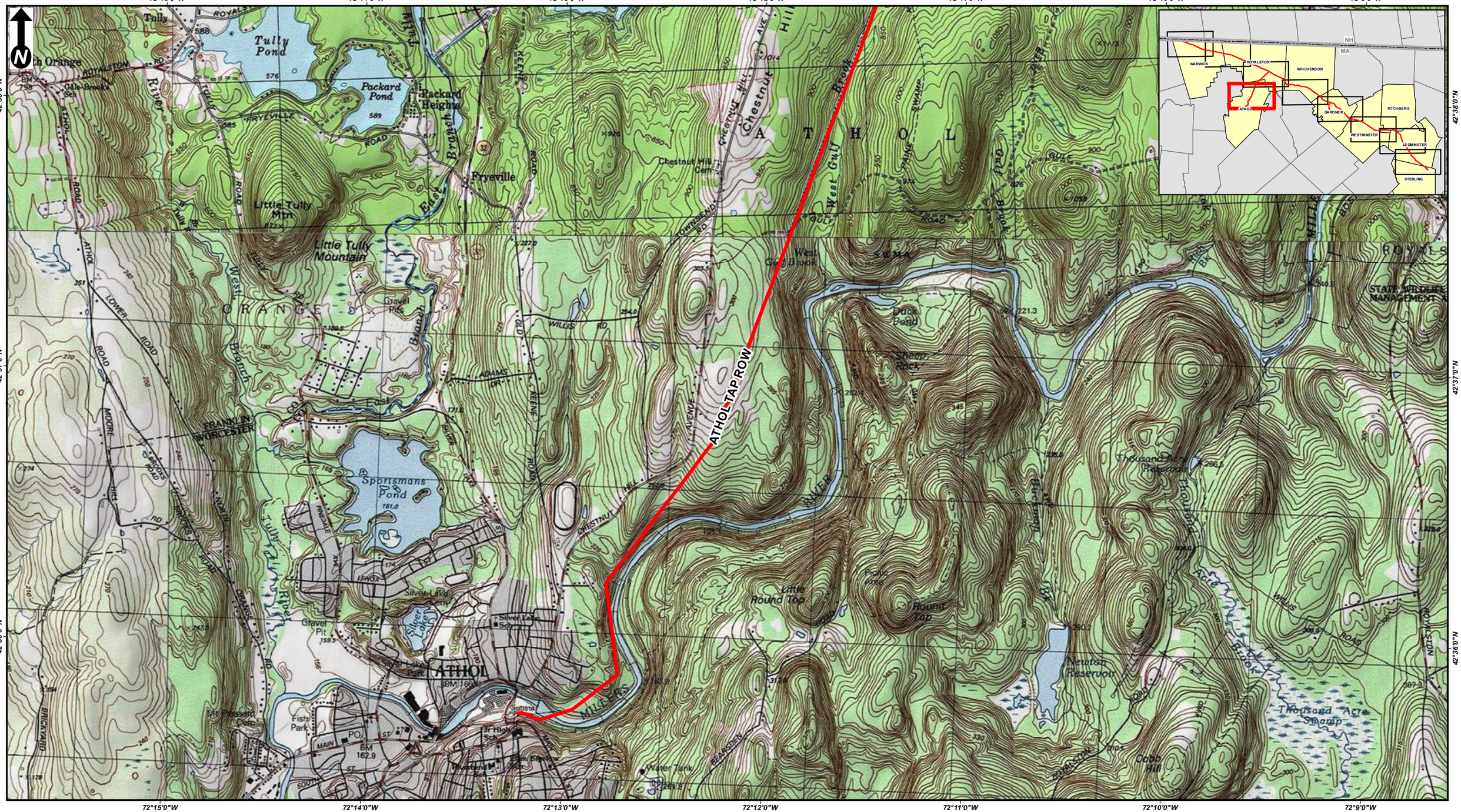
A1/B2 ASSET CONDITION REFURBISHMENT PROJECT
USGS Site Location Maps
Royalston, Athol, & Winchendon, MA
Page 3 of 9

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

Document Path: G:\GISPrj\8962066\Output\Maps\MXD\ReportMaps\RouteAnalysis\USGSLocus\A1B2_USGSLocus_20230419.mxd
Date Saved: 4/24/2023 3:24:11 PM



Scale:
1:24,000
(page size: 11 X 17)
0 2,000 4,000
Feet

A1/B2 ASSET CONDITION REFURBISHMENT PROJECT
USGS Site Location Maps
Athol, MA
Page 4 of 9

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

Document Path: G:\GISPrj\8962066\Output\Maps\MXD\ReportMaps\RouteAnalysis\USGSLocus\A1B2_USGSLocus_20230419.mxd
Date Saved: 4/24/2023 3:24:11 PM



Scale:
1:24,000
(page size: 11 X 17)
0 2,000 4,000
Feet

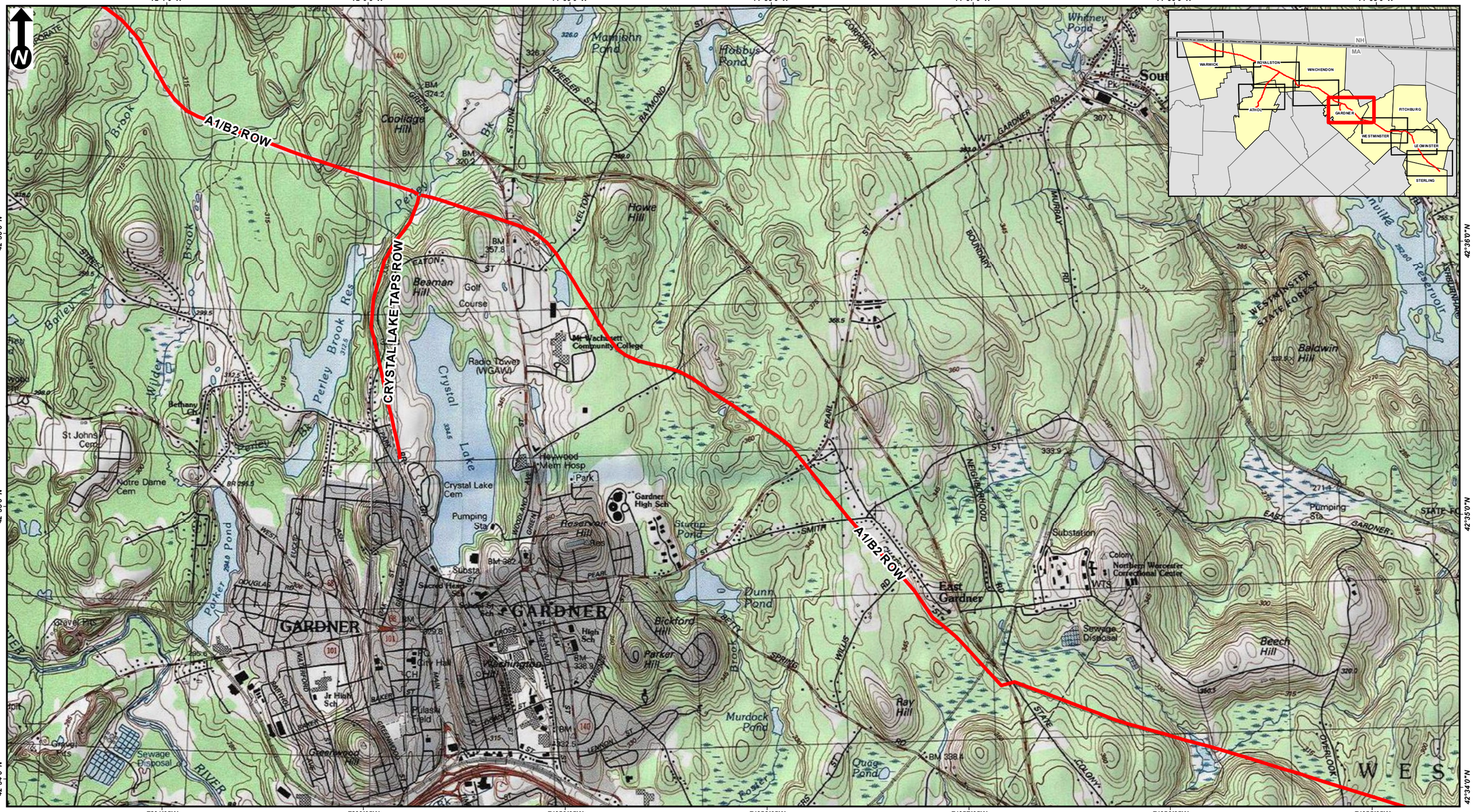
A1/B2 ASSET CONDITION REFURBISHMENT PROJECT
USGS Site Location Maps
Winchendon & Gardner, MA
Page 5 of 9

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

Document Path: G:\GISPrj\8962066\Output\Maps\MXD\ReportMaps\RouteAnalysis\USGSLocus\A1B2_USGSLocus_20230419.mxd
Date Saved: 4/24/2023 3:24:11 PM



Scale:
1:24,000
(page size: 11 X 17)
0 2,000 4,000
Feet

A1/B2 ASSET CONDITION REFURBISHMENT PROJECT
USGS Site Location Maps
Gardner & Westminster, MA
Page 6 of 9

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

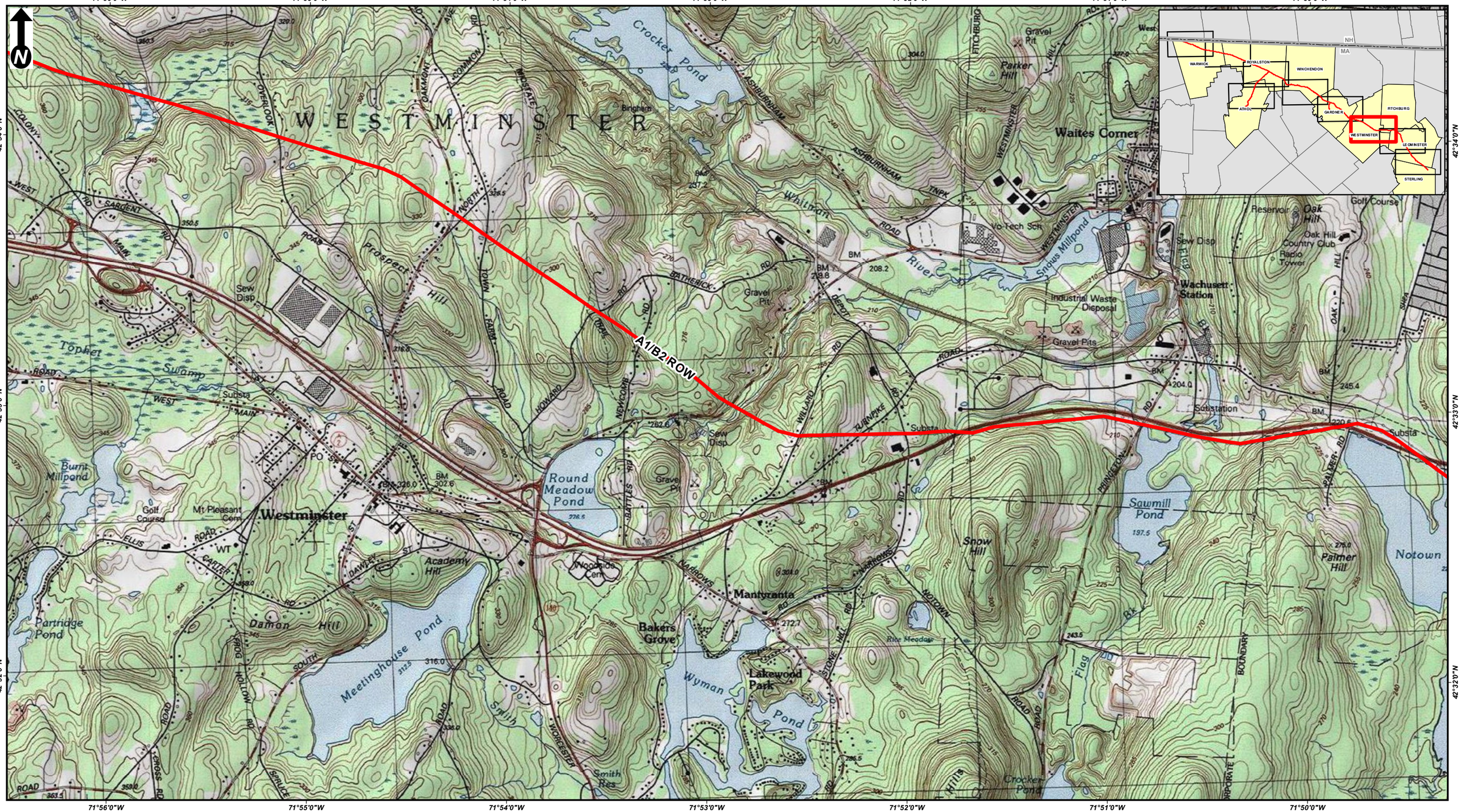
Document Path: G:\GISPrj\8962066\Output\Maps\MXD\ReportMaps\RouteAnalysis\USGSLocus\A1B2_USGSLocus_20230419.mxd
Date Saved: 4/24/2023 3:24:11 PM

71°56'0"W 71°55'0"W 71°54'0"W 71°53'0"W 71°52'0"W 71°51'0"W 71°50'0"W

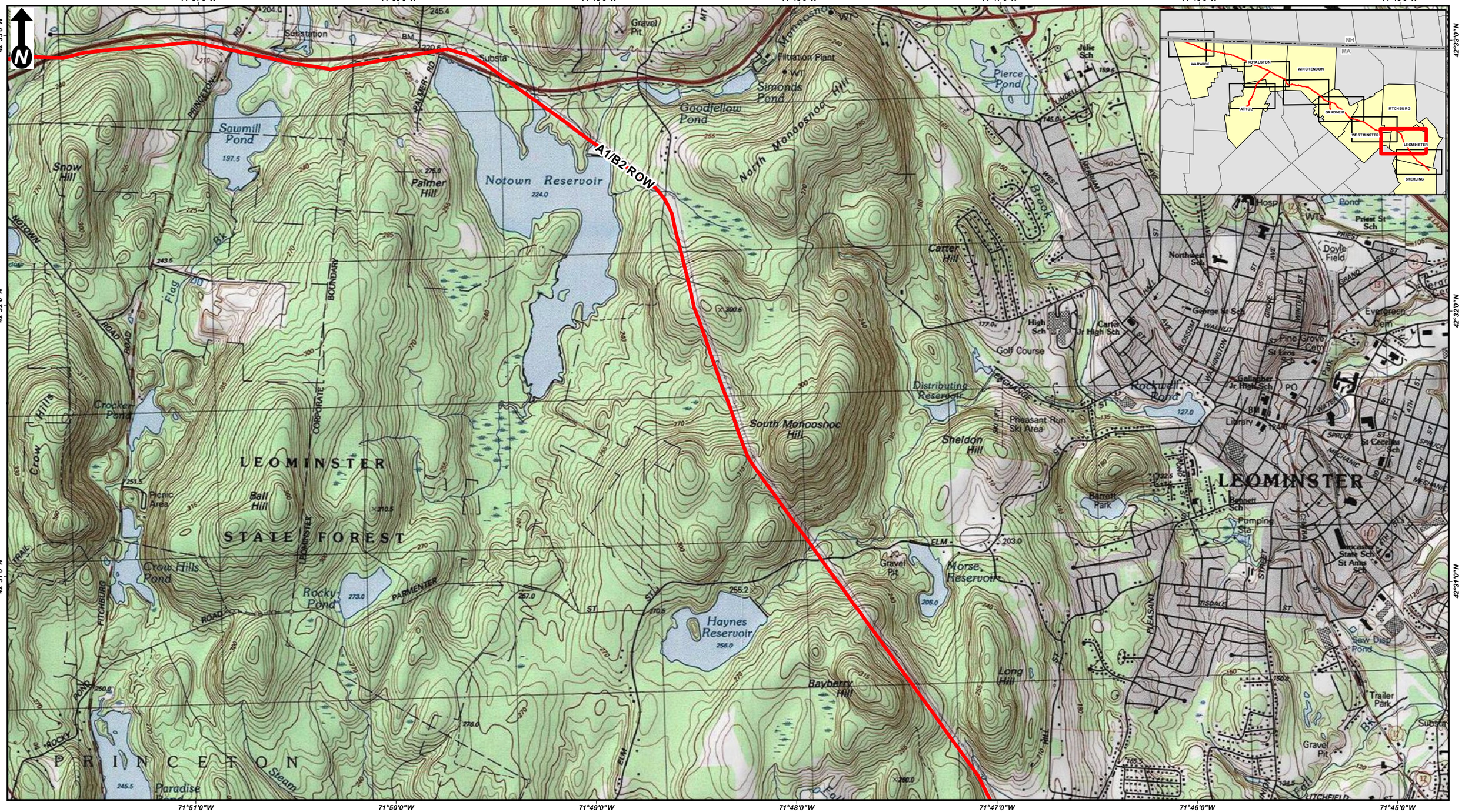
42°34'0"N

42°33'0"N

42°32'0"N


N
WESTMINSTER
A1/B2 ROW
Crocker Pond
Parker Hill
Gravel Pit
Waites Corner
Whitman
Vo-Tech Sch
Reservoir
Oak Hill
Golf Course
Oak Hill Country Club
Radio Tower
Sew Disp
Wachusett Station
Industrial Waste Disposal
Gravel Pits
Substation
Topher Swamp
Burnt Millpond
Golf Course
Mt Pleasant Cem
Westminster
Academy Hill
Partridge Pond
Daman Hill
Meetinghouse Pond
Round Meadow Pond
Bakers Grove
Mantyranta
Lakewood Park
Wyman Pond
Smith Res
Crocker Pond
Sawmill Pond
Snow Hill
Palmer Hill
Notown
Rice Meadow
Flag
Prospect Hill
Sew Disp
Substa
PO
Cemetery
Golf Course
Reservoir
Radio Tower
Substation
Flag
Pond
Hills
Res
Meetinghouse
Smith
Wyman
Lakewood
Bakers
Mantyranta
Academy
Daman
Partridge
Burnt
Round
Meadow
Sawmill
Snow
Palmer
Notown
Rice
Crocker
Oak
Hill
Wachusett
Station
Waites
Corner
Parker
Hill
Crocker
Pond
Gravel
Pit
Industrial
Waste
Disposal
Gravel
Pits
Vo-Tech
Sch
Sew
Disp
Substa
Substation
Golf
Course
Reservoir
Oak
Hill
Country
Club
Radio
Tower
Flag
Pond
Hills
Res
Meetinghouse
Smith
Wyman
Lakewood
Bakers
Grove
Mantyranta
Academy
Hill
Daman
Hill
Partridge
Pond
Burnt
Millpond
Round
Meadow
Pond
Sawmill
Pond
Snow
Hill
Palmer
Hill
Notown
Rice
Meadow
Crocker
Pond
Prospect
Hill
Sew
Disp
Substa
PO
Cemetery
Golf
Course
Reservoir
Radio
Tower
Substation

Document Path: G:\GISPrj\8962066\Output\Maps\MXD\ReportMaps\RouteAnalysis\USGSLocus\A1B2_USGSLocus_20230419.mxd
Date Saved: 4/24/2023 3:24:11 PM



Scale: 1:24,000
(page size: 11 X 17)
0 2,000 4,000
Feet

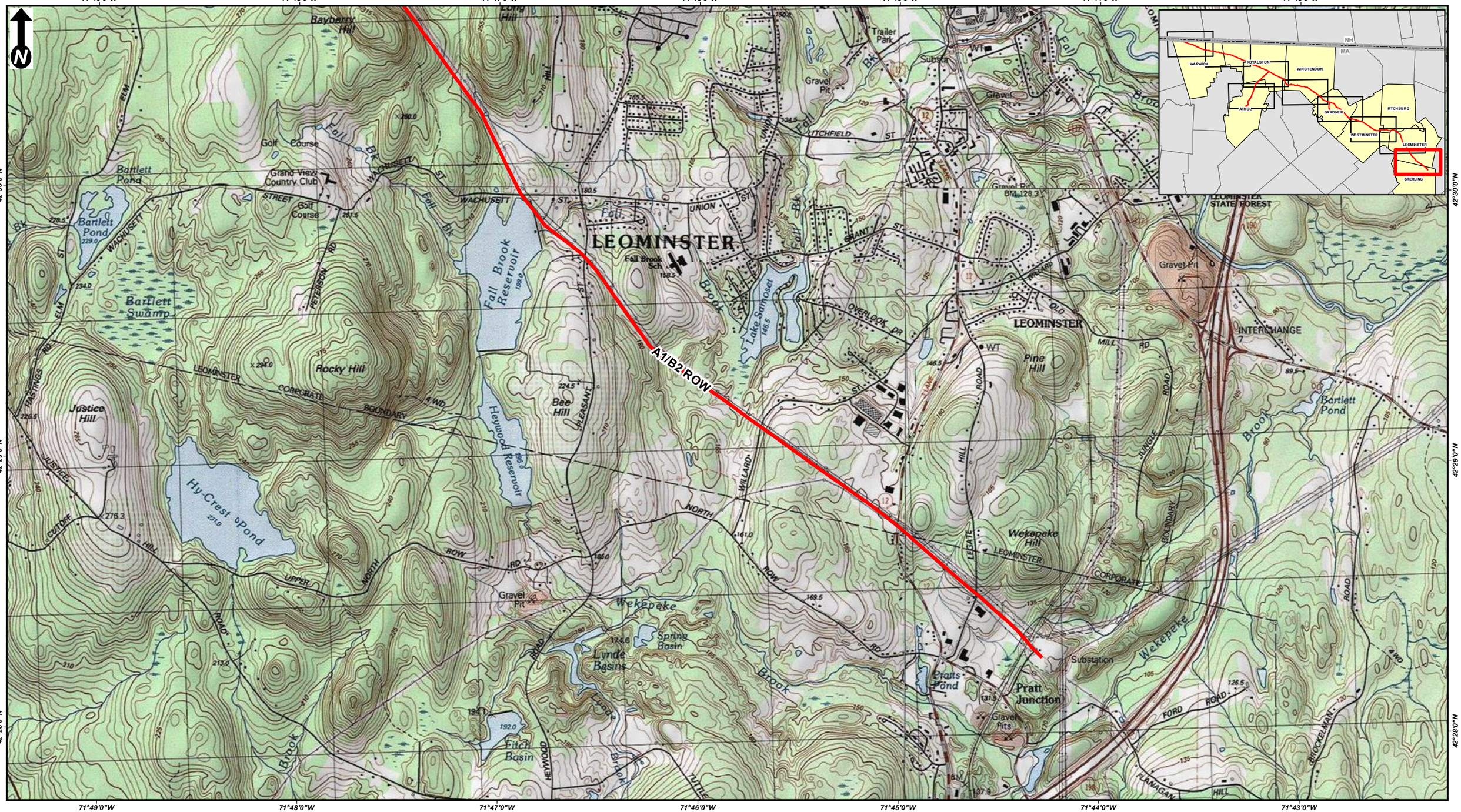
A1/B2 ASSET CONDITION REFURBISHMENT PROJECT
USGS Site Location Maps
Westminster, Fitchburg, & Leominster, MA
Page 8 of 9

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

Document Path: G:\GISPrj\8962066\Output\Maps\MXD\ReportMaps\RouteAnalysis\USGSLocus\A1B2_USGSLocus_20230419.mxd
Date Saved: 4/24/2023 3:24:11 PM



Scale:
1:24,000
(page size: 11 X 17)
0 2,000 4,000
Feet

A1/B2 ASSET CONDITION REFURBISHMENT PROJECT
USGS Site Location Maps
Leominster & Sterling, MA
Page 9 of 9

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

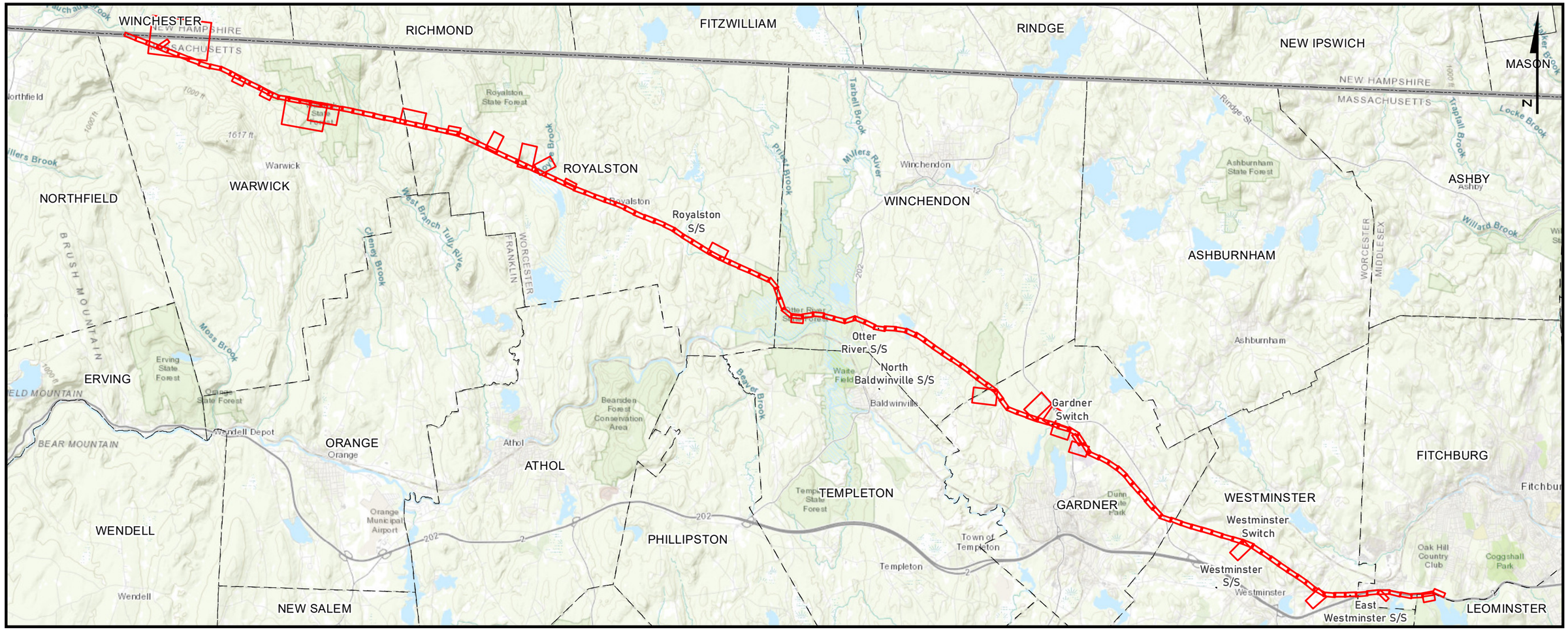
Figure 2 - MEPA General Purpose Plans (DEIR Plans)

Figure 2A - A1/B2 Mainline

BSC Project Number: 89620.66

Asset Condition Refurbishment Project (ACR) - A1/B2 Mainline

Warwick, Royalston, Athol, Wichendon, Gardner,
Westminster, Fitchburg, & Leominster, MA
MEPA General Purpose Plans - 75% Design
October 26, 2023



PREPARED FOR:

nationalgrid

170 Data Drive
Waltham, MA 02451

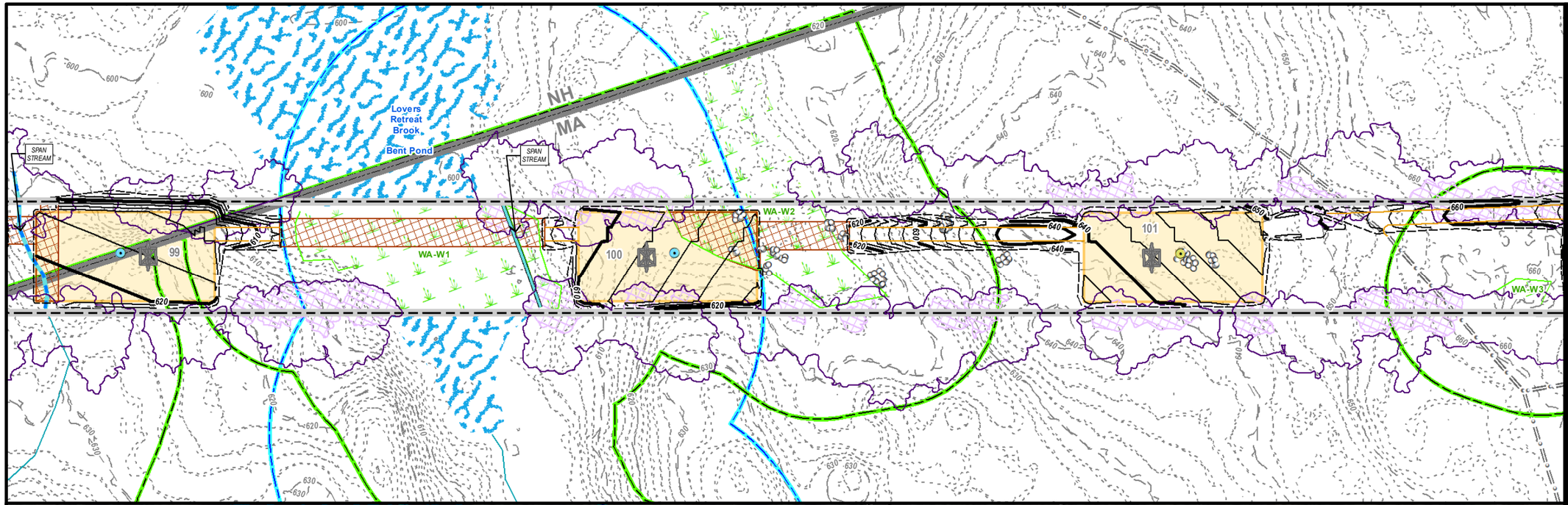
INDEX OF FIGURES

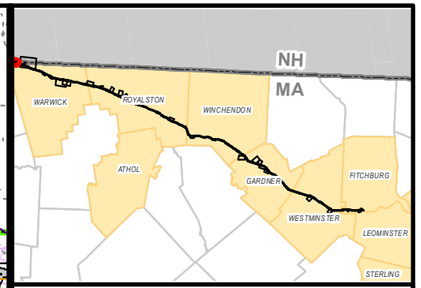
T1 - TITLE SHEET
1 - 137 - MAP SHEETS
1A - 137A - OFF ROW ACCESS SHEETS

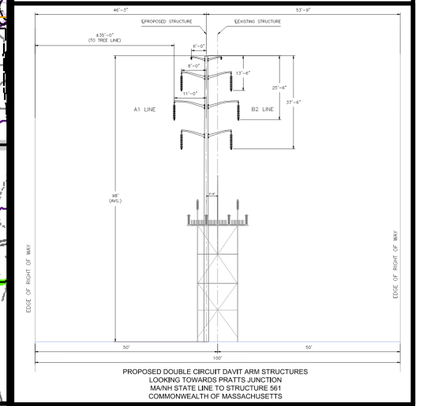
ISSUED FOR PERMITTING
NOT CONSTRUCTION

PREPARED BY:

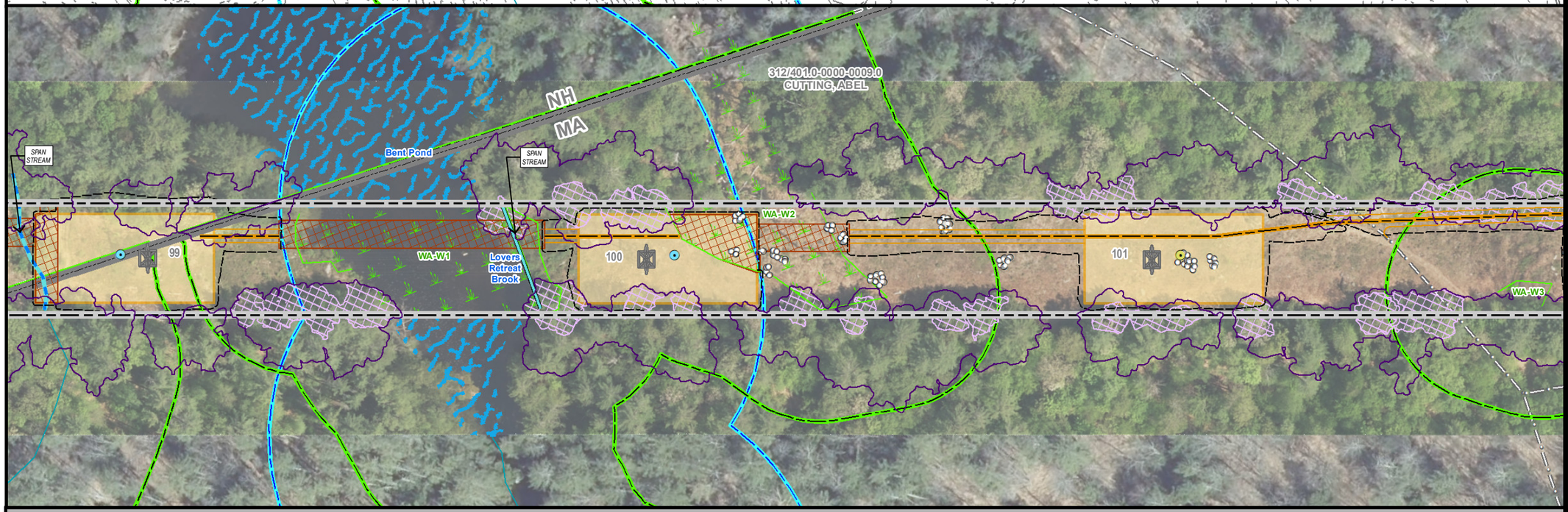
BSC GROUP
1 Mercantile Street Suite 601
Worcester, MA 01608







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 1 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

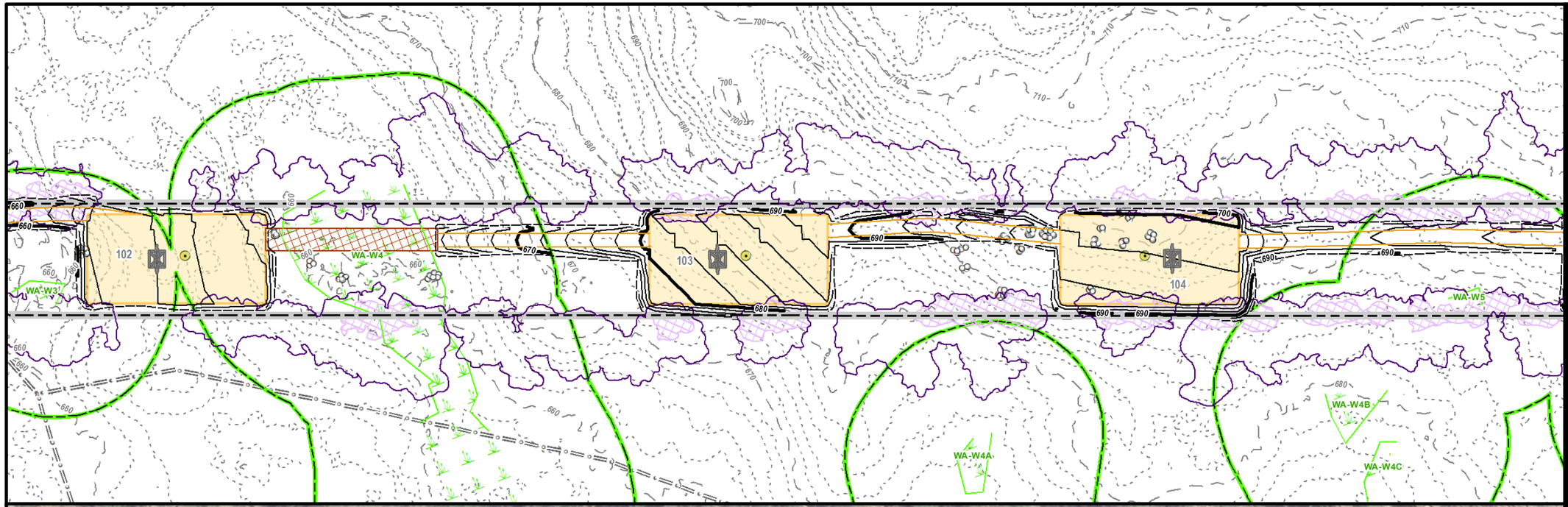
**Indicates Layers Set to Transparency*

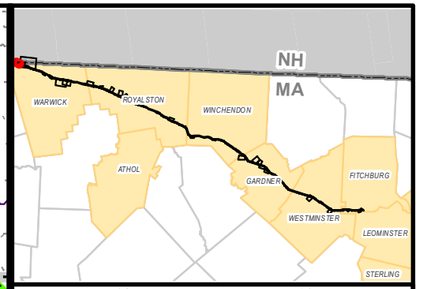
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

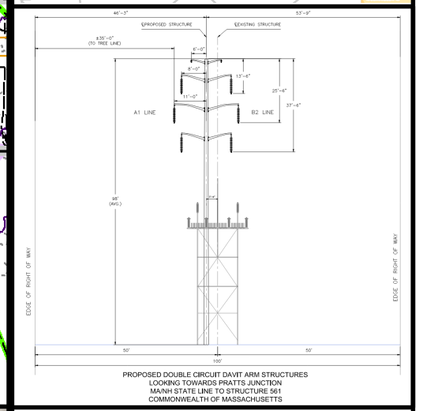
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

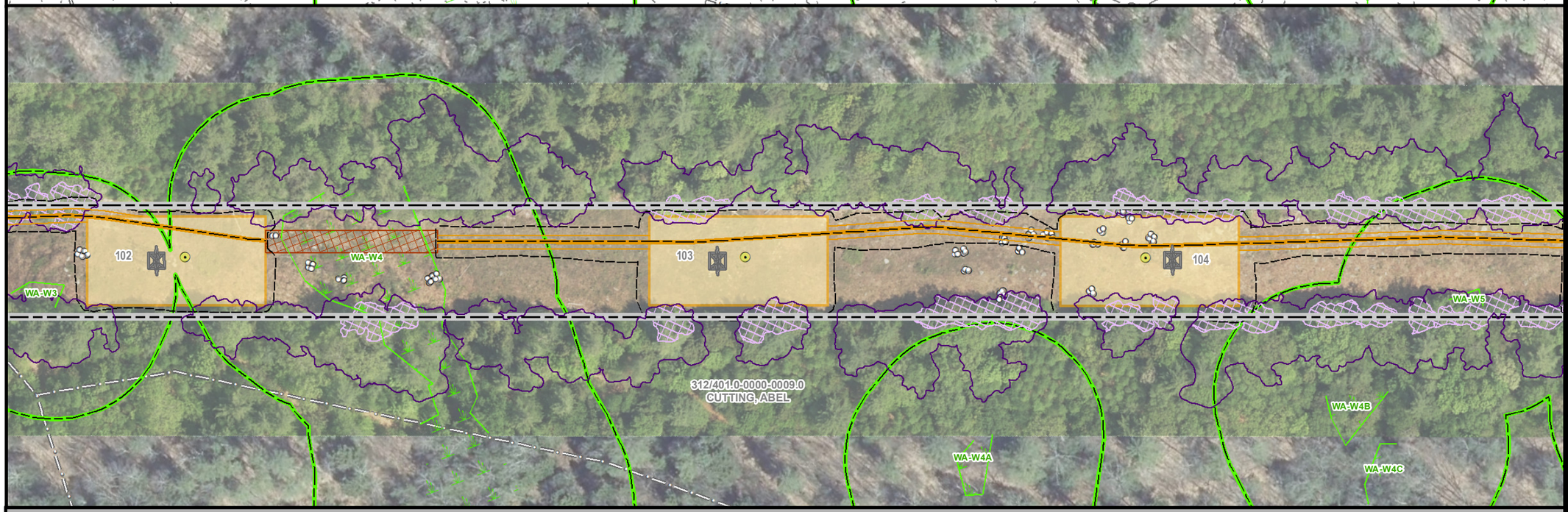
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 2 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

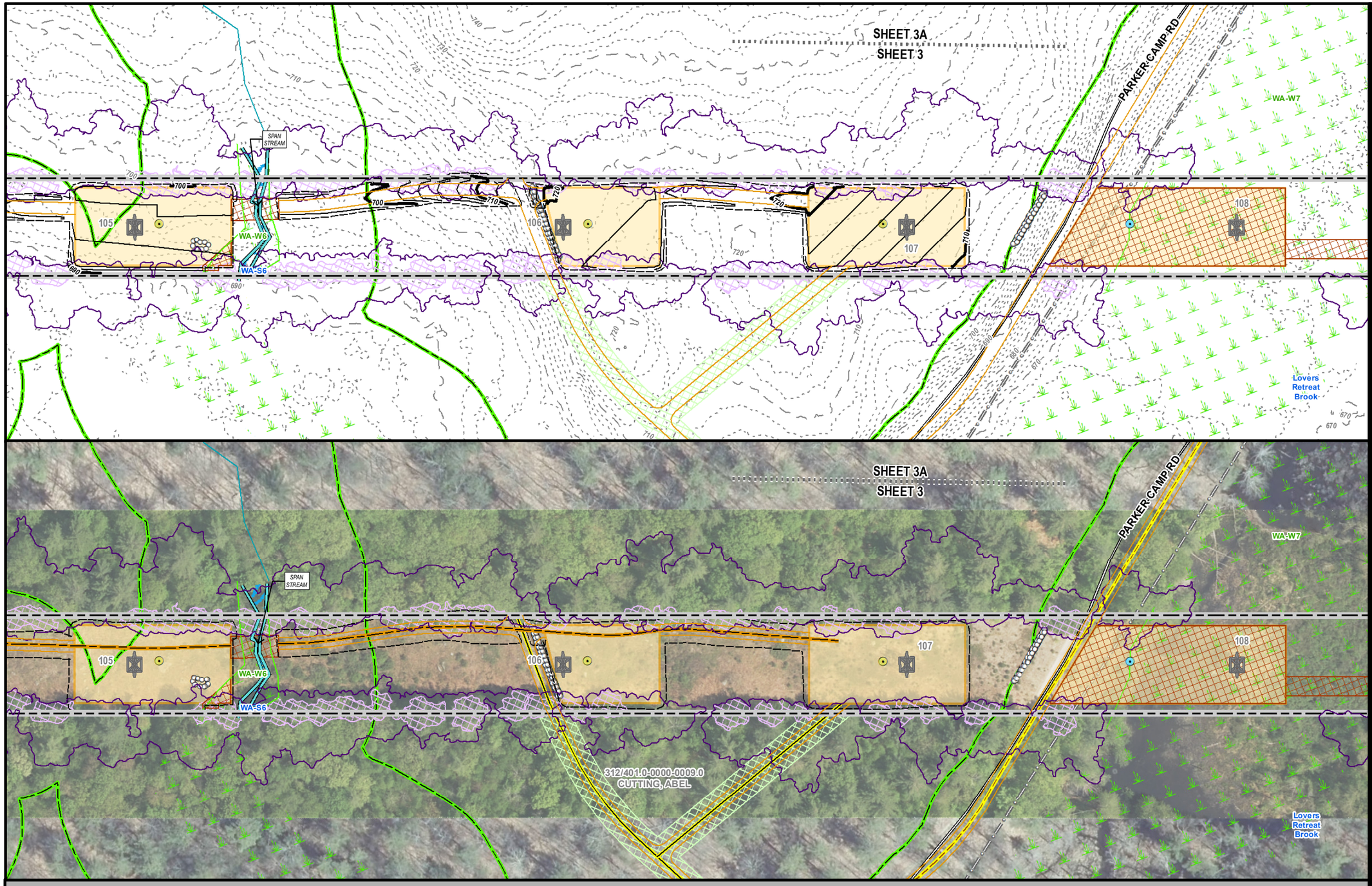
**Indicates Layers Set to Transparency*

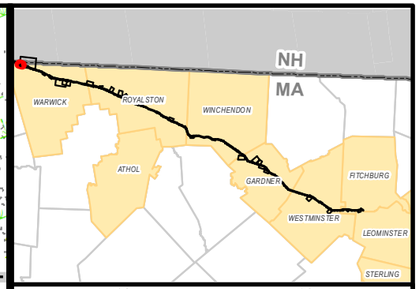
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

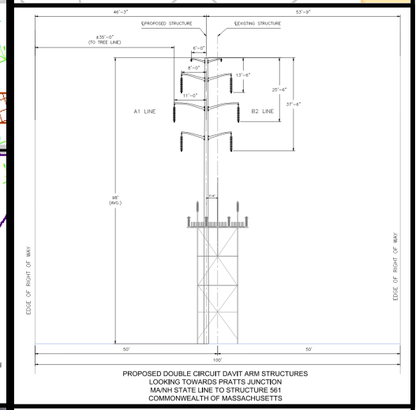
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 3 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

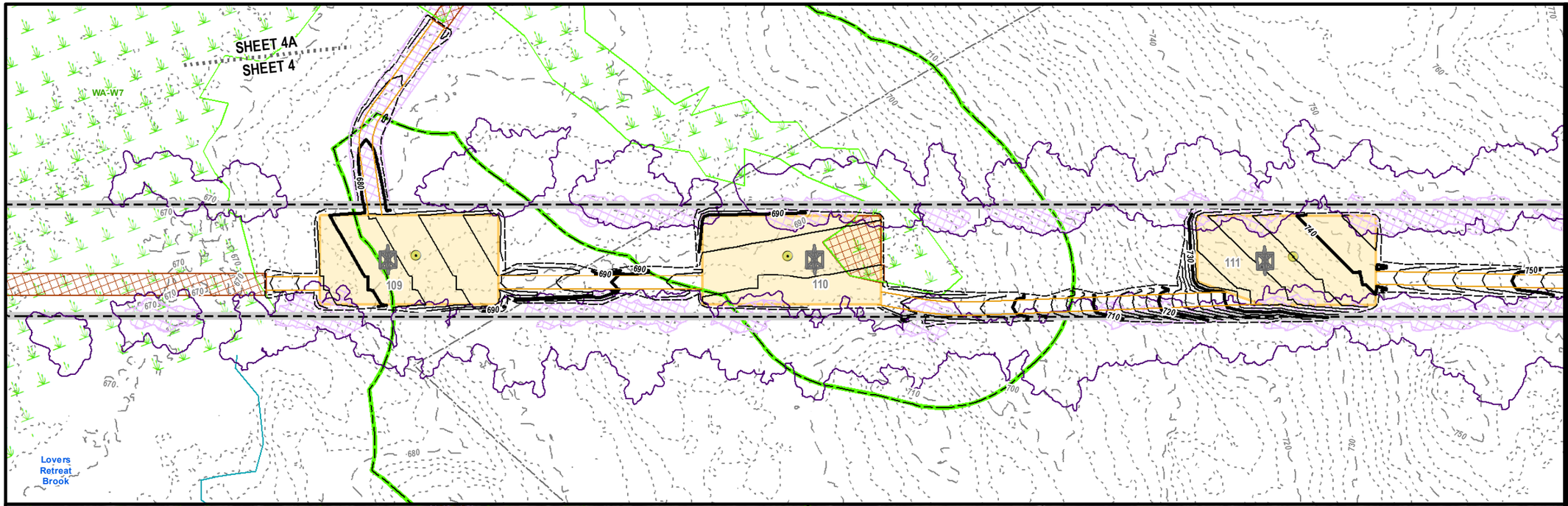
**Indicates Layers Set to Transparency*

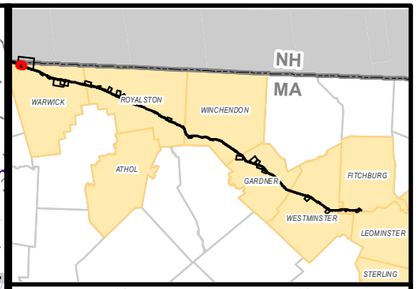
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

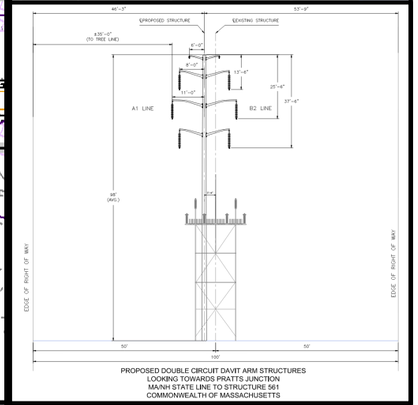
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

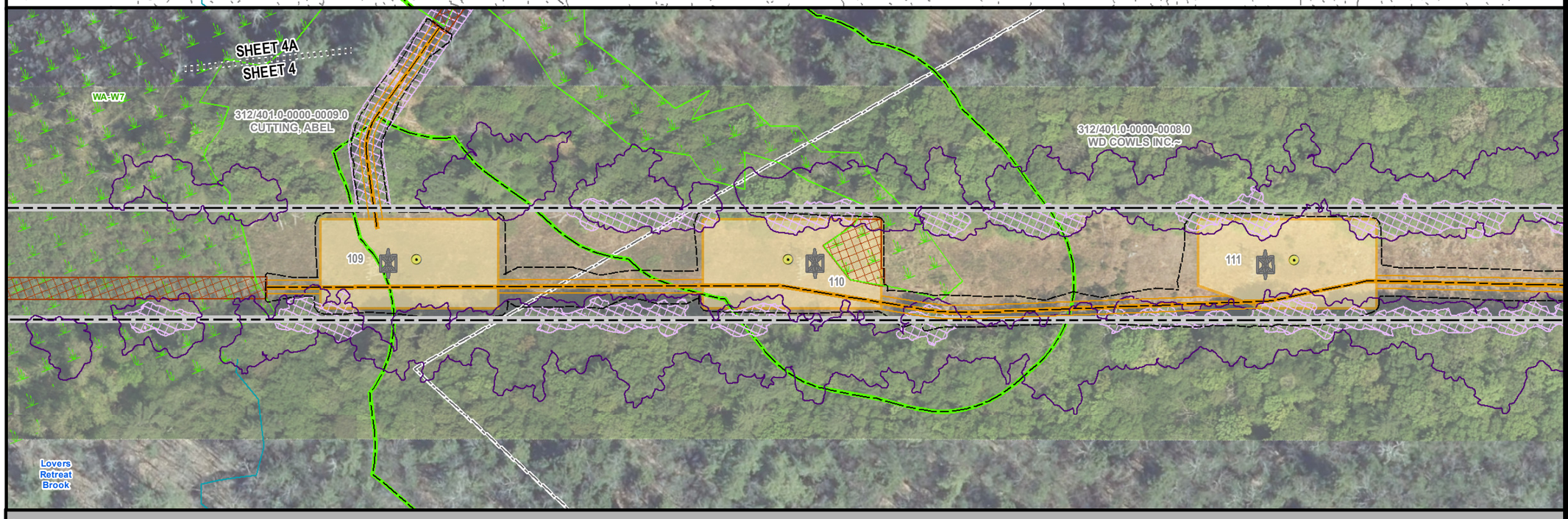
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 4 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

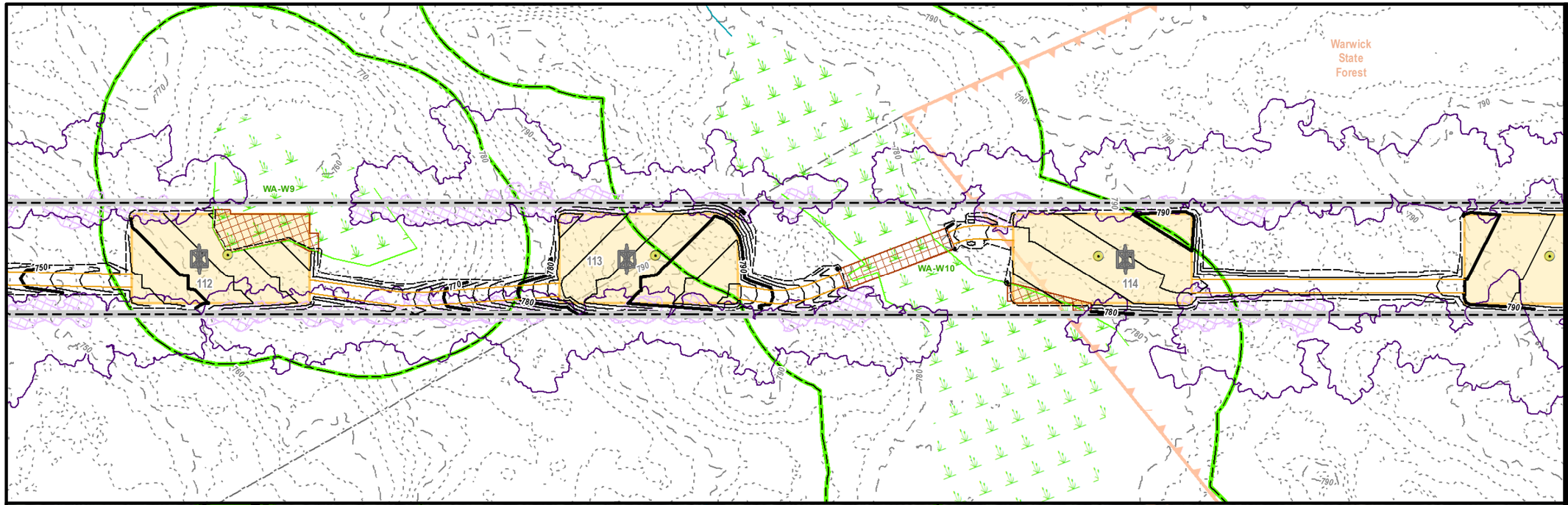
**Indicates Layers Set to Transparency*

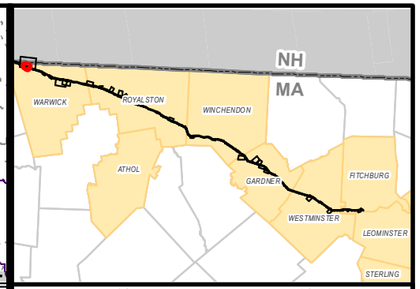
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

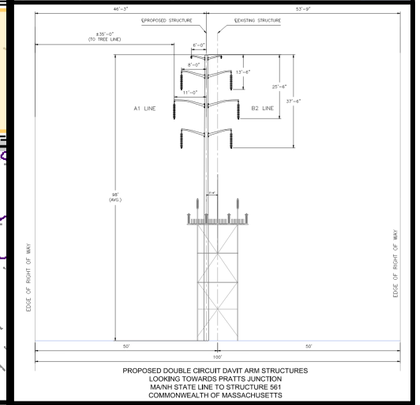
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

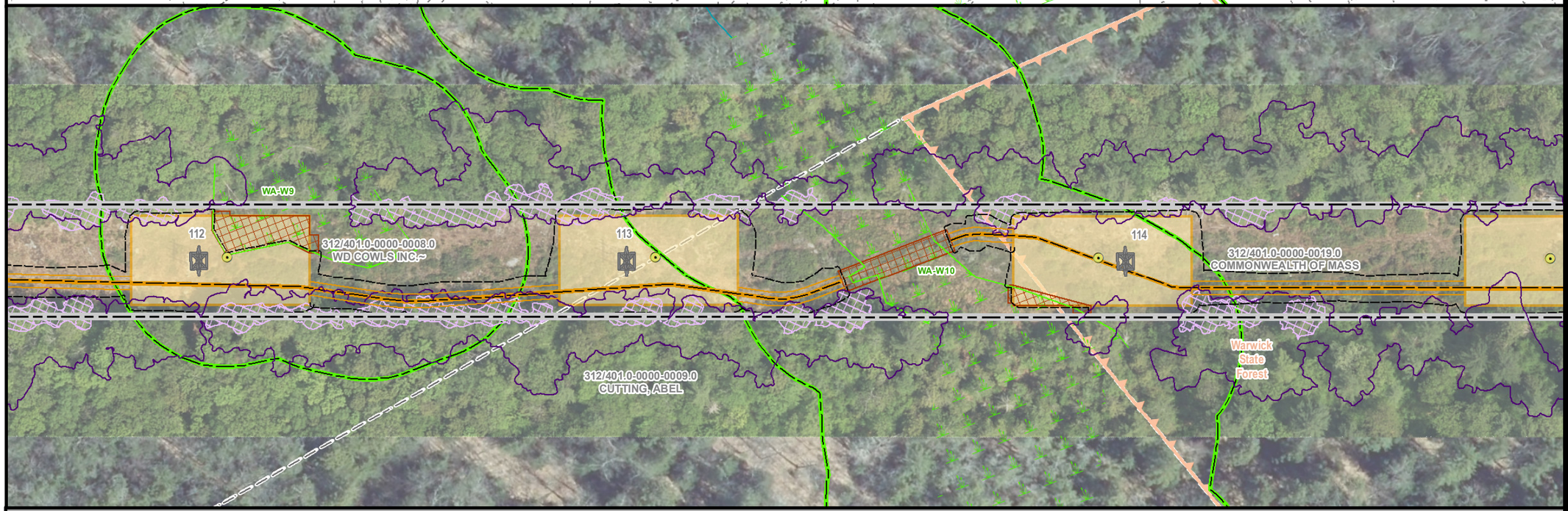
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 5 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

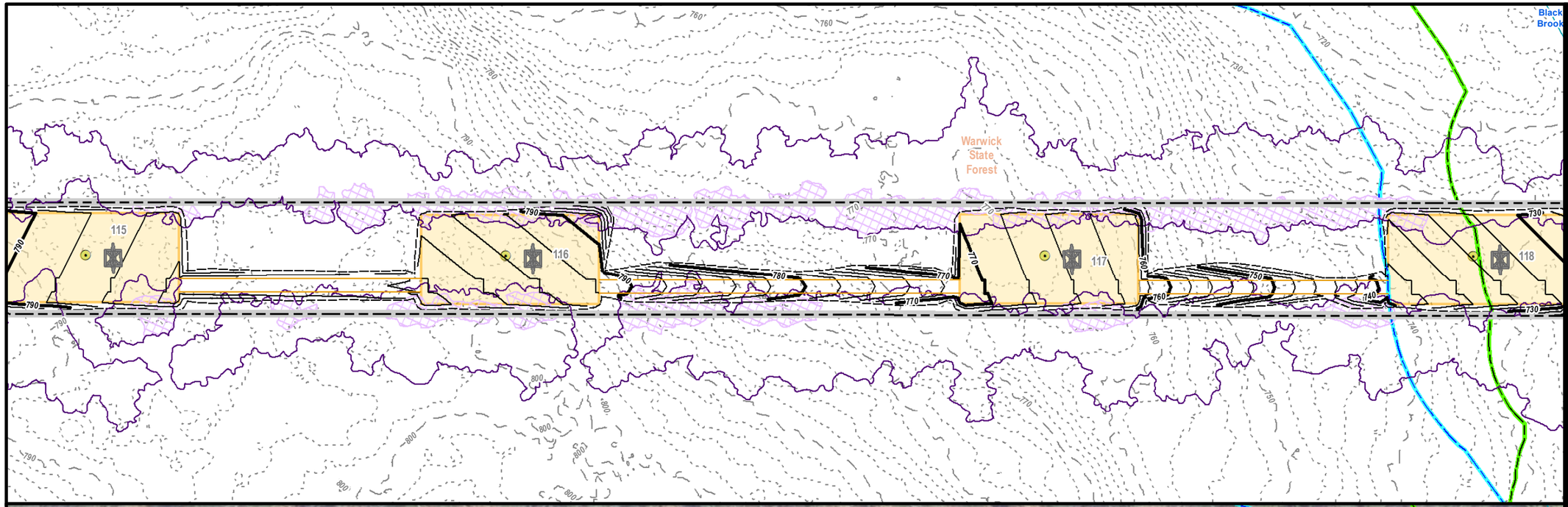
**Indicates Layers Set to Transparency*

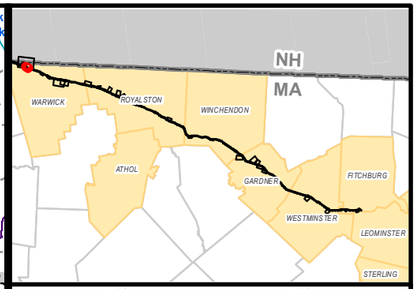
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

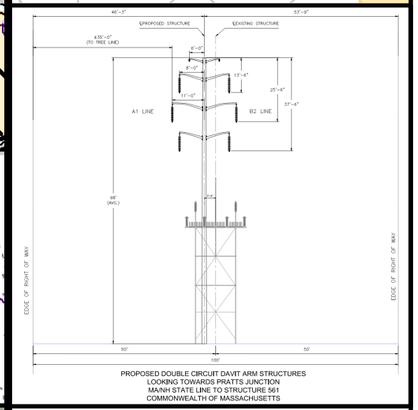
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

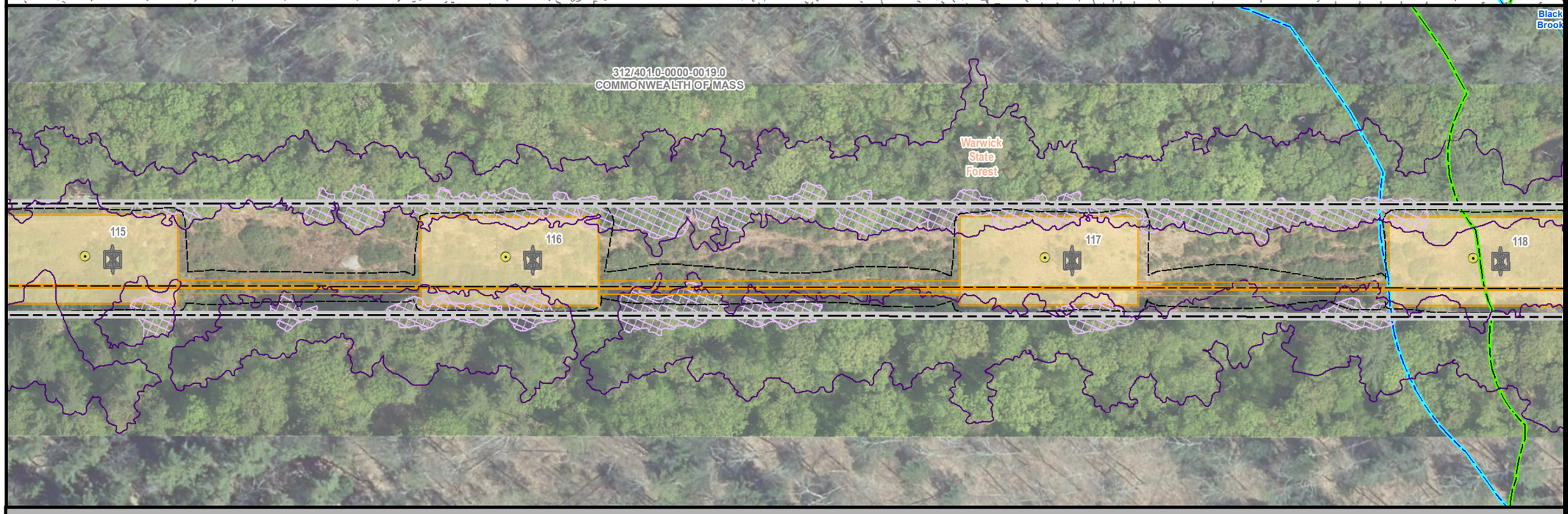
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 6 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

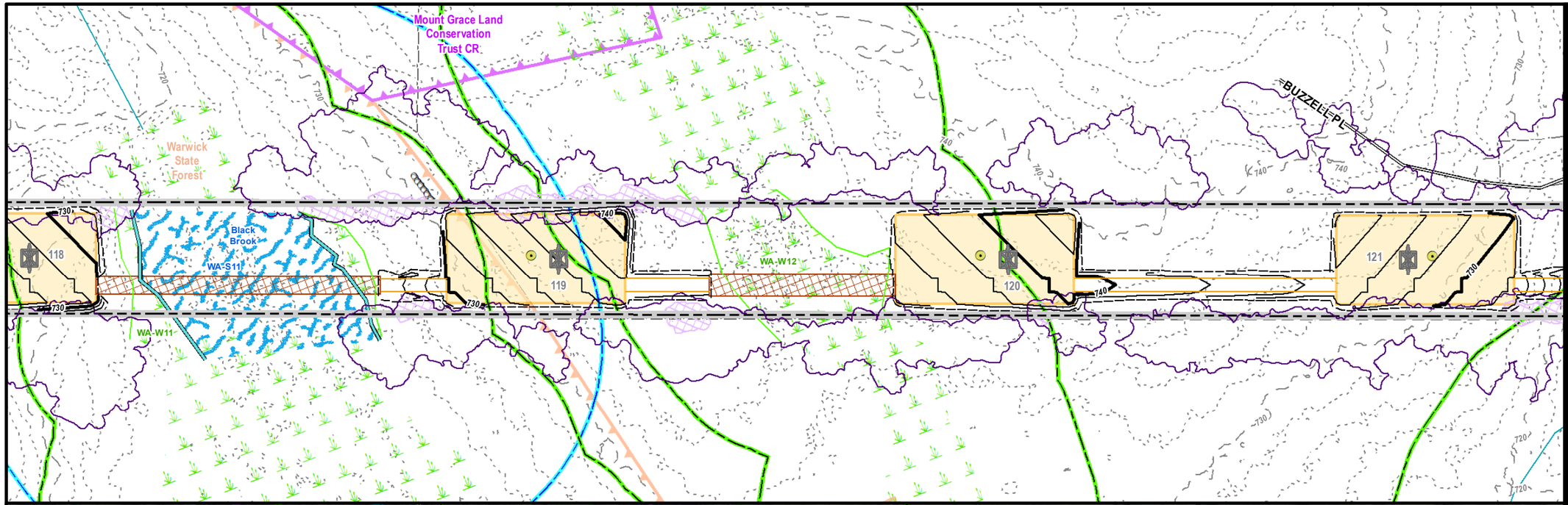
**Indicates Layers Set to Transparency*

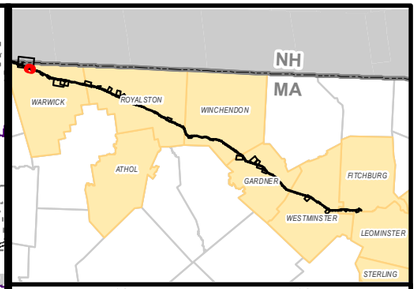
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

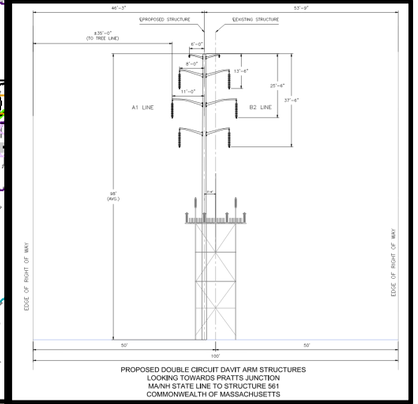
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

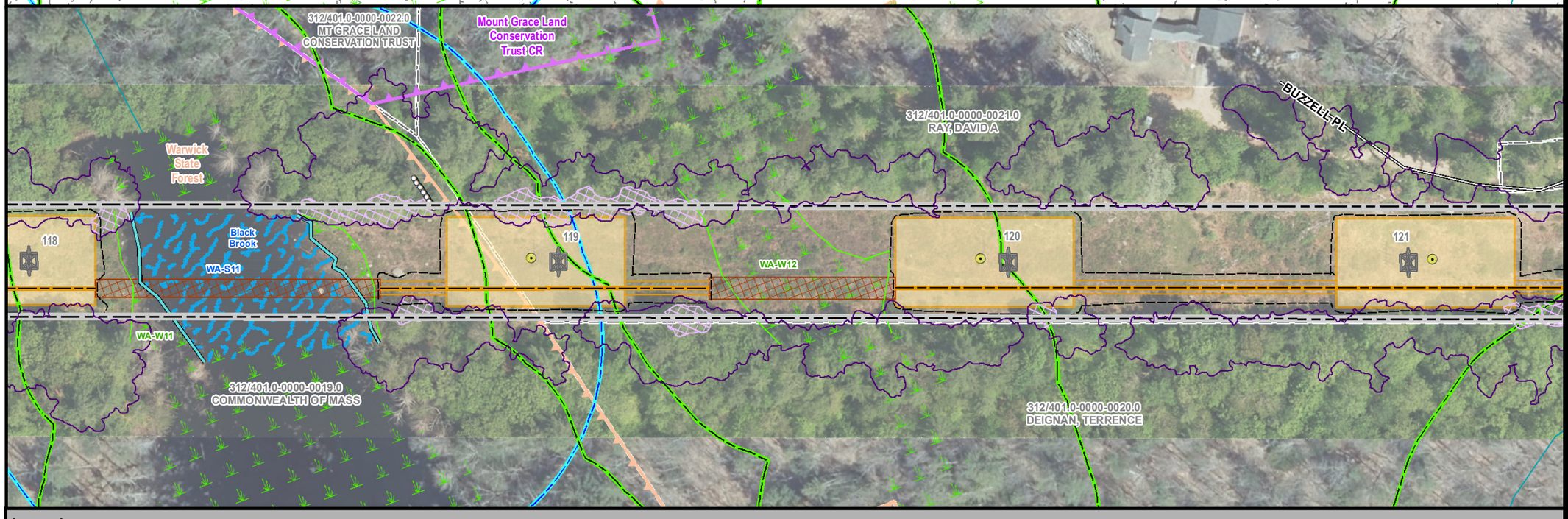
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 7 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

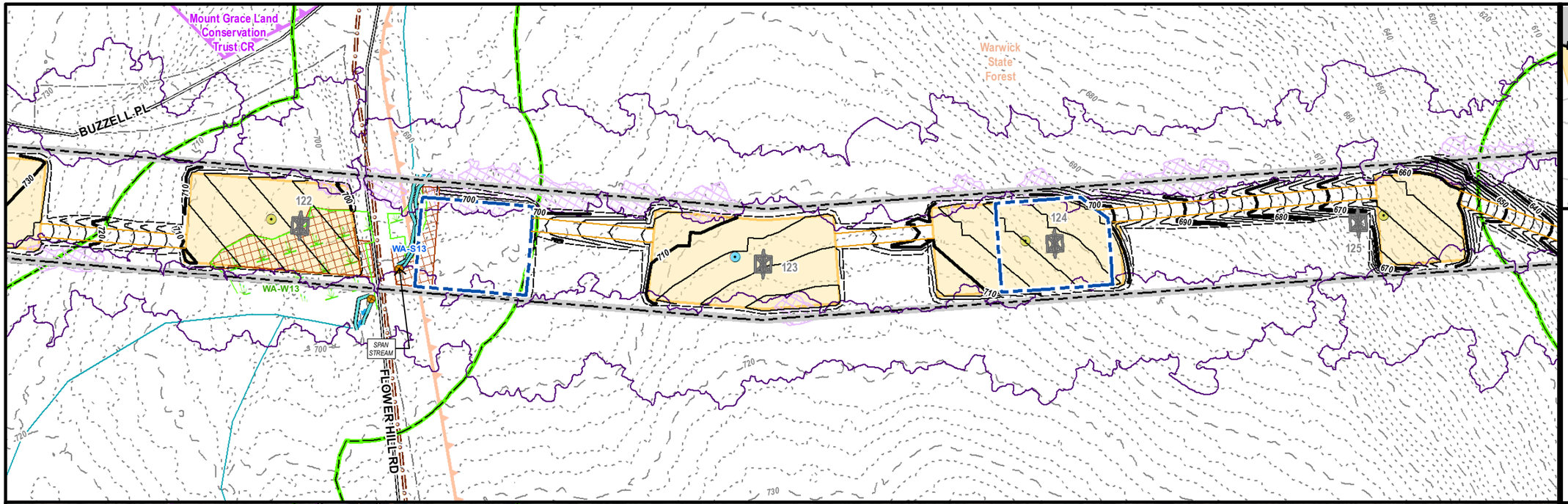
**Indicates Layers Set to Transparency*

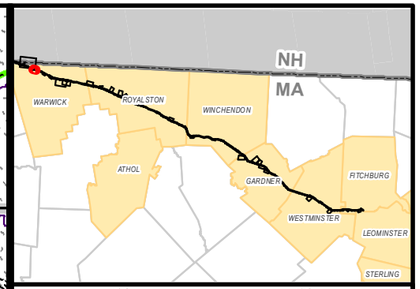
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

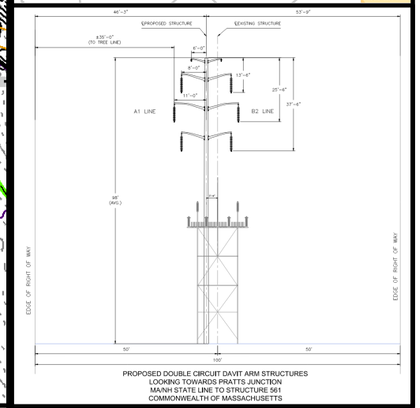
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 8 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

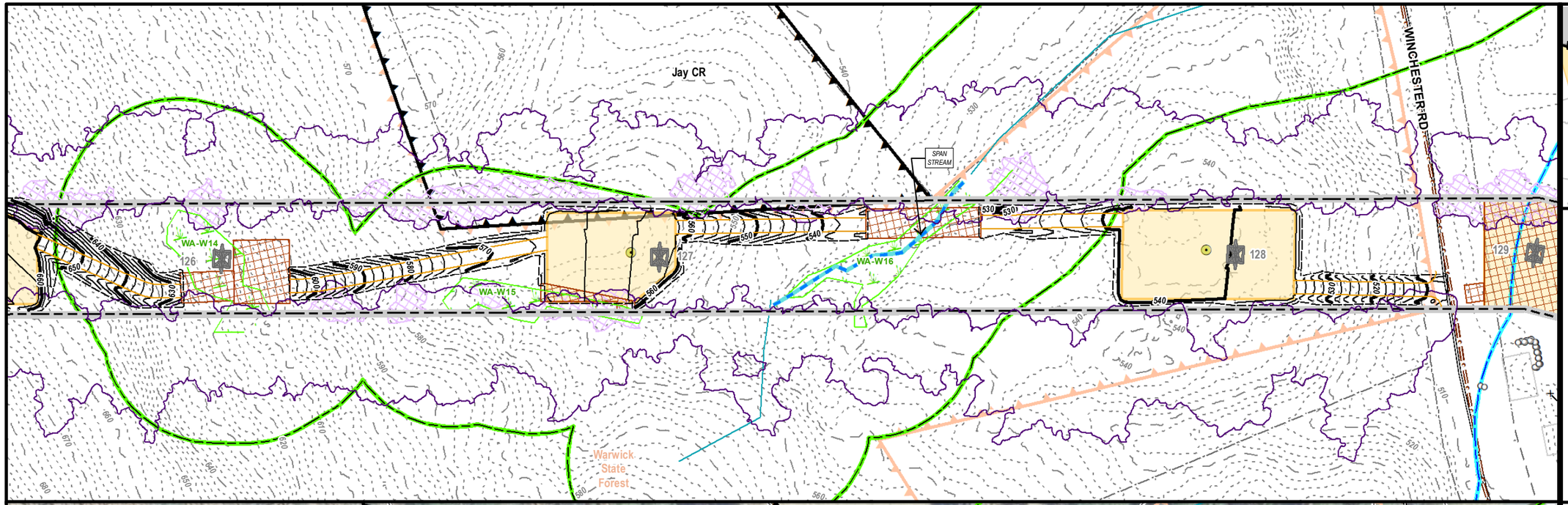
**Indicates Layers Set to Transparency*

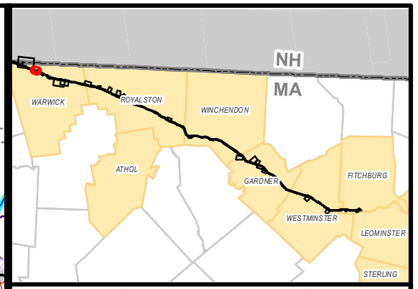
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

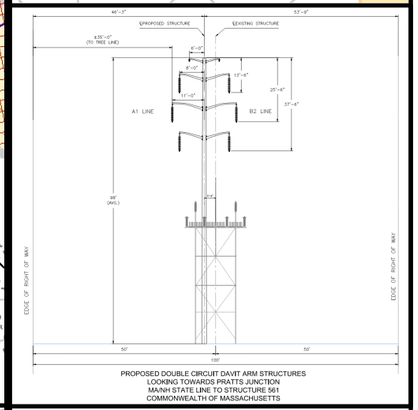
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

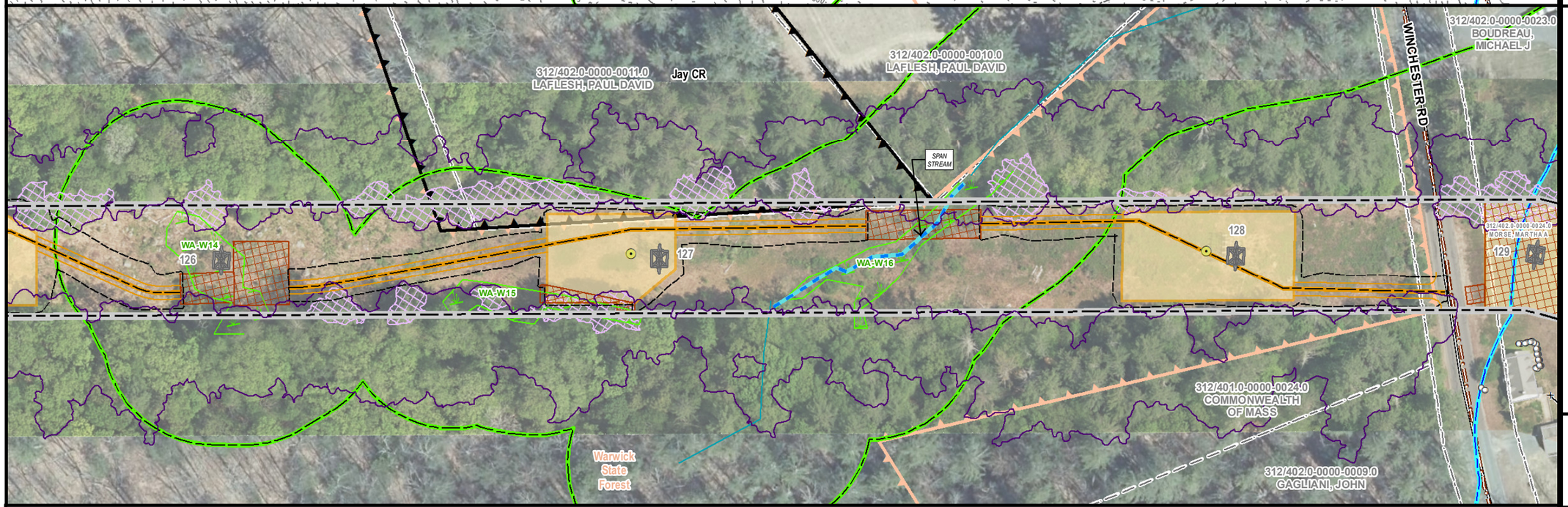
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 9 OF 137

N

1 inch = 100 feet

0 50 100

Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

**Indicates Layers Set to Transparency*

PREPARED FOR:

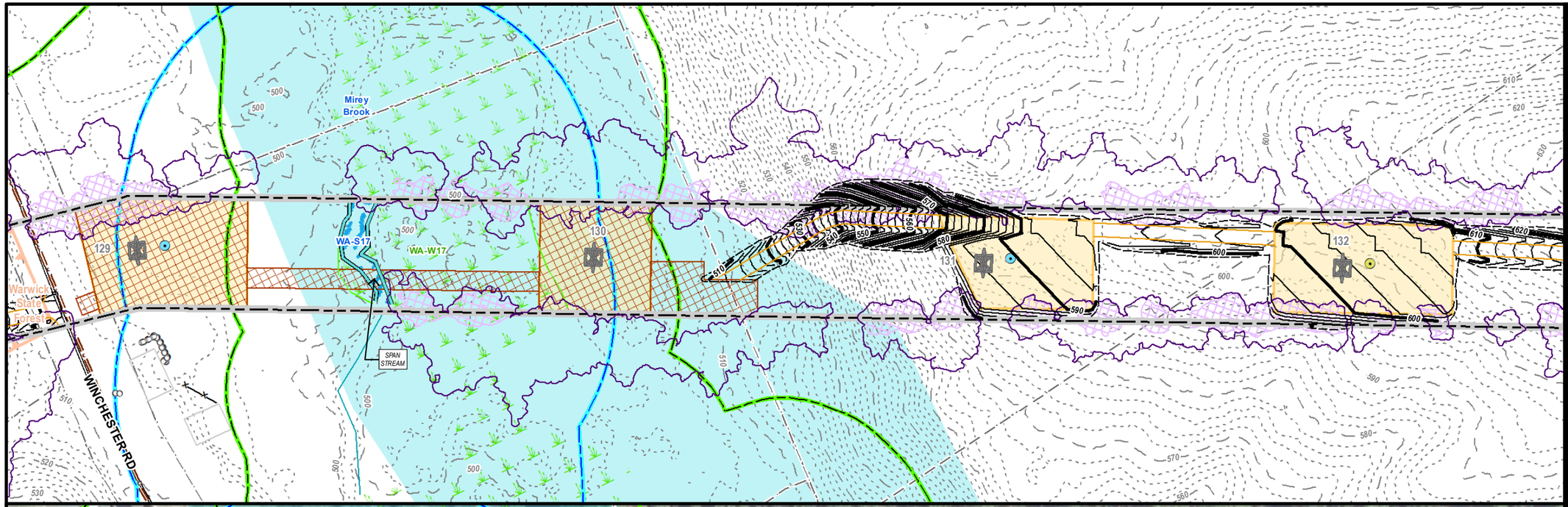
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

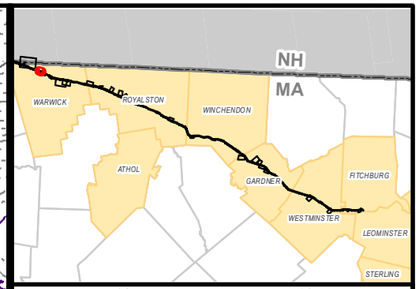
PREPARED BY:

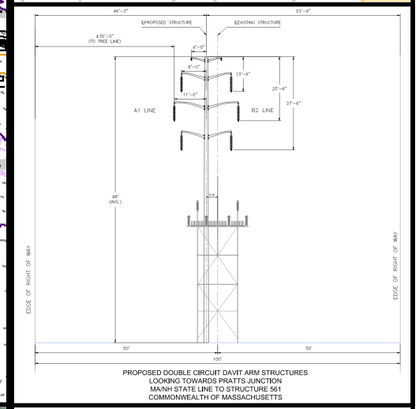
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 10 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

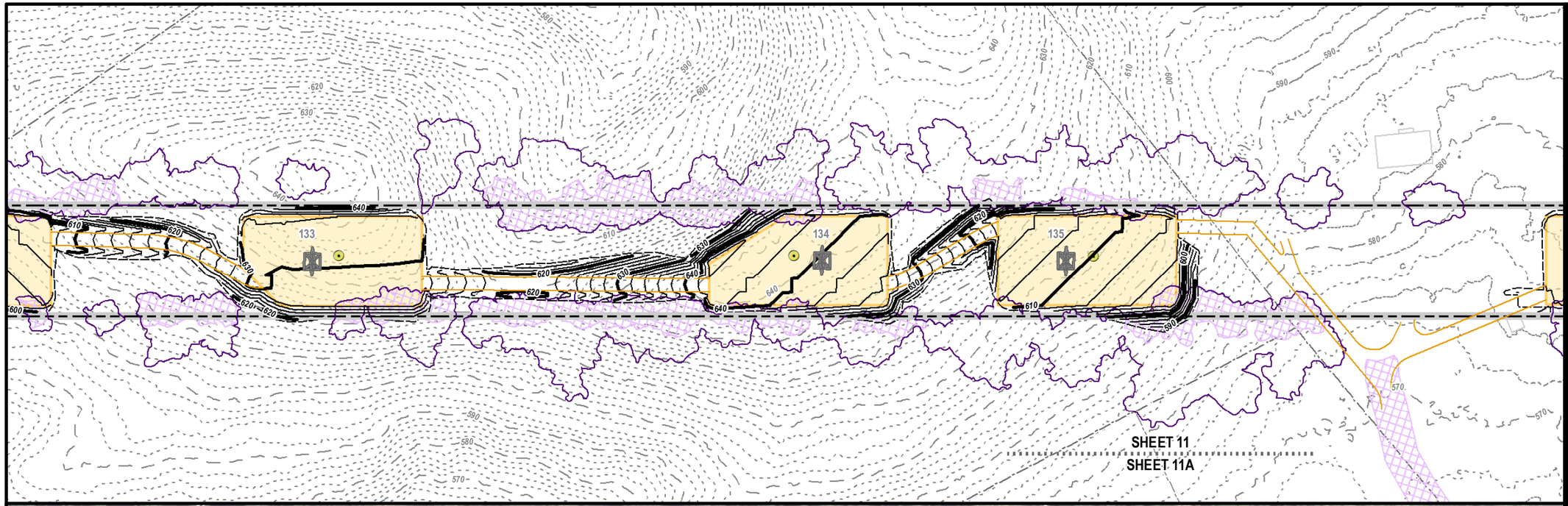
**Indicates Layers Set to Transparency*

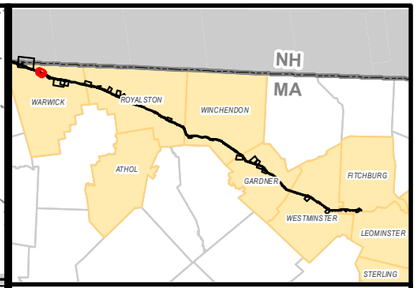
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

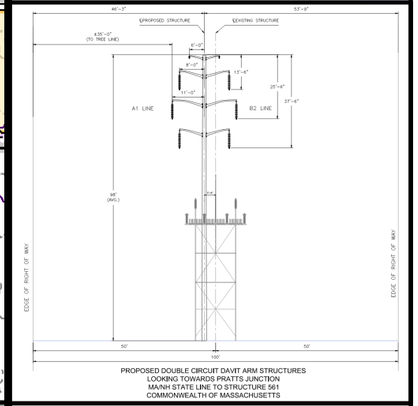
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

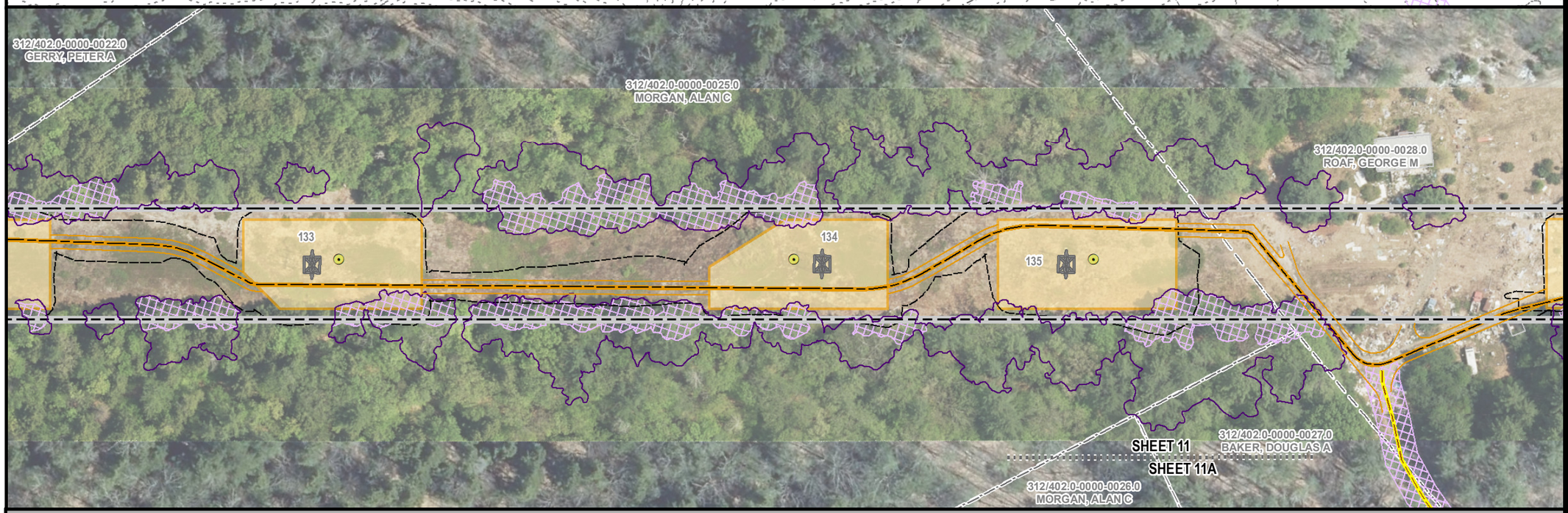
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 11 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

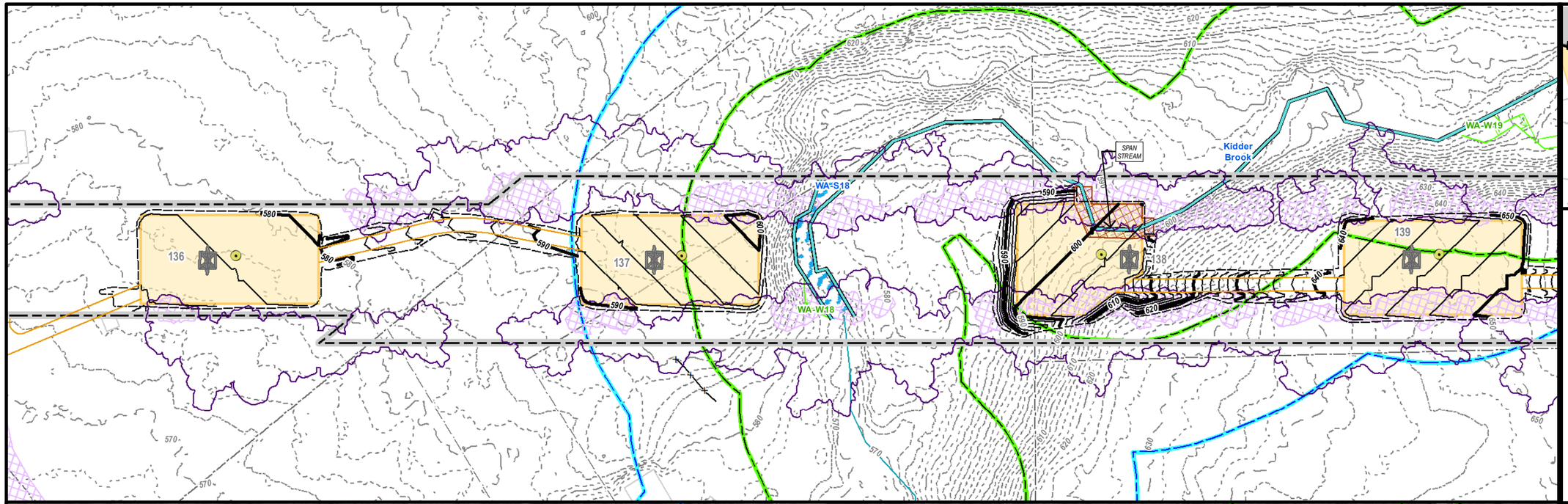
**Indicates Layers Set to Transparency*

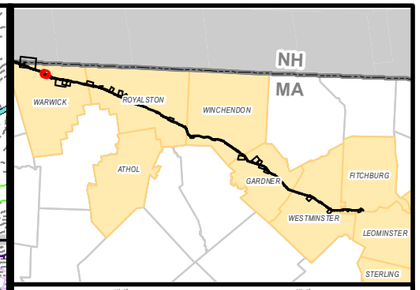
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

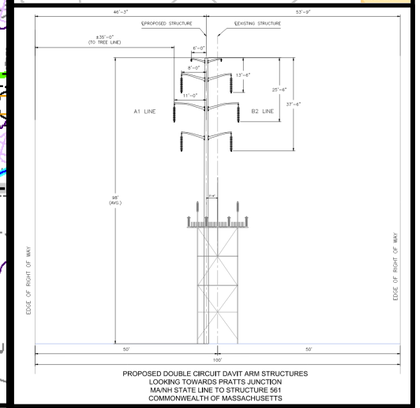
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 12 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

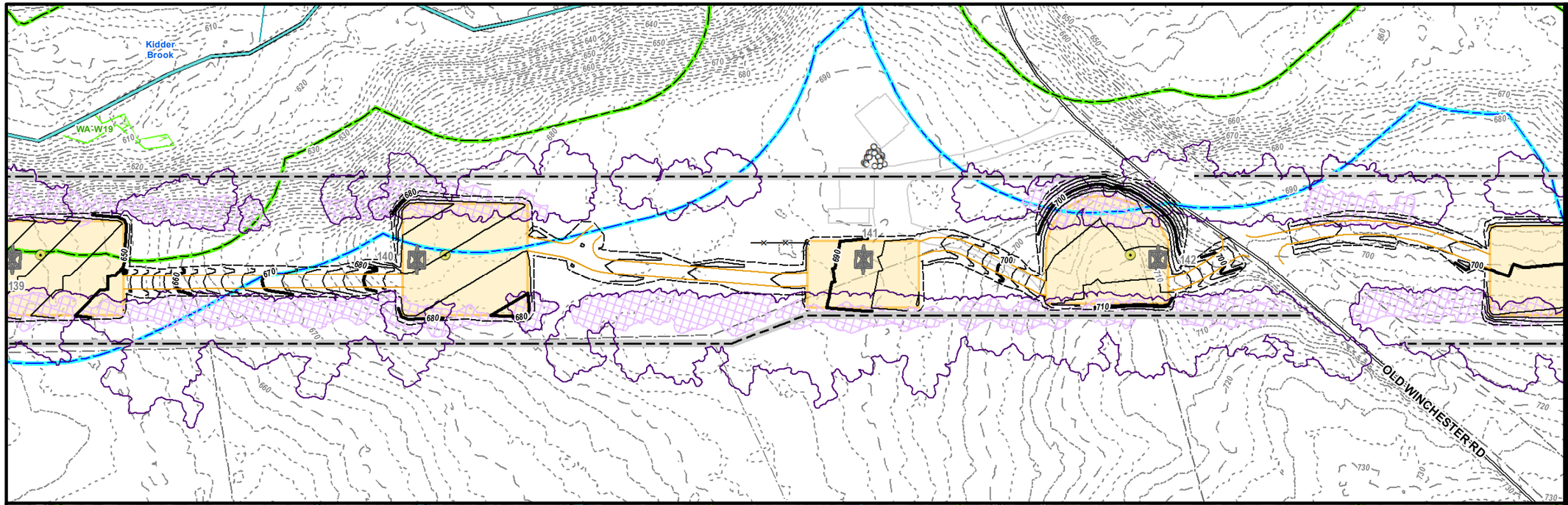
**Indicates Layers Set to Transparency*

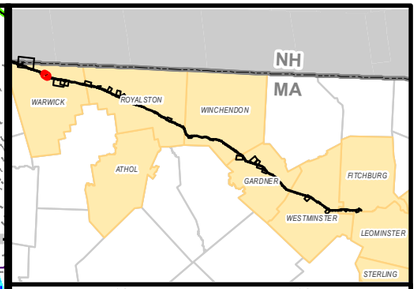
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

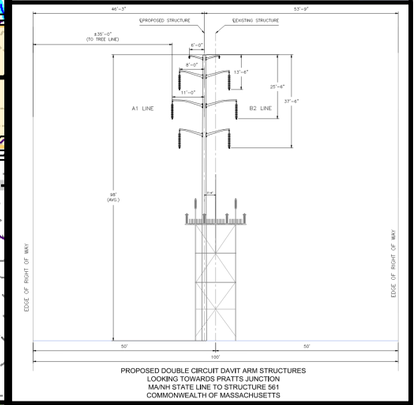
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

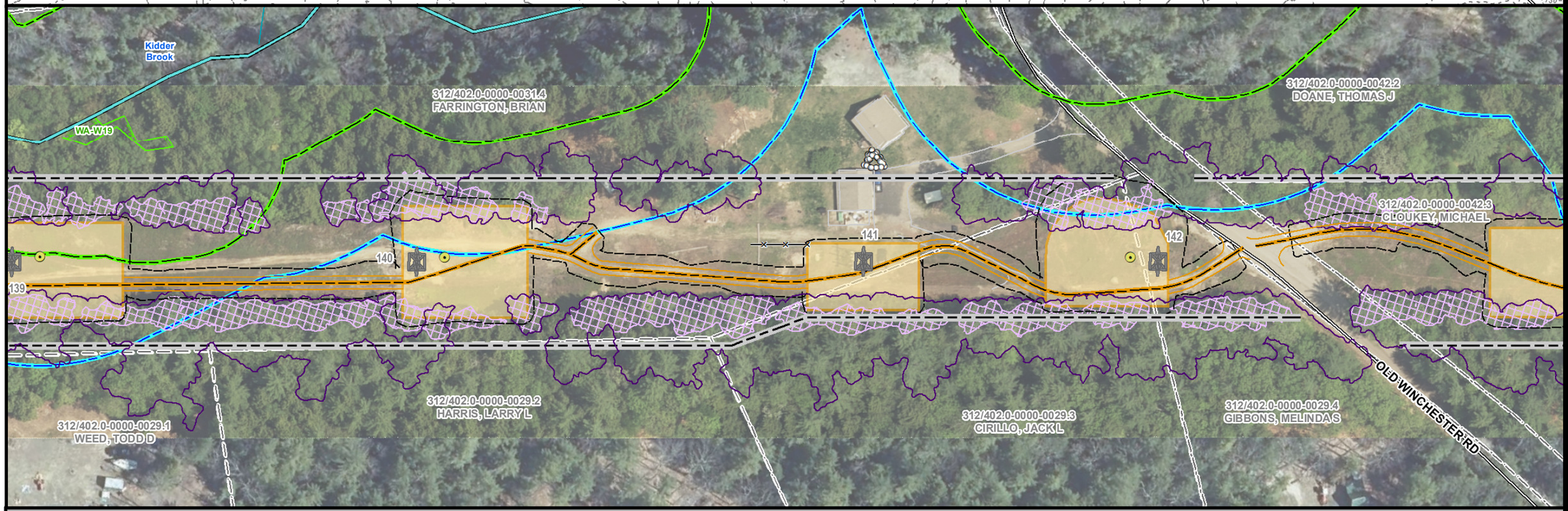
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 13 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.

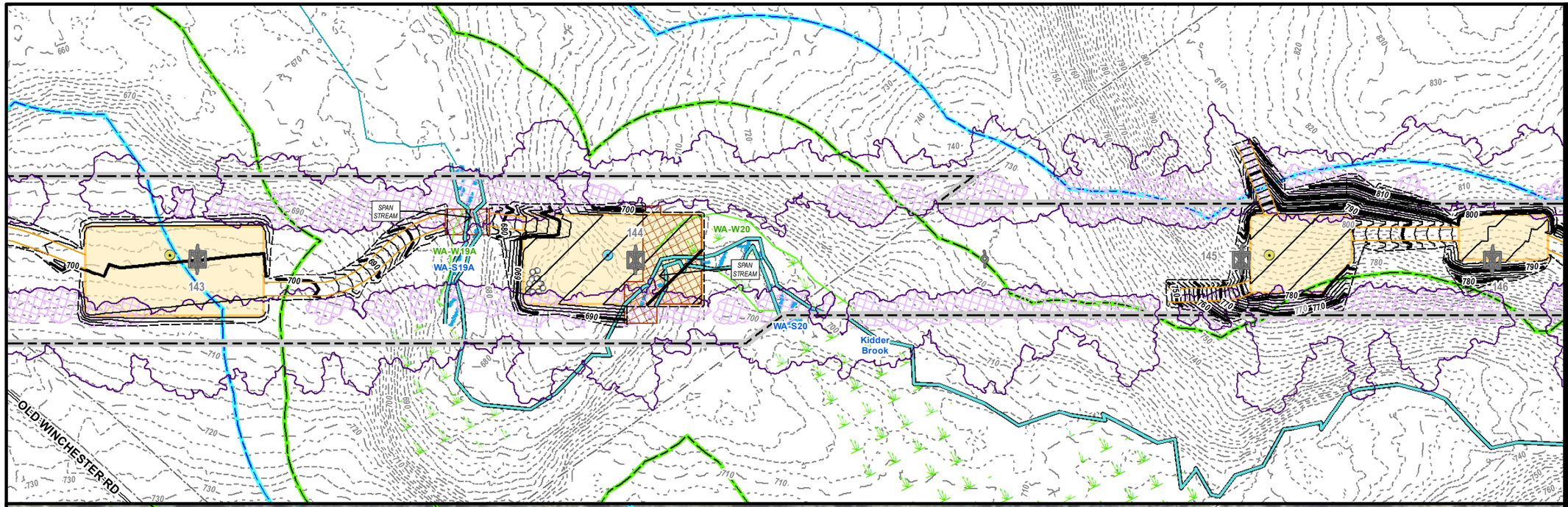
***Indicates Layers Set to Transparency**

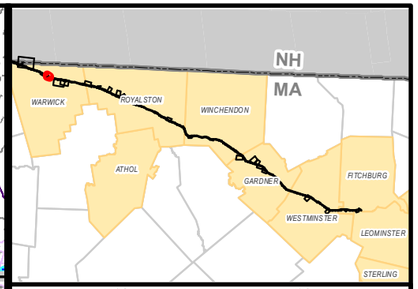
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

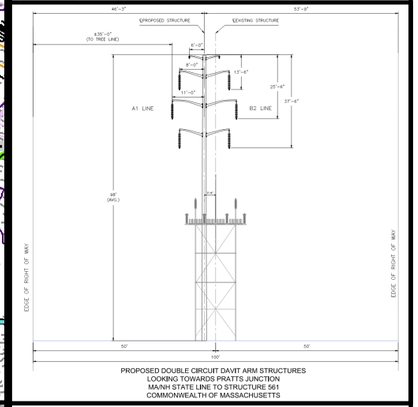
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

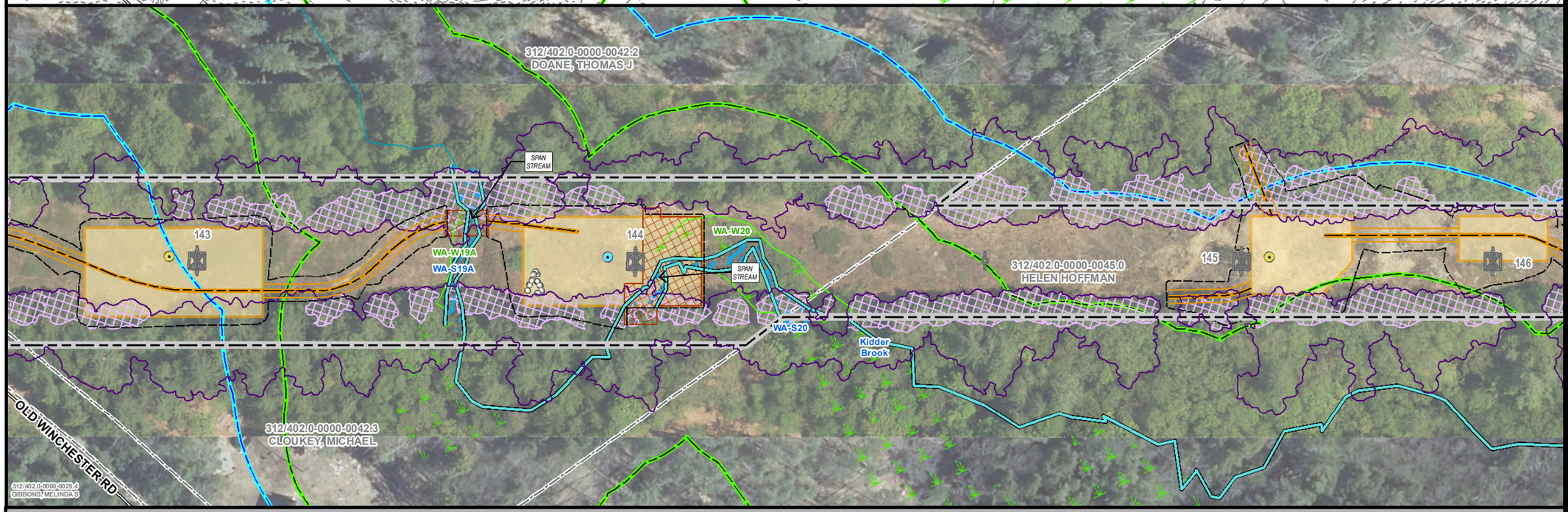
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 14 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

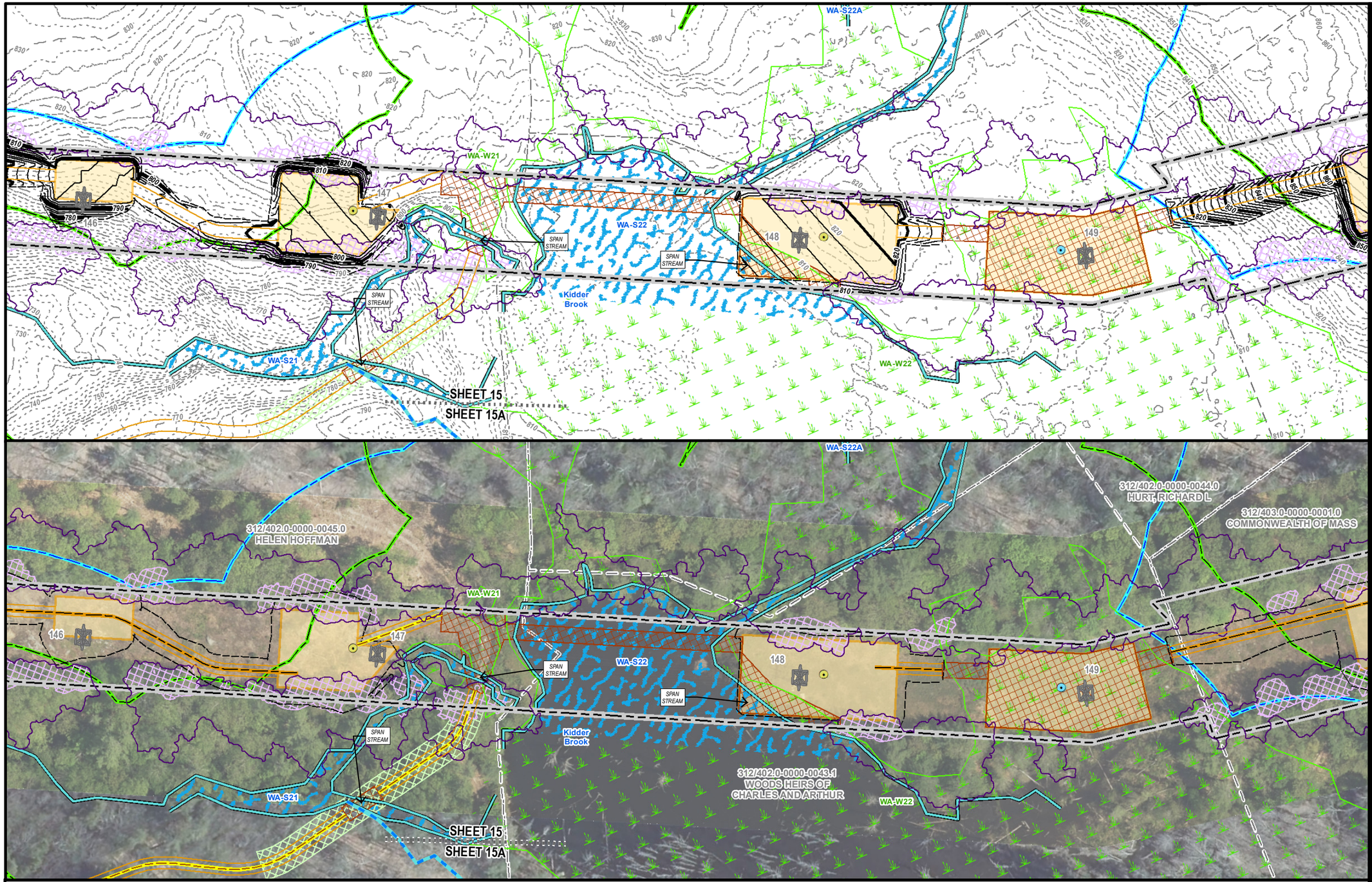
**Indicates Layers Set to Transparency*

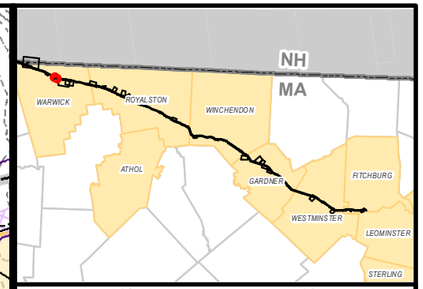
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

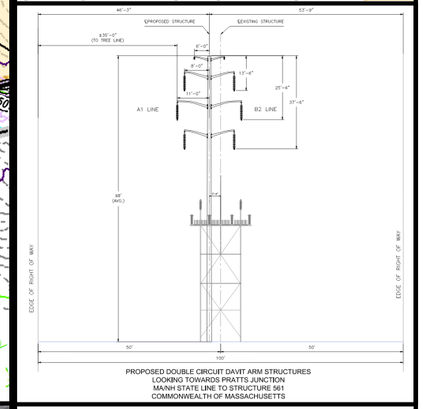
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 15 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

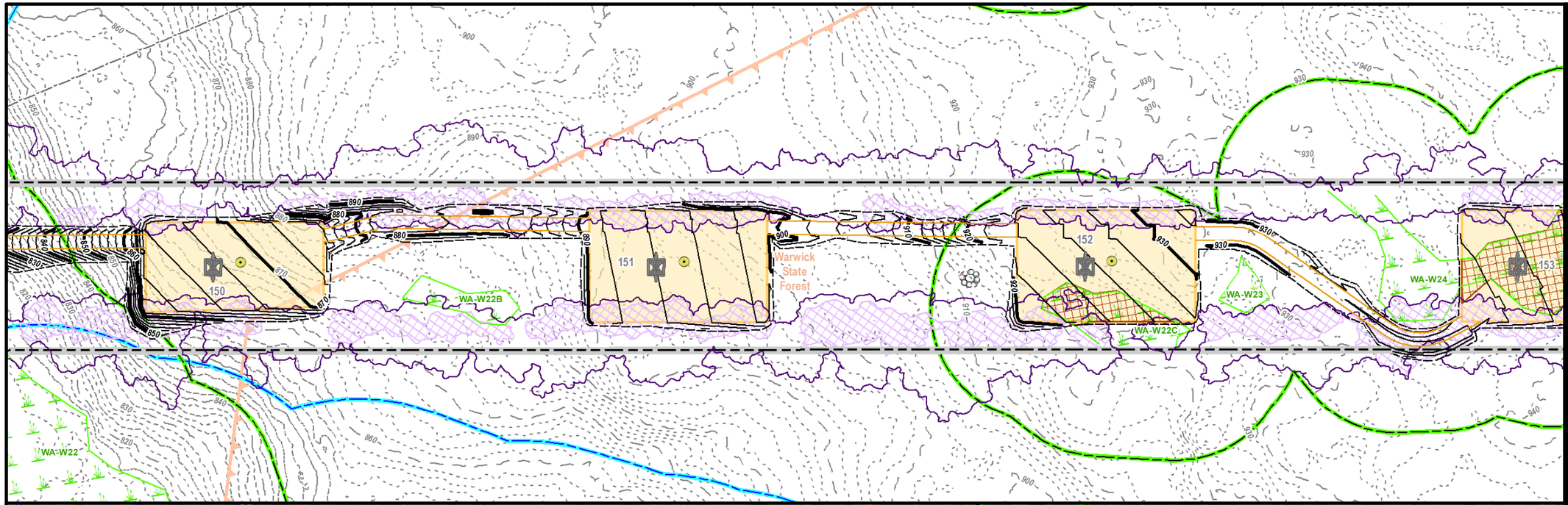
**Indicates Layers Set to Transparency*

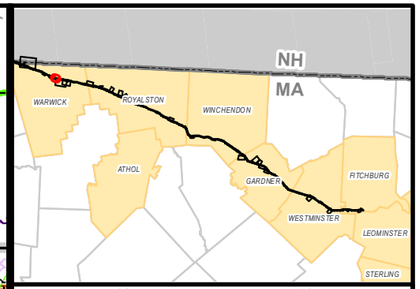
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

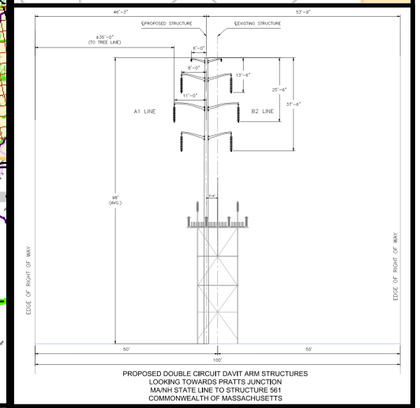
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 16 OF 137

N

1 inch = 100 feet

0 50 100

Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

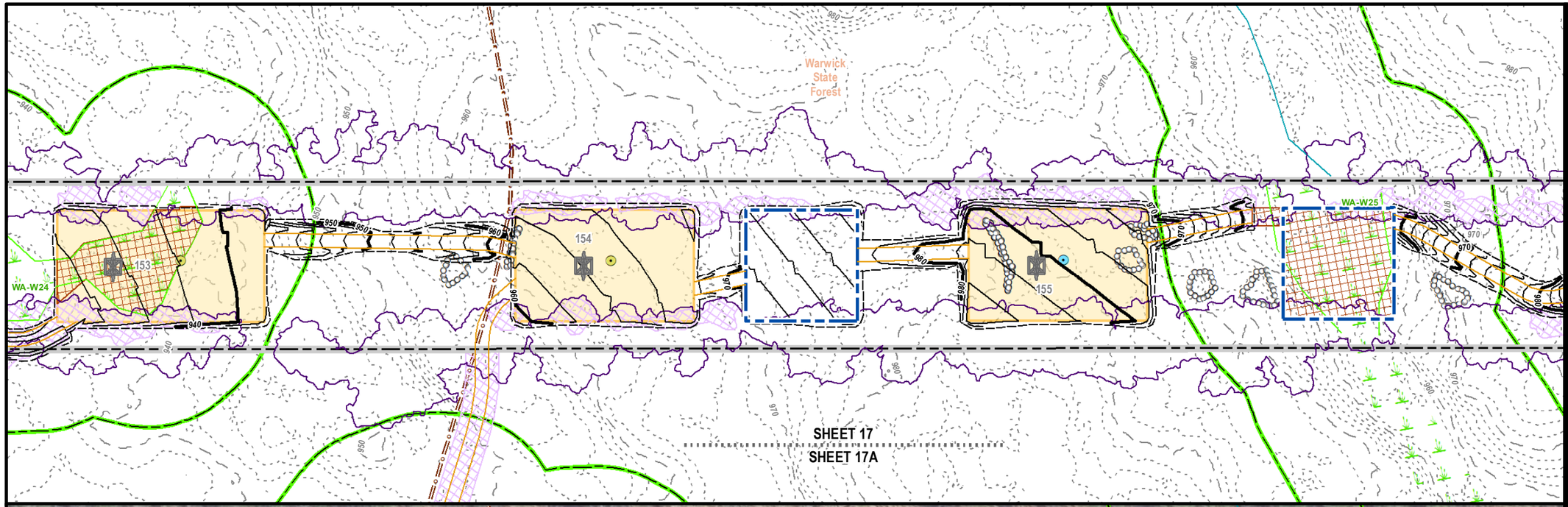
**Indicates Layers Set to Transparency*

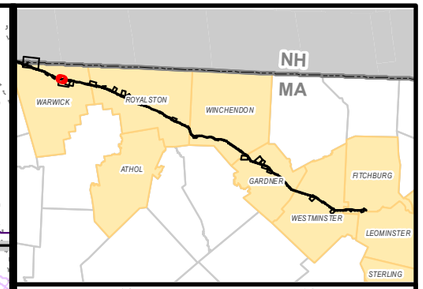
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

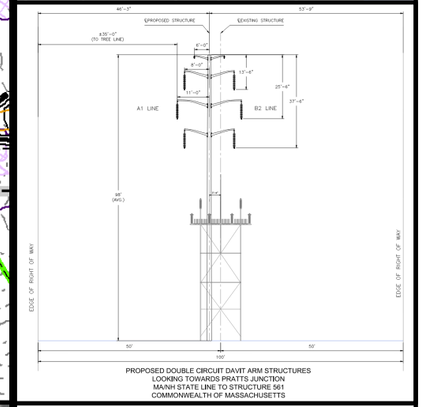
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

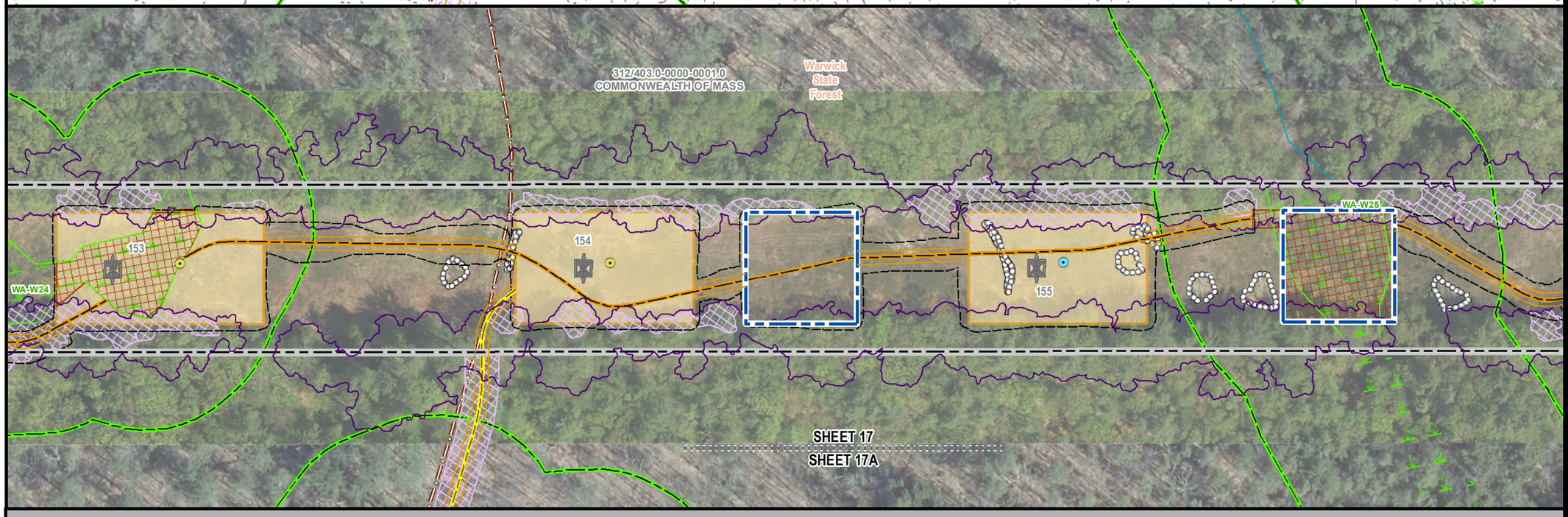
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 17 OF 137

N

1 inch = 100 feet

0 50 100

Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.

Indicates Layers Set to Transparency

PREPARED FOR:

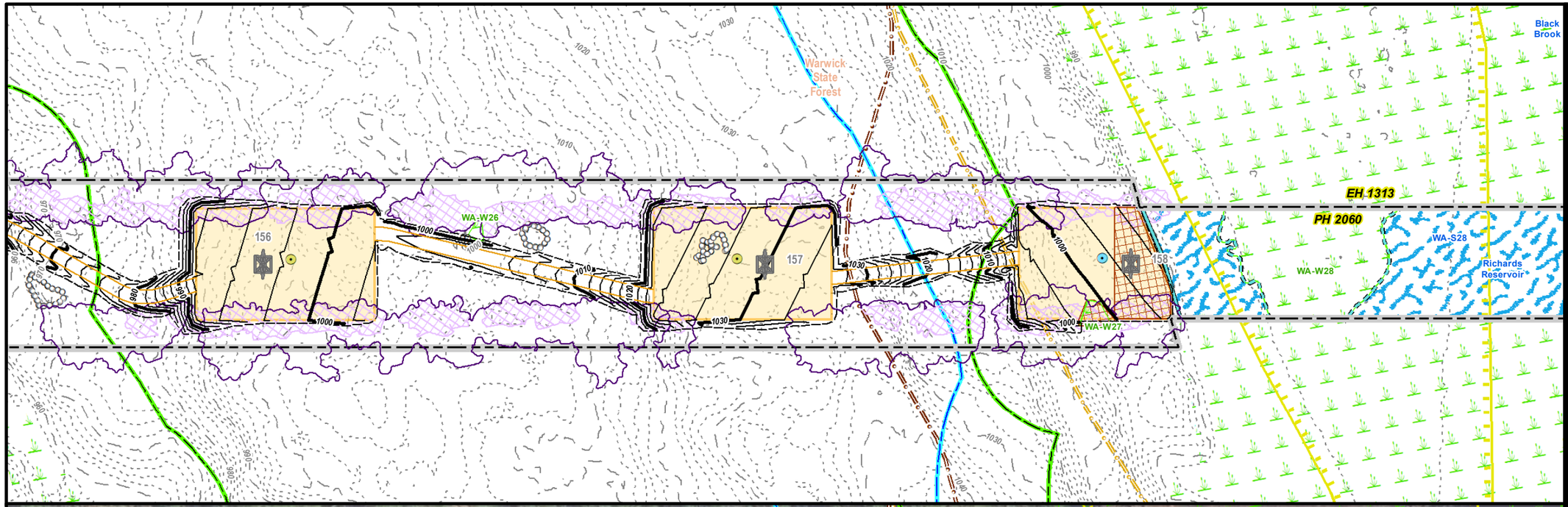
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

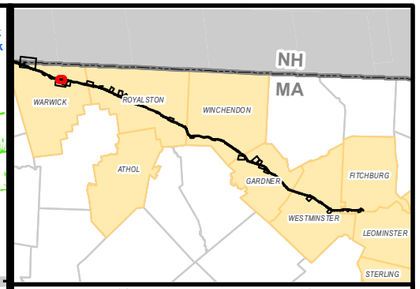
PREPARED BY:

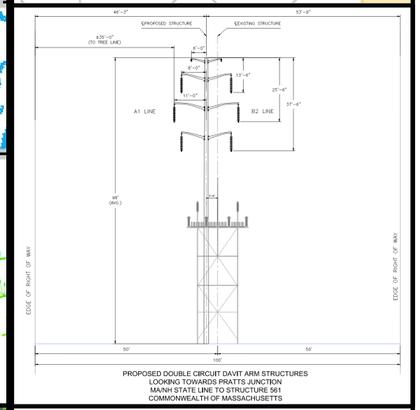
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 18 OF 137

N

1 inch = 100 feet

0 50 100

Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

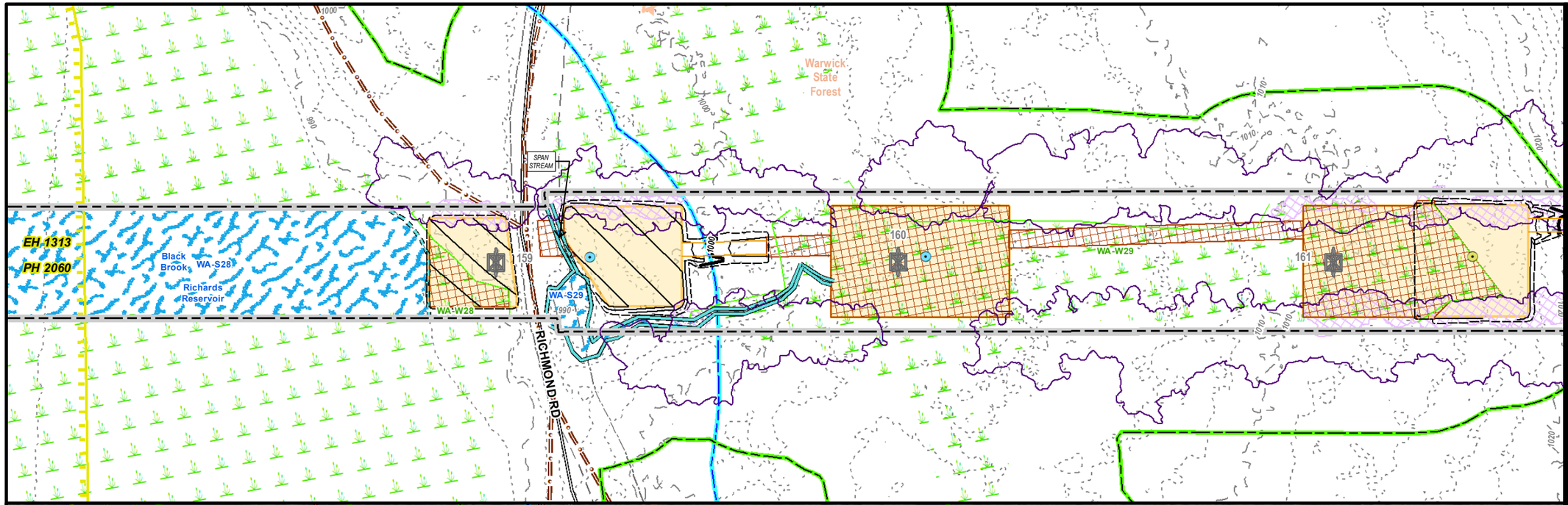
**Indicates Layers Set to Transparency*

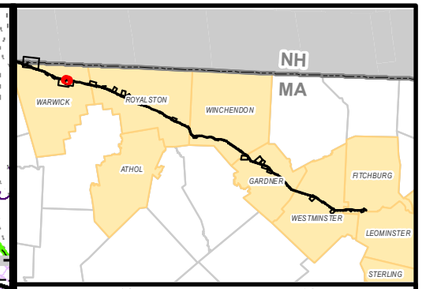
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

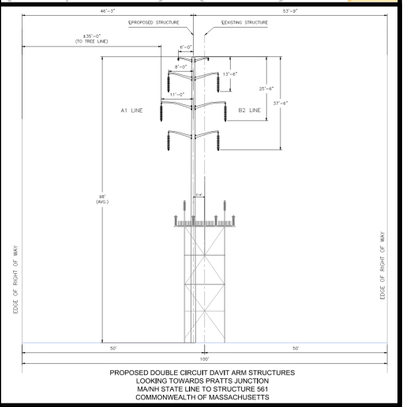
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

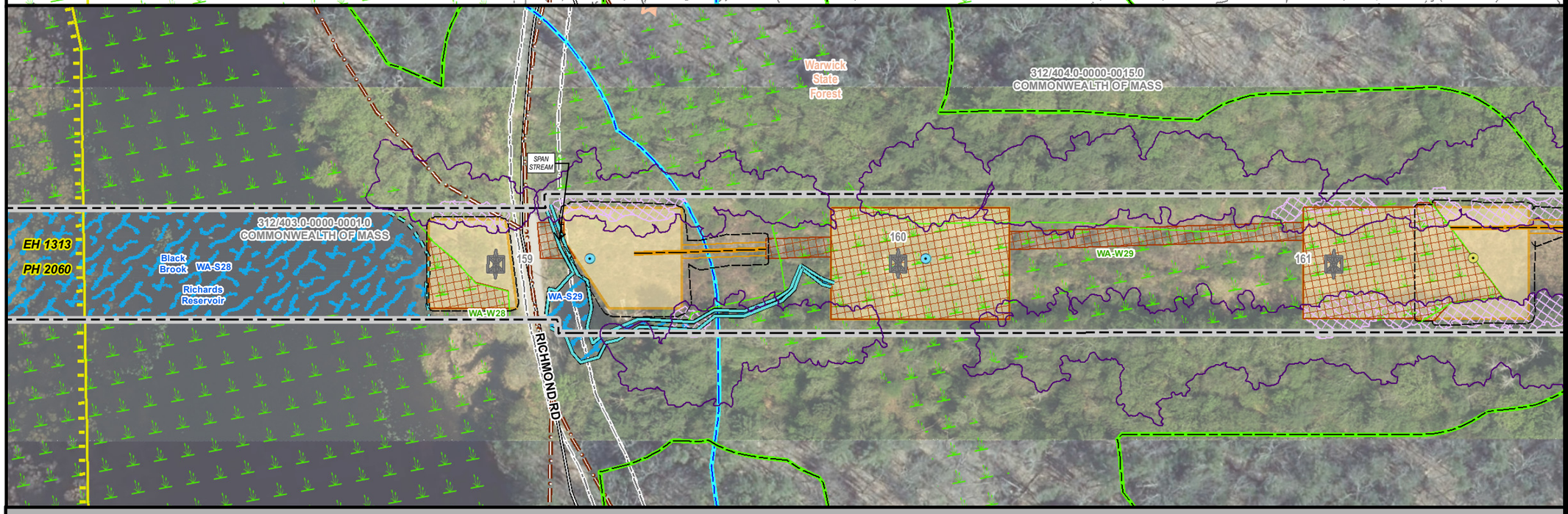
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 19 OF 137

N

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

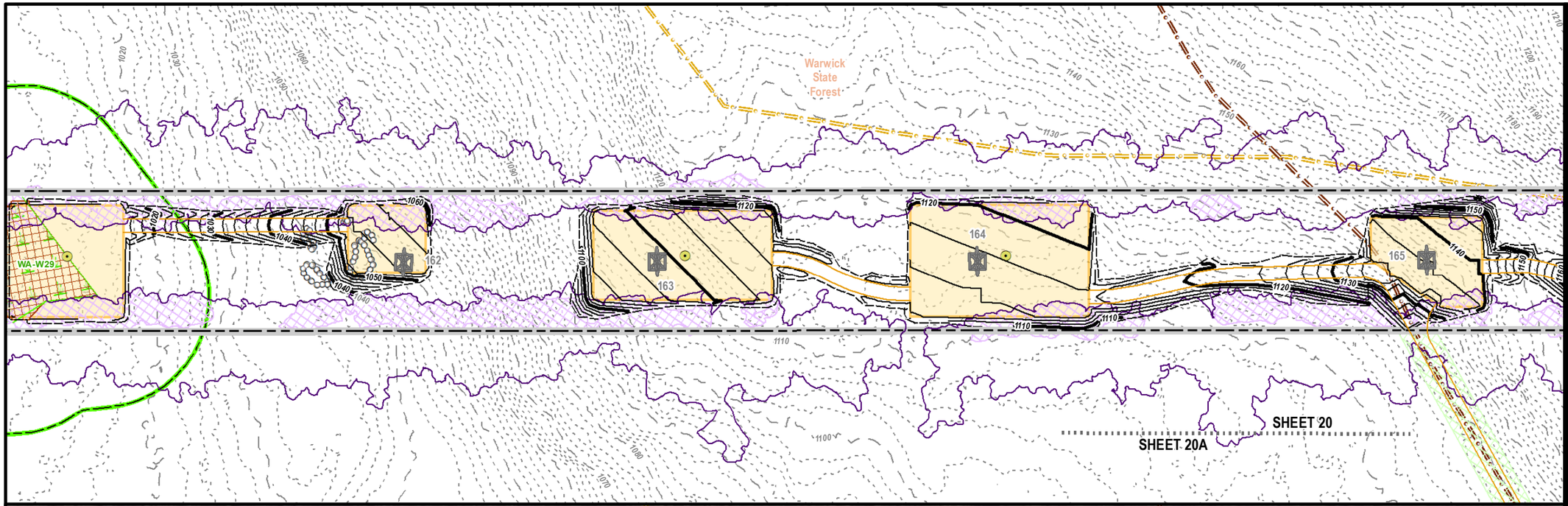
**Indicates Layers Set to Transparency*

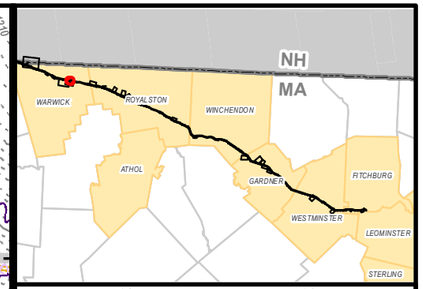
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

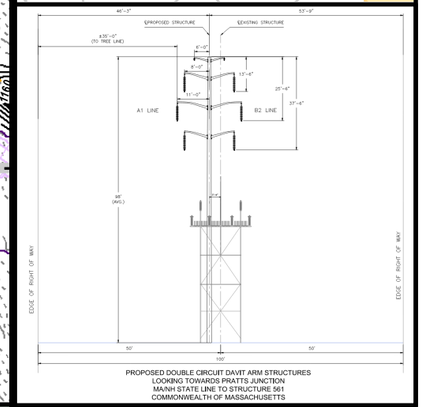
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

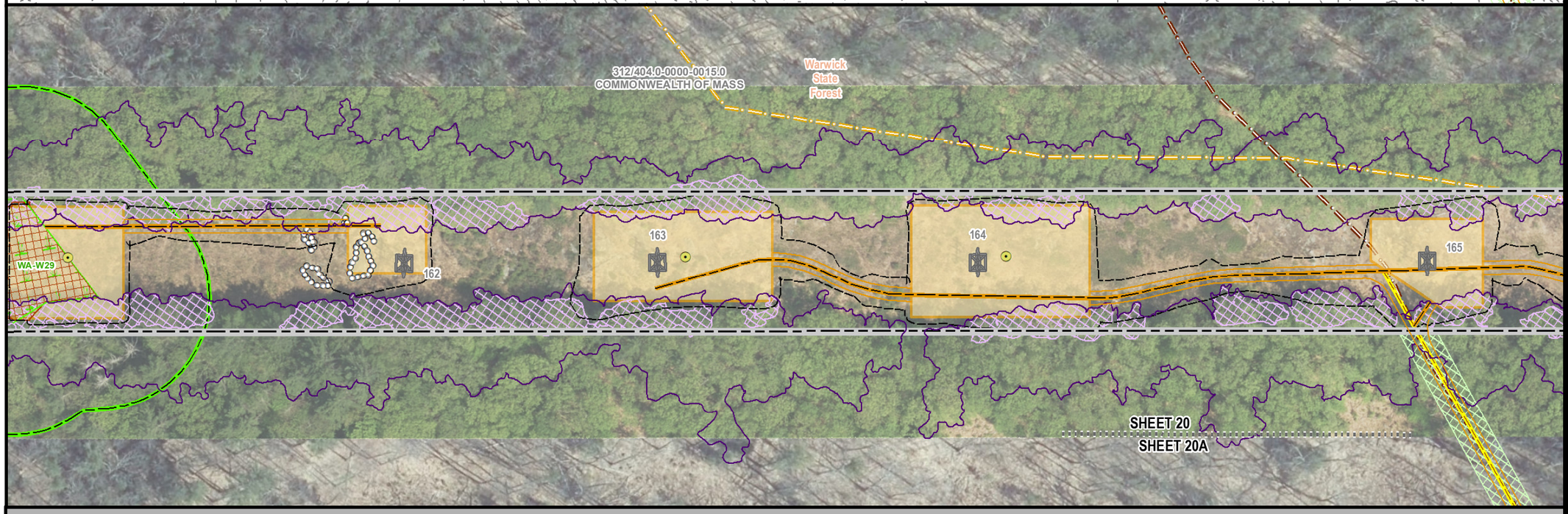
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 20 OF 137

N

1 inch = 100 feet

0 50 100

Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

**Indicates Layers Set to Transparency*

PREPARED FOR:

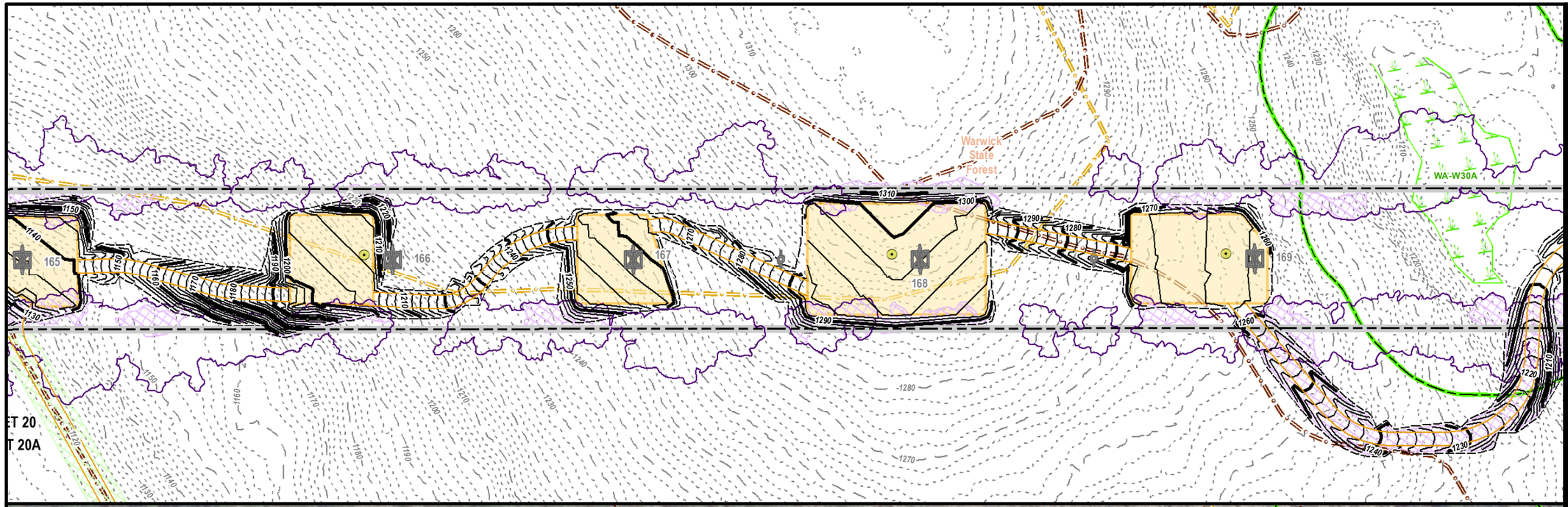
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

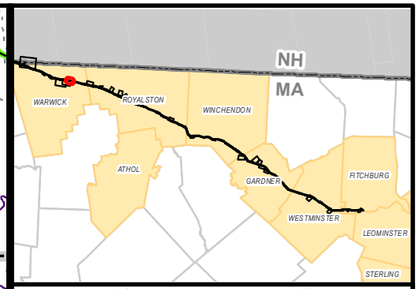
PREPARED BY:

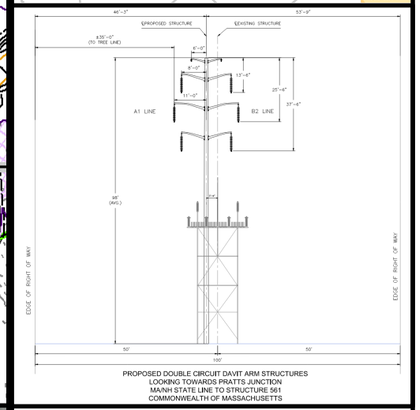
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

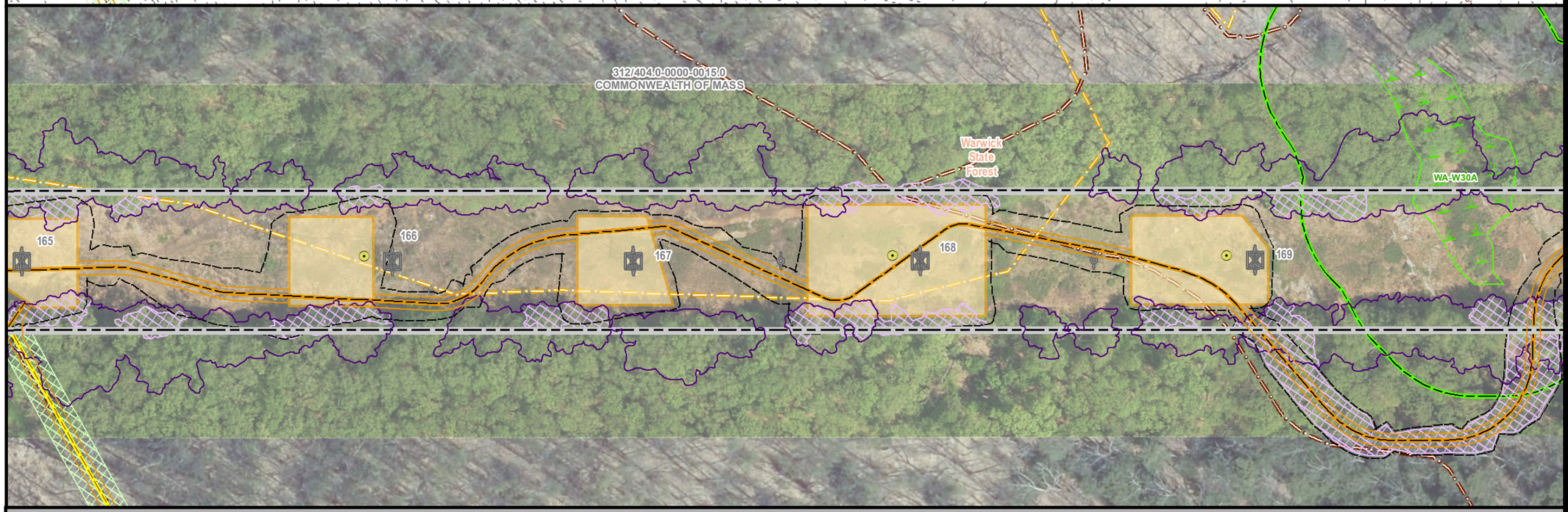
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 21 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

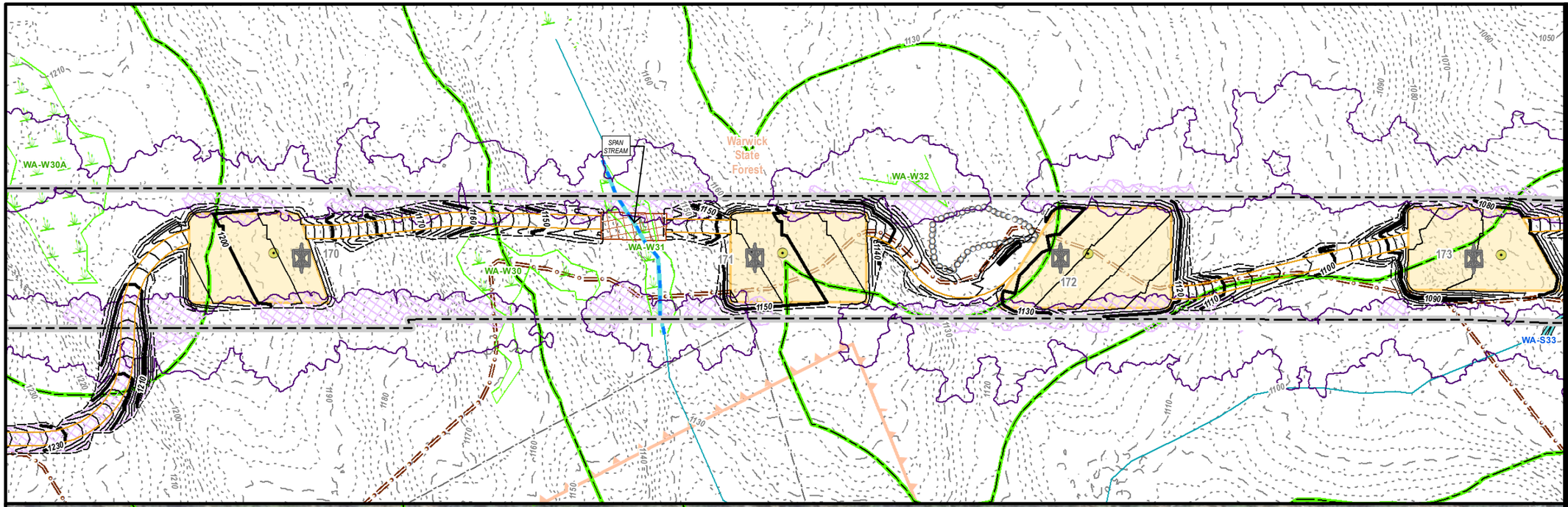
**Indicates Layers Set to Transparency*

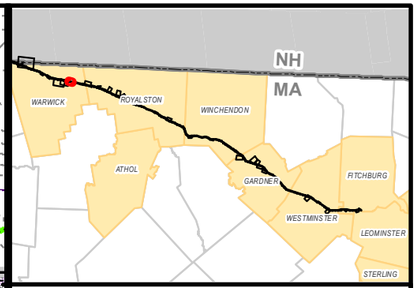
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

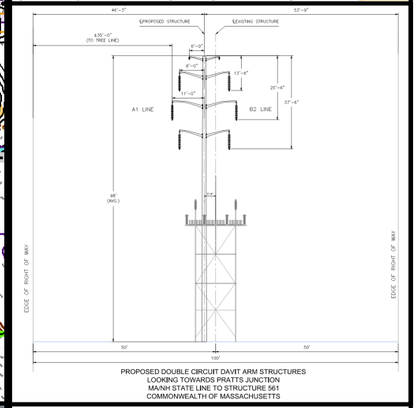
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

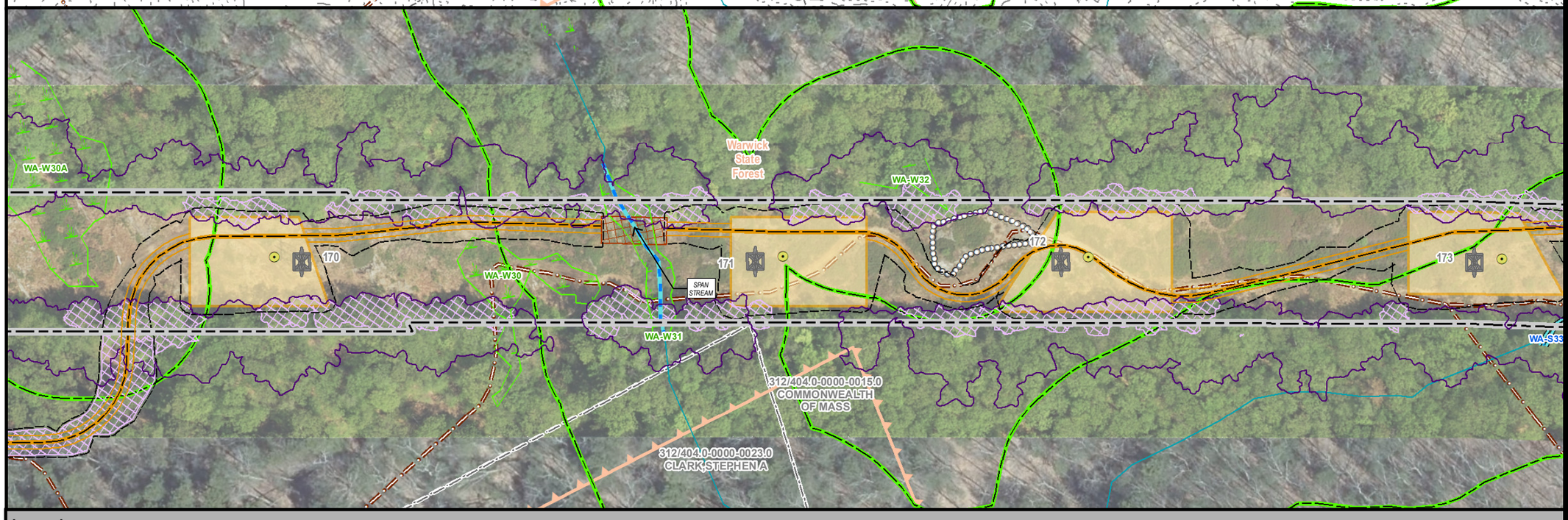
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 22 OF 137

N

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

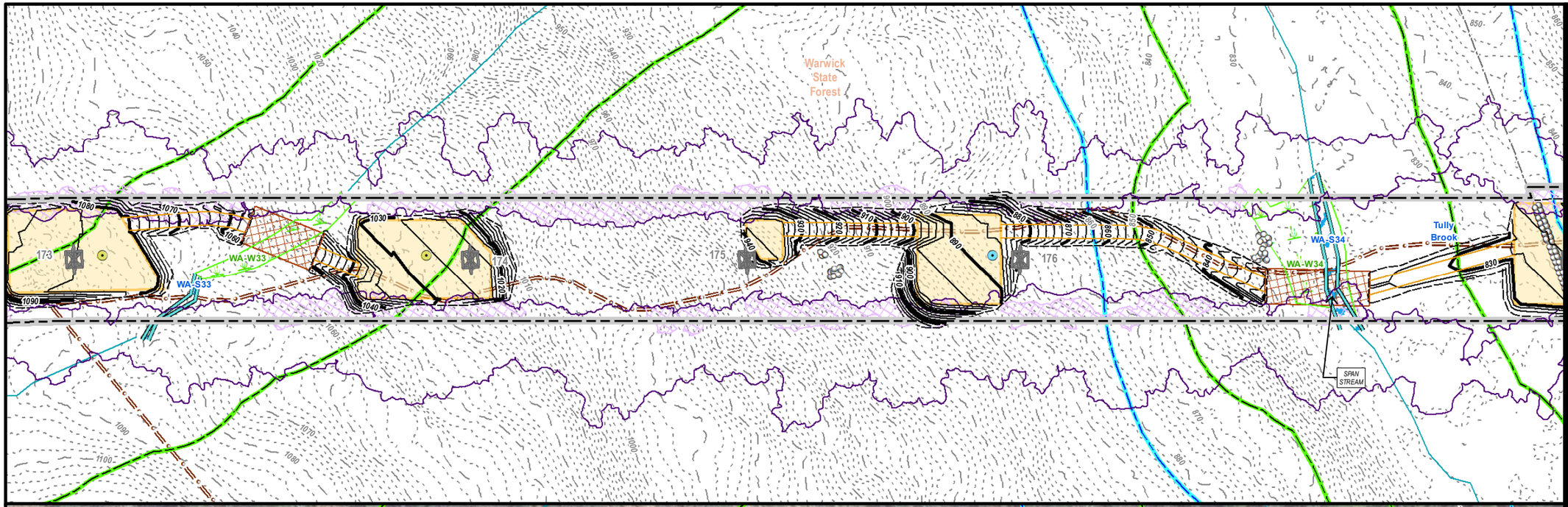
**Indicates Layers Set to Transparency*

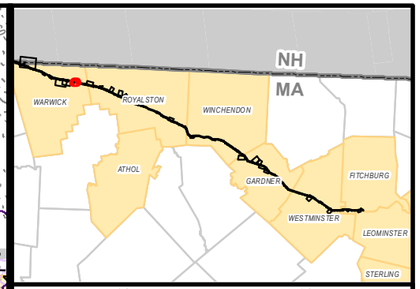
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

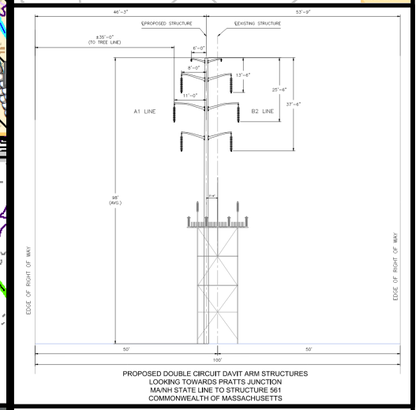
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

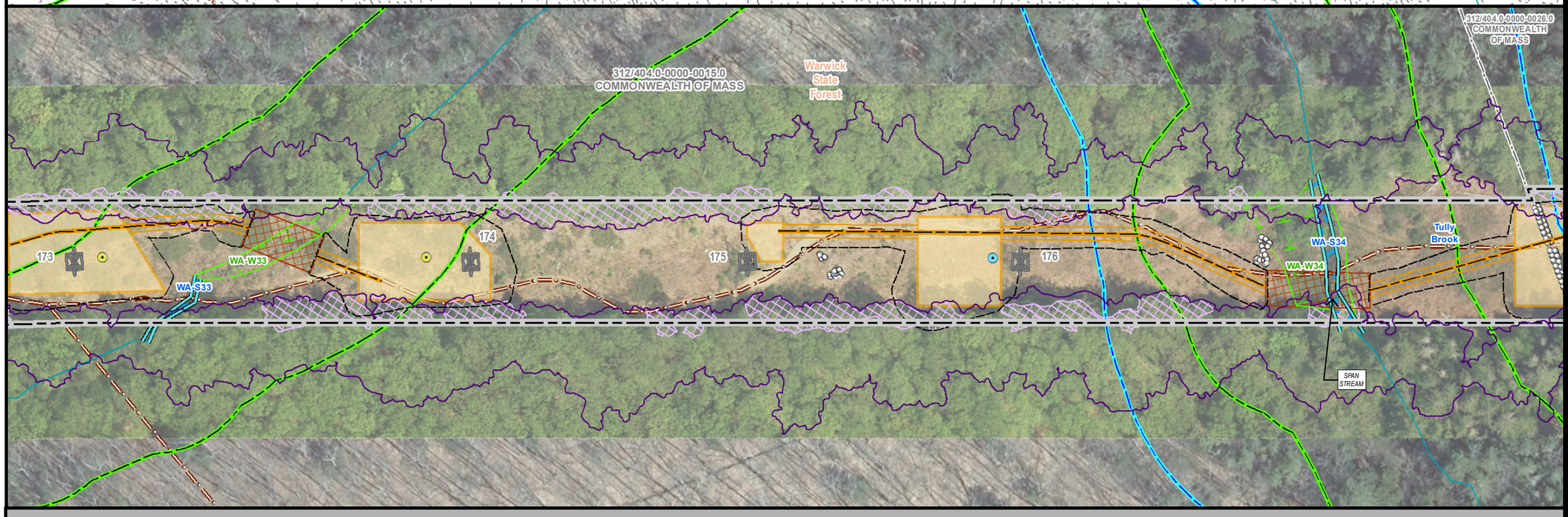
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 23 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

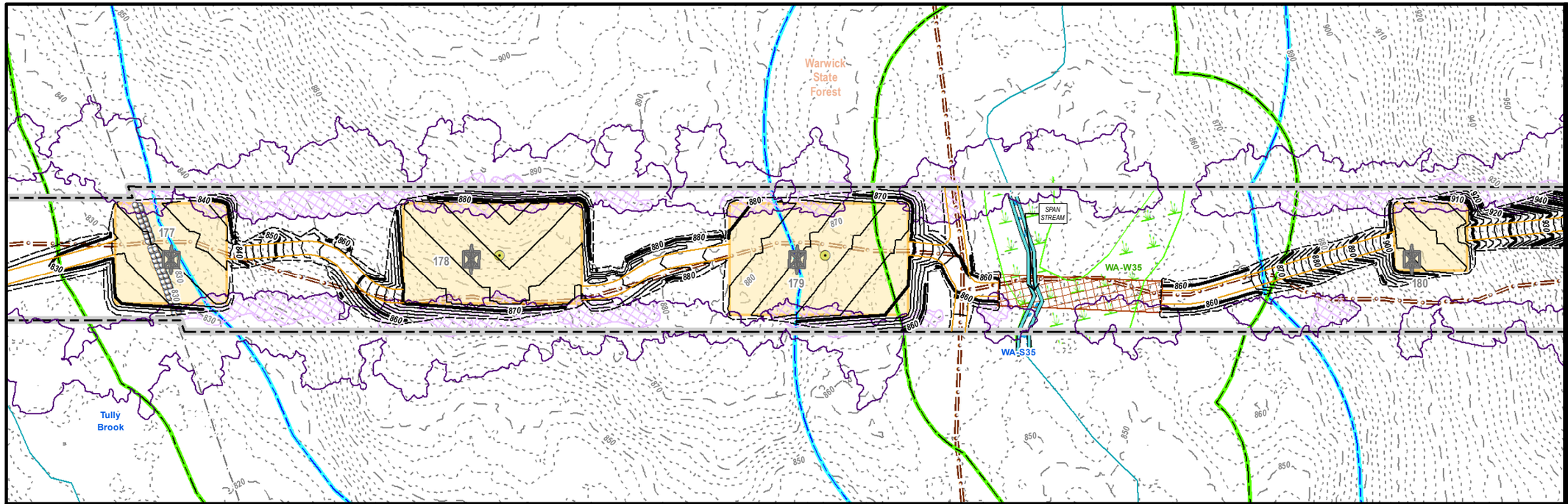
**Indicates Layers Set to Transparency*

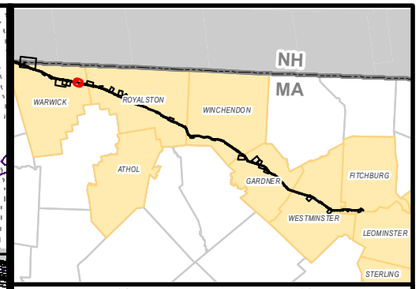
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

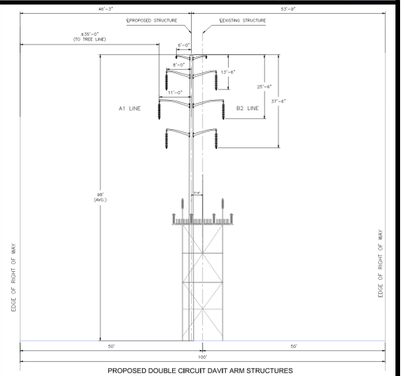
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

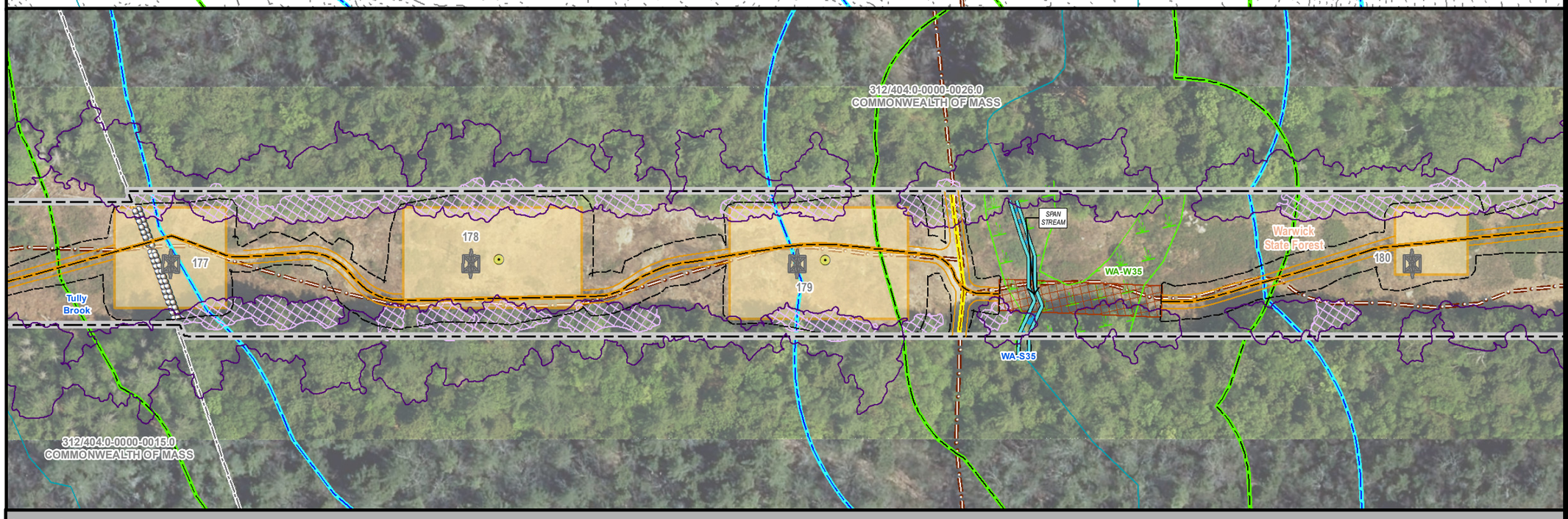
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 24 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

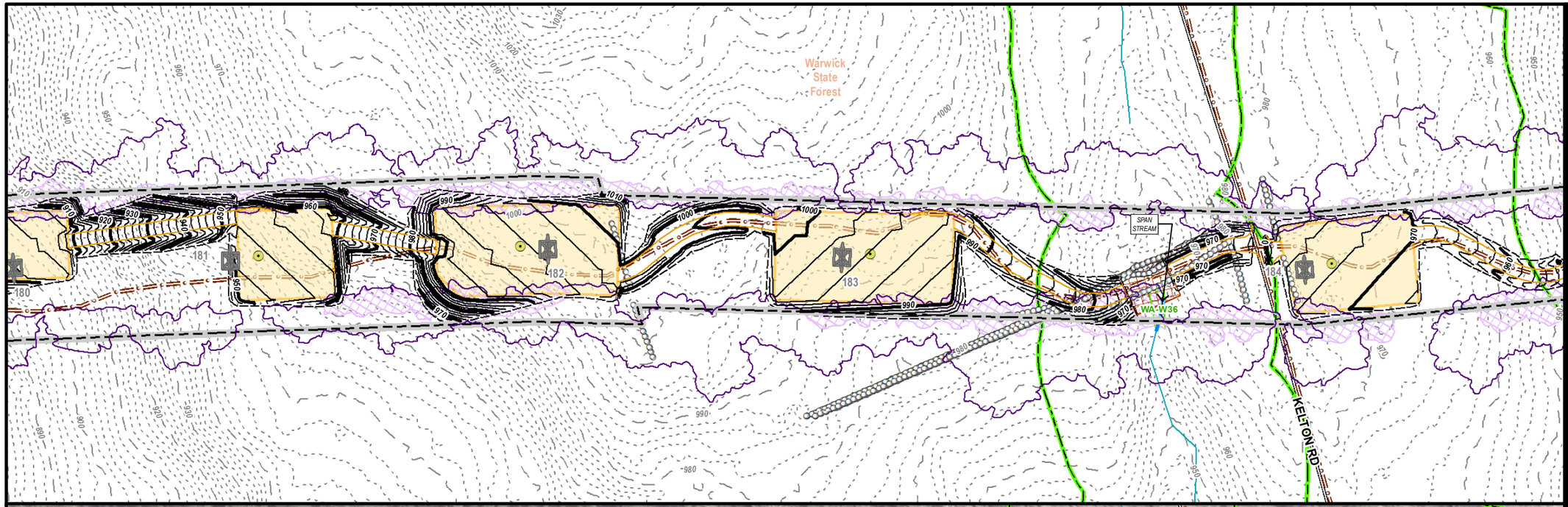
**Indicates Layers Set to Transparency*

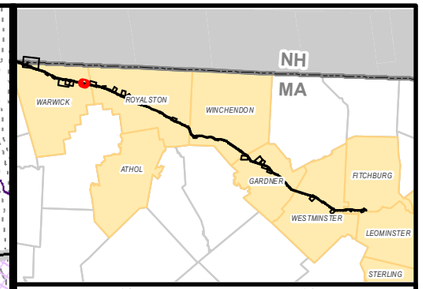
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

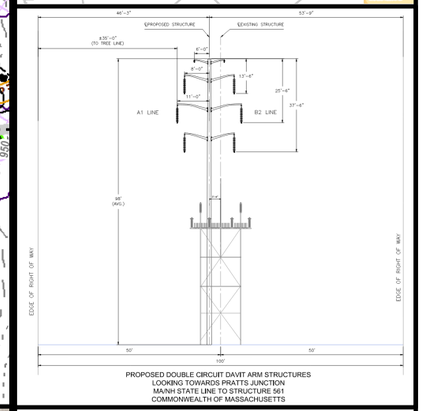
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

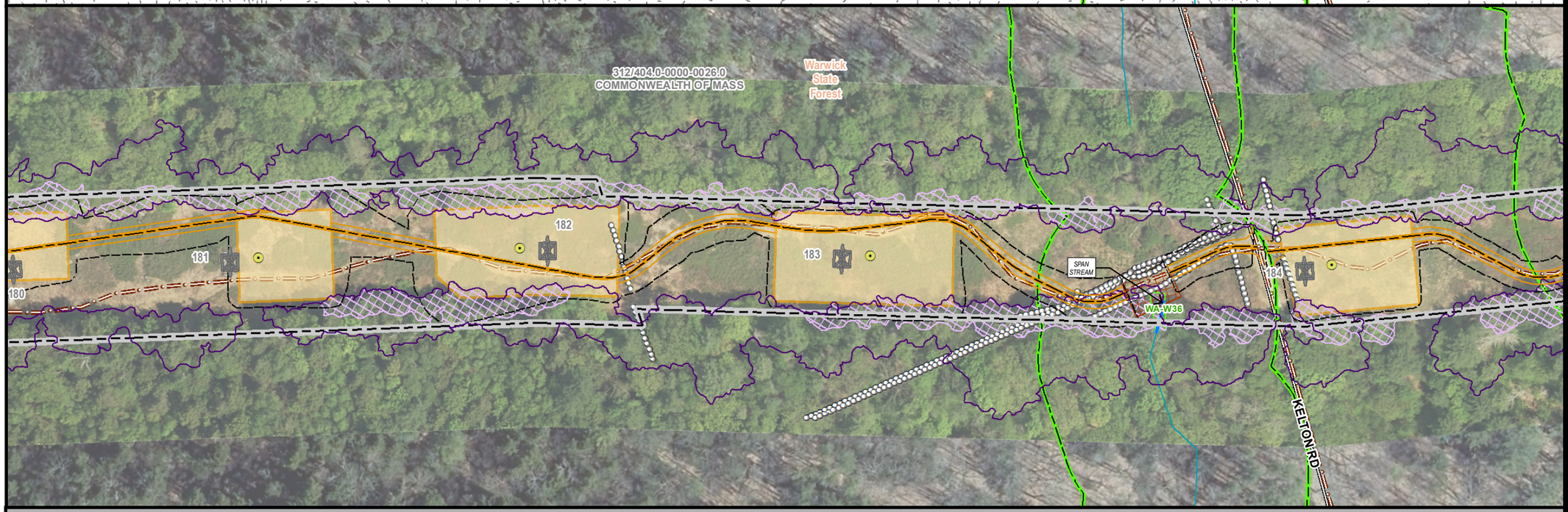
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 25 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

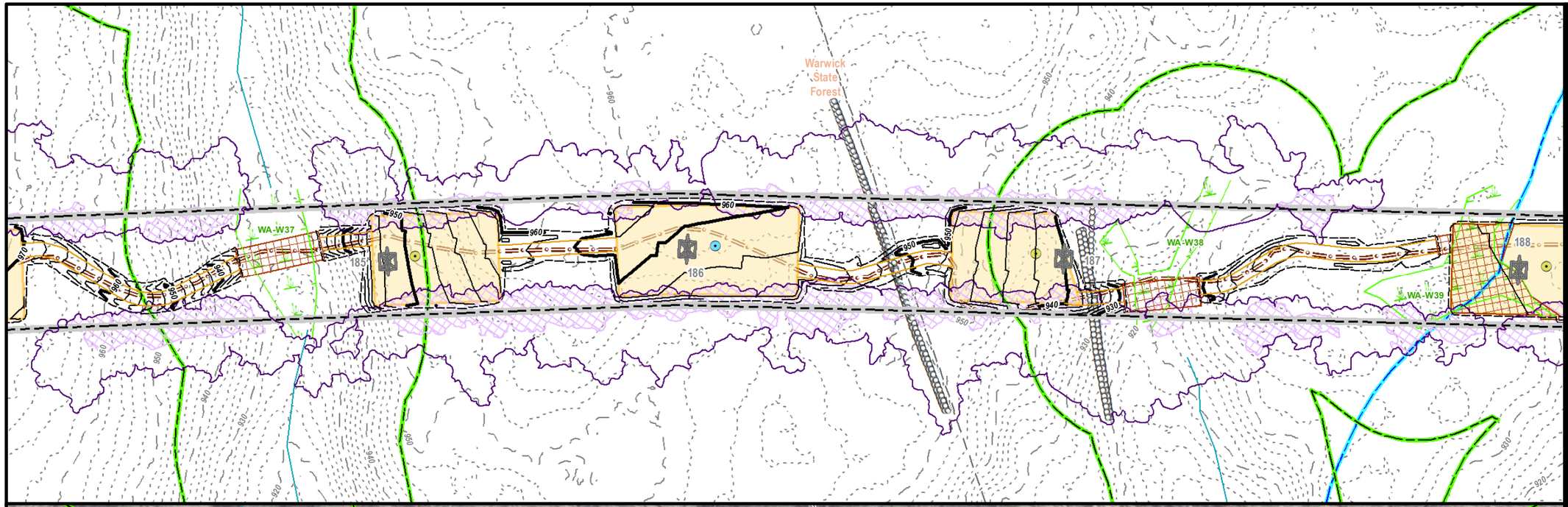
**Indicates Layers Set to Transparency*

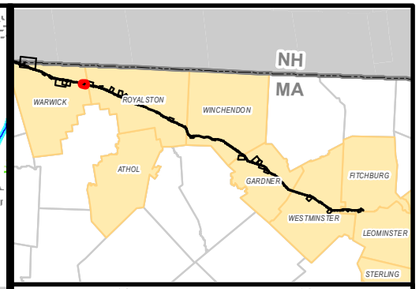
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

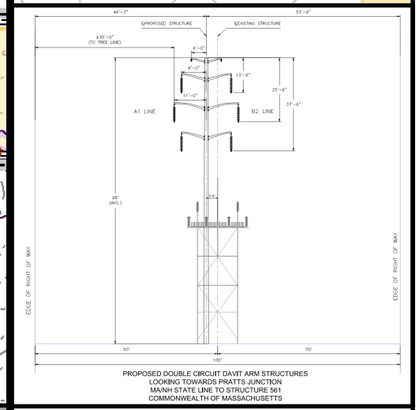
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

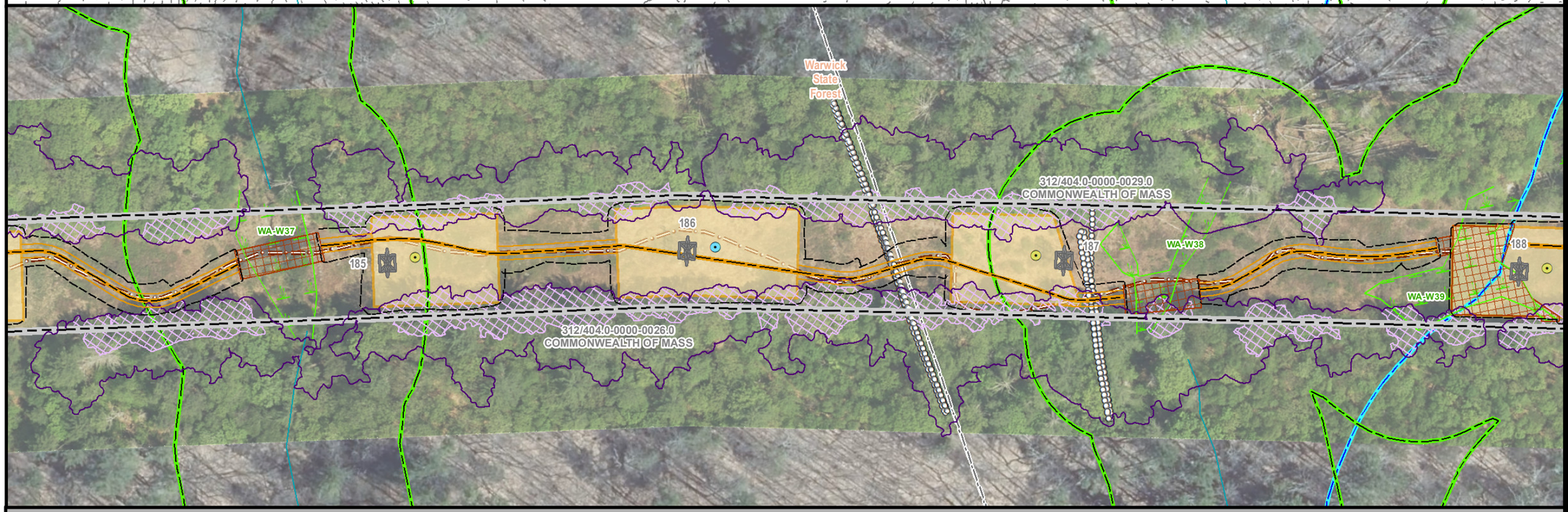
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK MA
PAGE 26 OF 137

N

1 inch = 100 feet

0 50 100

Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

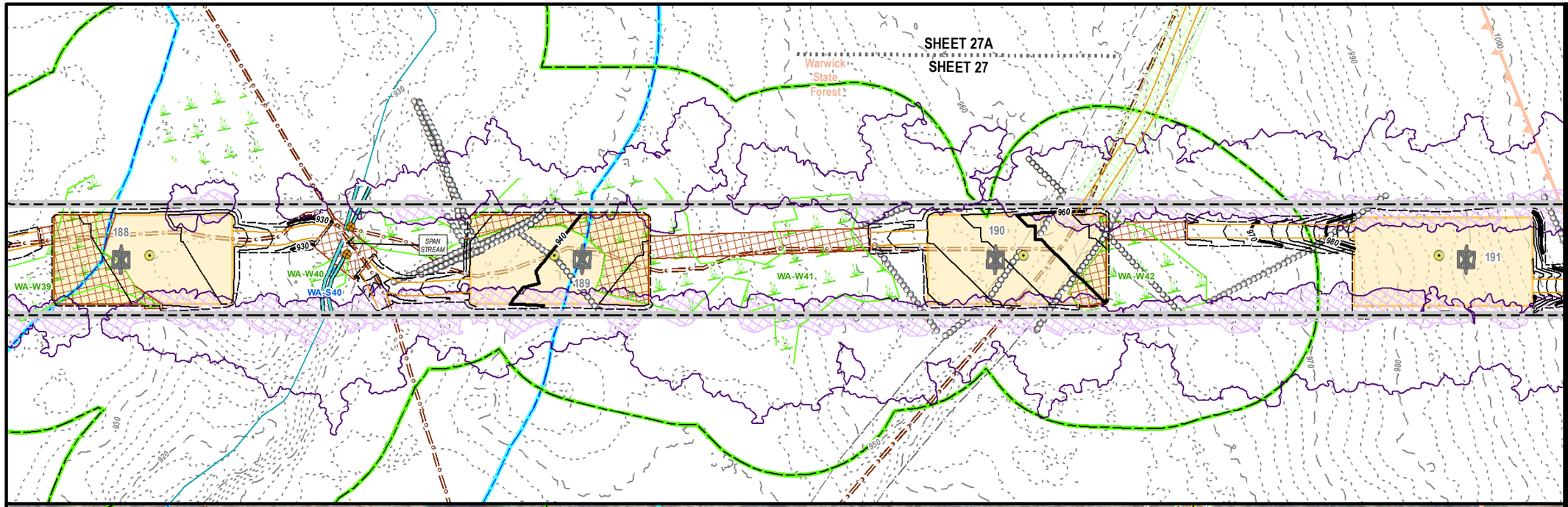
**Indicates Layers Set to Transparency*

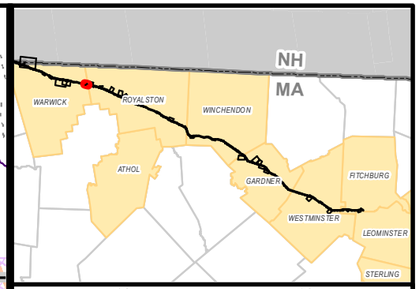
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

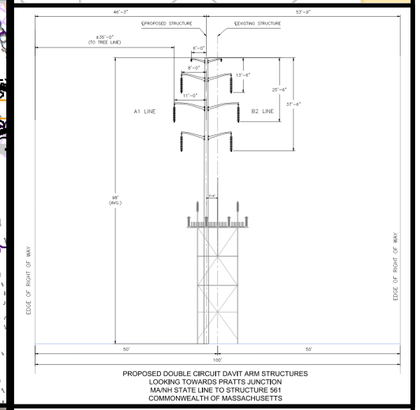
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

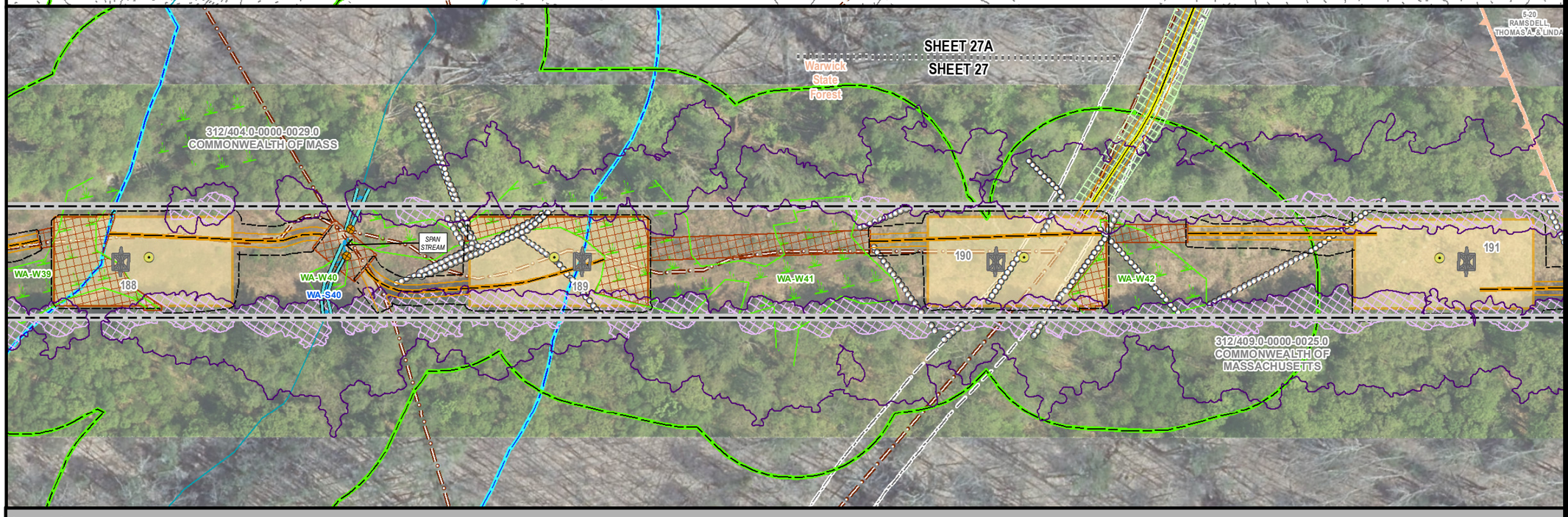
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK & ROYALSTON, MA
PAGE 27 OF 137

N

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

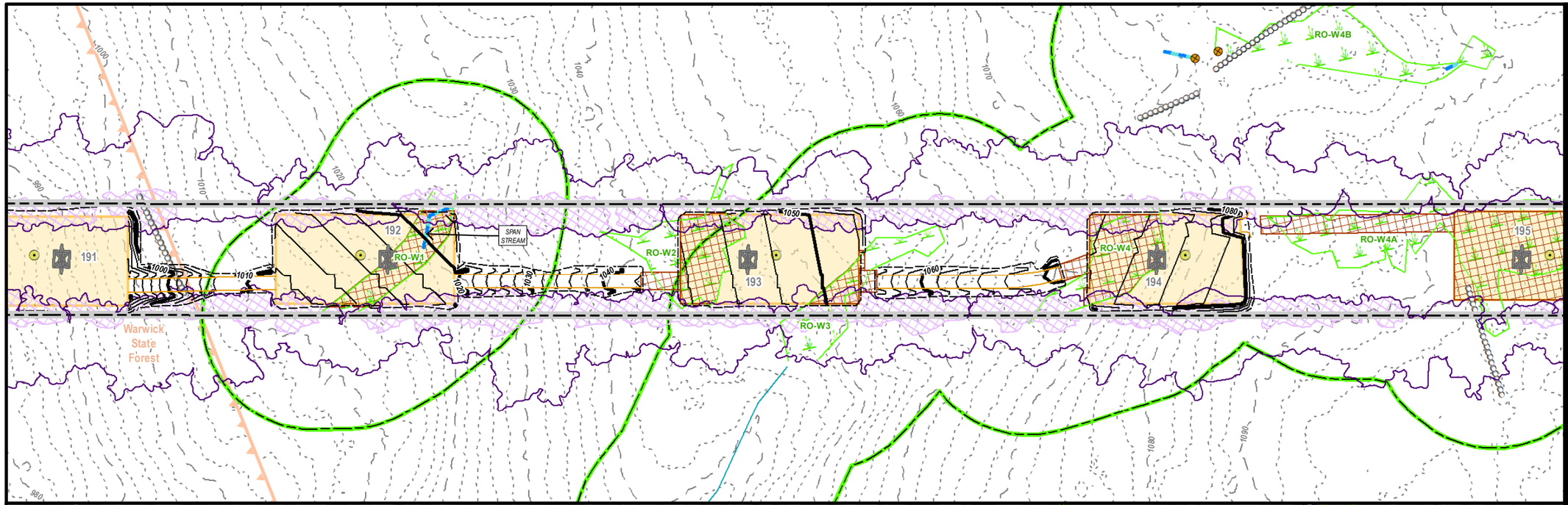
**Indicates Layers Set to Transparency*

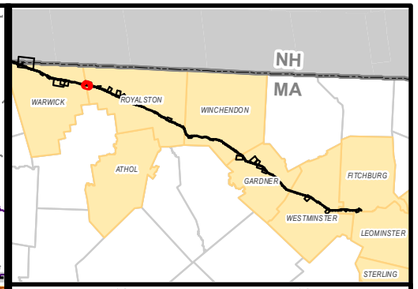
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

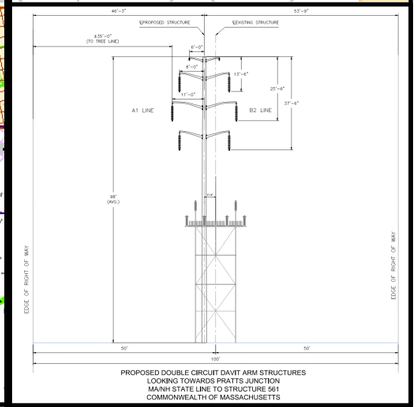
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

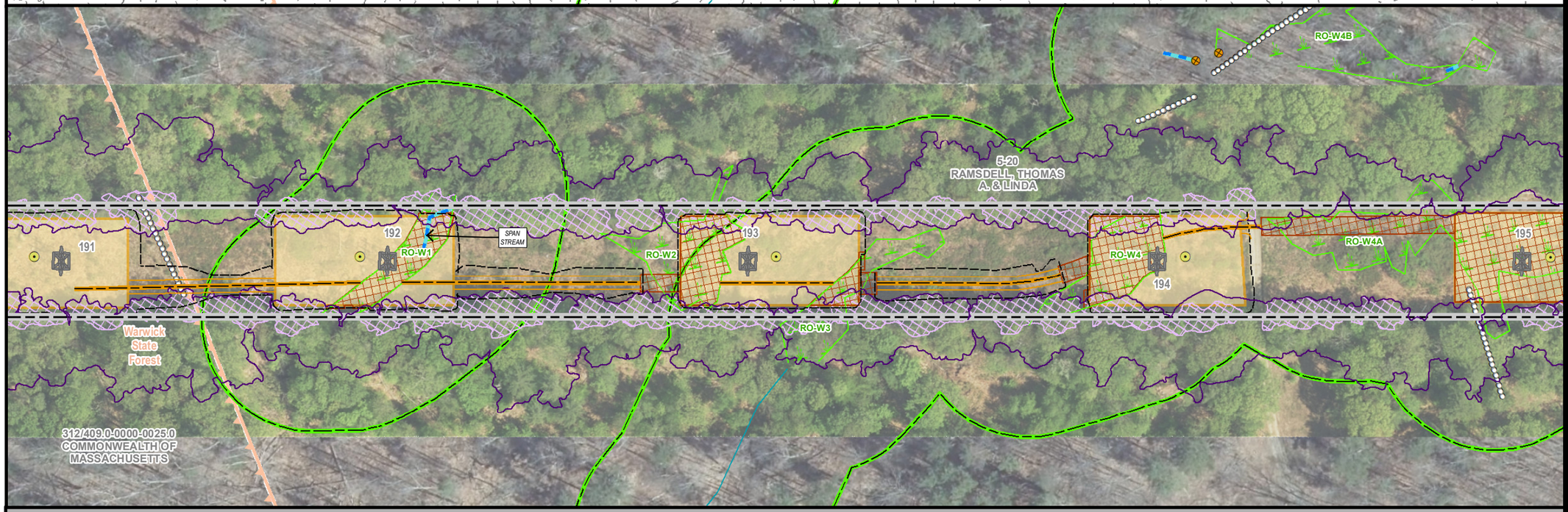
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WARWICK & ROYALSTON, MA
PAGE 28 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

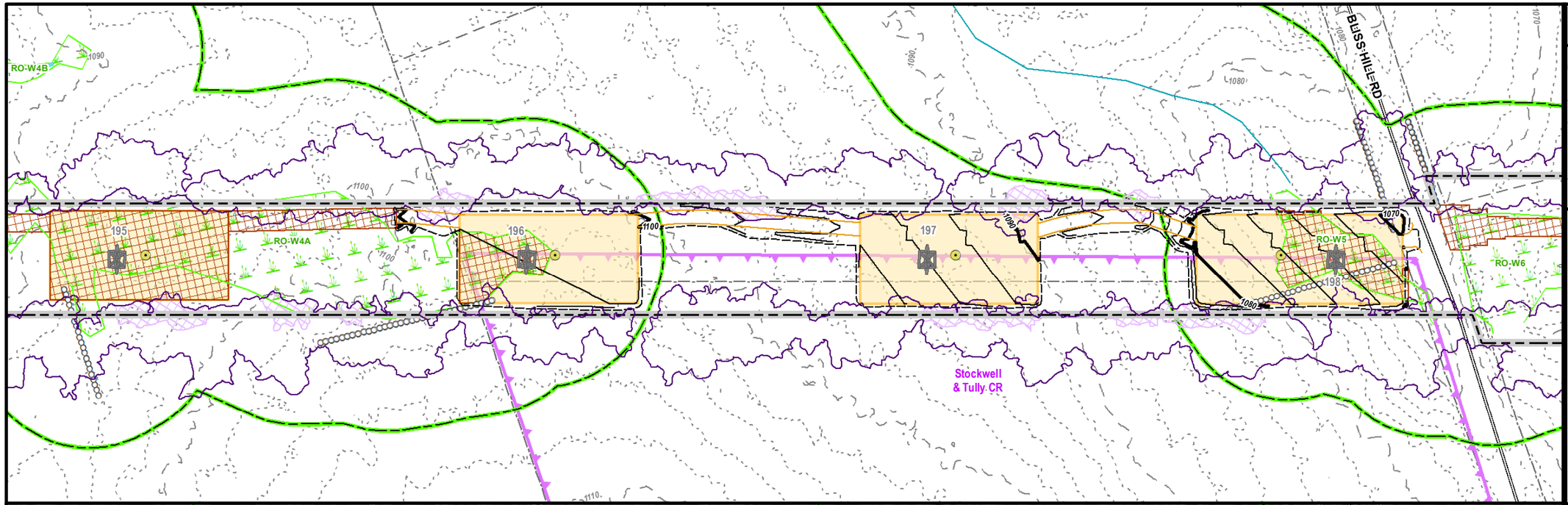
**Indicates Layers Set to Transparency*

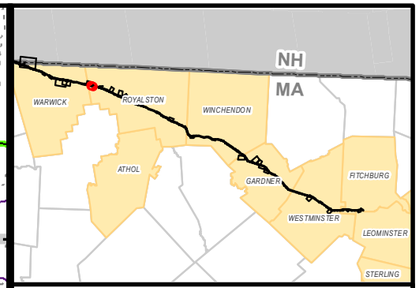
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

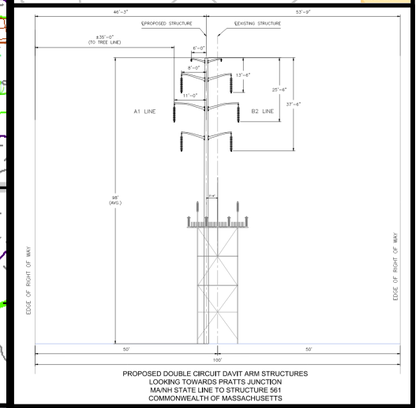
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

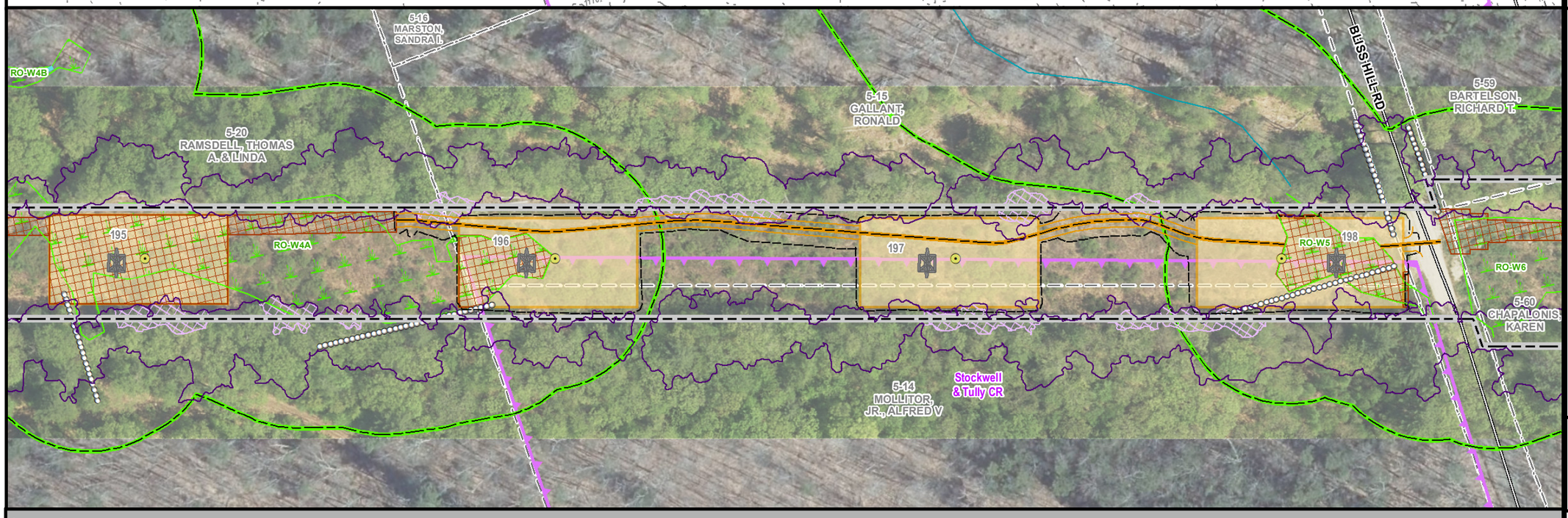
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 29 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

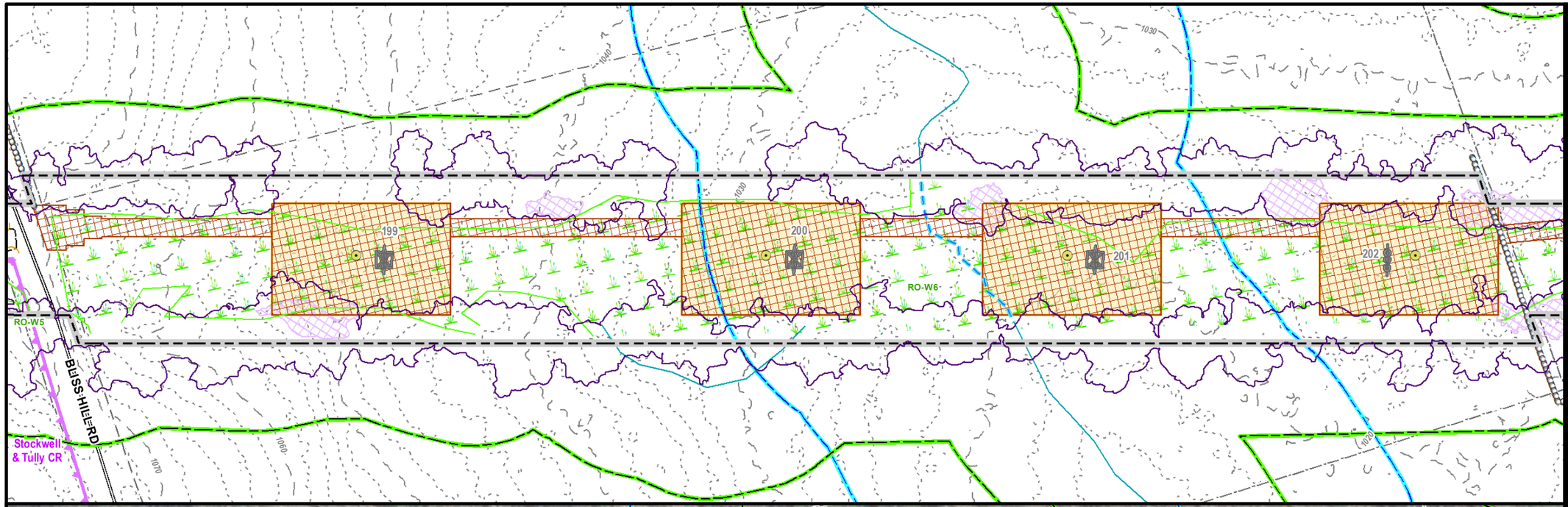
**Indicates Layers Set to Transparency*

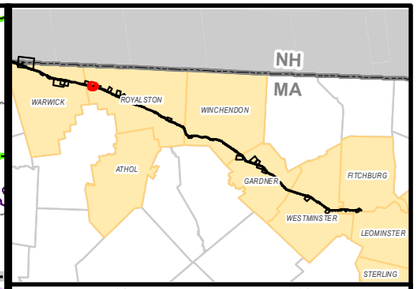
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

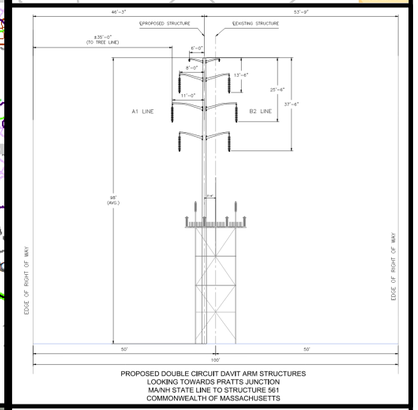
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

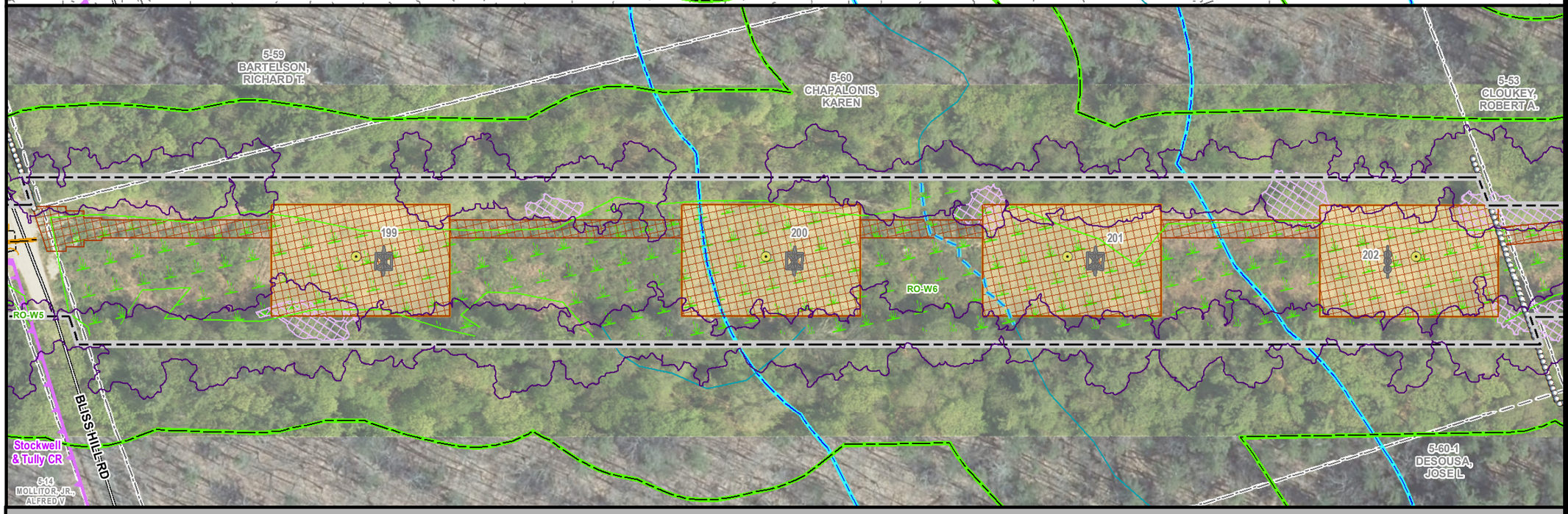
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 30 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.

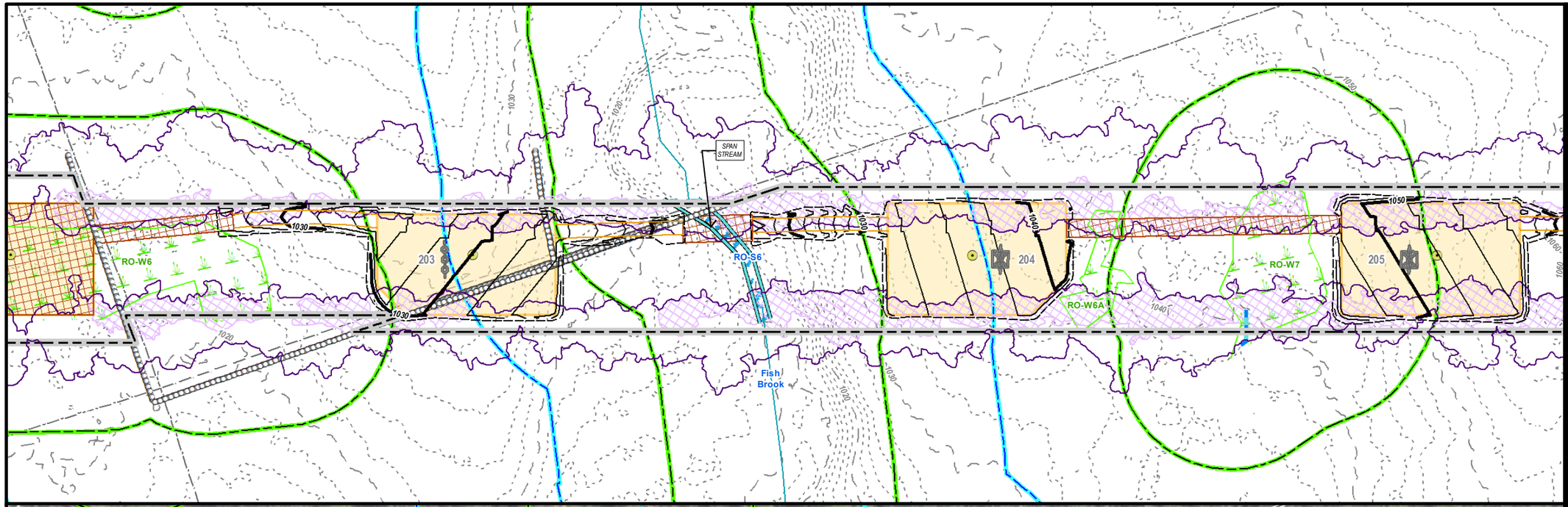
***Indicates Layers Set to Transparency**

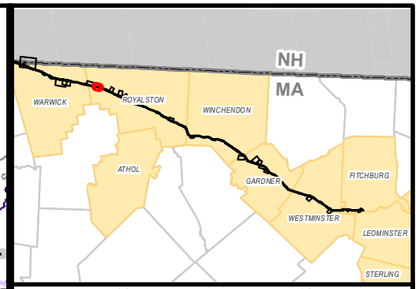
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

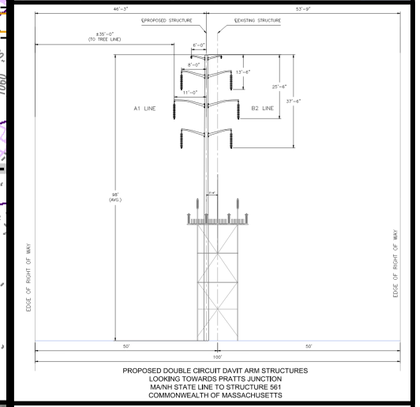
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

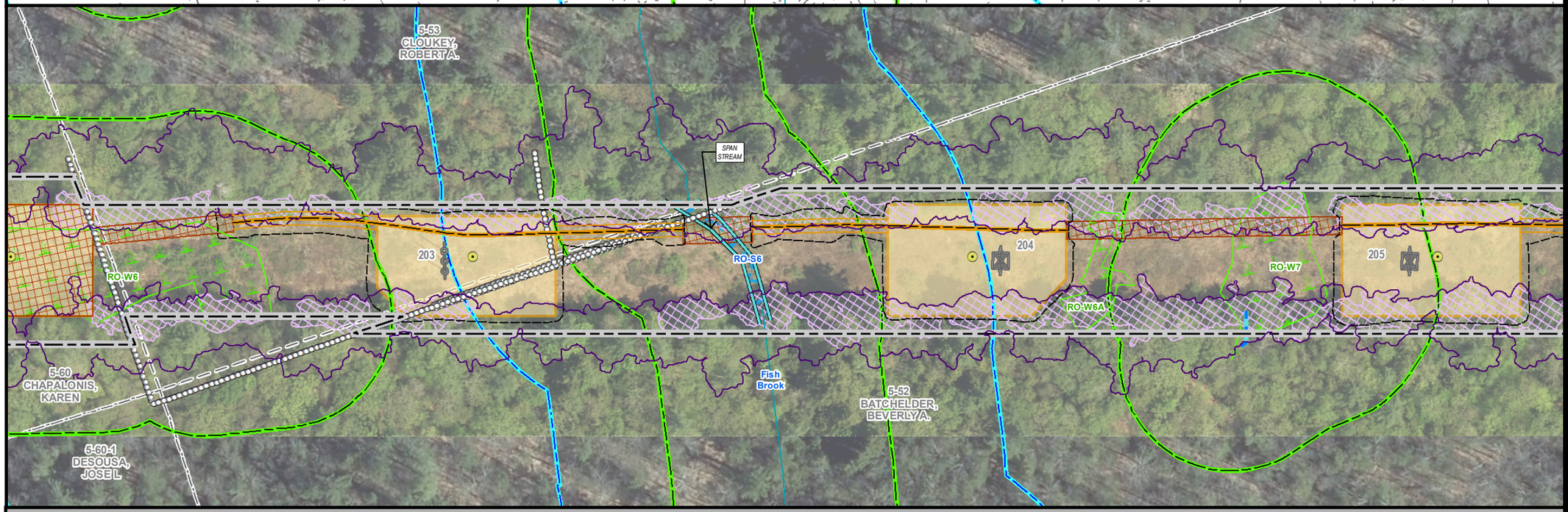
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 31 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

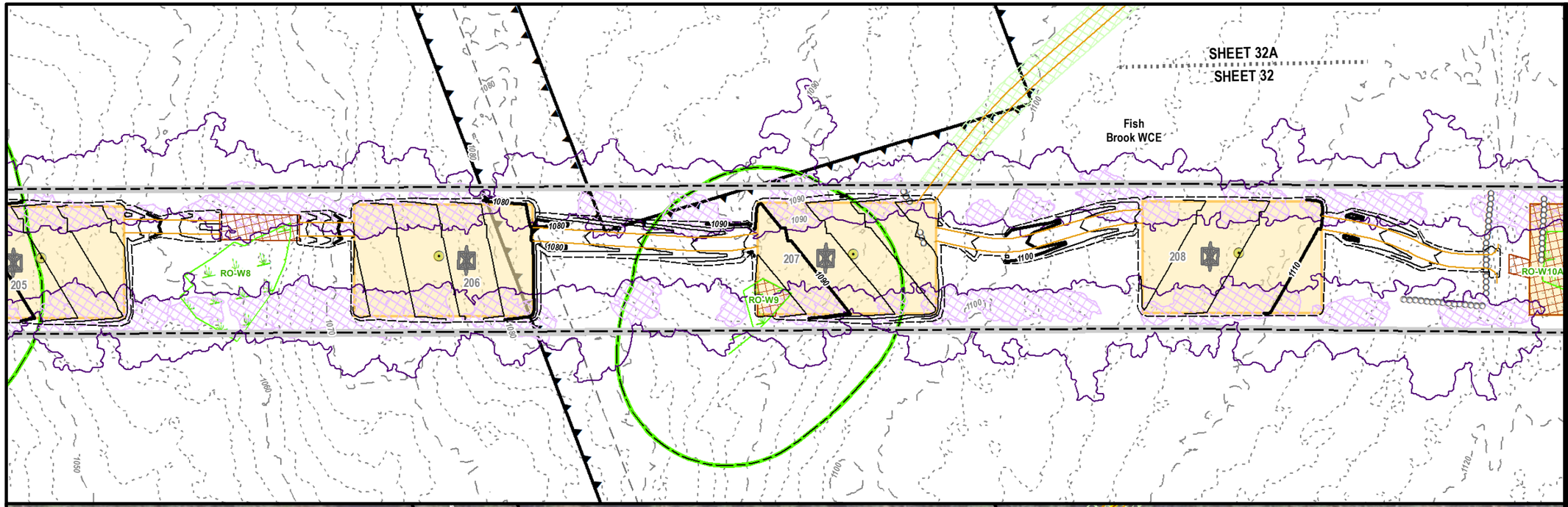
**Indicates Layers Set to Transparency*

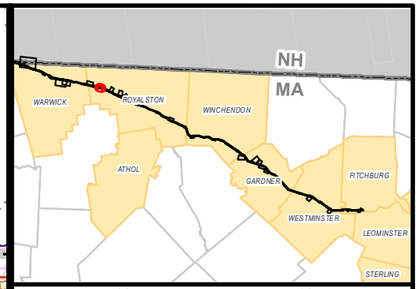
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

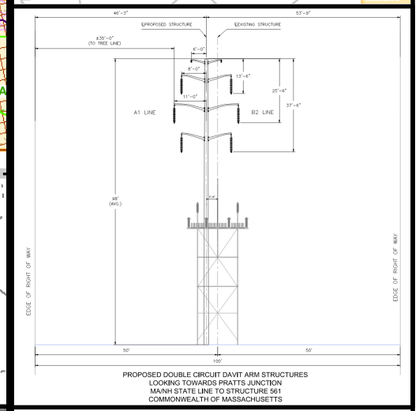
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

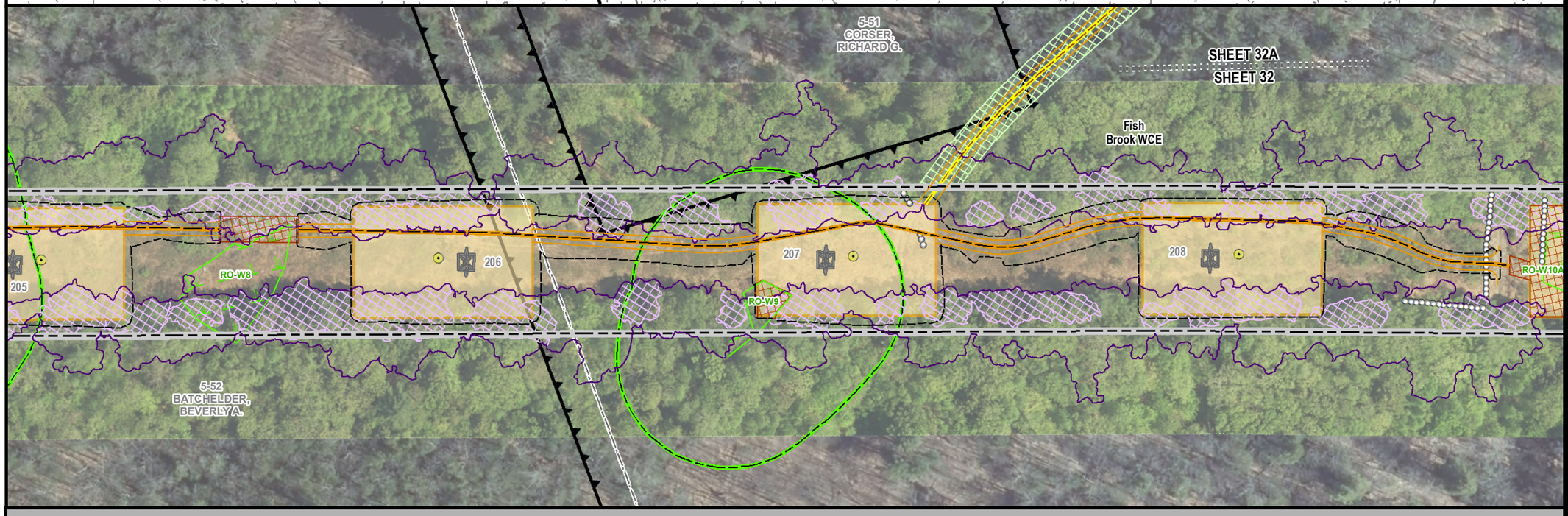
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 32 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

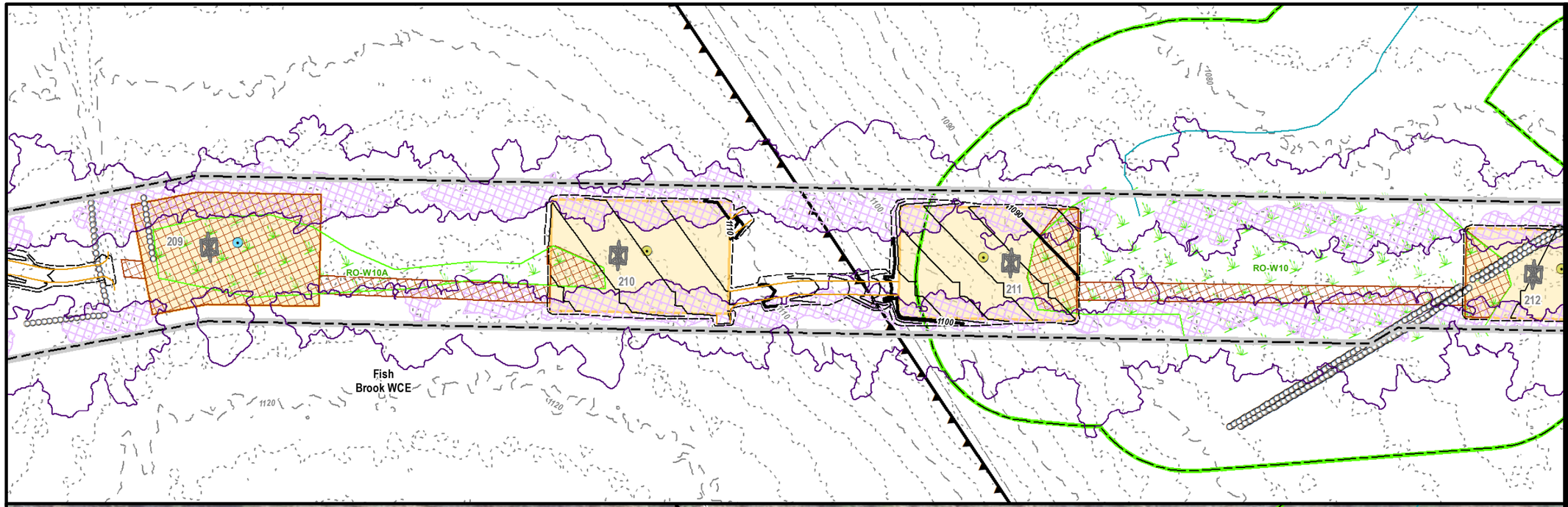
**Indicates Layers Set to Transparency*

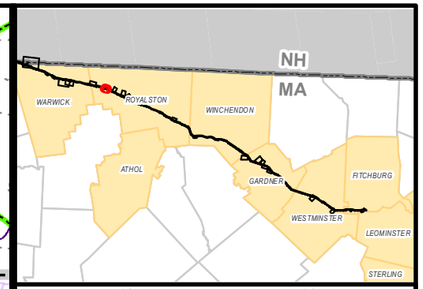
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

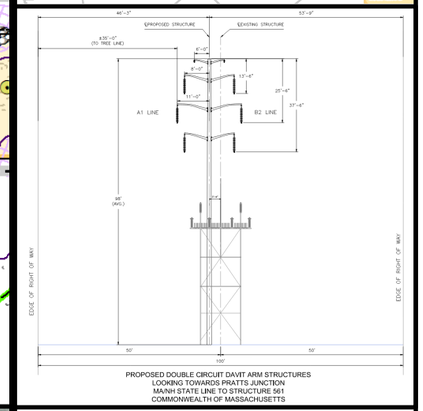
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 33 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

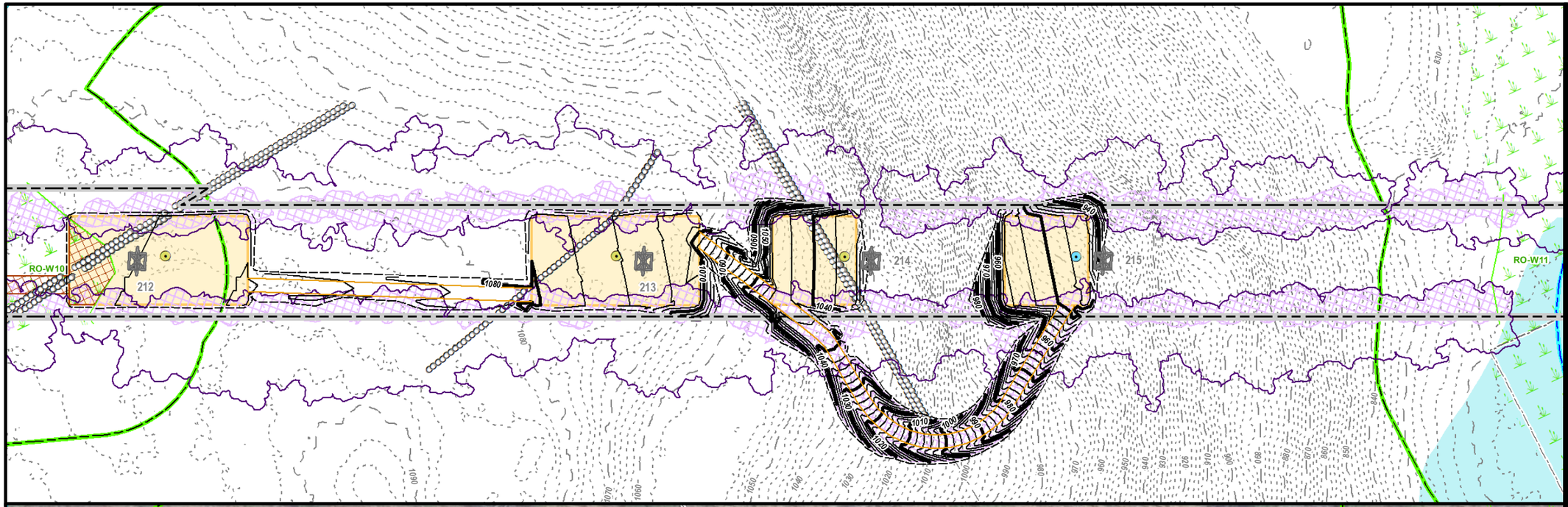
**Indicates Layers Set to Transparency*

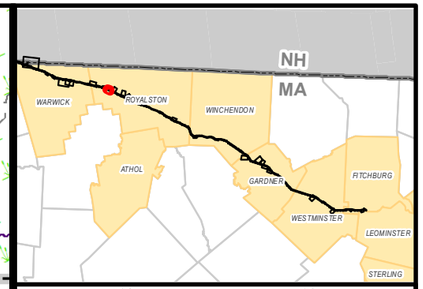
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

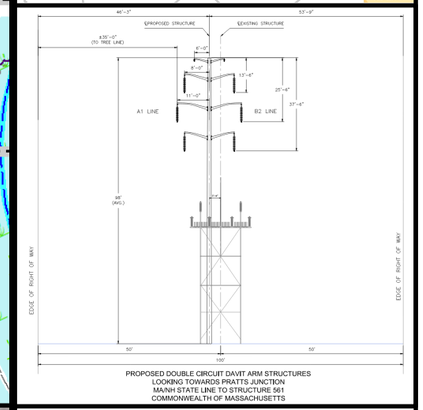
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

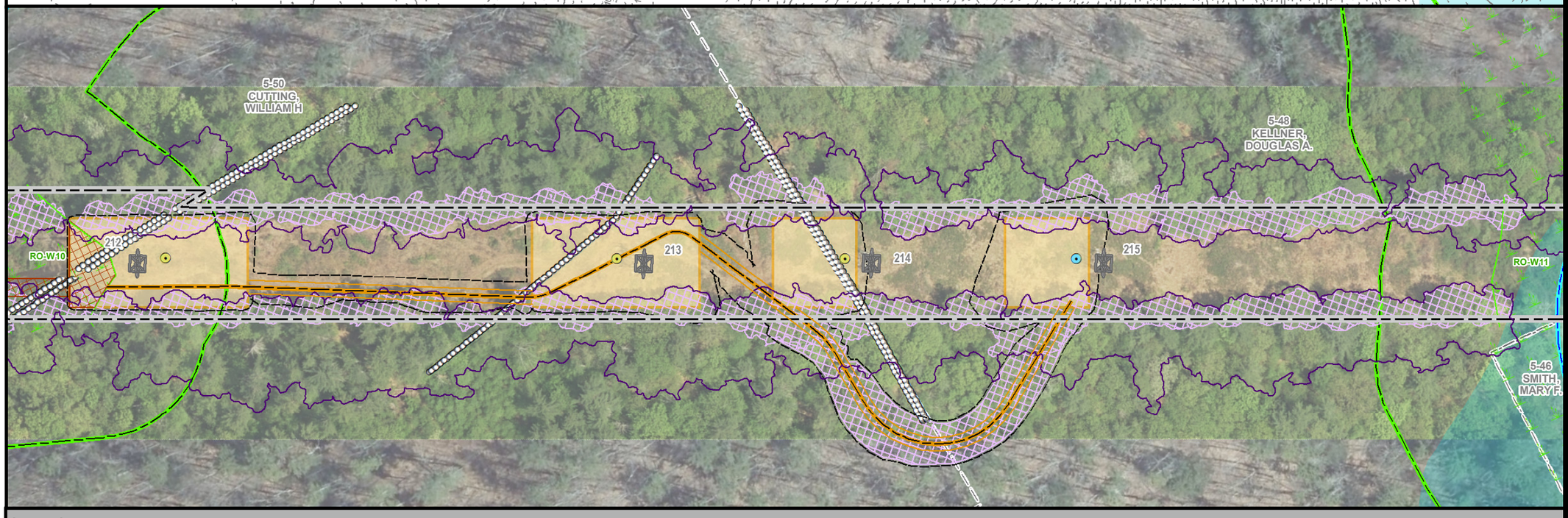
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 34 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

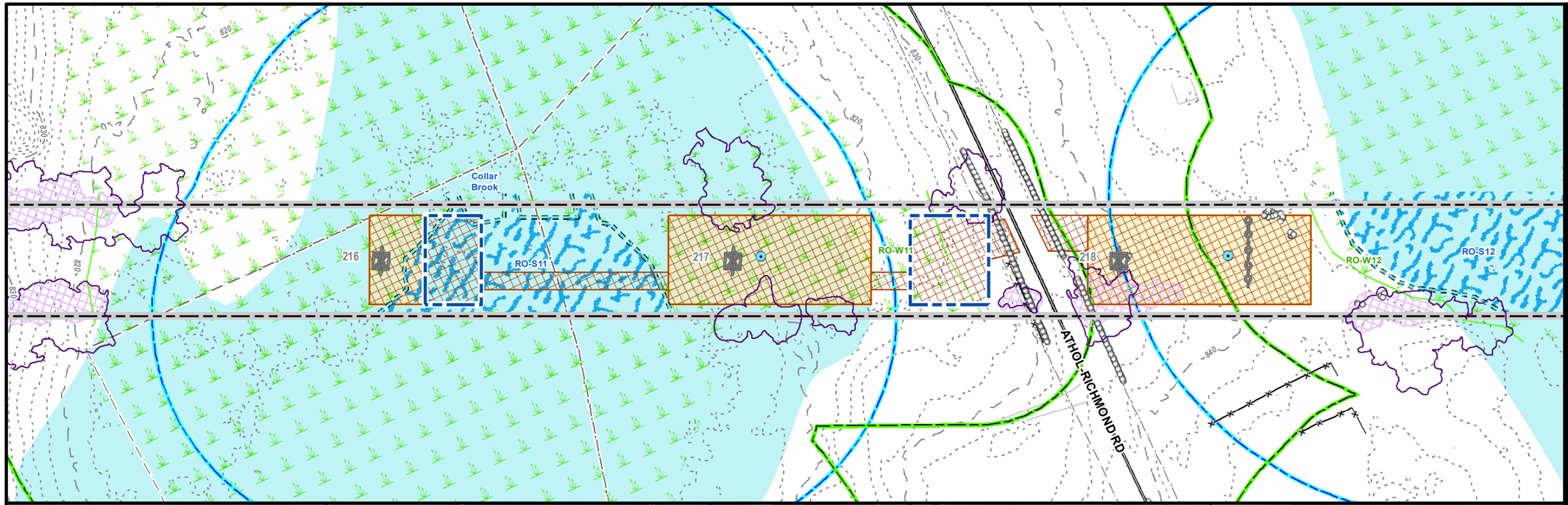
**Indicates Layers Set to Transparency*

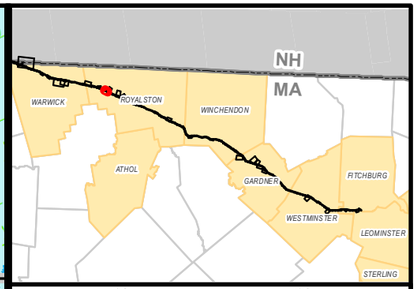
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

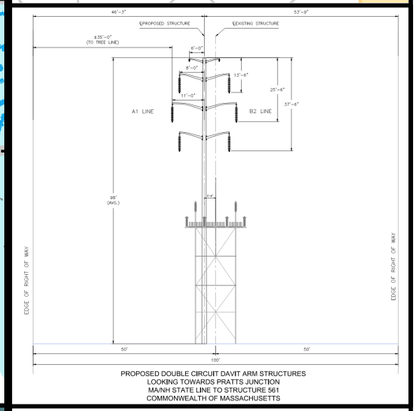
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

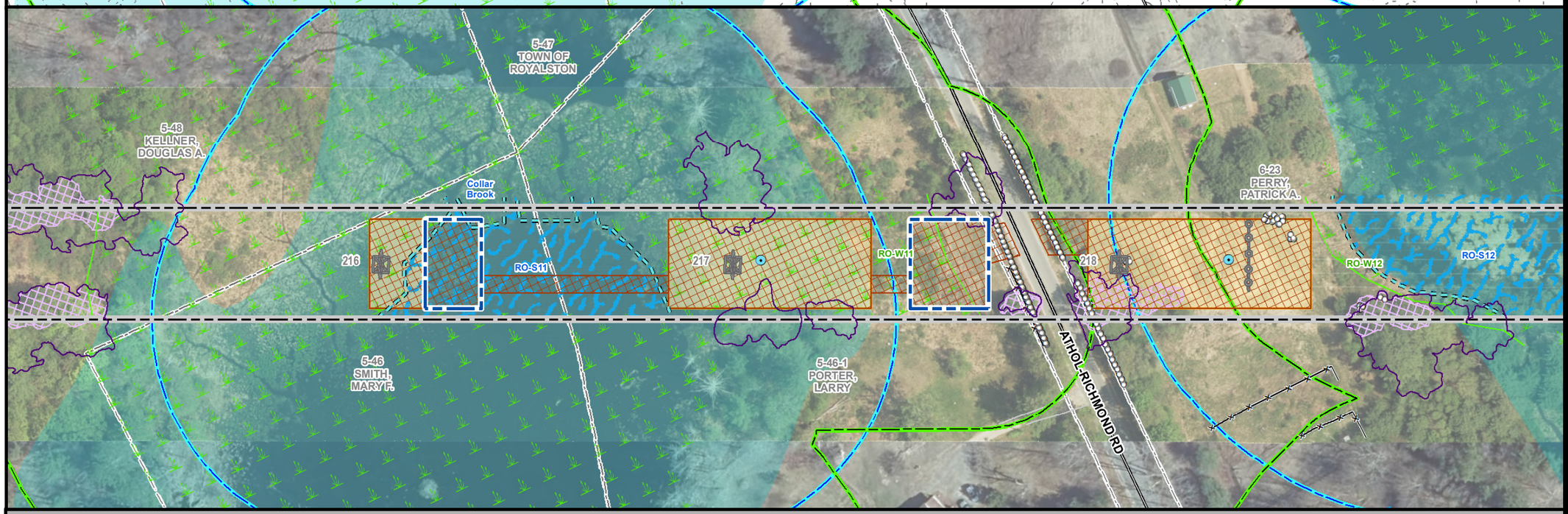
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 35 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

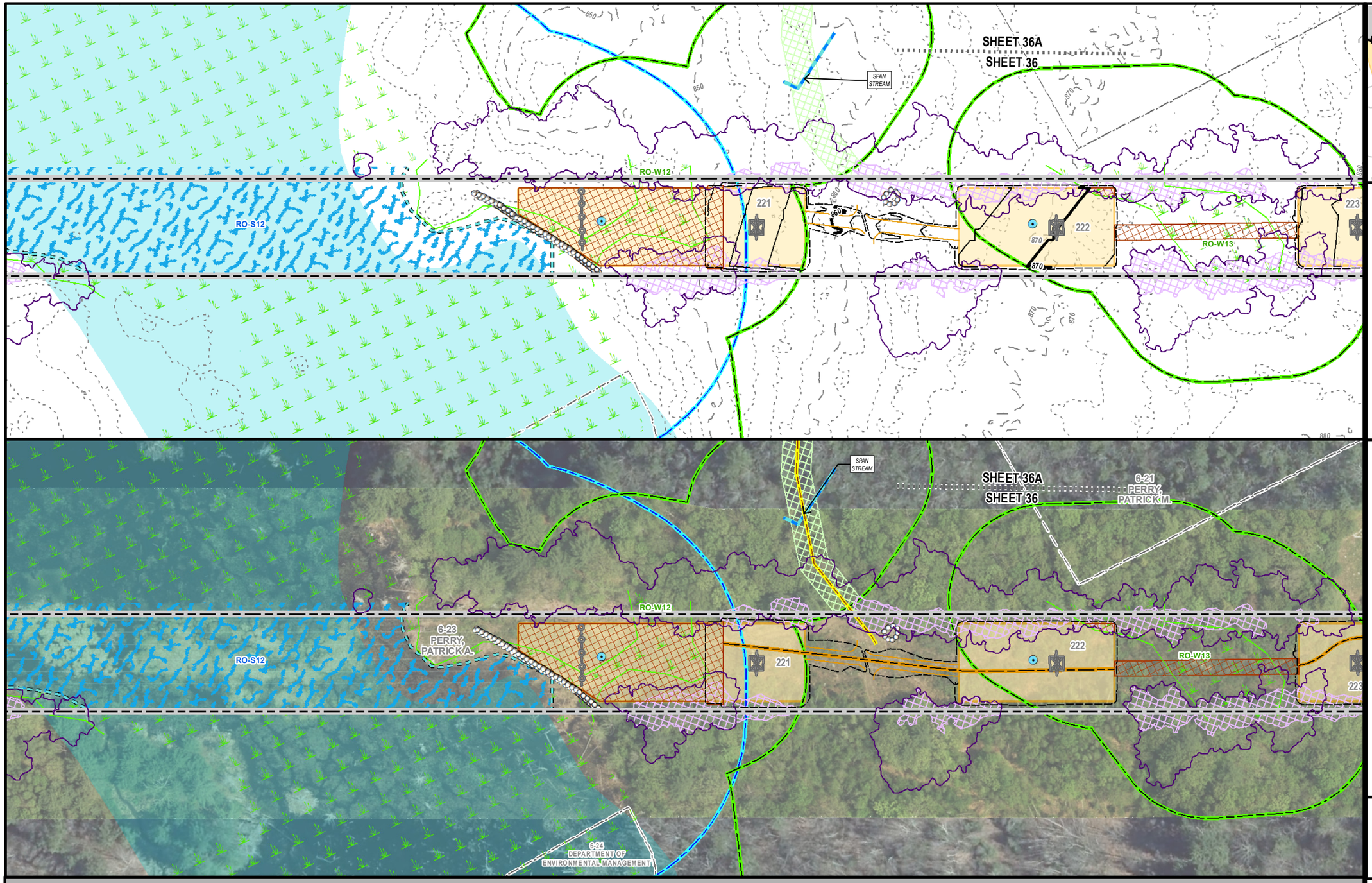
**Indicates Layers Set to Transparency*

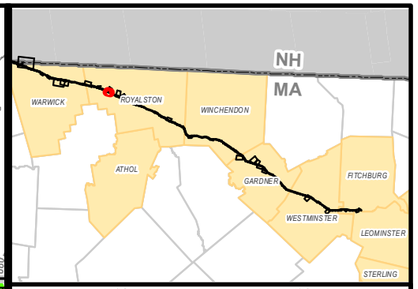
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

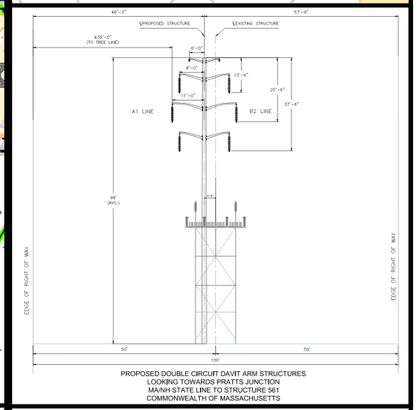
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 36 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

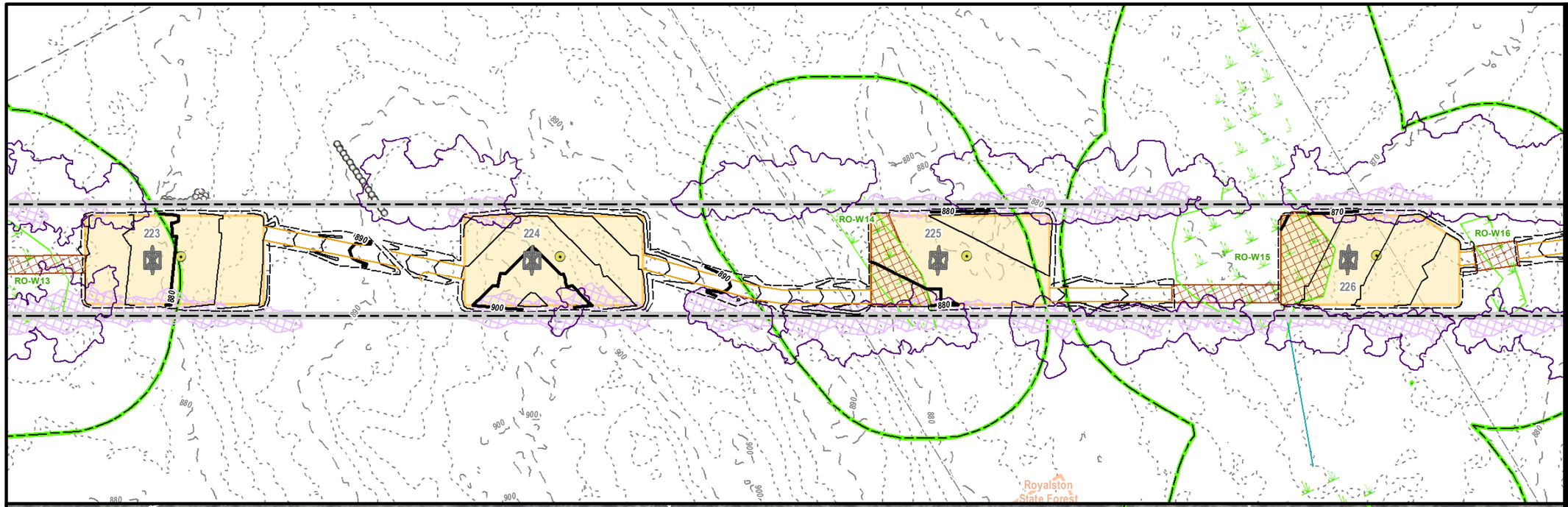
**Indicates Layers Set to Transparency*

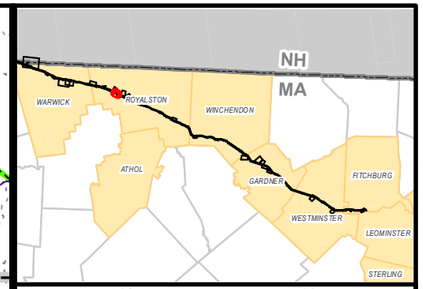
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

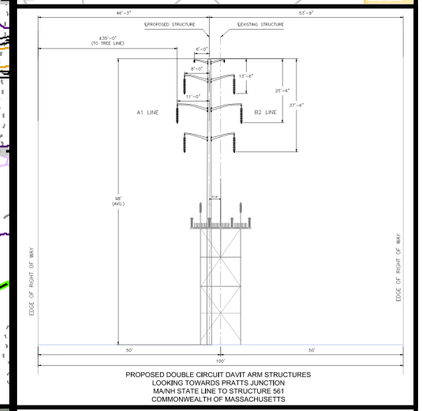
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

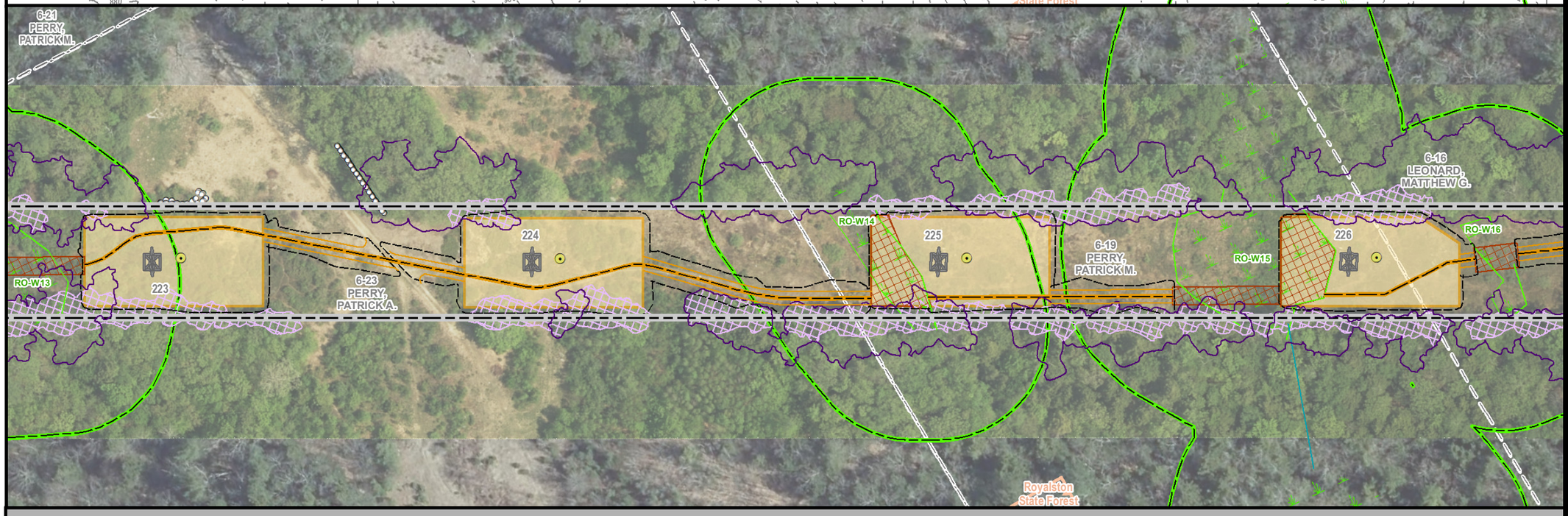
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 37 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.

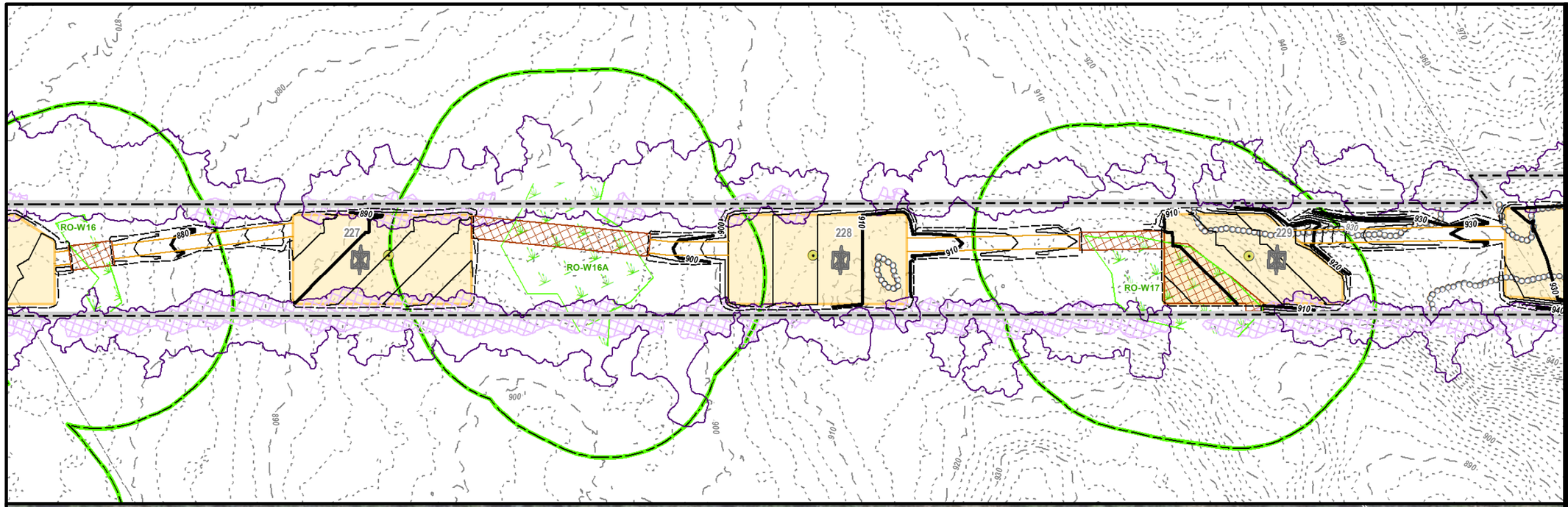
***Indicates Layers Set to Transparency**

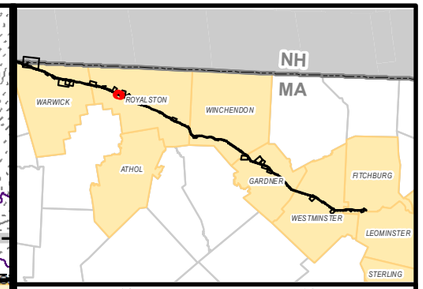
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

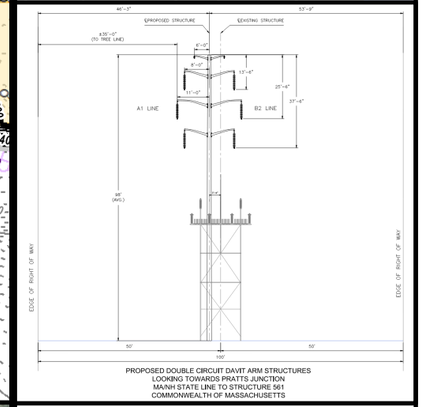
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

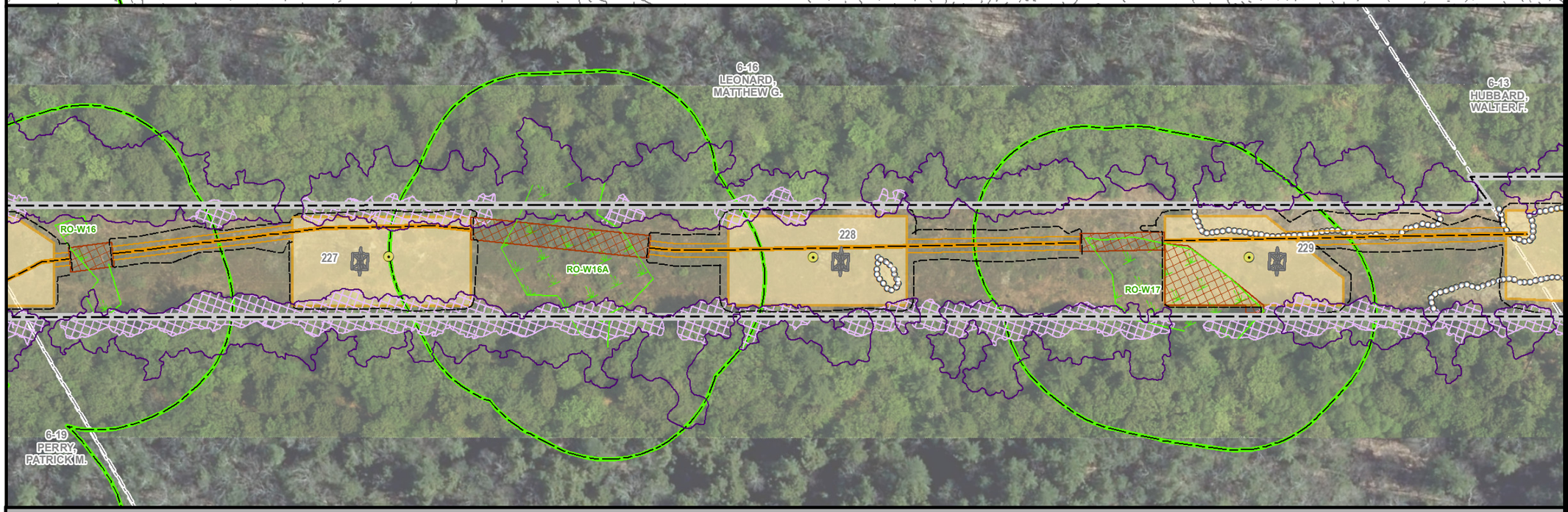
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 38 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.

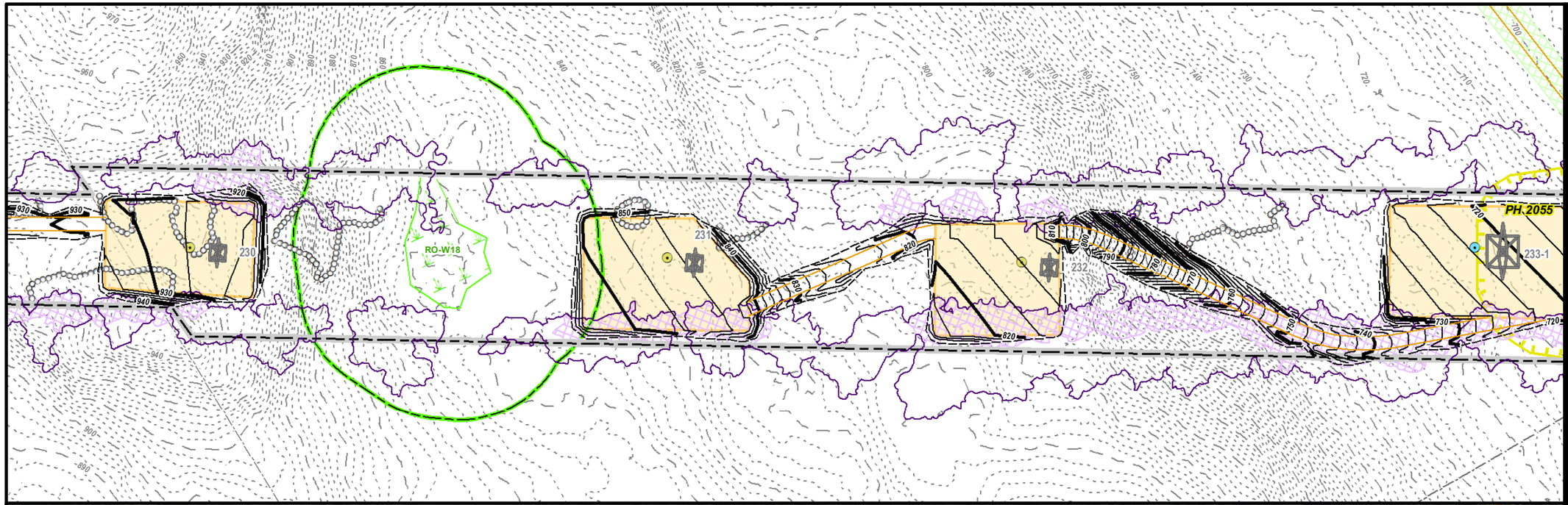
***Indicates Layers Set to Transparency**

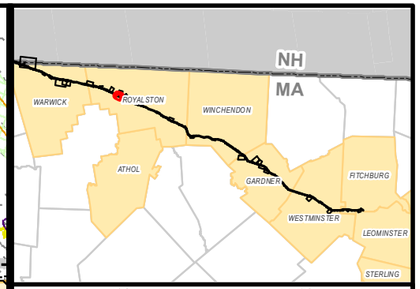
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

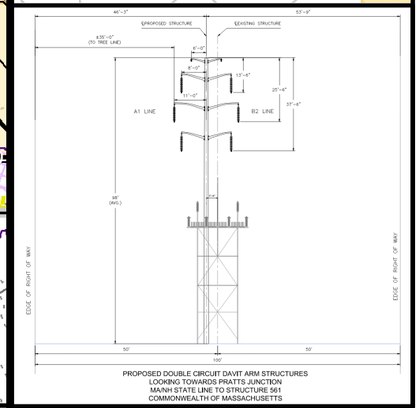
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

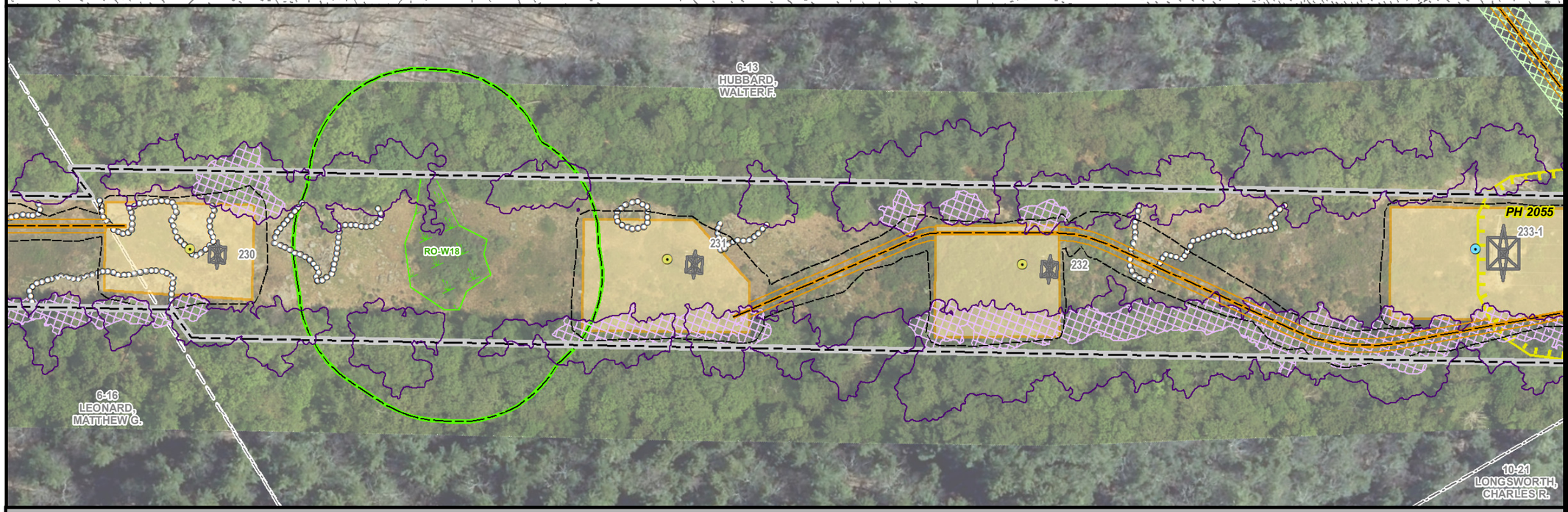
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 39 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

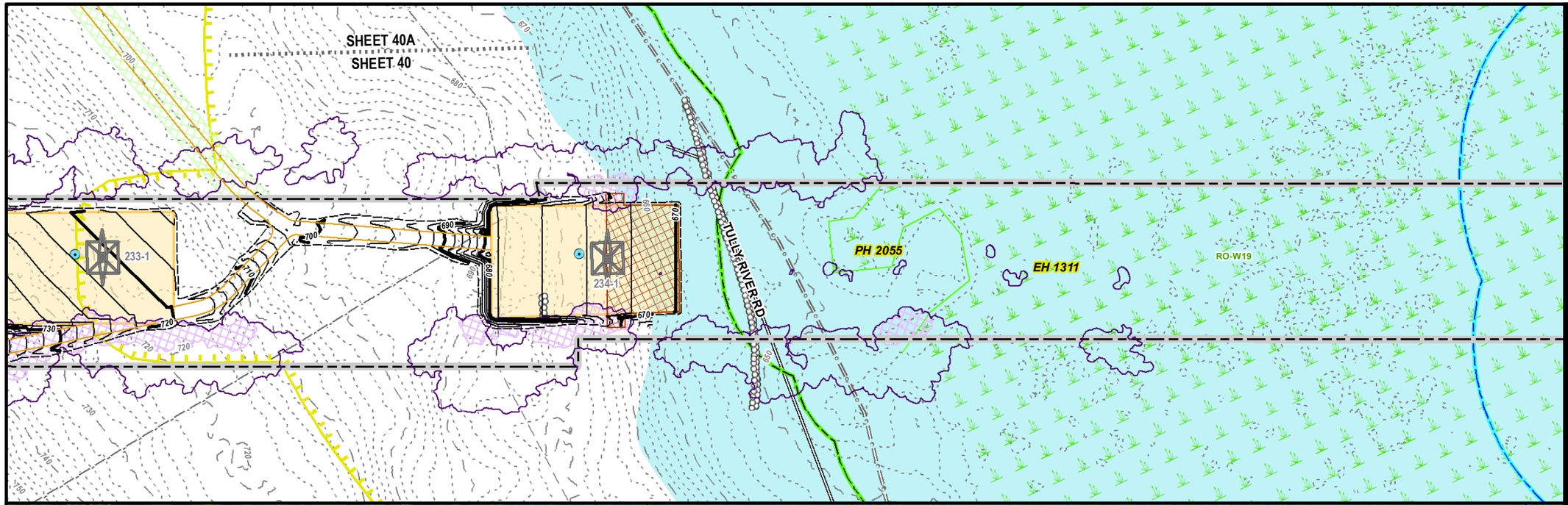
**Indicates Layers Set to Transparency*

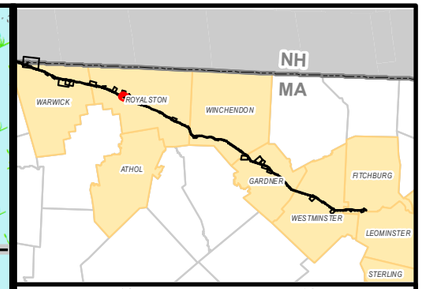
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

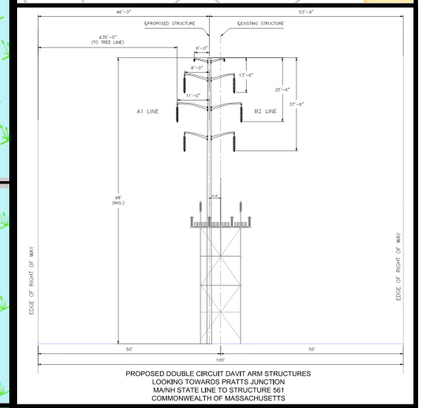
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

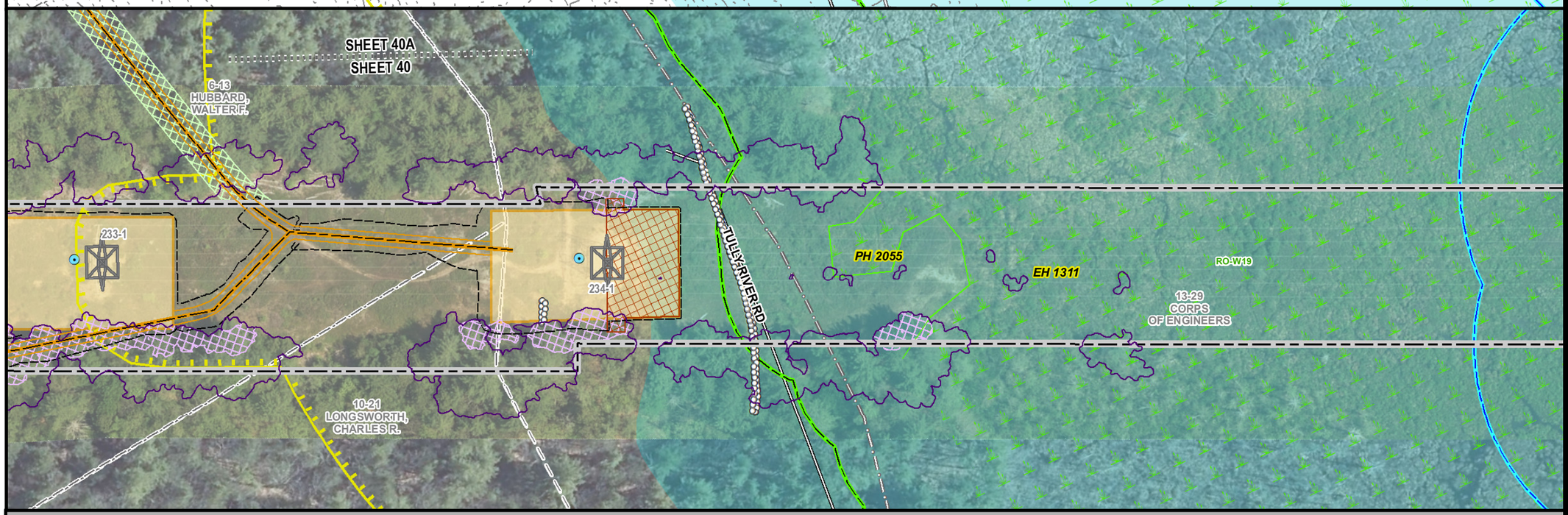
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 40 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

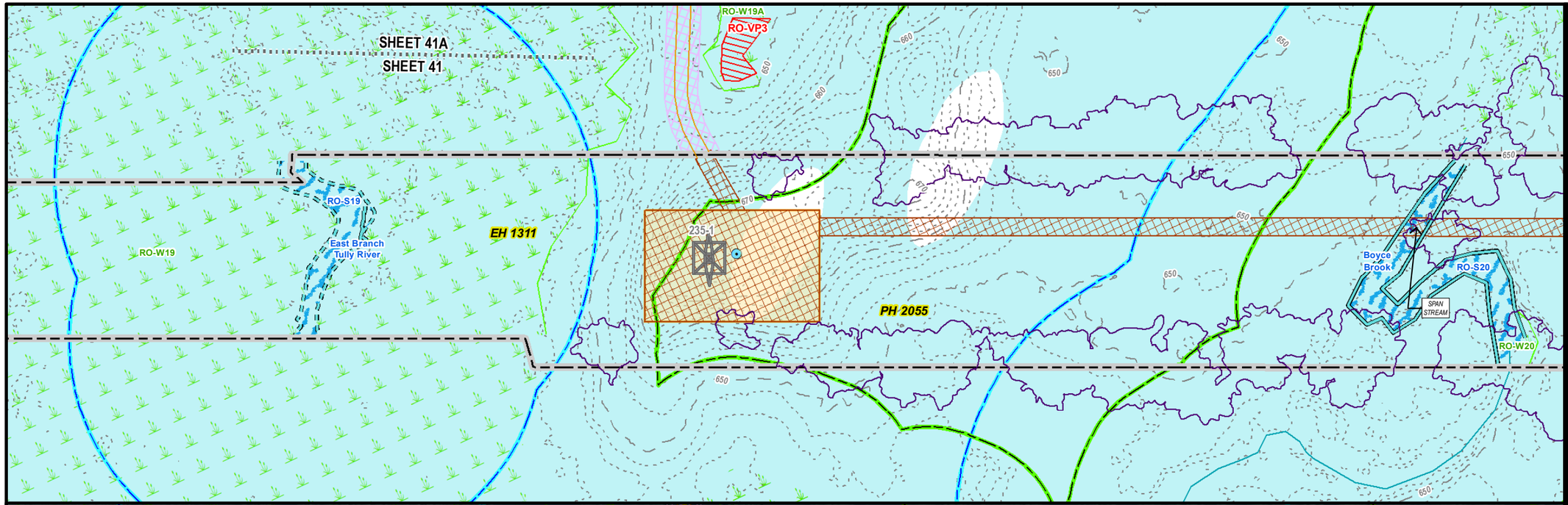
**Indicates Layers Set to Transparency*

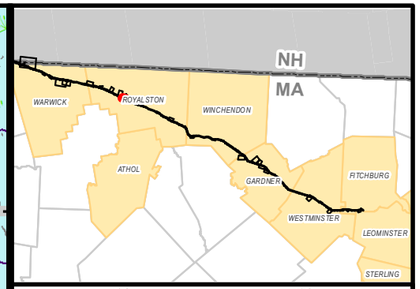
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

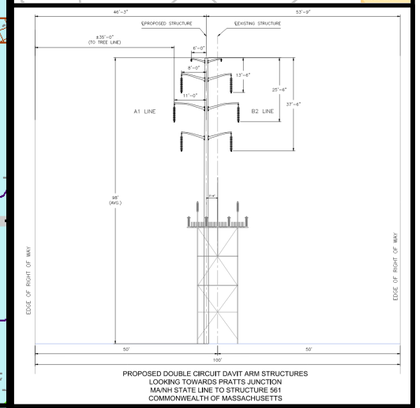
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

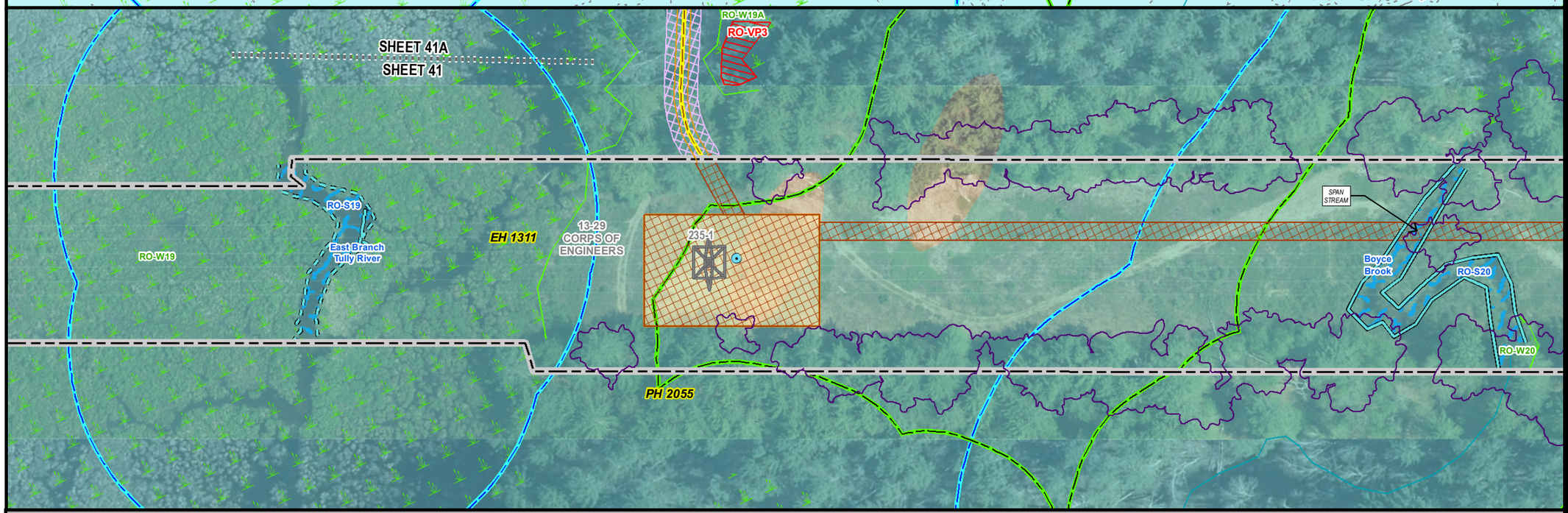
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 41 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

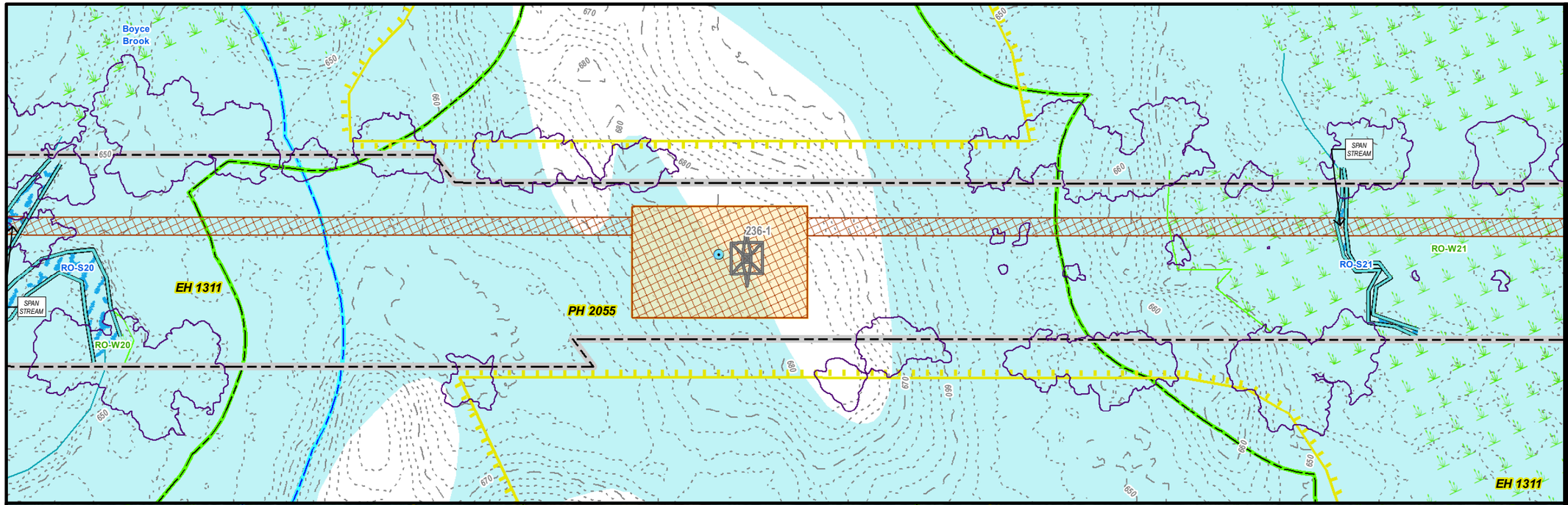
**Indicates Layers Set to Transparency*

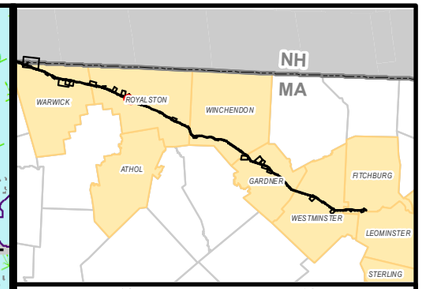
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

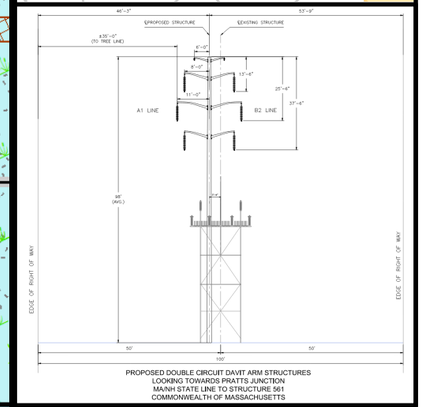
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

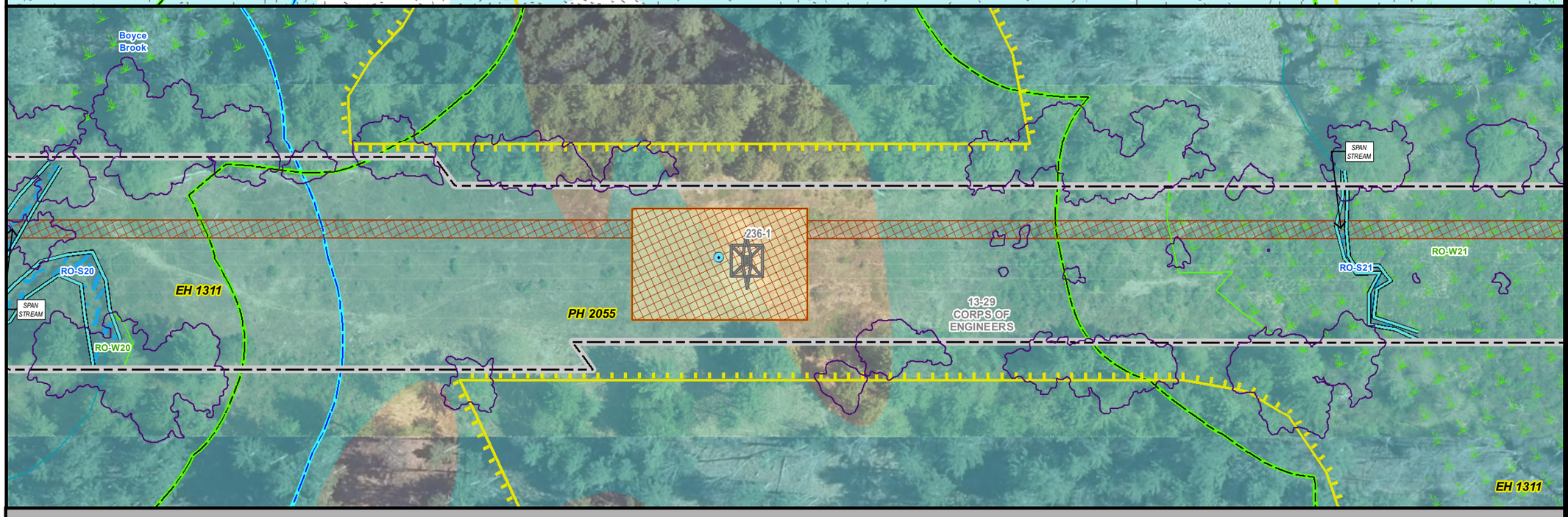
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 42 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

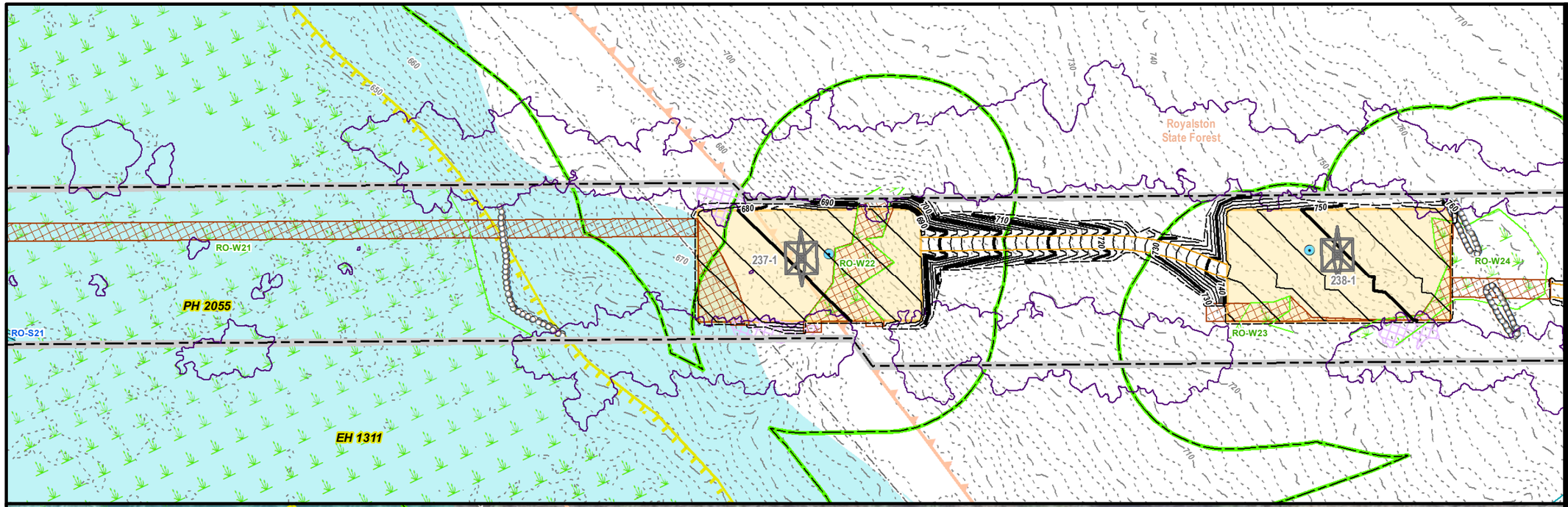
**Indicates Layers Set to Transparency*

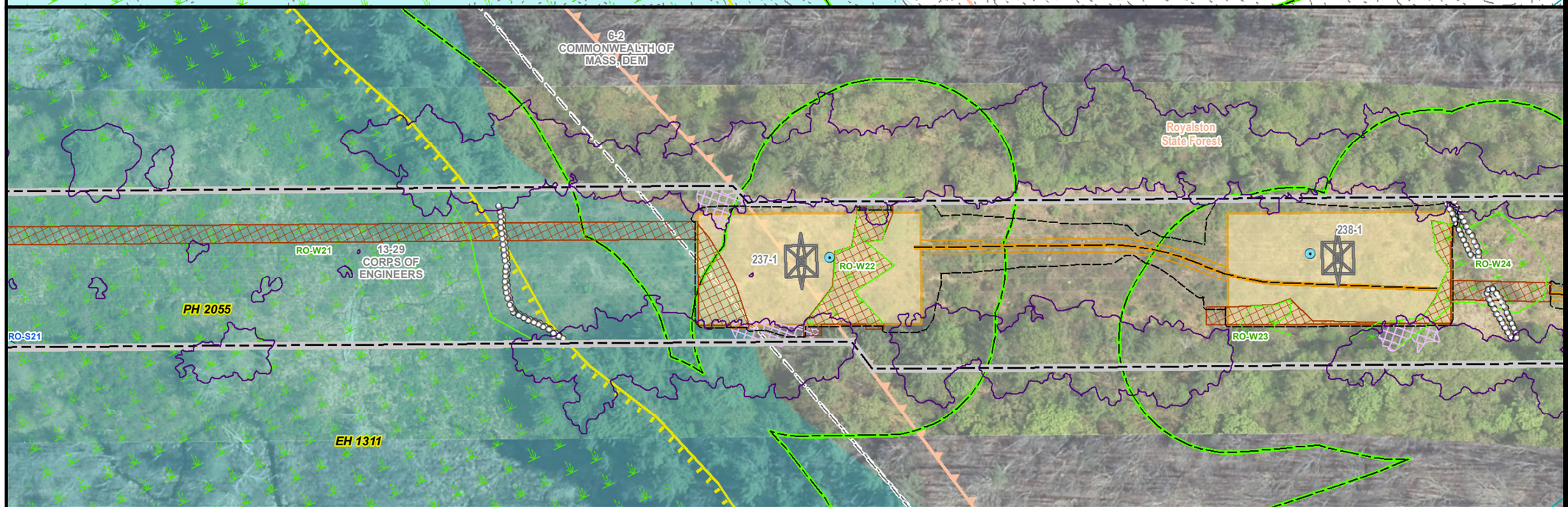
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

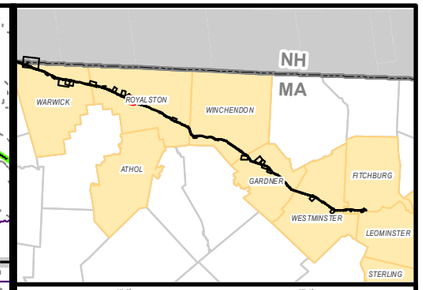
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

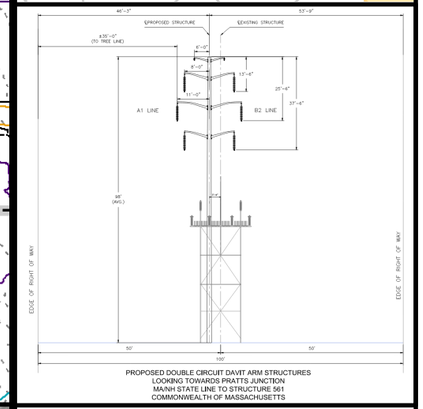
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 43 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

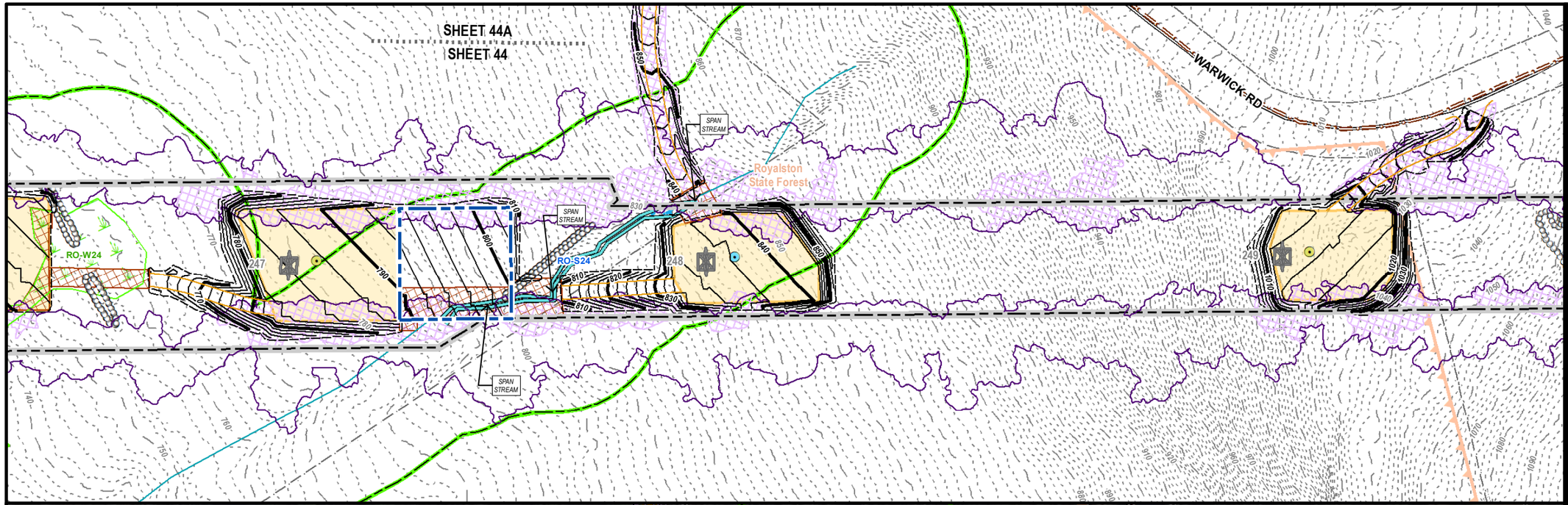
**Indicates Layers Set to Transparency*

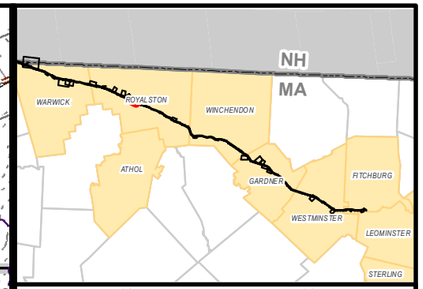
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

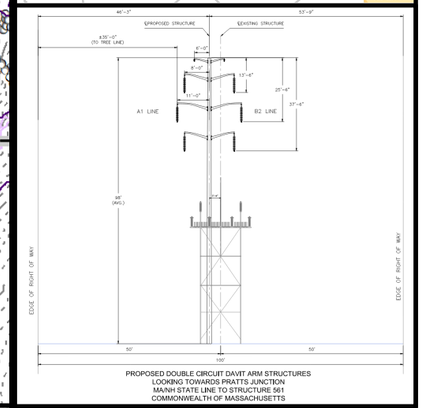
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

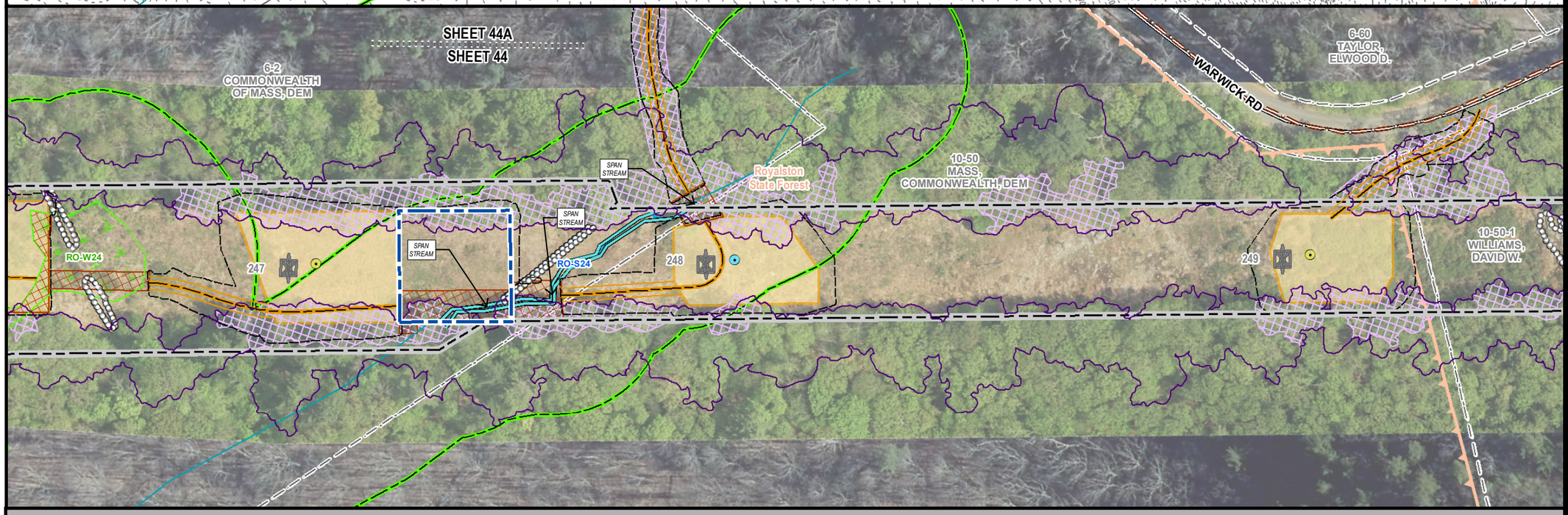
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 44 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.

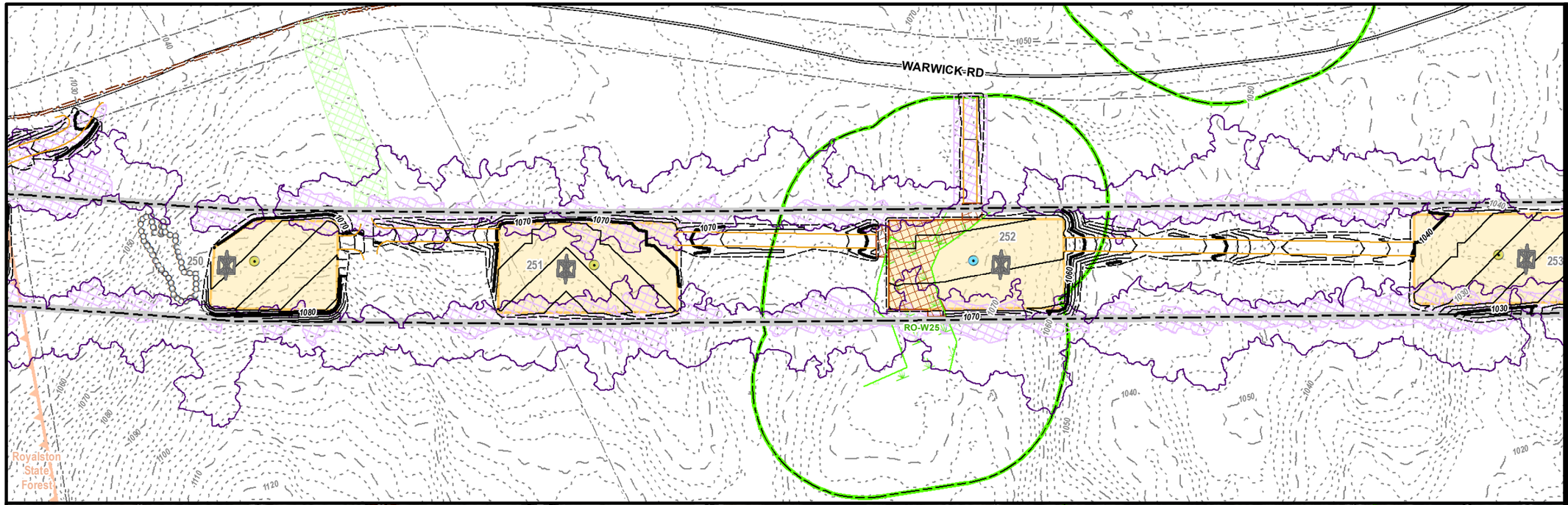
***Indicates Layers Set to Transparency**

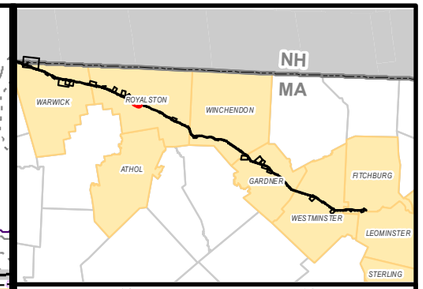
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

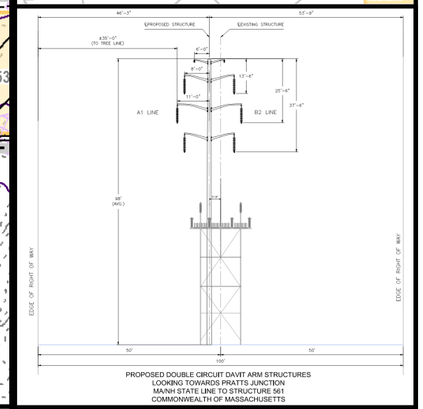
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

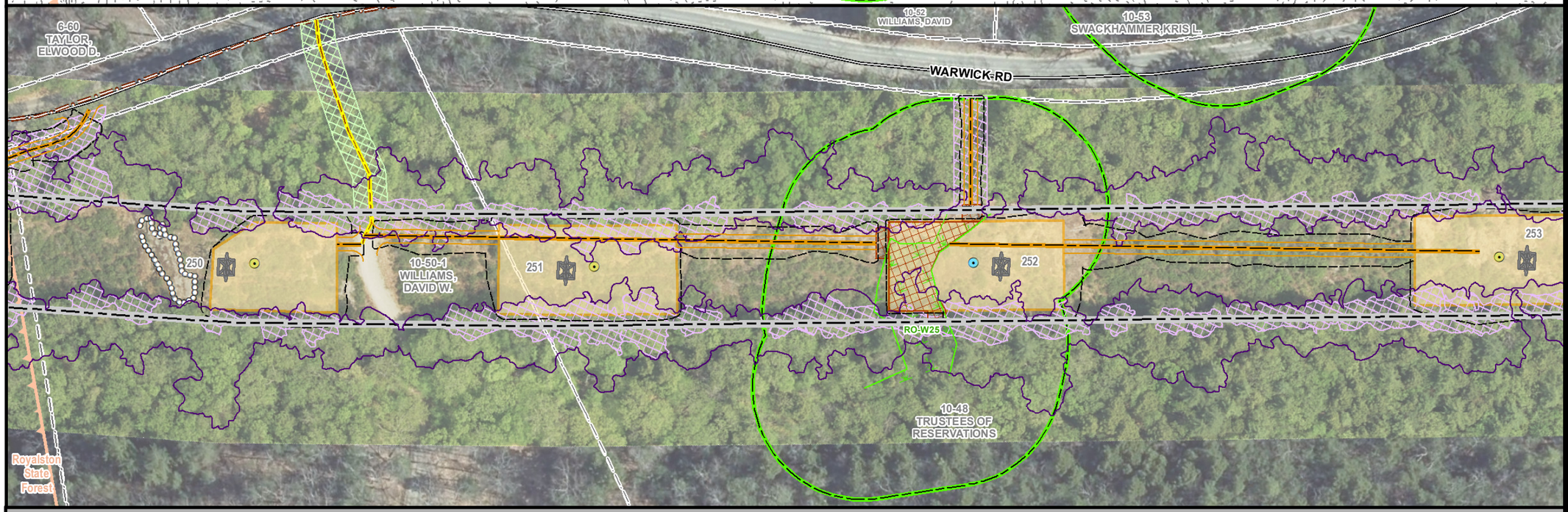
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 45 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

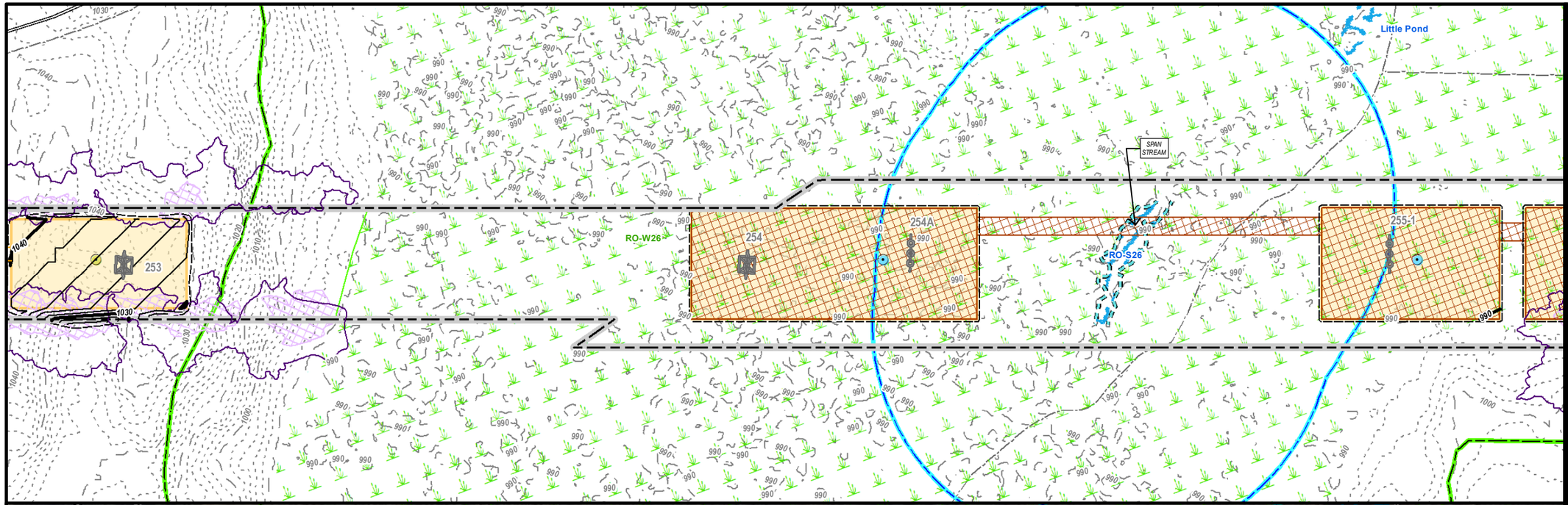
**Indicates Layers Set to Transparency*

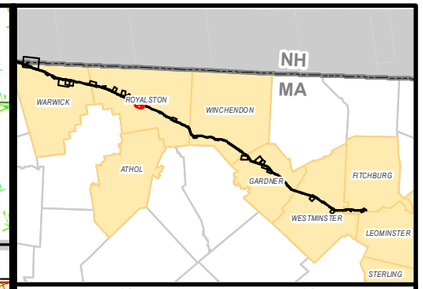
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

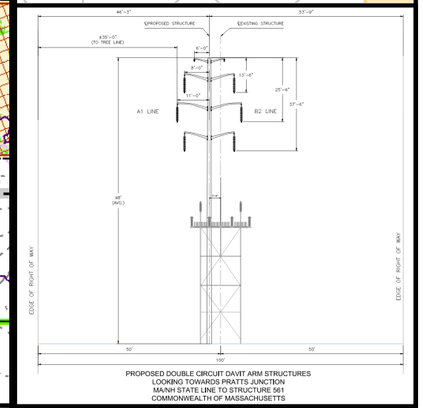
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

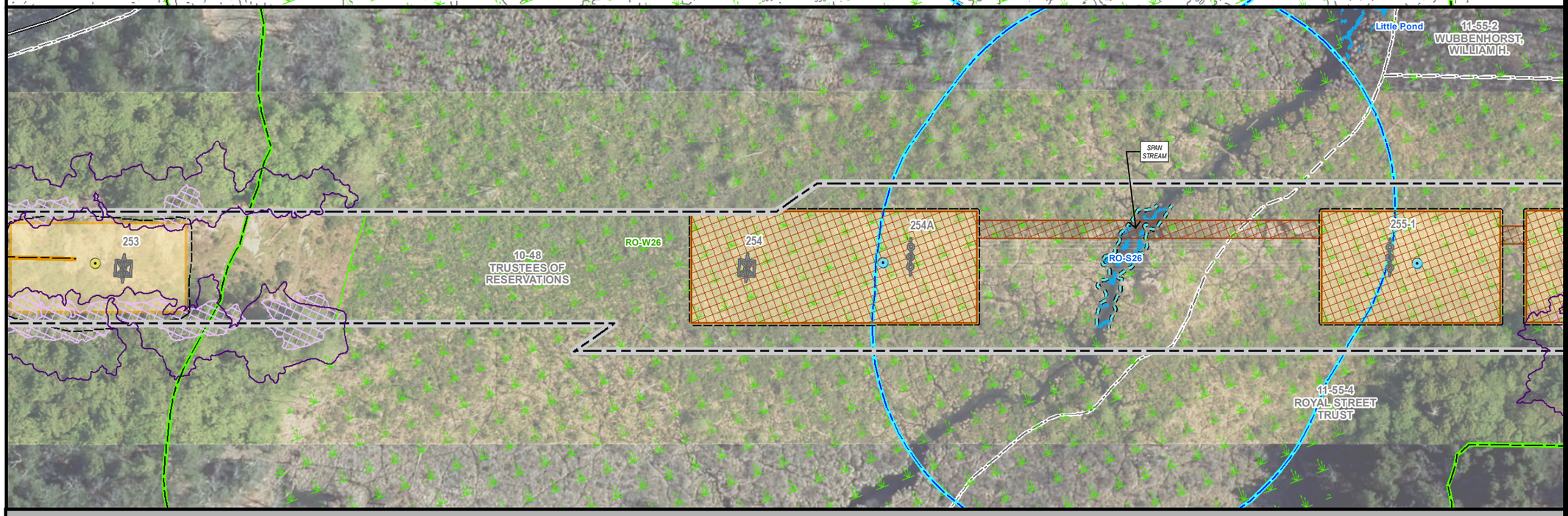
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 46 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

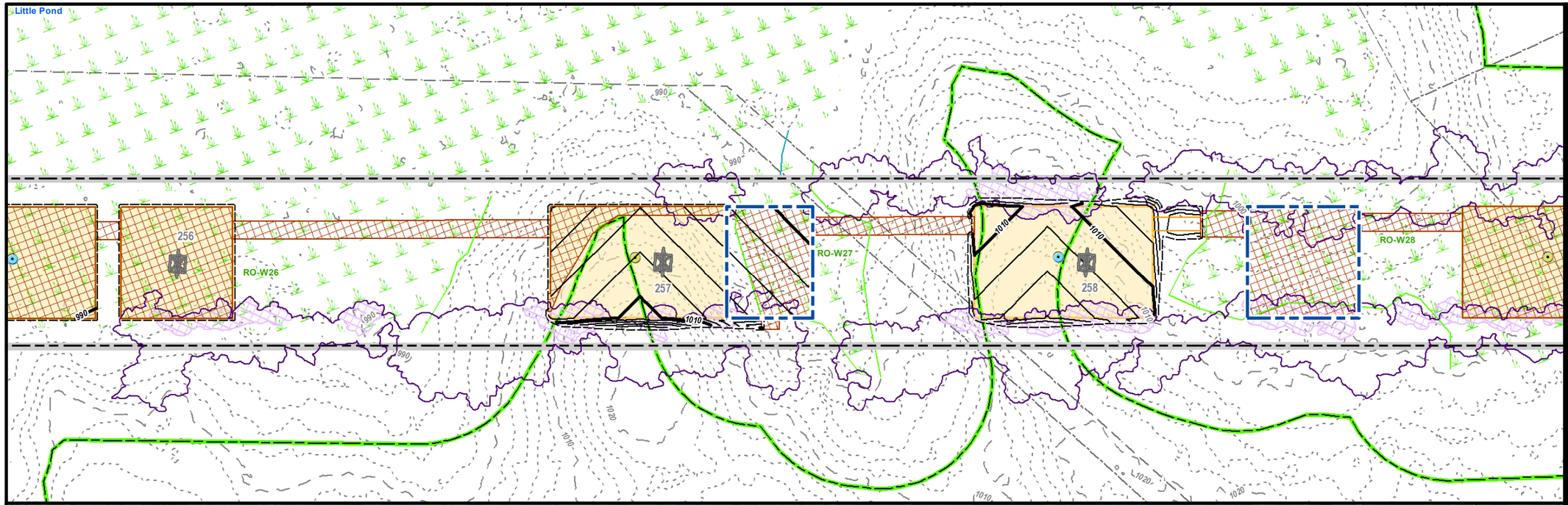
**Indicates Layers Set to Transparency*

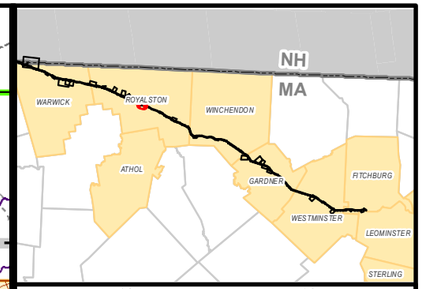
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

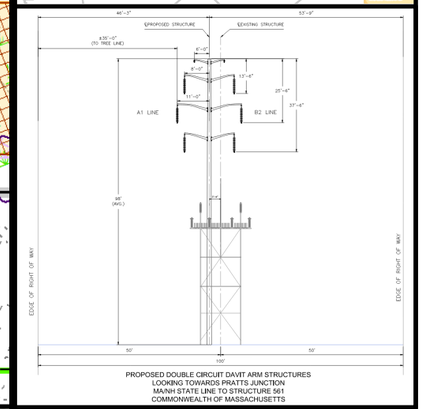
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

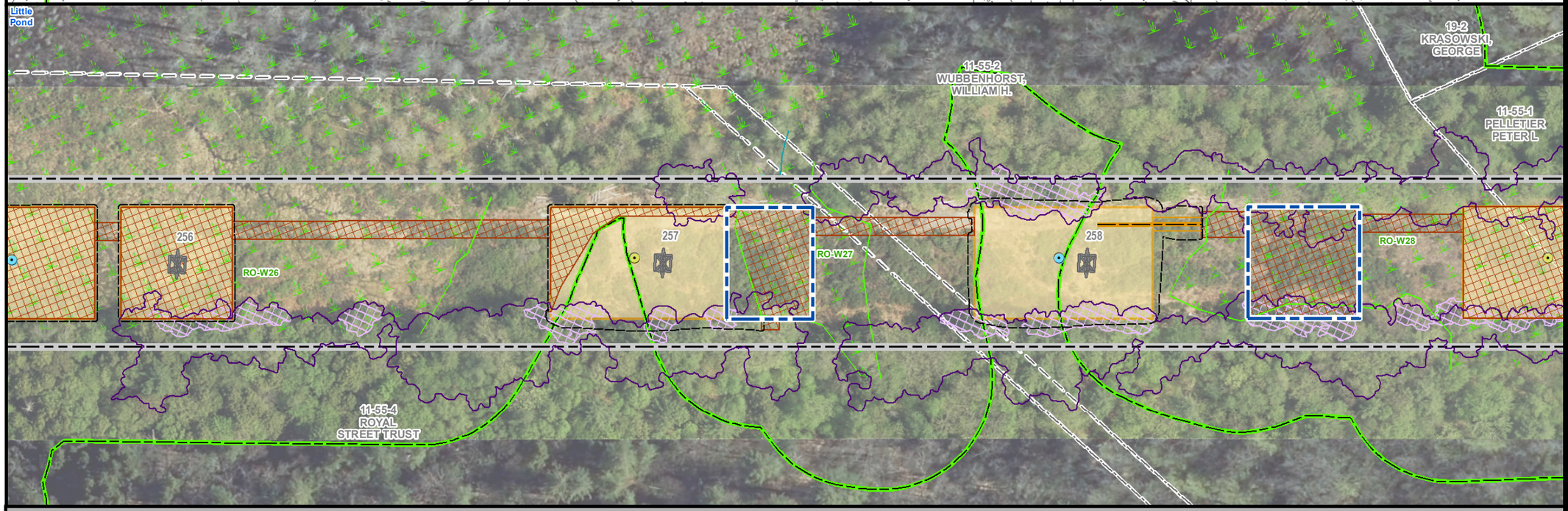
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 47 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.

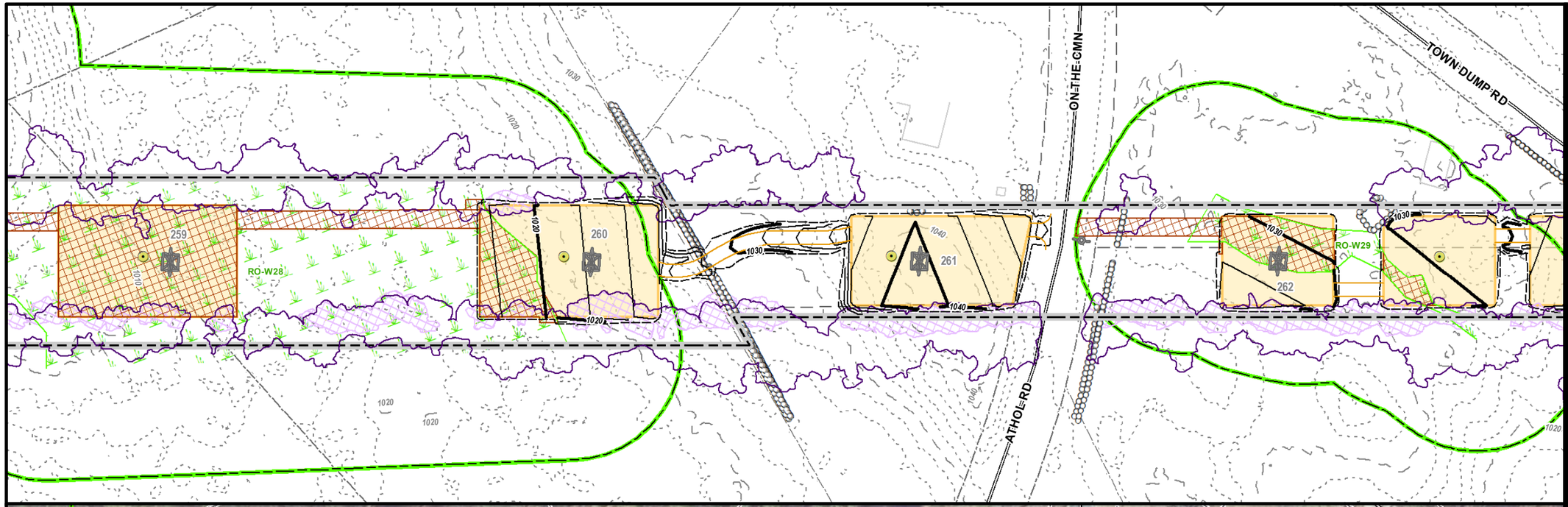
Indicates Layers Set to Transparency

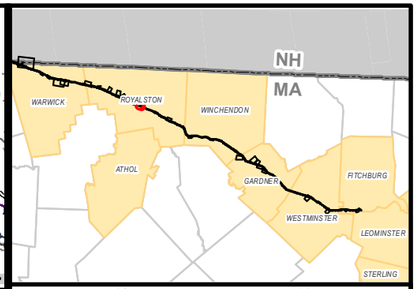
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

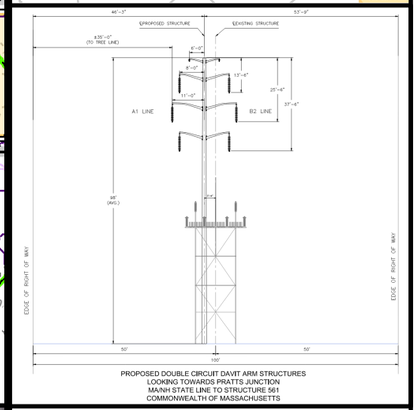
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

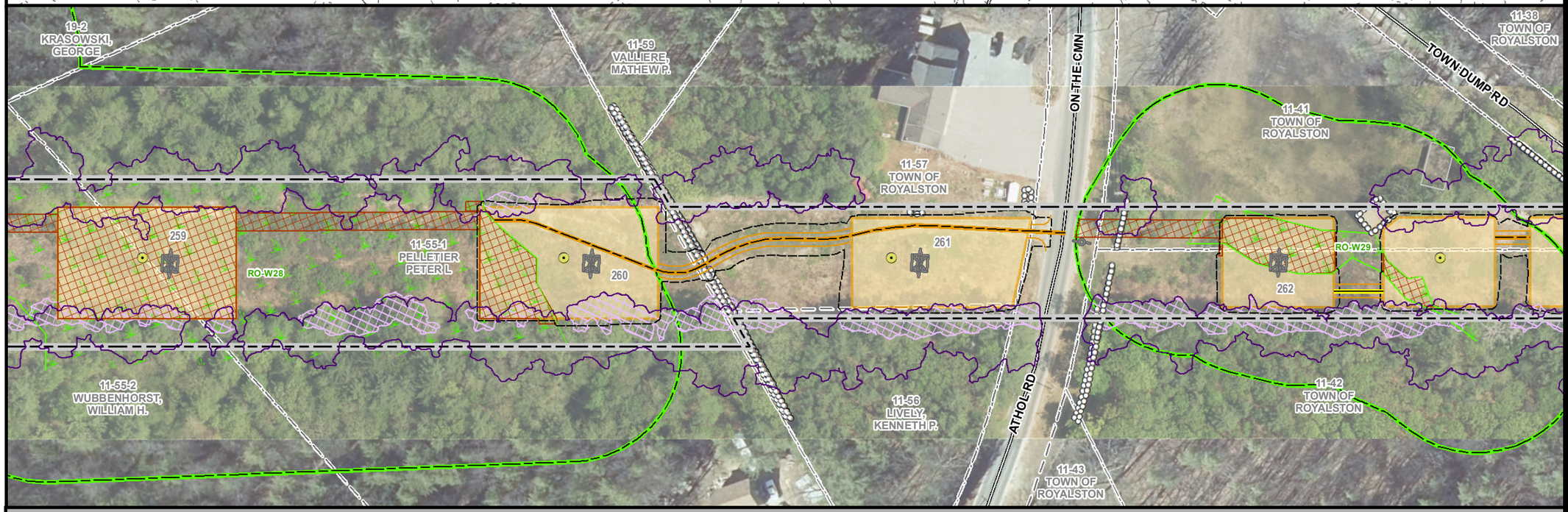
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 48 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

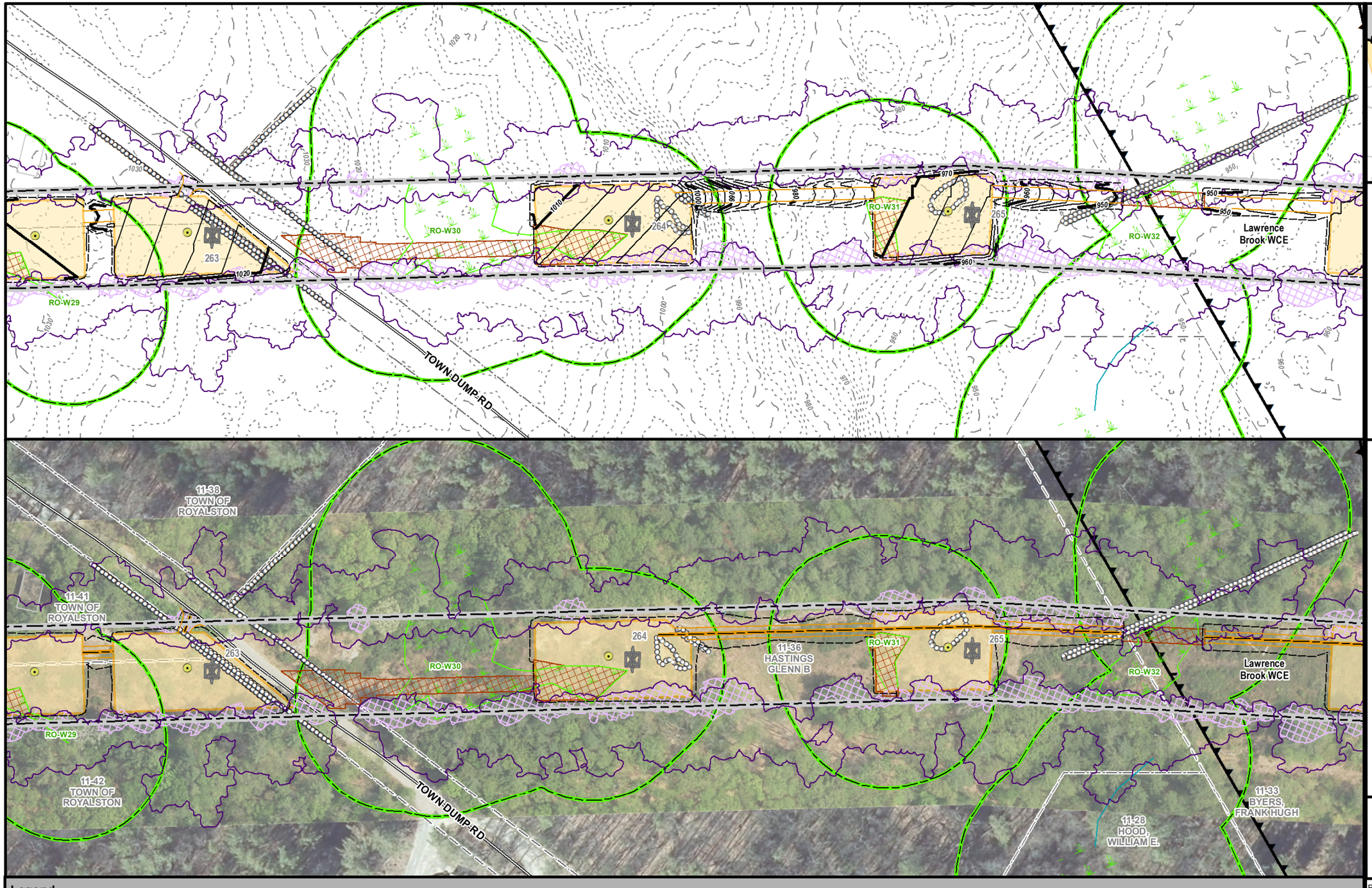
**Indicates Layers Set to Transparency*

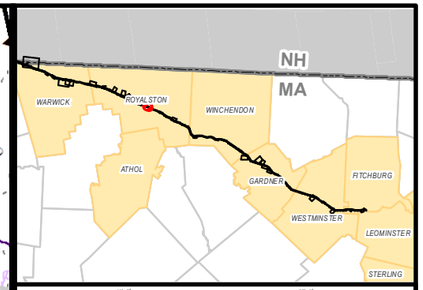
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

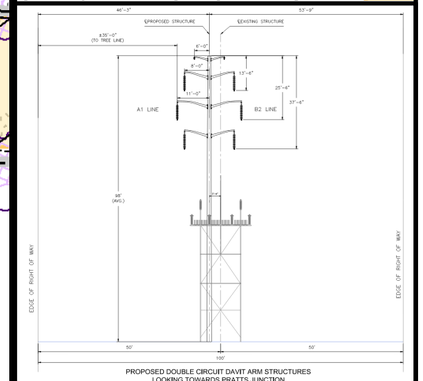
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 49 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

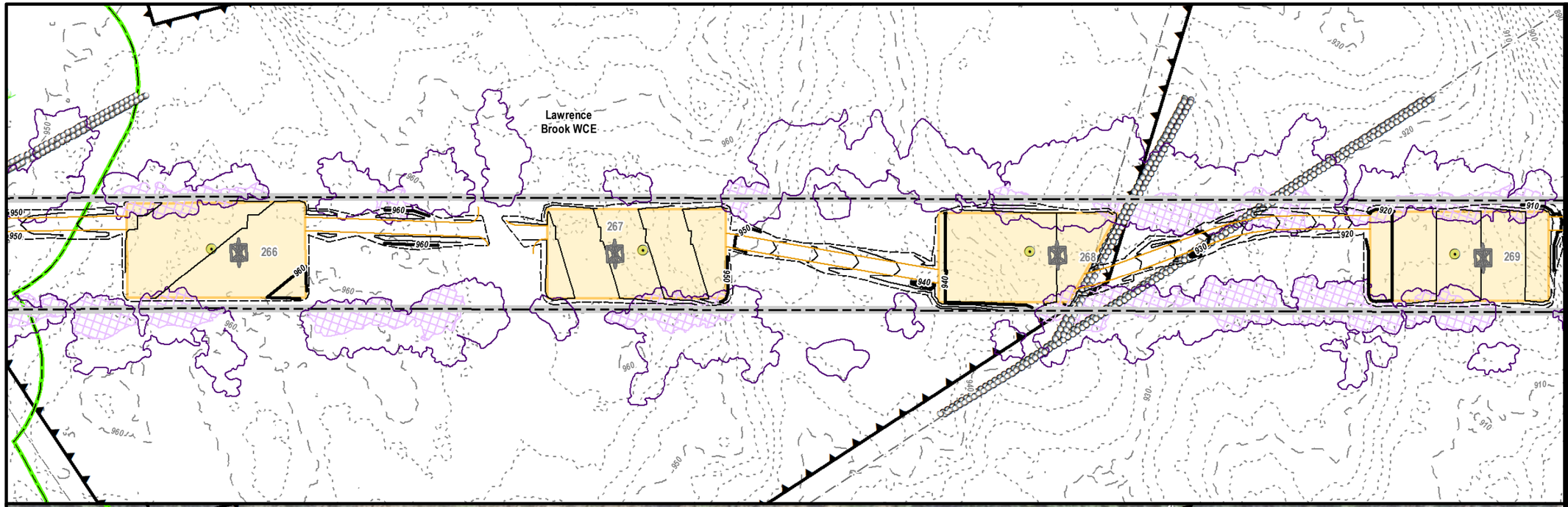
**Indicates Layers Set to Transparency*

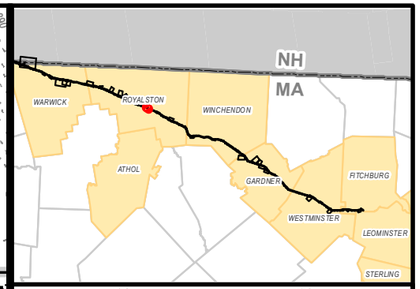
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

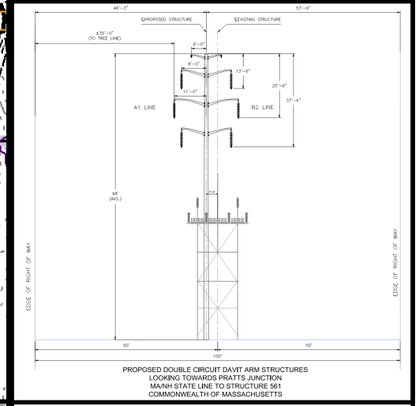
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

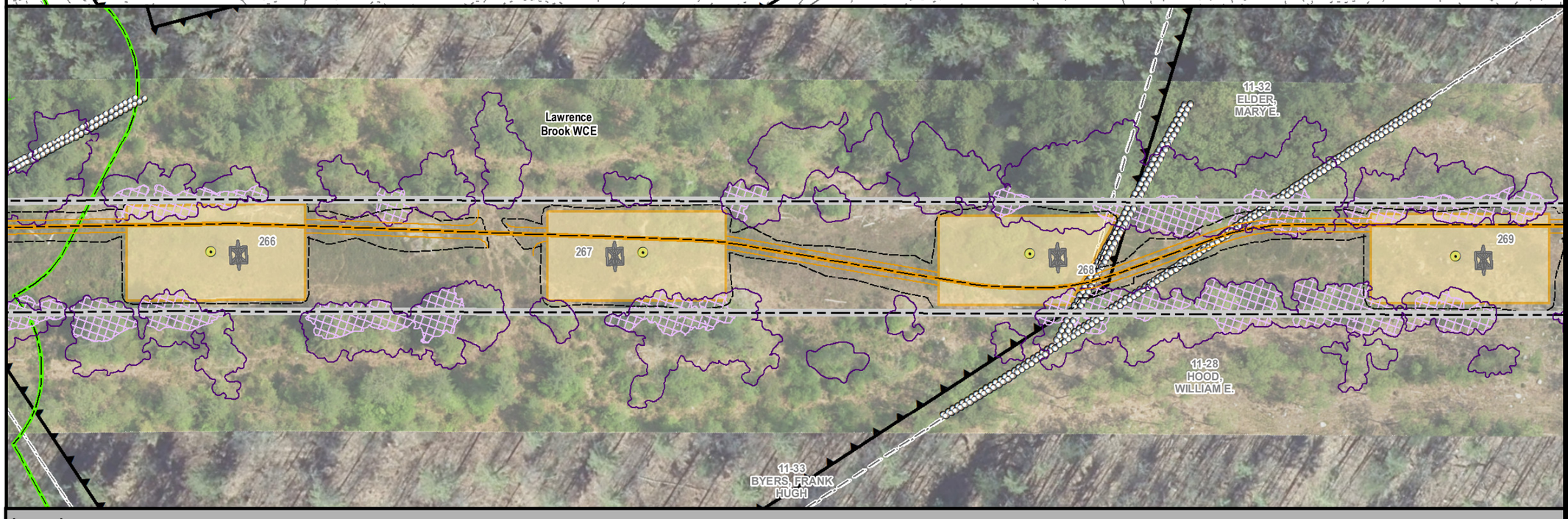
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 50 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

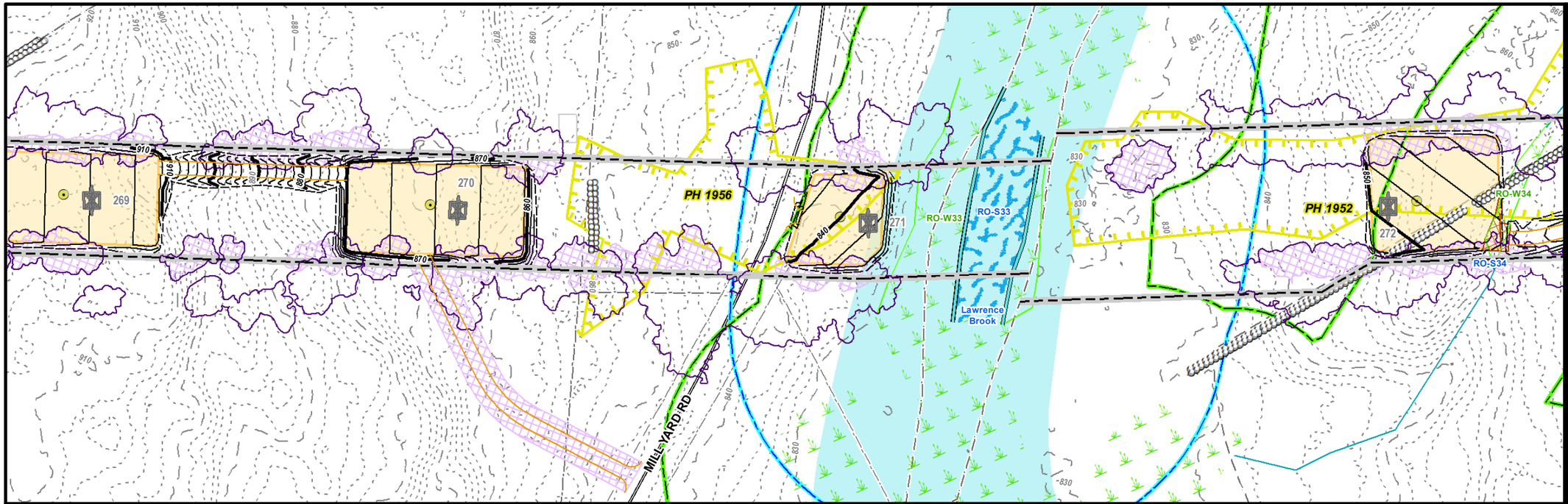
**Indicates Layers Set to Transparency*

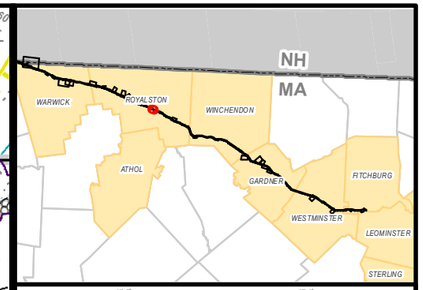
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

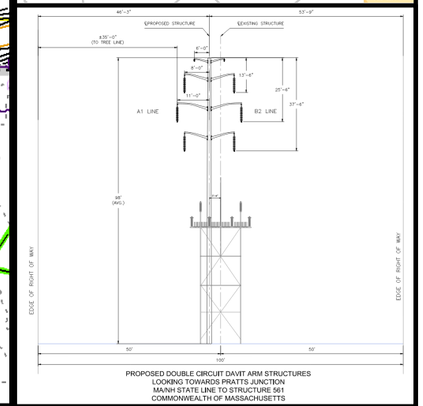
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 51 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

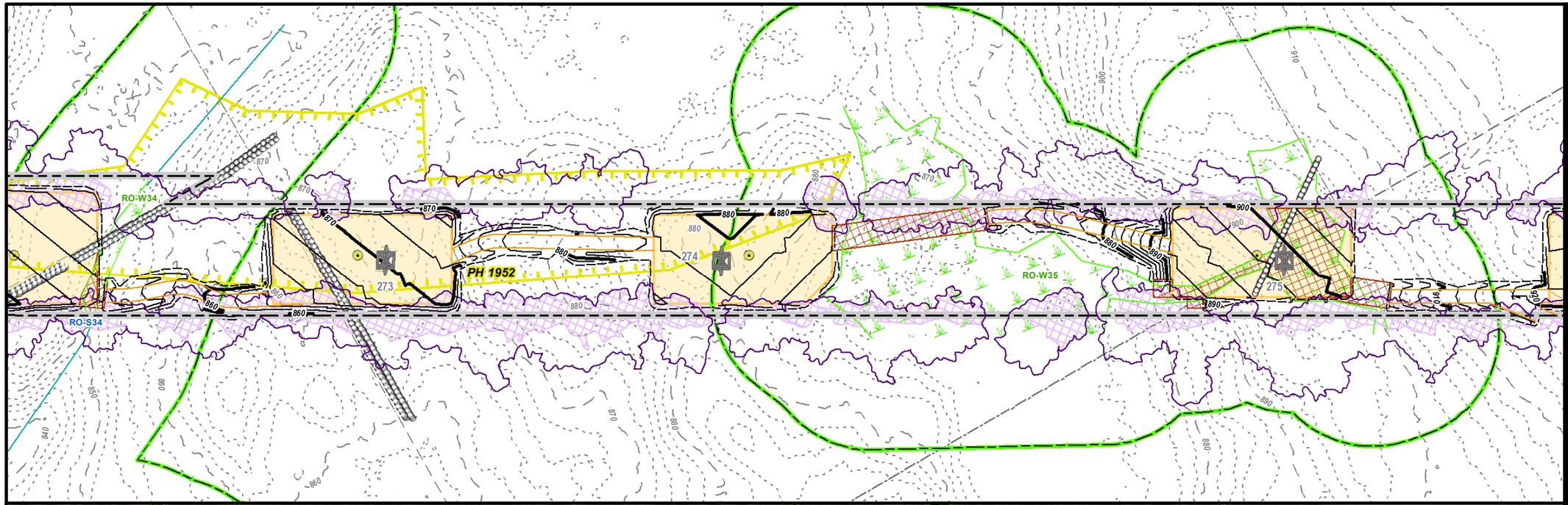
**Indicates Layers Set to Transparency*

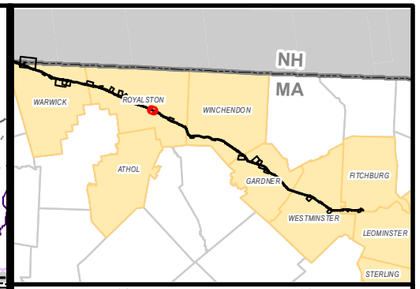
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

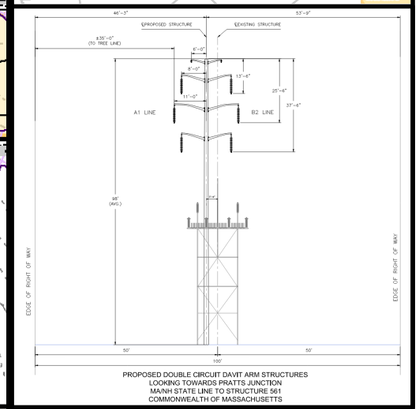
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 52 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

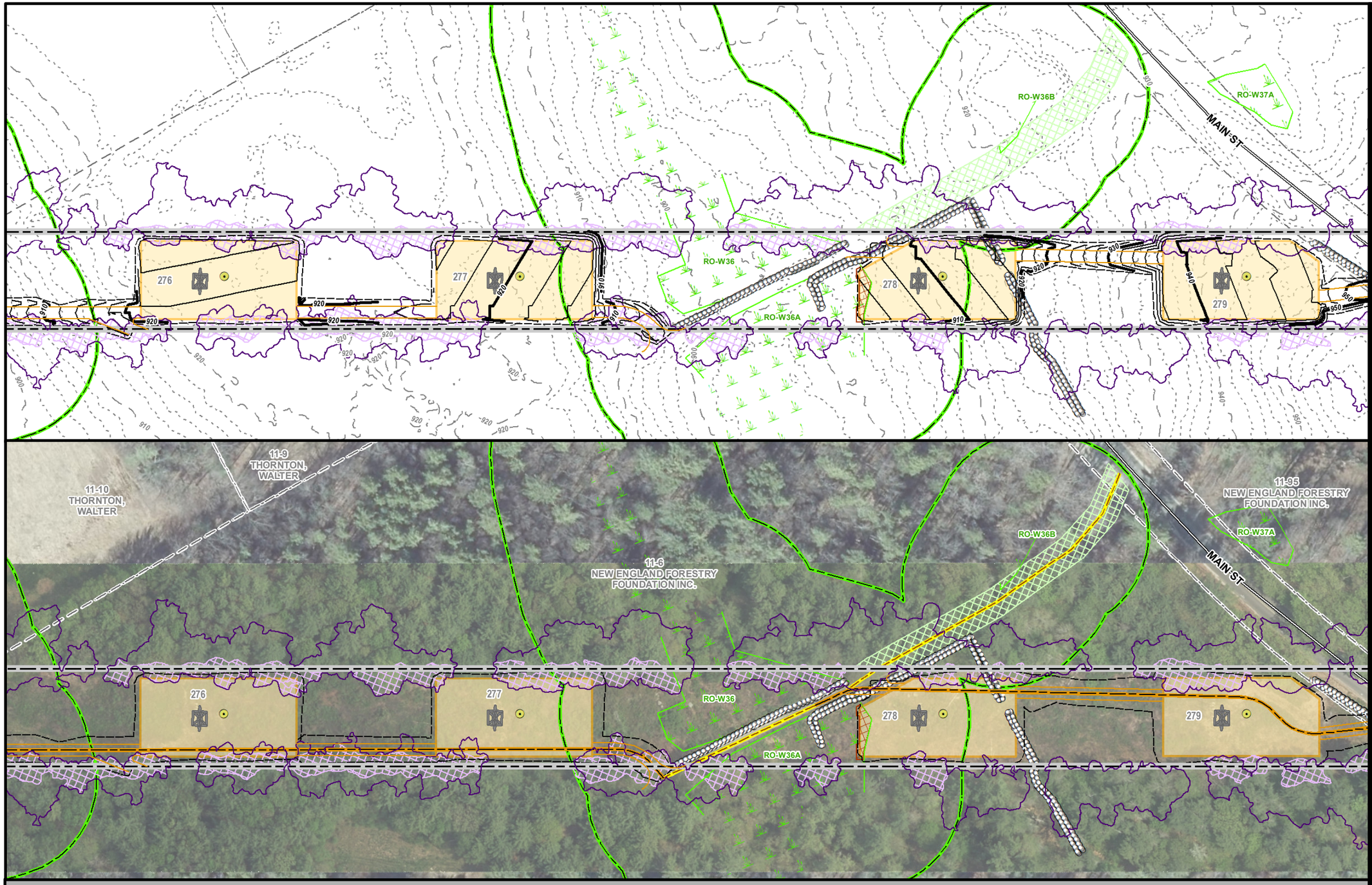
**Indicates Layers Set to Transparency*

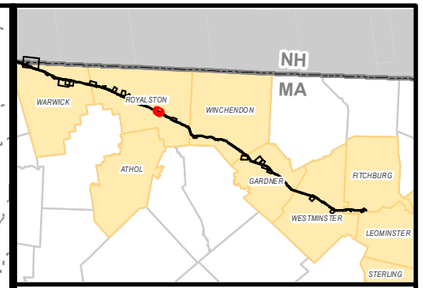
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

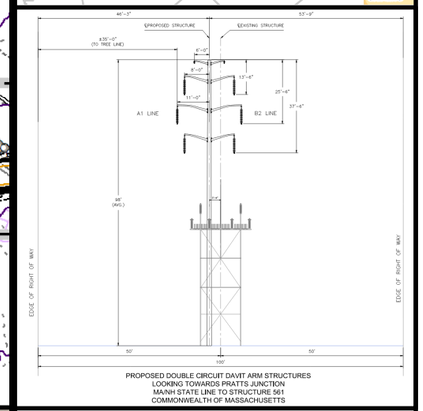
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 53 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

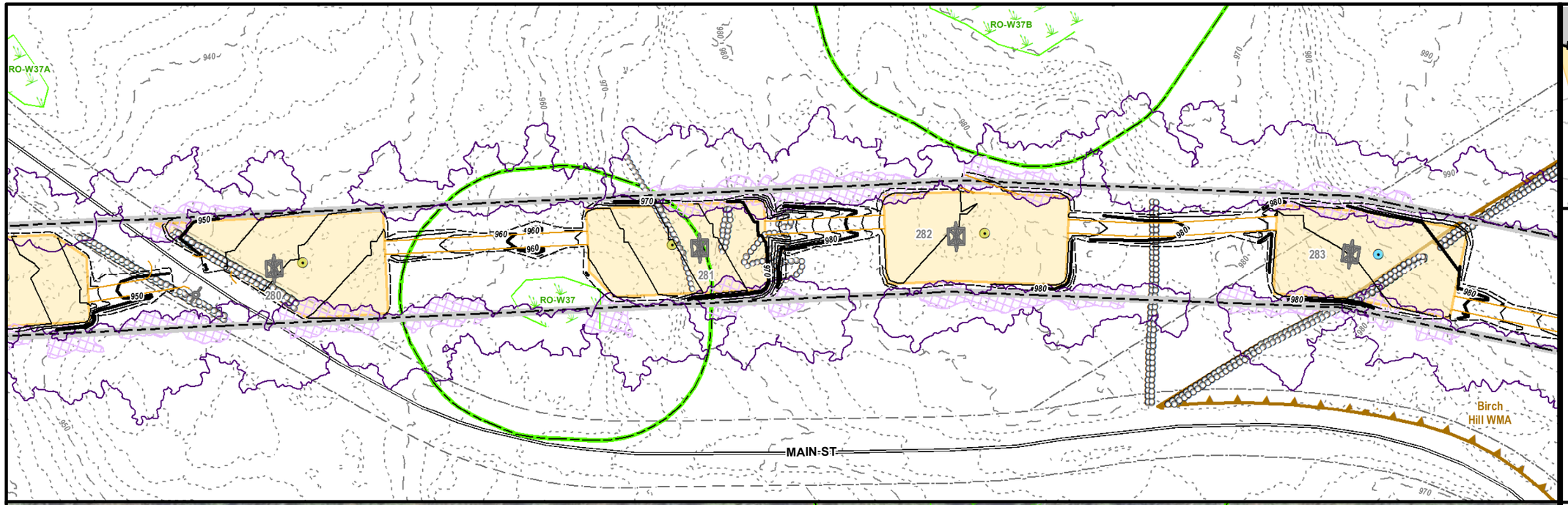
**Indicates Layers Set to Transparency*

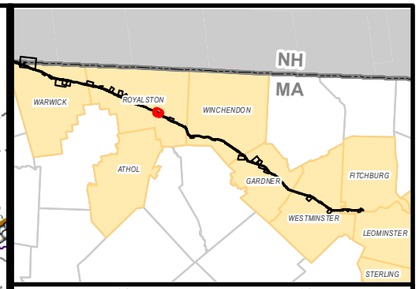
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

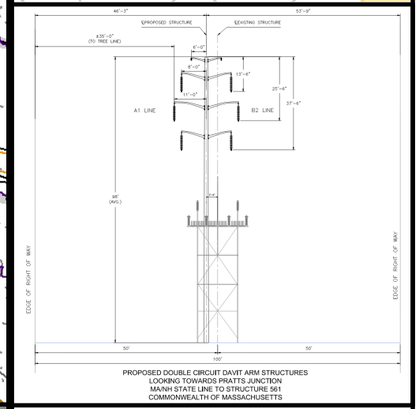
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

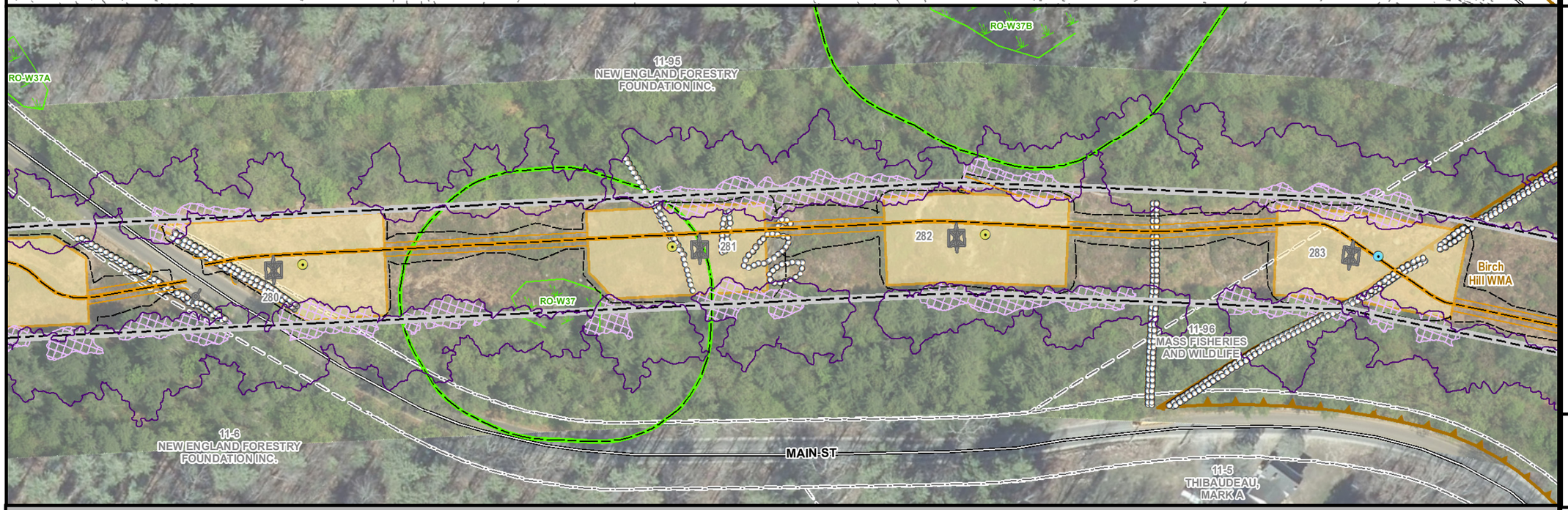
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 54 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

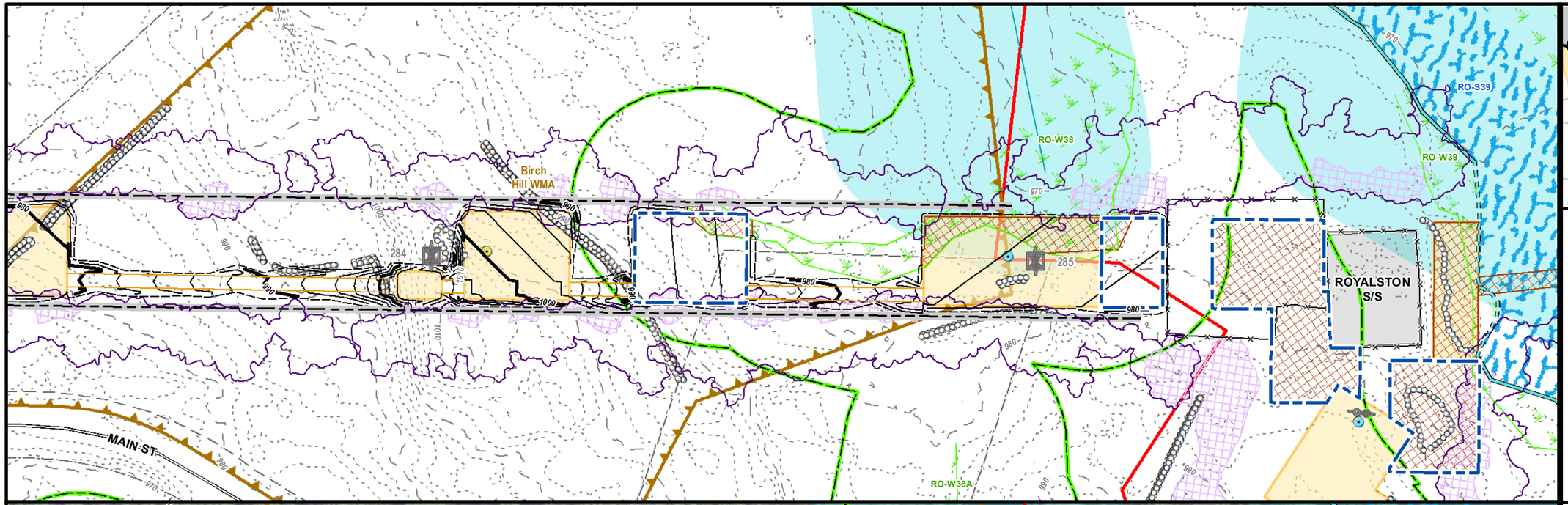
**Indicates Layers Set to Transparency*

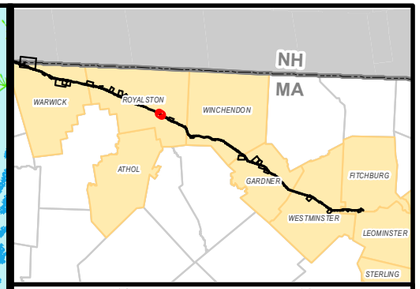
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

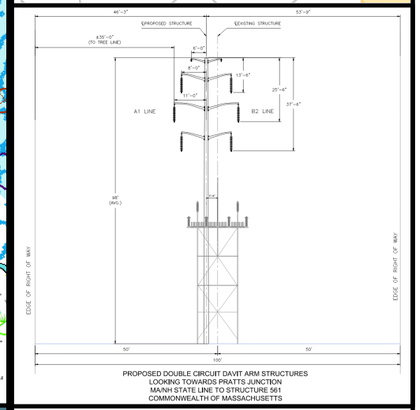
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

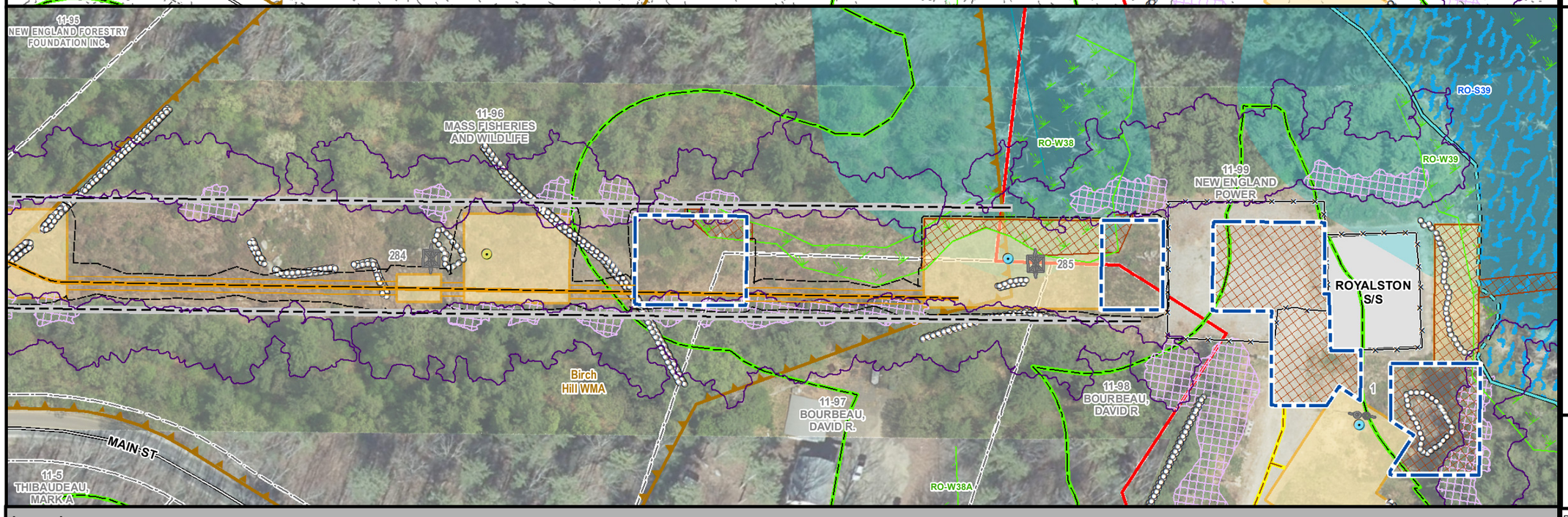
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 55 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.**

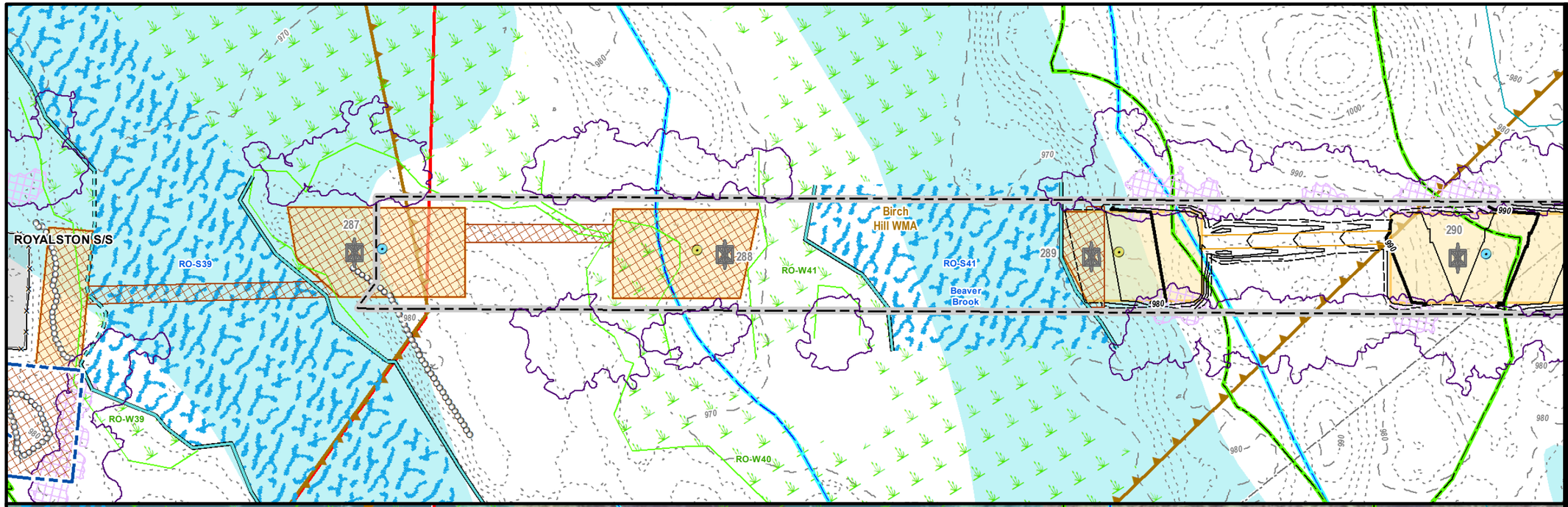
***Indicates Layers Set to Transparency**

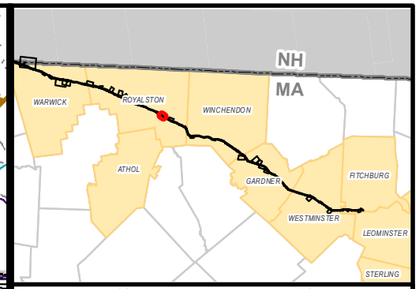
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

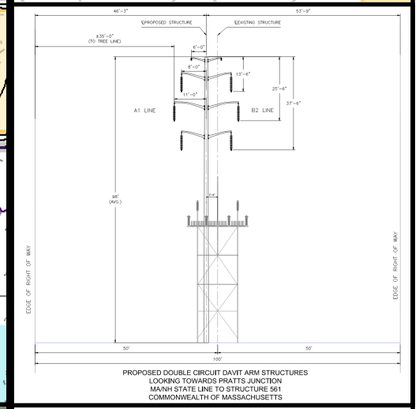
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

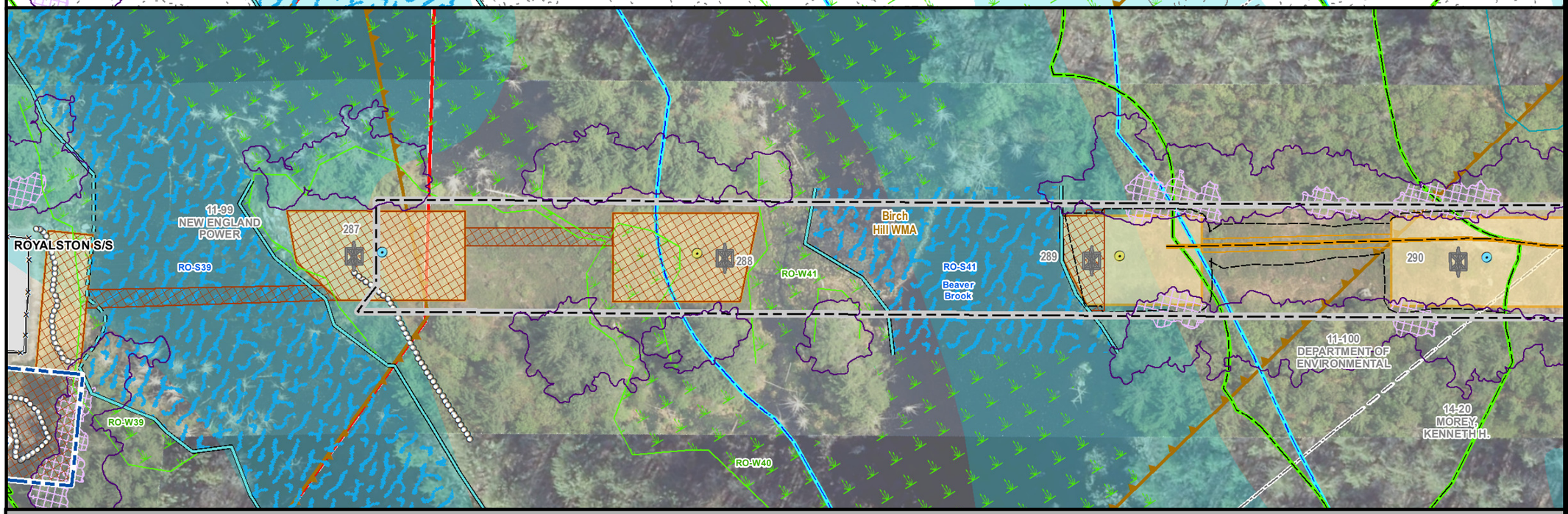
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 56 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.

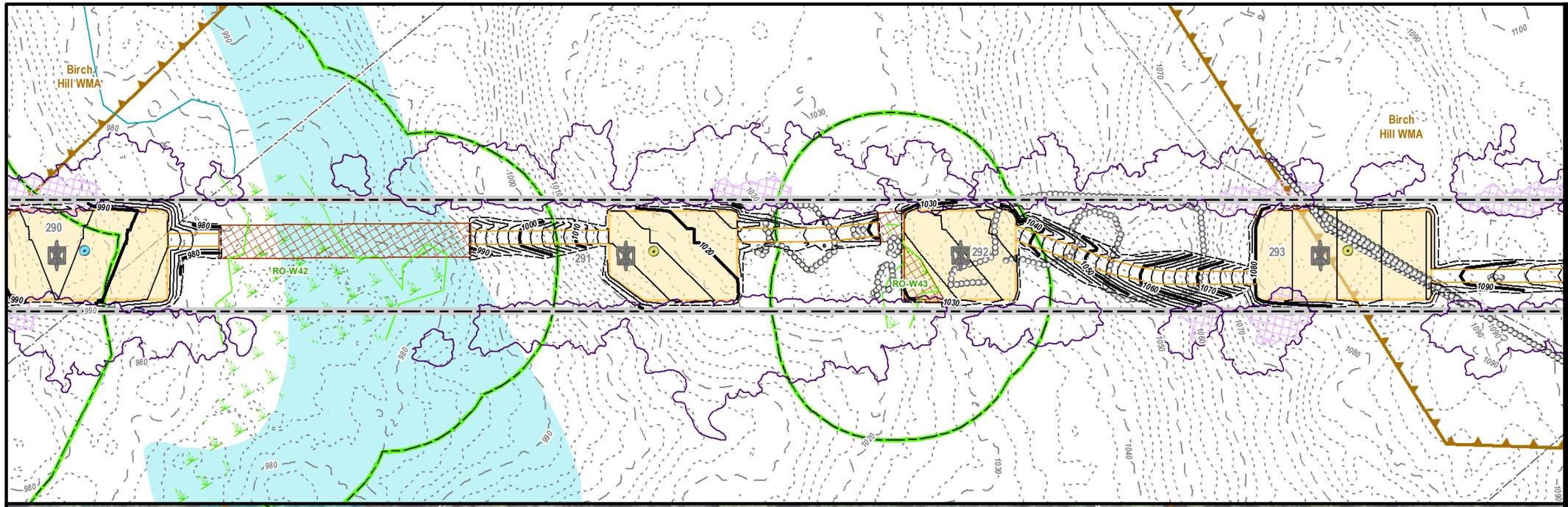
***Indicates Layers Set to Transparency**

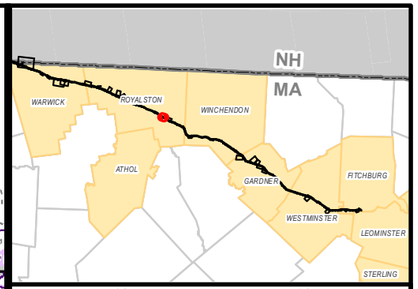
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

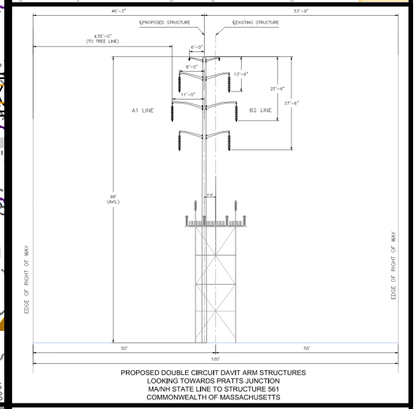
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 57 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

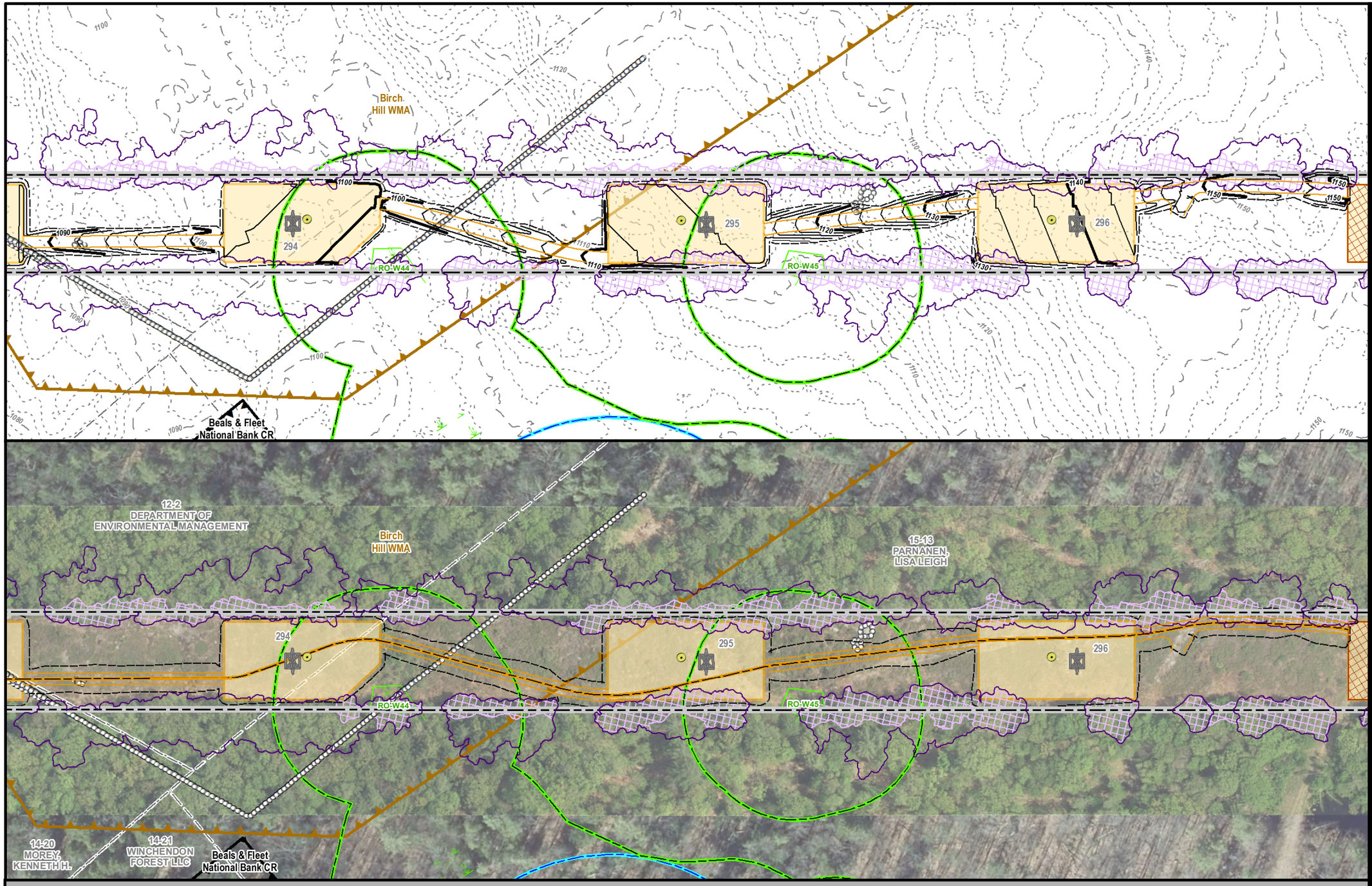
**Indicates Layers Set to Transparency*

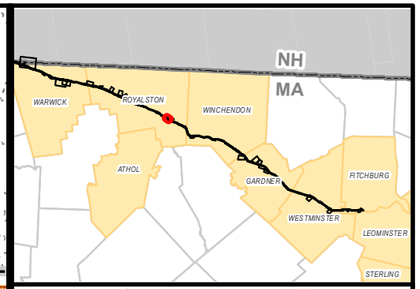
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

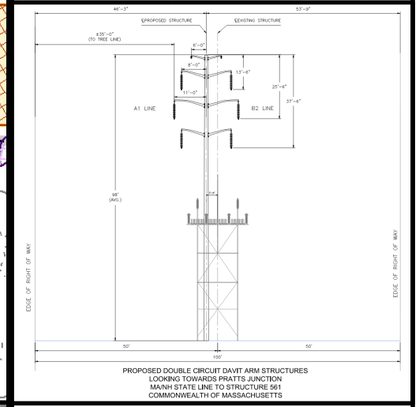
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 58 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

**Indicates Layers Set to Transparency*

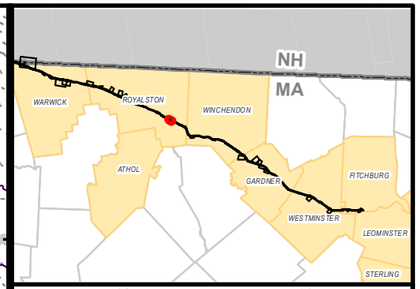
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

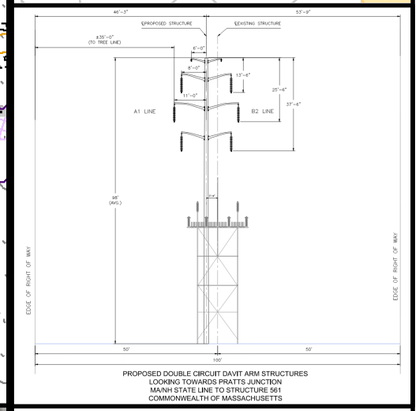
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 59 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

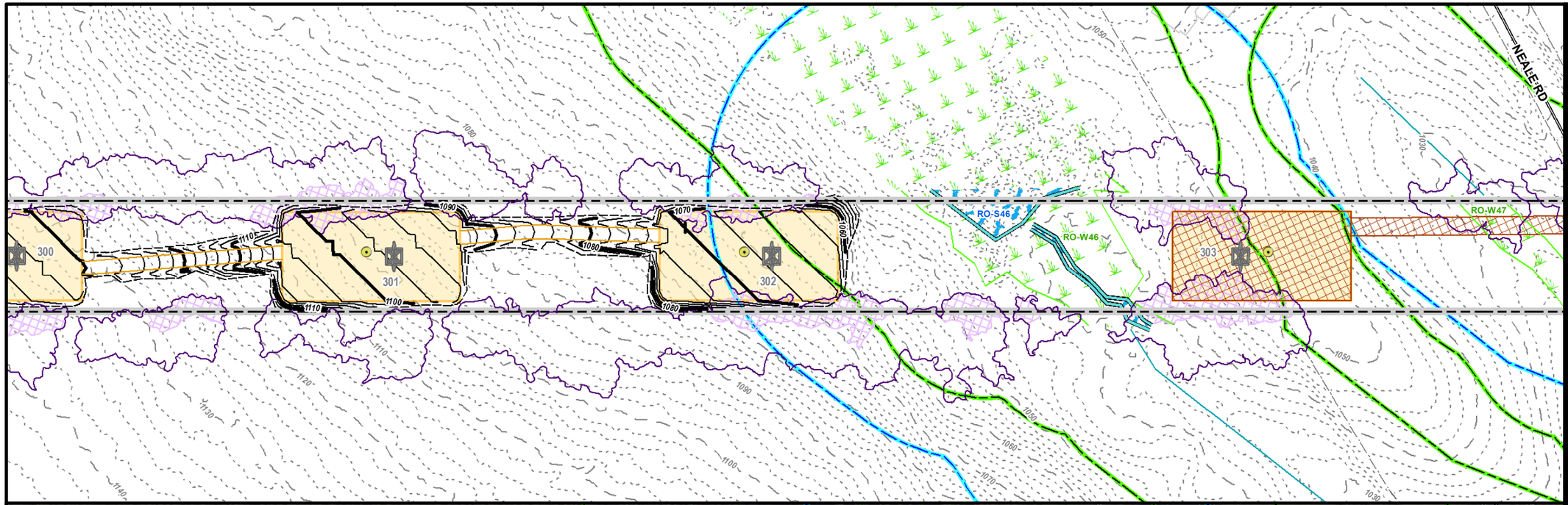
**Indicates Layers Set to Transparency*

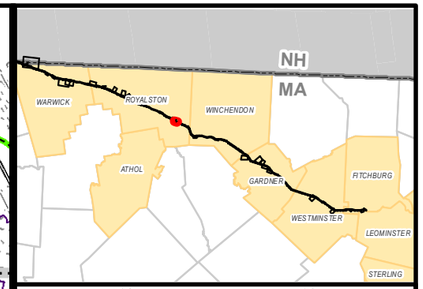
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

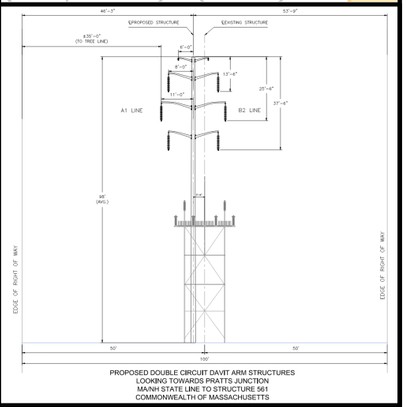
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

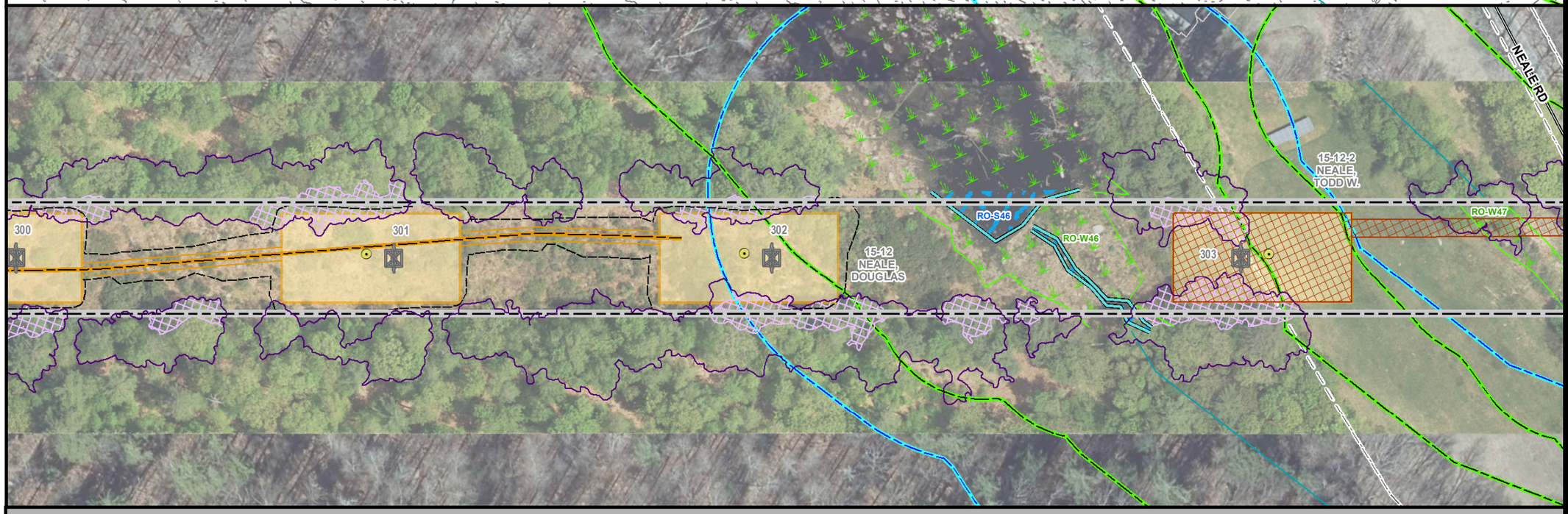
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 60 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

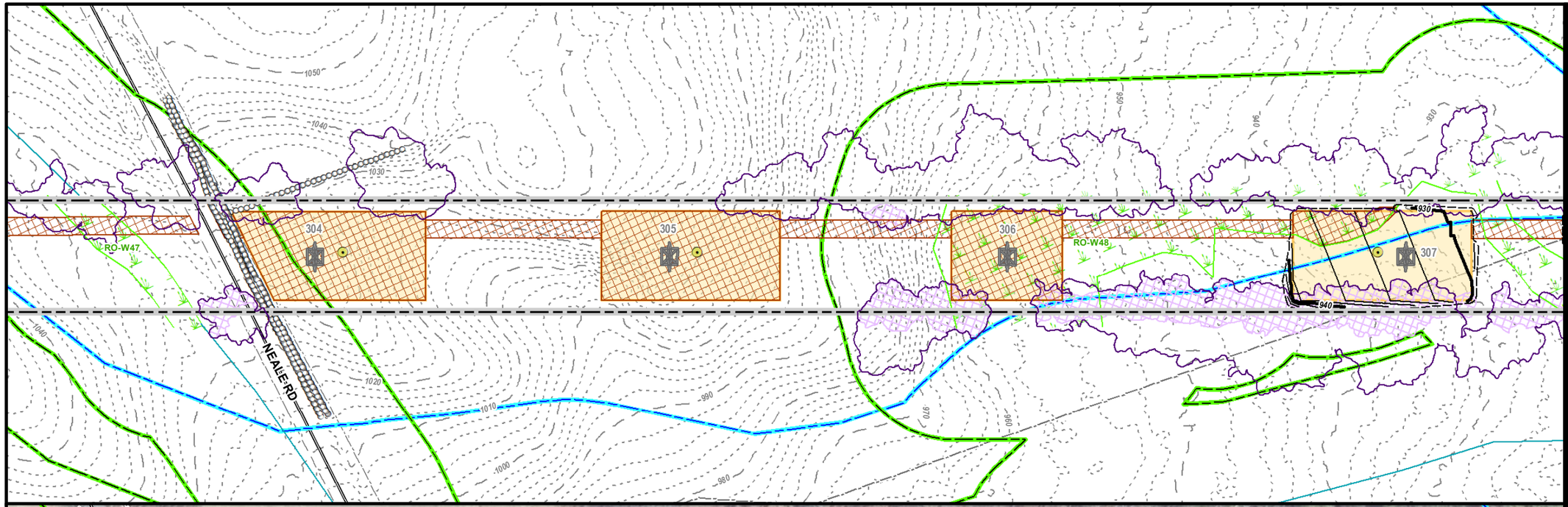
**Indicates Layers Set to Transparency*

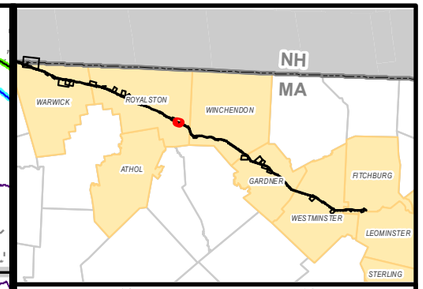
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

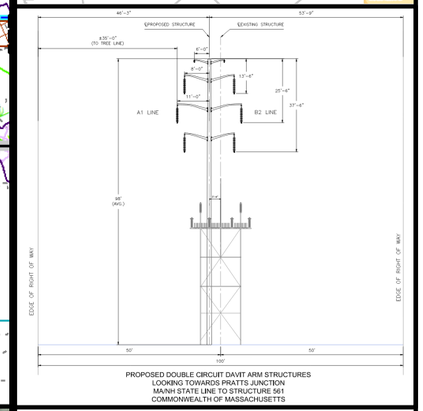
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

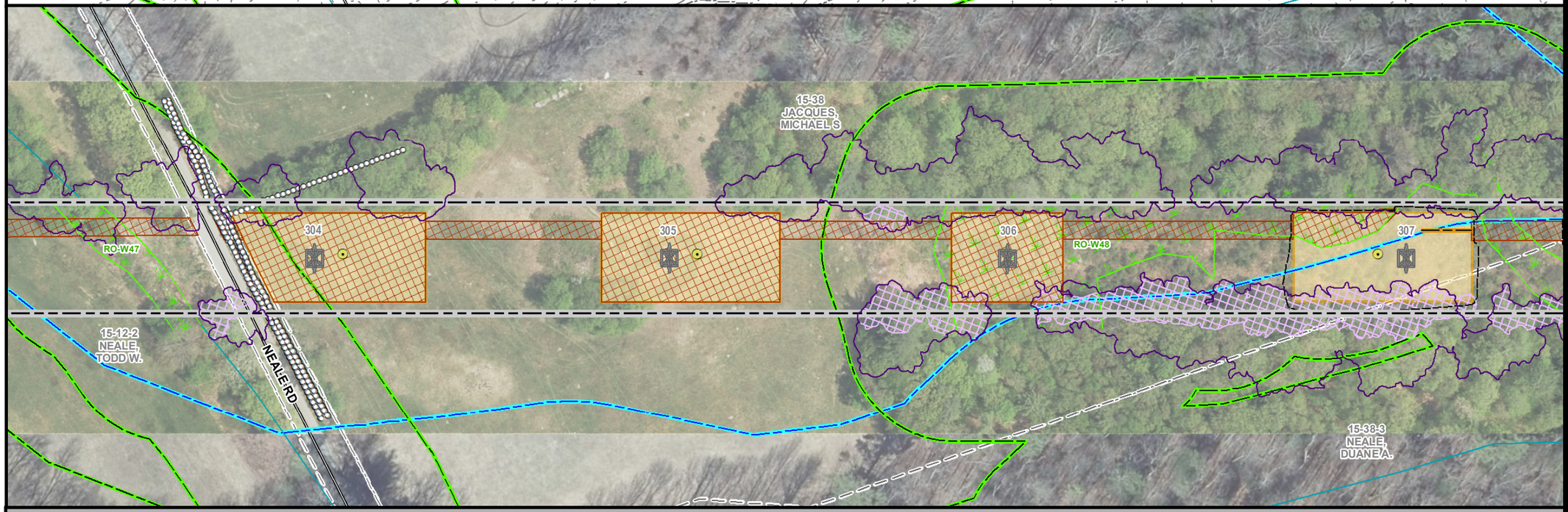
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 61 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

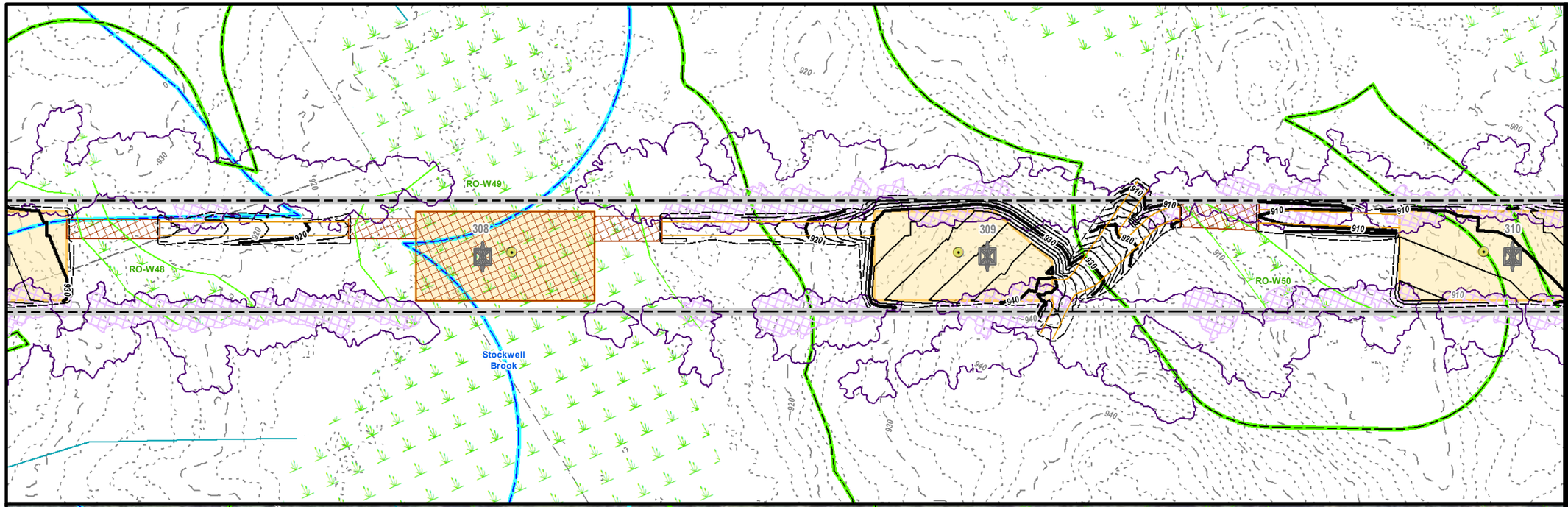
**Indicates Layers Set to Transparency*

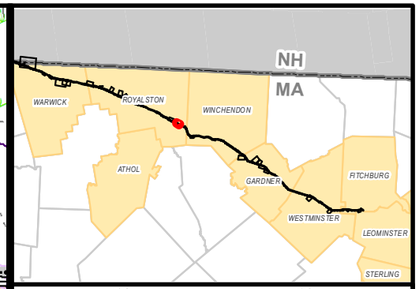
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

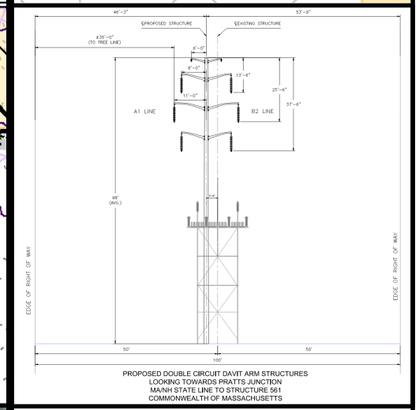
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

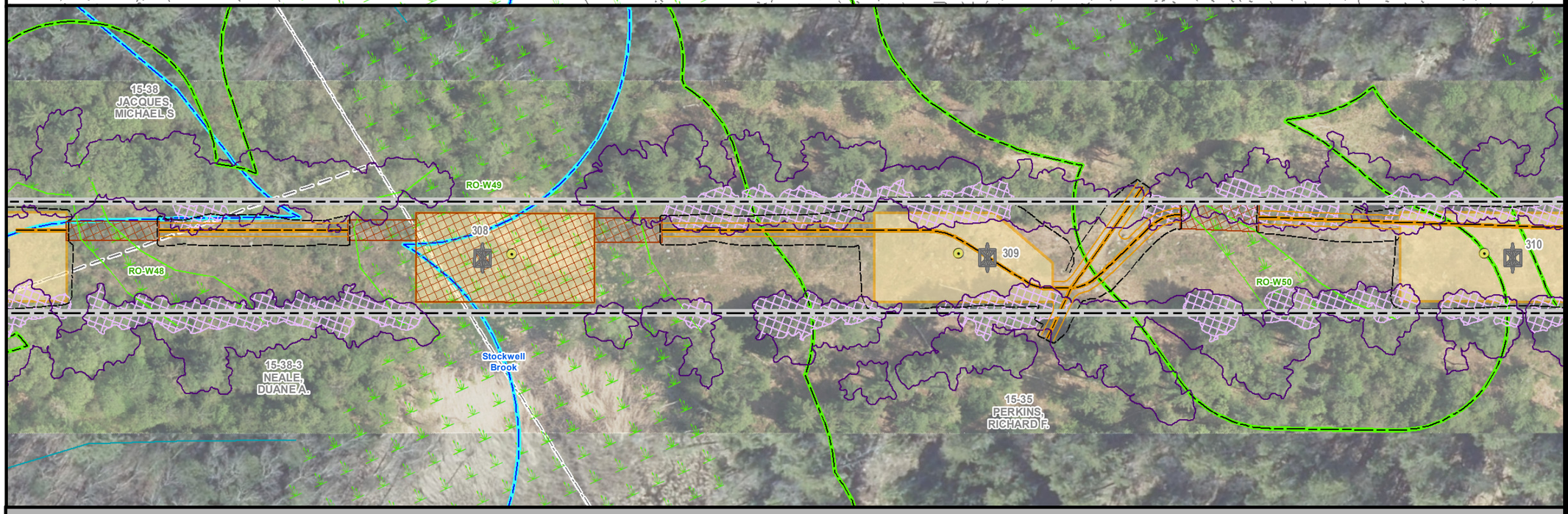
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 62 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

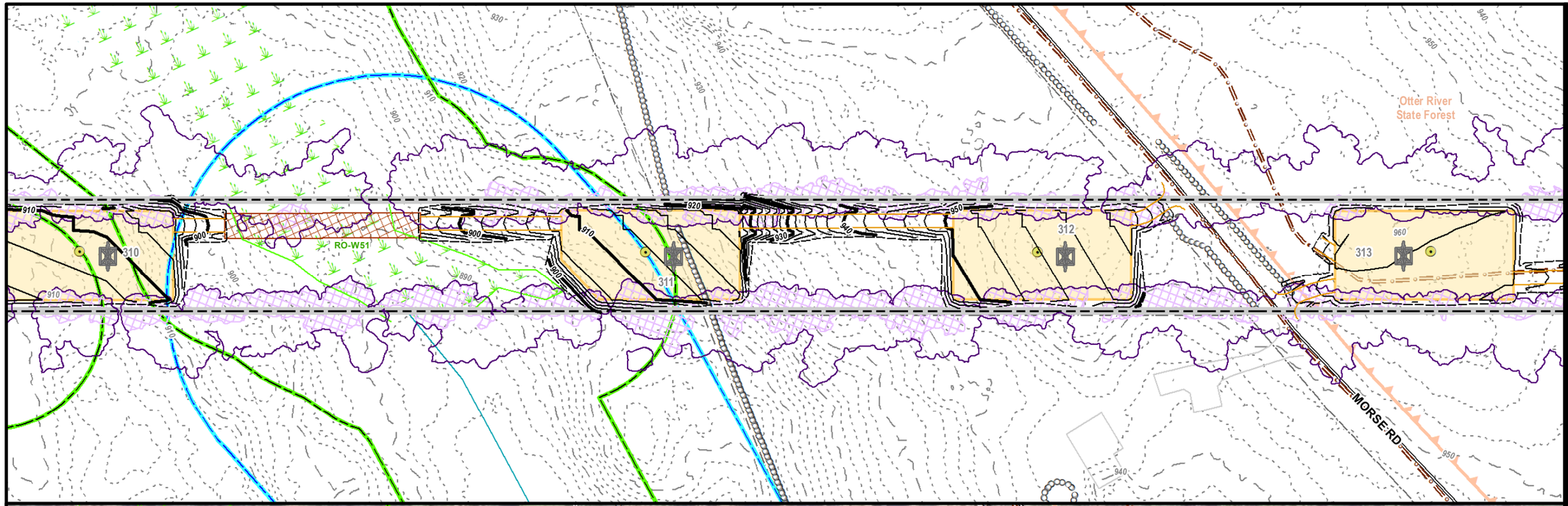
**Indicates Layers Set to Transparency*

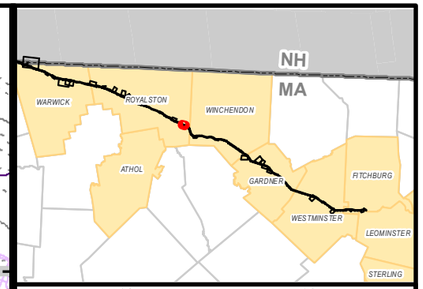
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

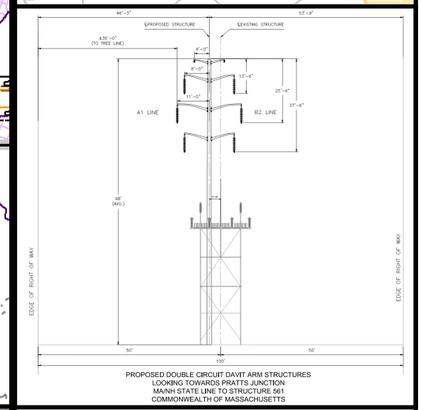
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

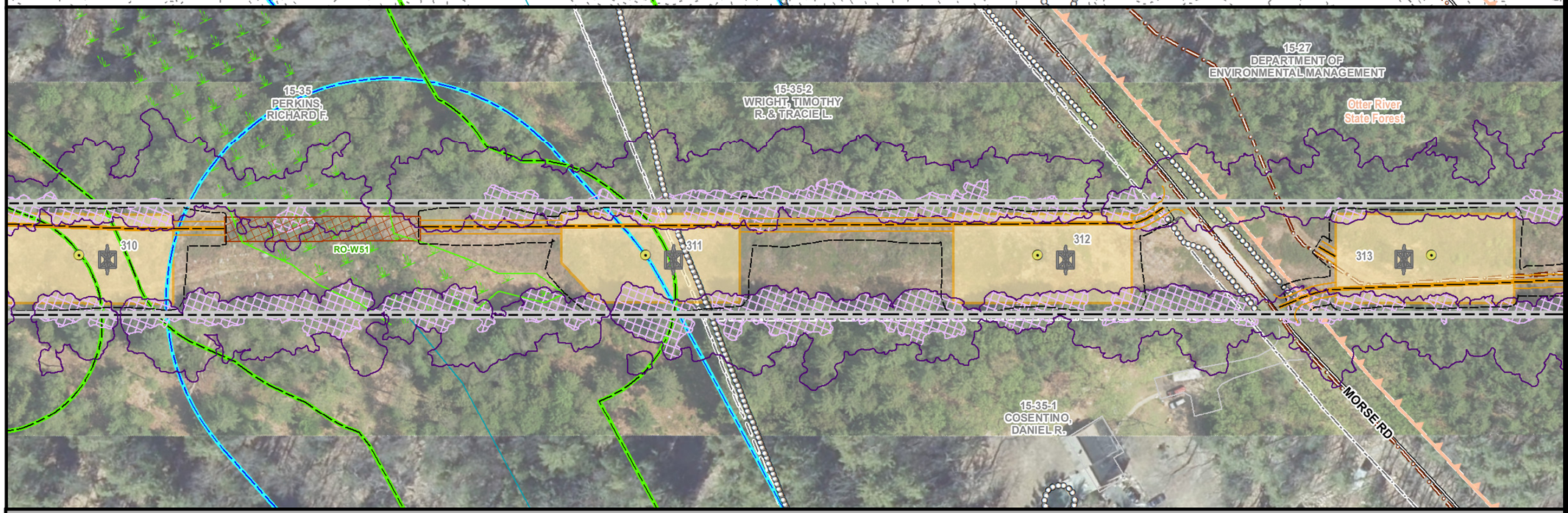
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 63 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

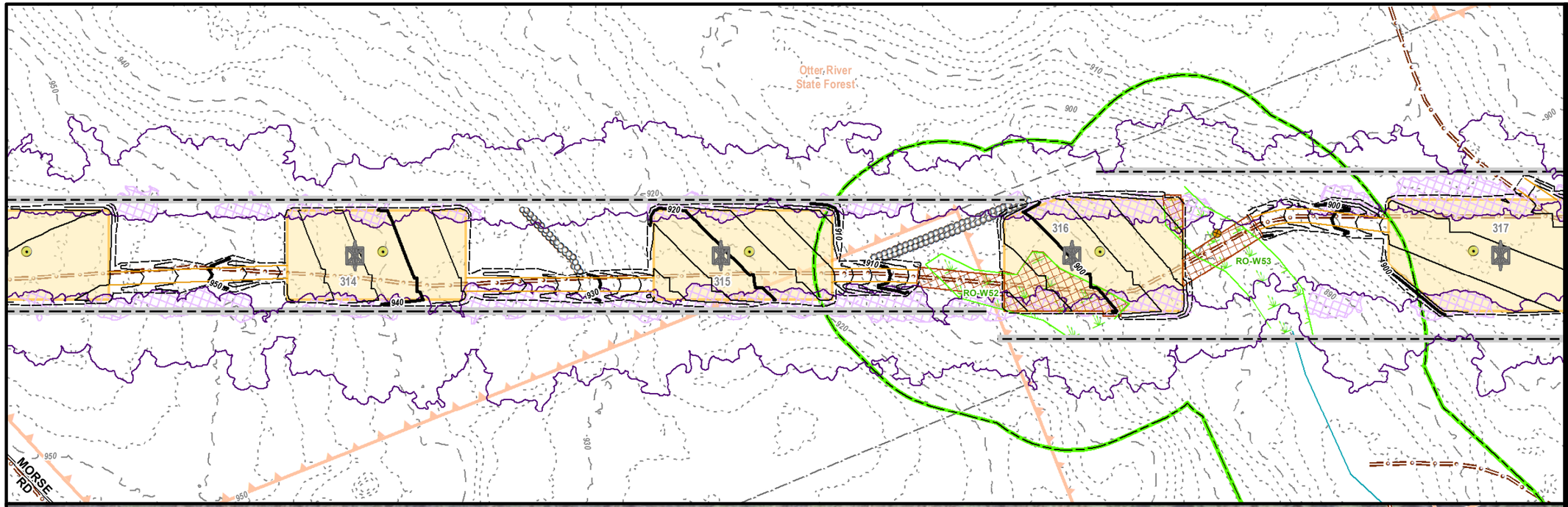
**Indicates Layers Set to Transparency*

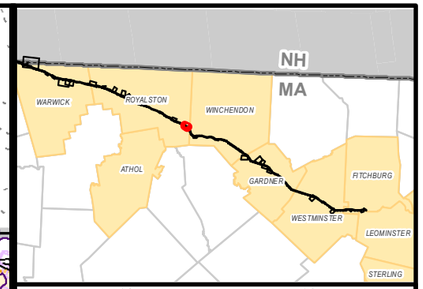
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

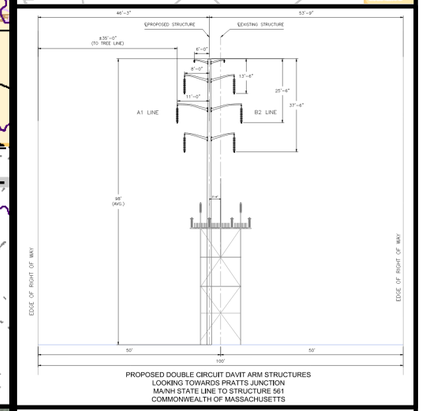
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

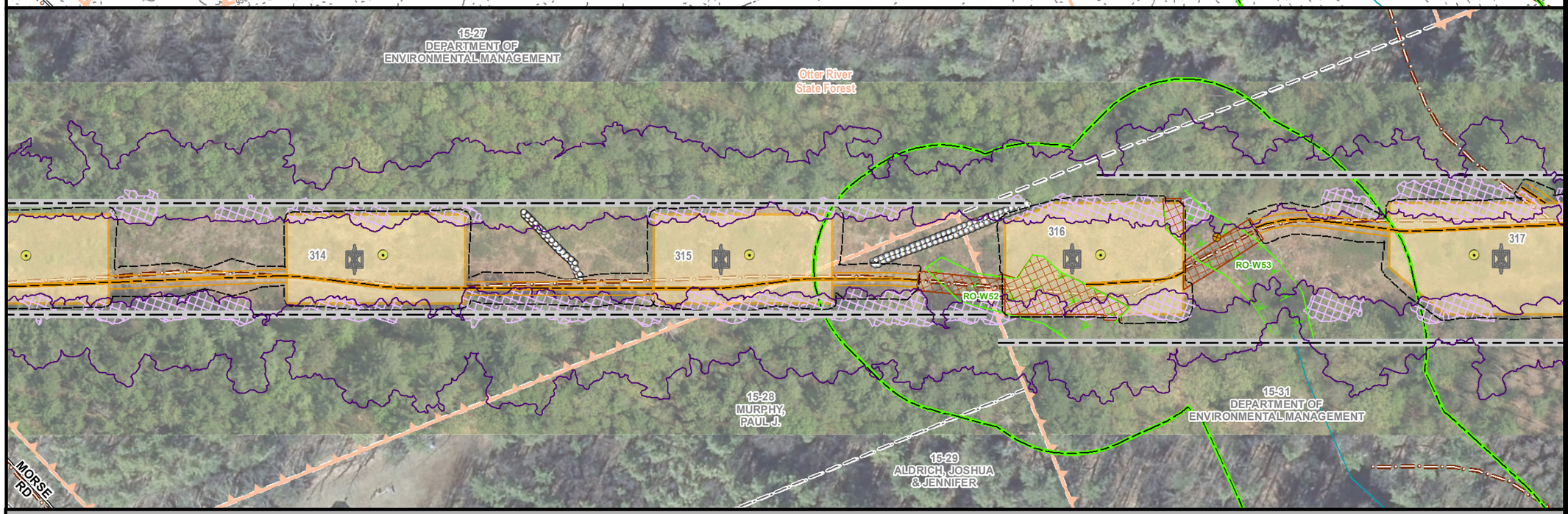
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 64 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

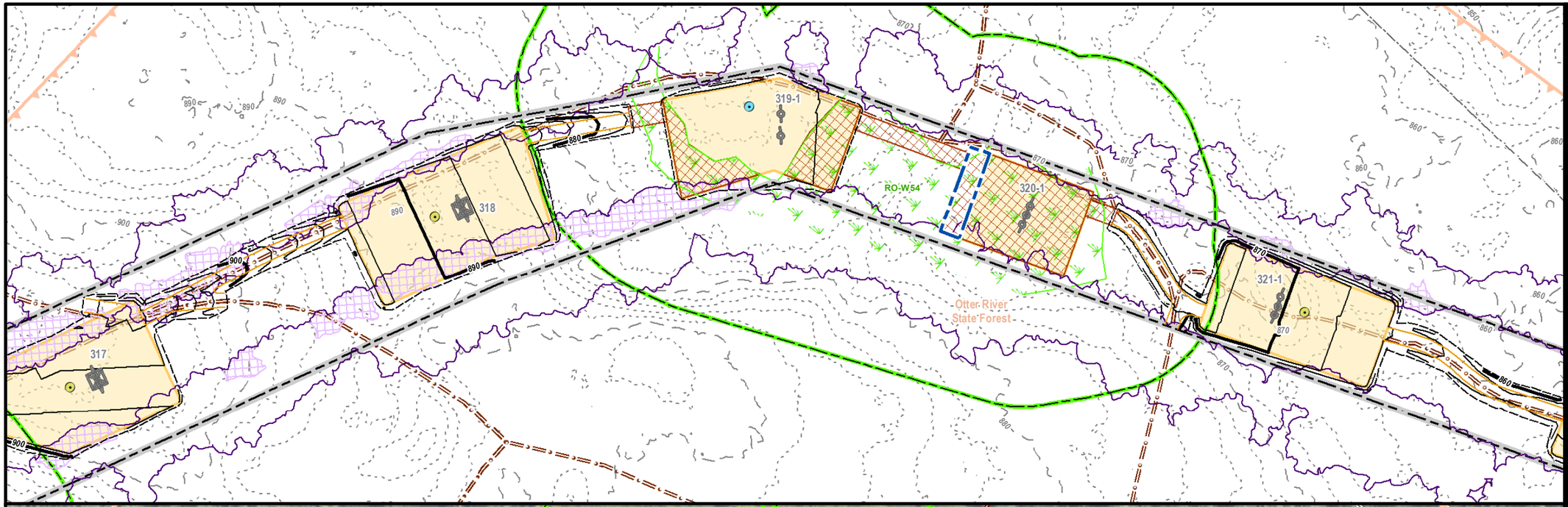
**Indicates Layers Set to Transparency*

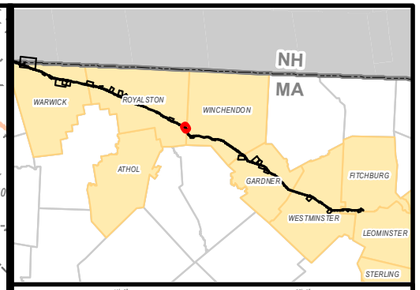
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

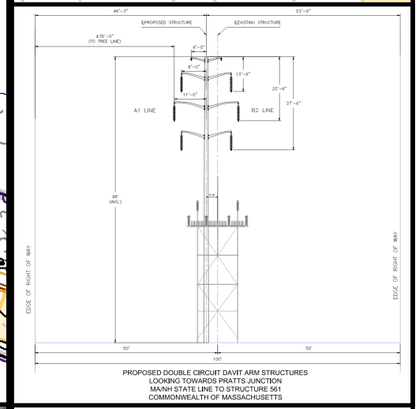
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

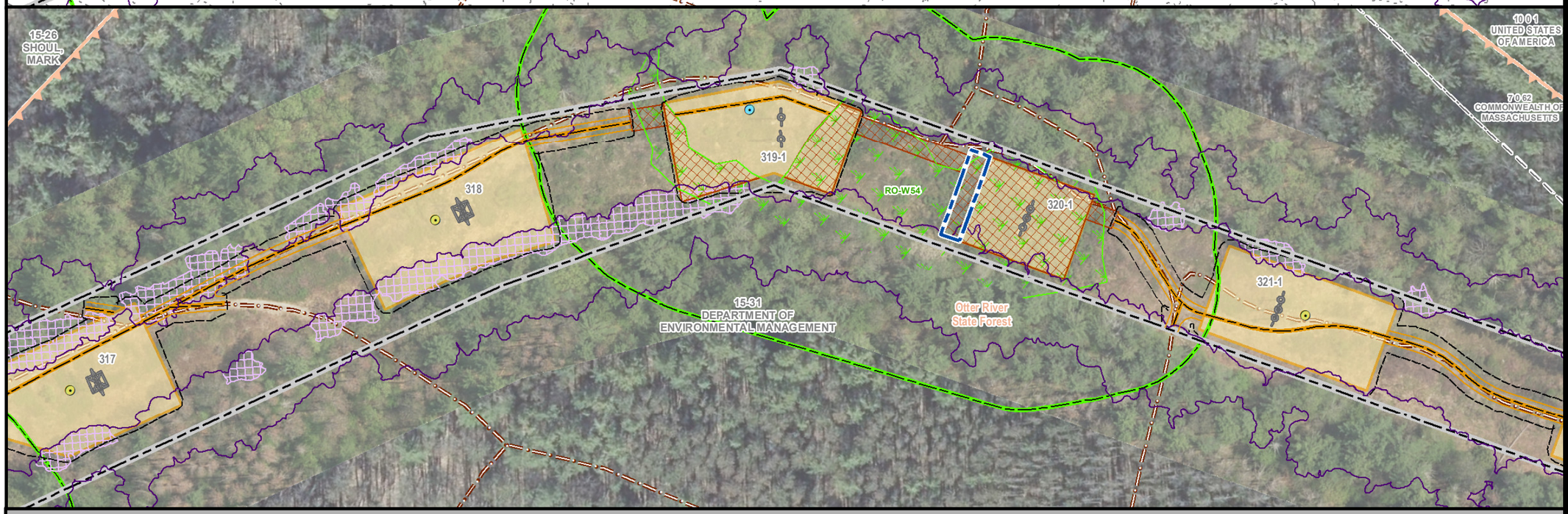
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON &
WINCHENDON, MA
PAGE 65 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

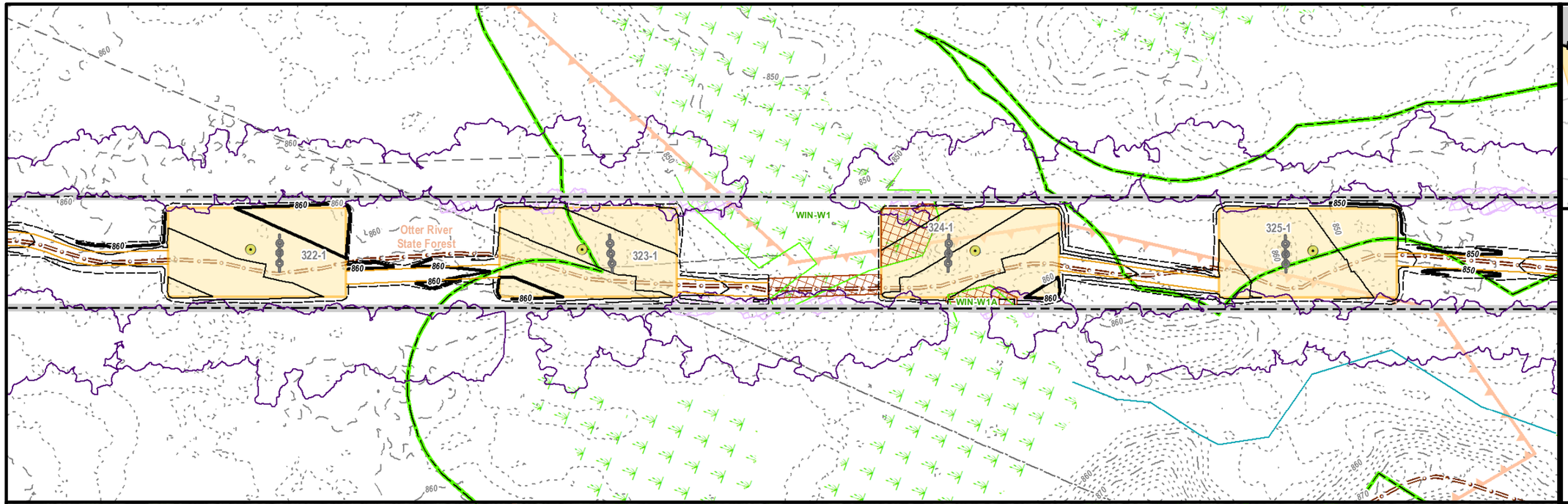
**Indicates Layers Set to Transparency*

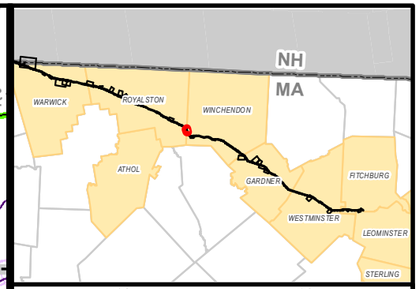
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

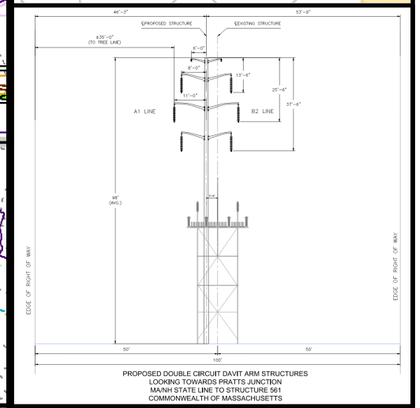
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

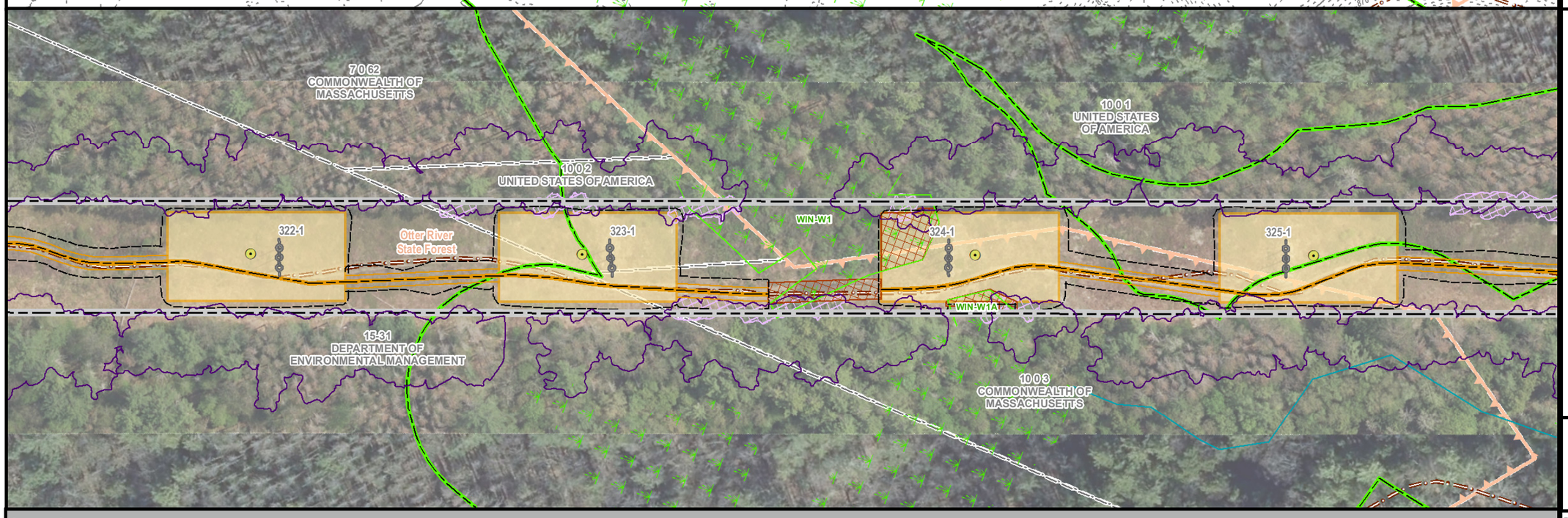
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON & WINCHENDON, MA
PAGE 66 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

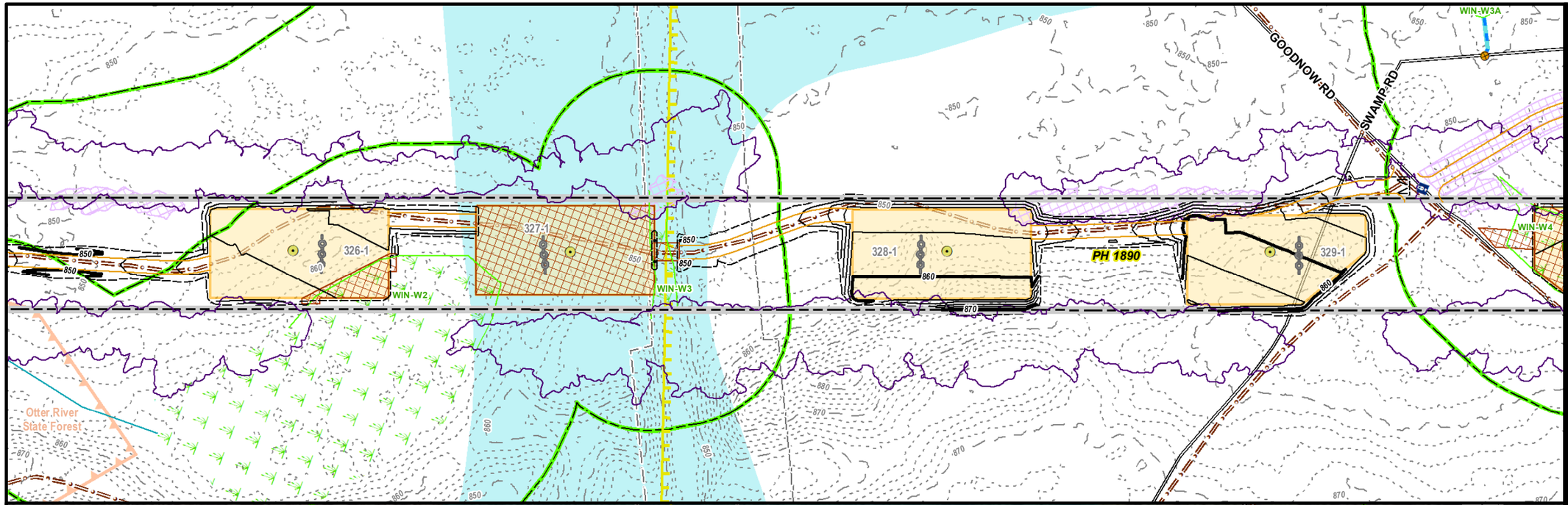
**Indicates Layers Set to Transparency*

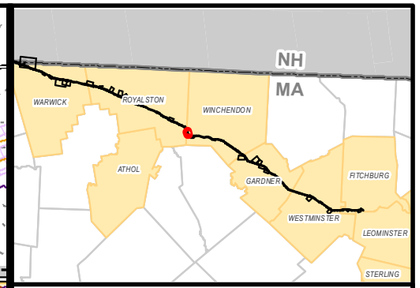
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

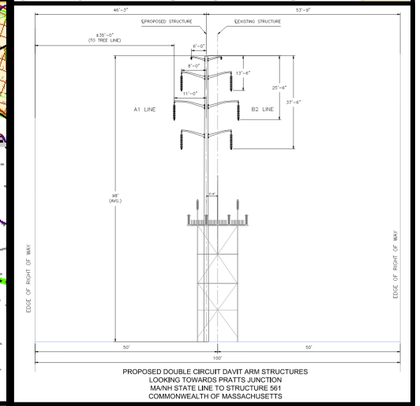
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 67 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

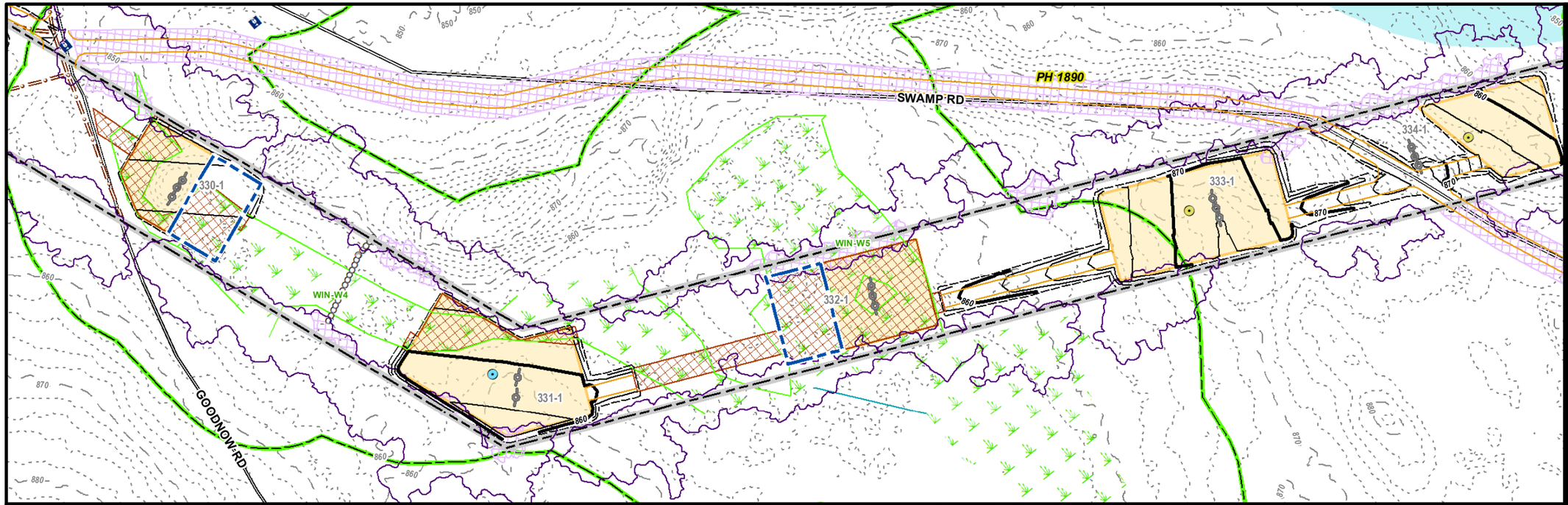
**Indicates Layers Set to Transparency*

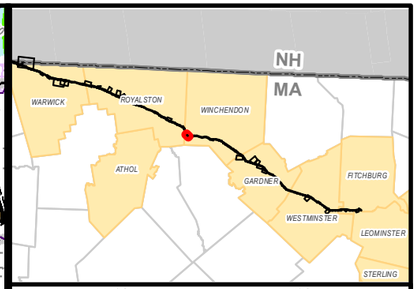
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

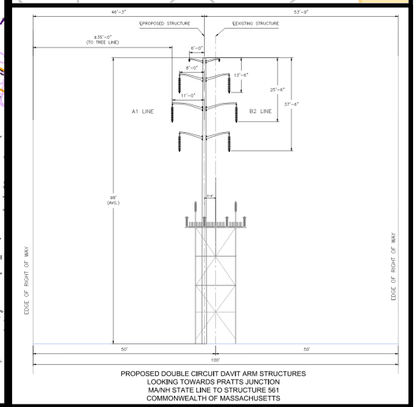
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

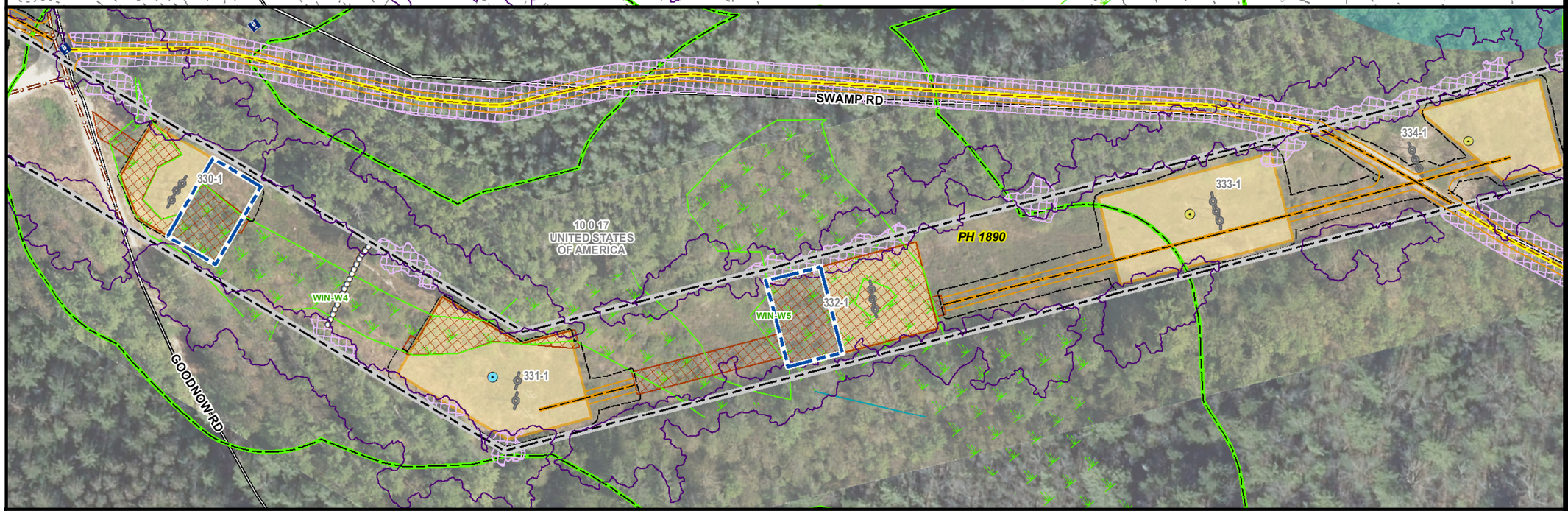
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 68 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

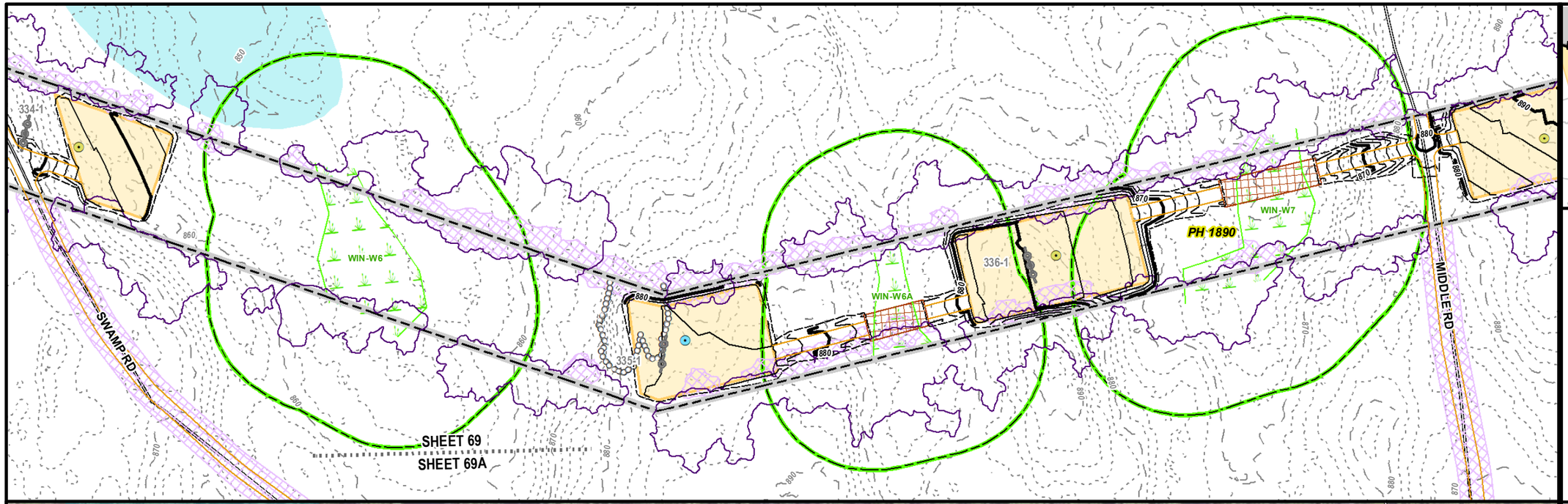
**Indicates Layers Set to Transparency*

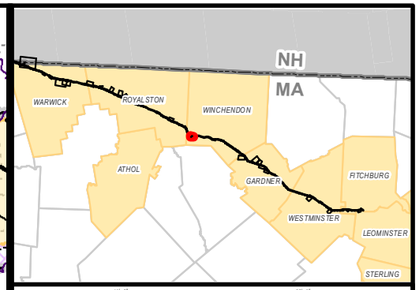
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

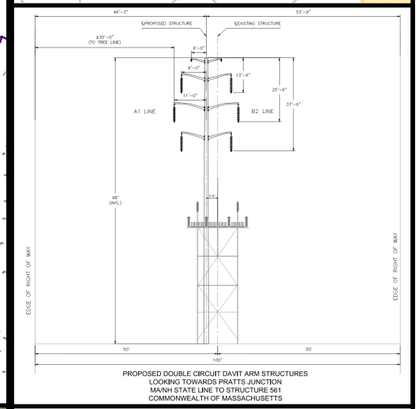
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







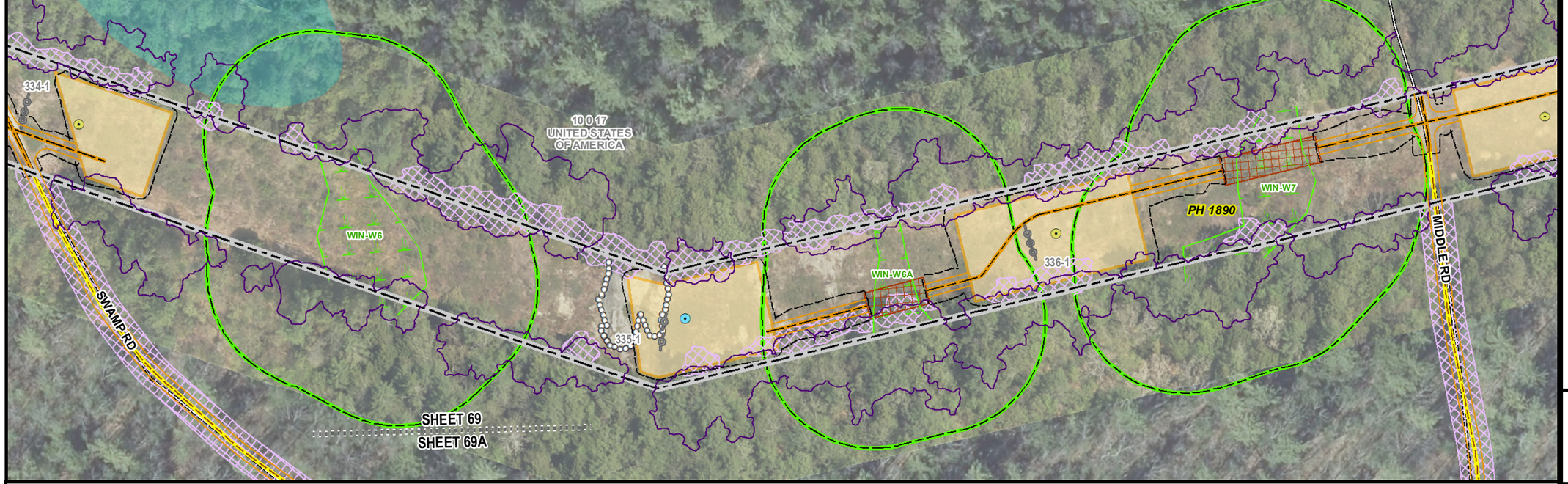
PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 69 OF 137



1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

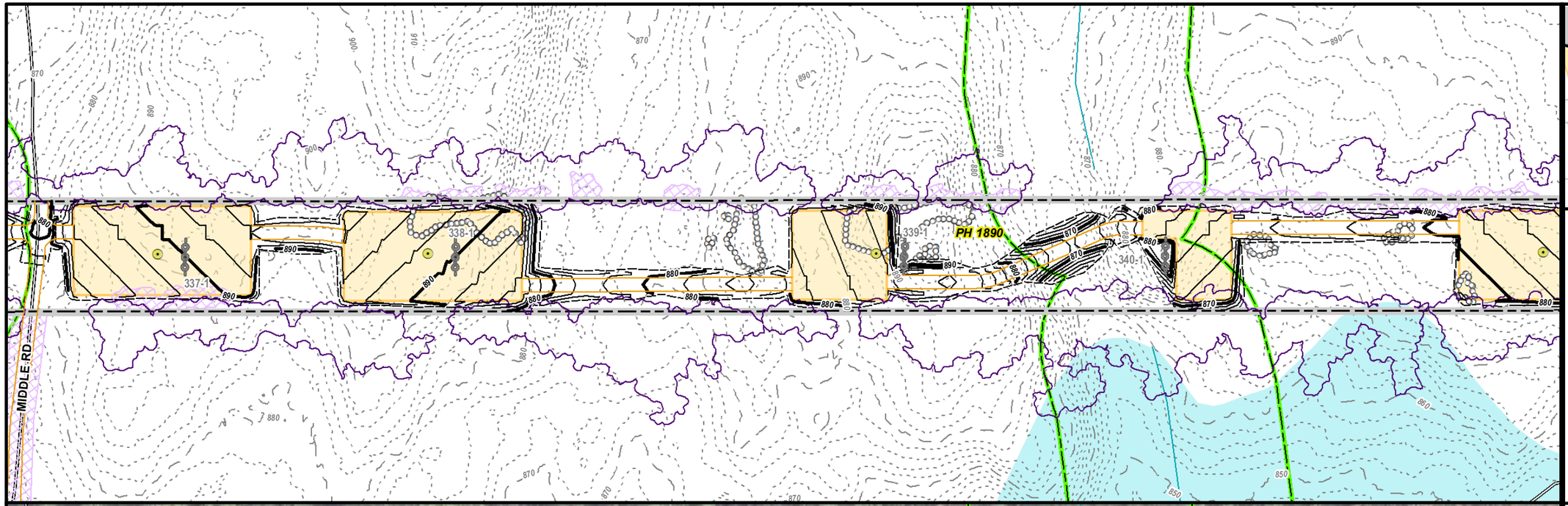
**Indicates Layers Set to Transparency*

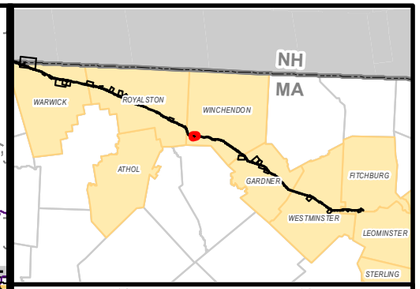
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

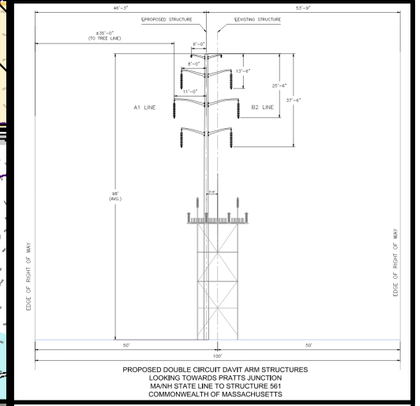
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

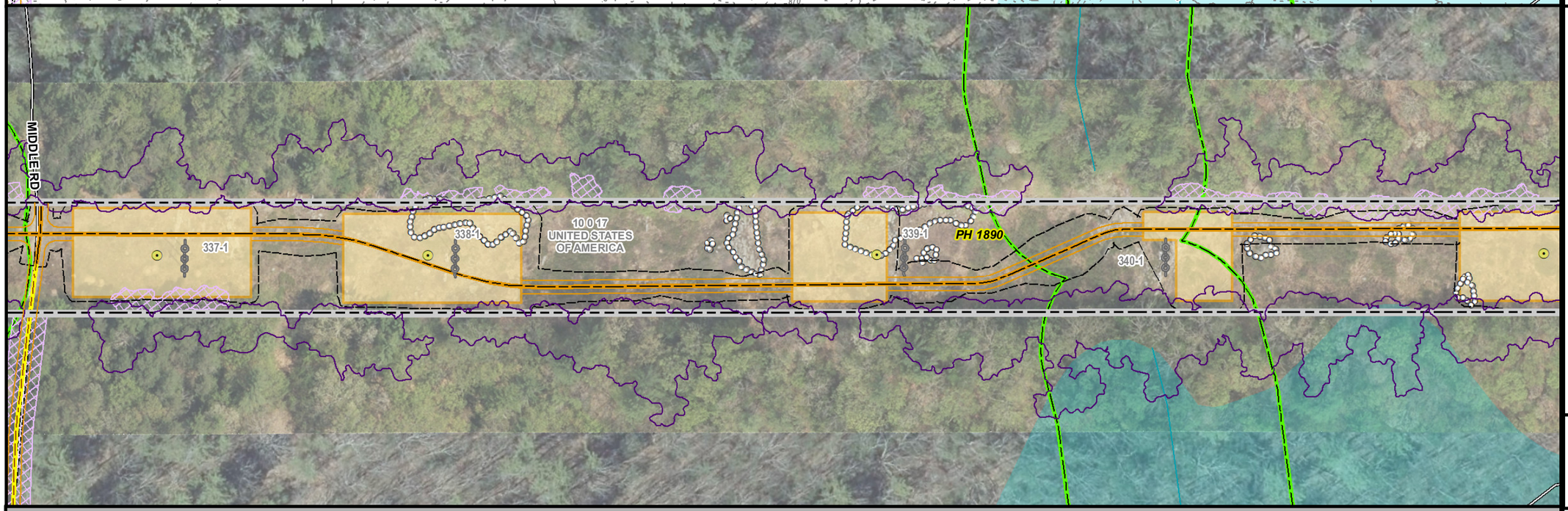
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 70 OF 137

N

1 inch = 100 feet

0 50 100

Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

**Indicates Layers Set to Transparency*

PREPARED FOR:

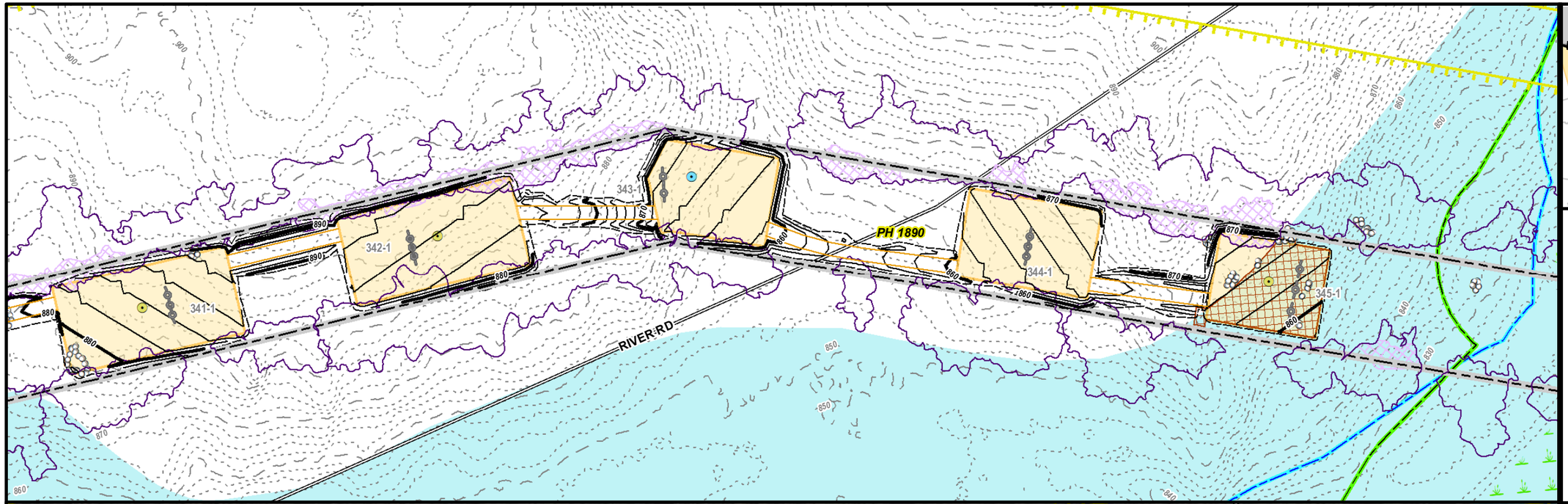
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

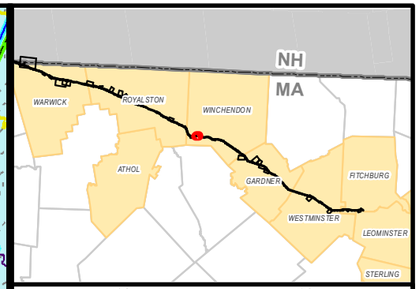
PREPARED BY:

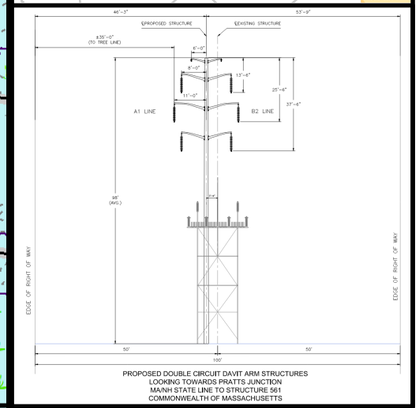
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 71 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

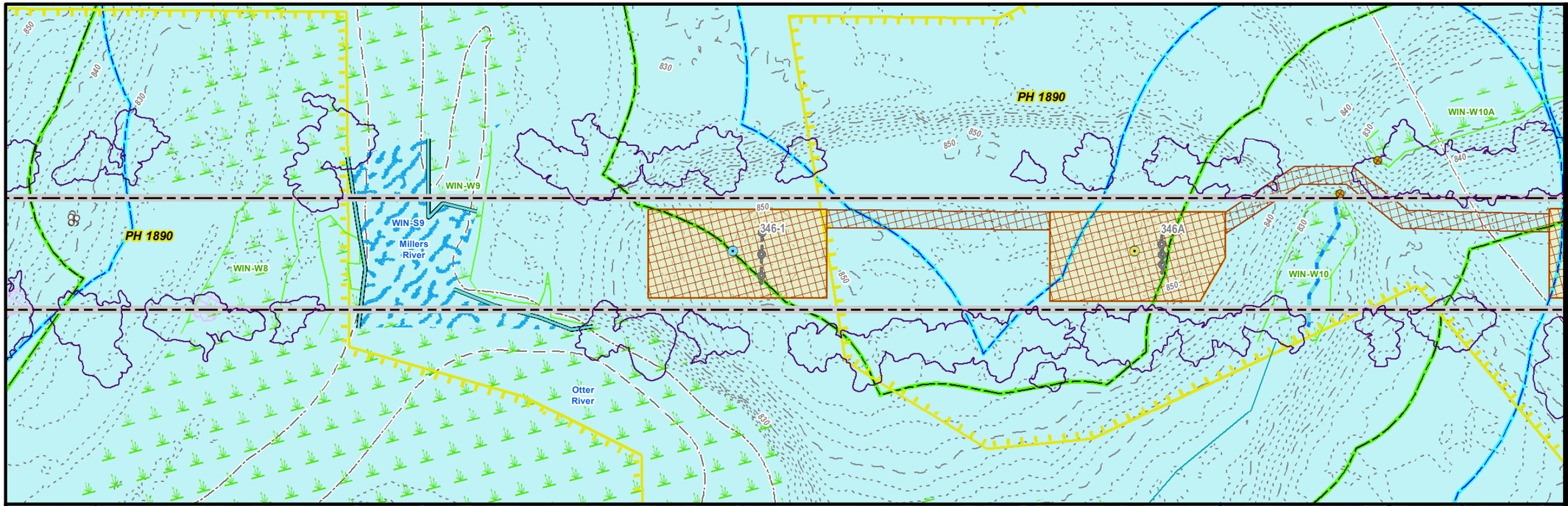
**Indicates Layers Set to Transparency*

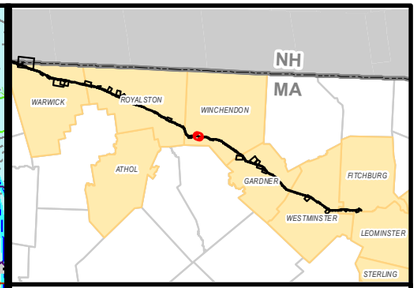
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

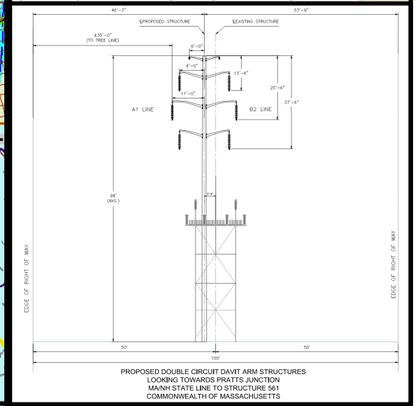
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 72 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

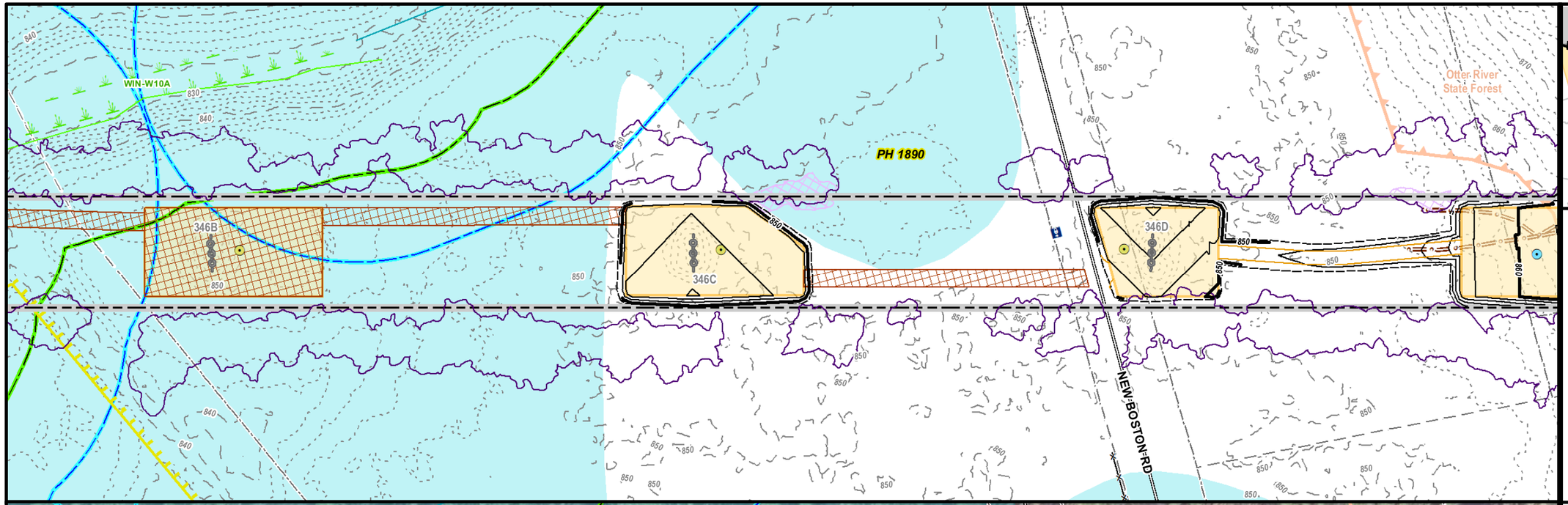
**Indicates Layers Set to Transparency*

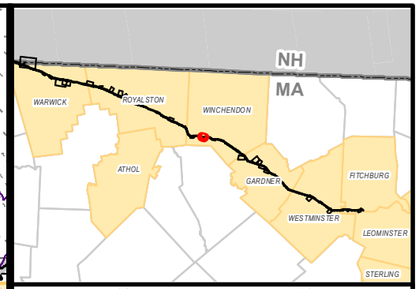
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

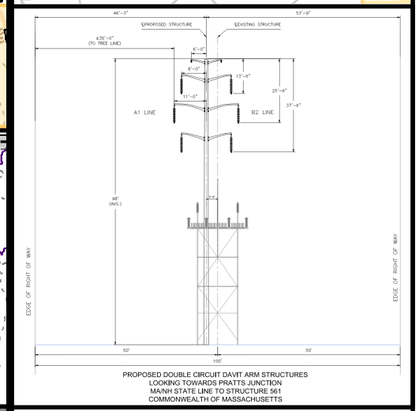
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

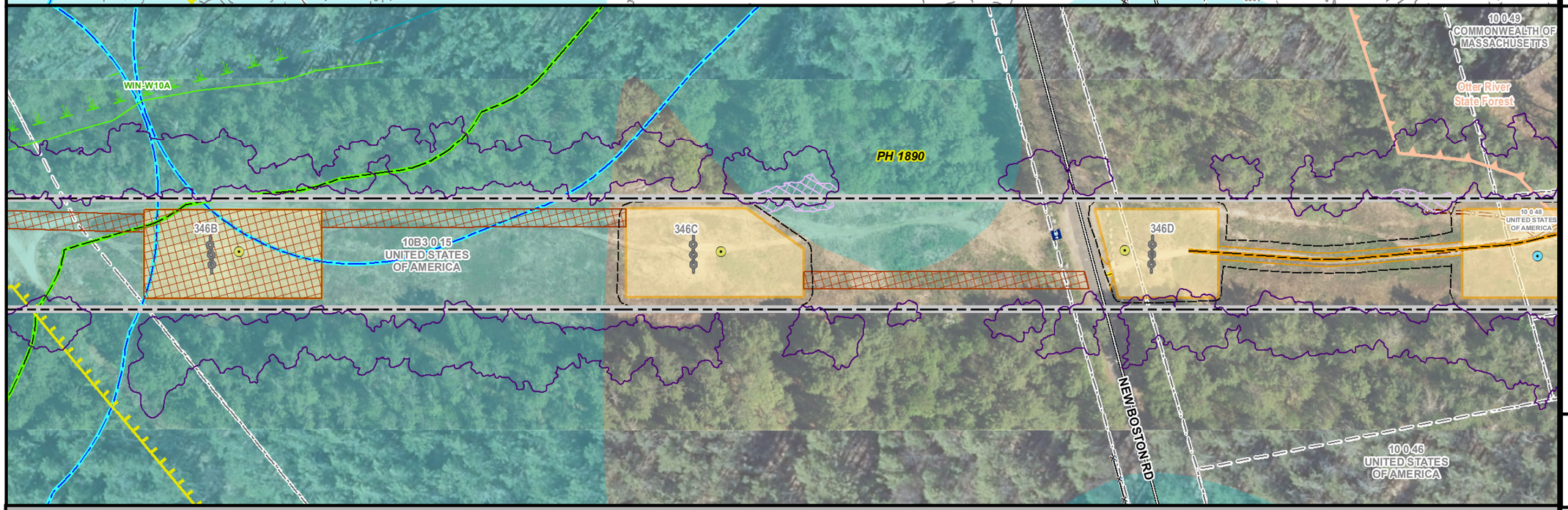
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 73 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

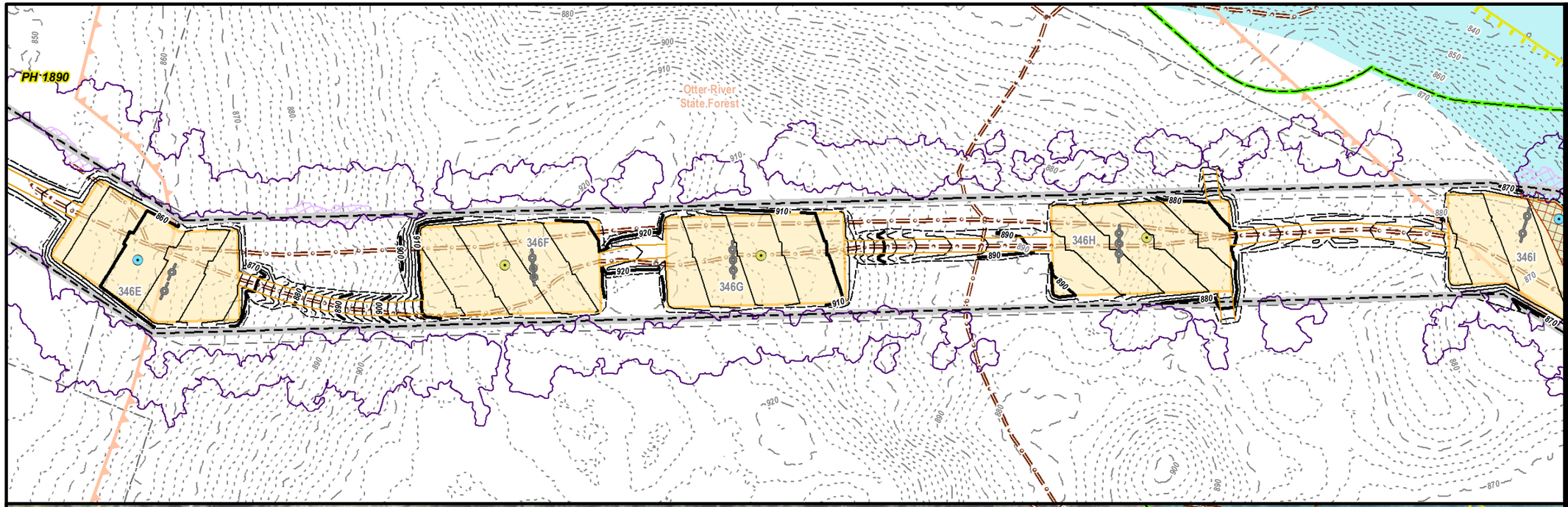
**Indicates Layers Set to Transparency*

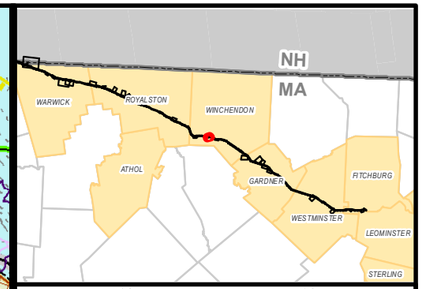
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

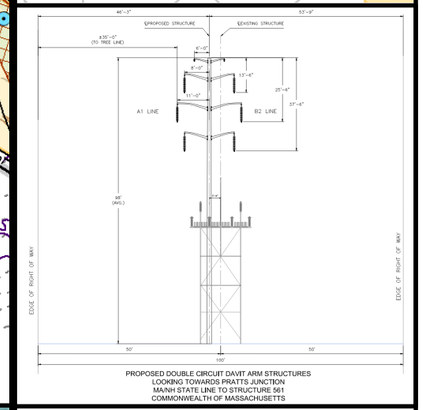
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 74 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

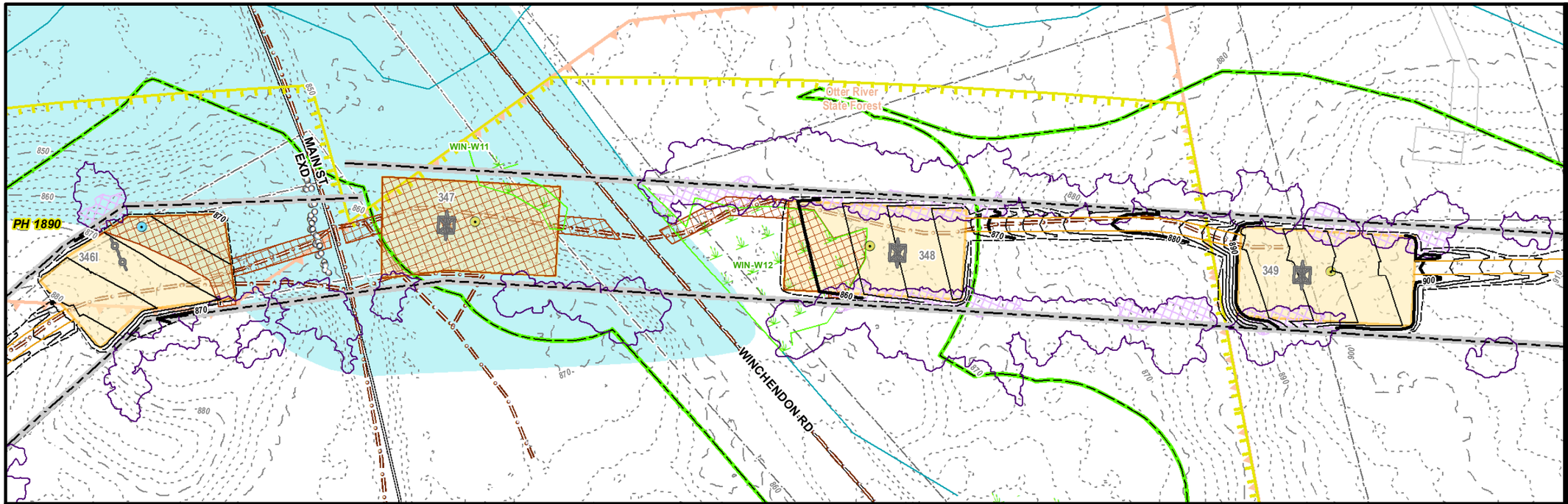
**Indicates Layers Set to Transparency*

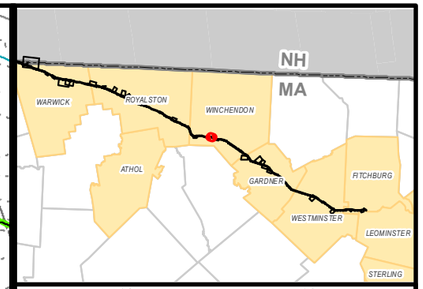
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

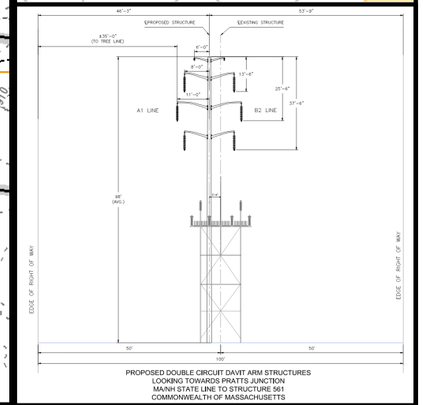
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

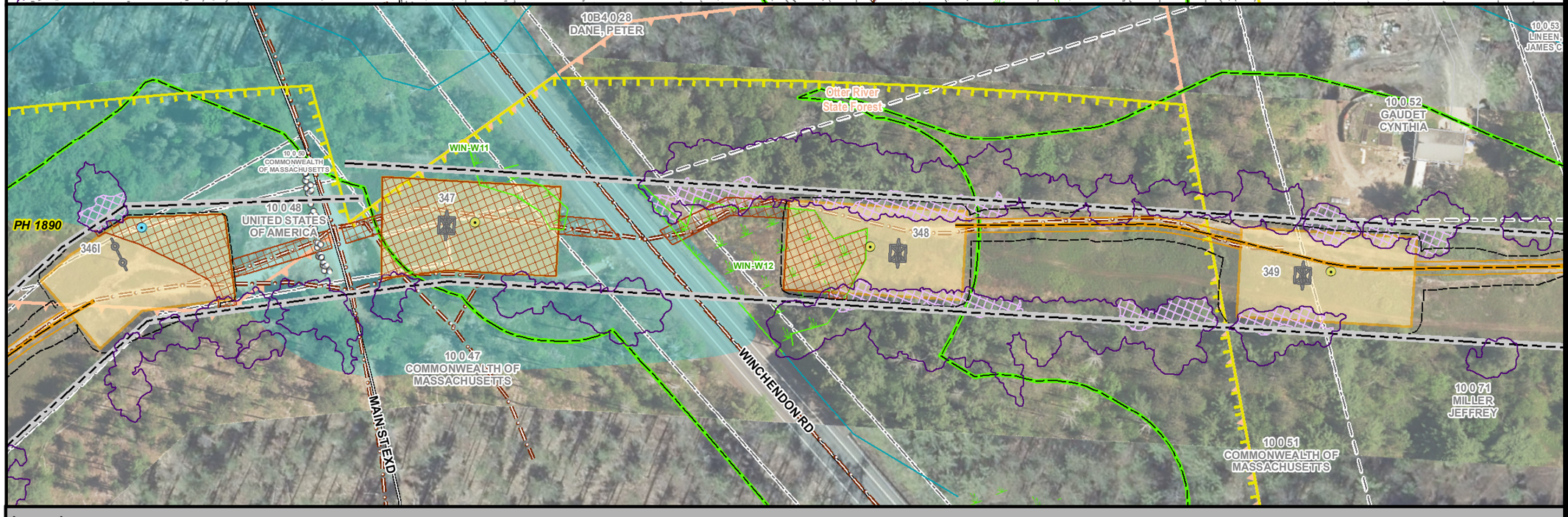
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 75 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

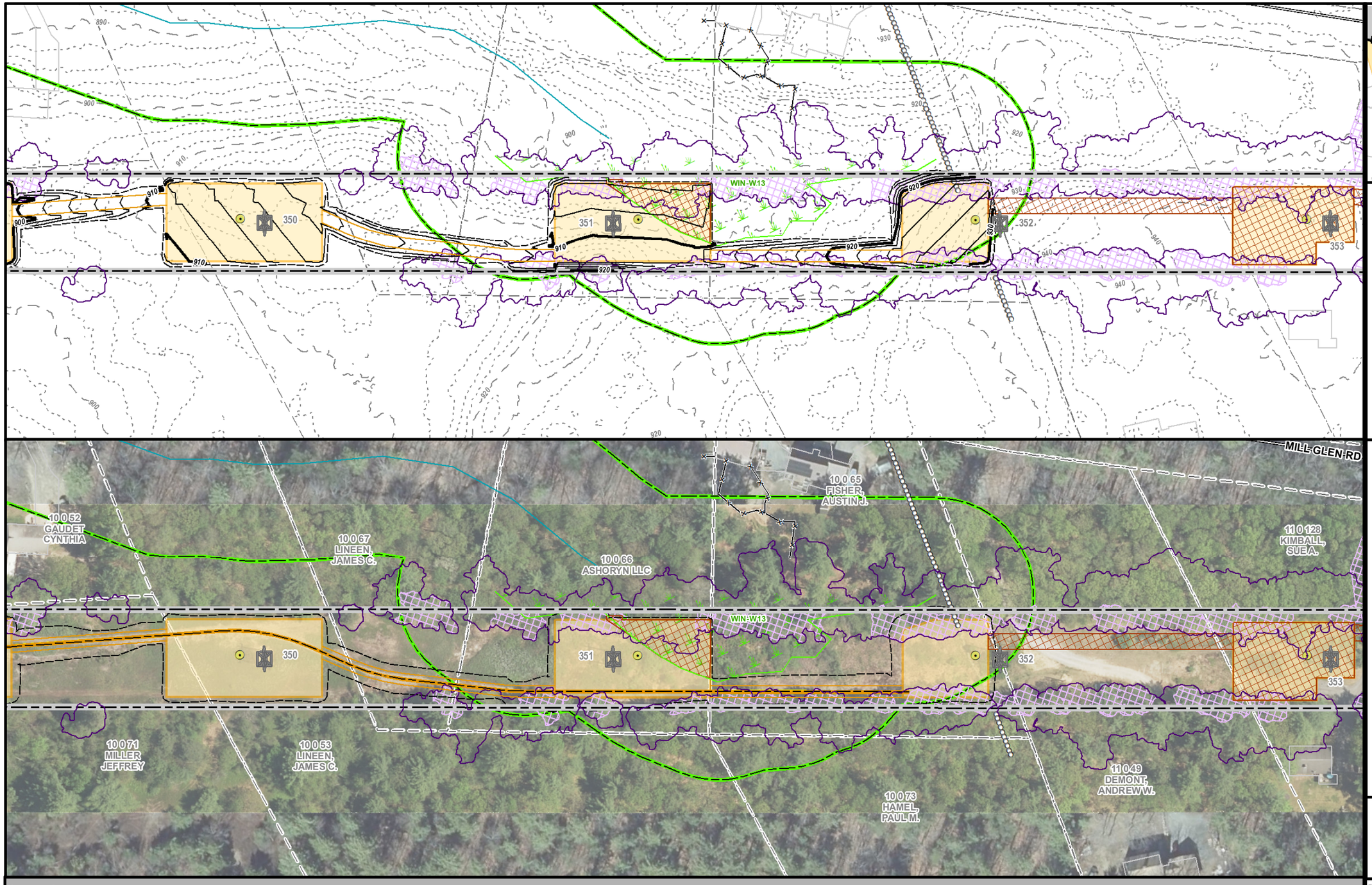
**Indicates Layers Set to Transparency*

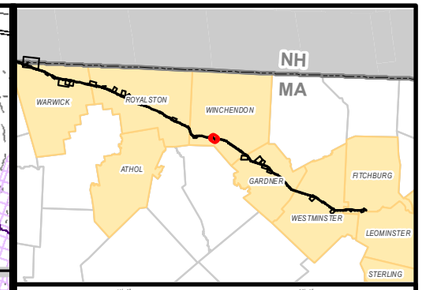
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

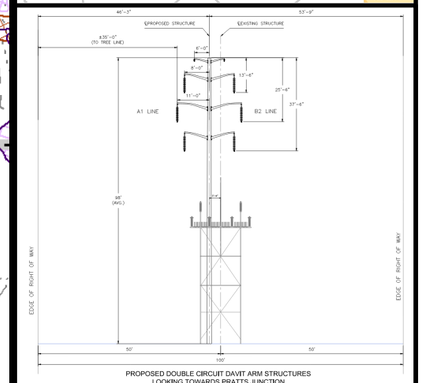
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 76 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

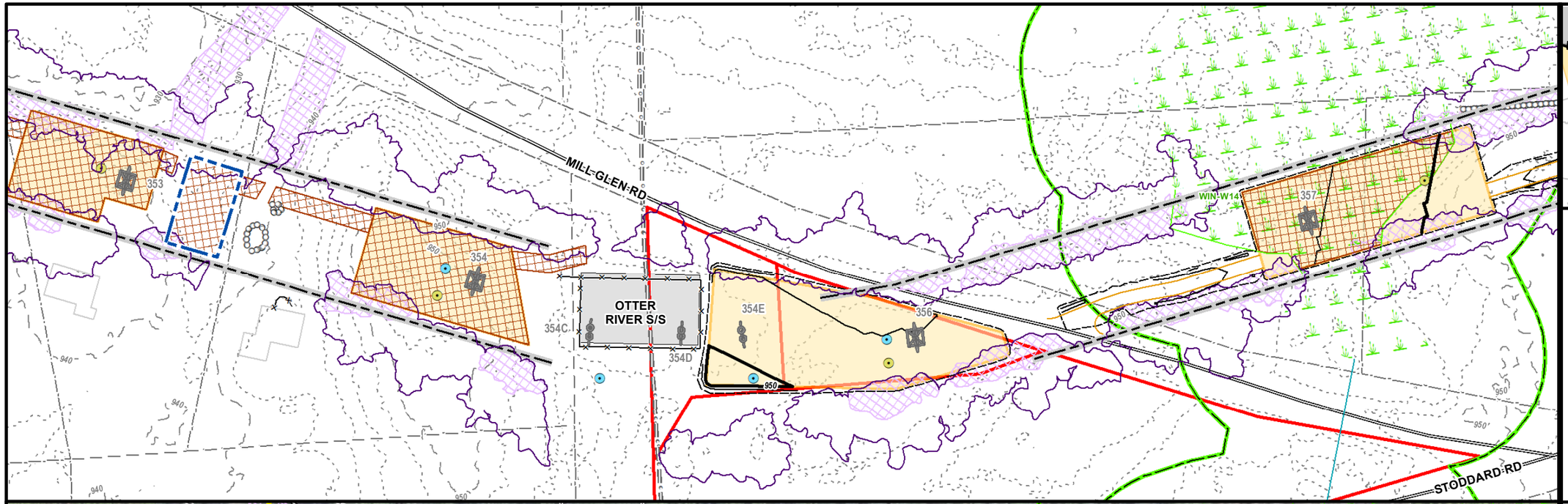
**Indicates Layers Set to Transparency*

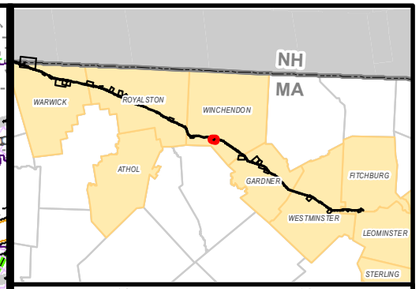
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

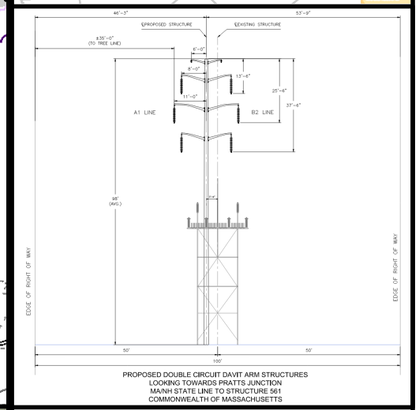
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 77 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

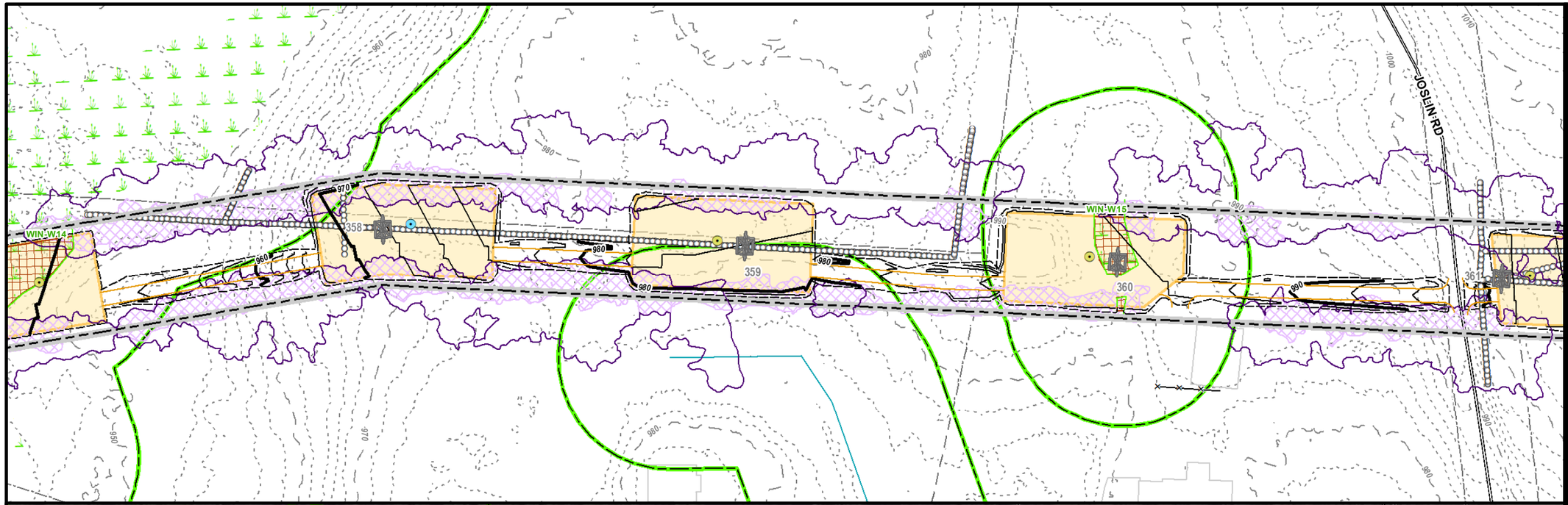
**Indicates Layers Set to Transparency*

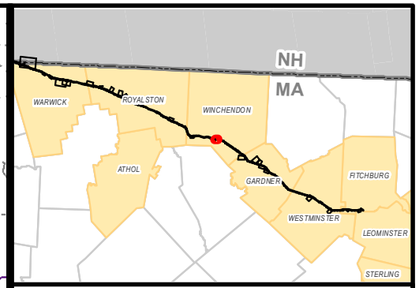
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

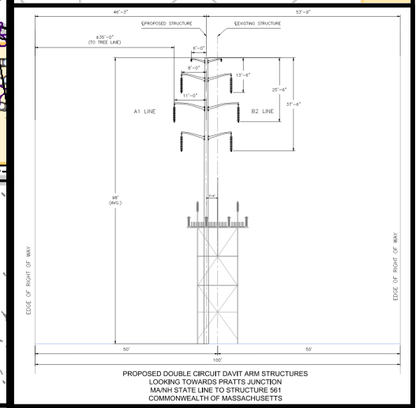
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

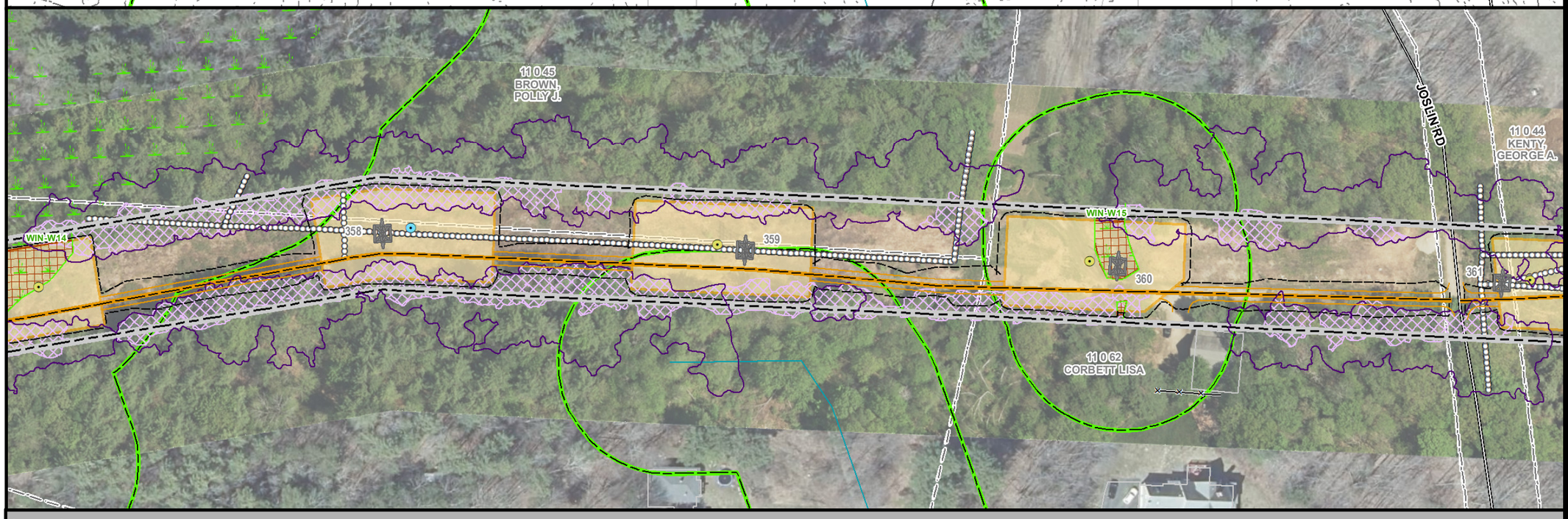
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 78 OF 137

N

1 inch = 100 feet

0 50 100

Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

**Indicates Layers Set to Transparency*

PREPARED FOR:

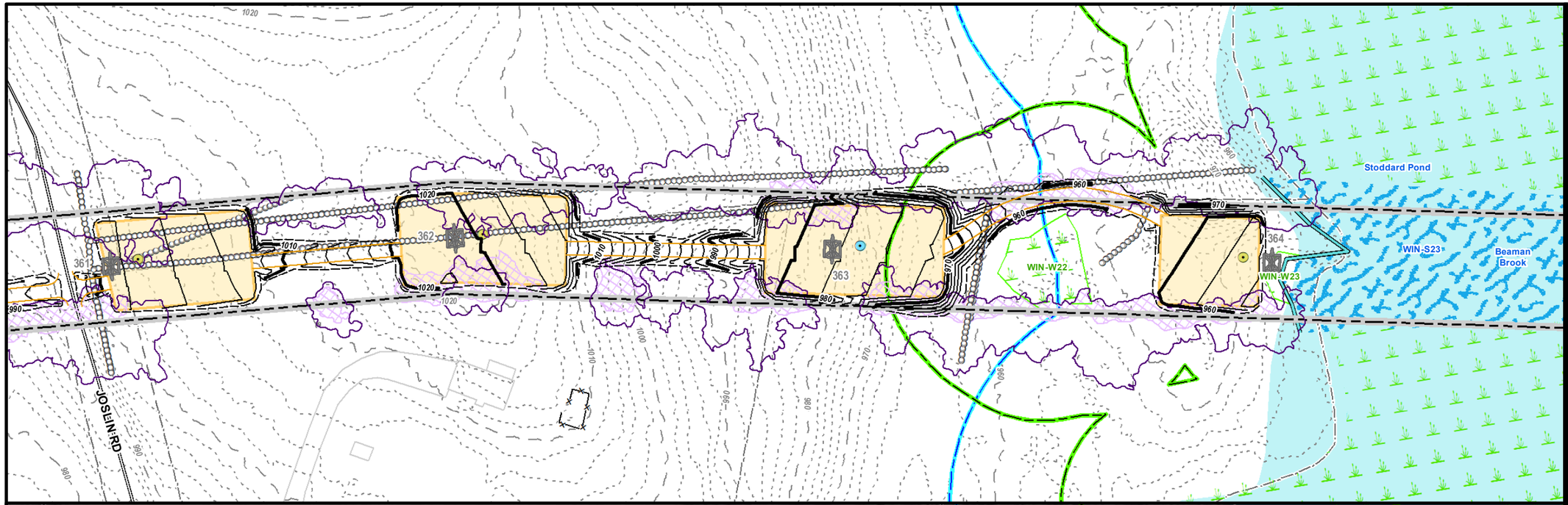
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

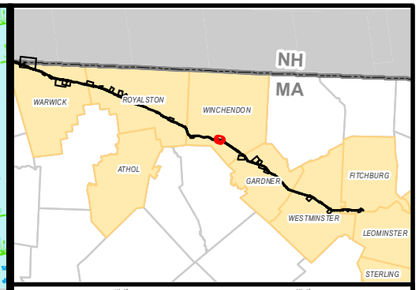
PREPARED BY:

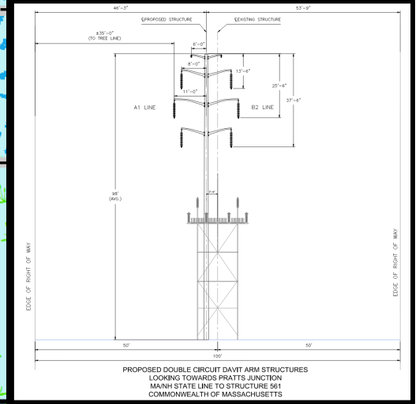
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

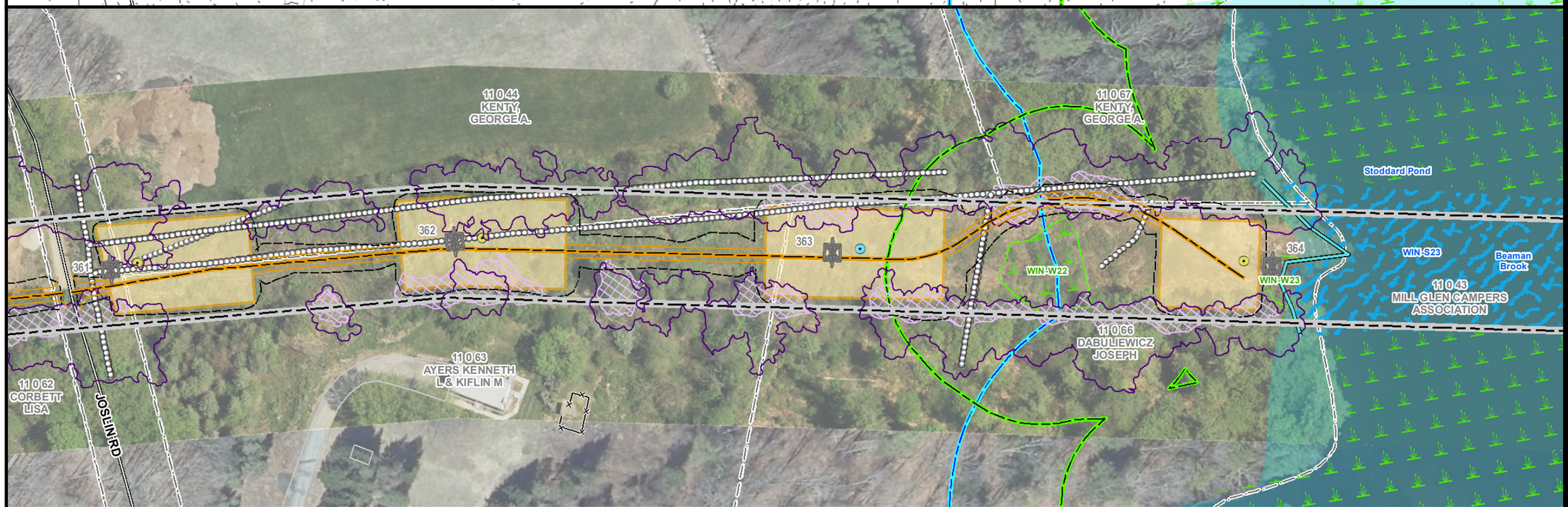
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 79 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

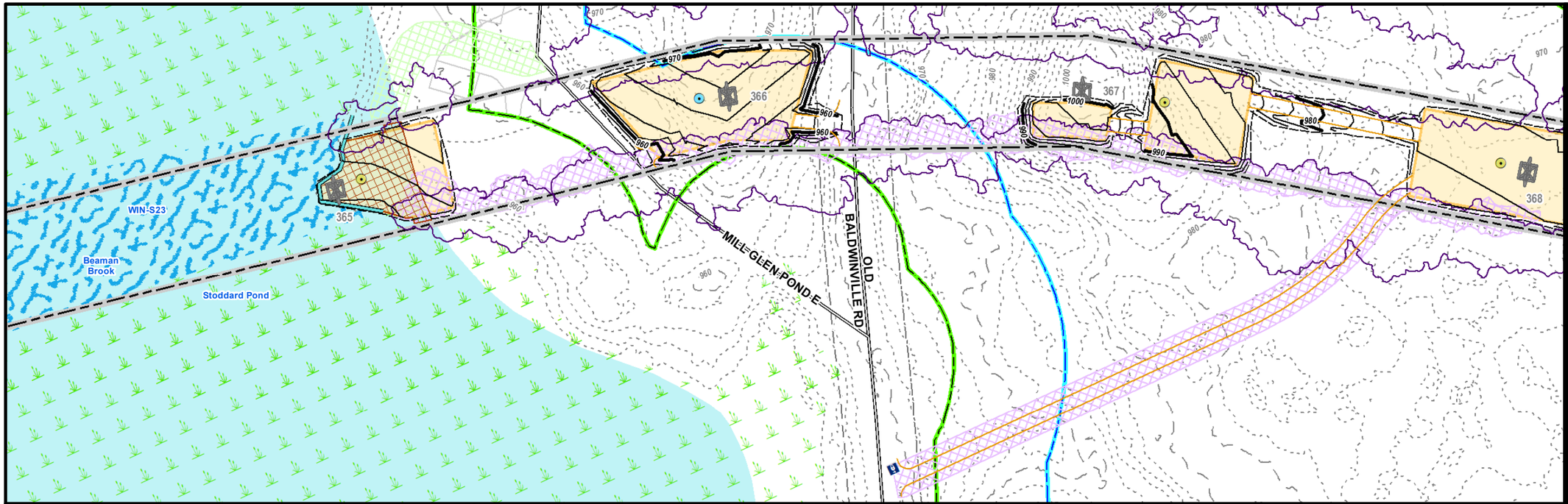
**Indicates Layers Set to Transparency*

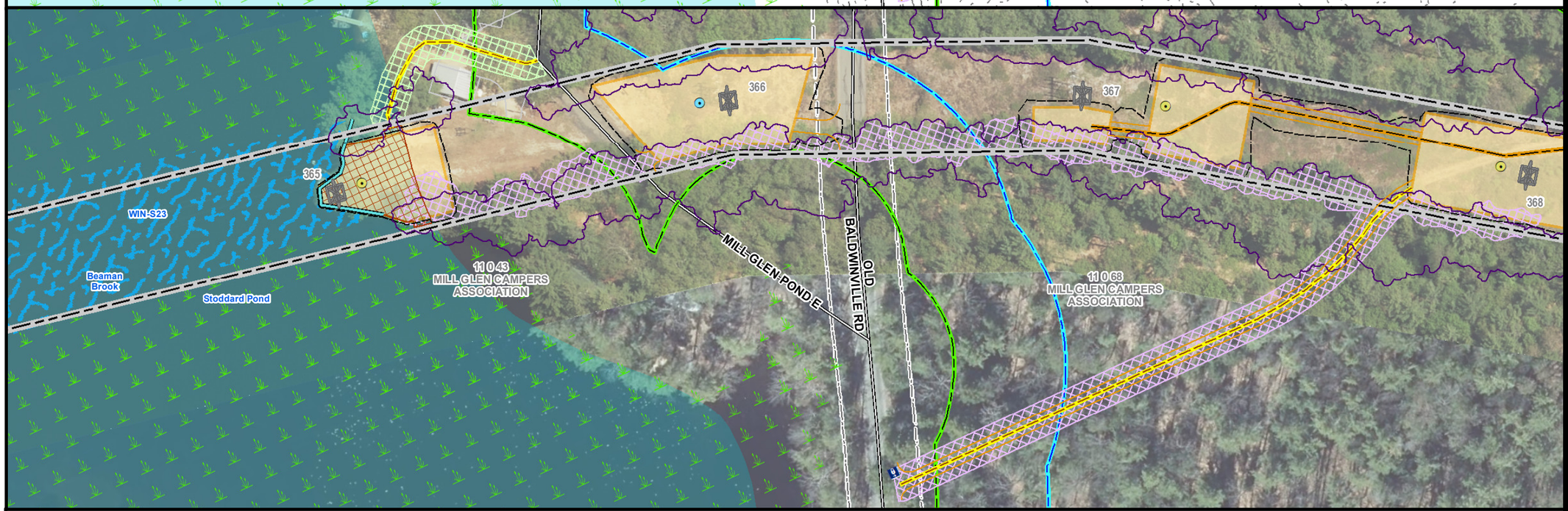
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

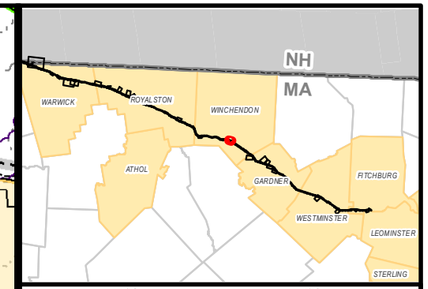
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

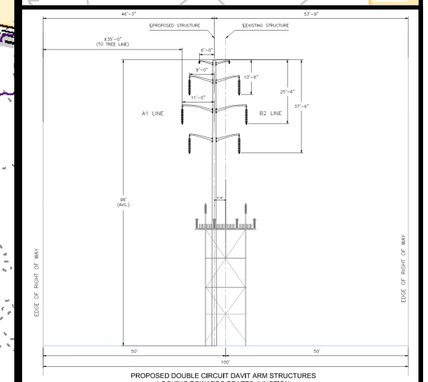
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 80 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

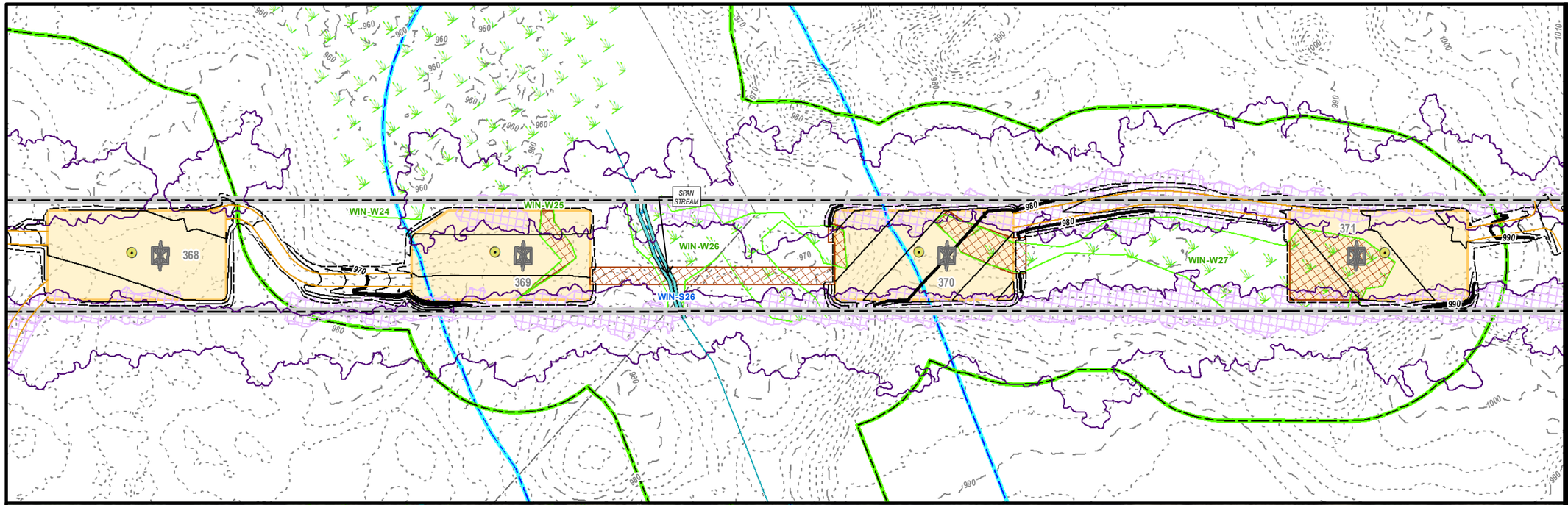
**Indicates Layers Set to Transparency*

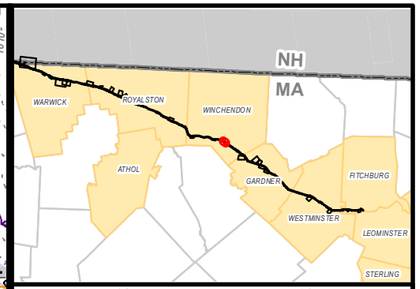
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

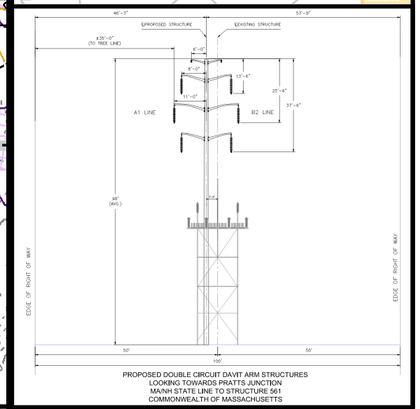
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 81 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

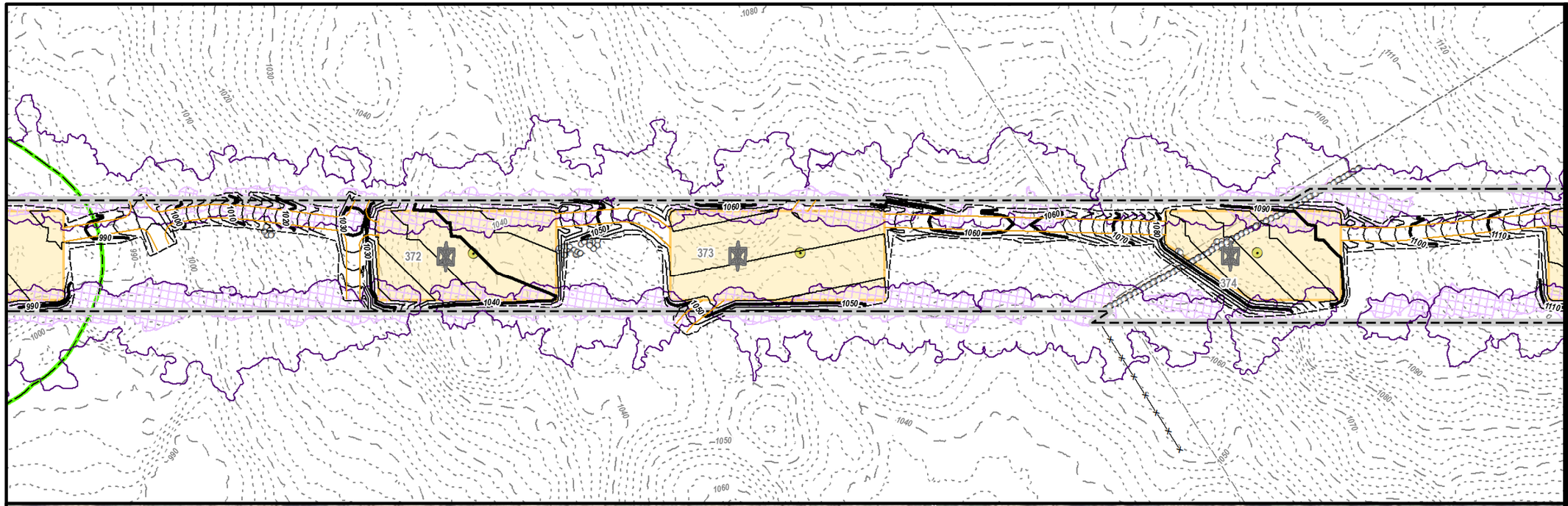
**Indicates Layers Set to Transparency*

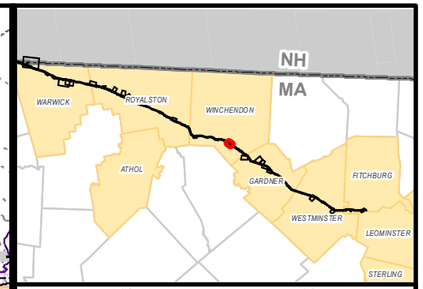
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

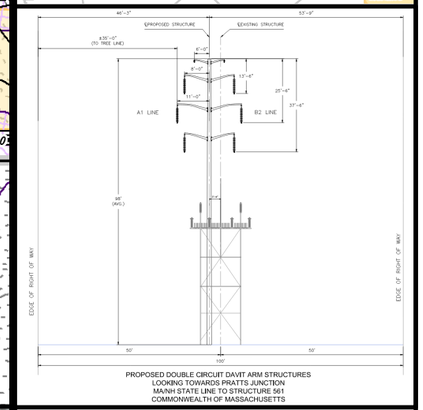
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

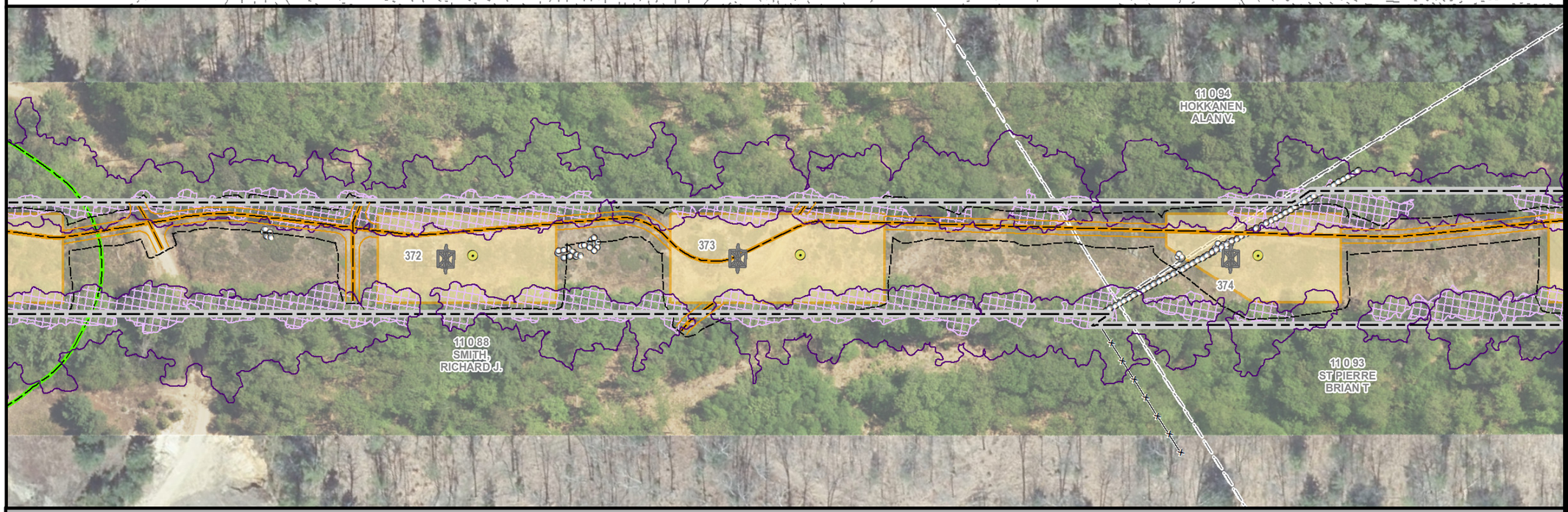
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 82 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

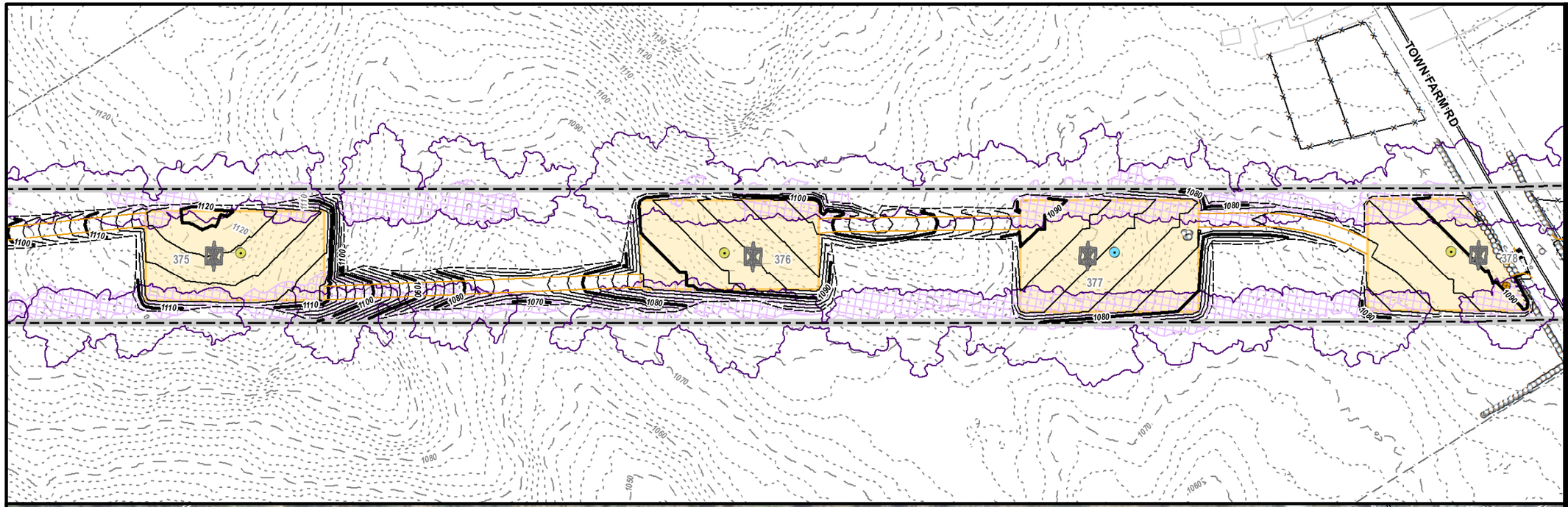
**Indicates Layers Set to Transparency*

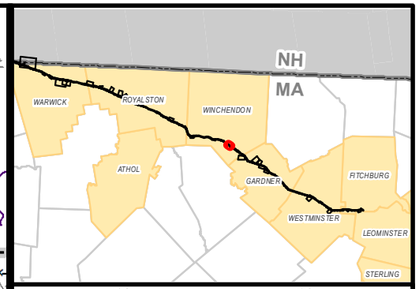
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

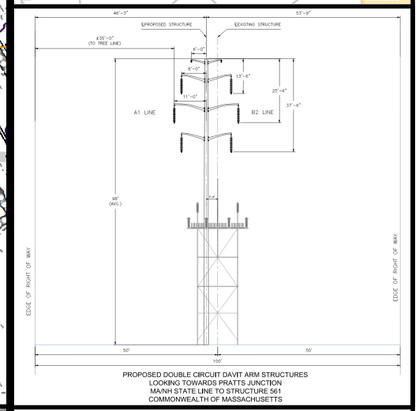
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 83 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

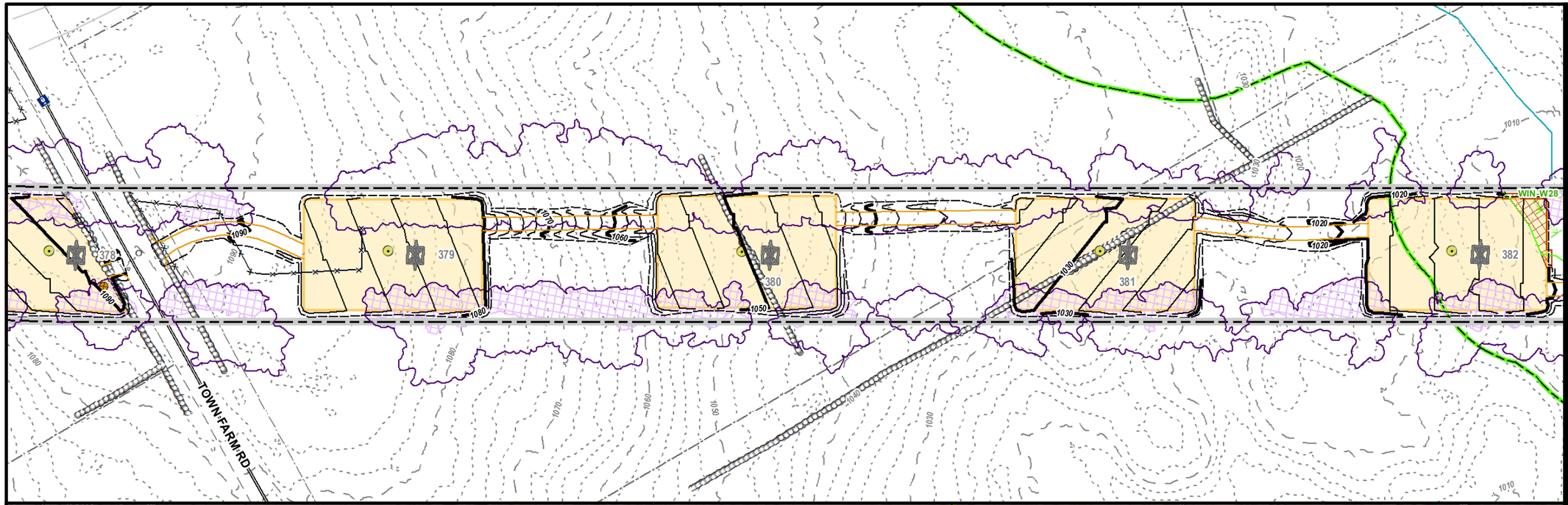
**Indicates Layers Set to Transparency*

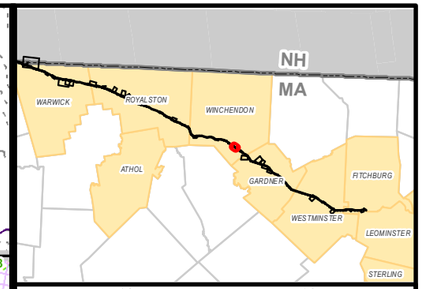
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

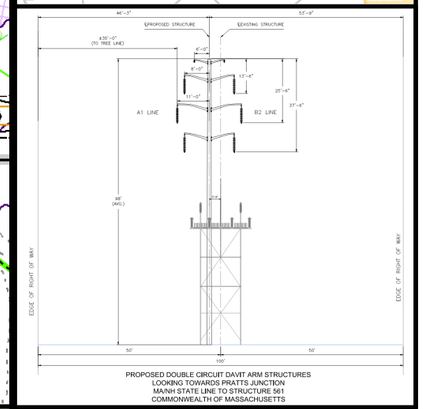
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

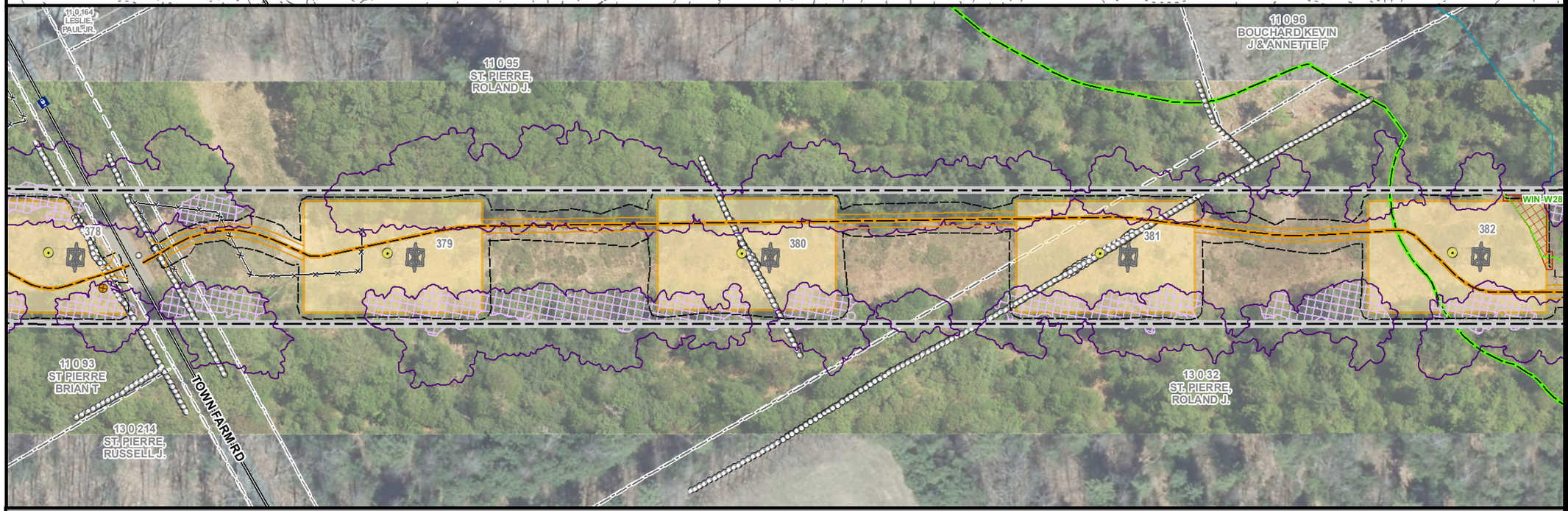
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 84 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

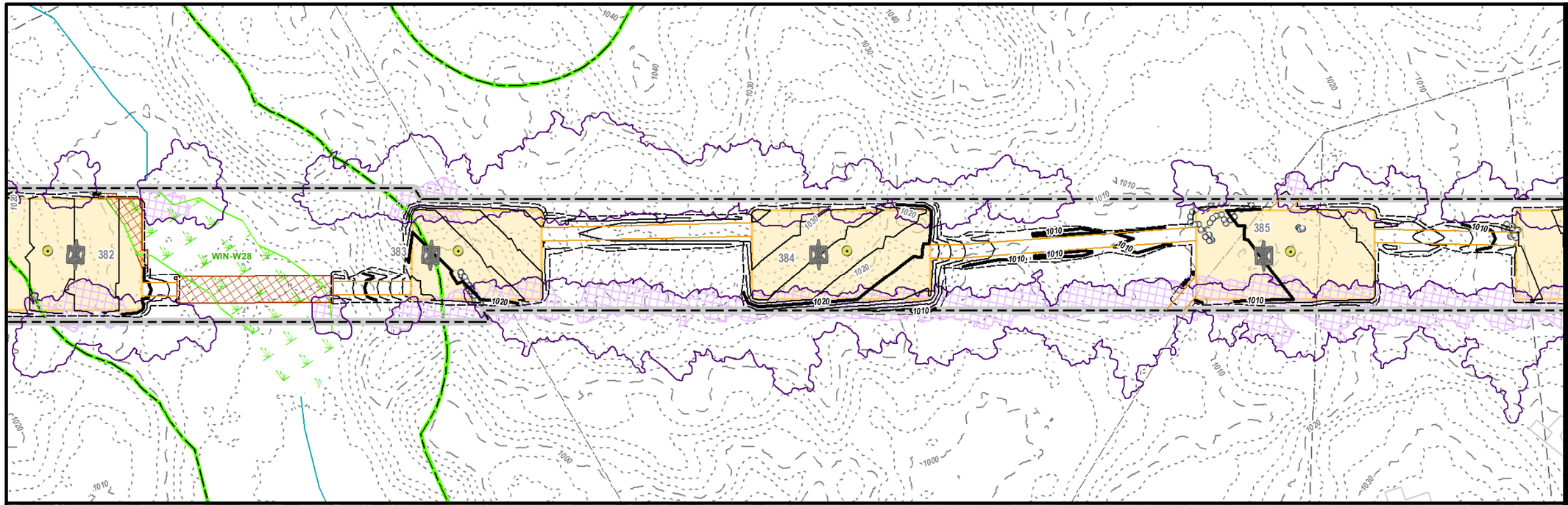
**Indicates Layers Set to Transparency*

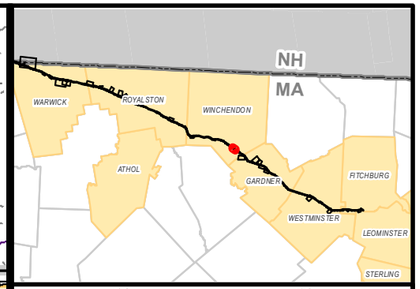
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

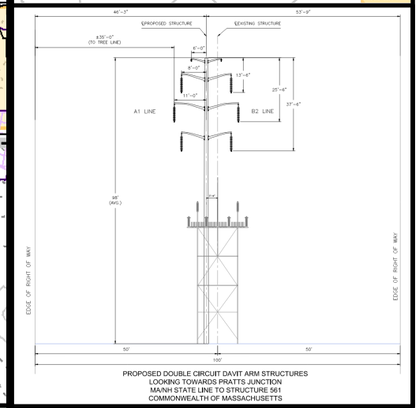
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

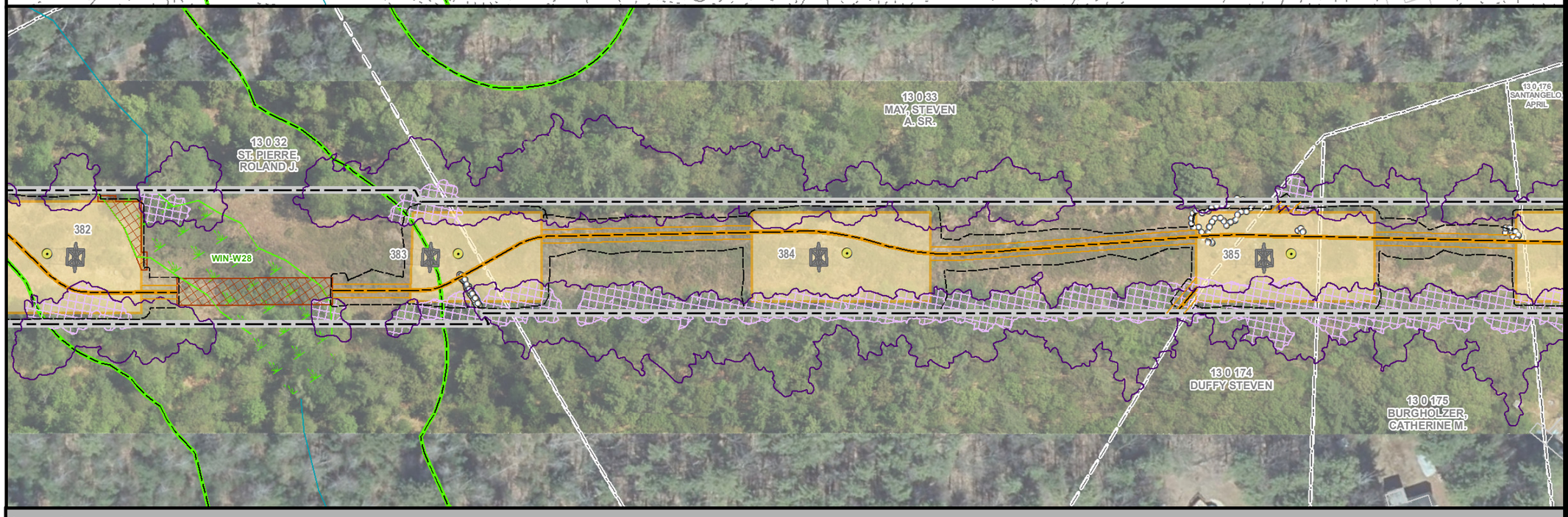
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 85 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

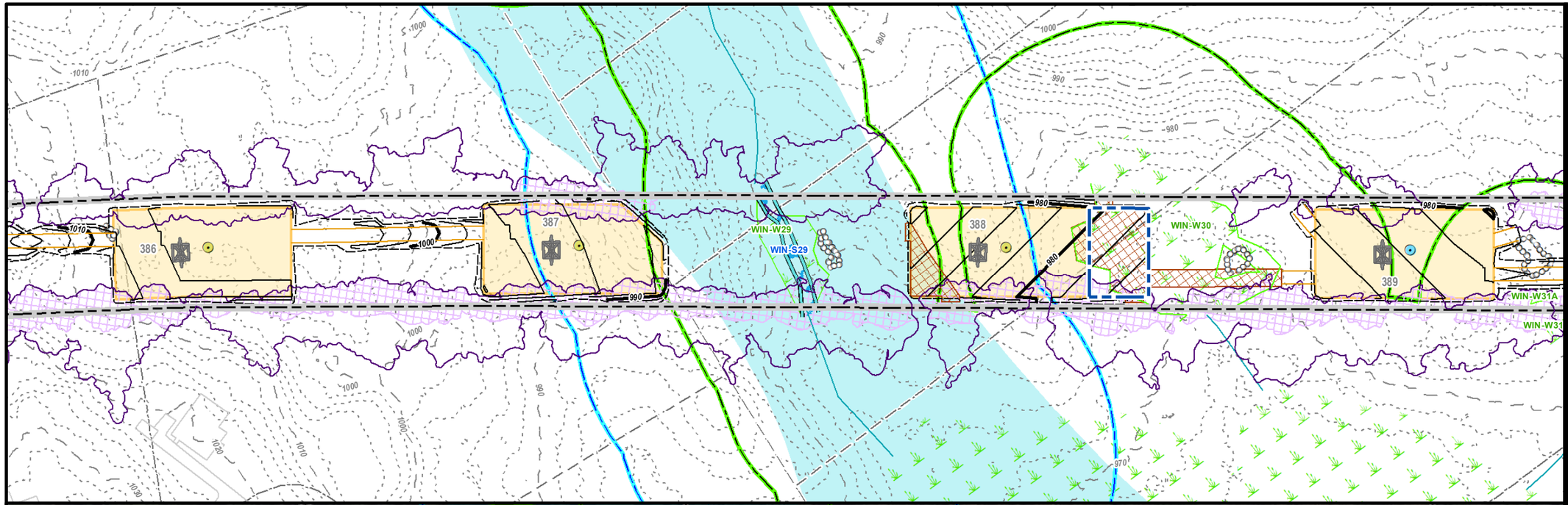
**Indicates Layers Set to Transparency*

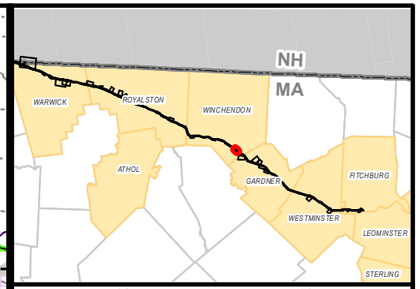
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

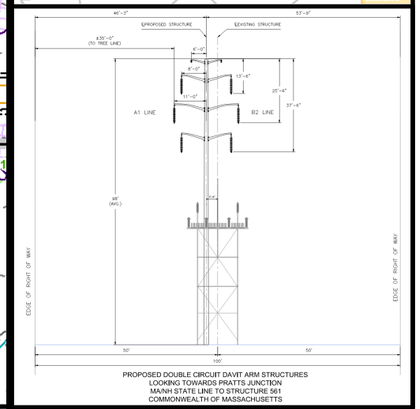
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

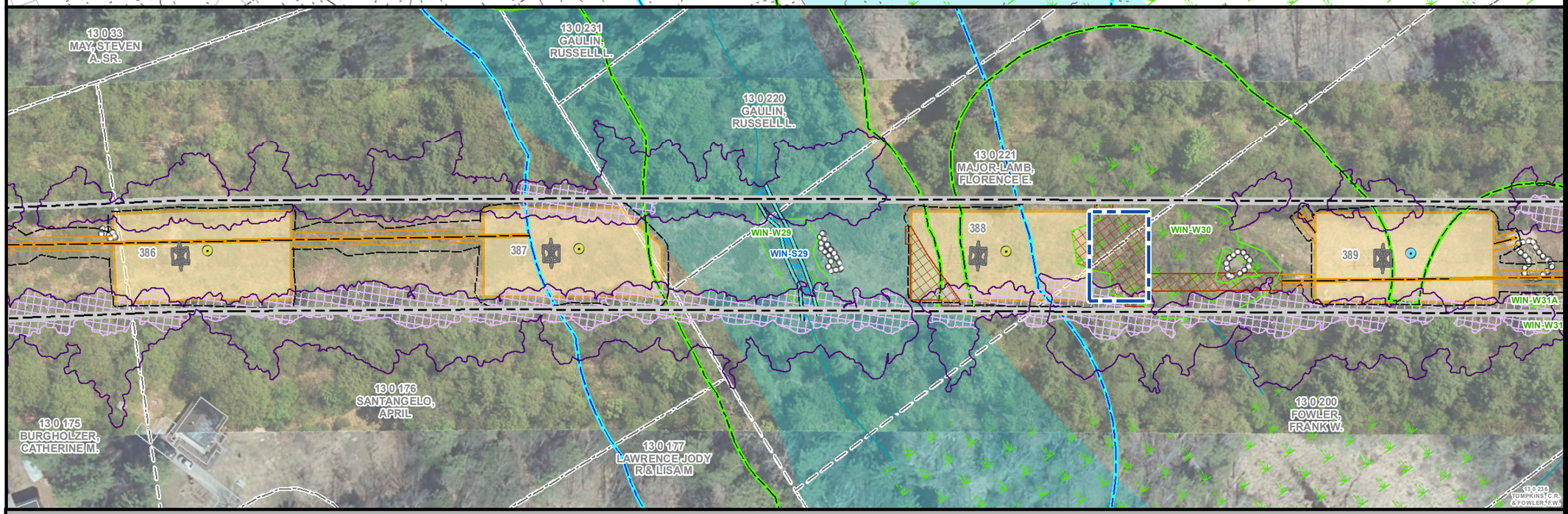
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 86 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

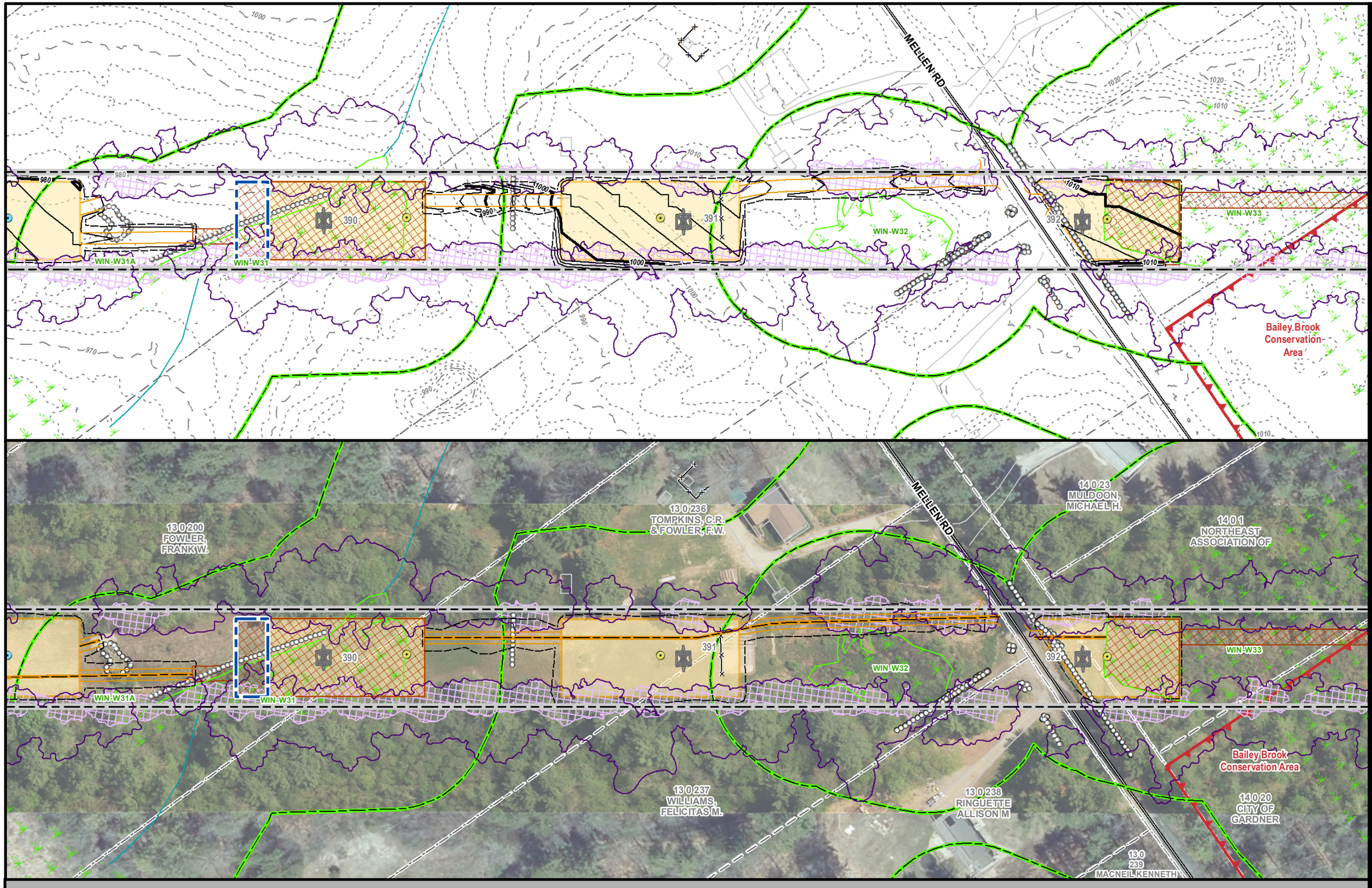
**Indicates Layers Set to Transparency*

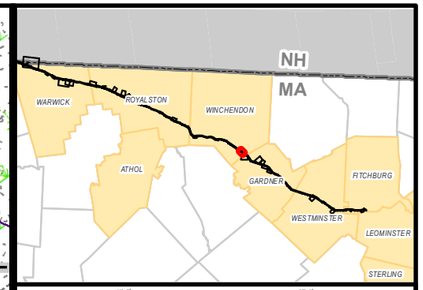
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

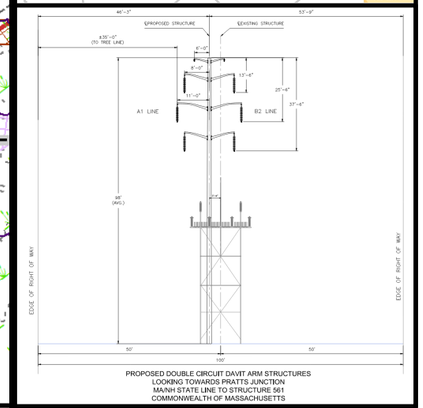
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 87 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

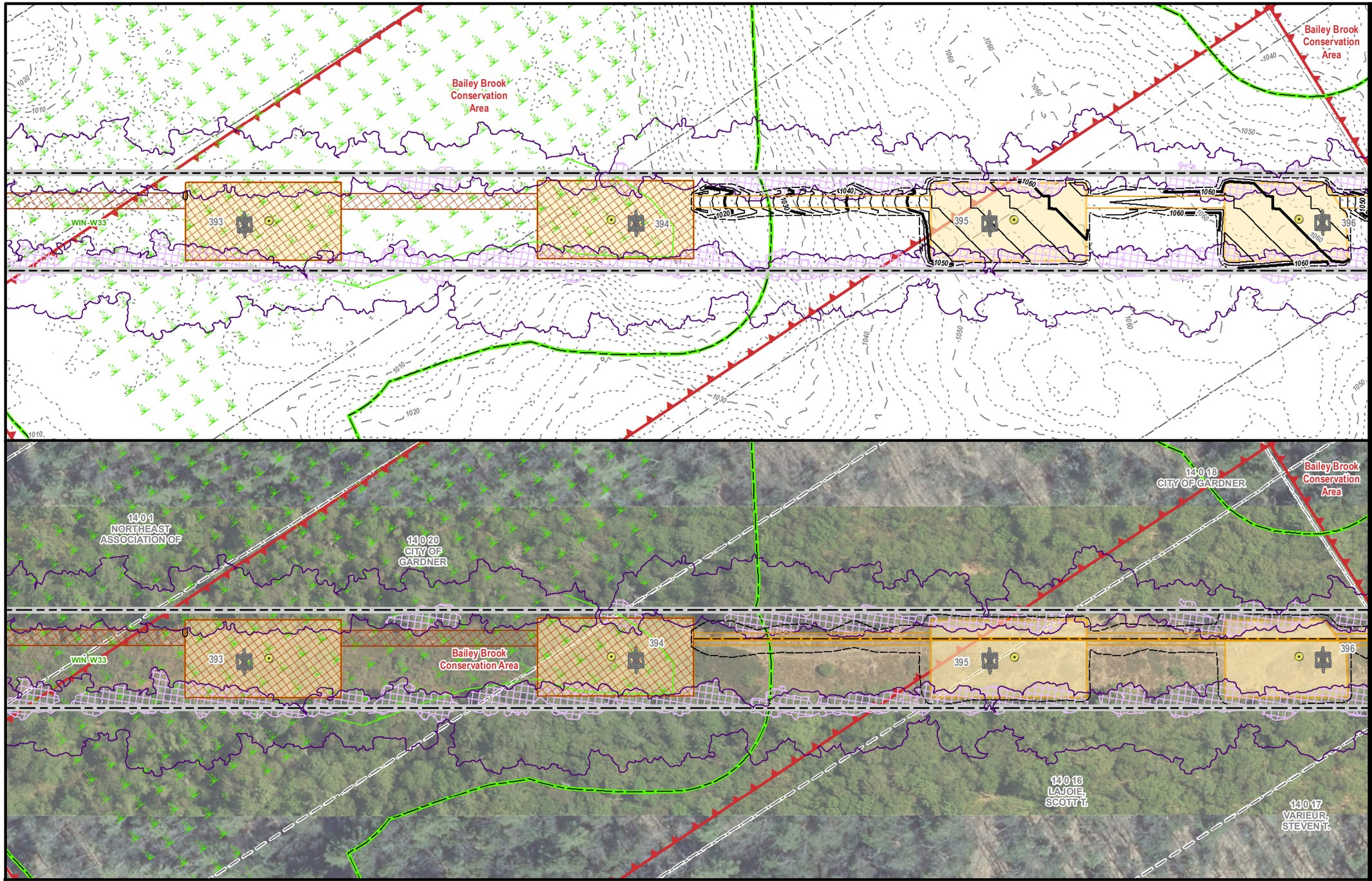
**Indicates Layers Set to Transparency*

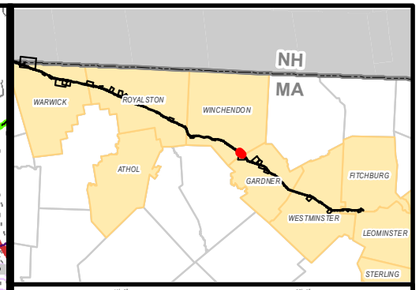
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

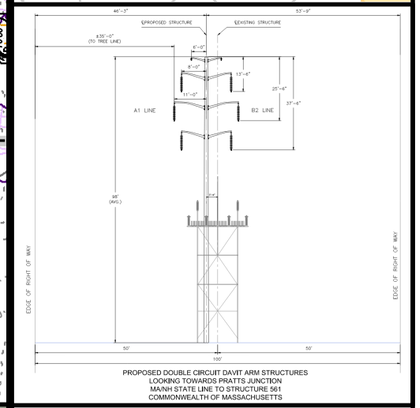
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 88 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

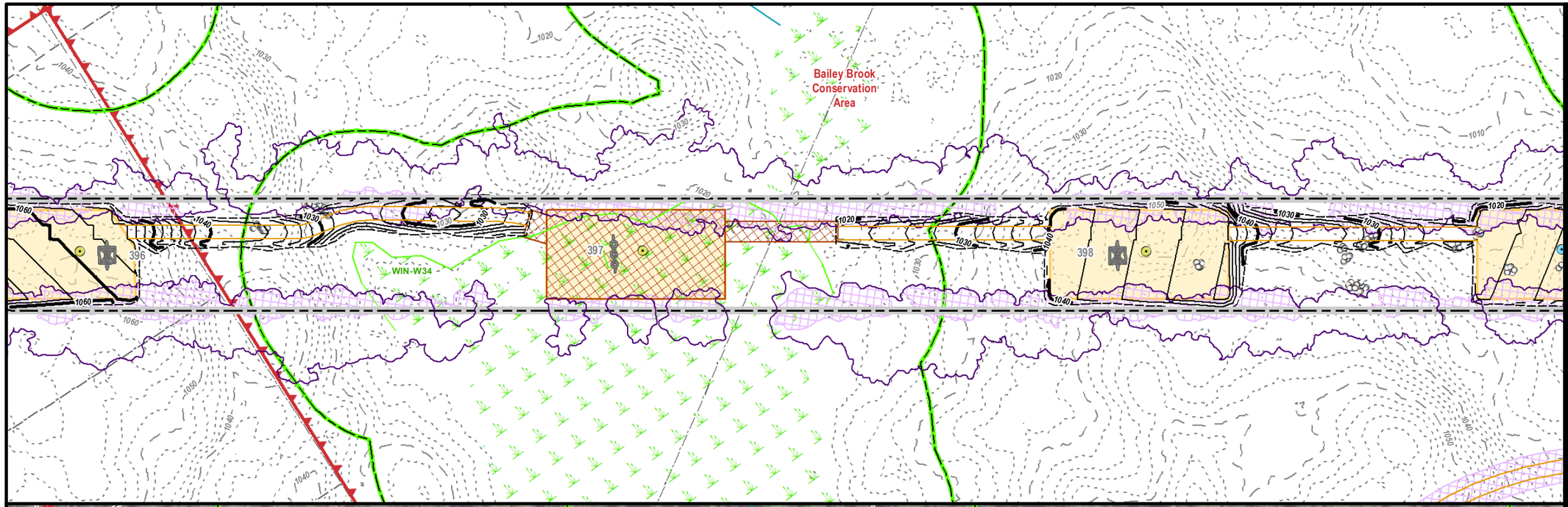
**Indicates Layers Set to Transparency*

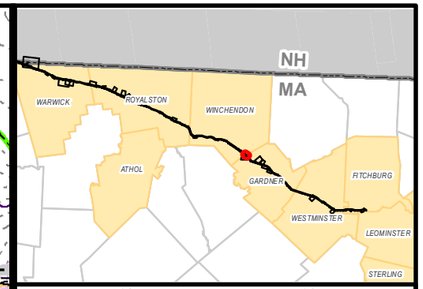
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

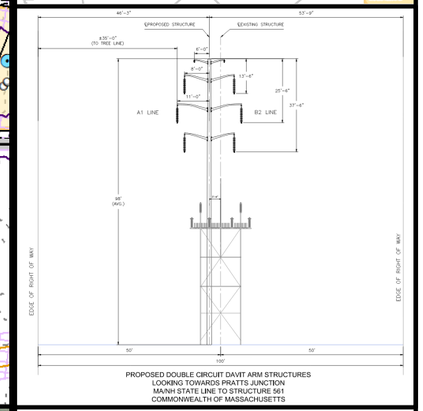
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

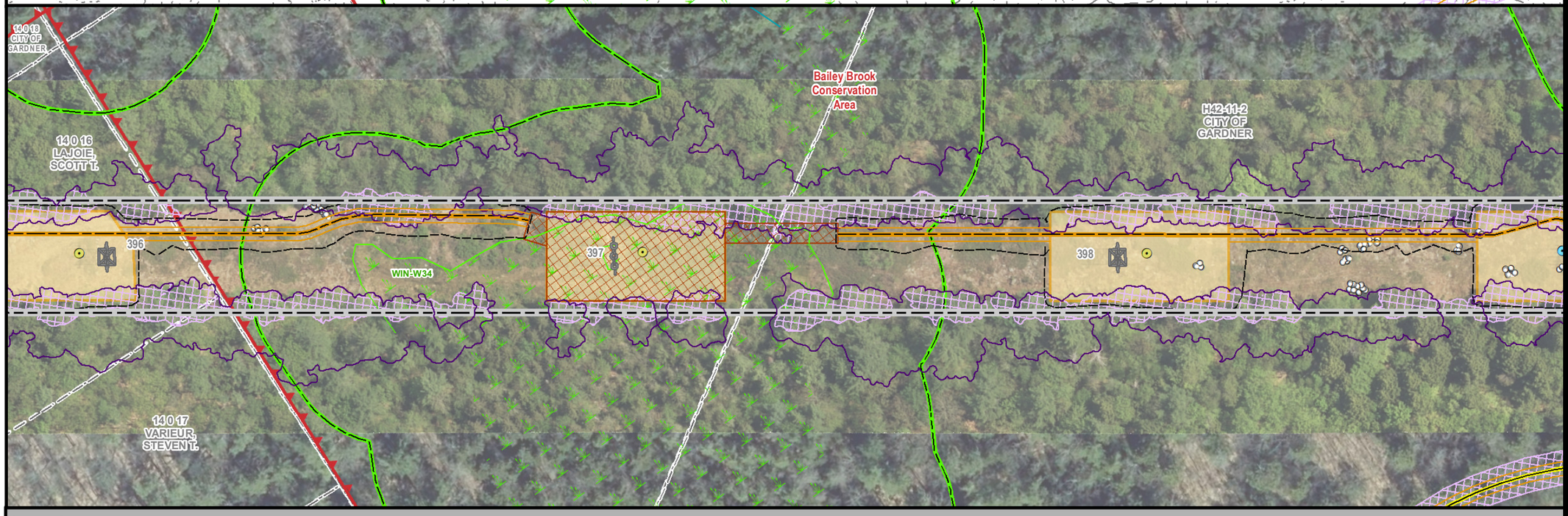
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON & GARDNER, MA
PAGE 89 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

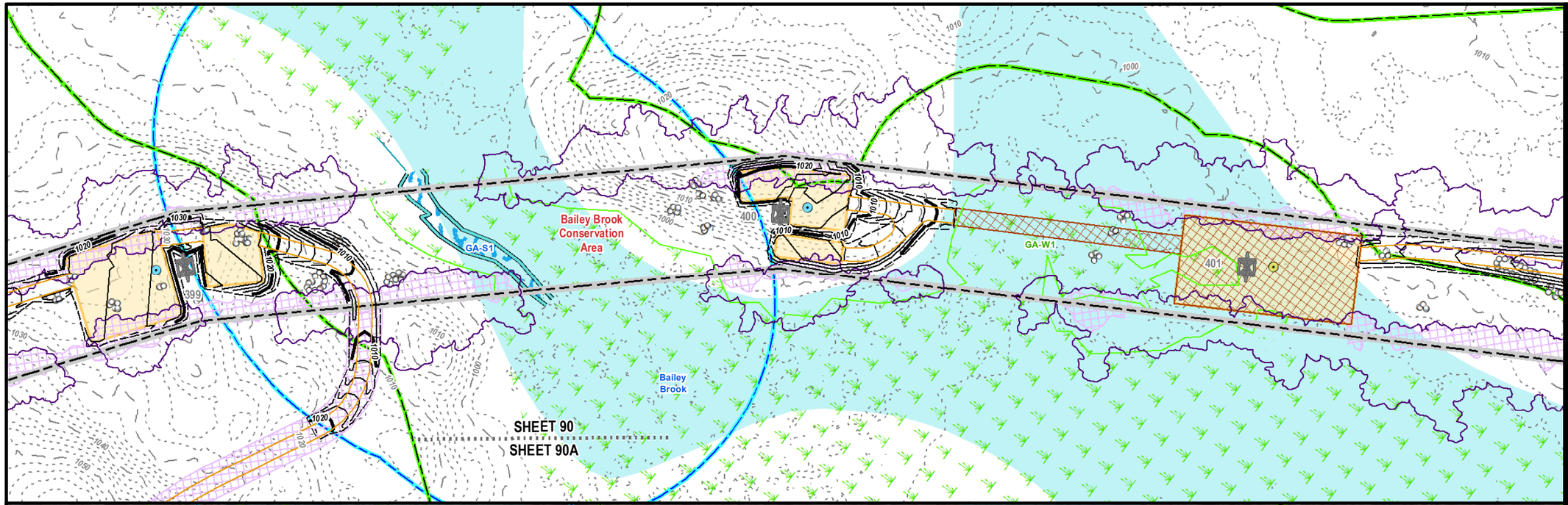
**Indicates Layers Set to Transparency*

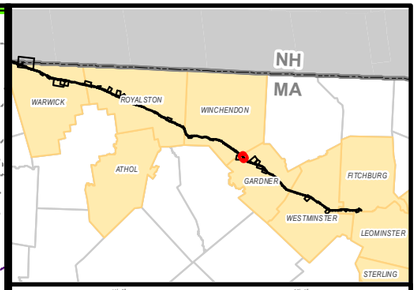
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

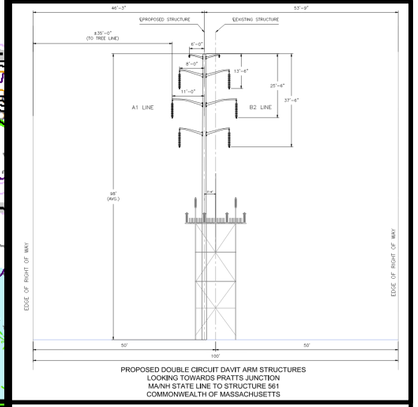
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 90 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

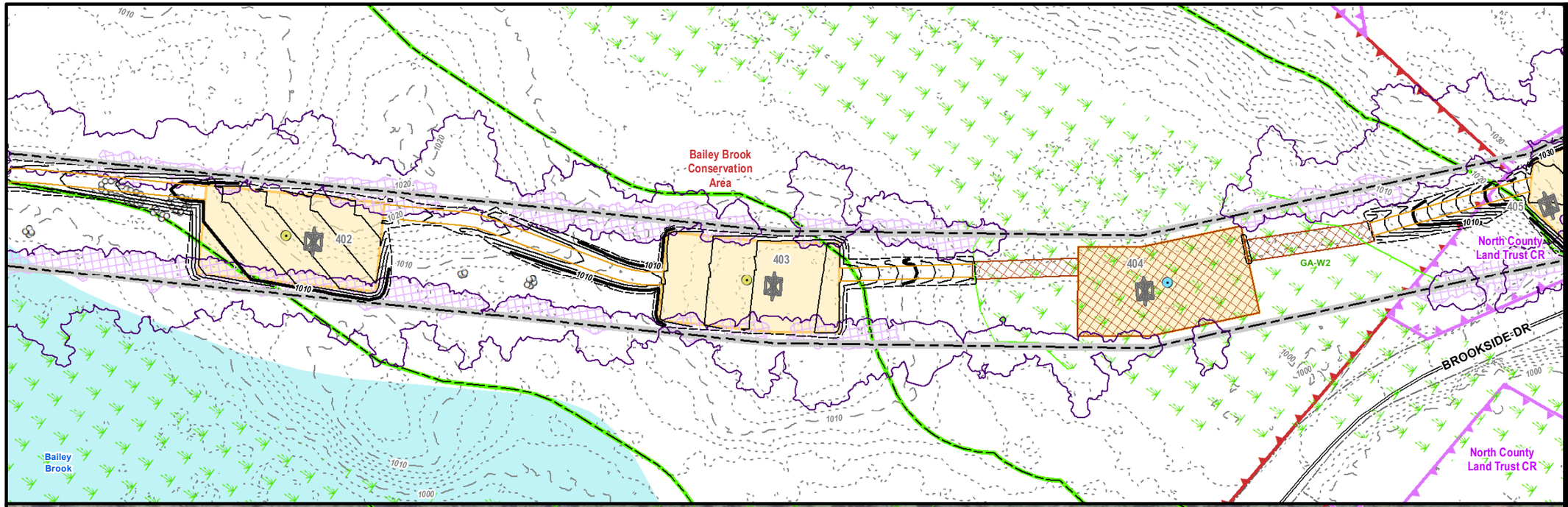
**Indicates Layers Set to Transparency*

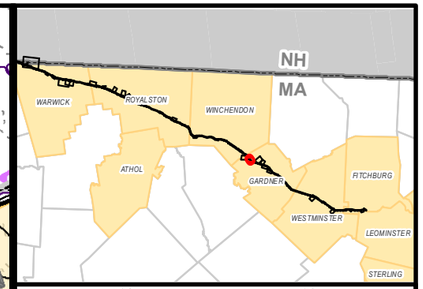
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

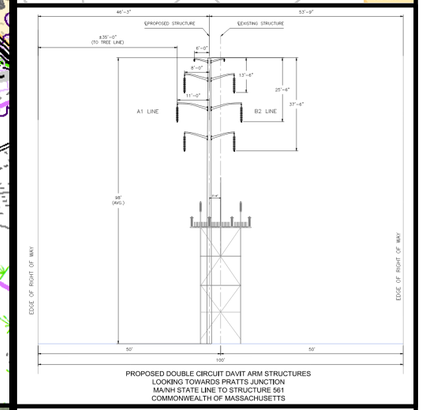
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

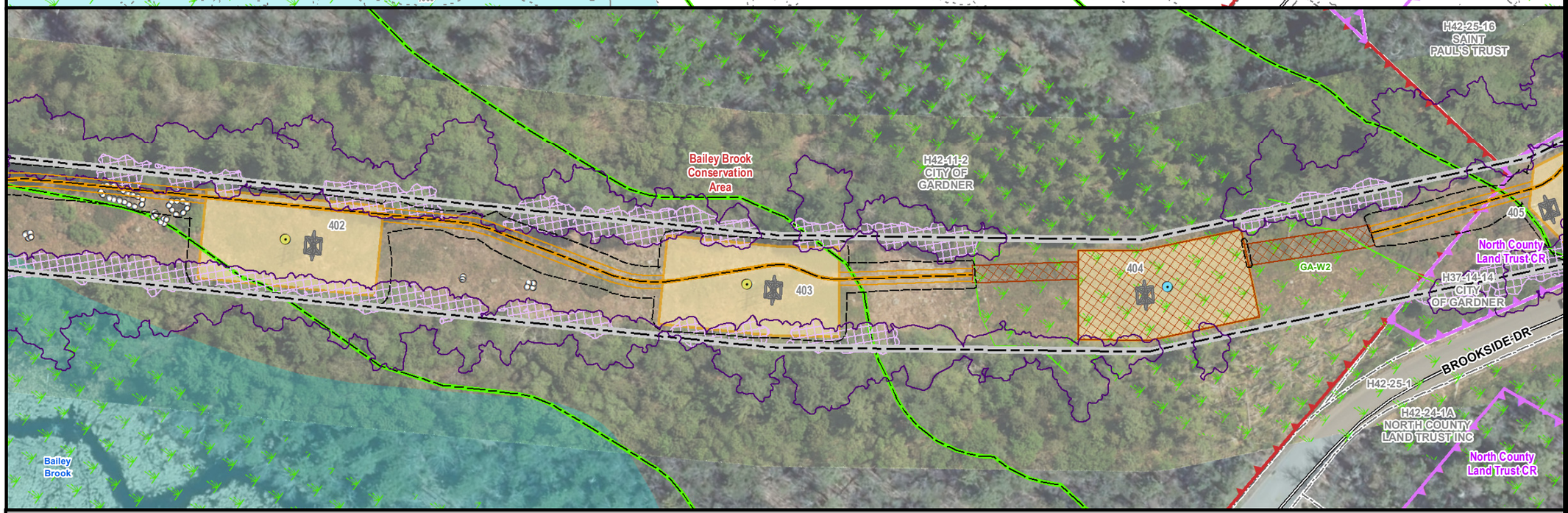
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 91 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

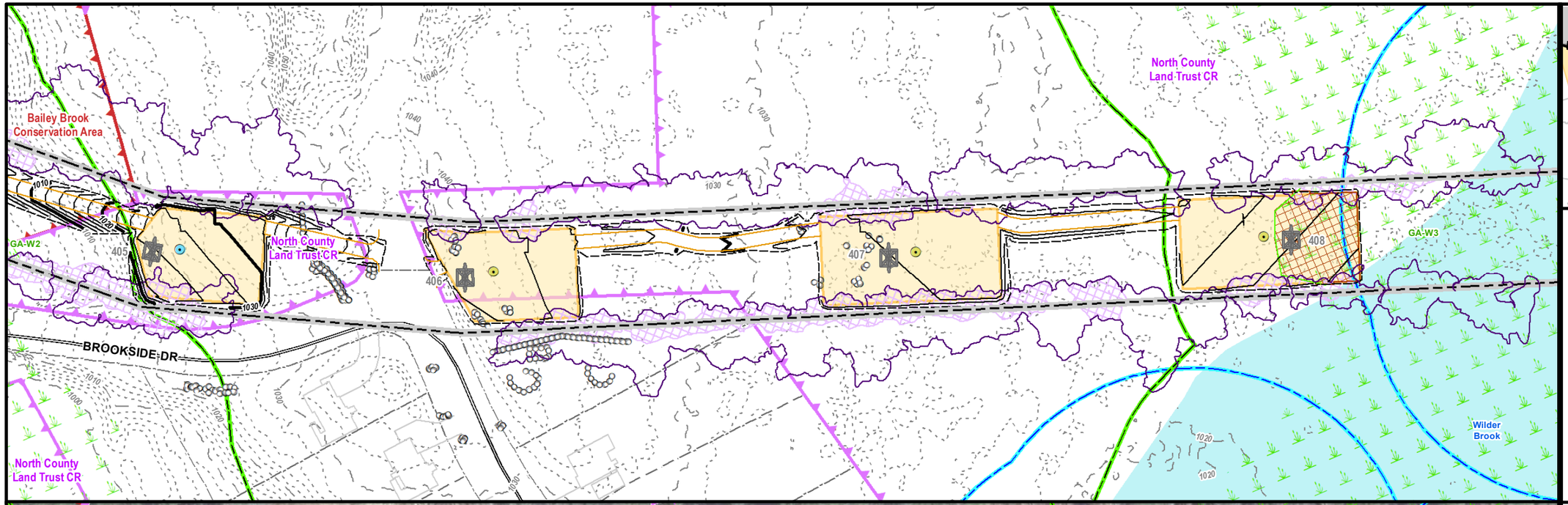
**Indicates Layers Set to Transparency*

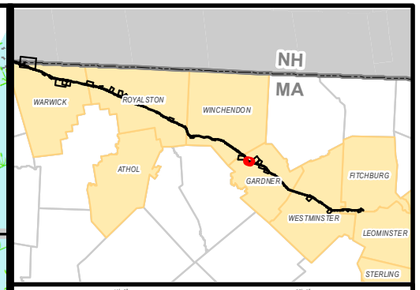
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

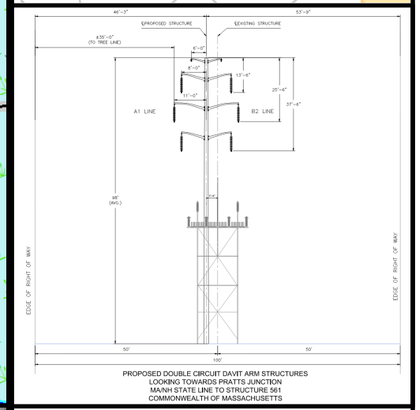
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 92 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

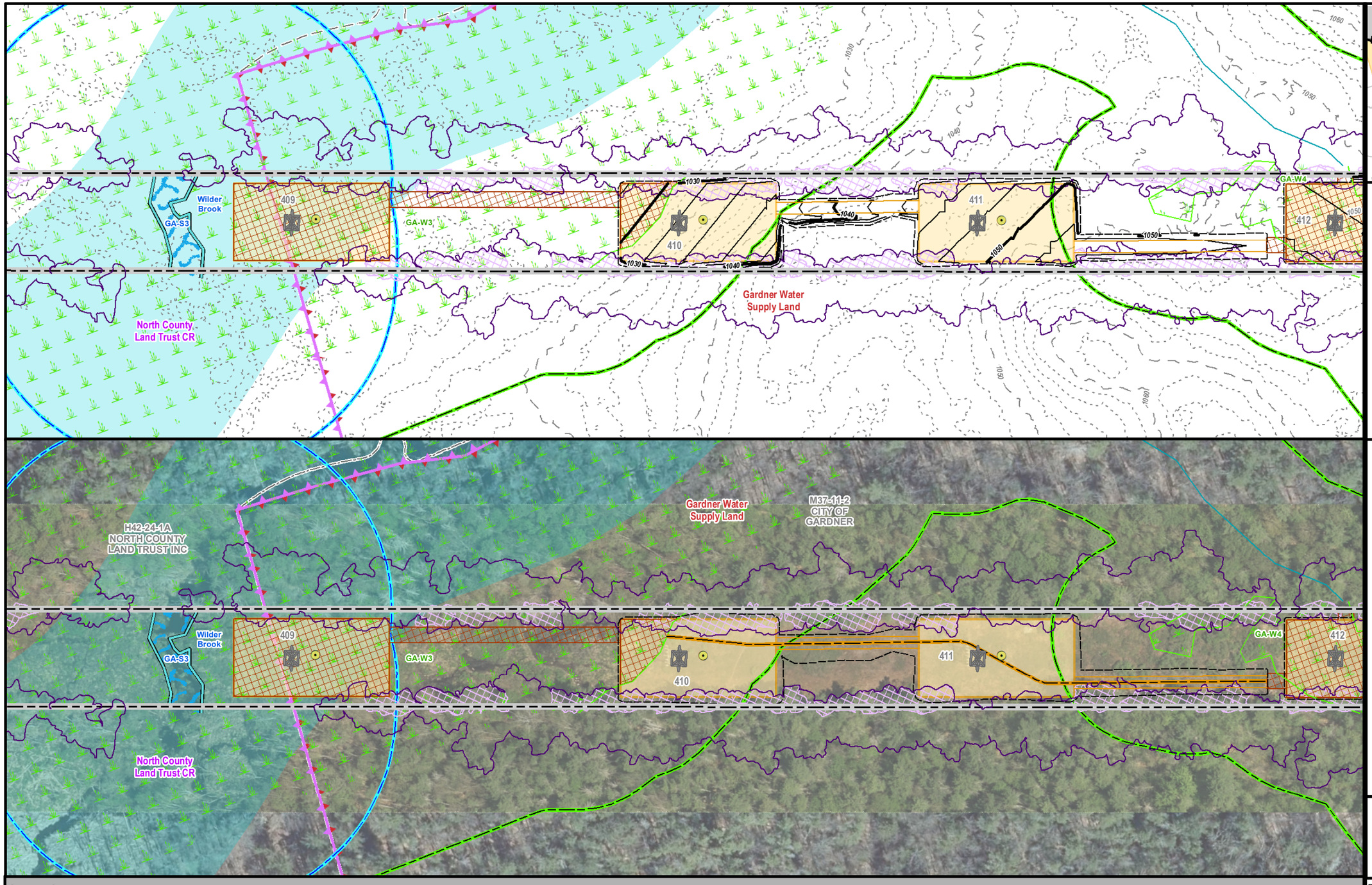
**Indicates Layers Set to Transparency*

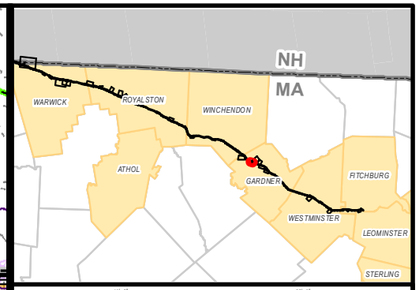
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

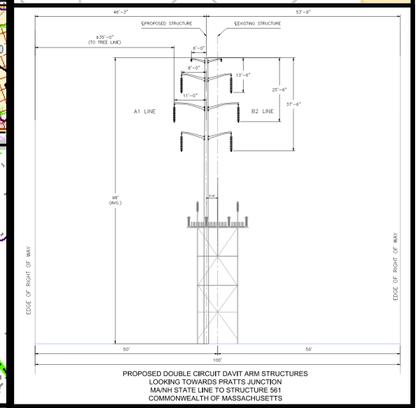
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 93 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

**Indicates Layers Set to Transparency*

PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.

SHEET 94A
SHEET 94

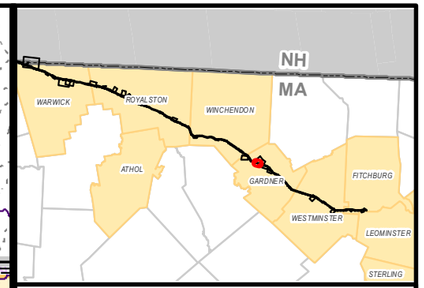
Gardner Water Supply Land

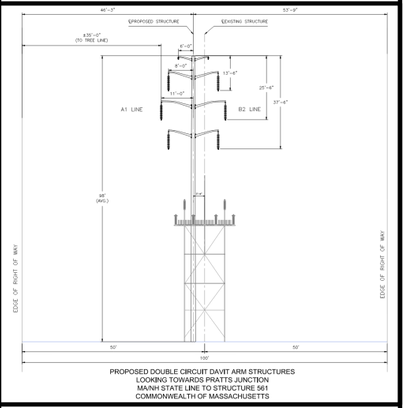
GA-W4
GA-W5
GA-W5A
GA-W6

412
413
414
415

M37-11-2
CITY OF GARDNER

M42-14-3
CITY OF GARDNER





PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 94 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

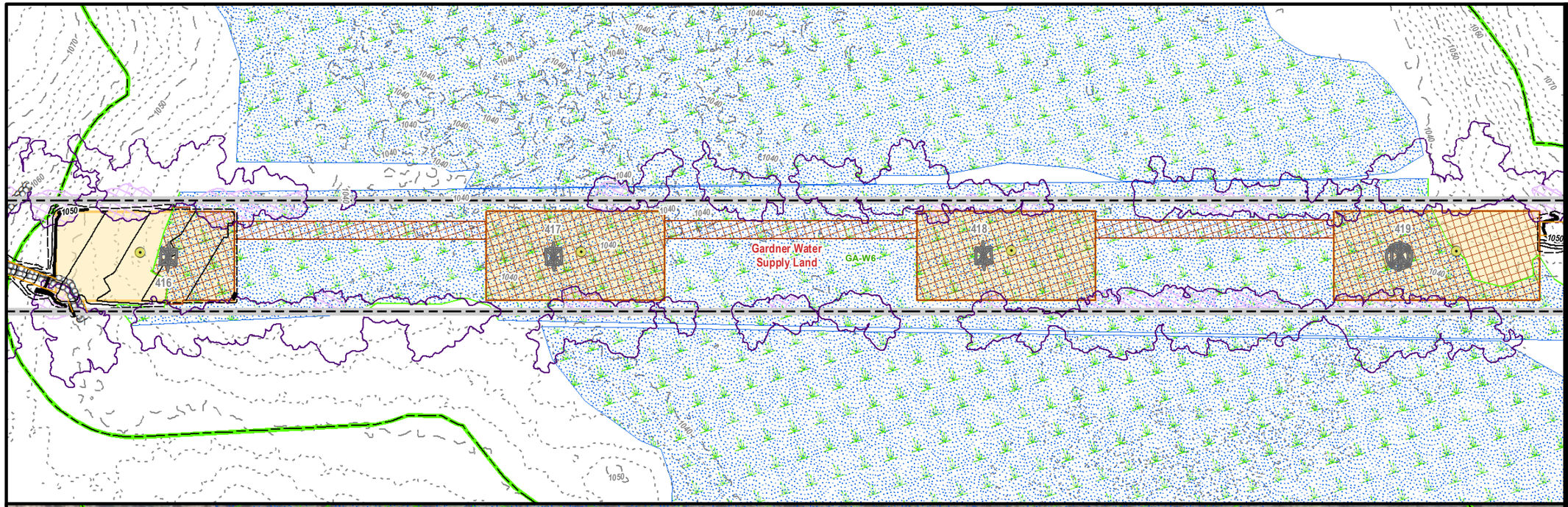
**Indicates Layers Set to Transparency*

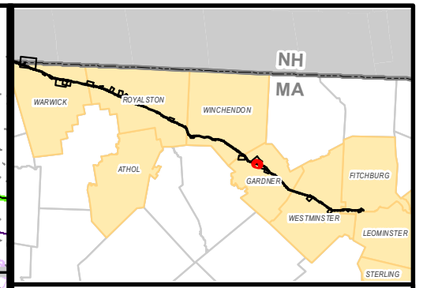
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

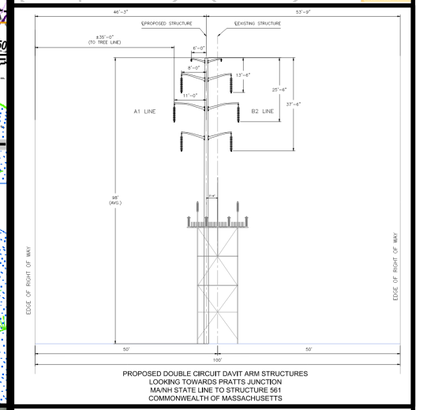
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

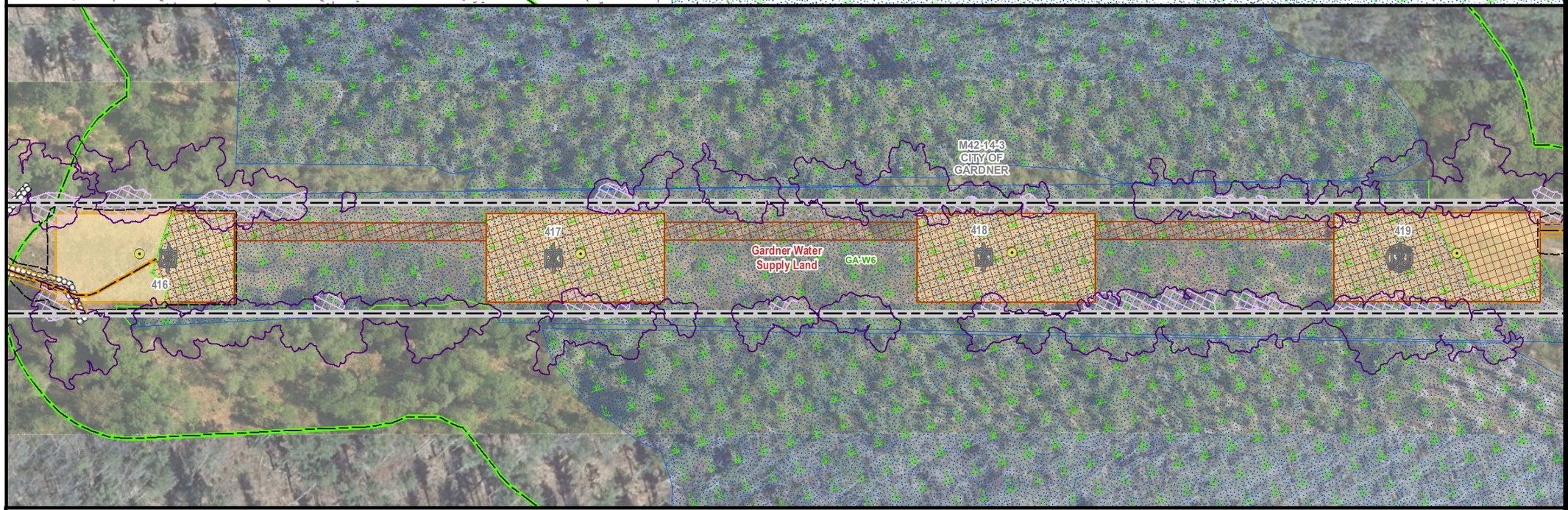
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 95 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

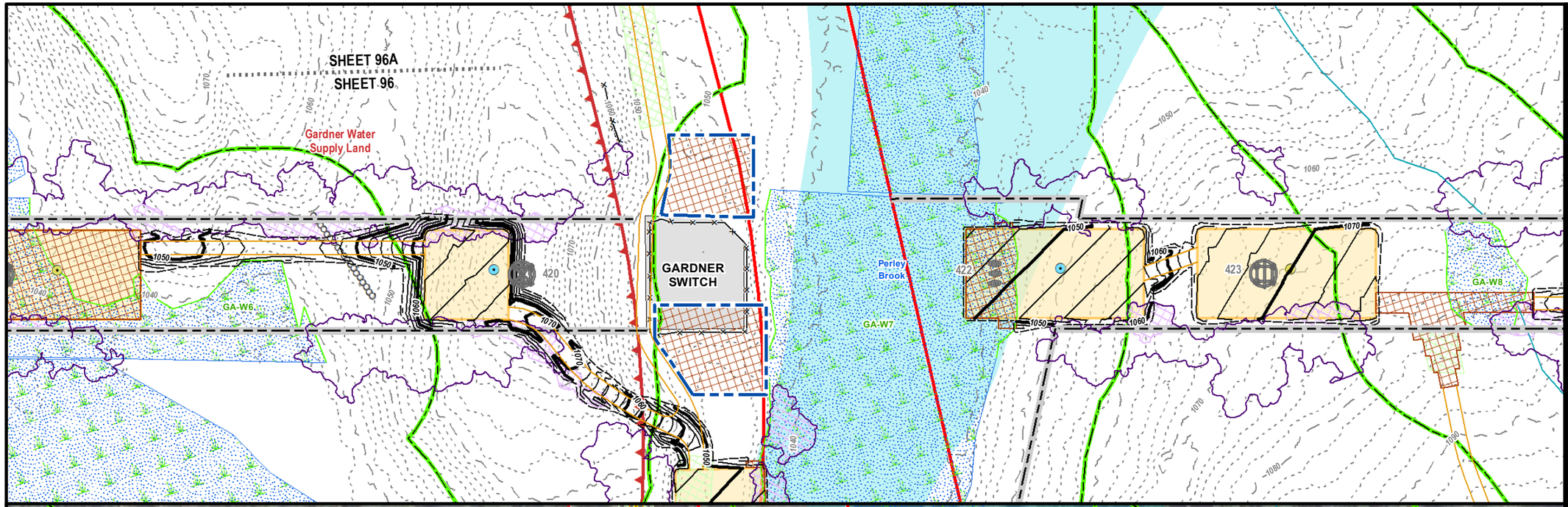
**Indicates Layers Set to Transparency*

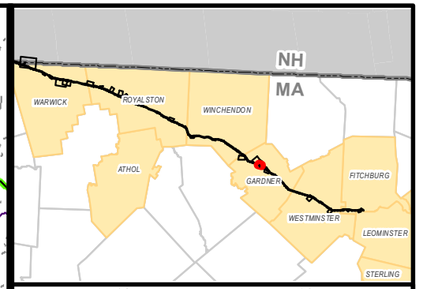
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

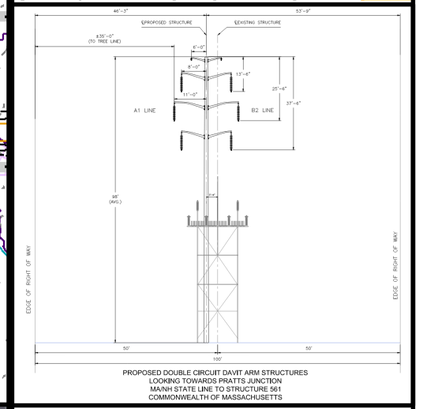
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

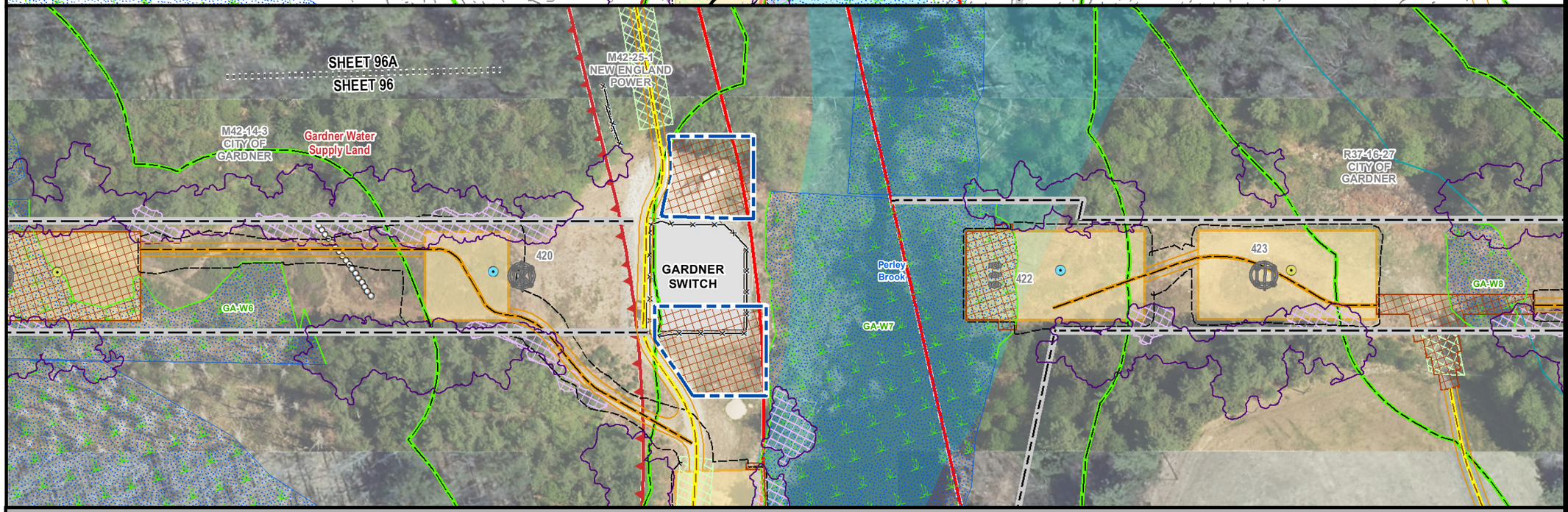
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 96 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

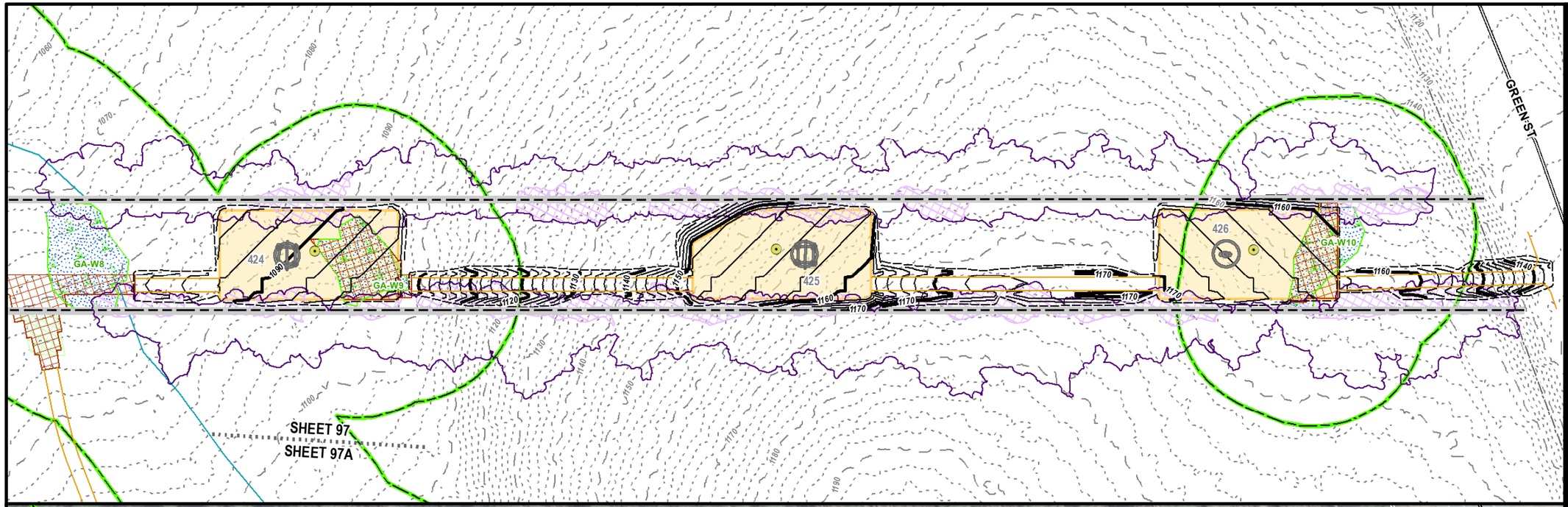
**Indicates Layers Set to Transparency*

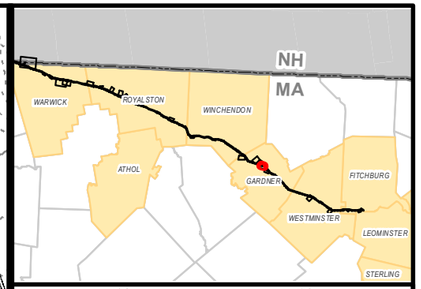
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

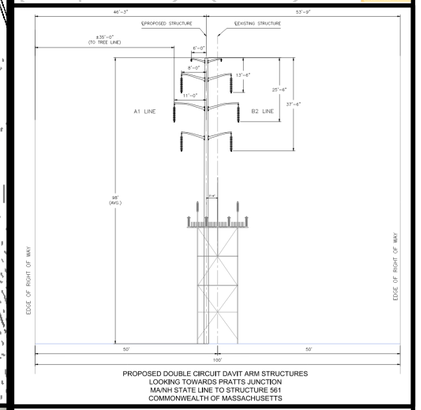
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 97 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.**

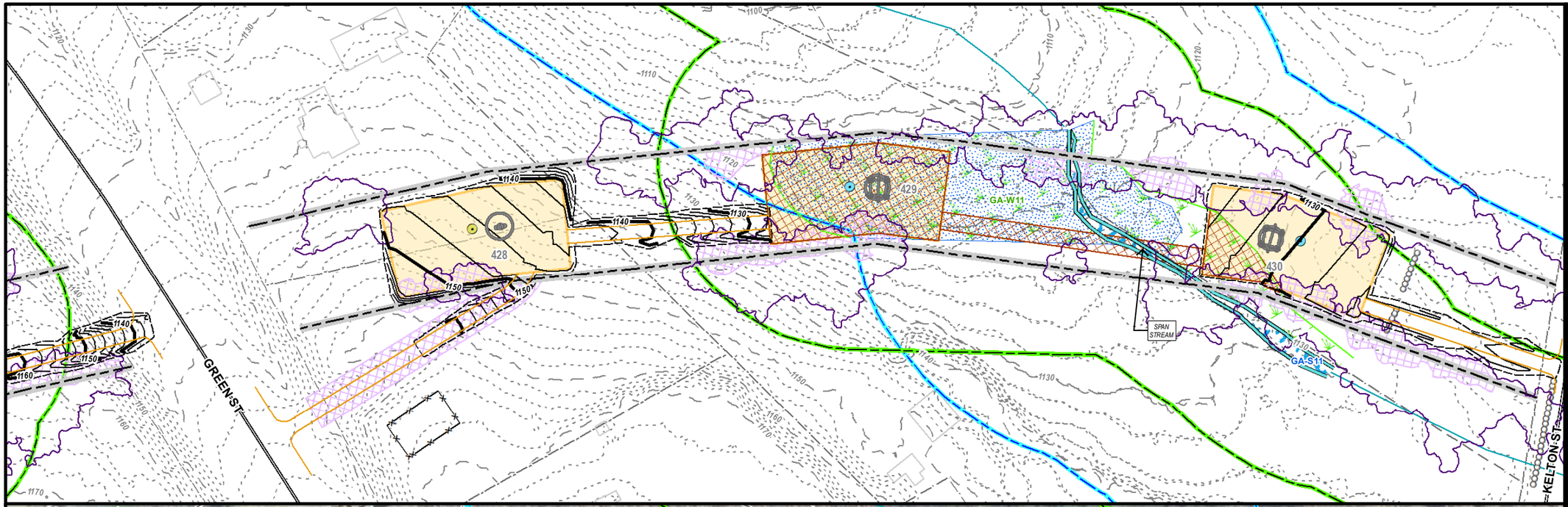
***Indicates Layers Set to Transparency**

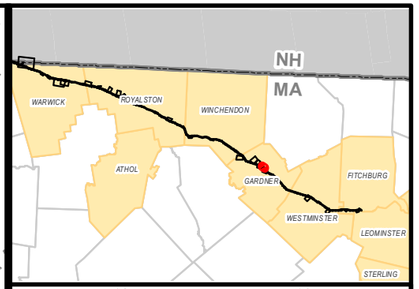
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

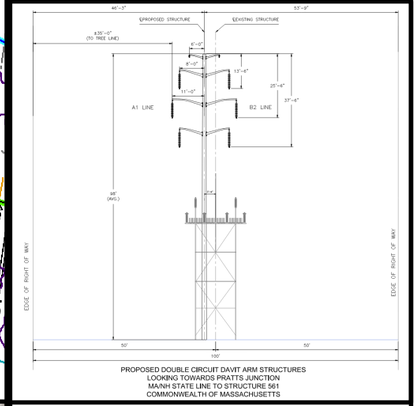
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

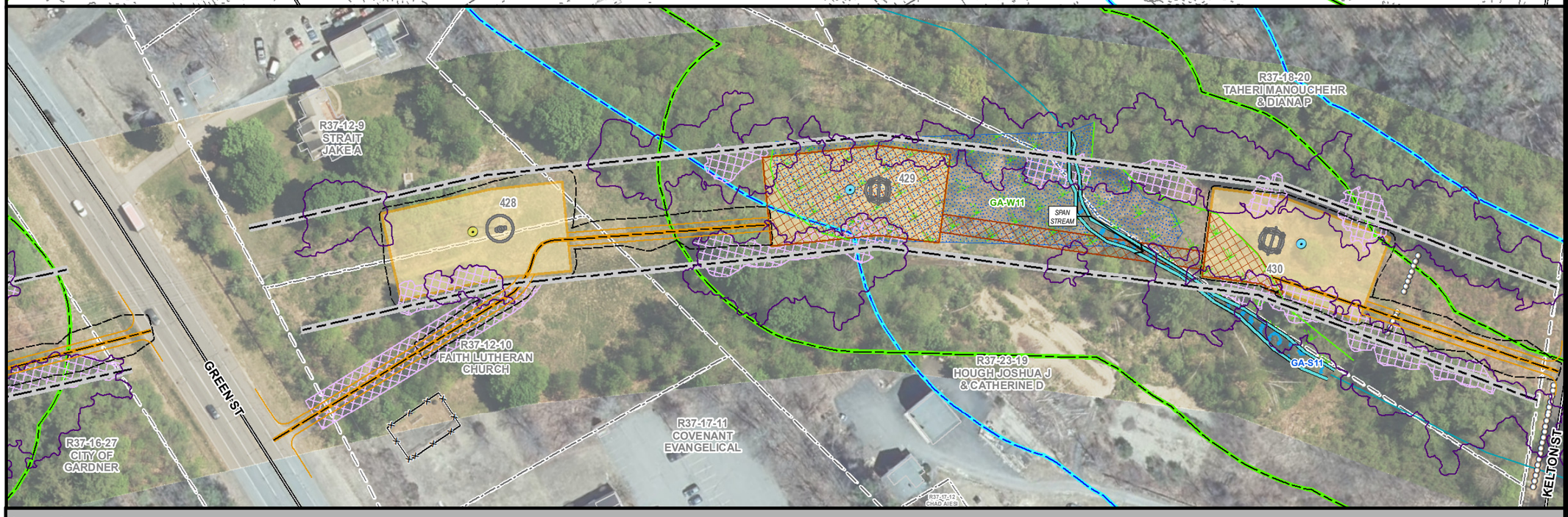
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 98 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

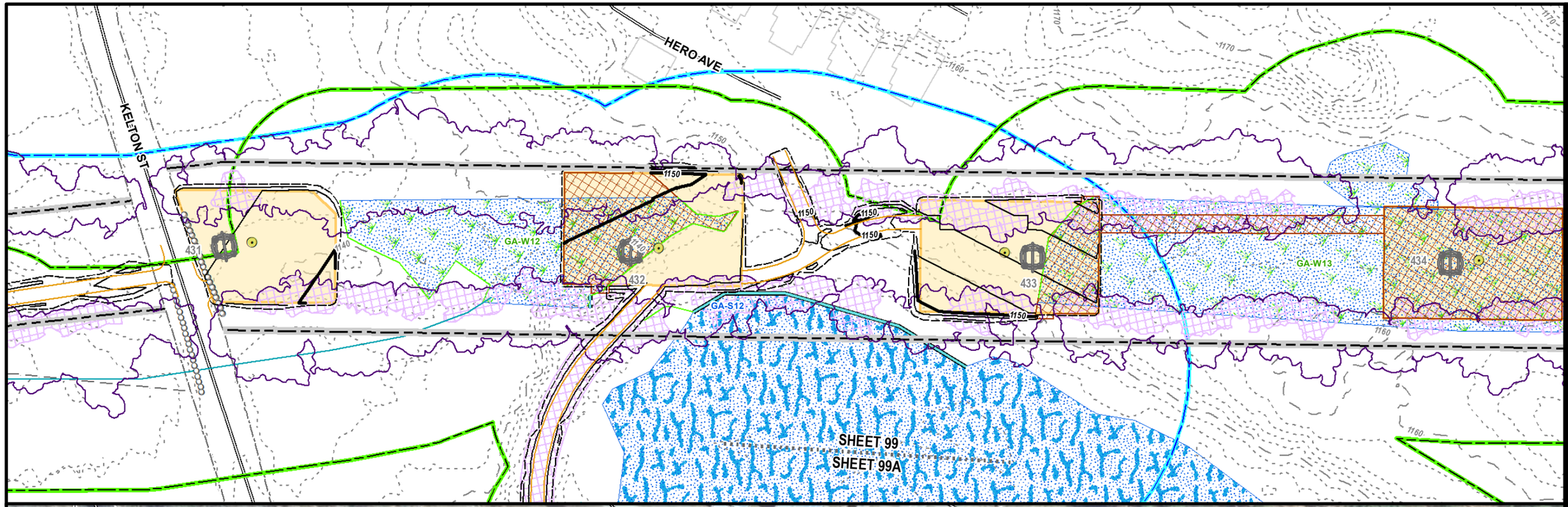
**Indicates Layers Set to Transparency*

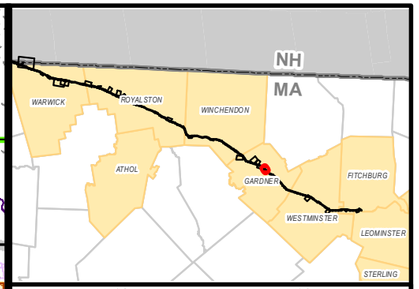
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

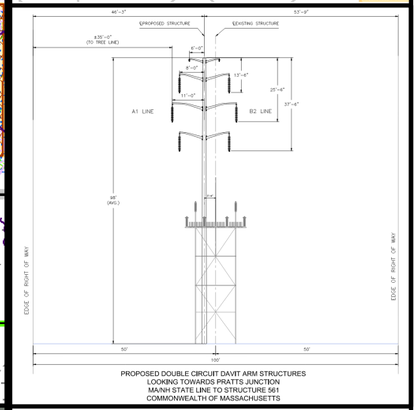
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

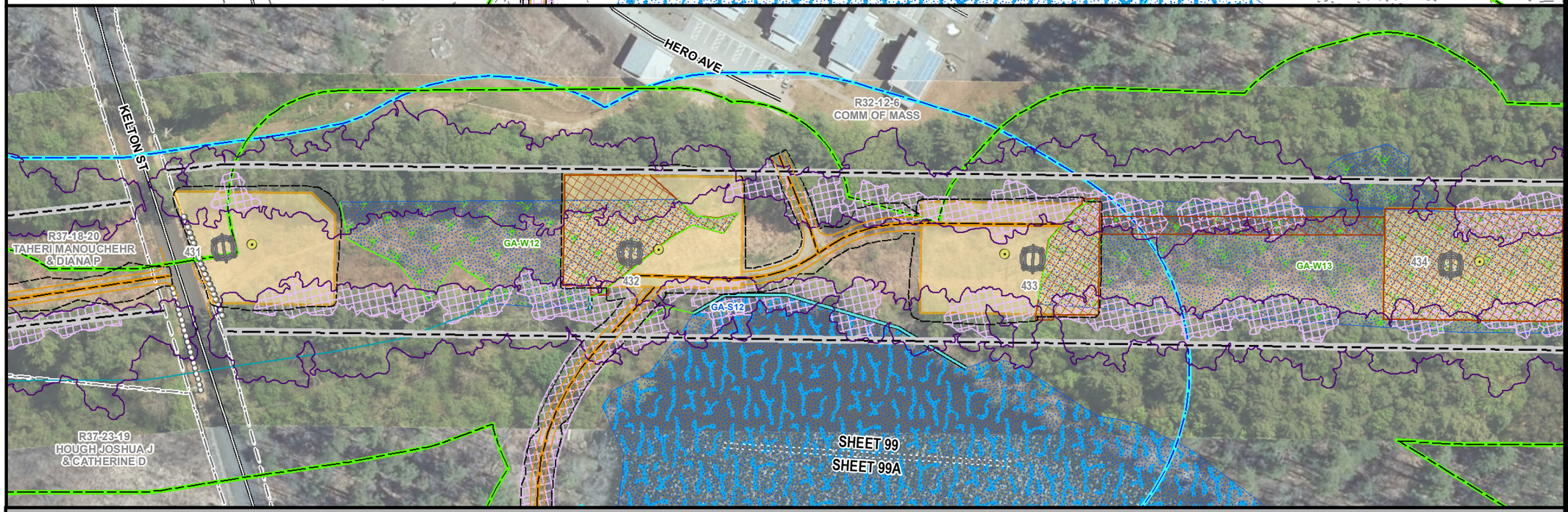
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 99 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

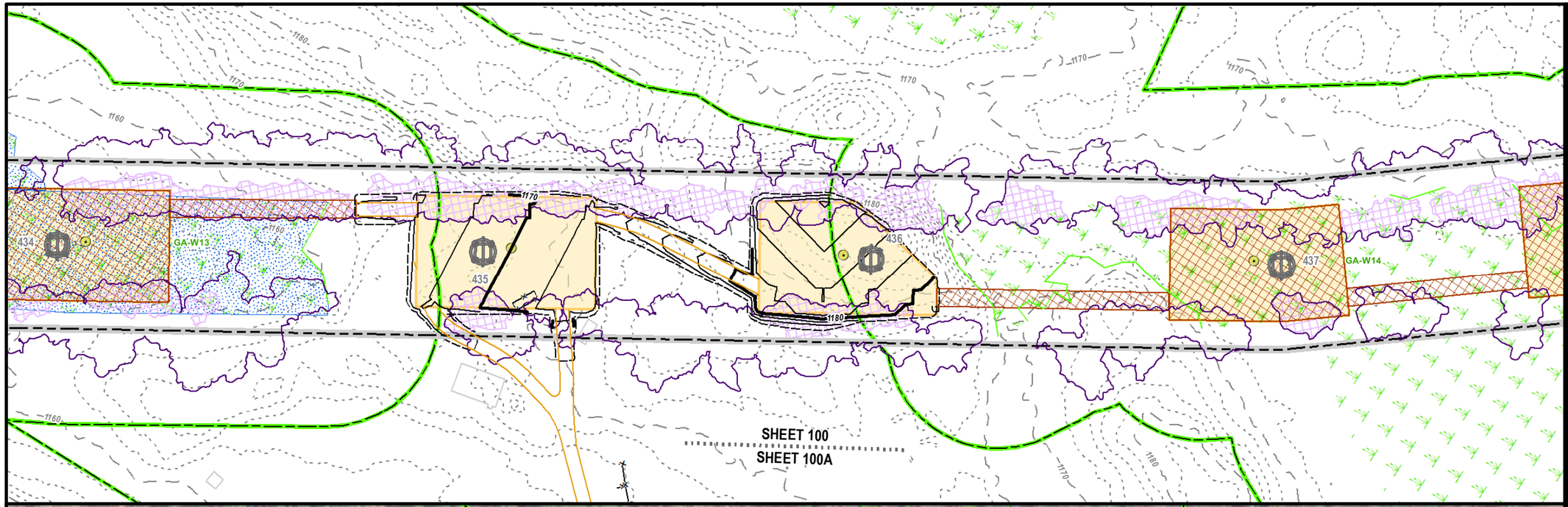
**Indicates Layers Set to Transparency*

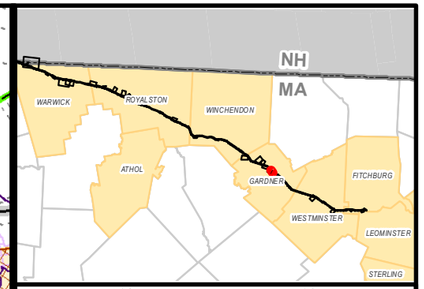
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

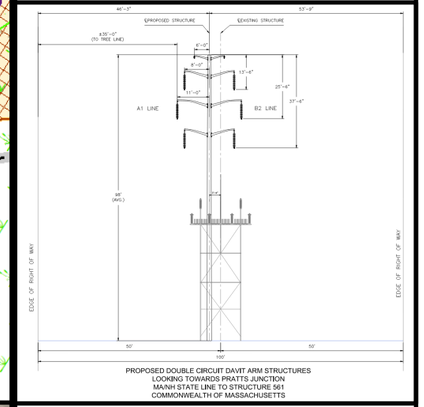
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

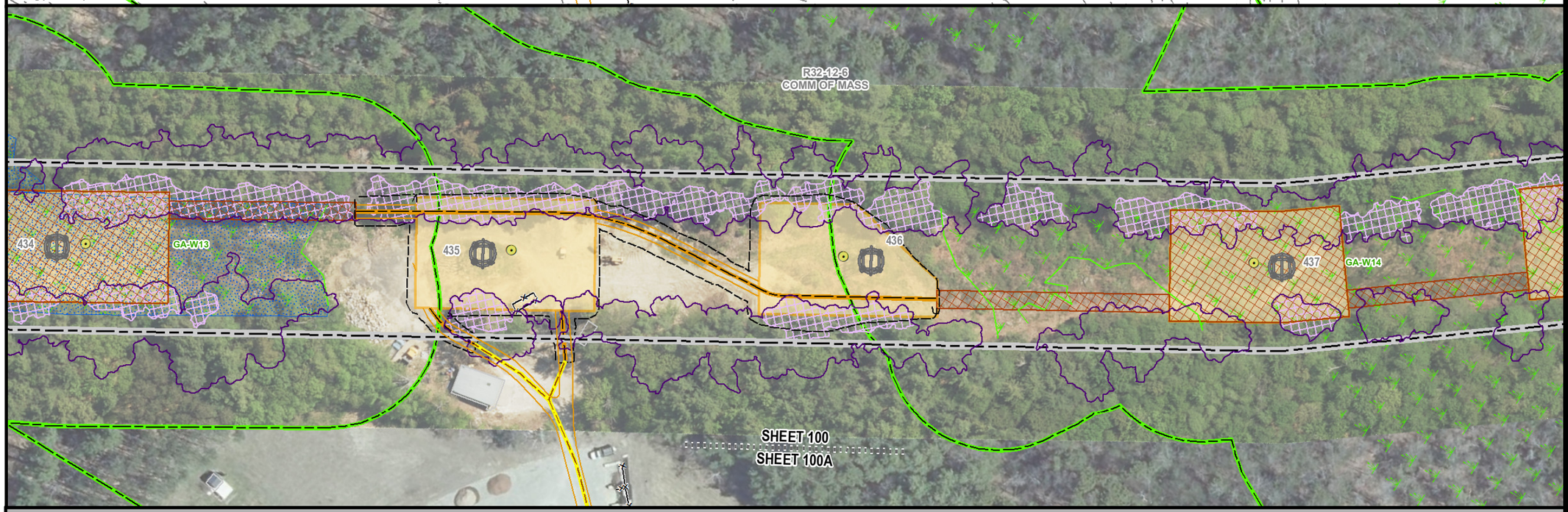
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 100 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

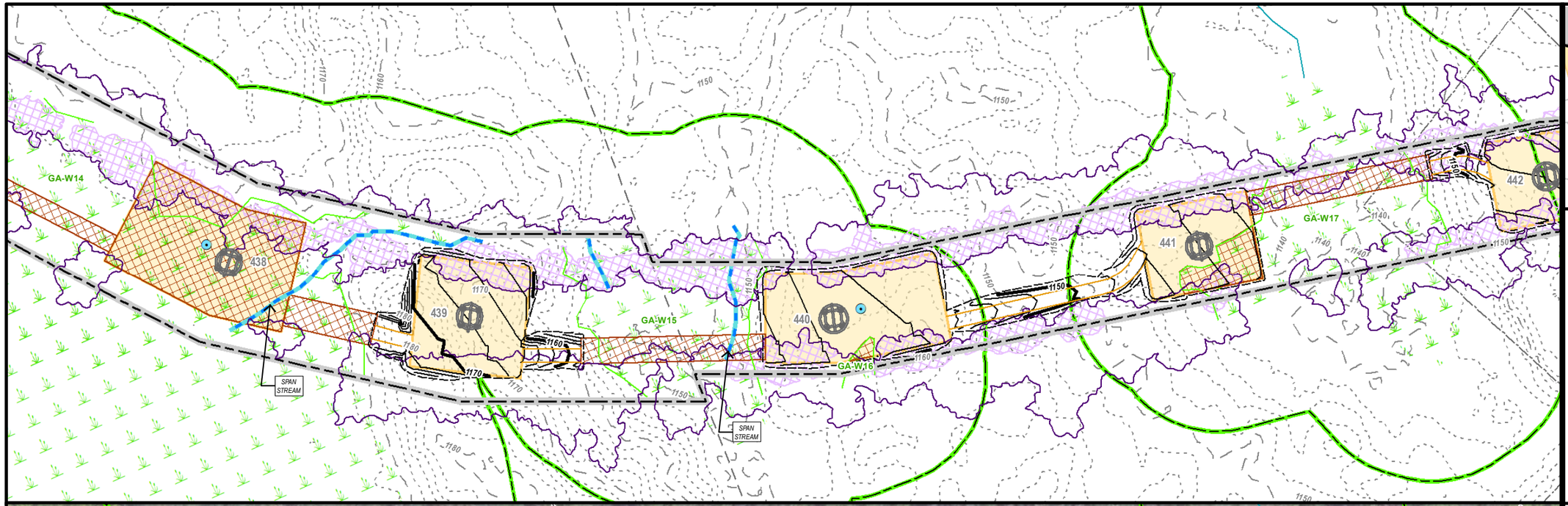
**Indicates Layers Set to Transparency*

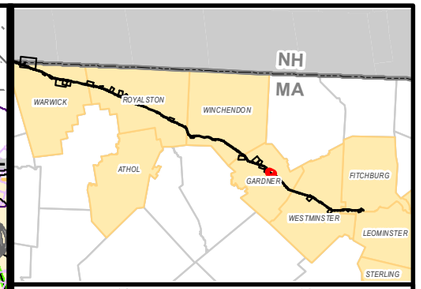
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

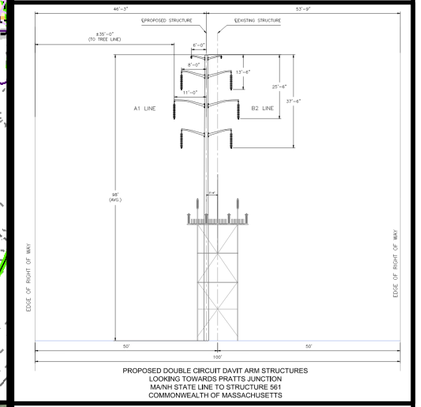
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

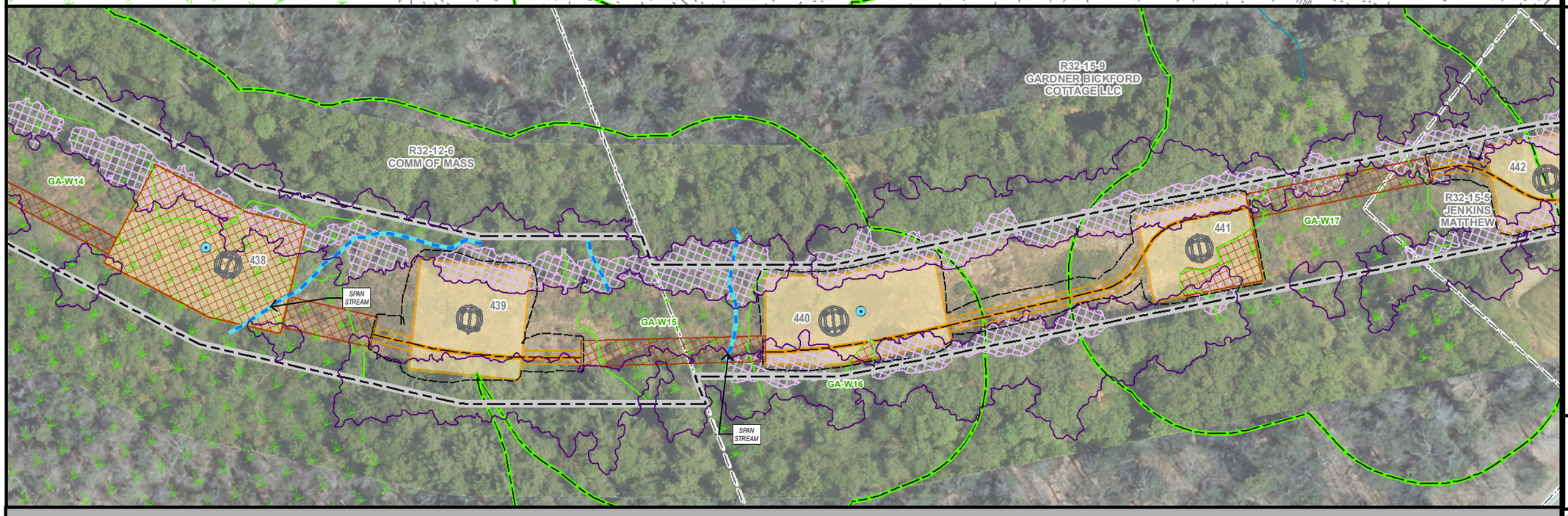
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 101 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

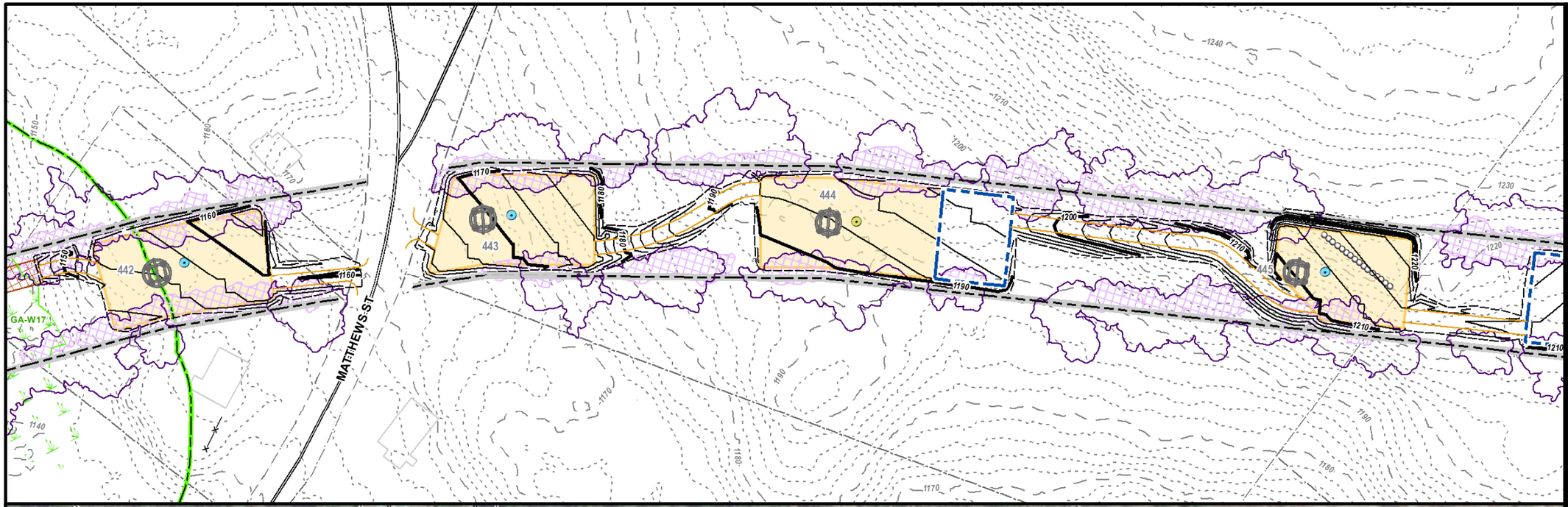
**Indicates Layers Set to Transparency*

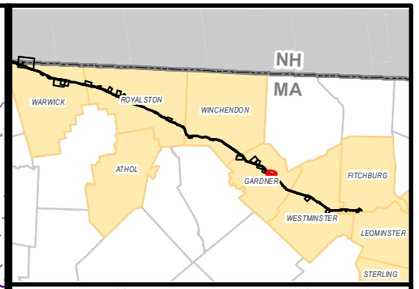
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

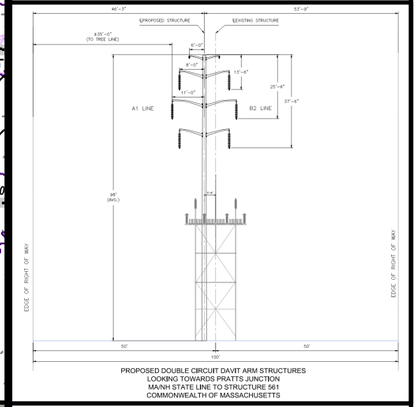
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

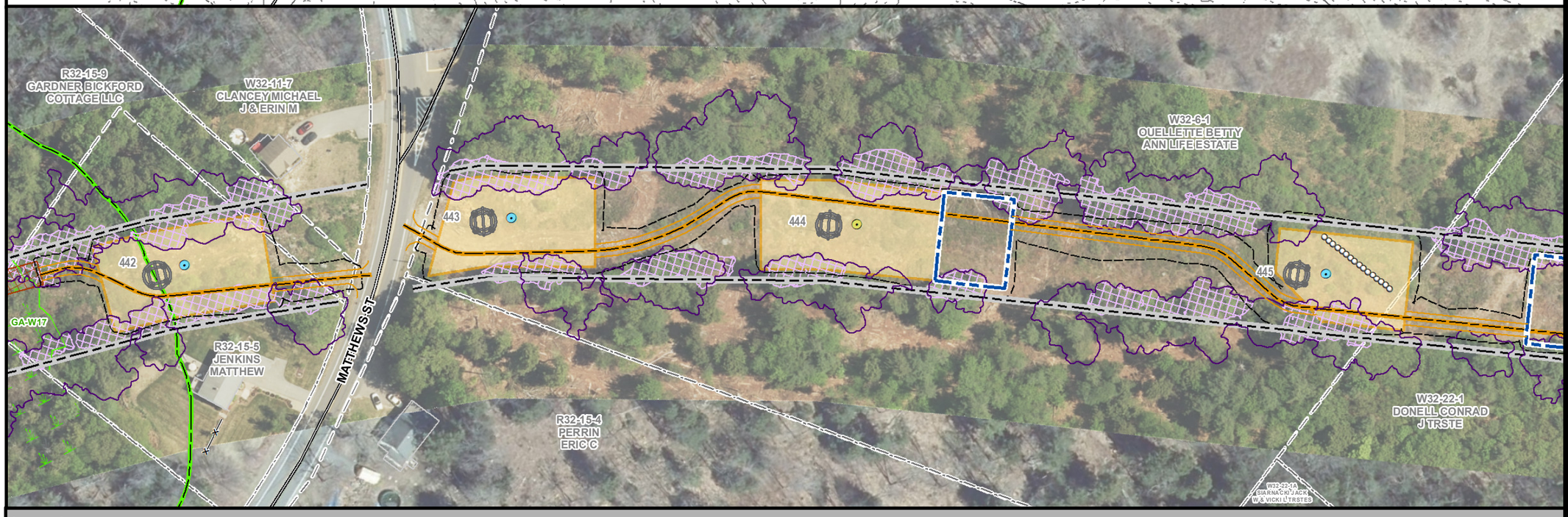
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 102 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

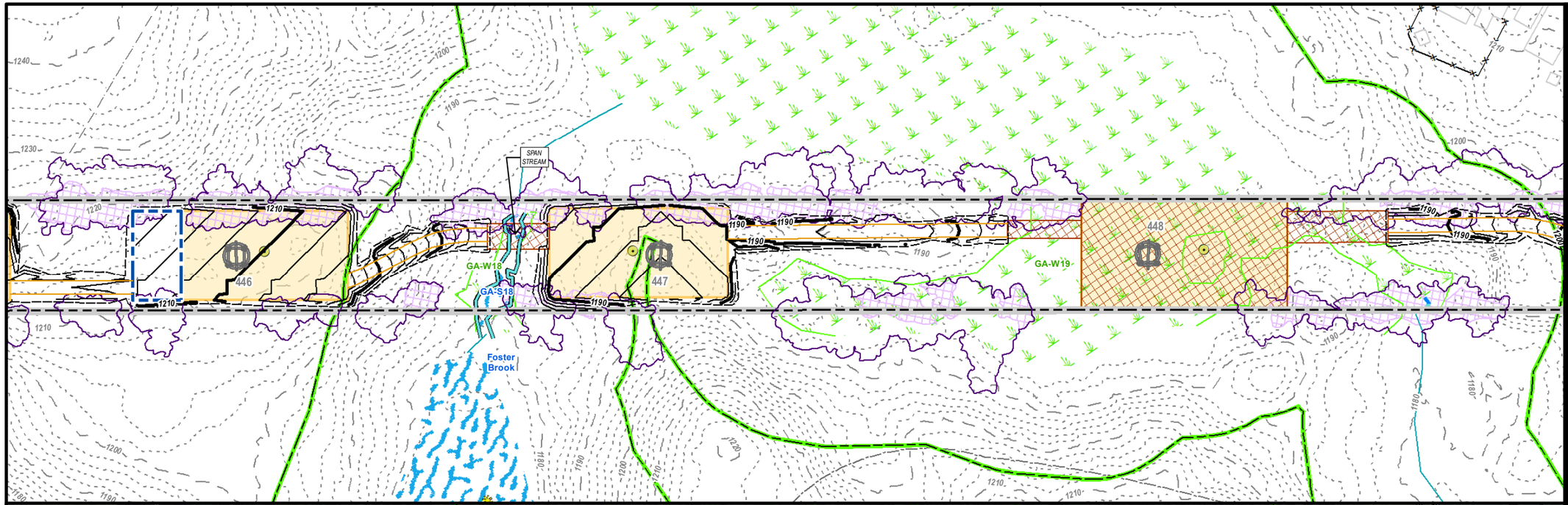
**Indicates Layers Set to Transparency*

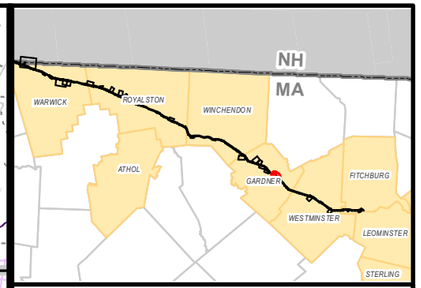
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

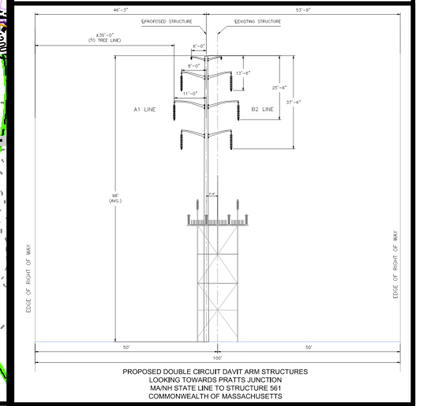
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

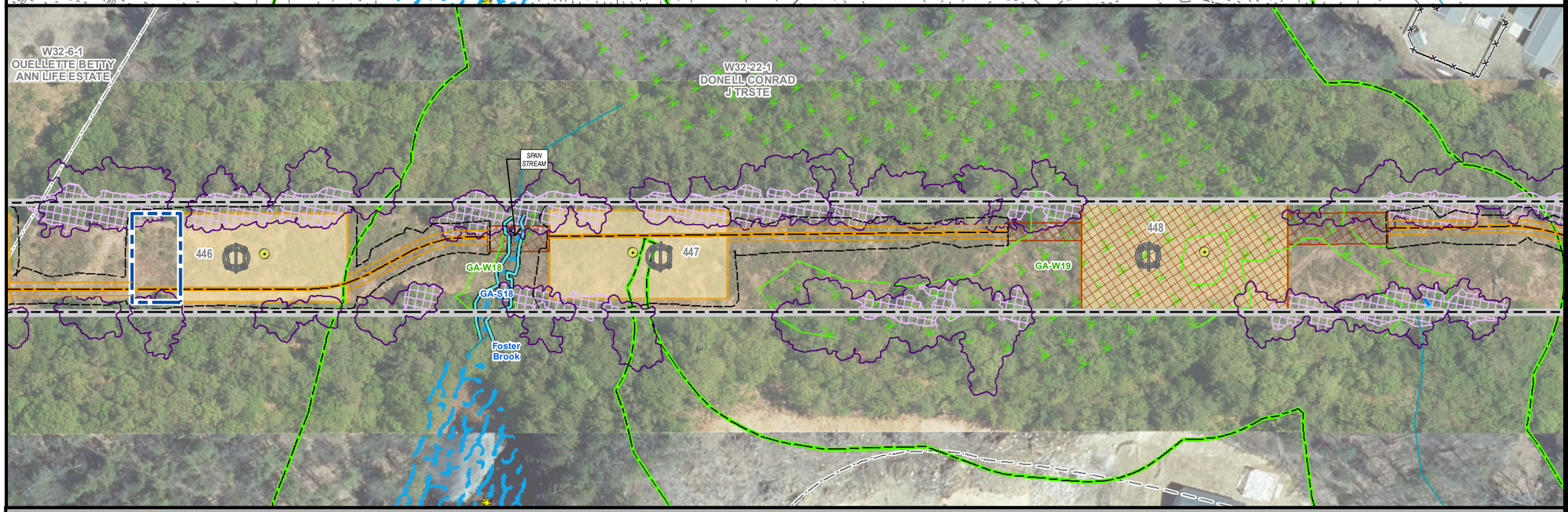
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 103 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

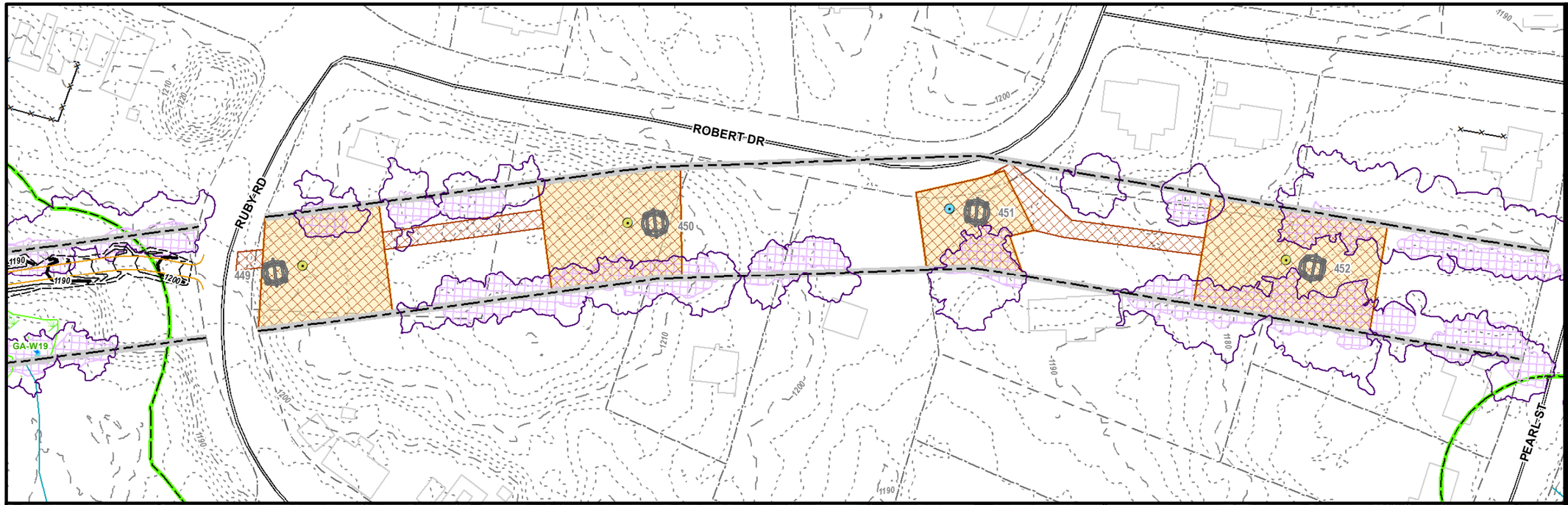
**Indicates Layers Set to Transparency*

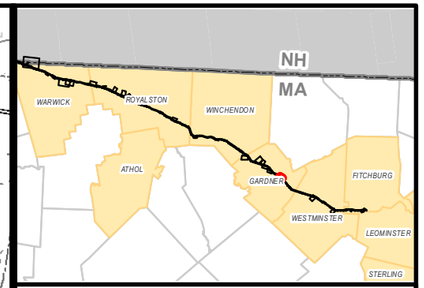
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

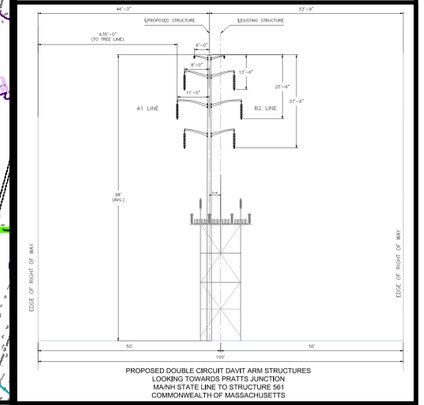
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

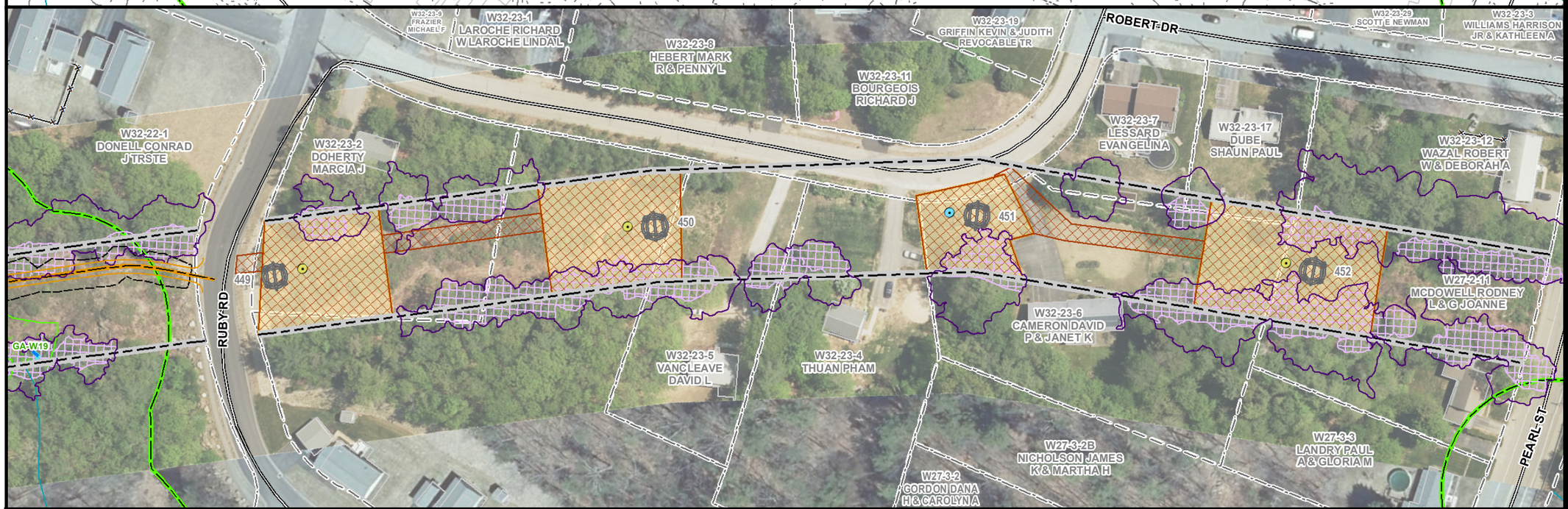
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 104 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

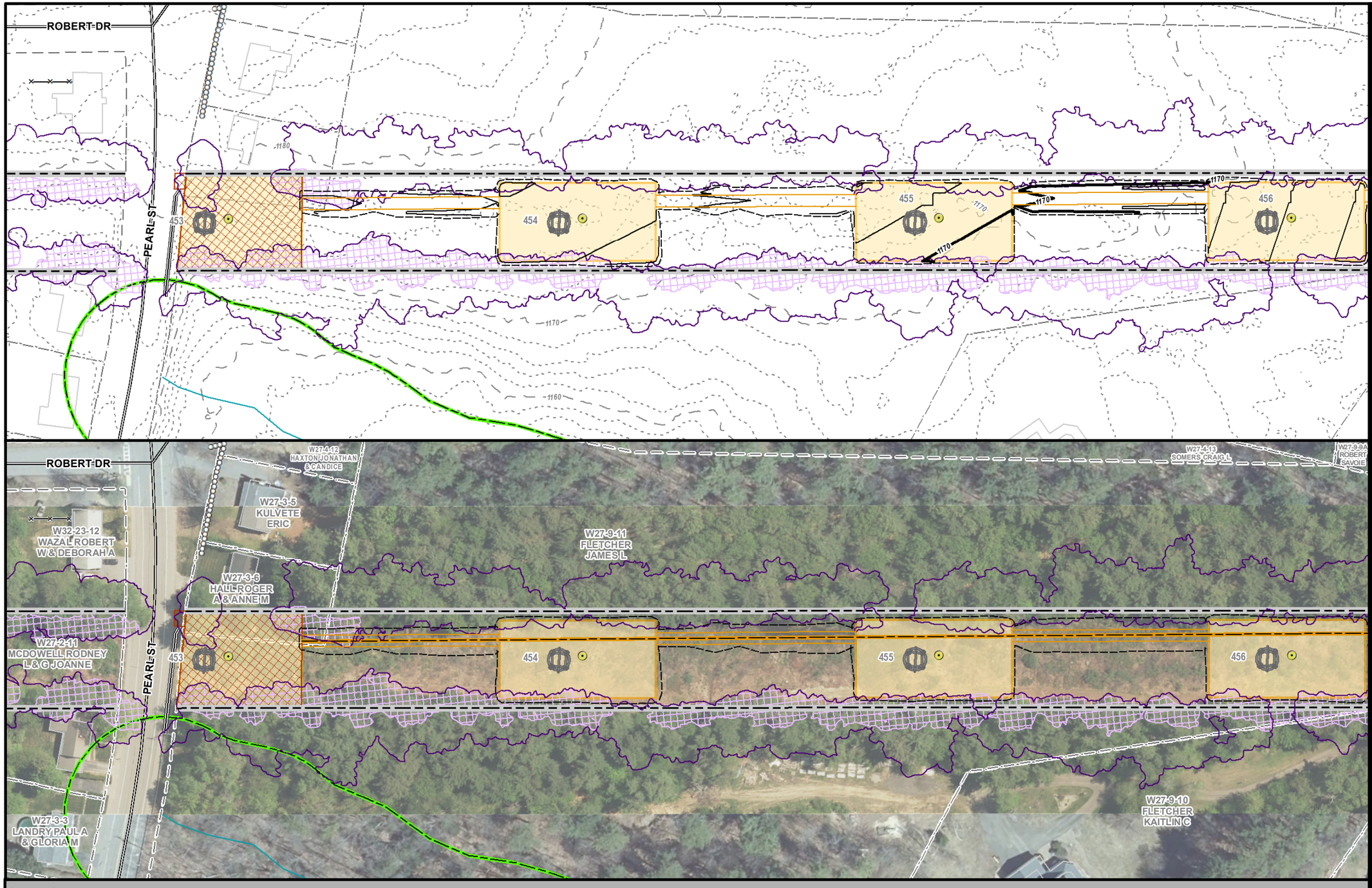
**Indicates Layers Set to Transparency*

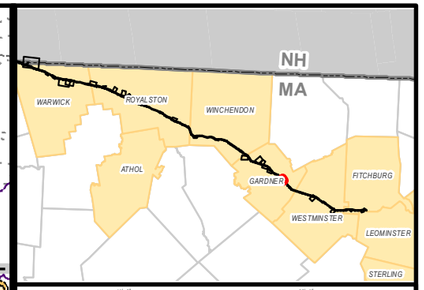
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

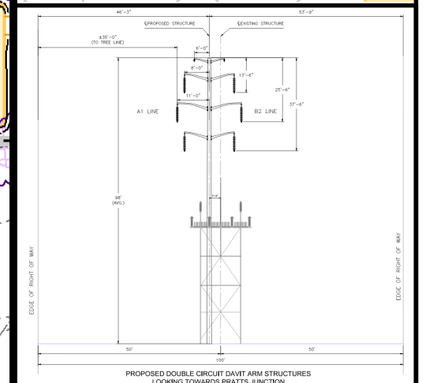
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 105 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

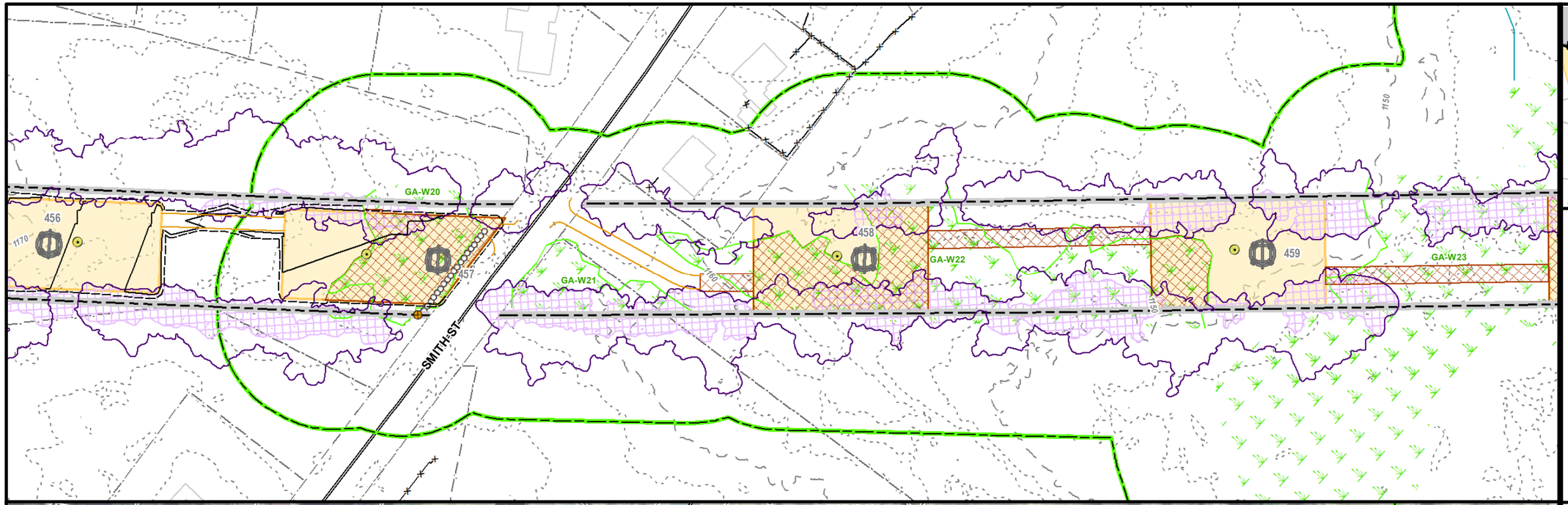
*Indicates Layers Set to Transparency

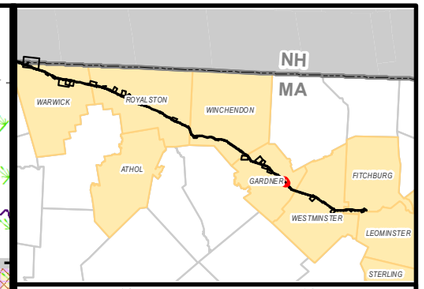
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

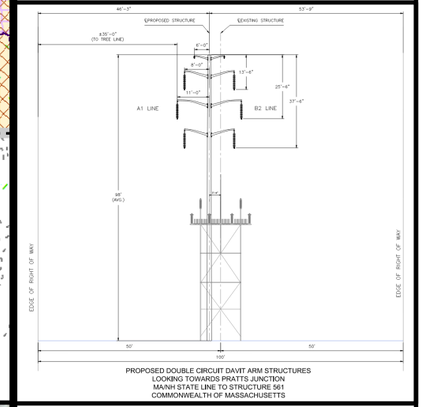
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

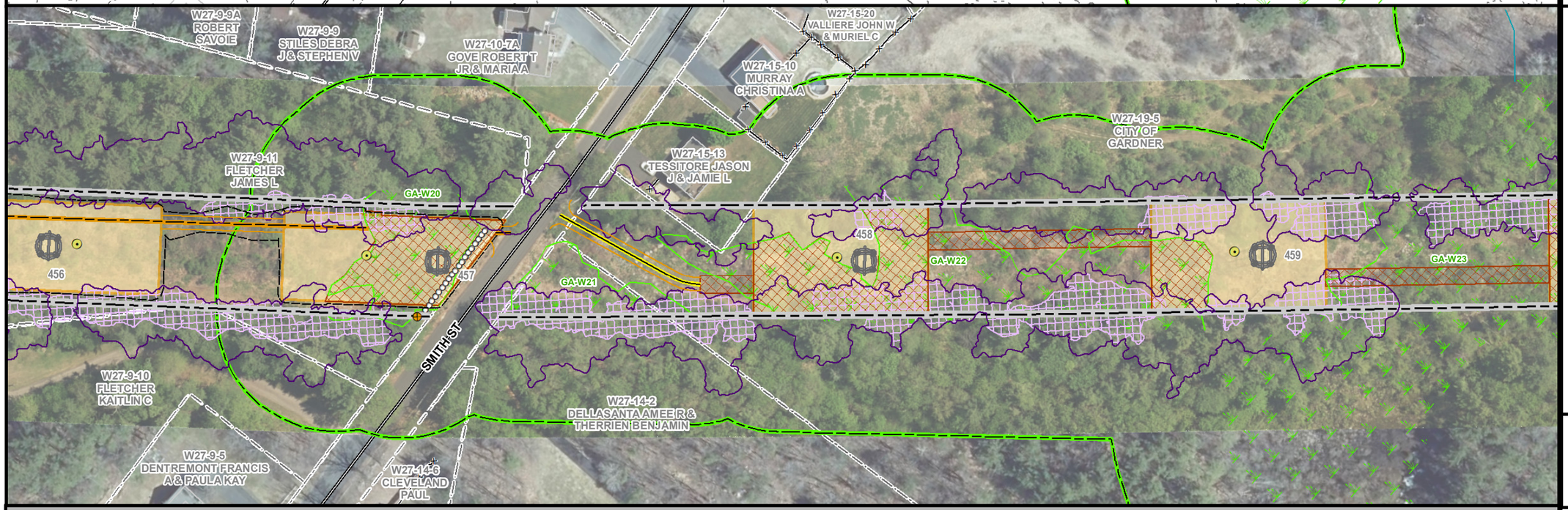
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 106 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

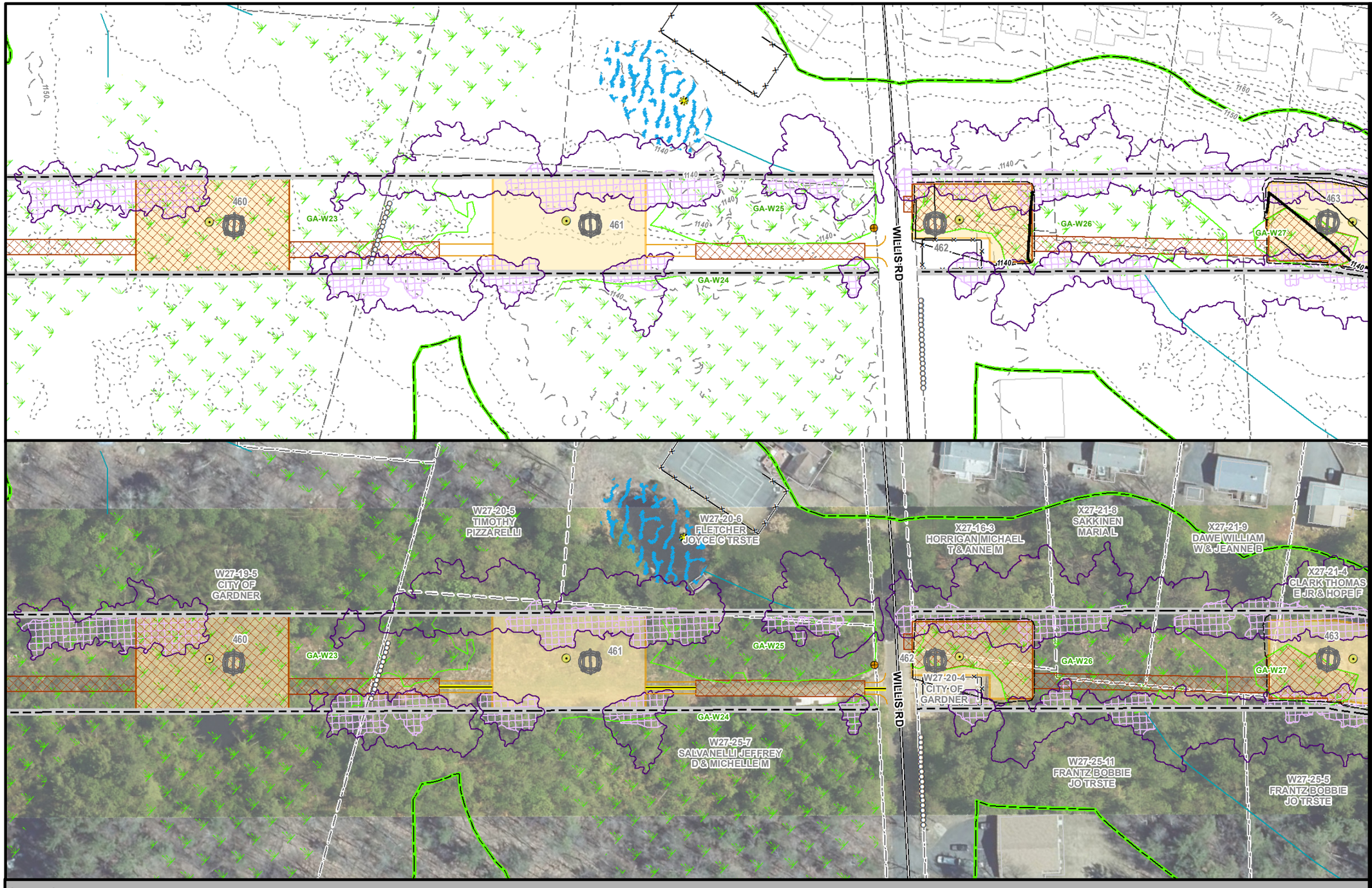
**Indicates Layers Set to Transparency*

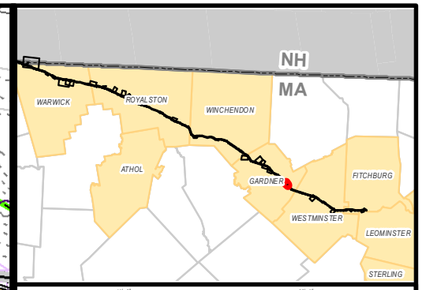
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

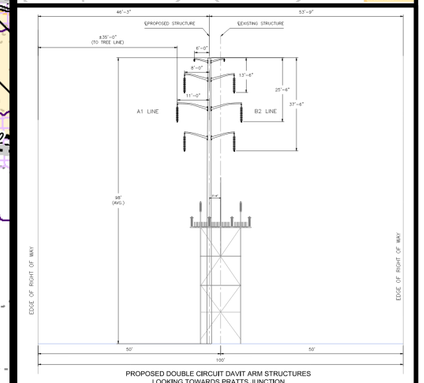
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 107 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

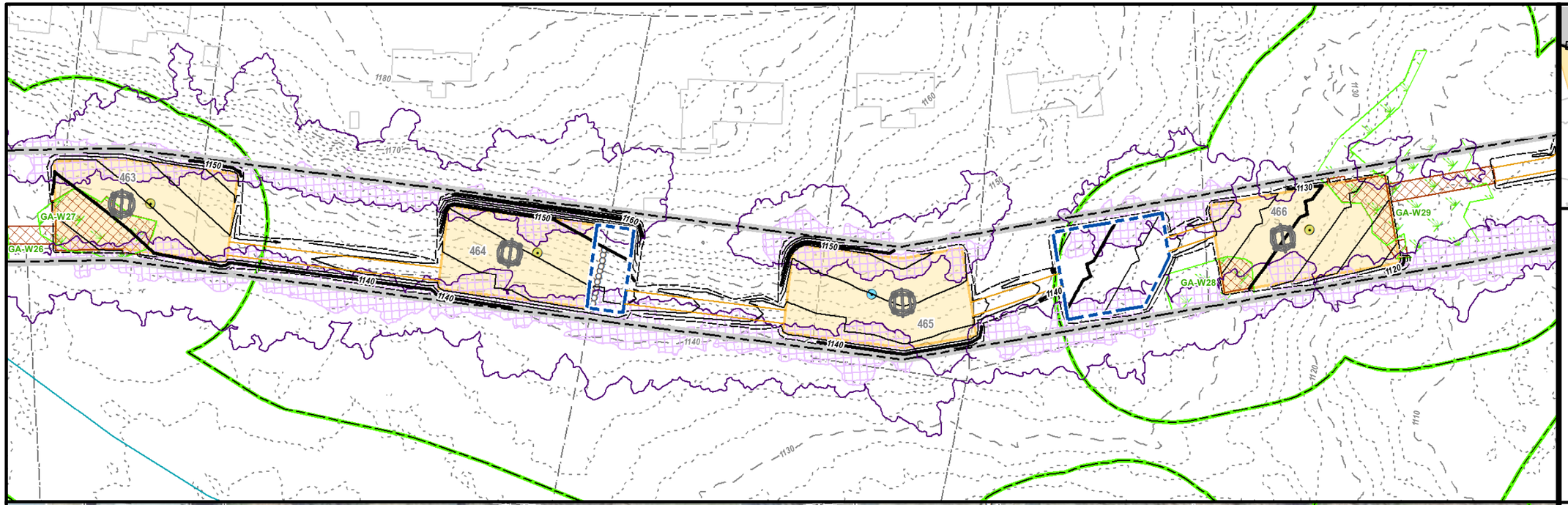
**Indicates Layers Set to Transparency*

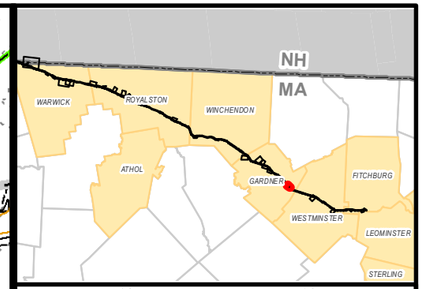
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

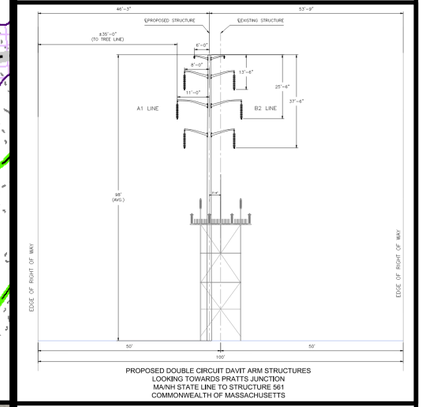
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

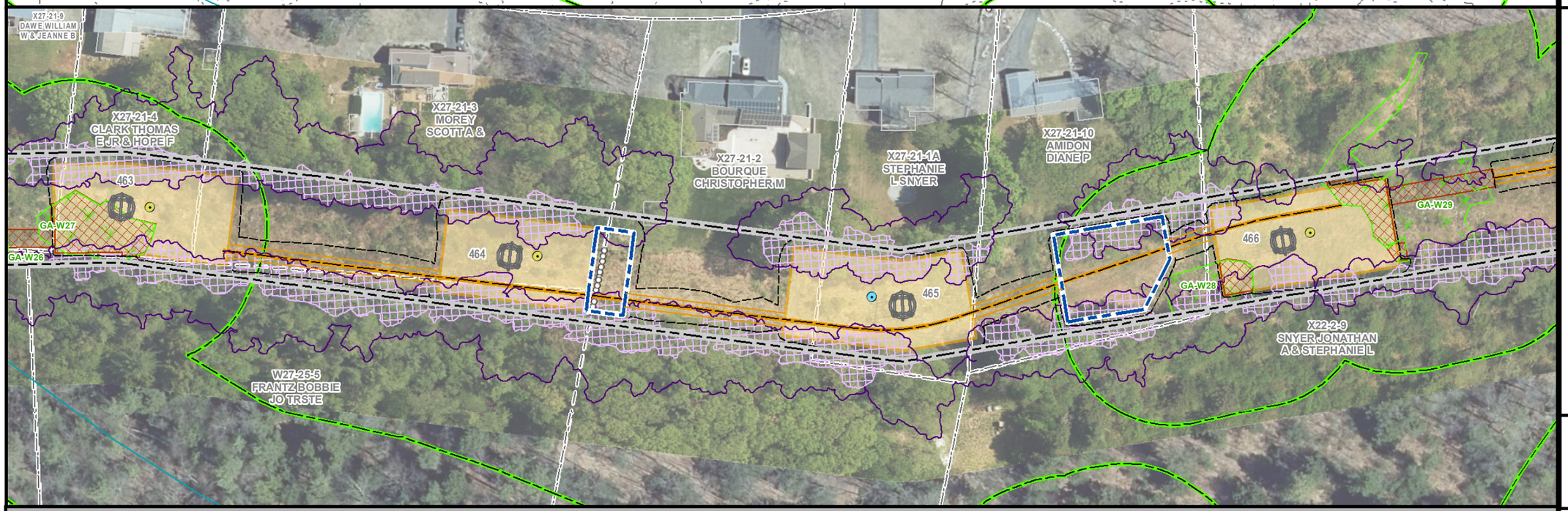
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 108 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.

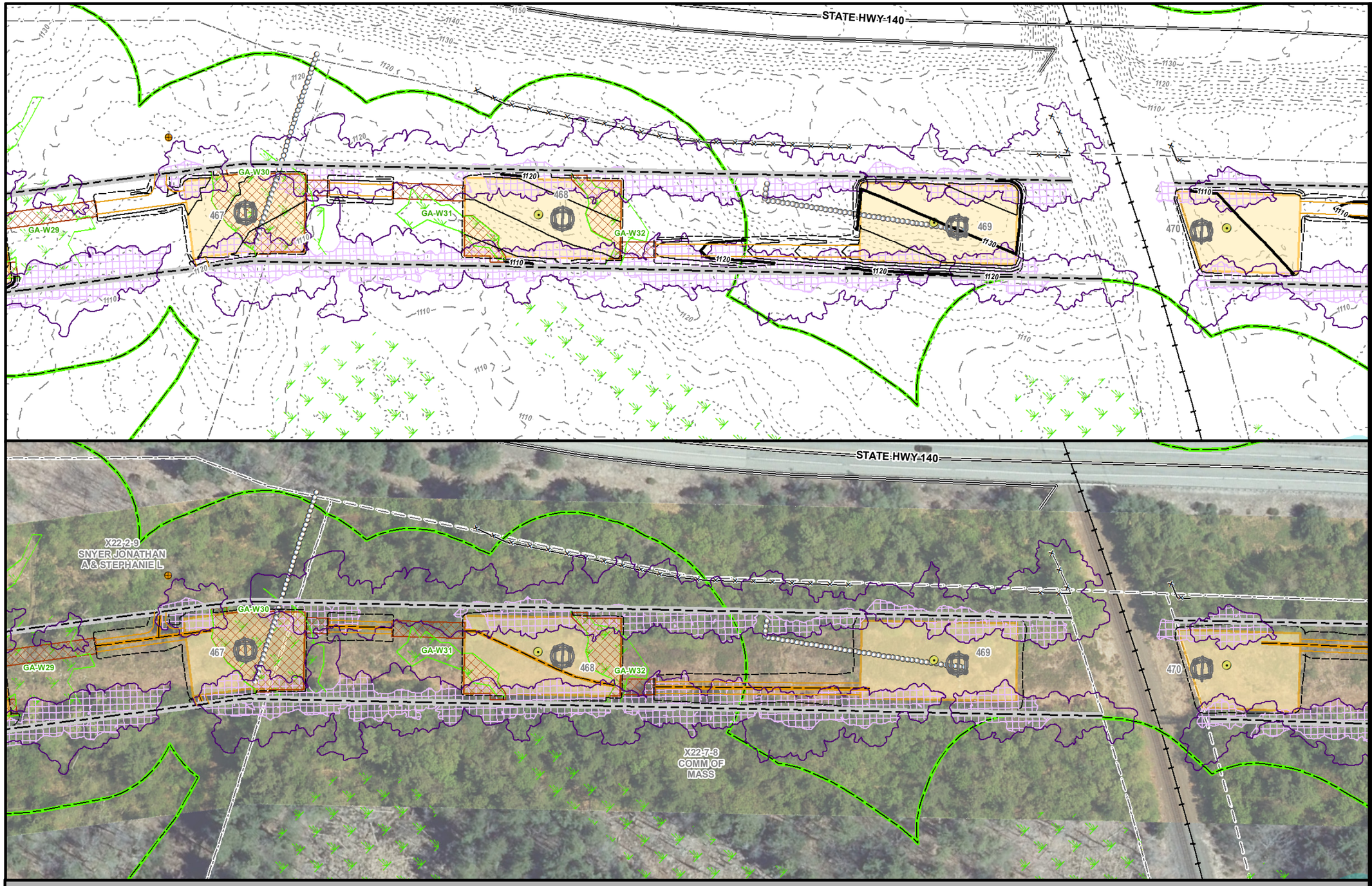
***Indicates Layers Set to Transparency**

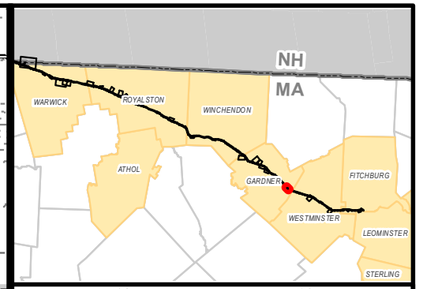
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

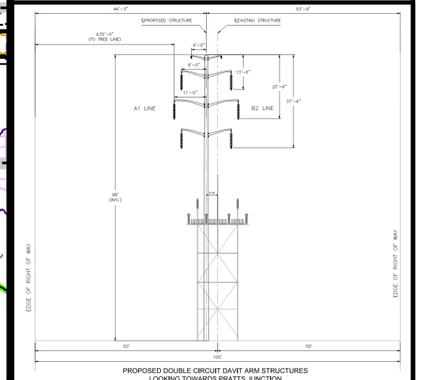
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 109 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

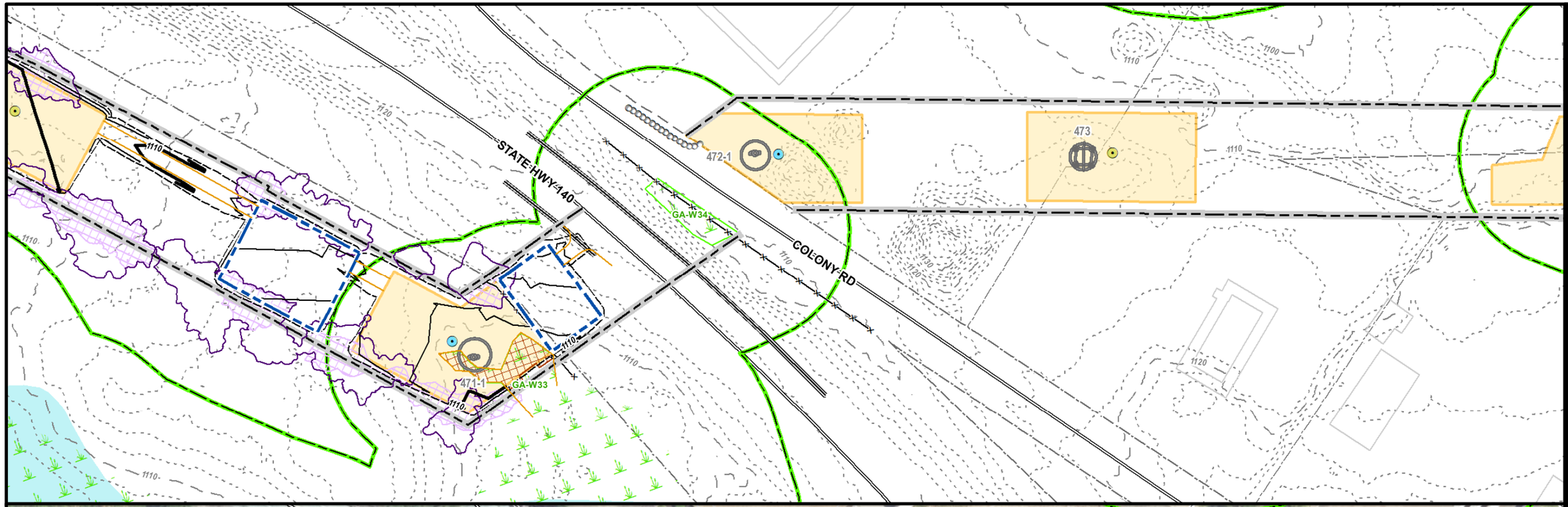
*Indicates Layers Set to Transparency

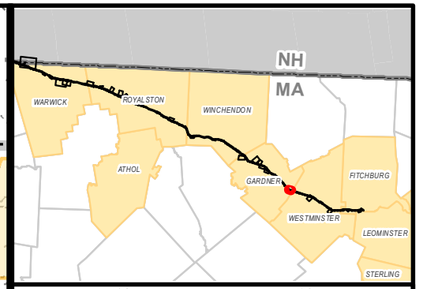
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

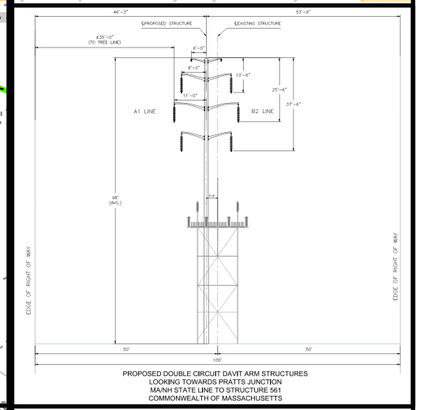
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 110 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

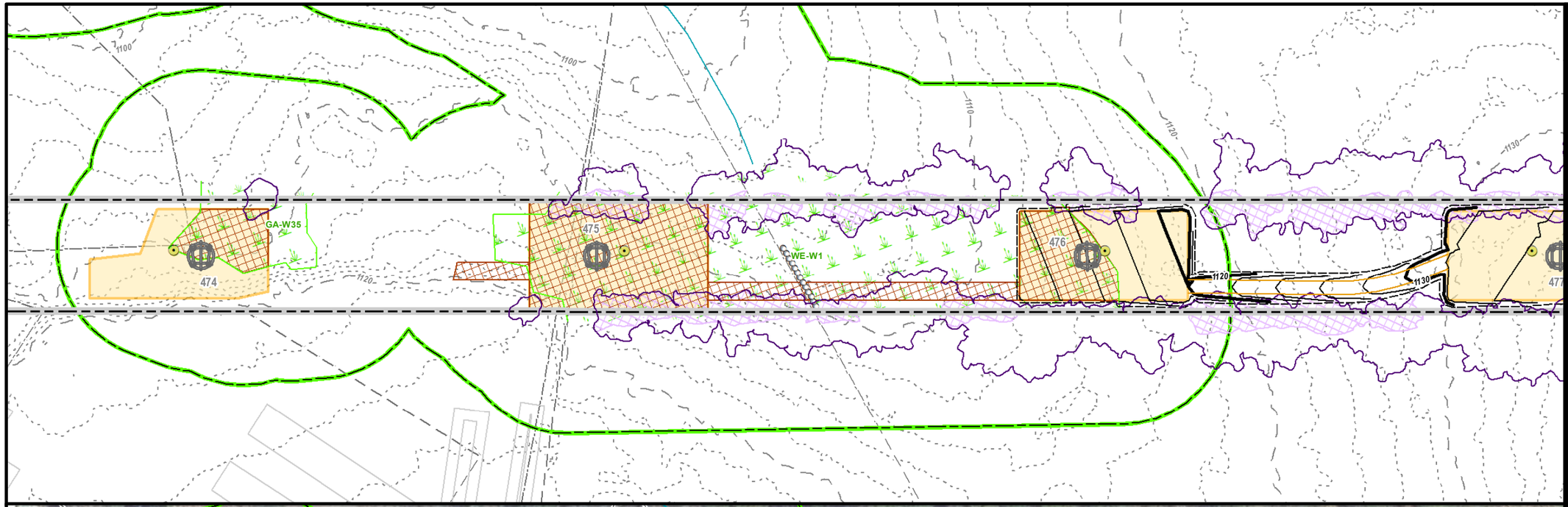
**Indicates Layers Set to Transparency*

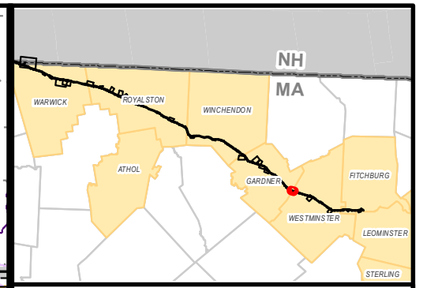
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

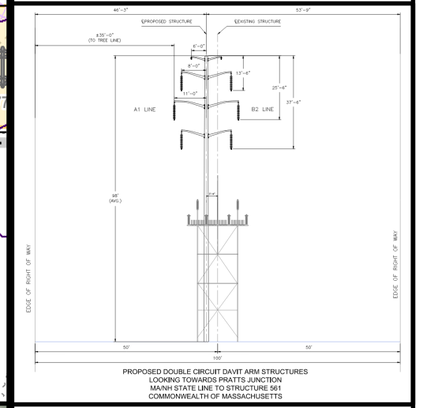
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

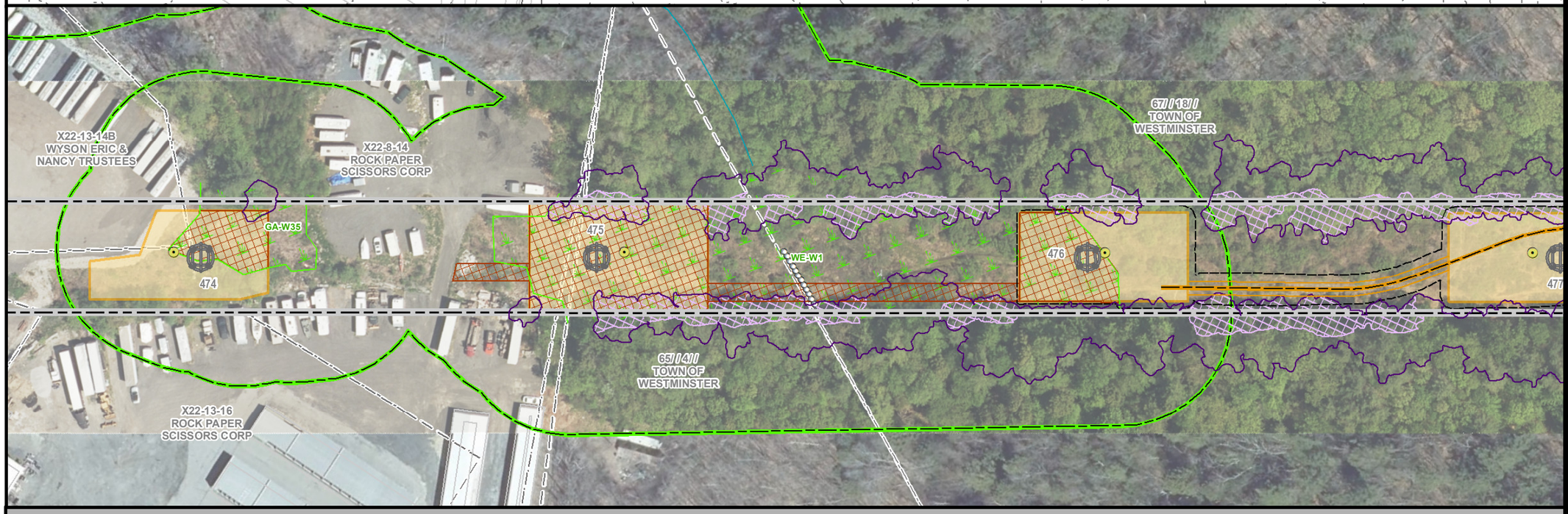
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER & WESTMINSTER, MA
PAGE 111 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

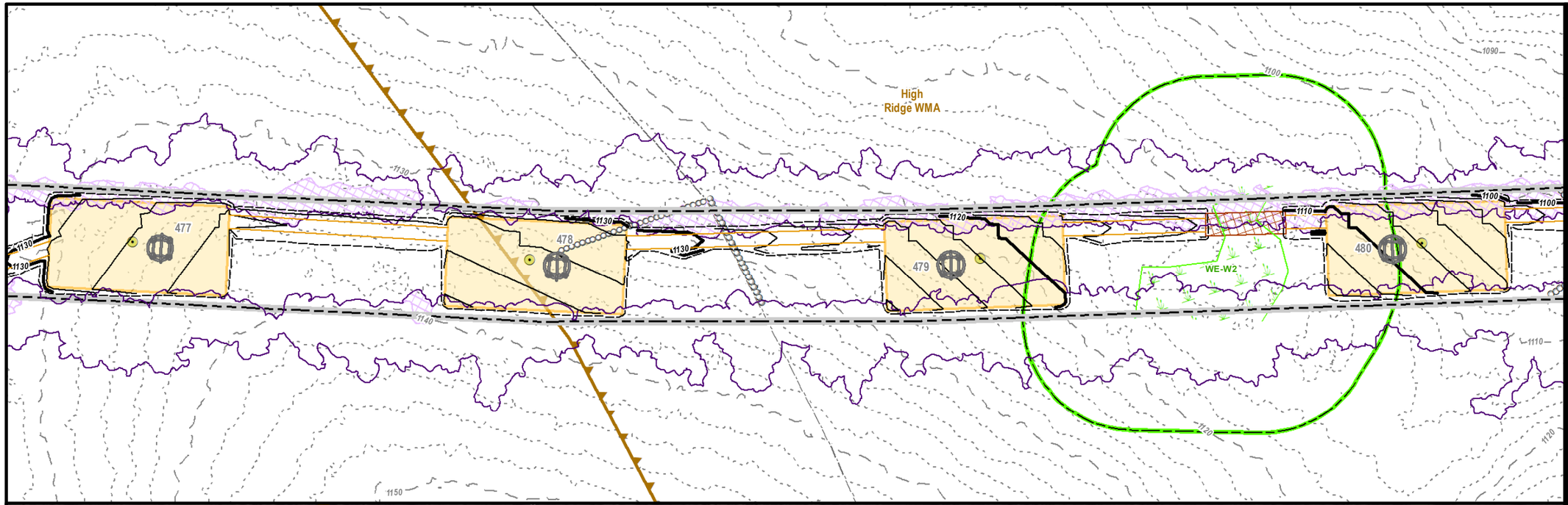
**Indicates Layers Set to Transparency*

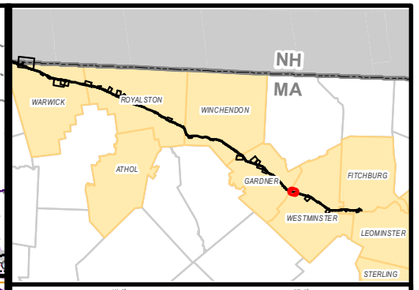
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

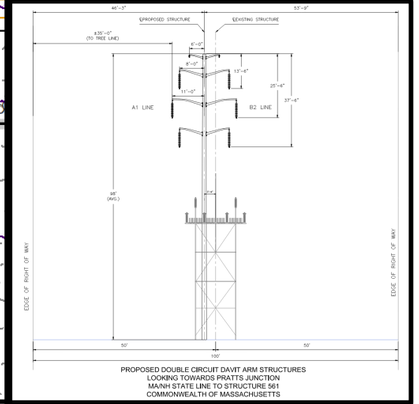
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WESTMINSTER, MA
PAGE 112 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

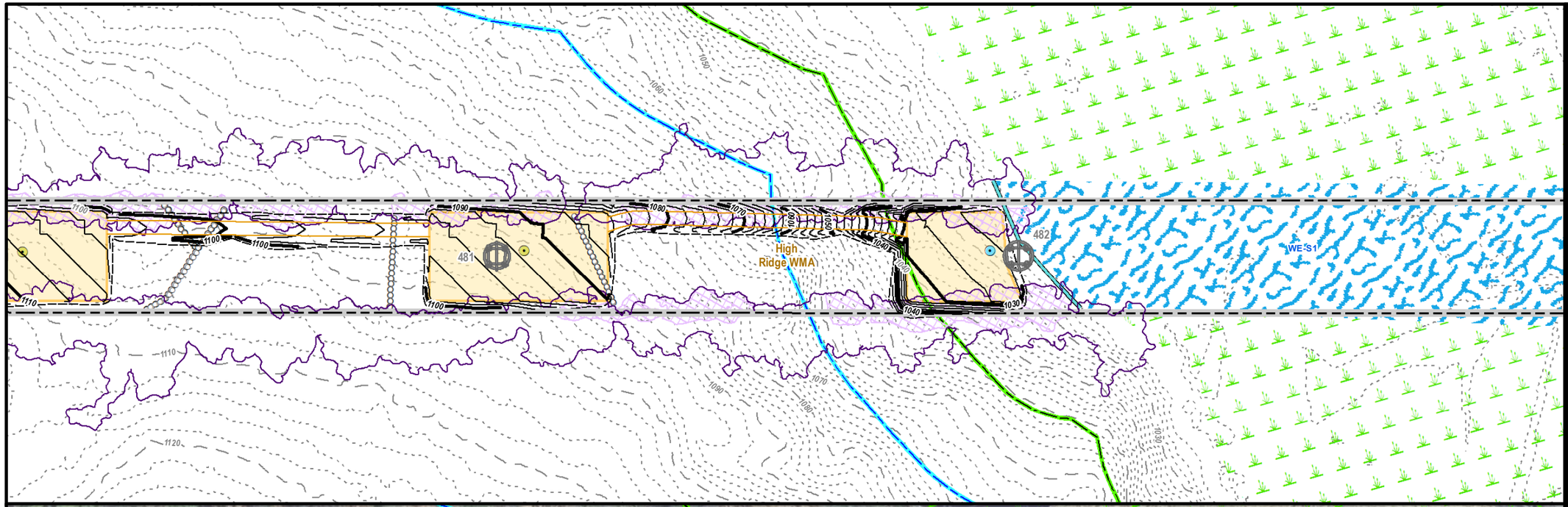
**Indicates Layers Set to Transparency*

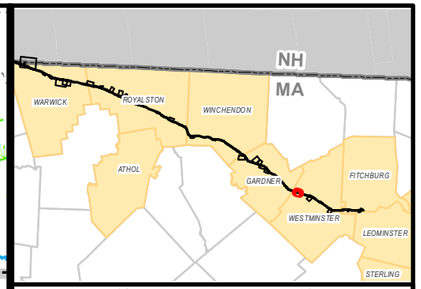
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

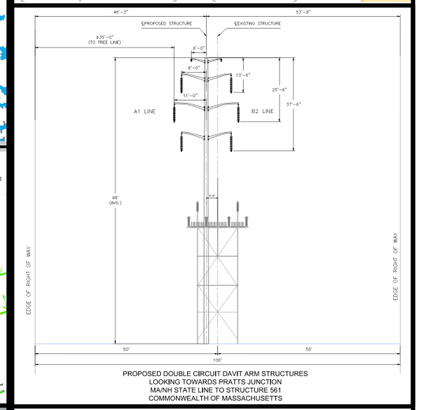
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

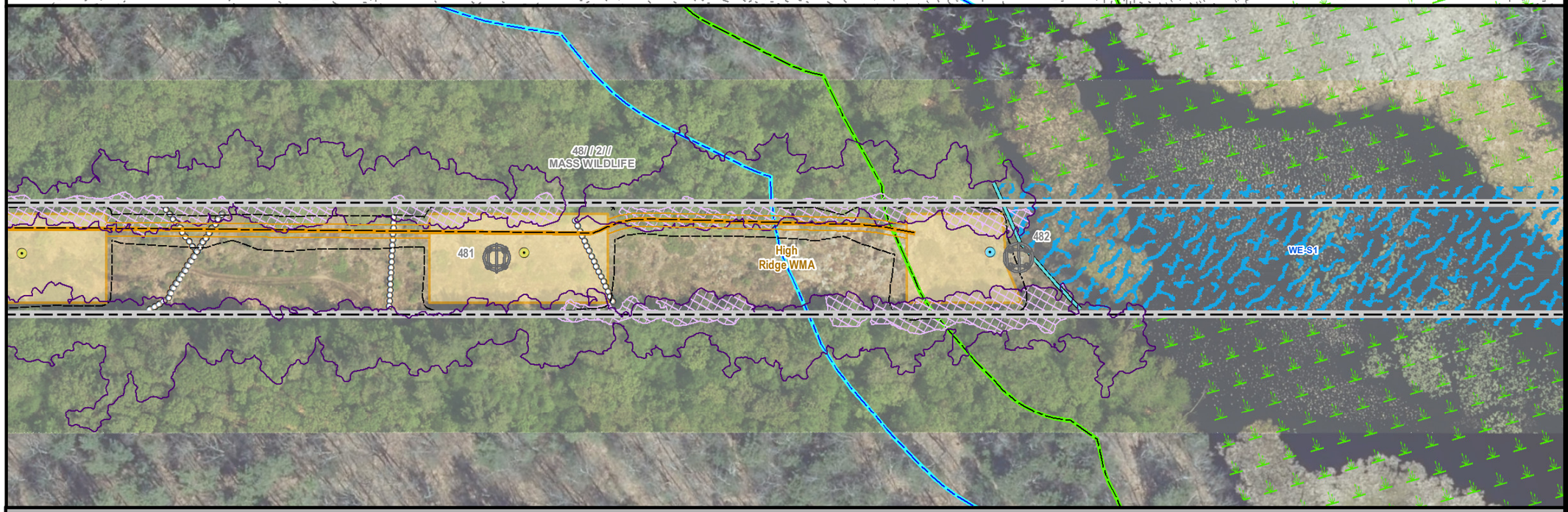
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WESTMINSTER, MA
PAGE 113 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

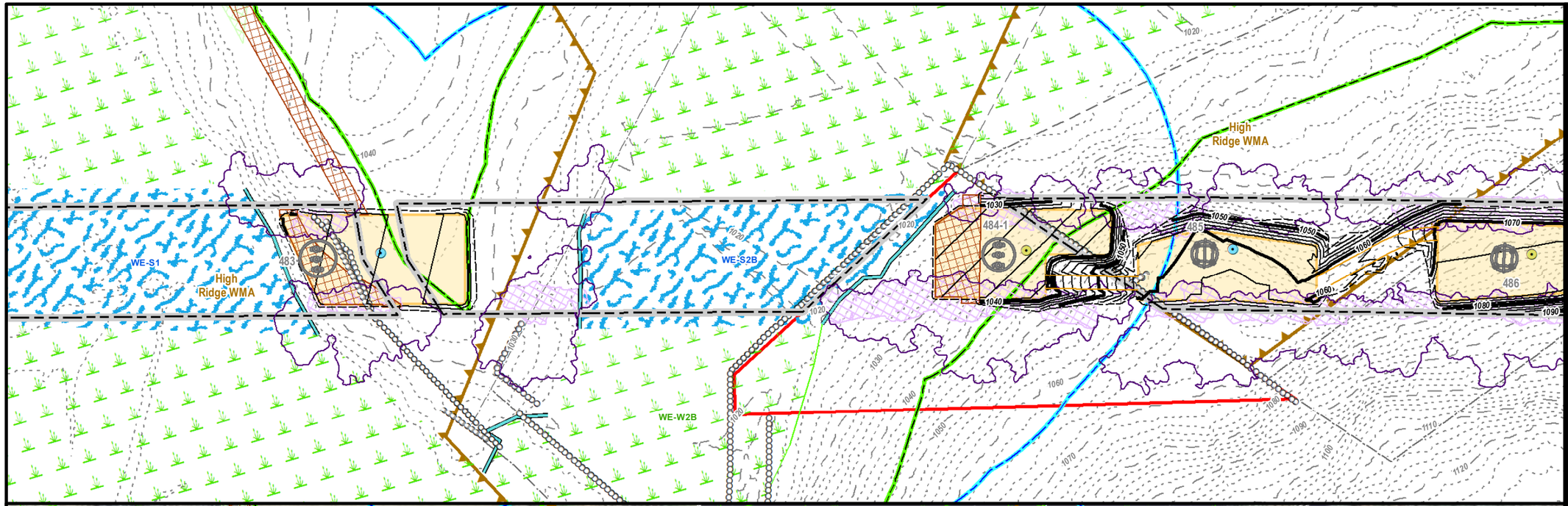
**Indicates Layers Set to Transparency*

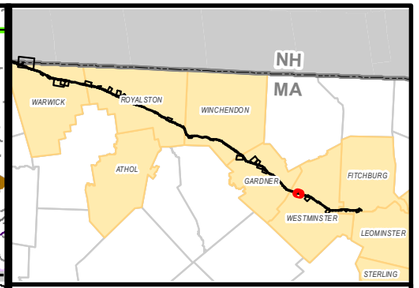
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

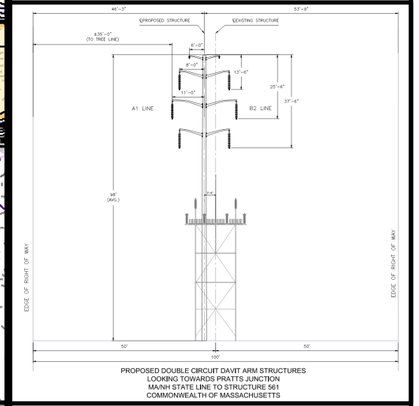
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

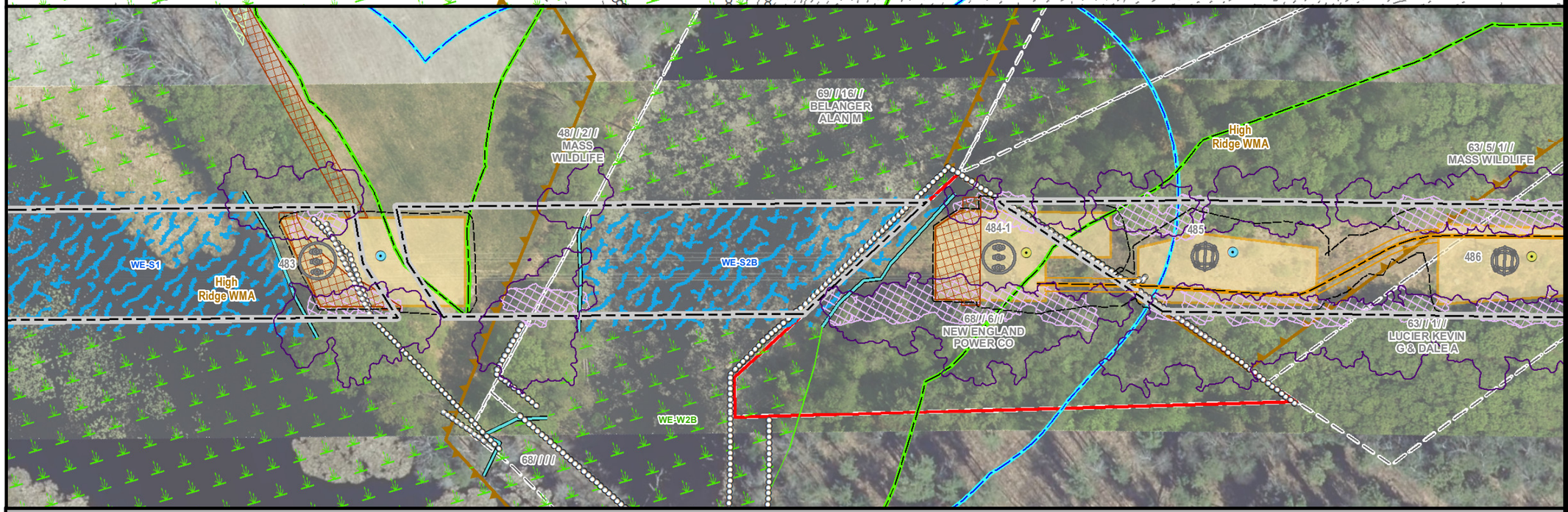
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WESTMINSTER, MA
PAGE 114 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

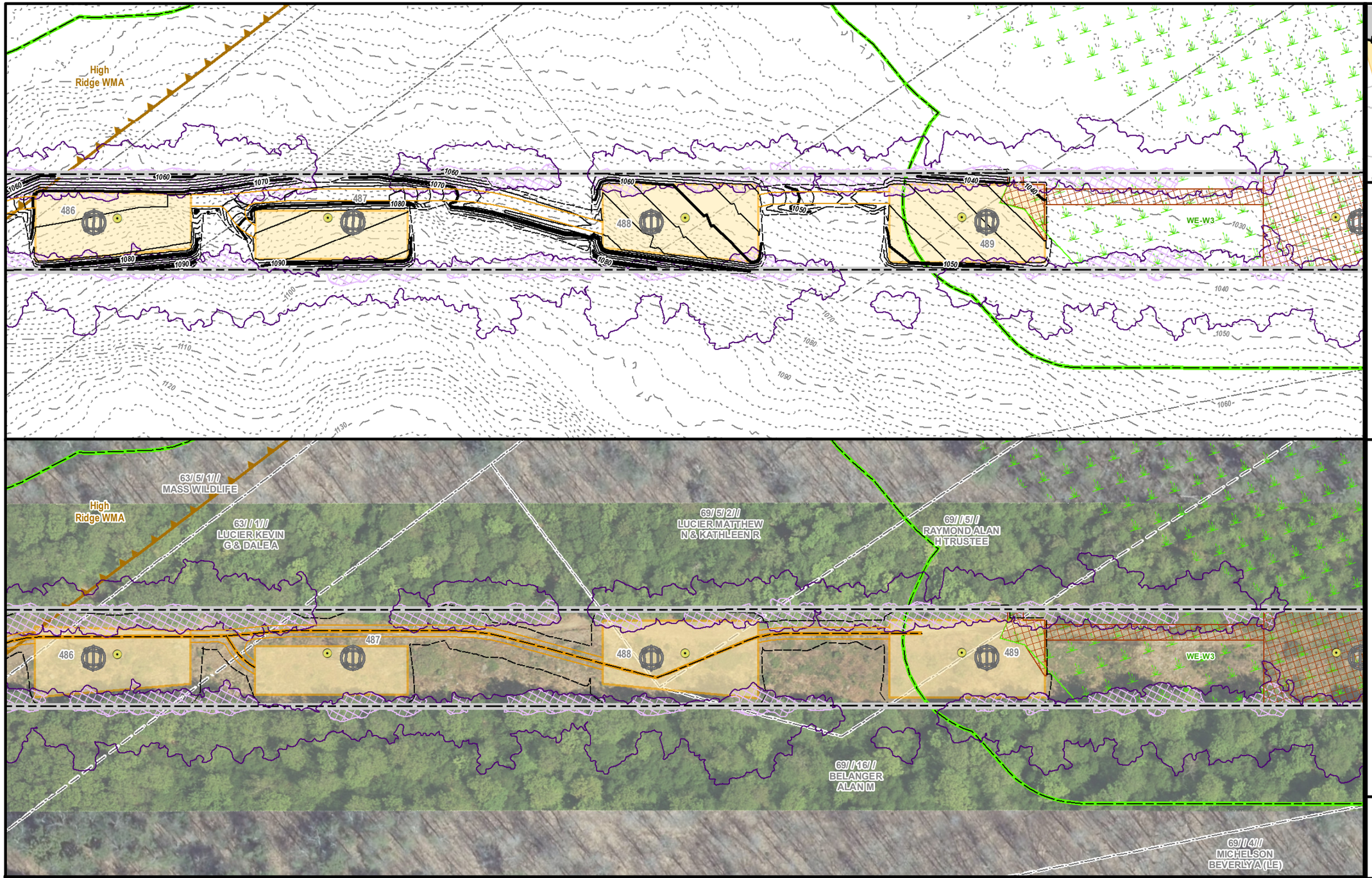
**Indicates Layers Set to Transparency*

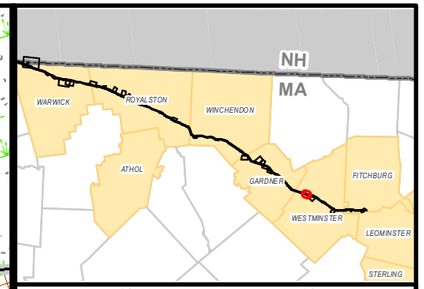
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

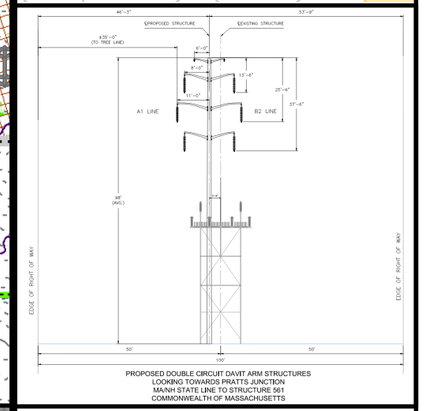
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WESTMINSTER, MA
PAGE 115 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

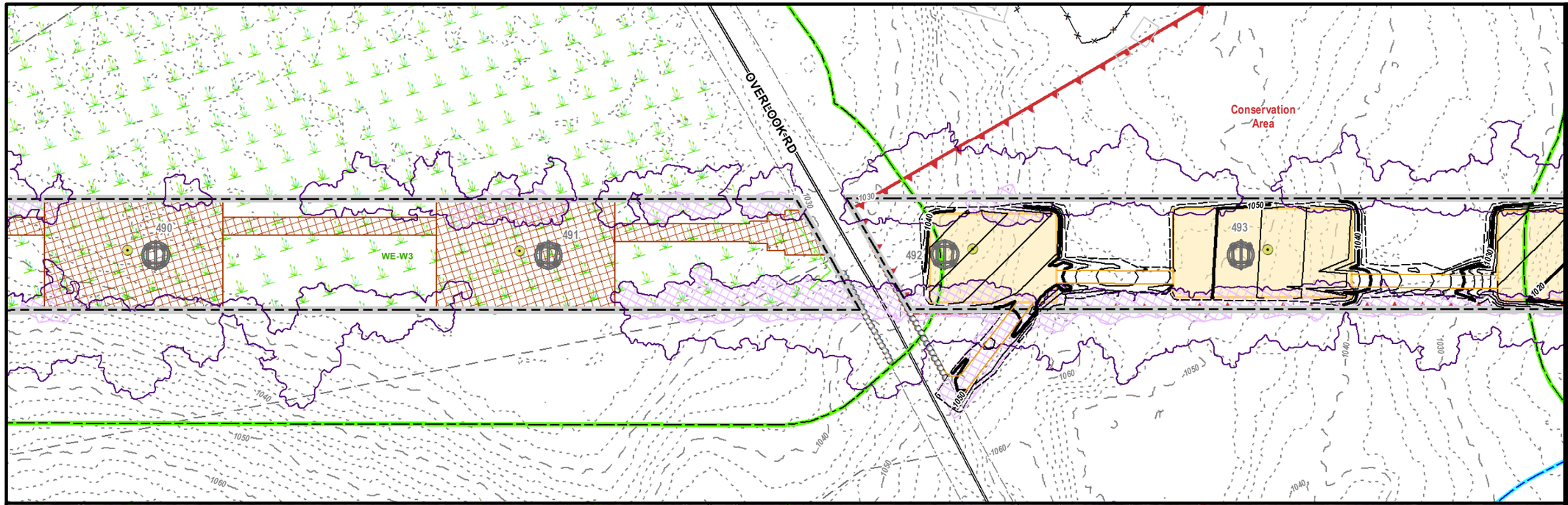
**Indicates Layers Set to Transparency*

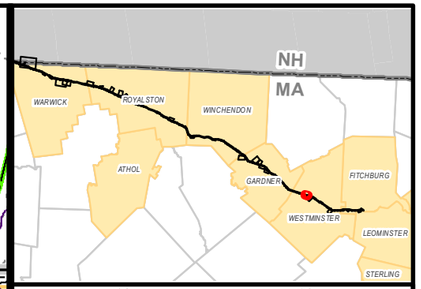
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

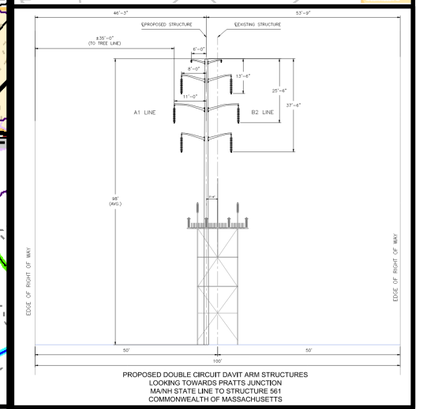
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

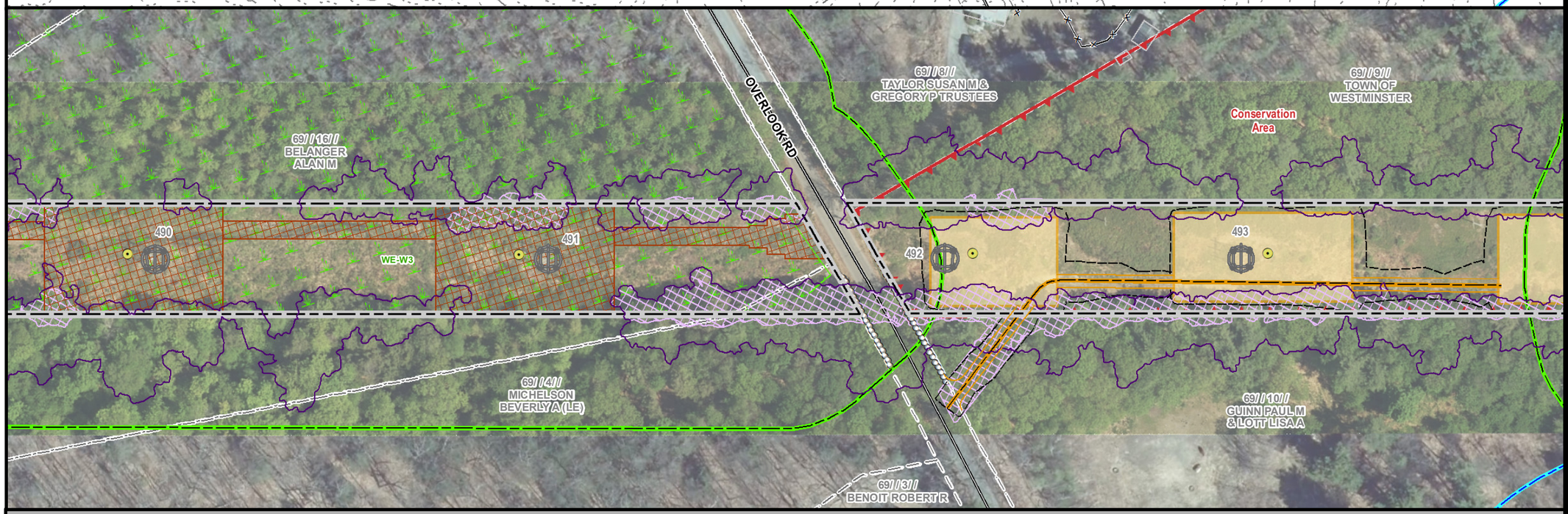
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WESTMINSTER, MA
PAGE 116 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

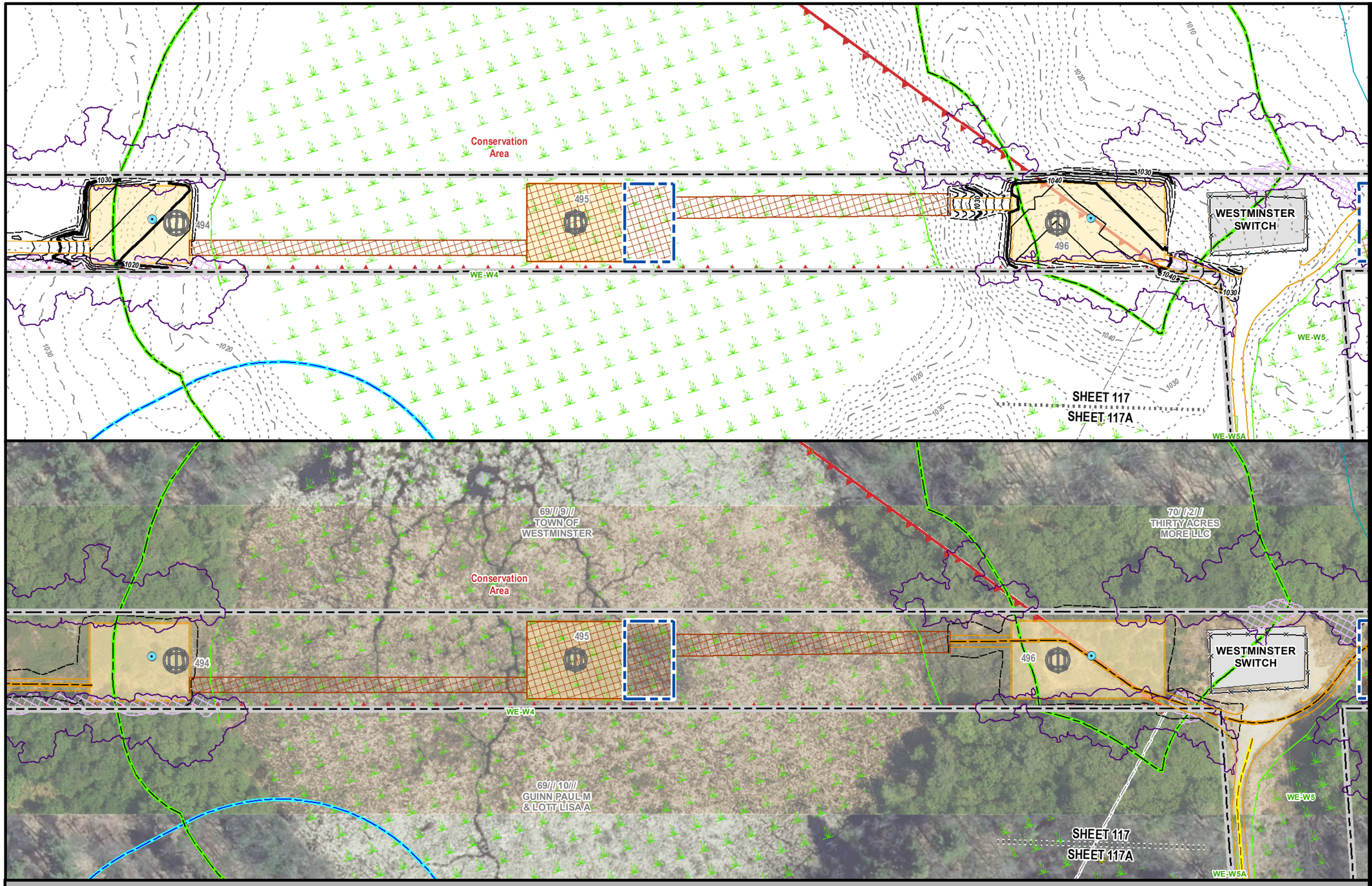
**Indicates Layers Set to Transparency*

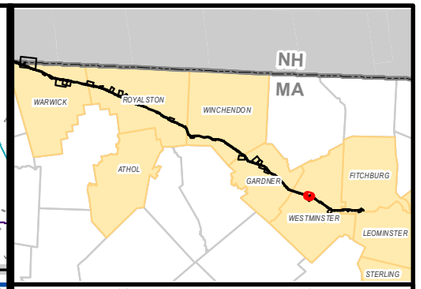
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

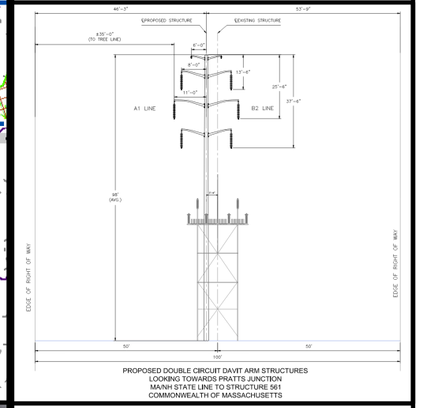
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WESTMINSTER, MA
PAGE 117 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

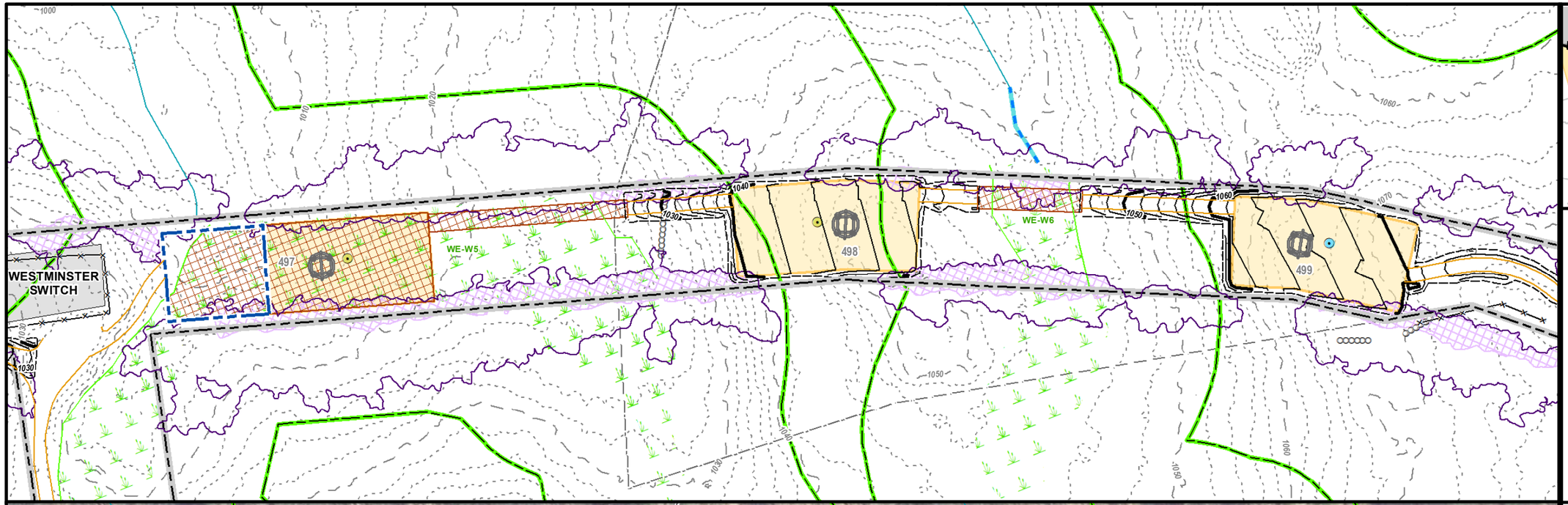
**Indicates Layers Set to Transparency*

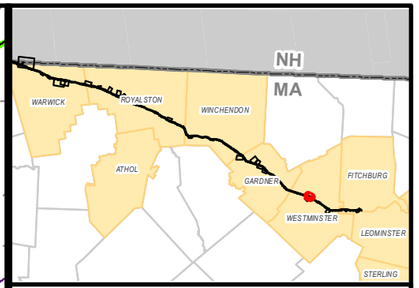
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

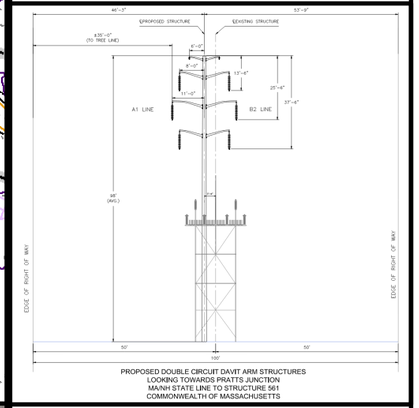
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WESTMINSTER, MA
PAGE 118 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

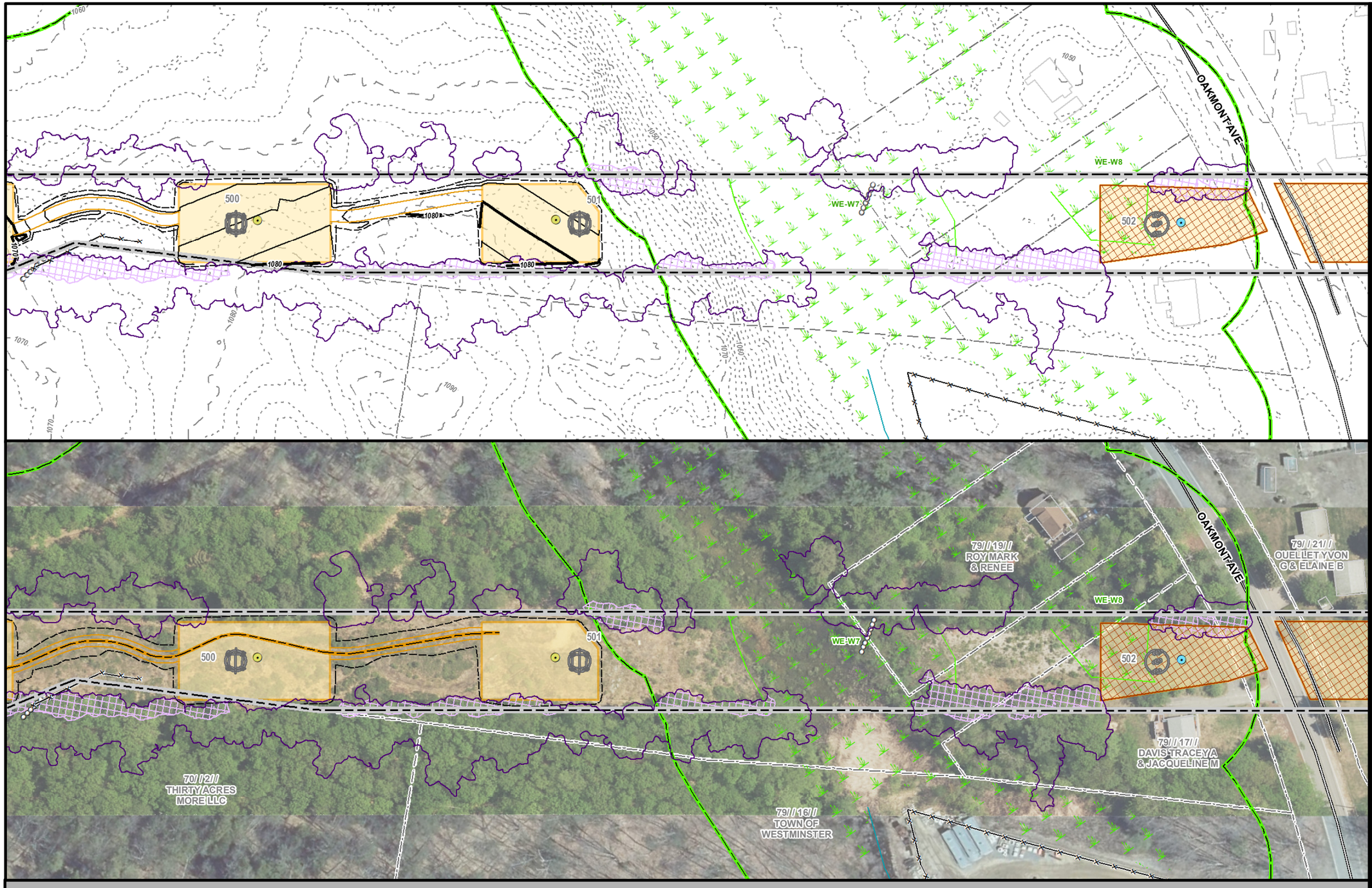
*Indicates Layers Set to Transparency

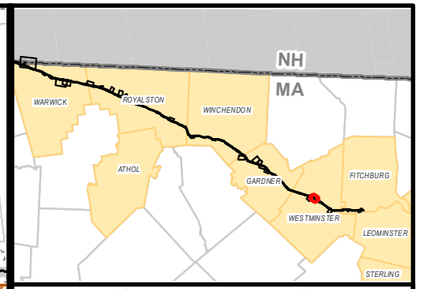
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

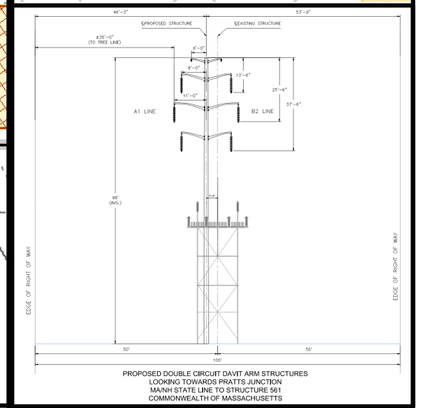
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WESTMINSTER, MA
PAGE 119 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

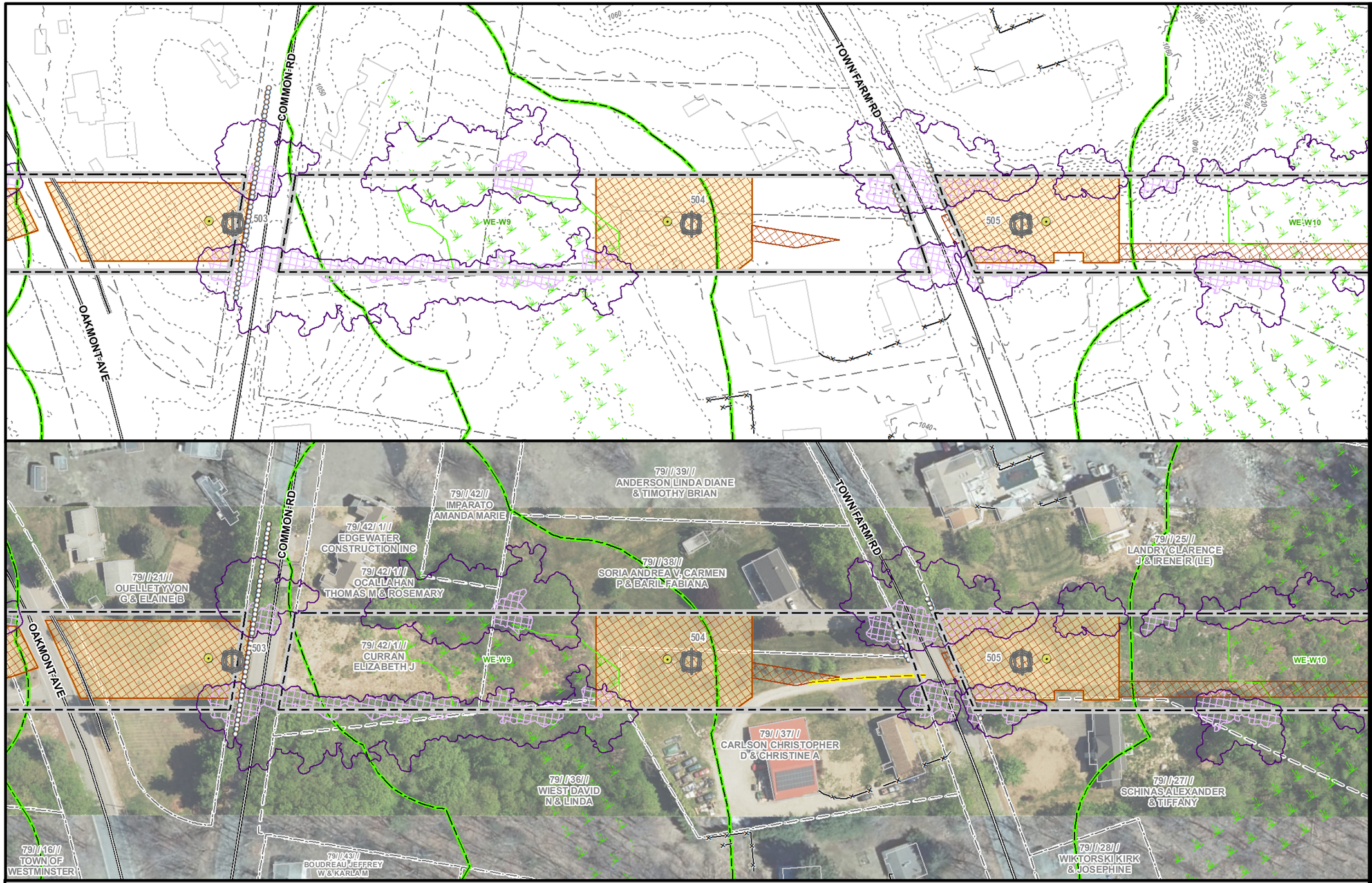
**Indicates Layers Set to Transparency*

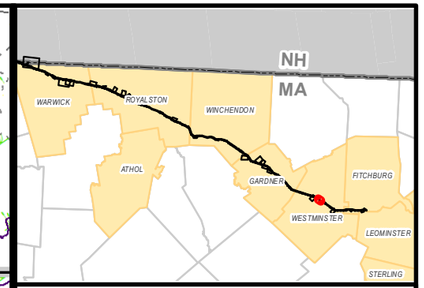
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

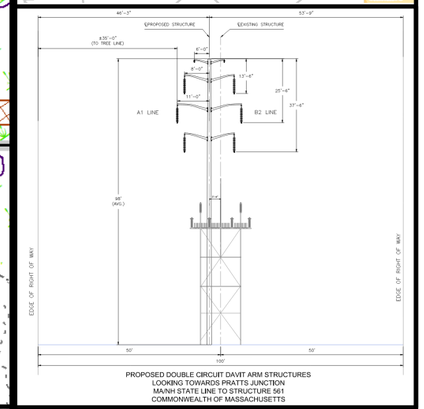
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WESTMINSTER, MA
PAGE 120 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

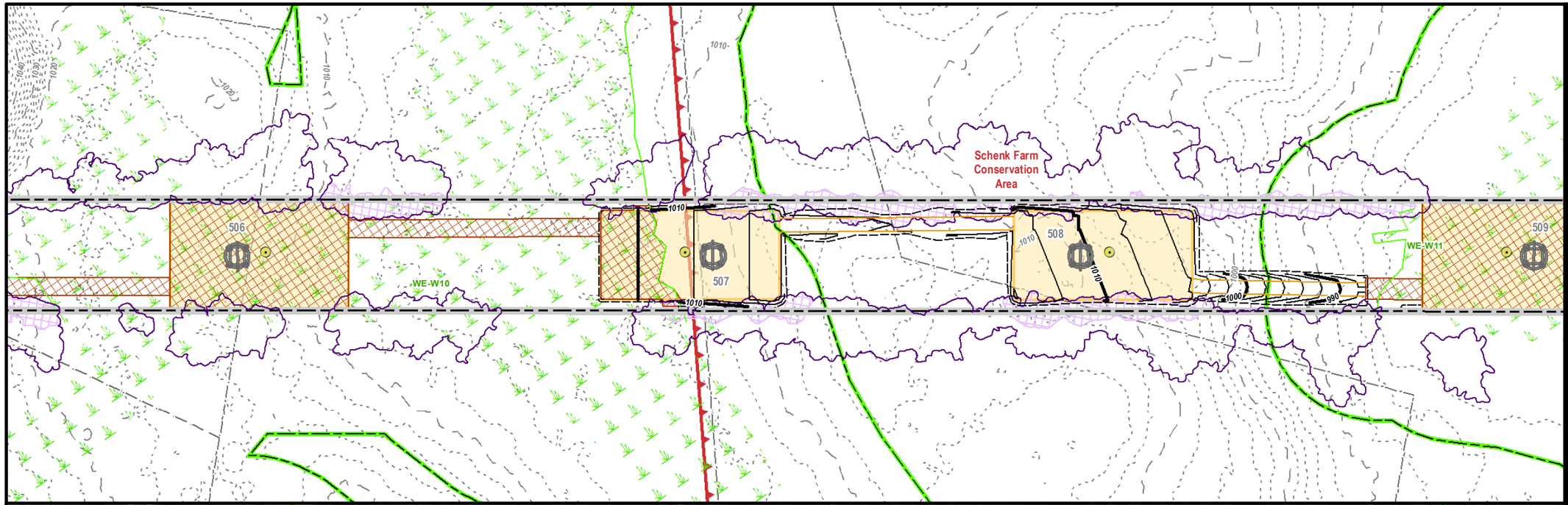
**Indicates Layers Set to Transparency*

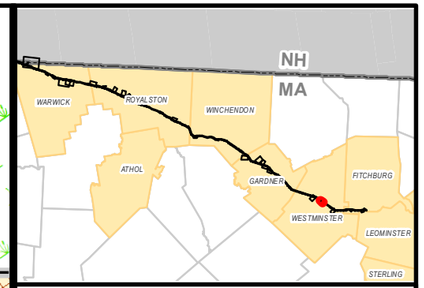
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

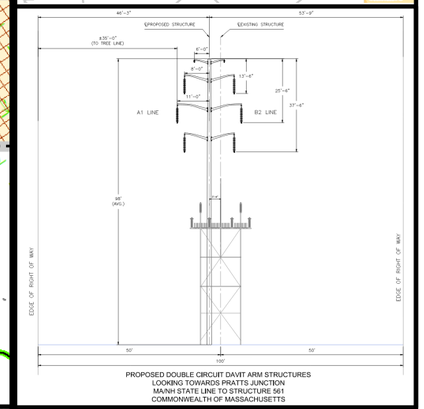
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

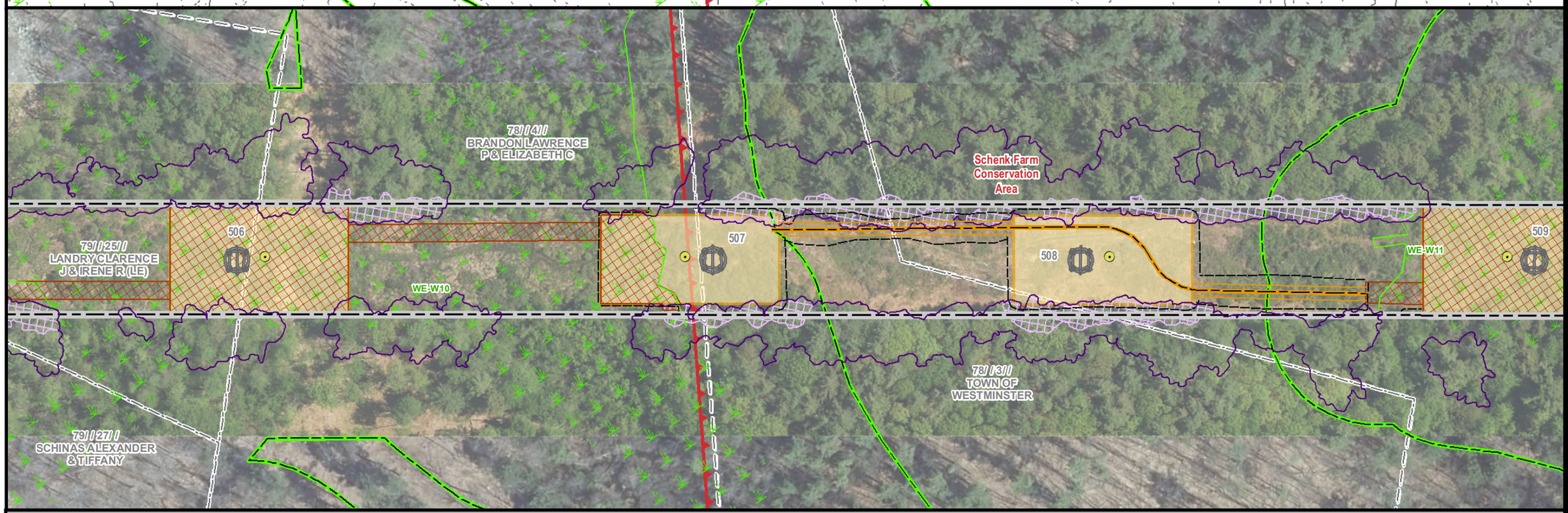
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WESTMINSTER, MA
PAGE 121 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

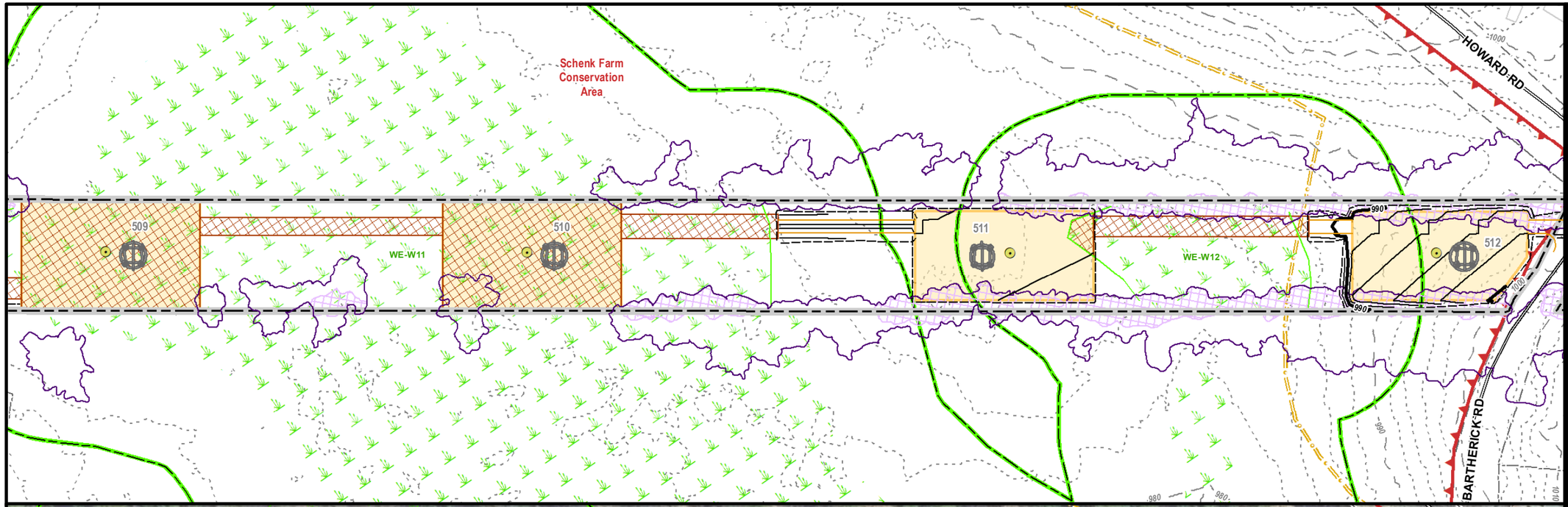
**Indicates Layers Set to Transparency*

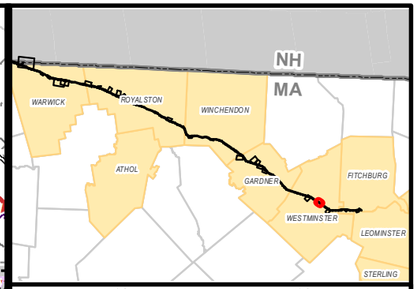
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

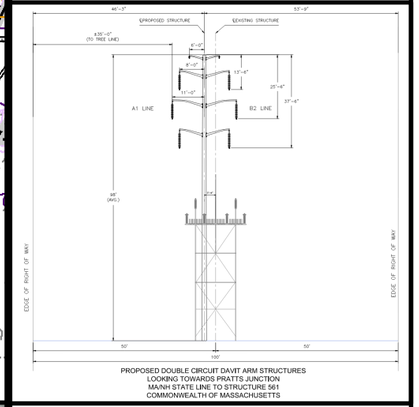
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

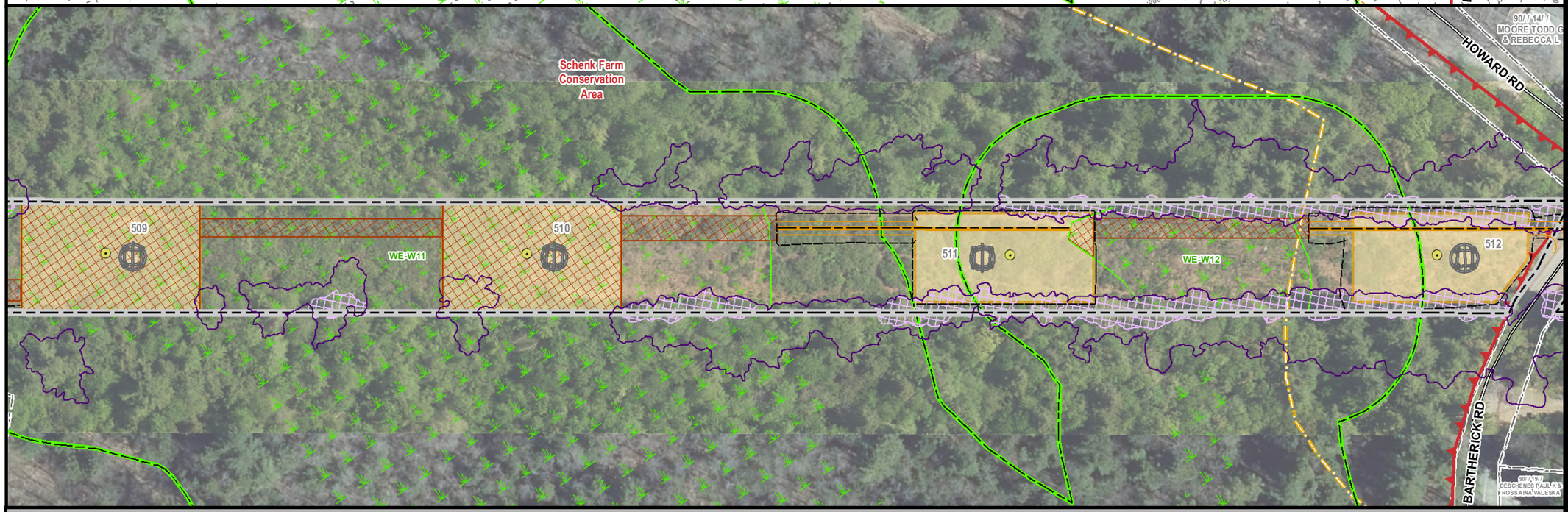
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WESTMINSTER, MA
PAGE 122 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

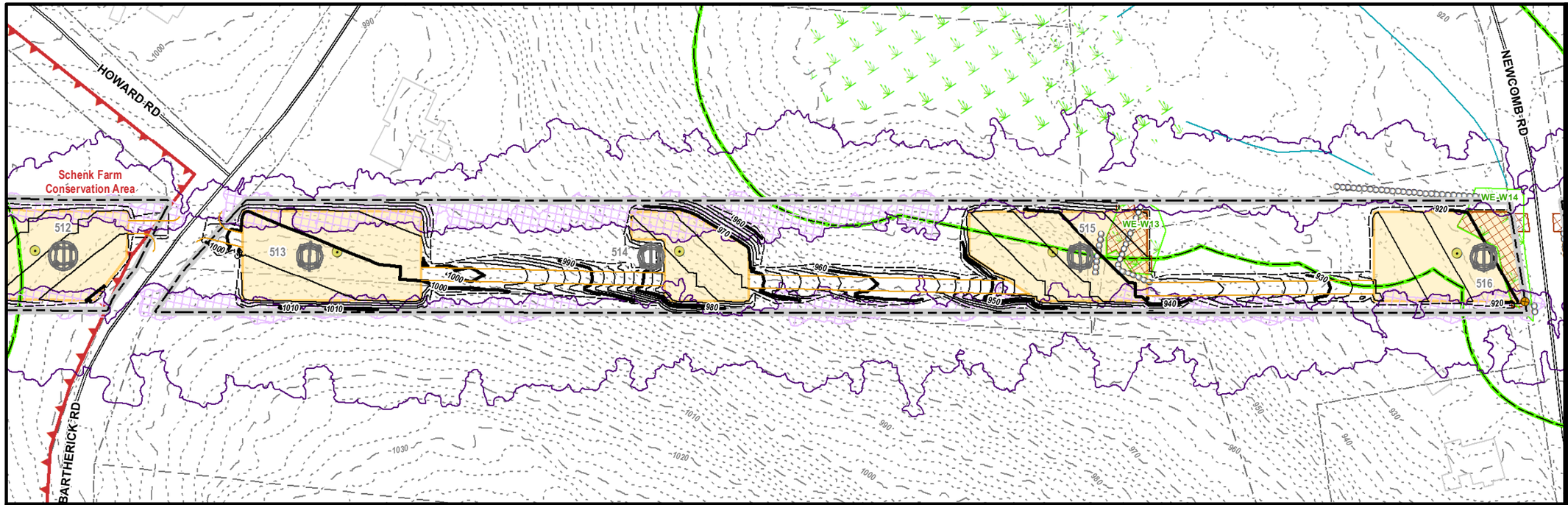
**Indicates Layers Set to Transparency*

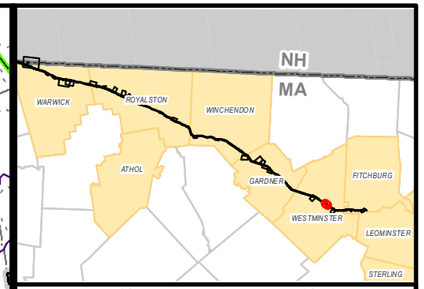
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

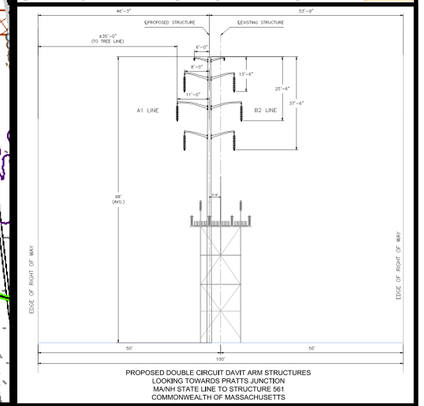
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

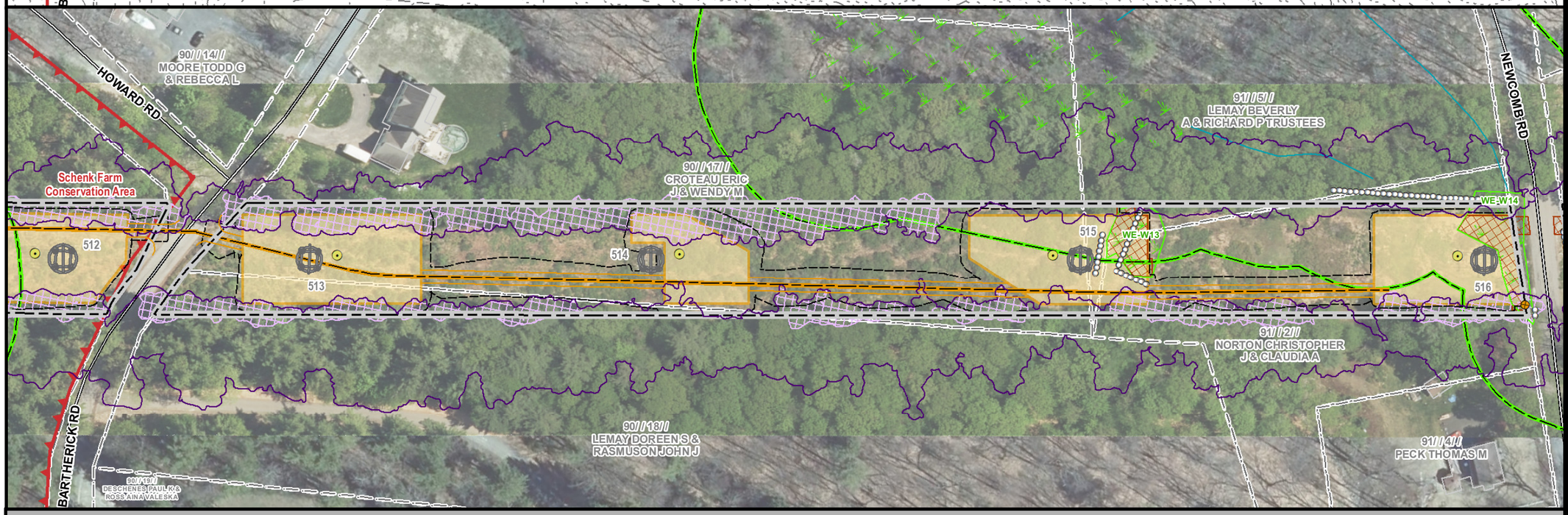
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WESTMINSTER, MA
PAGE 123 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

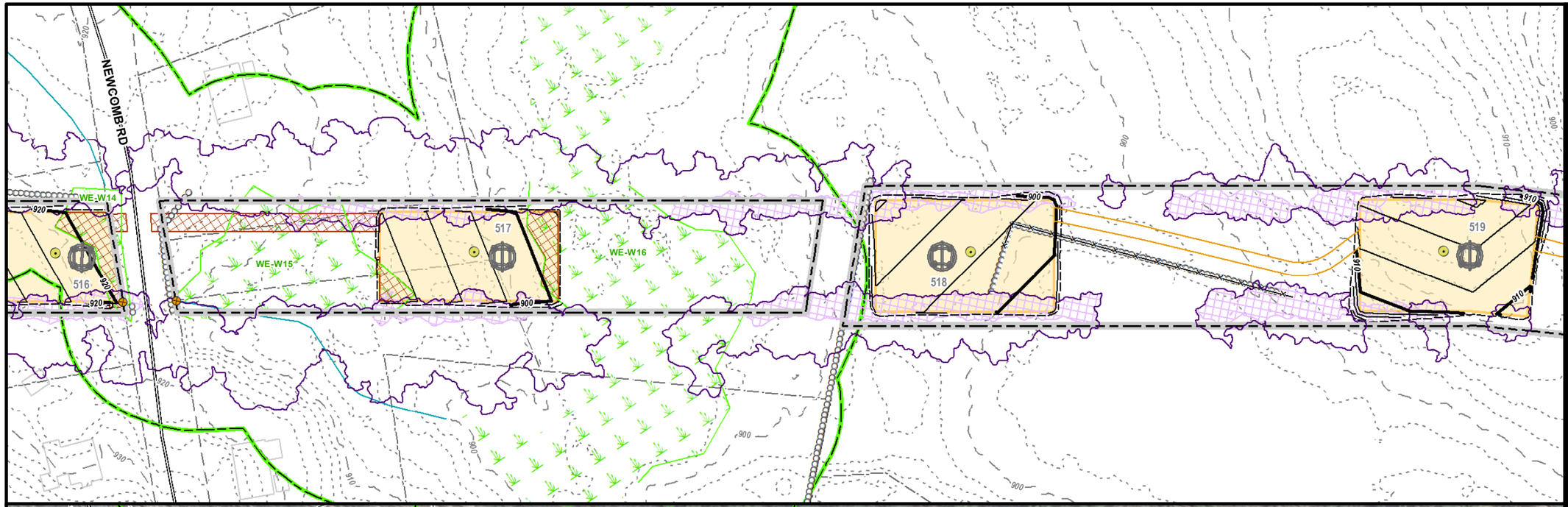
**Indicates Layers Set to Transparency*

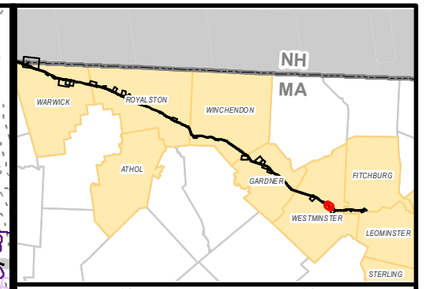
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

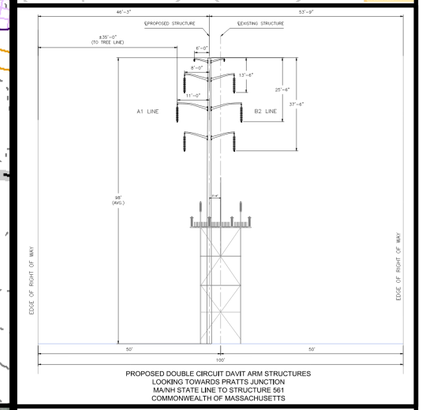
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

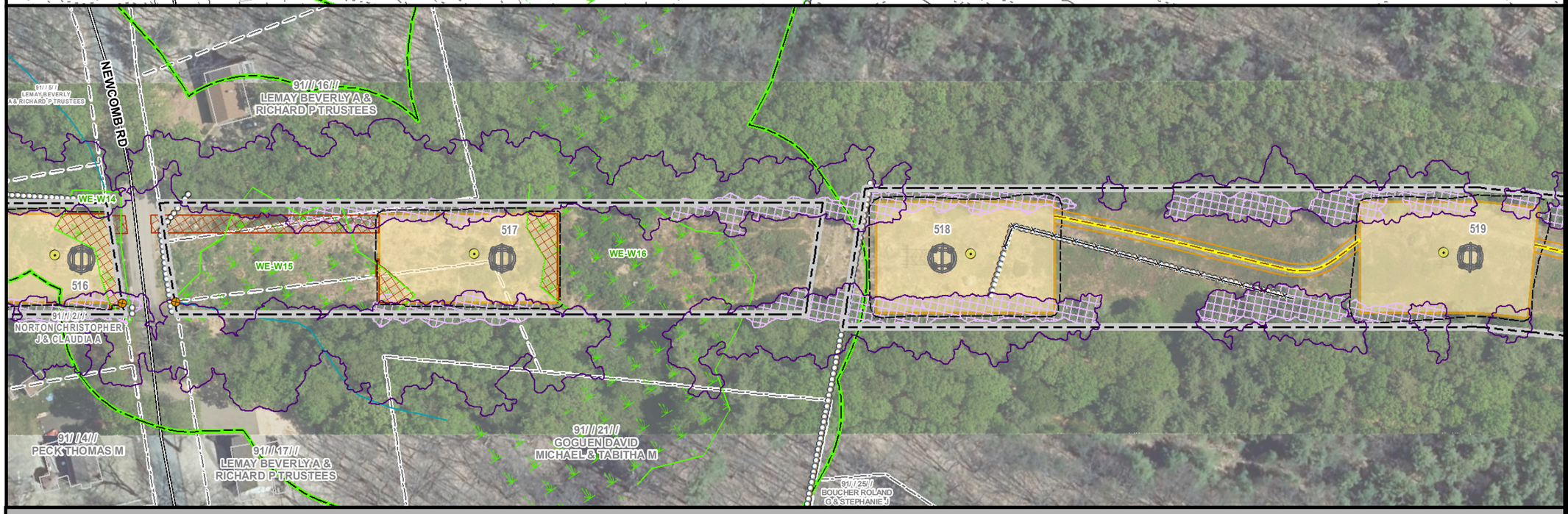
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WESTMINSTER, MA
PAGE 124 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

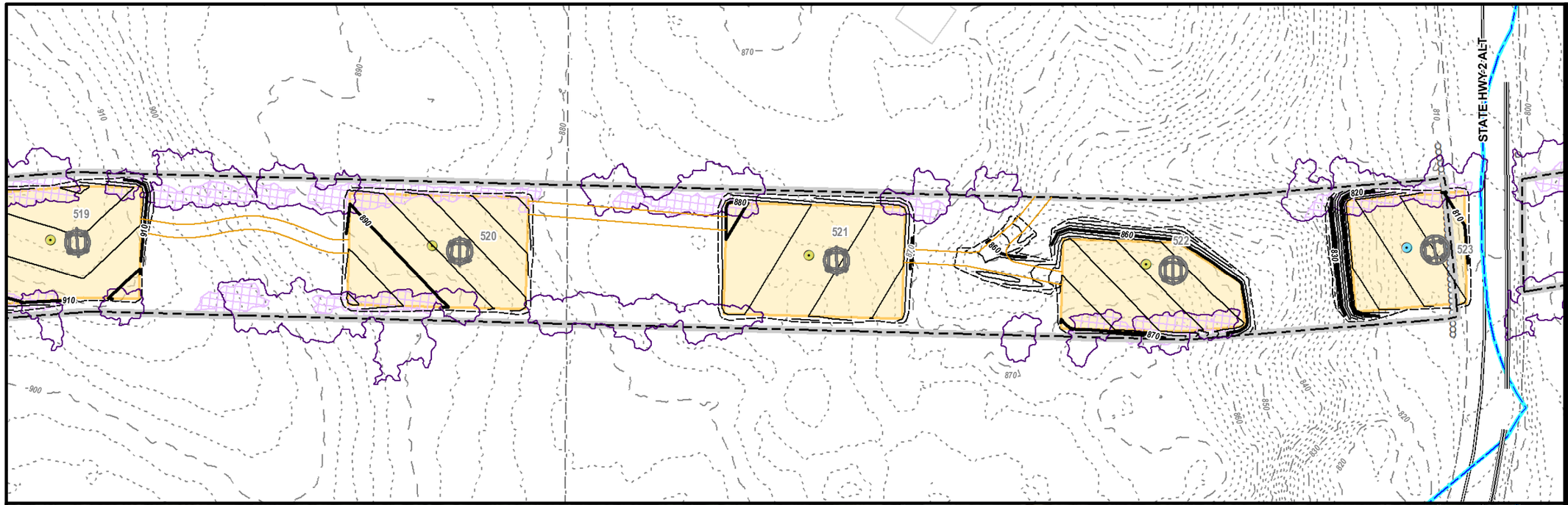
**Indicates Layers Set to Transparency*

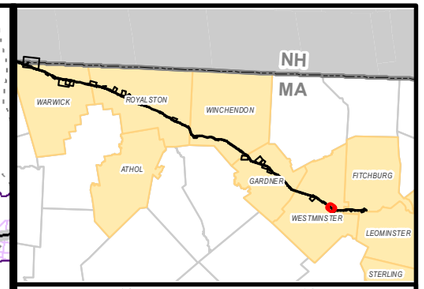
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

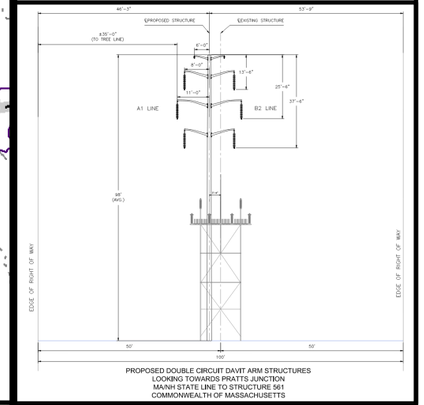
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

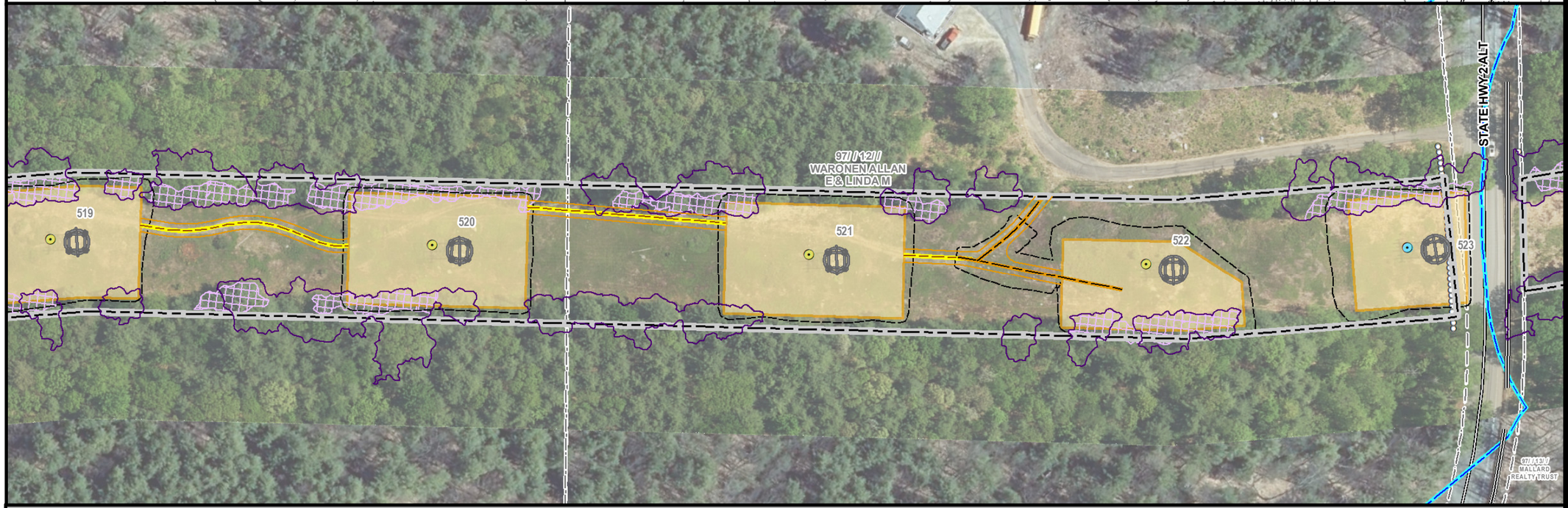
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WESTMINSTER, MA
PAGE 125 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

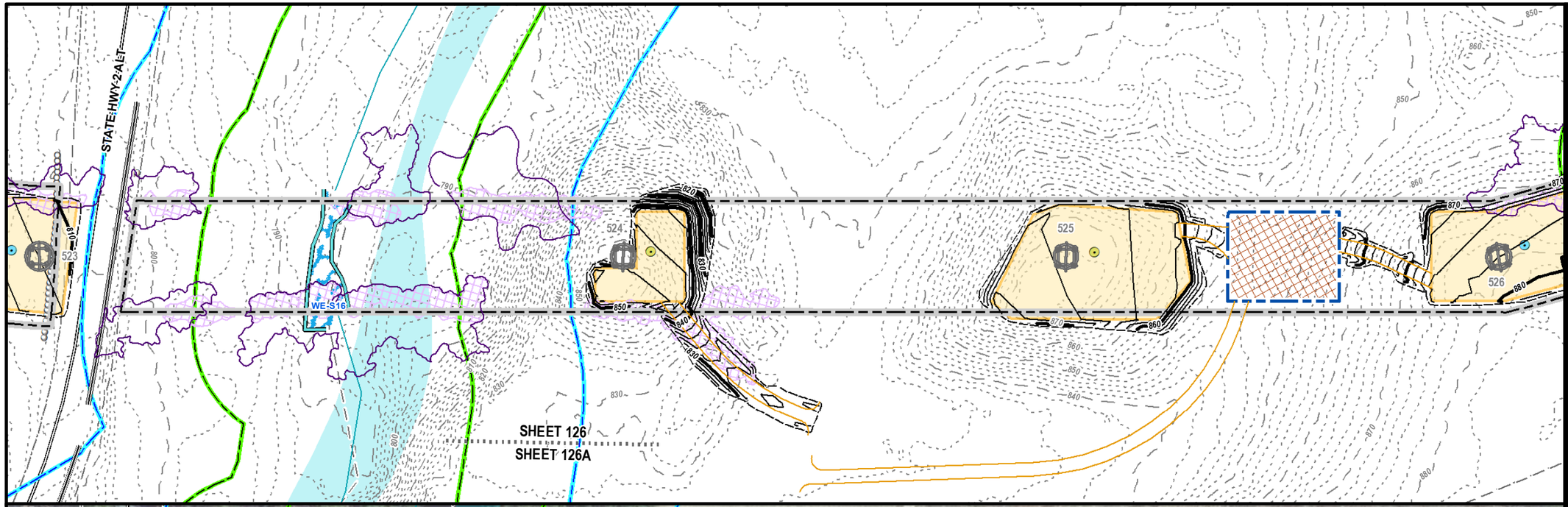
**Indicates Layers Set to Transparency*

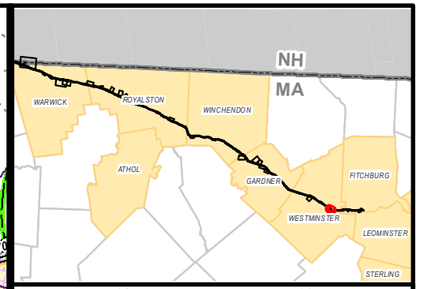
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

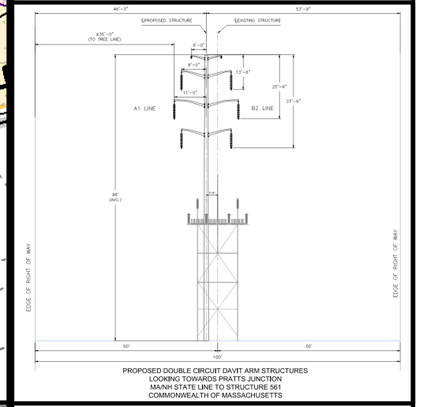
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

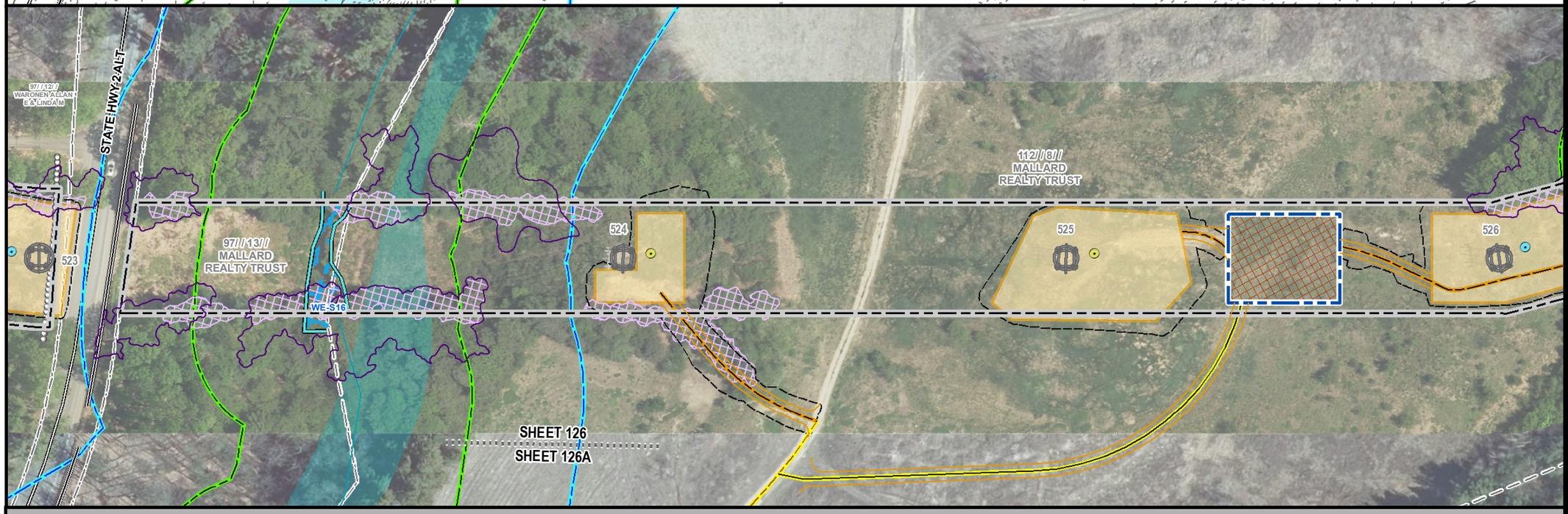
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WESTMINSTER, MA
PAGE 126 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

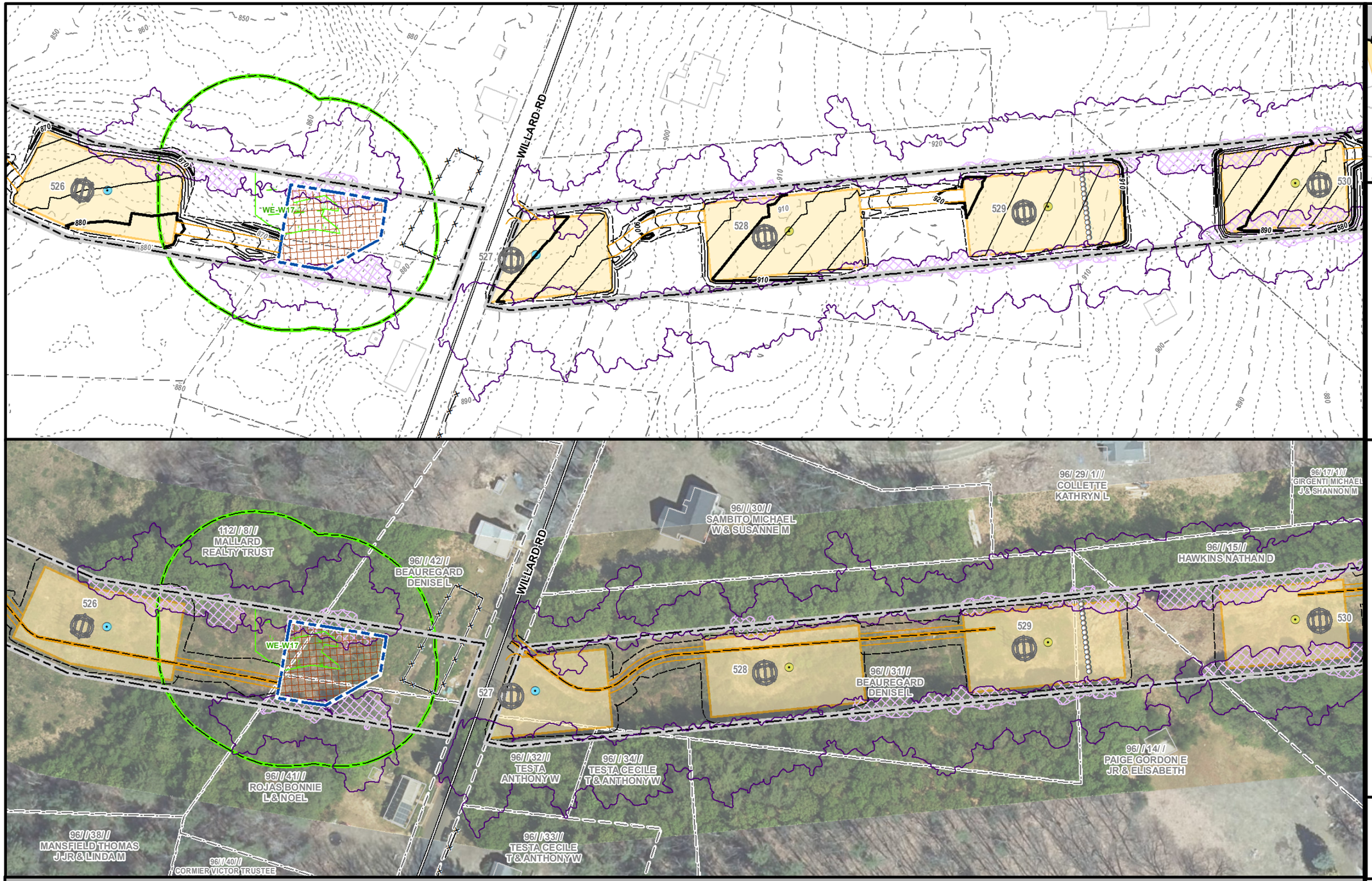
**Indicates Layers Set to Transparency*

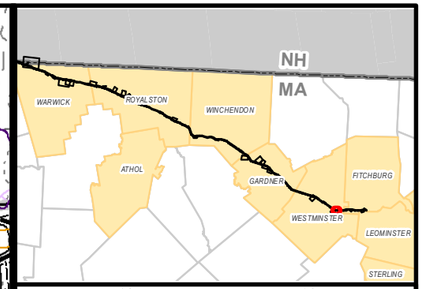
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

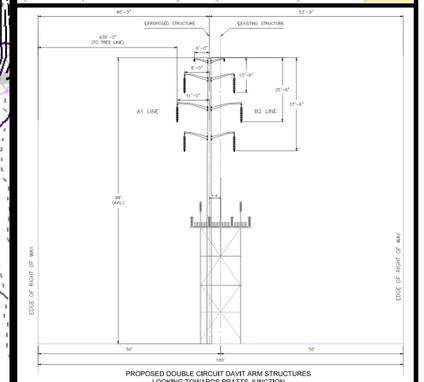
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WESTMINSTER, MA
PAGE 127 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

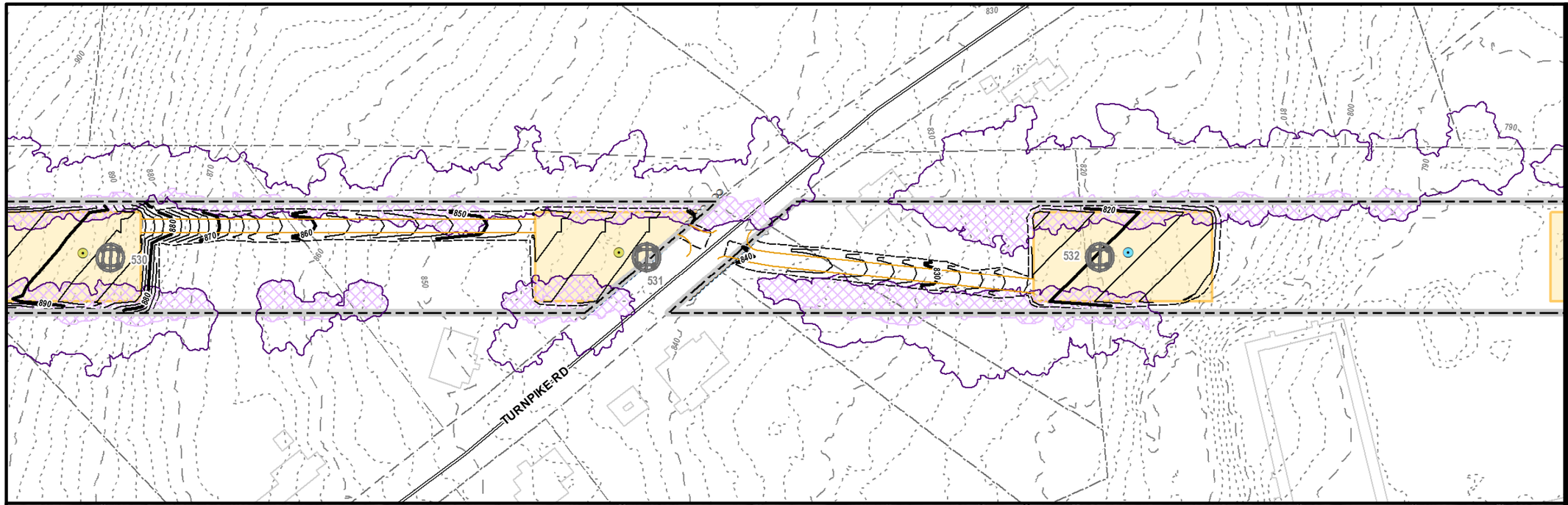
**Indicates Layers Set to Transparency*

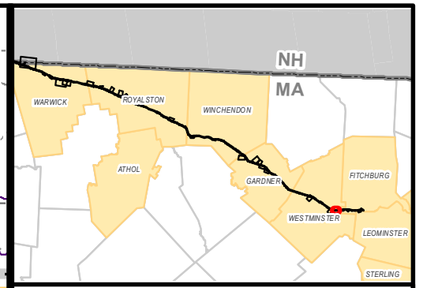
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

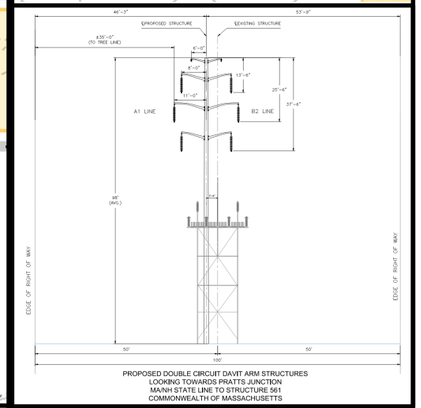
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

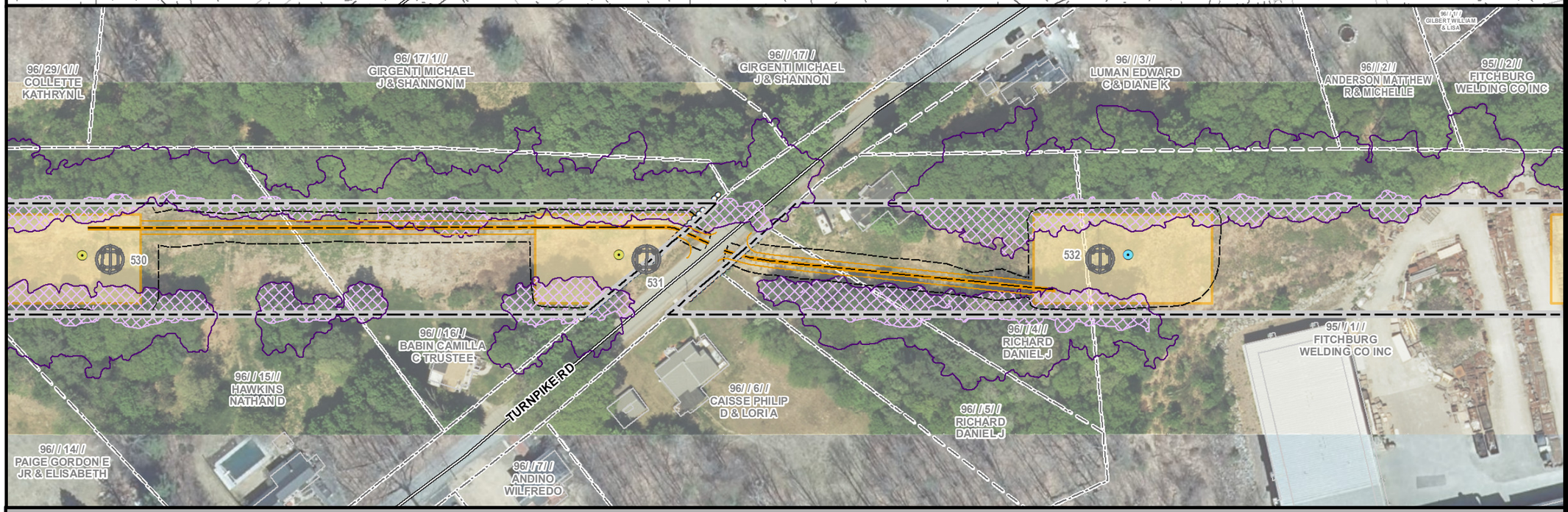
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WESTMINSTER, MA
PAGE 128 OF 137

N

1 inch = 100 feet

0 50 100

Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

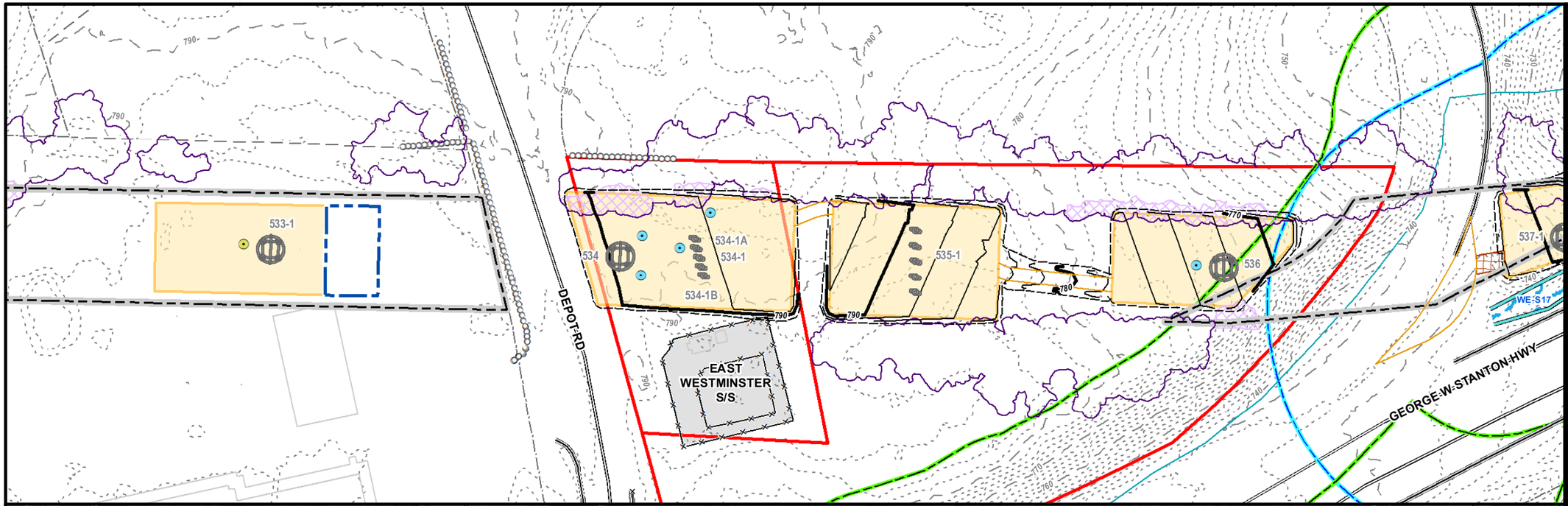
**Indicates Layers Set to Transparency*

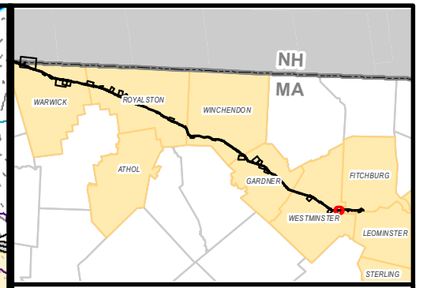
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

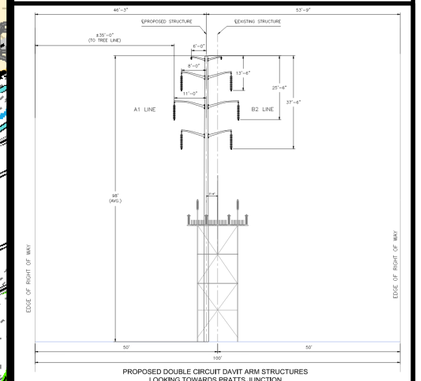
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WESTMINSTER, MA
PAGE 129 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

**Indicates Layers Set to Transparency*

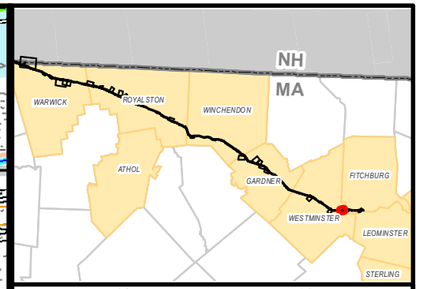
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

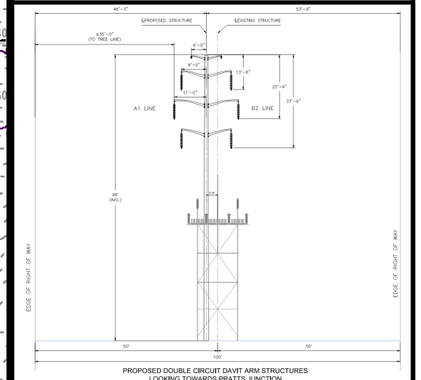
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WESTMINSTER & FITCHBURG, MA
PAGE 130 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

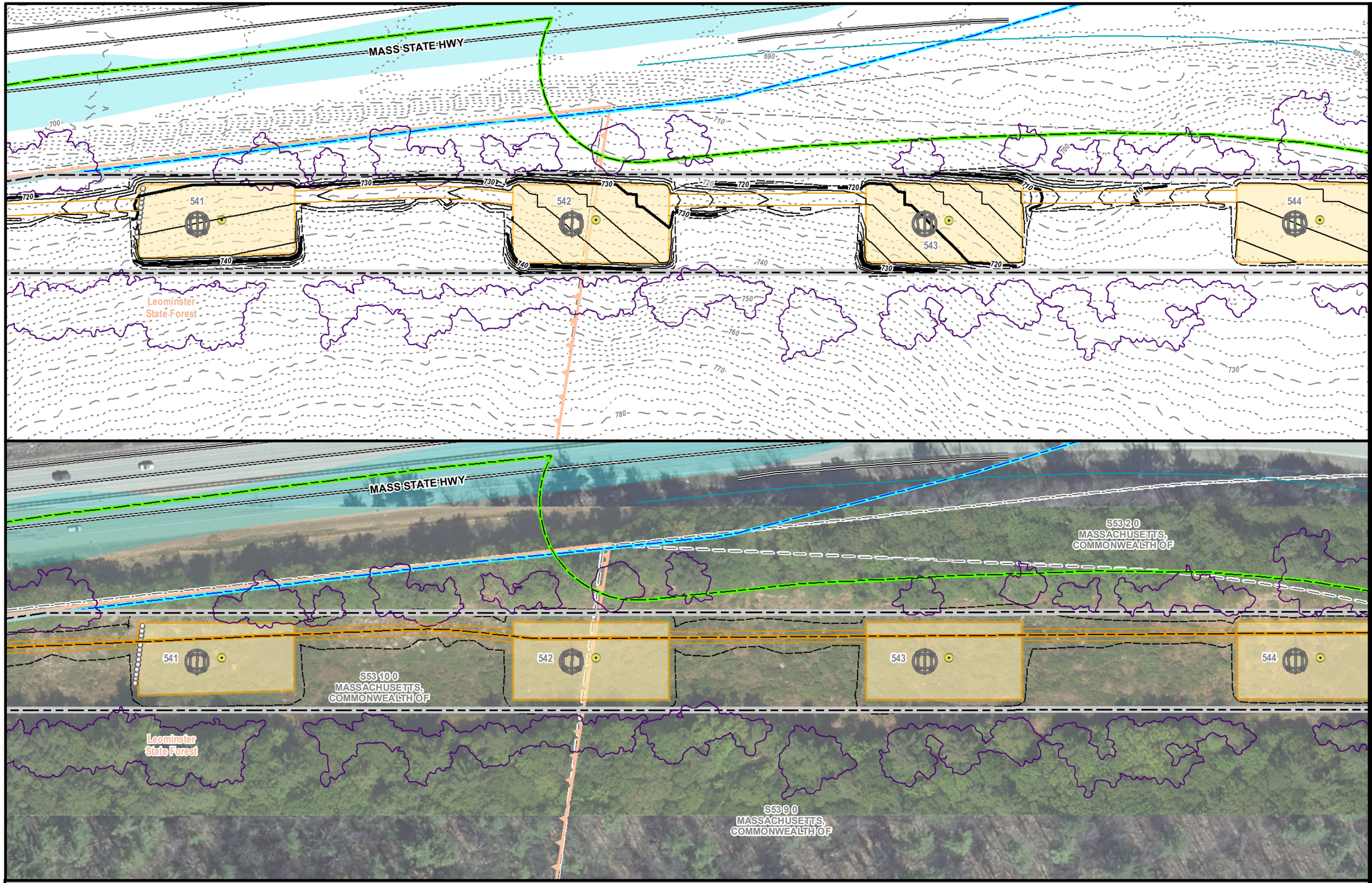
**Indicates Layers Set to Transparency*

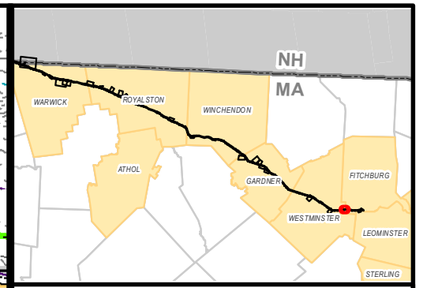
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

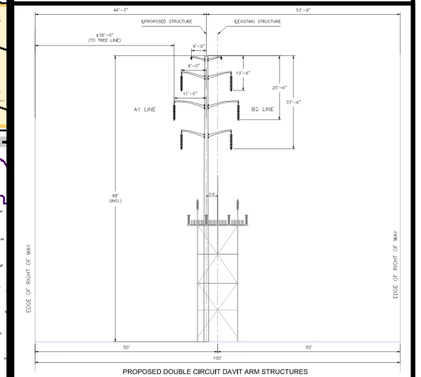
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

FITCHBURG, MA
PAGE 131 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

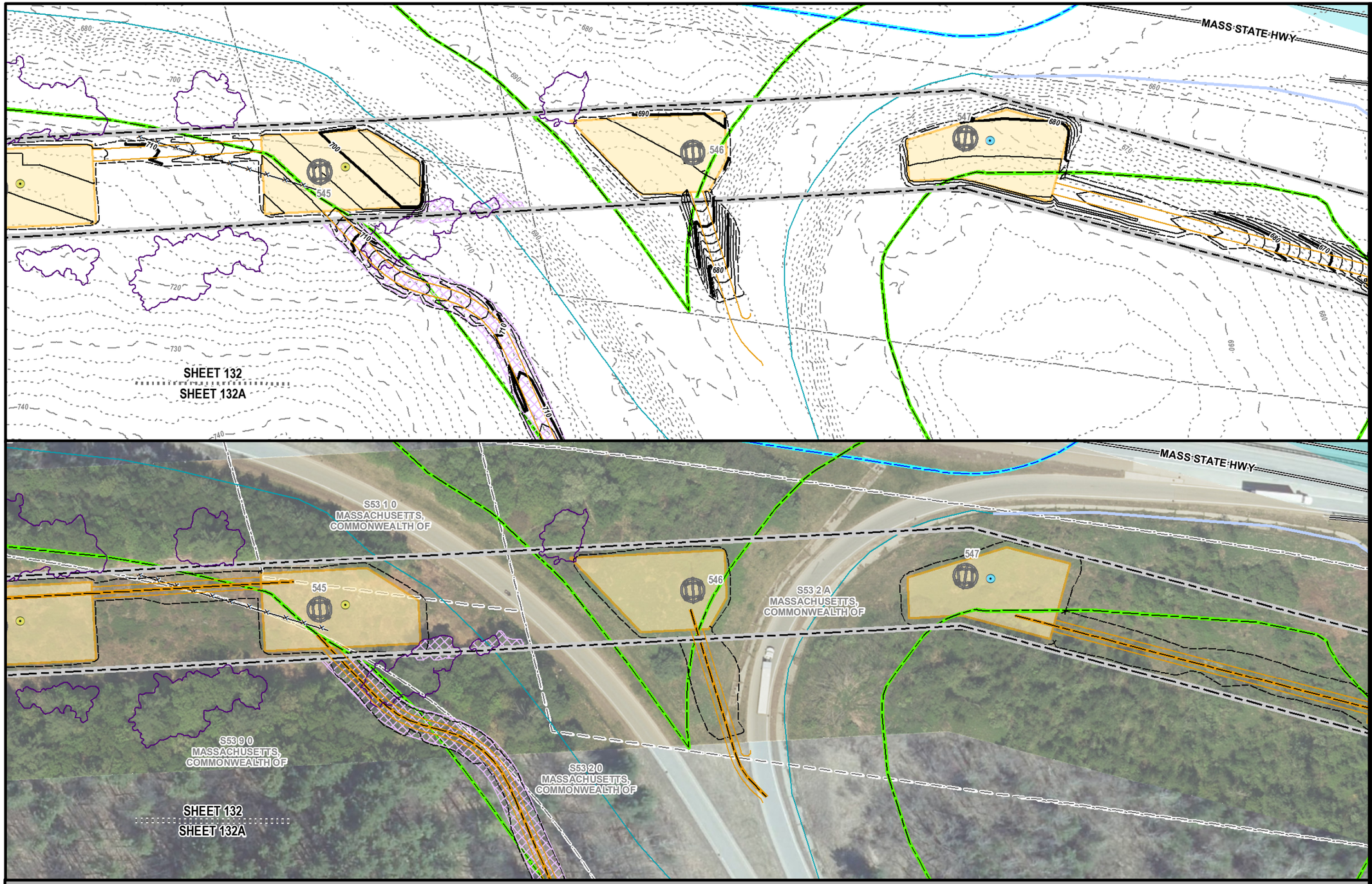
**Indicates Layers Set to Transparency*

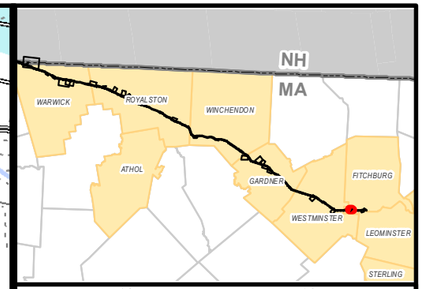
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

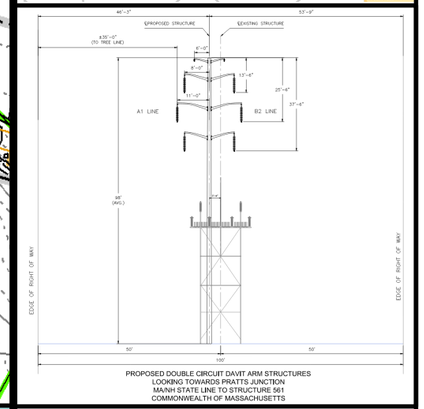
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

FITCHBURG, MA
PAGE 132 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

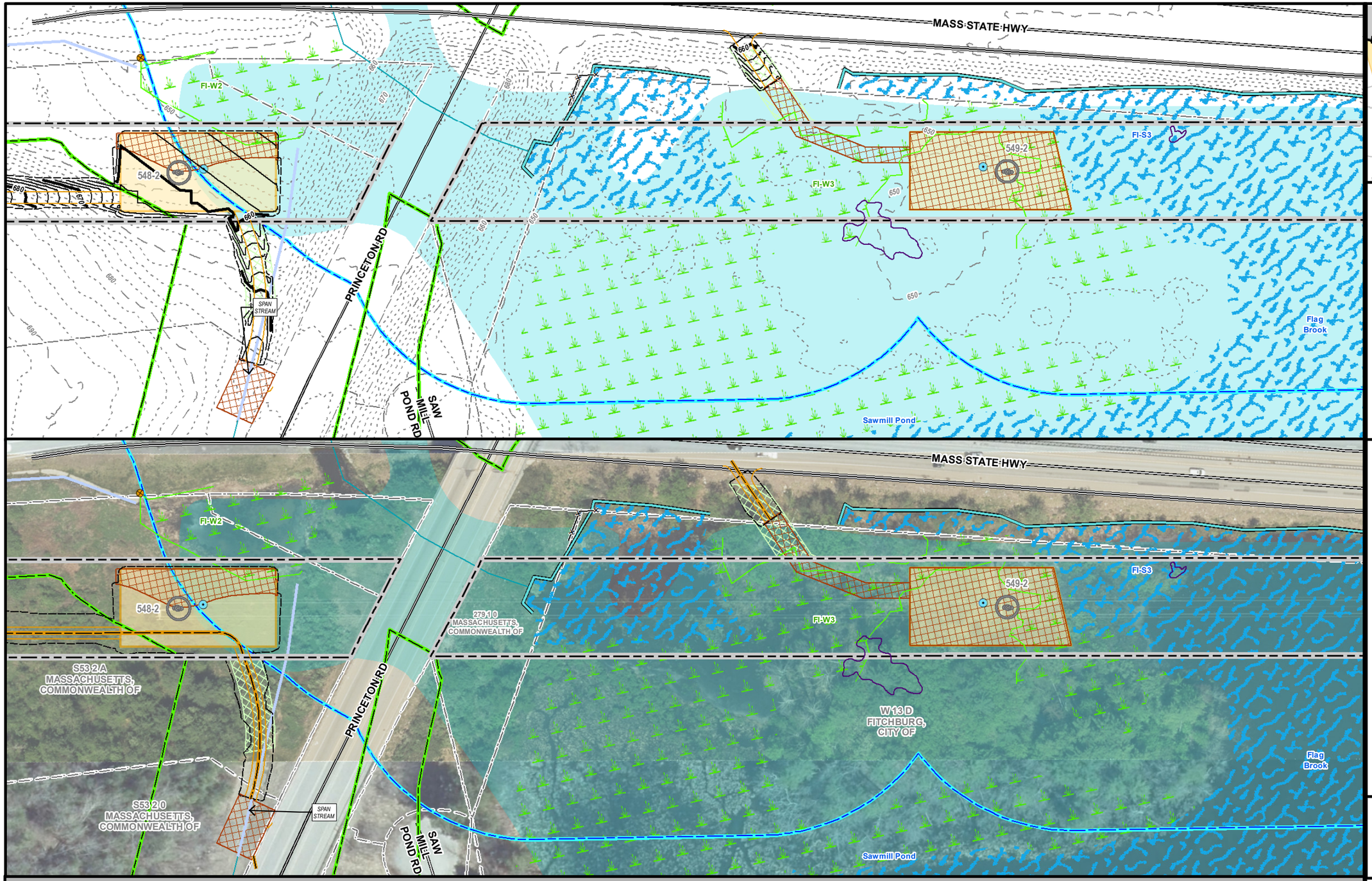
**Indicates Layers Set to Transparency*

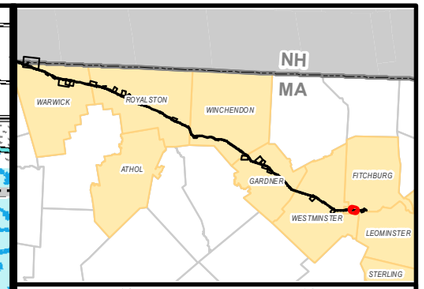
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

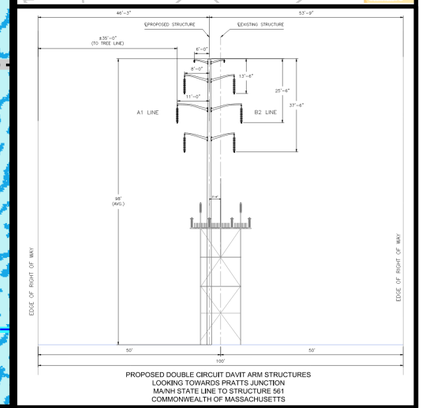
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

FITCHBURG, MA
PAGE 133 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

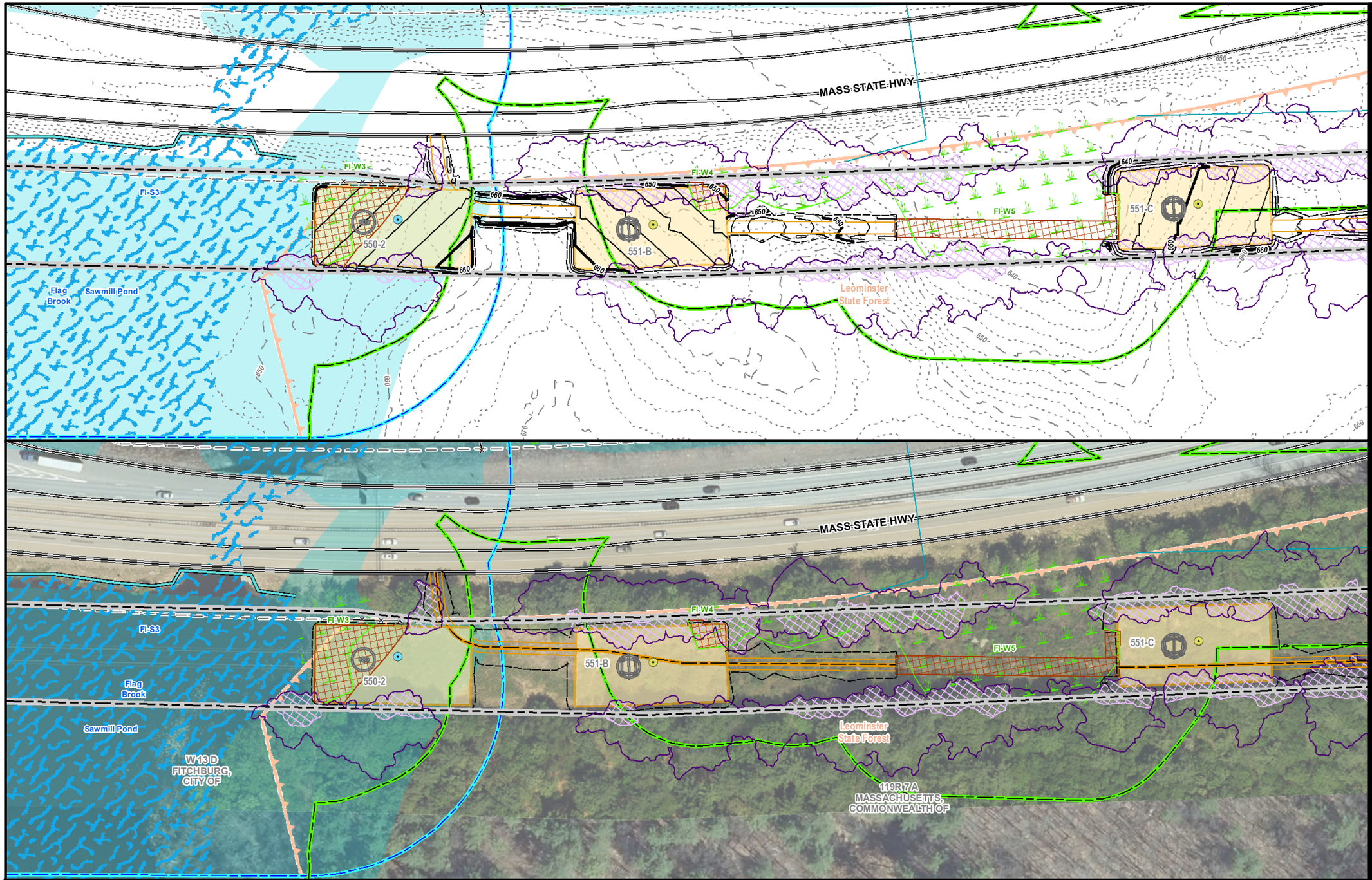
**Indicates Layers Set to Transparency*

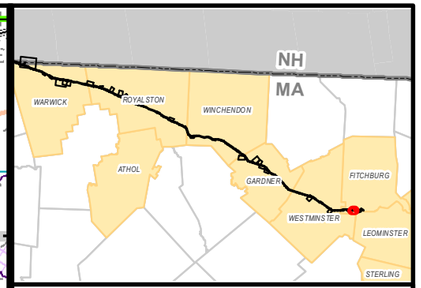
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

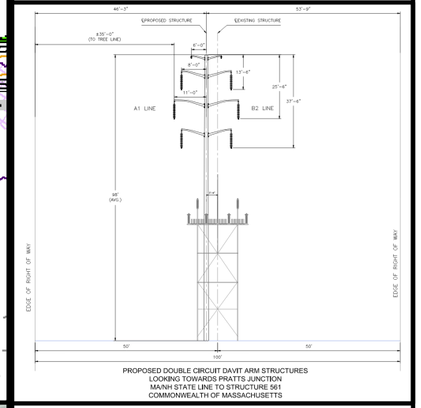
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

FITCHBURG, MA
PAGE 134 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

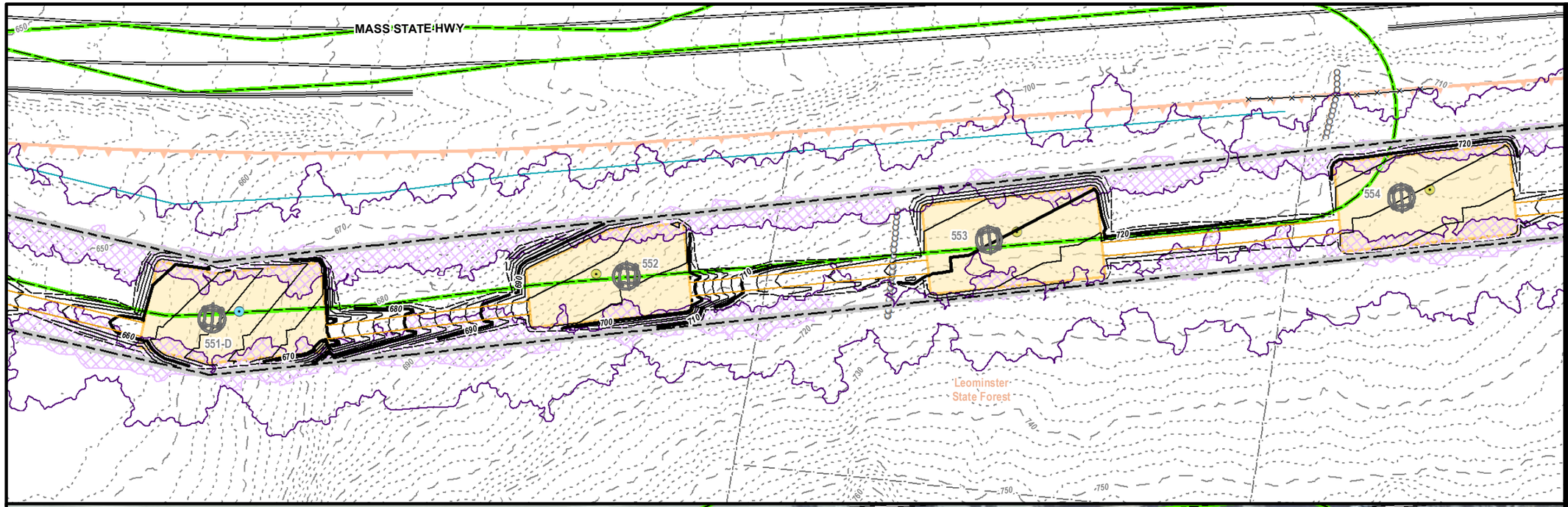
*Indicates Layers Set to Transparency

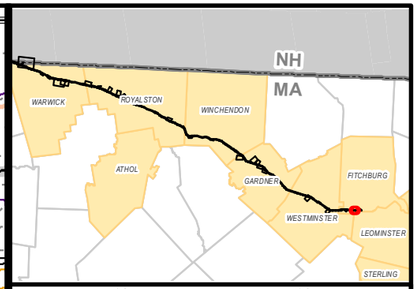
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

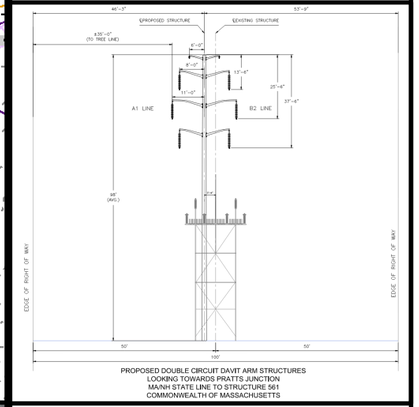
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

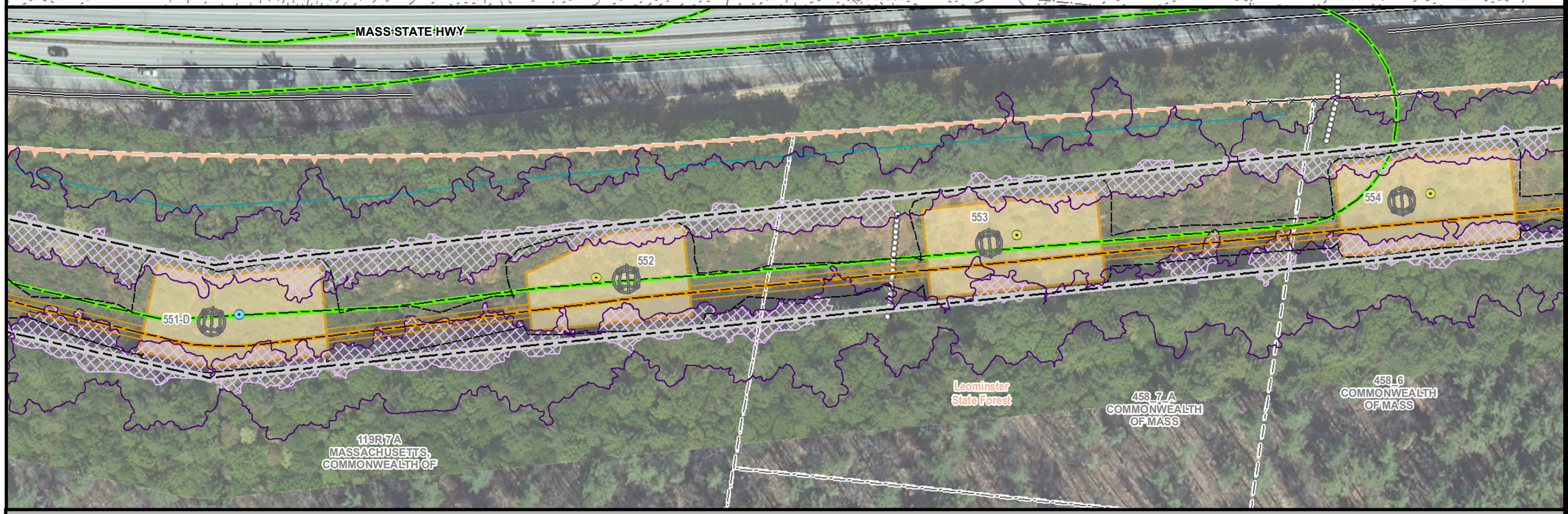
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

FITCHBURG & LEOMINSTER, MA

1 inch = 100 feet

0 50 100

Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

*Indicates Layers Set to Transparency

PREPARED FOR:

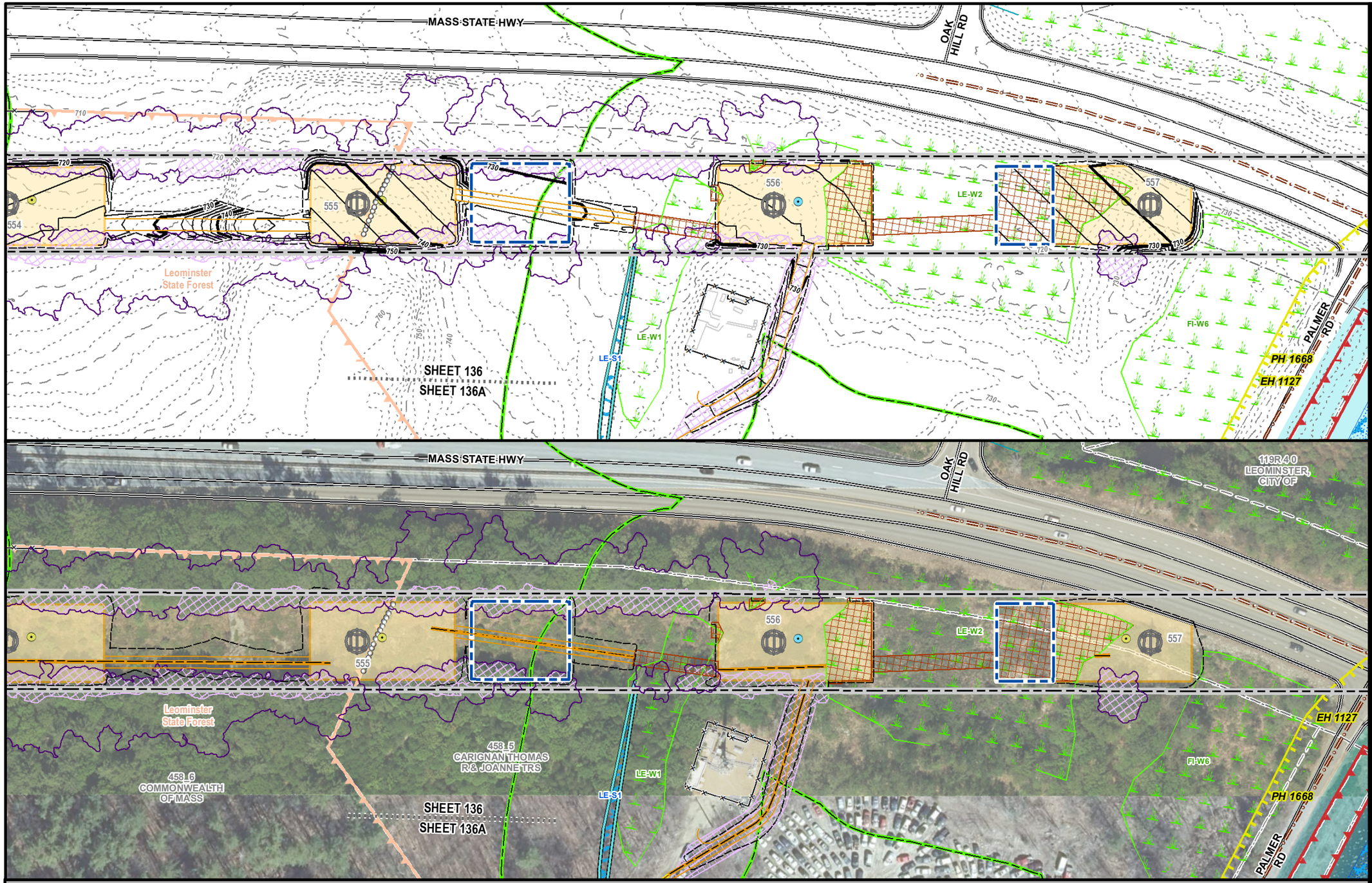
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

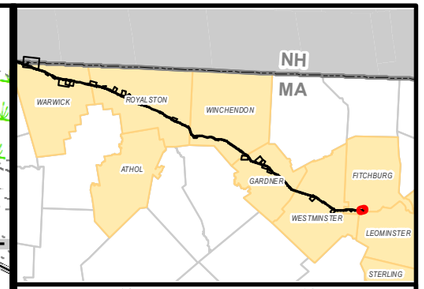
PREPARED BY:

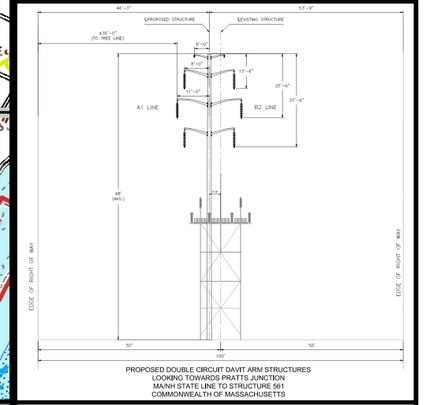
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

FITCHBURG & LEOMINSTER, MA

1 inch = 100 feet

0 50 100

Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

**Indicates Layers Set to Transparency*

PREPARED FOR:

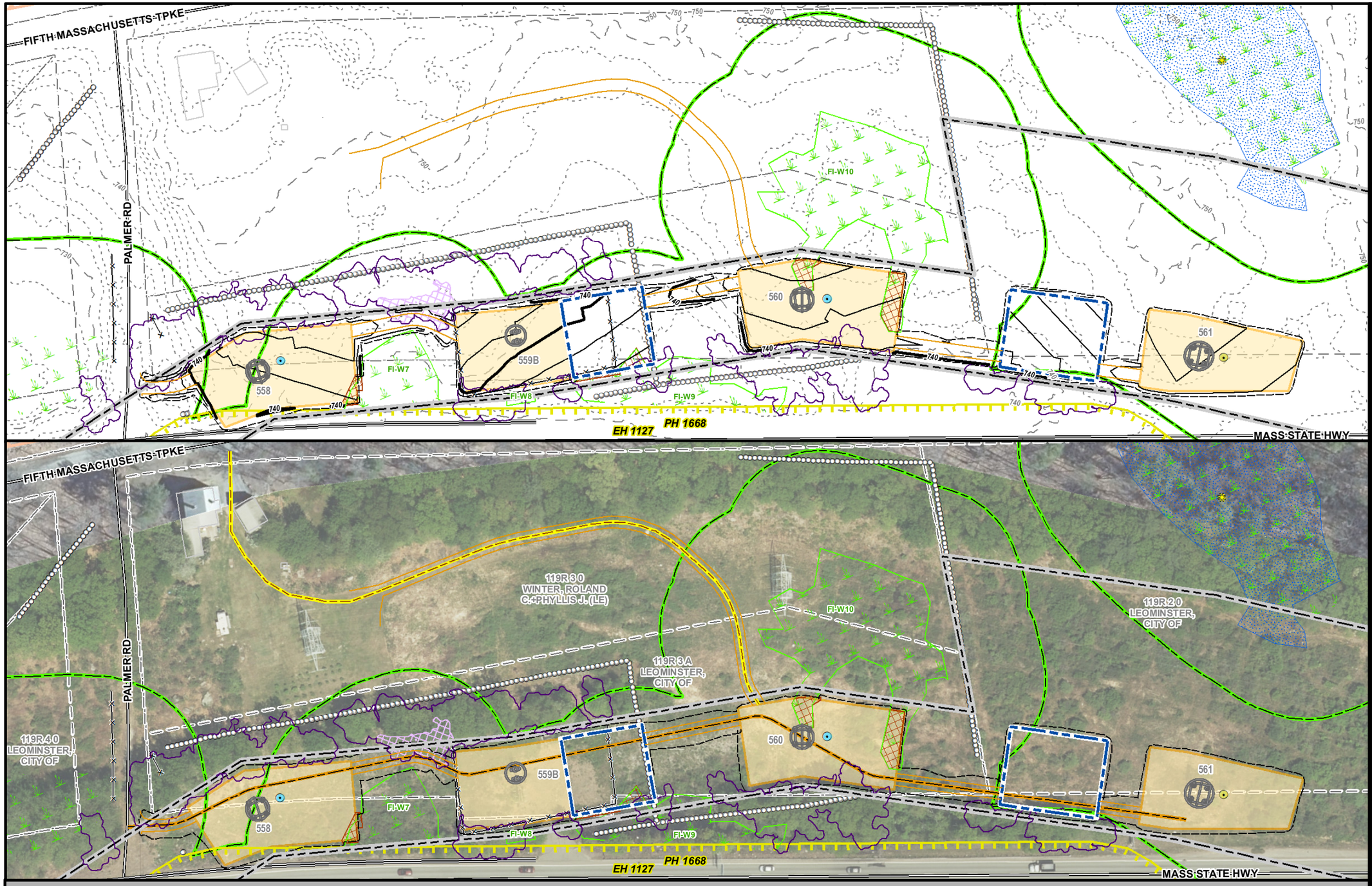
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

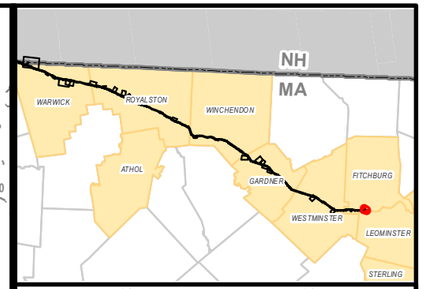
PREPARED BY:

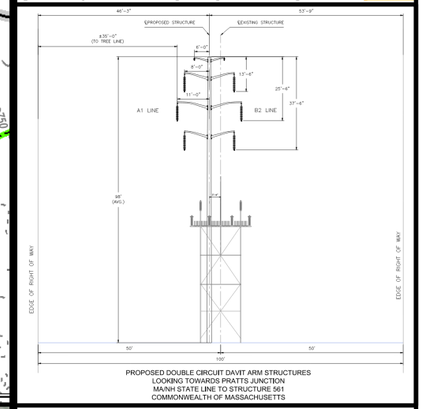
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

FITCHBURG & LEOMINSTER, MA
PAGE 137 OF 137

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

**Indicates Layers Set to Transparency*

PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.

Figure 2B - A1/B2 Mainline Centerline Change

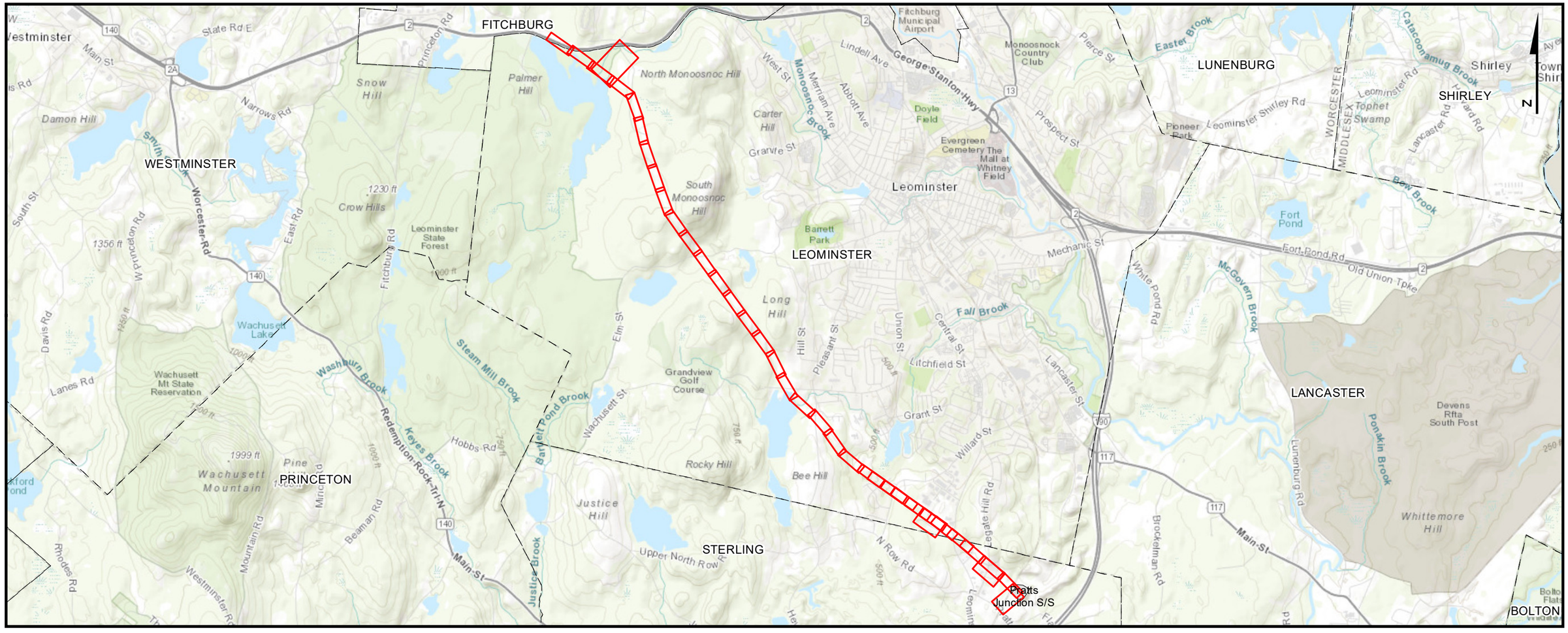
BSC Project Number: 89620.66

Asset Condition Refurbishment Project (ACR) - A1/B2 Mainline Centerline Change

Fitchburg, Leominster, & Sterling, MA

MEPA General Purpose Plans - 75% Design

October 26, 2023



PREPARED FOR:

nationalgrid

170 Data Drive
Waltham, MA 02451

INDEX OF FIGURES

T1 - TITLE SHEET

1 - 33 - MAP SHEETS

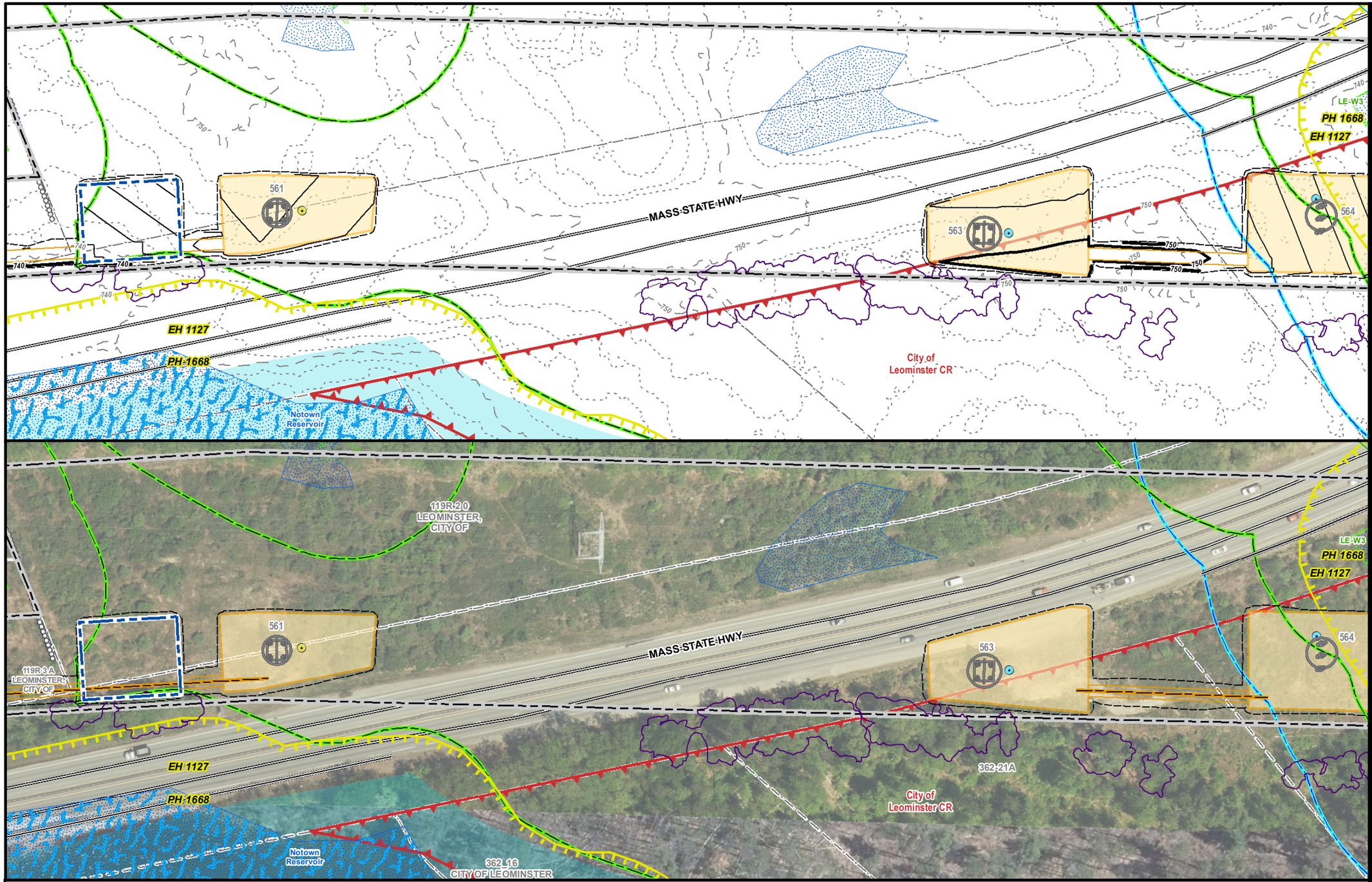
1A - 33A - OFF ROW ACCESS SHEETS

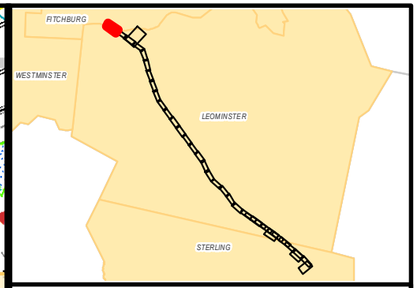
ISSUED FOR PERMITTING
NOT CONSTRUCTION

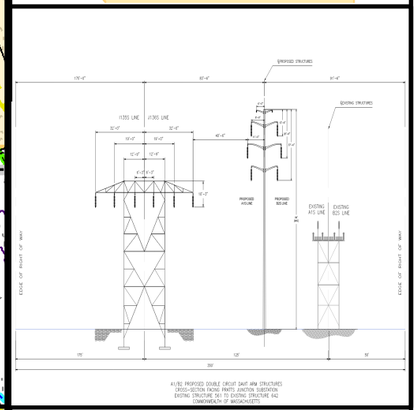
PREPARED BY:

BSC GROUP

1 Mercantile Street Suite 601
Worcester, MA 01608







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

FITCHBURG & LEOMINSTER, MA

PAGE 1 OF 33

1 inch = 100 feet

0 50 100

Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

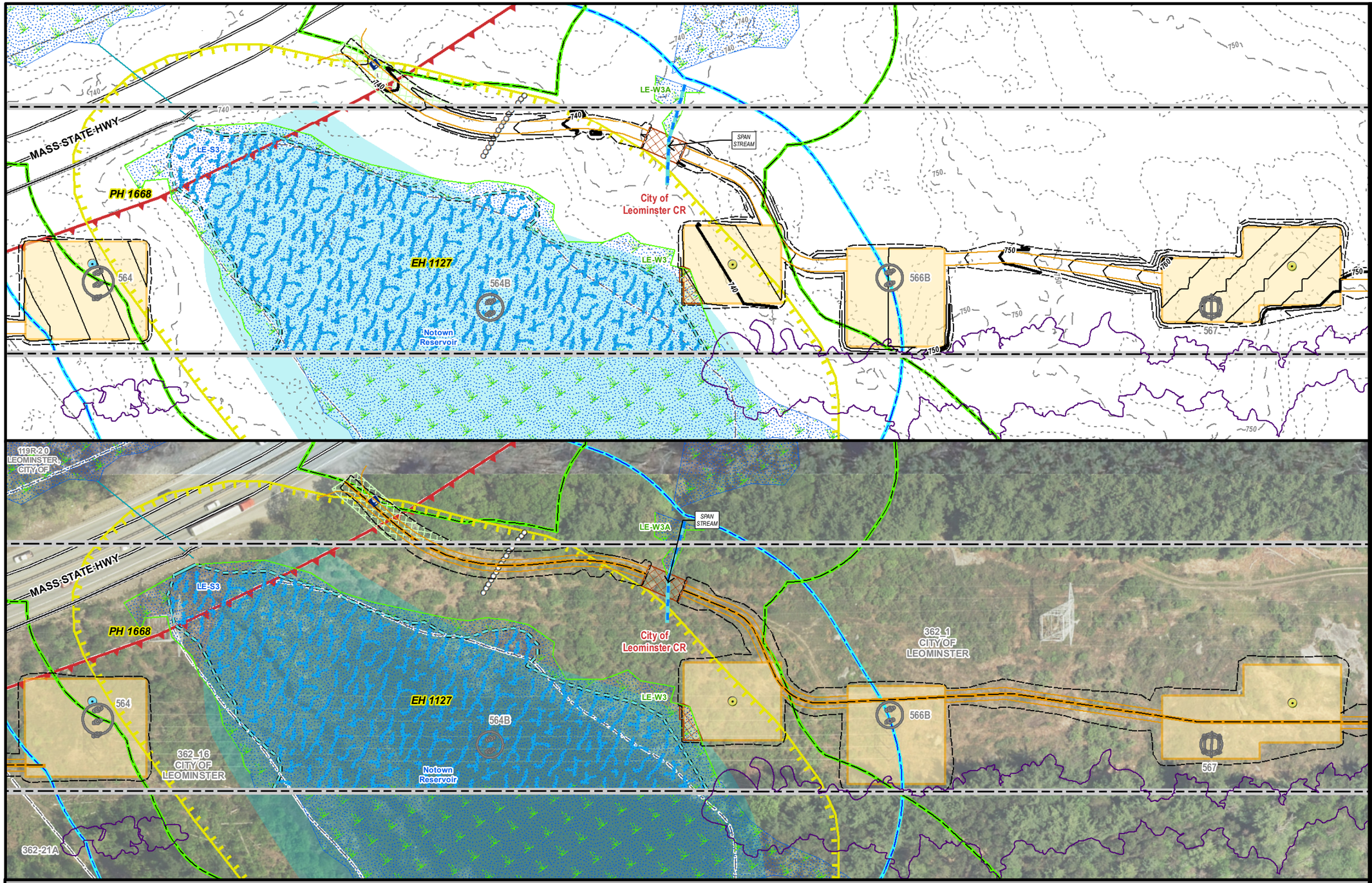
**Indicates Layers Set to Transparency*

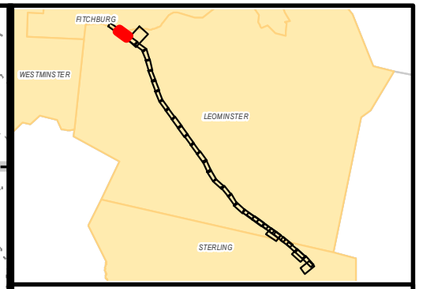
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

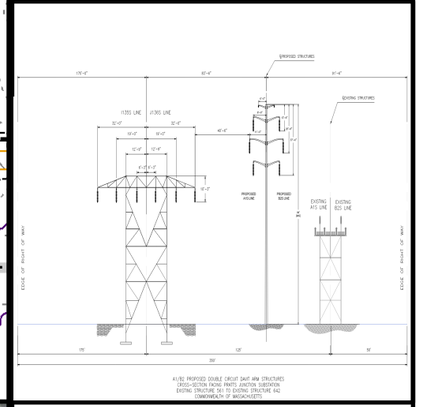
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

FITCHBURG & LEOMINSTER, MA

PAGE 2 OF 33

1 inch = 100 feet

0 50 100

Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

**Indicates Layers Set to Transparency*

PREPARED FOR:

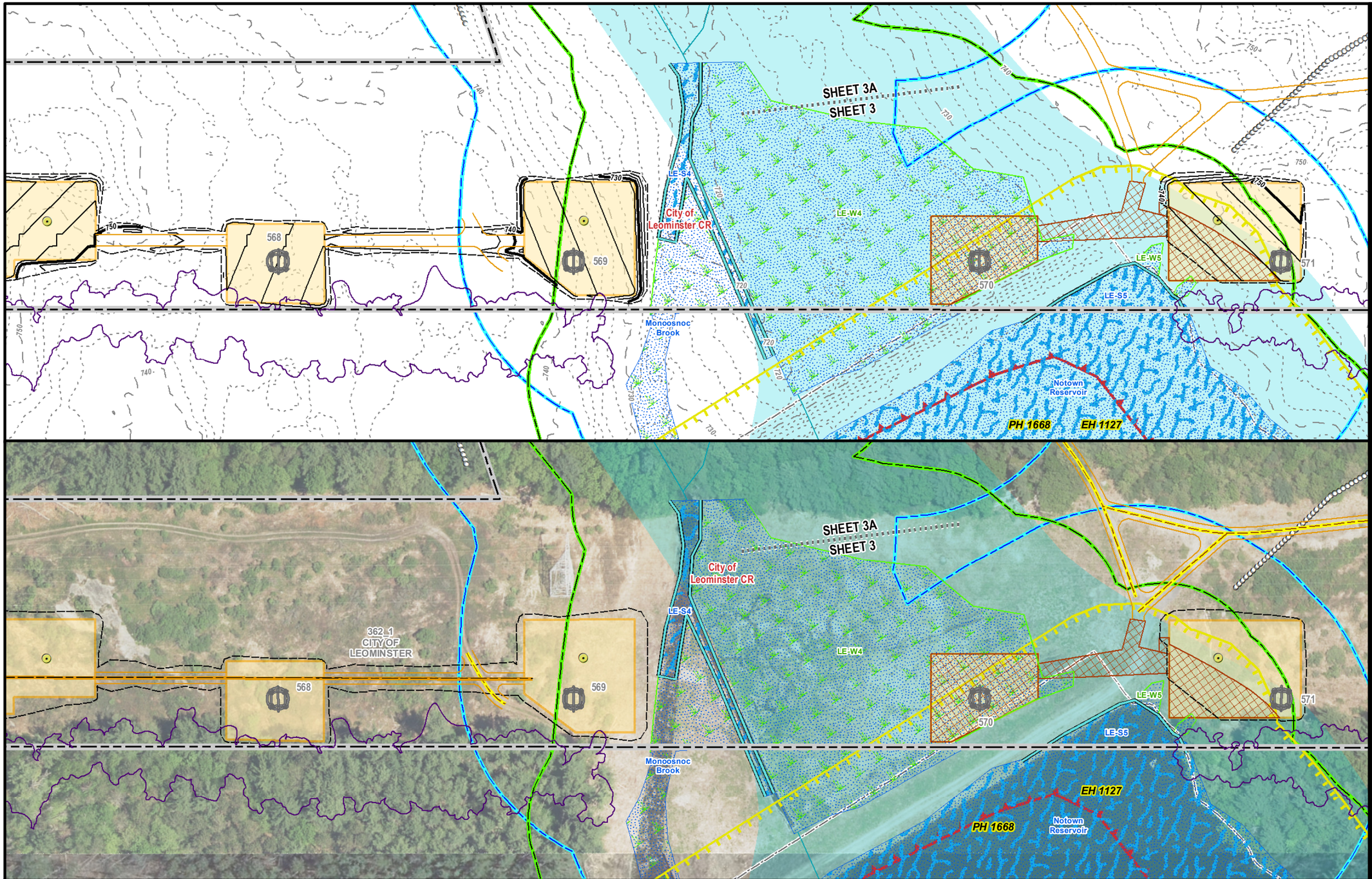
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

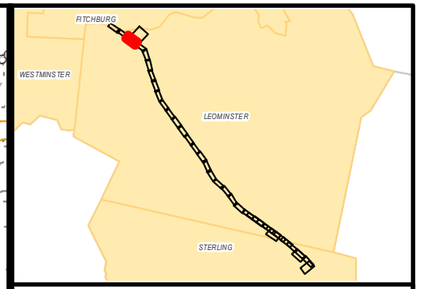
PREPARED BY:

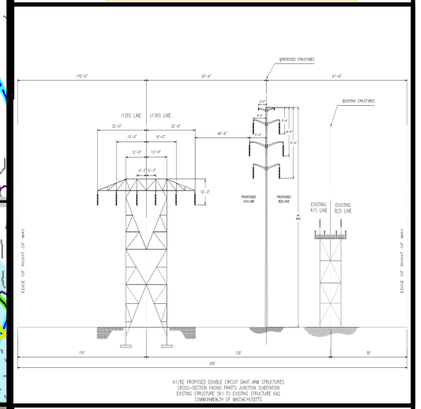
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 3 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

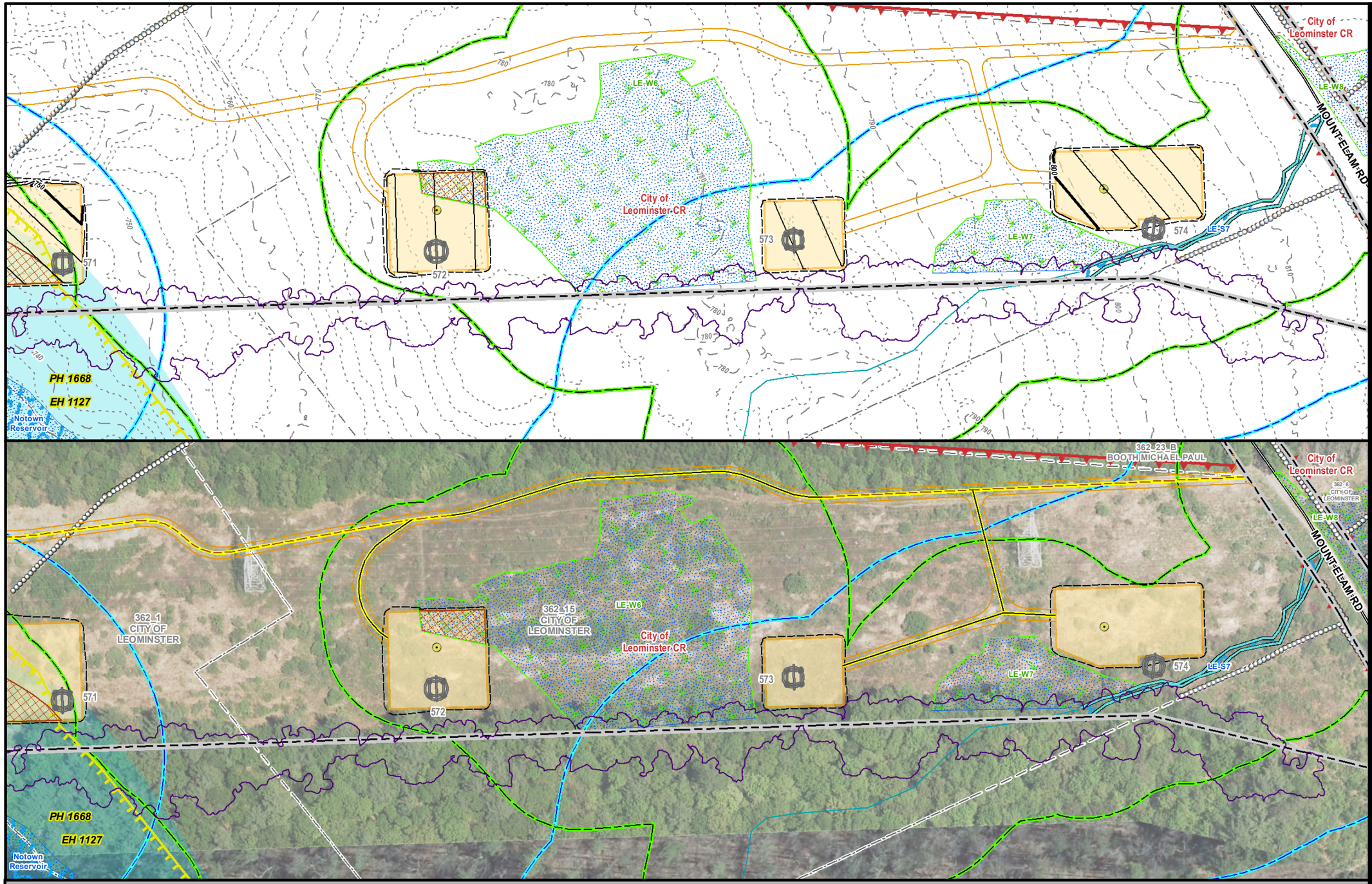
**Indicates Layers Set to Transparency*

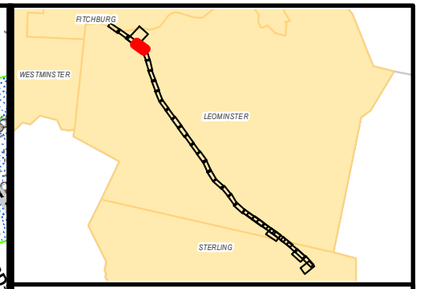
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

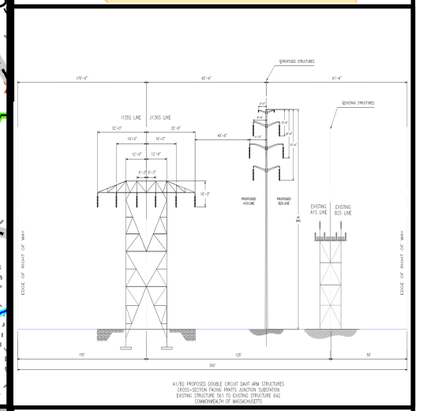
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 4 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

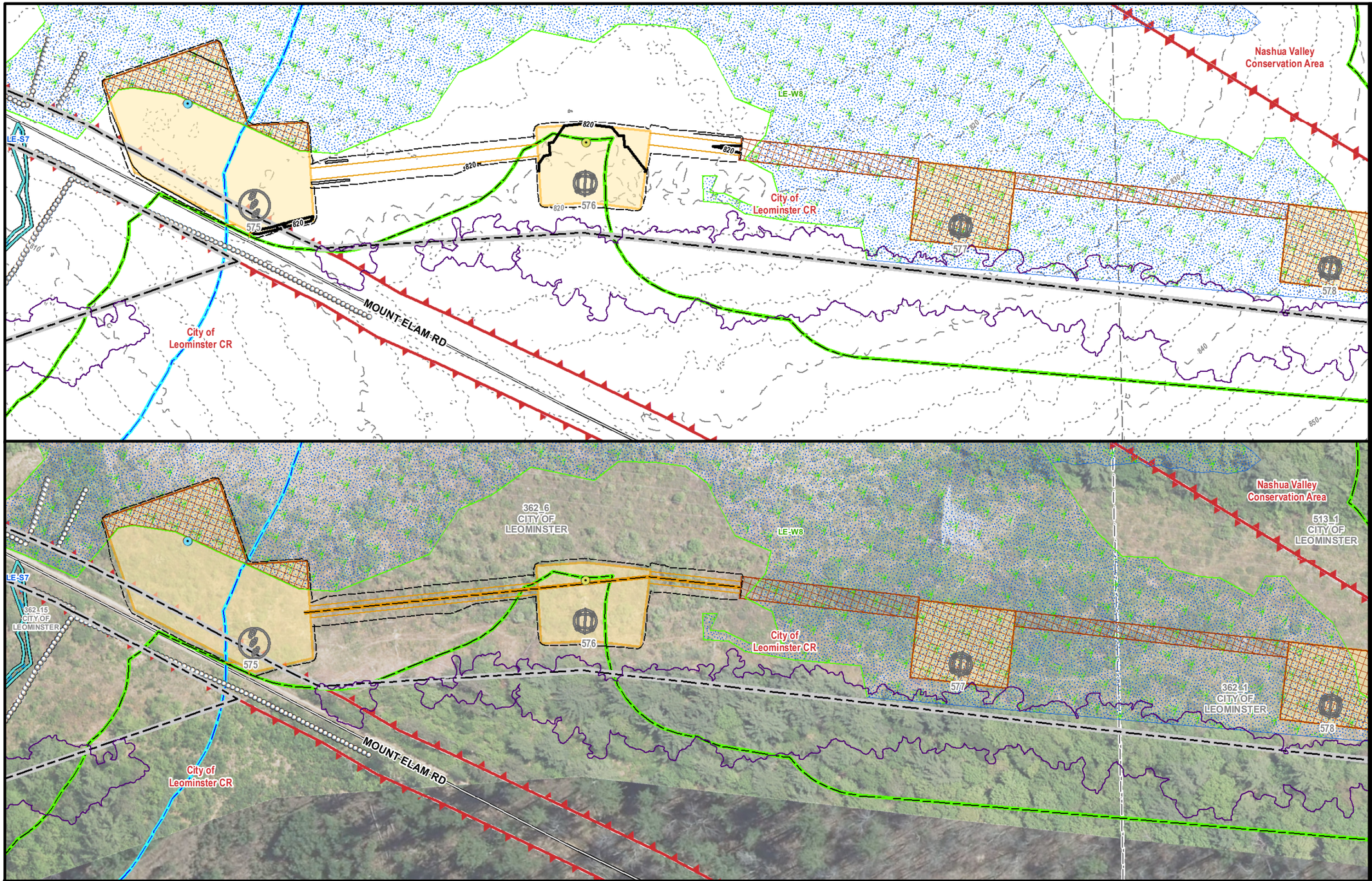
**Indicates Layers Set to Transparency*

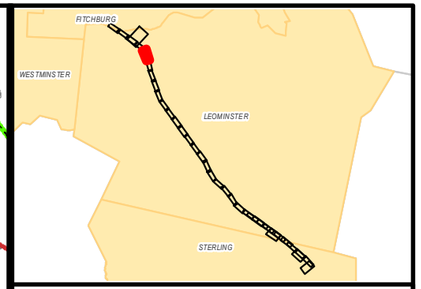
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

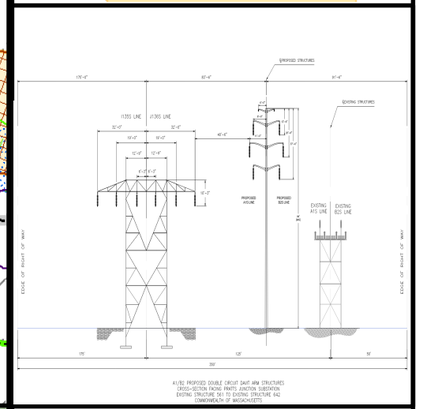
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 5 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

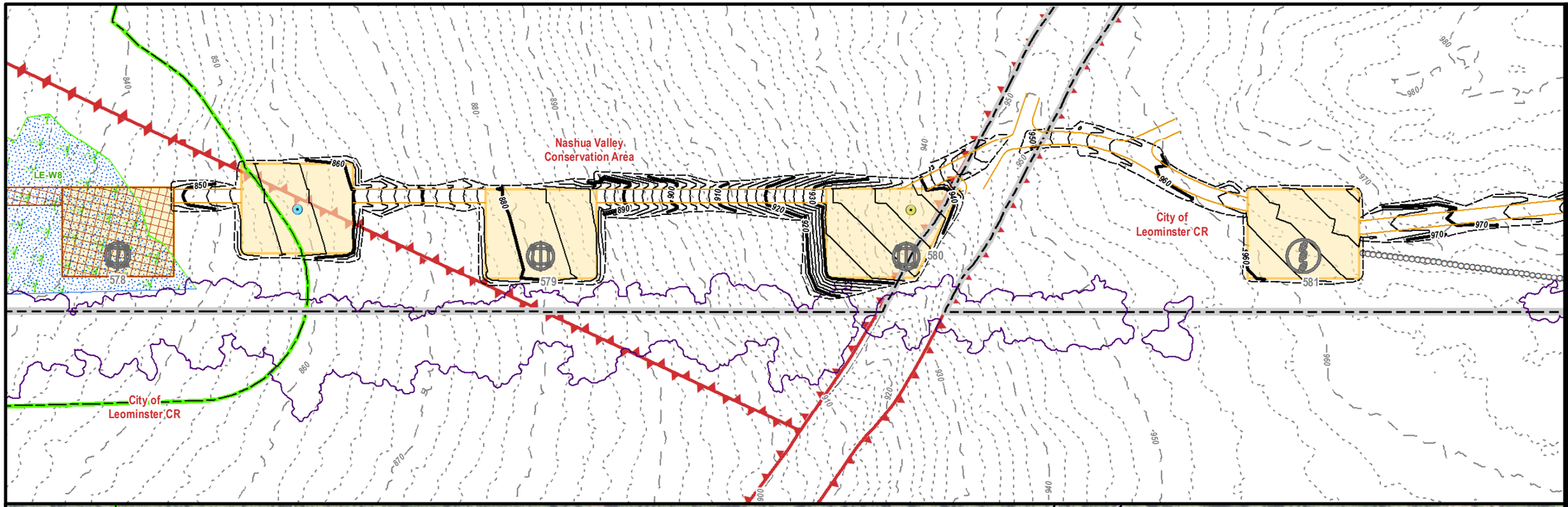
**Indicates Layers Set to Transparency*

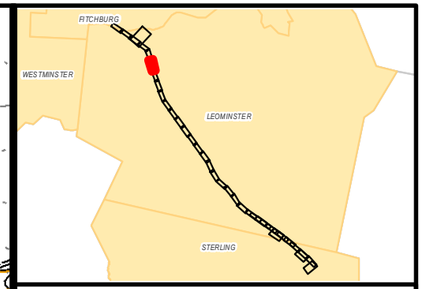
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

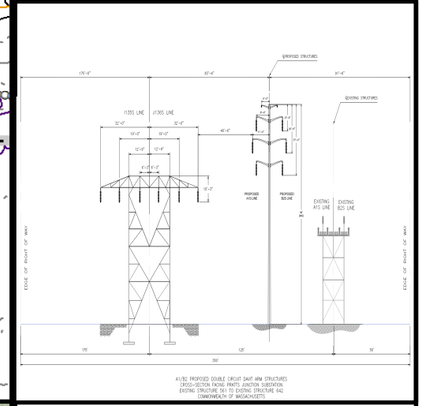
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

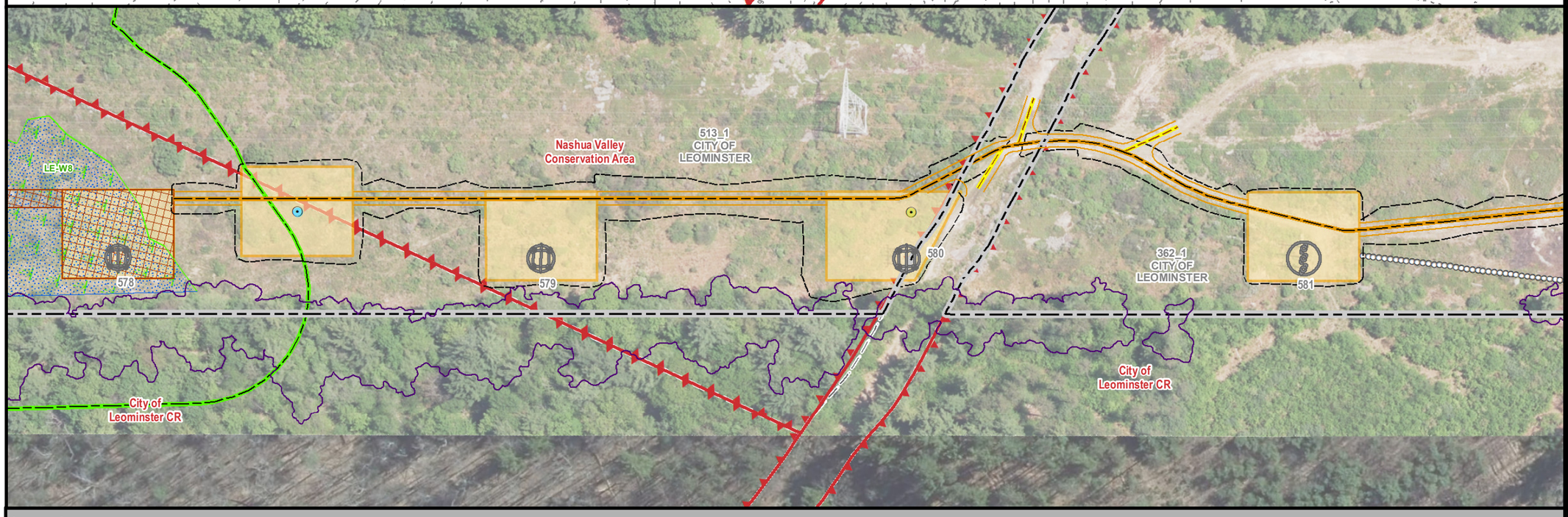
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 6 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

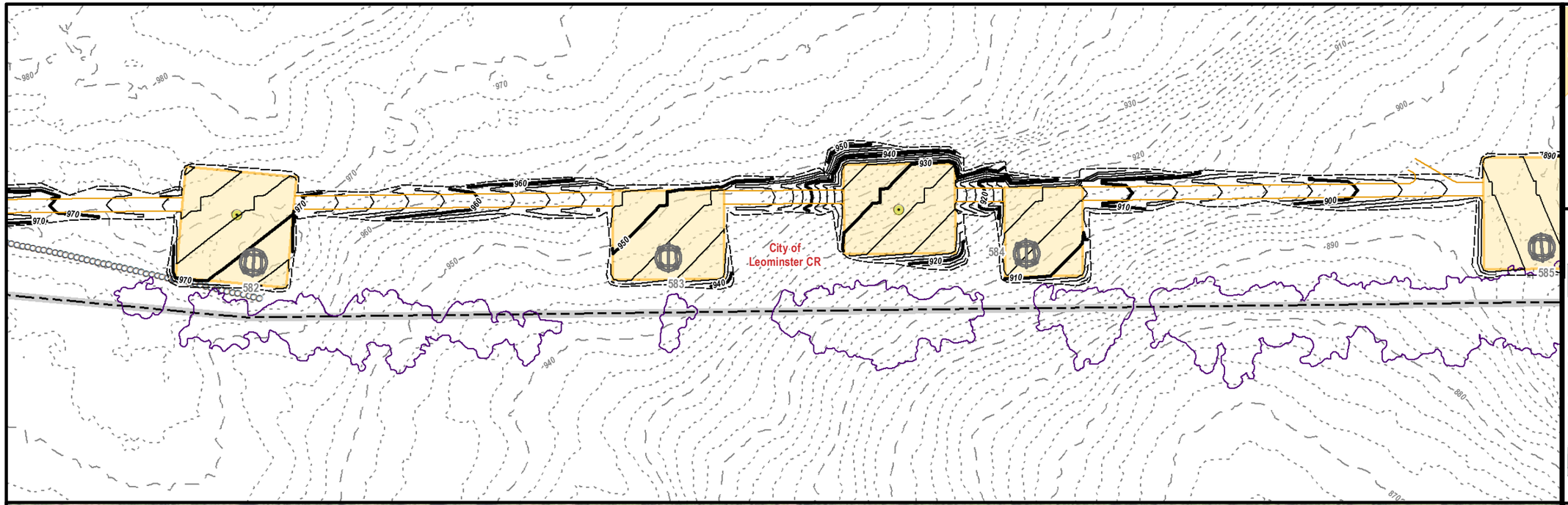
**Indicates Layers Set to Transparency*

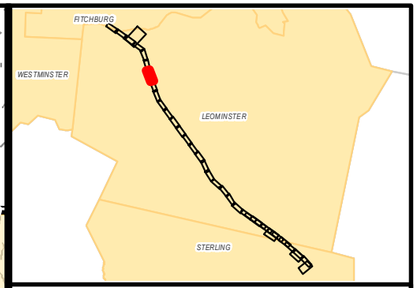
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

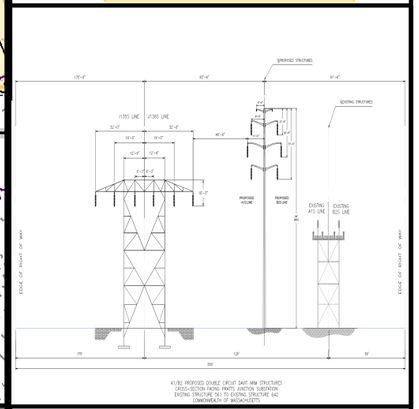
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

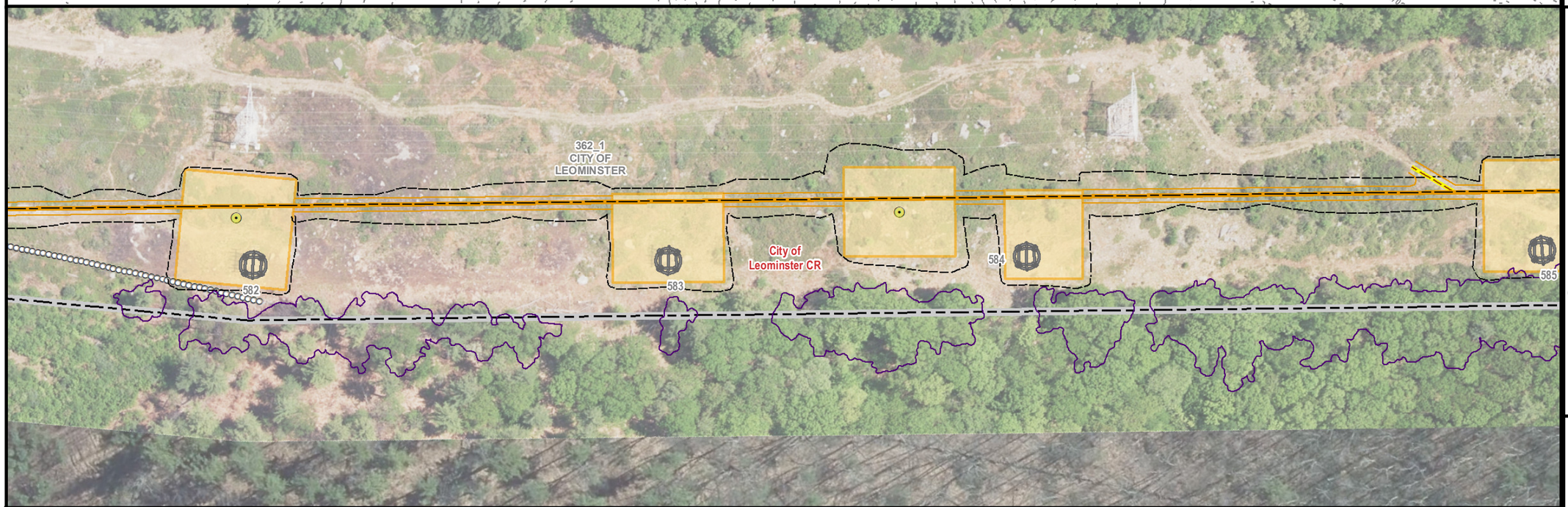
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 7 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

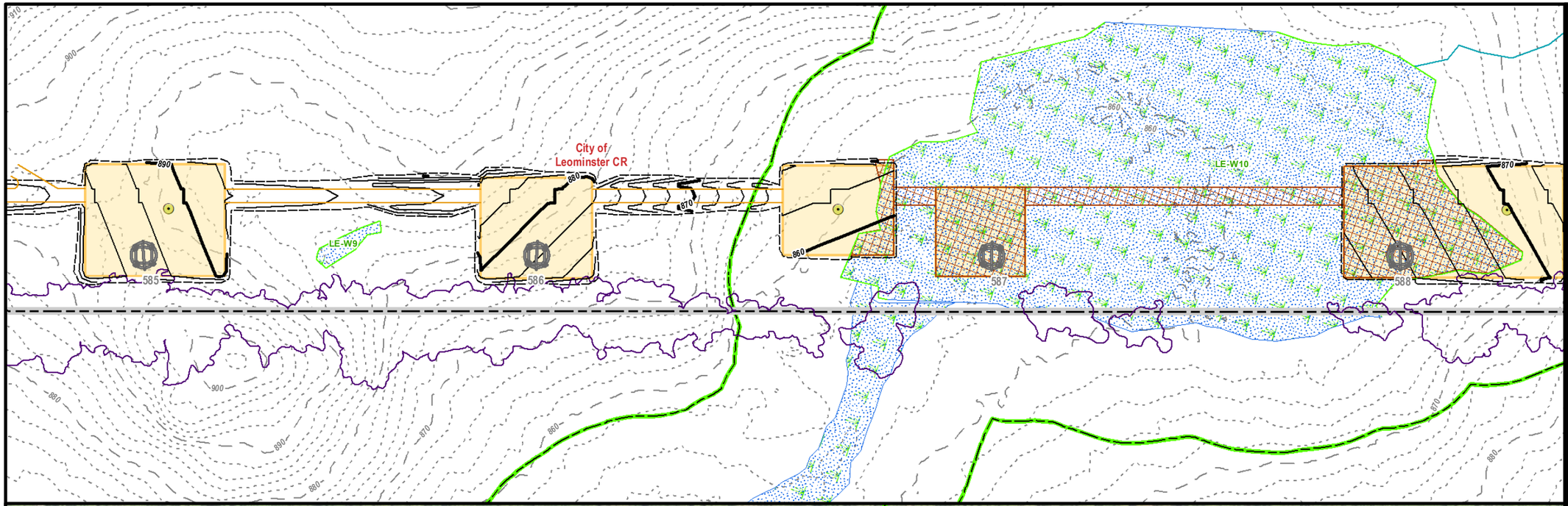
**Indicates Layers Set to Transparency*

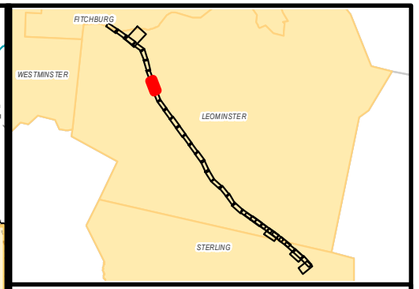
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

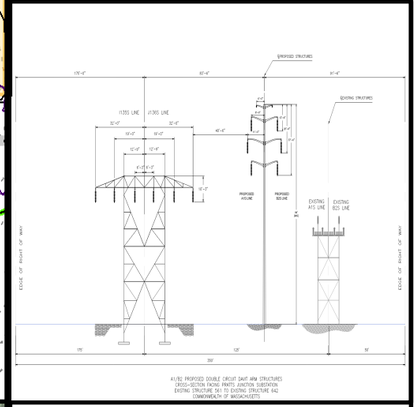
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

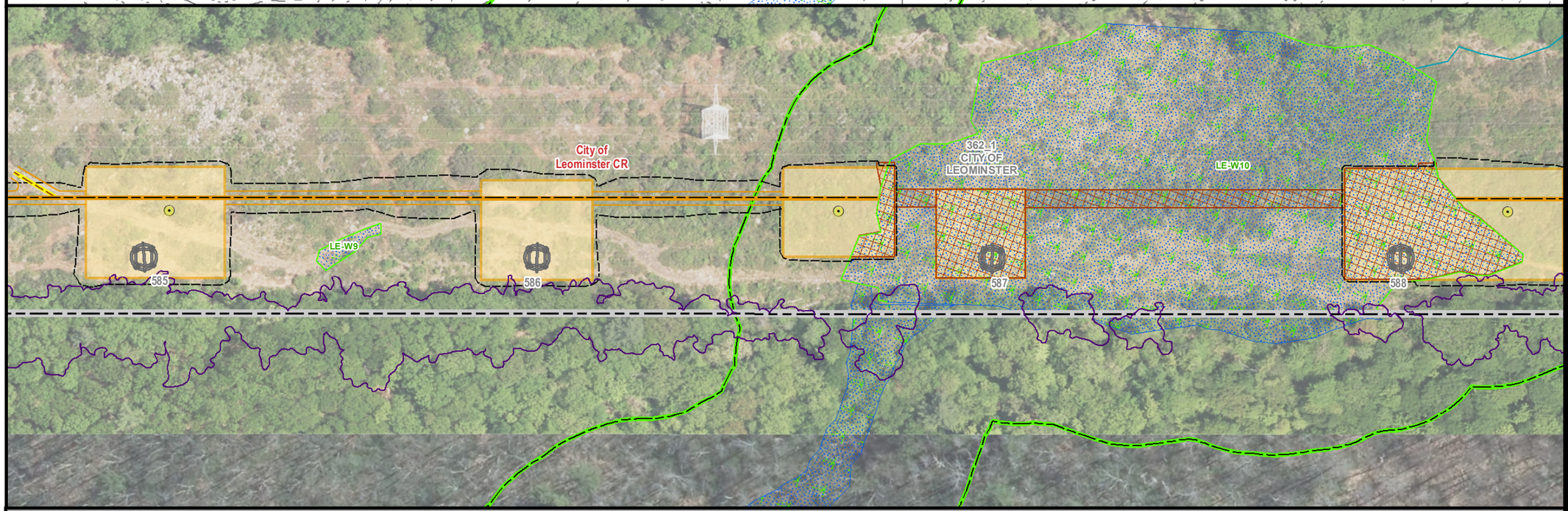
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 8 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

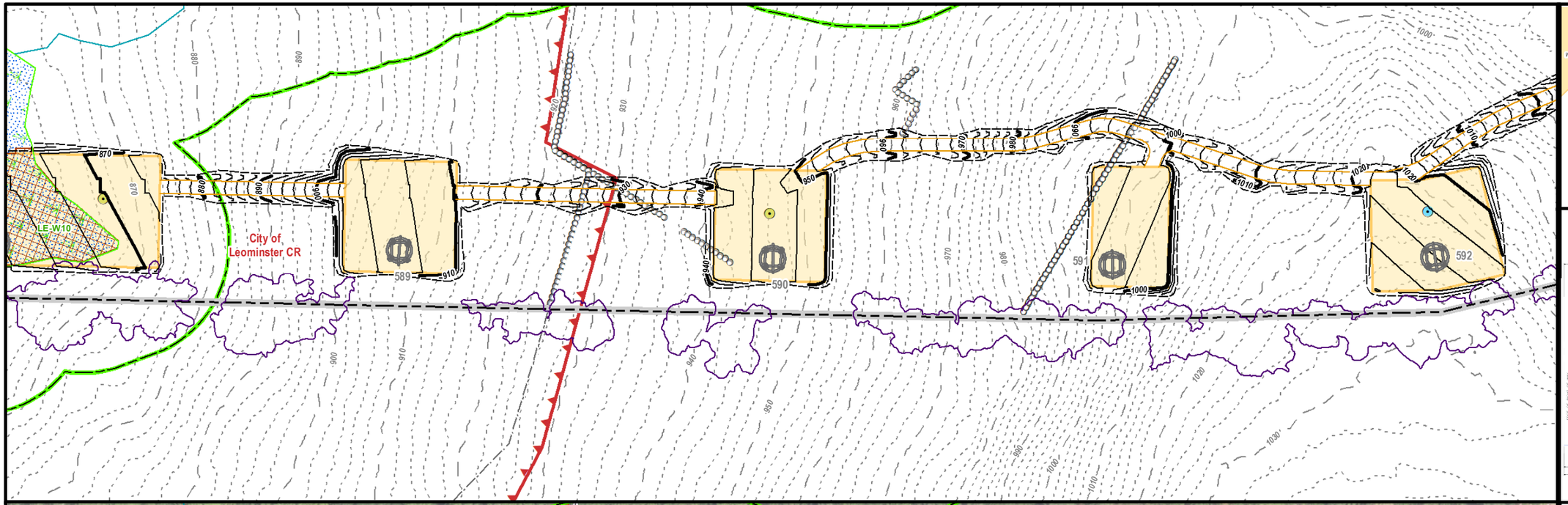
**Indicates Layers Set to Transparency*

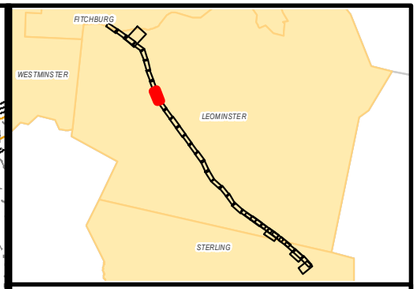
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

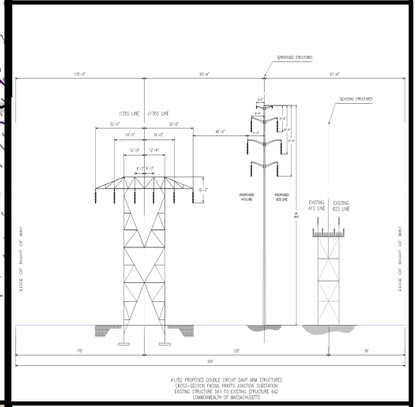
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

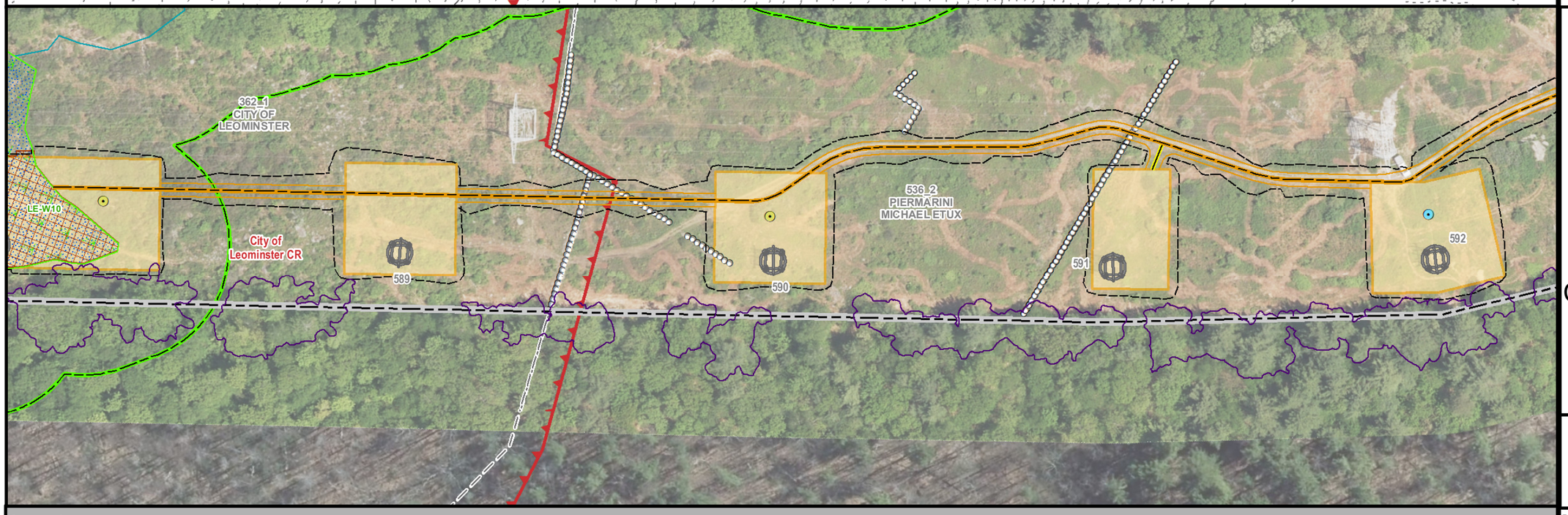
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 9 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

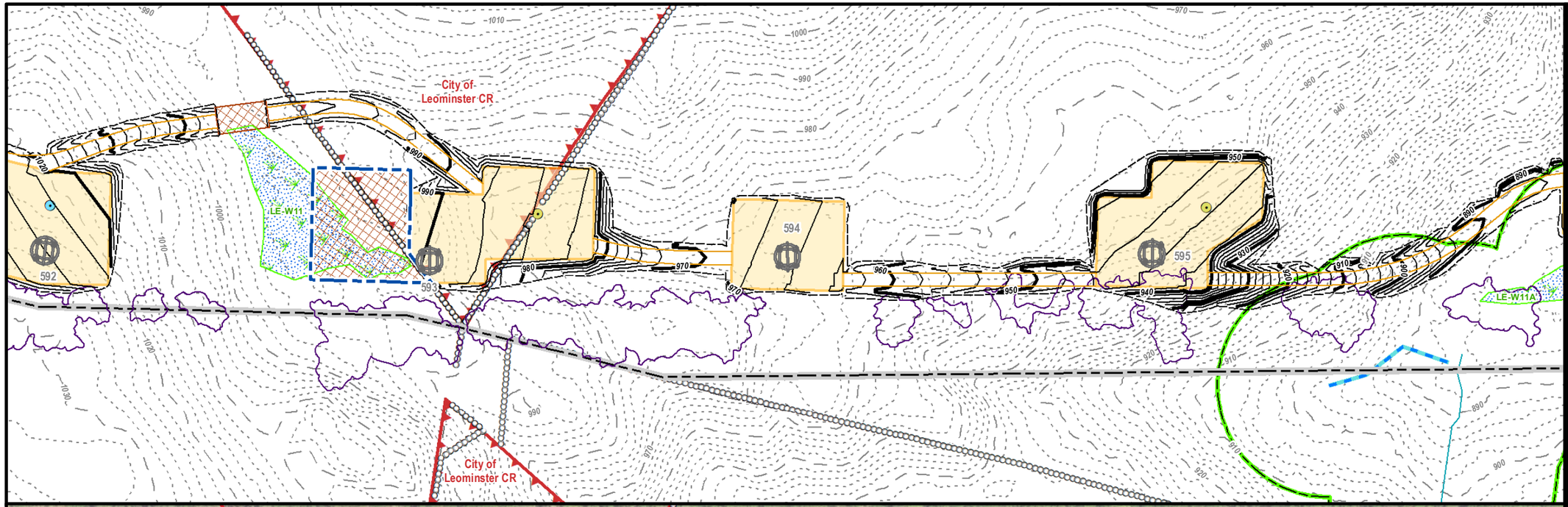
**Indicates Layers Set to Transparency*

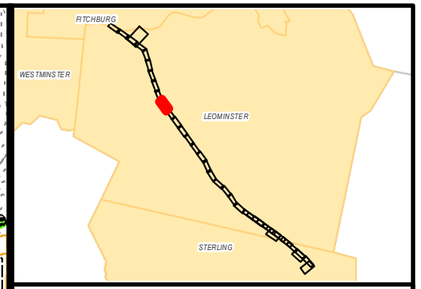
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

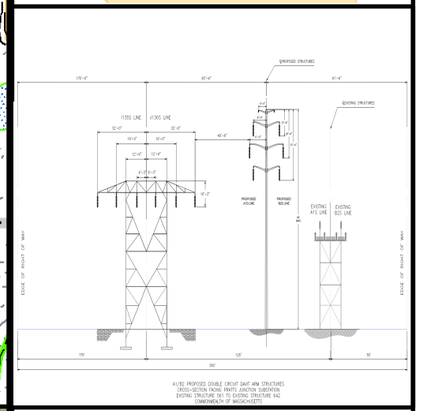
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

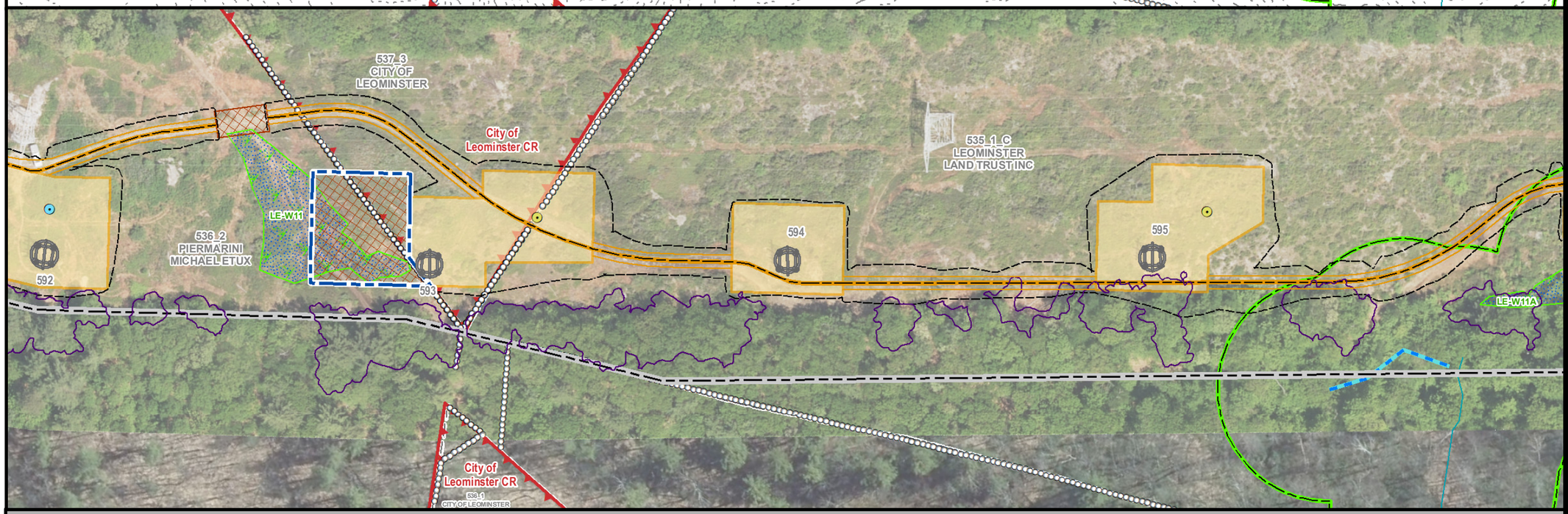
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 10 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

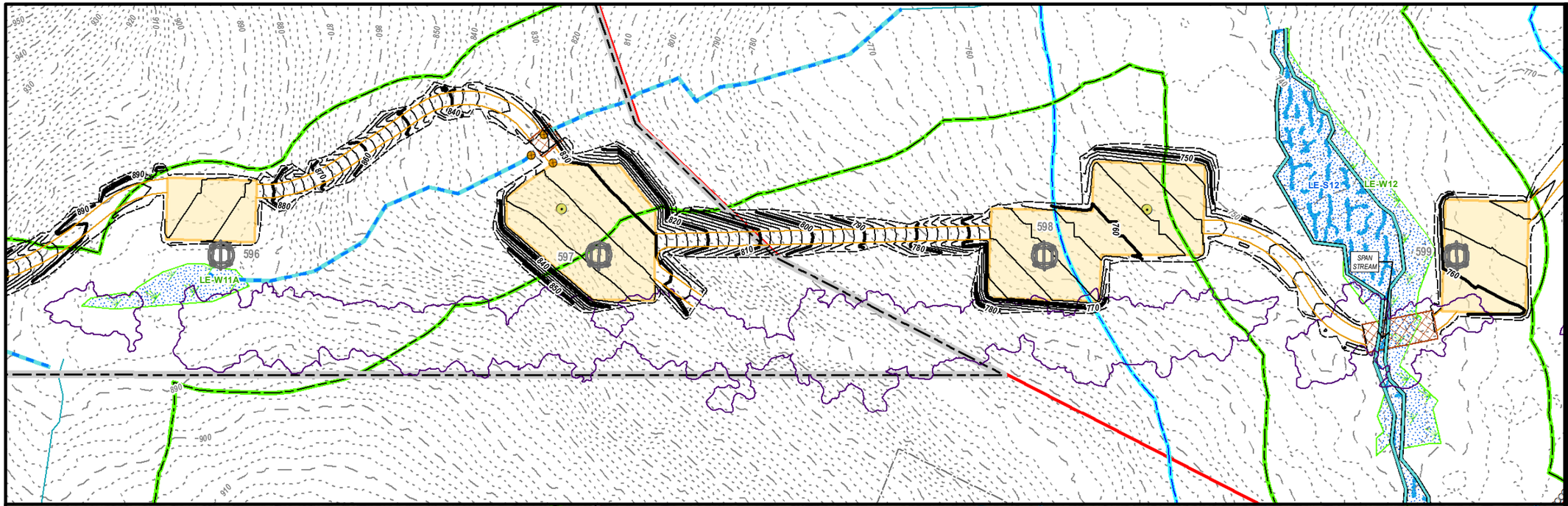
**Indicates Layers Set to Transparency*

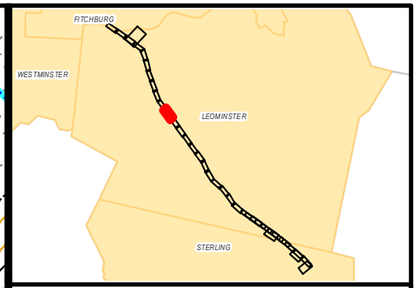
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

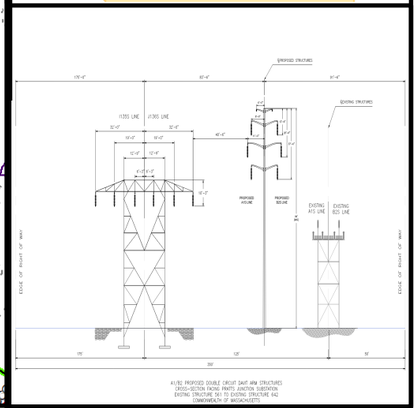
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 11 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

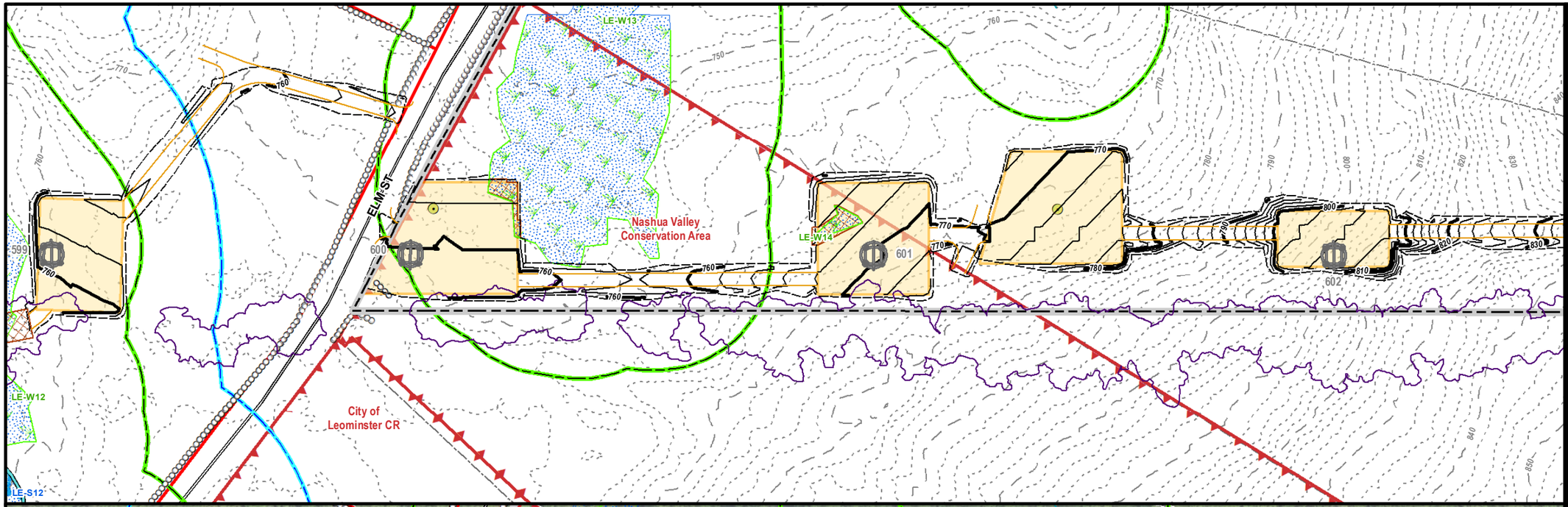
**Indicates Layers Set to Transparency*

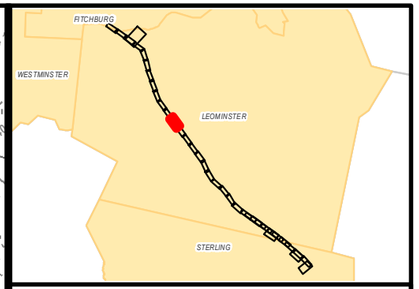
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

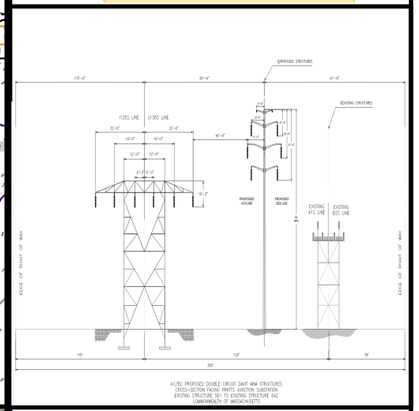
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

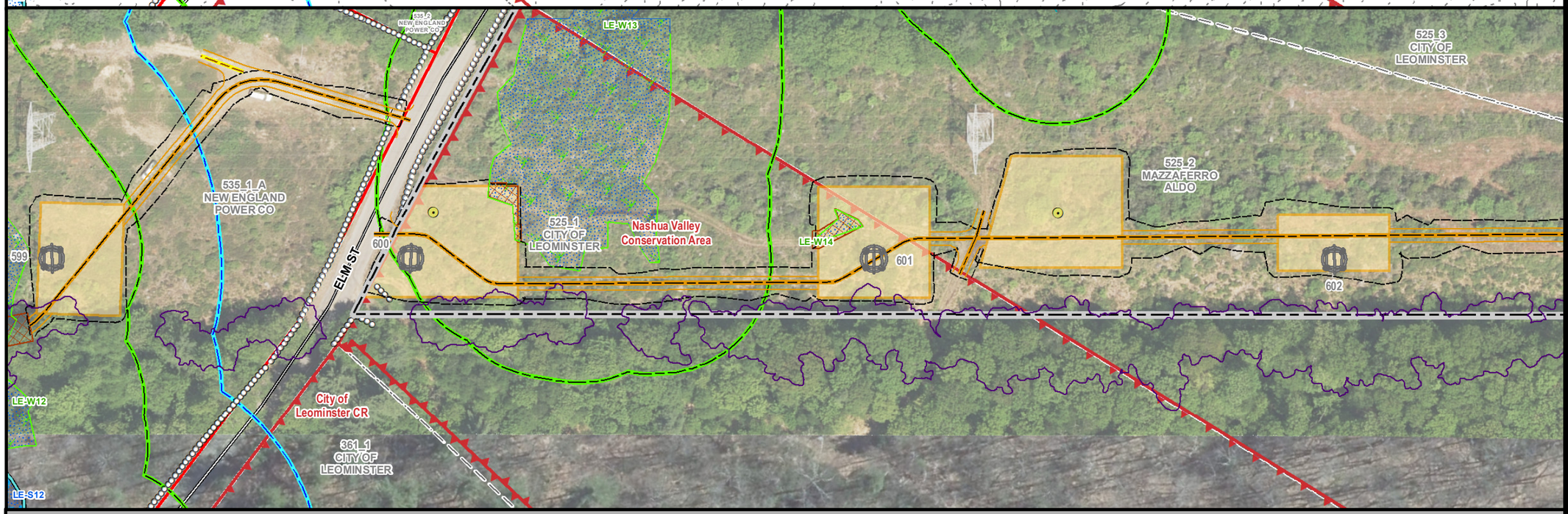
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 12 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

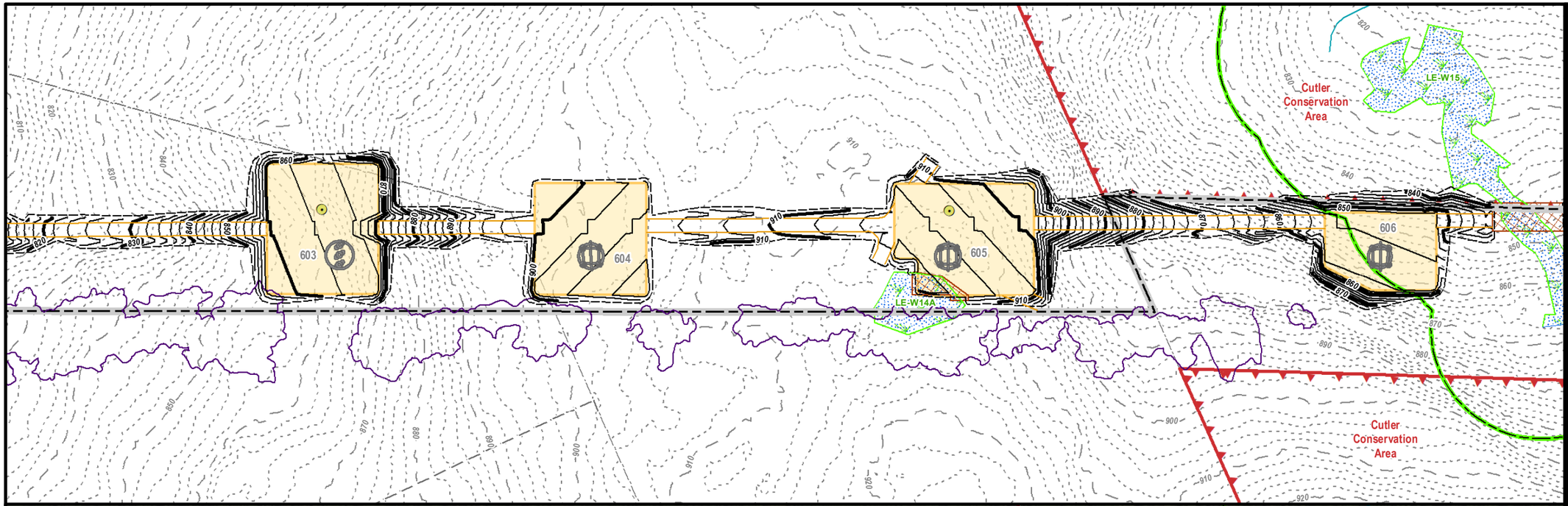
**Indicates Layers Set to Transparency*

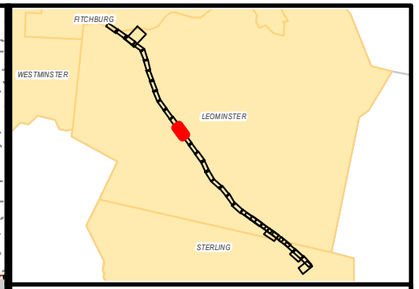
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

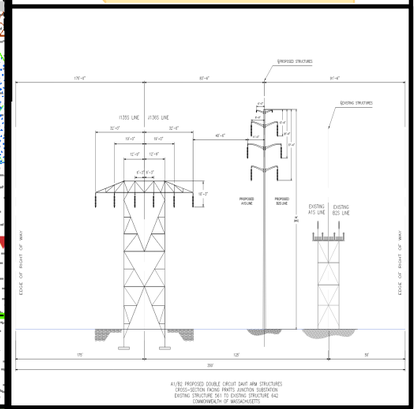
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

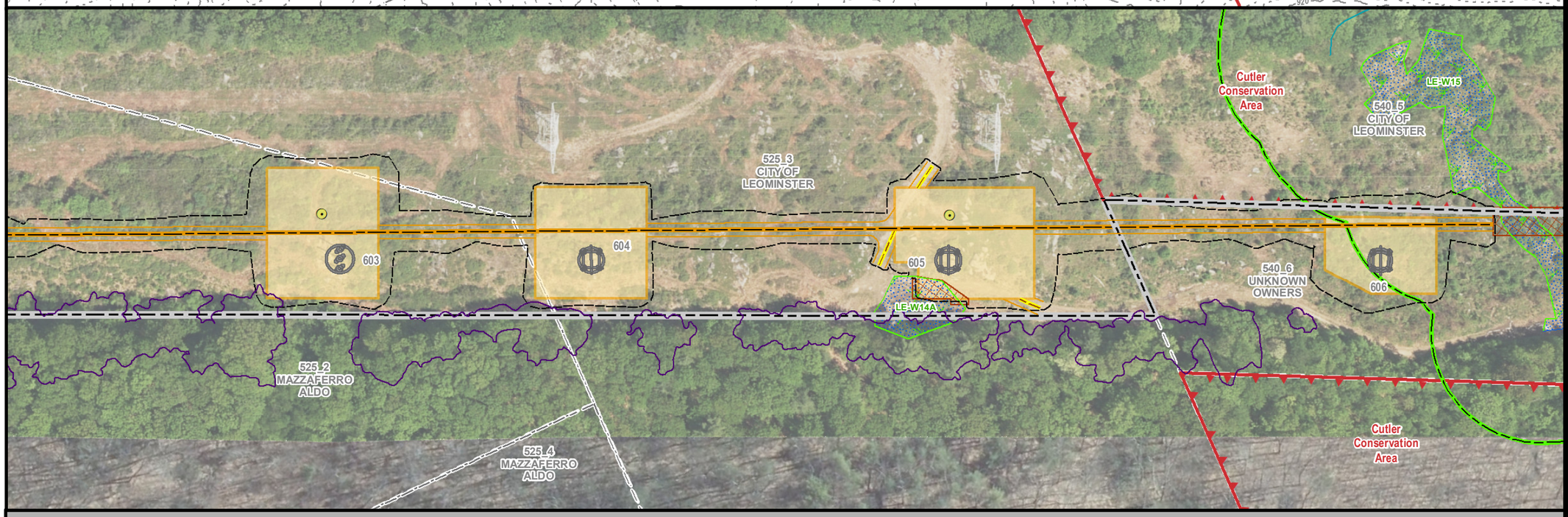
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 13 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

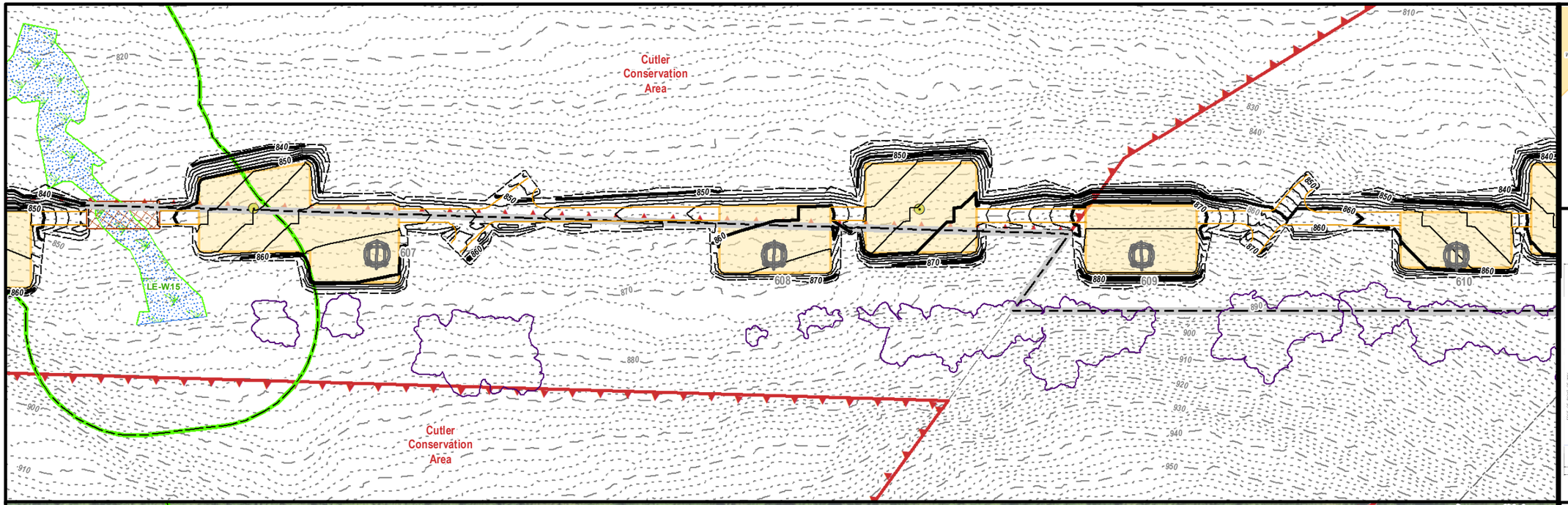
**Indicates Layers Set to Transparency*

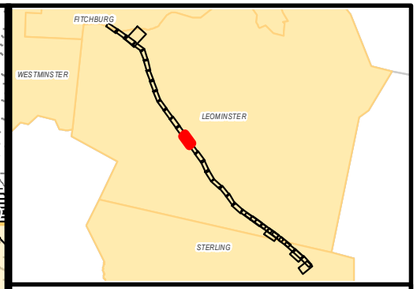
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

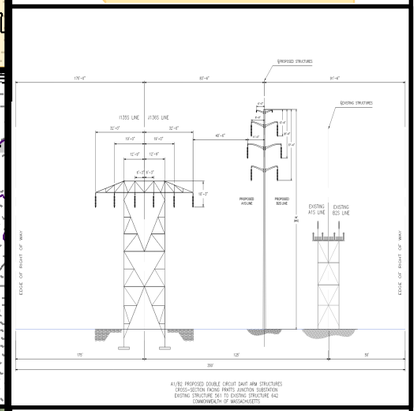
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

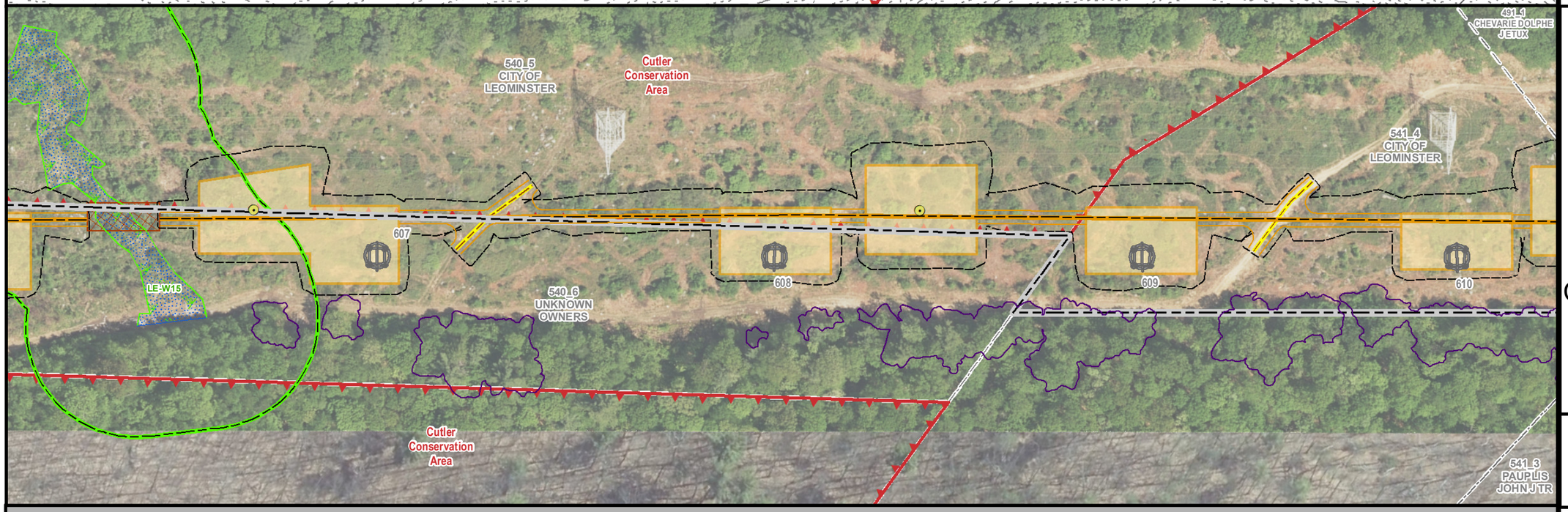
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 14 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.**

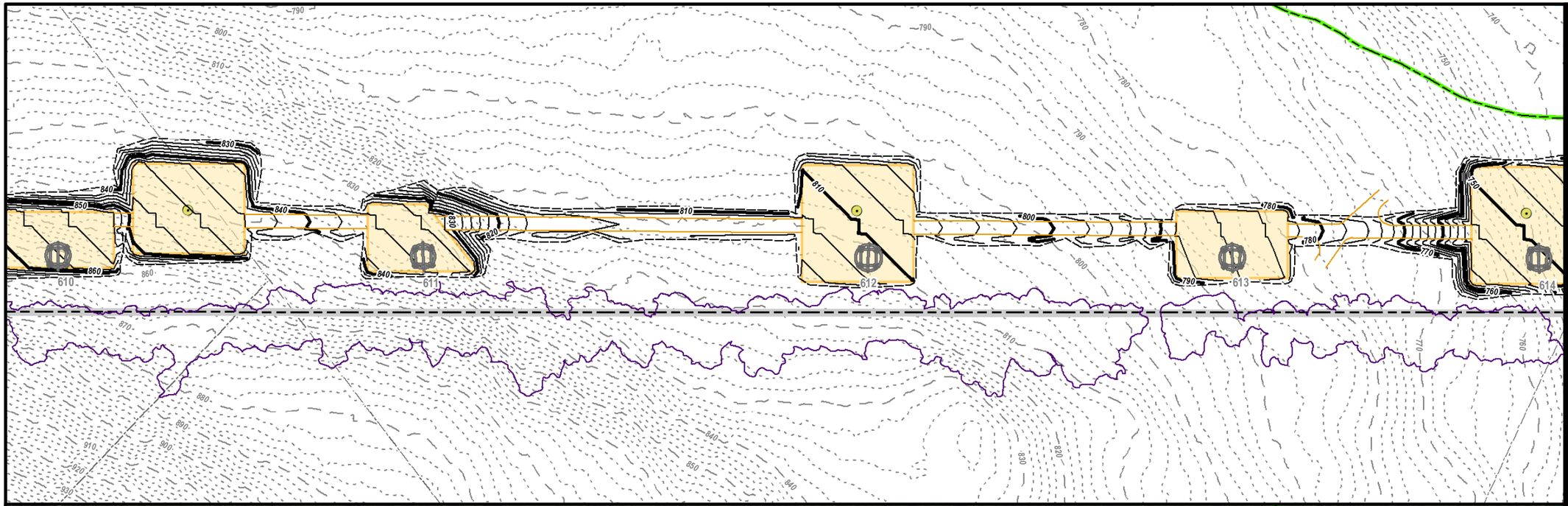
***Indicates Layers Set to Transparency**

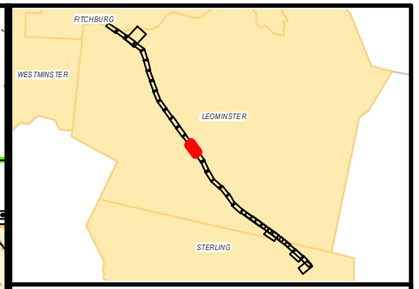
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

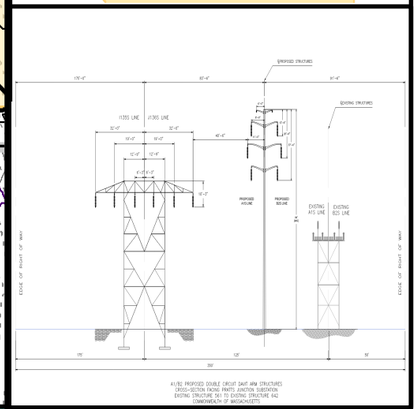
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

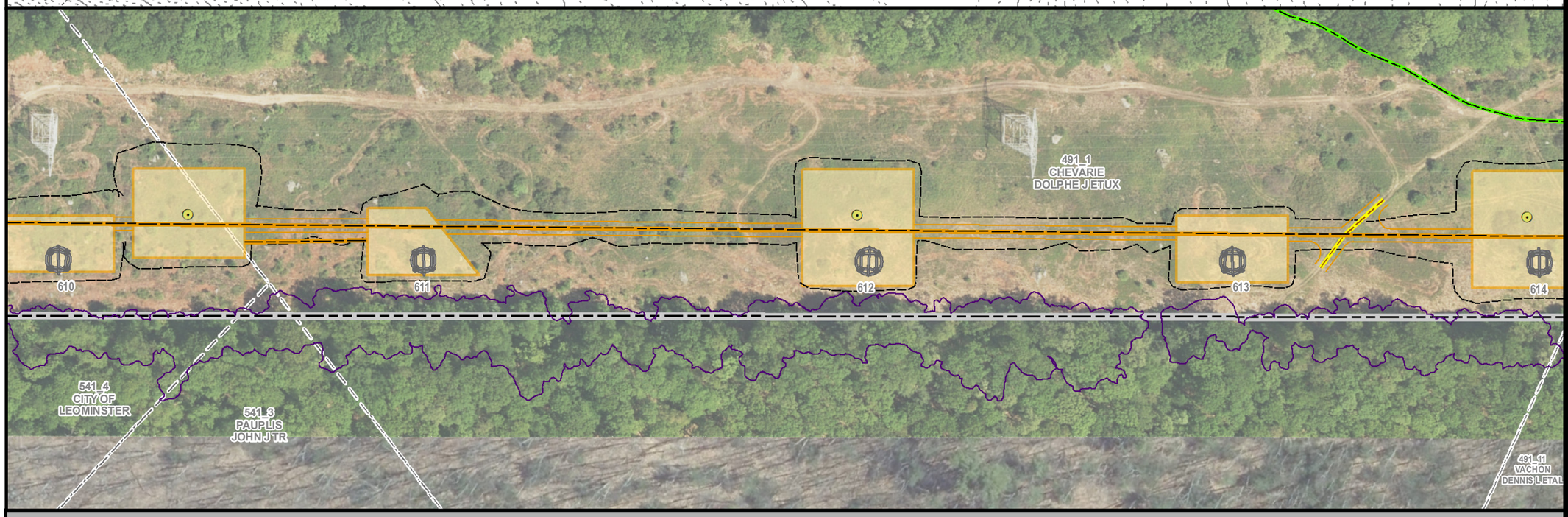
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 15 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

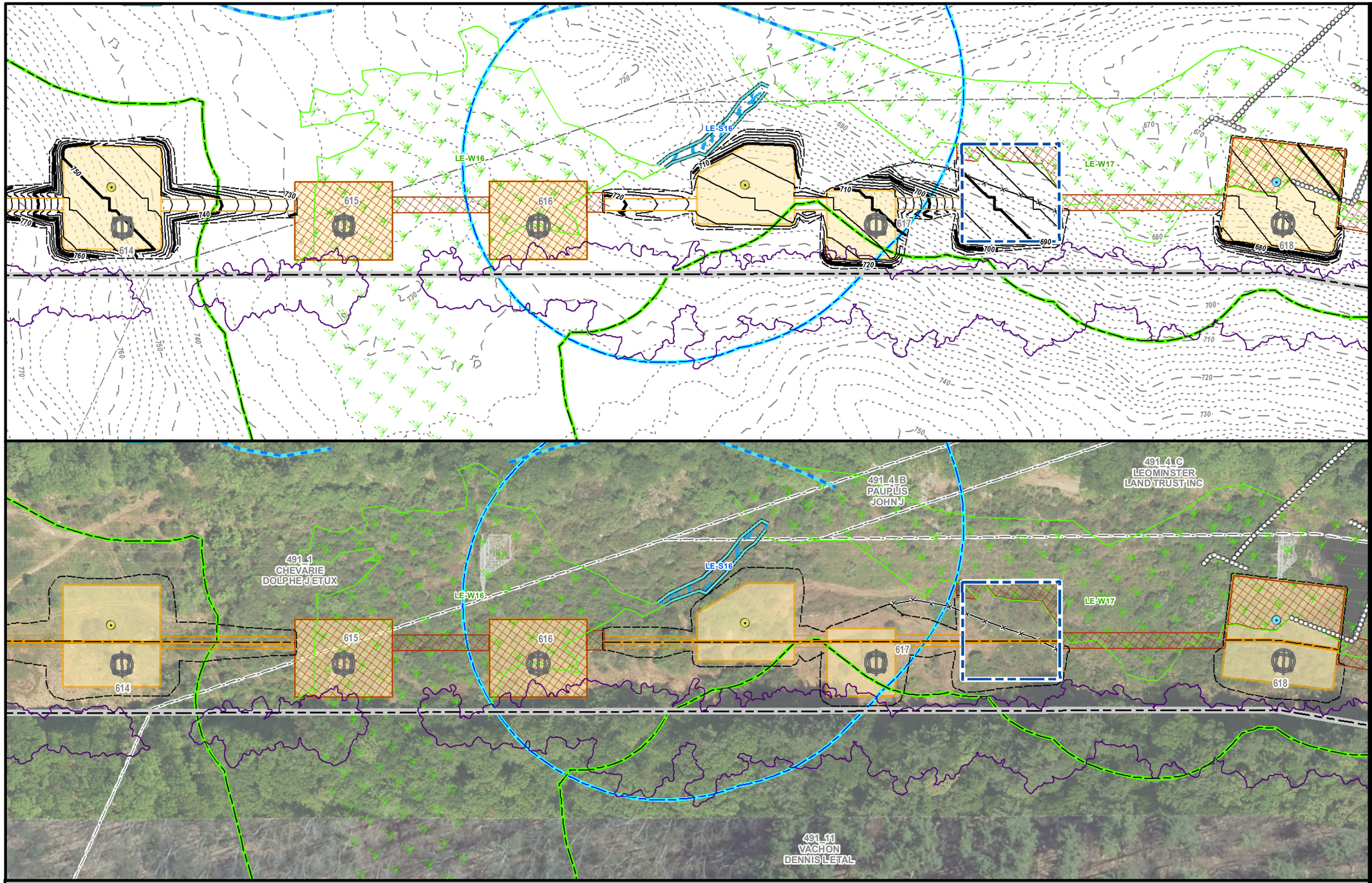
**Indicates Layers Set to Transparency*

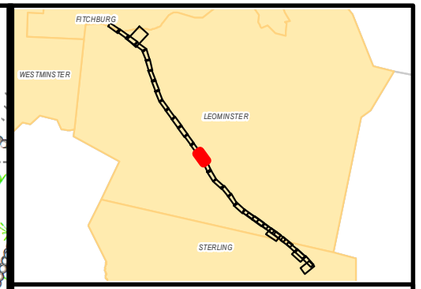
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

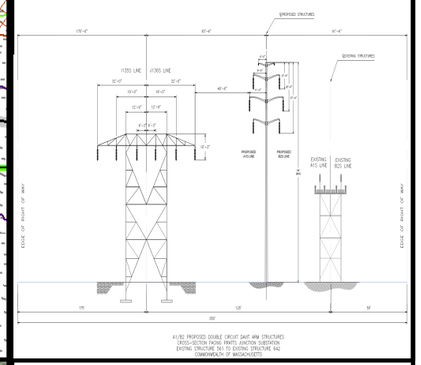
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 16 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

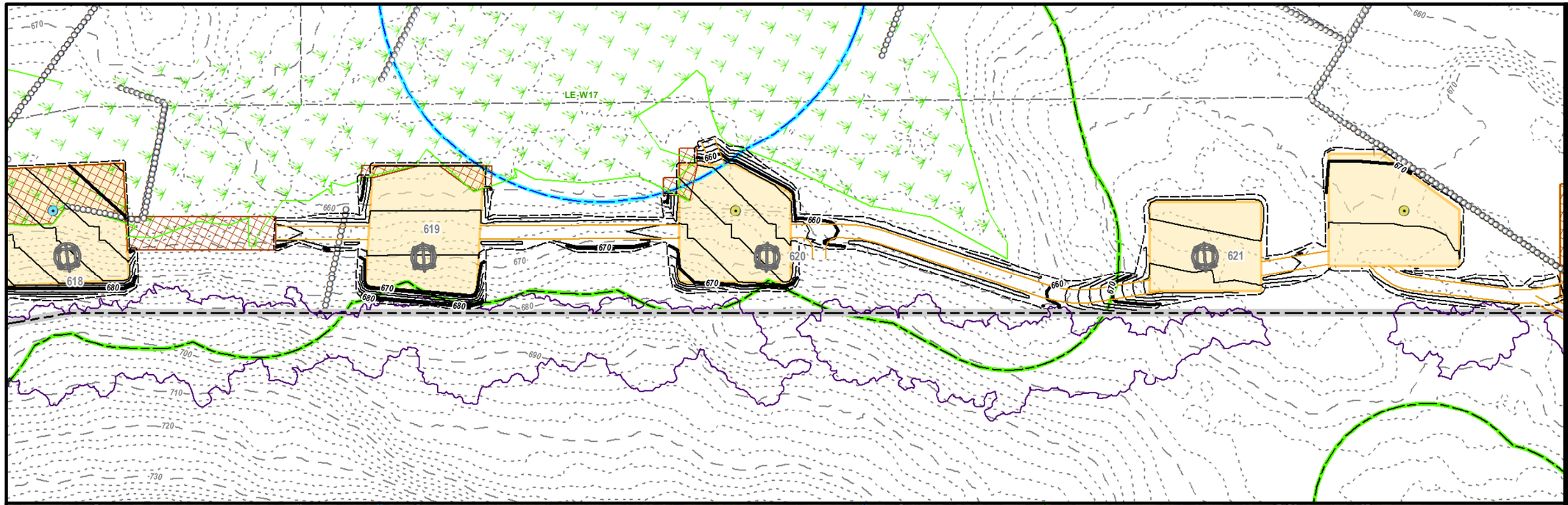
*Indicates Layers Set to Transparency

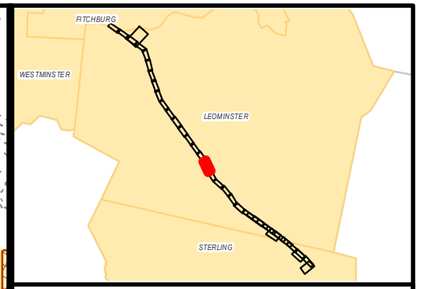
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

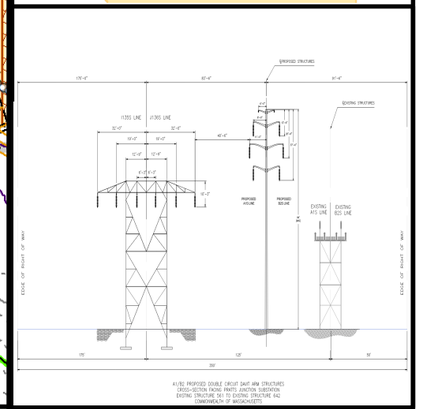
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

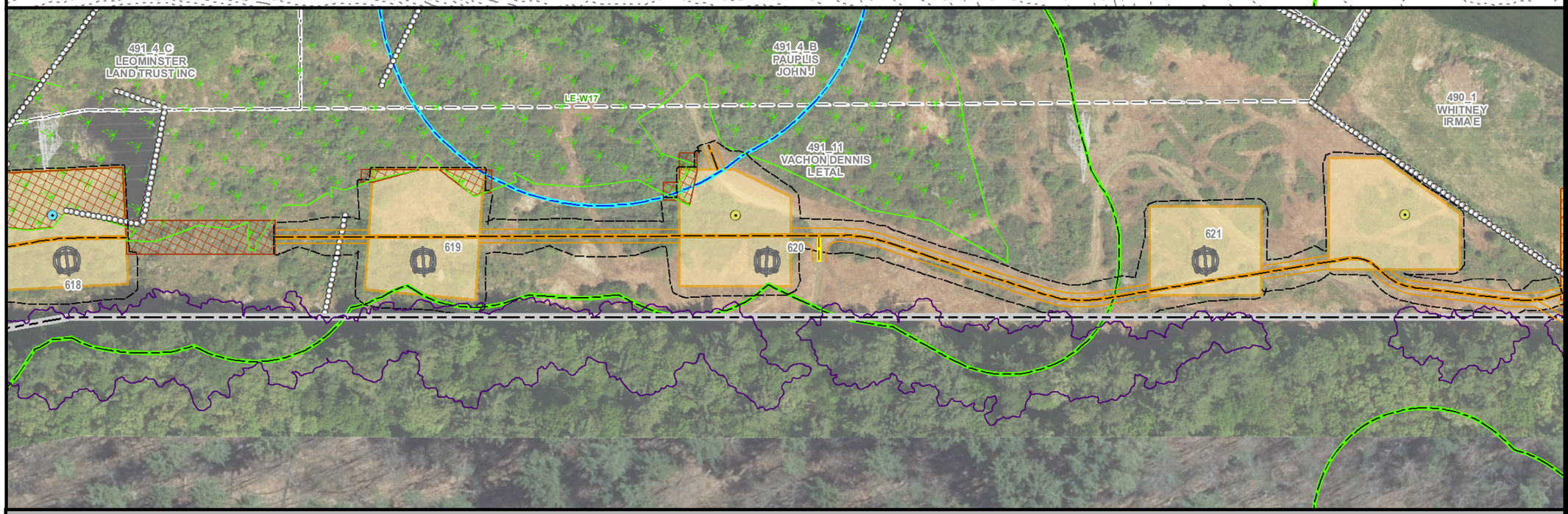
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 17 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

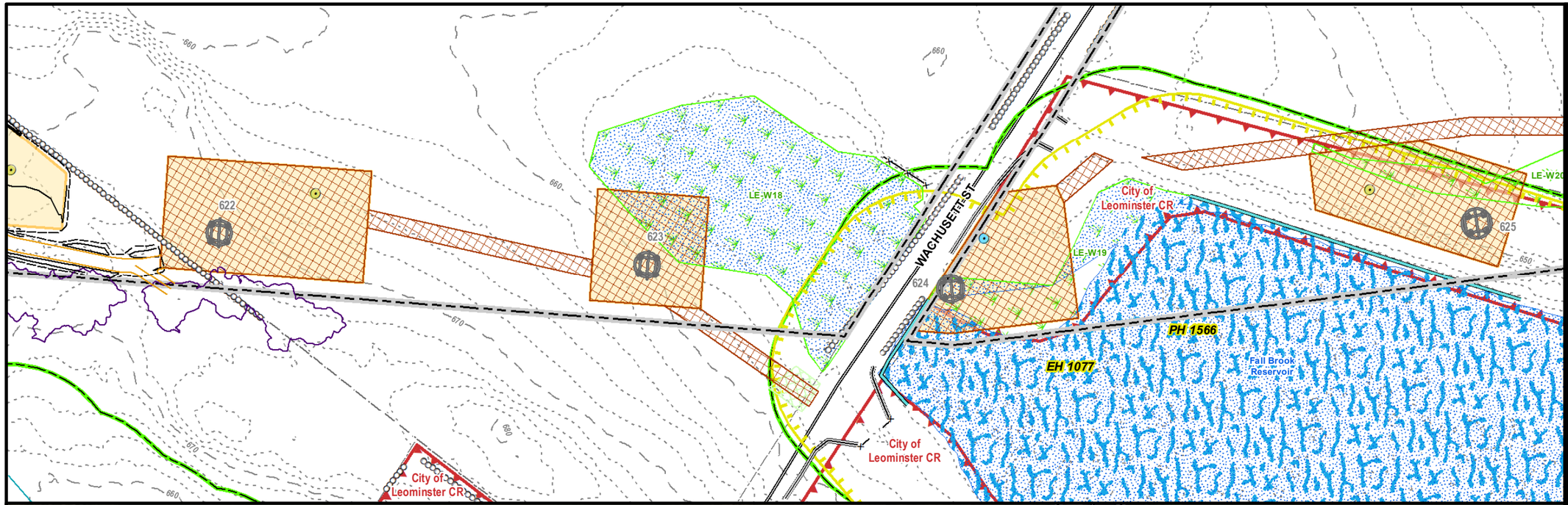
**Indicates Layers Set to Transparency*

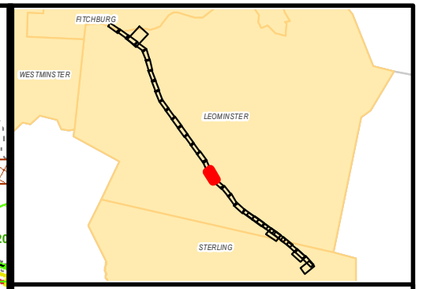
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

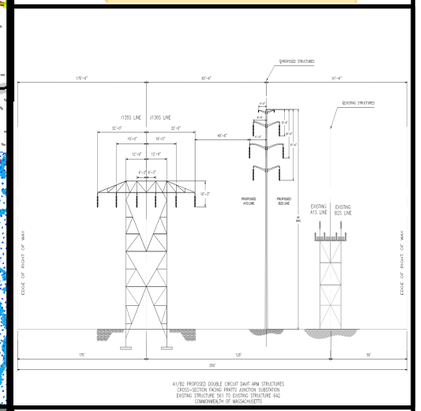
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

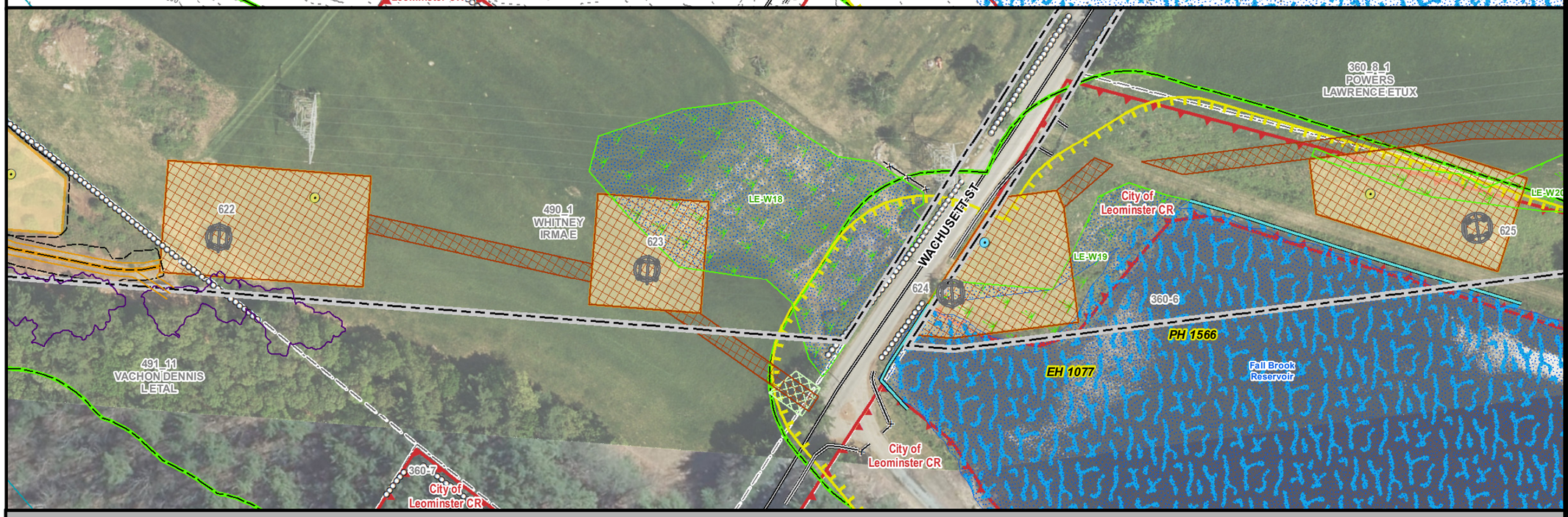
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 18 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

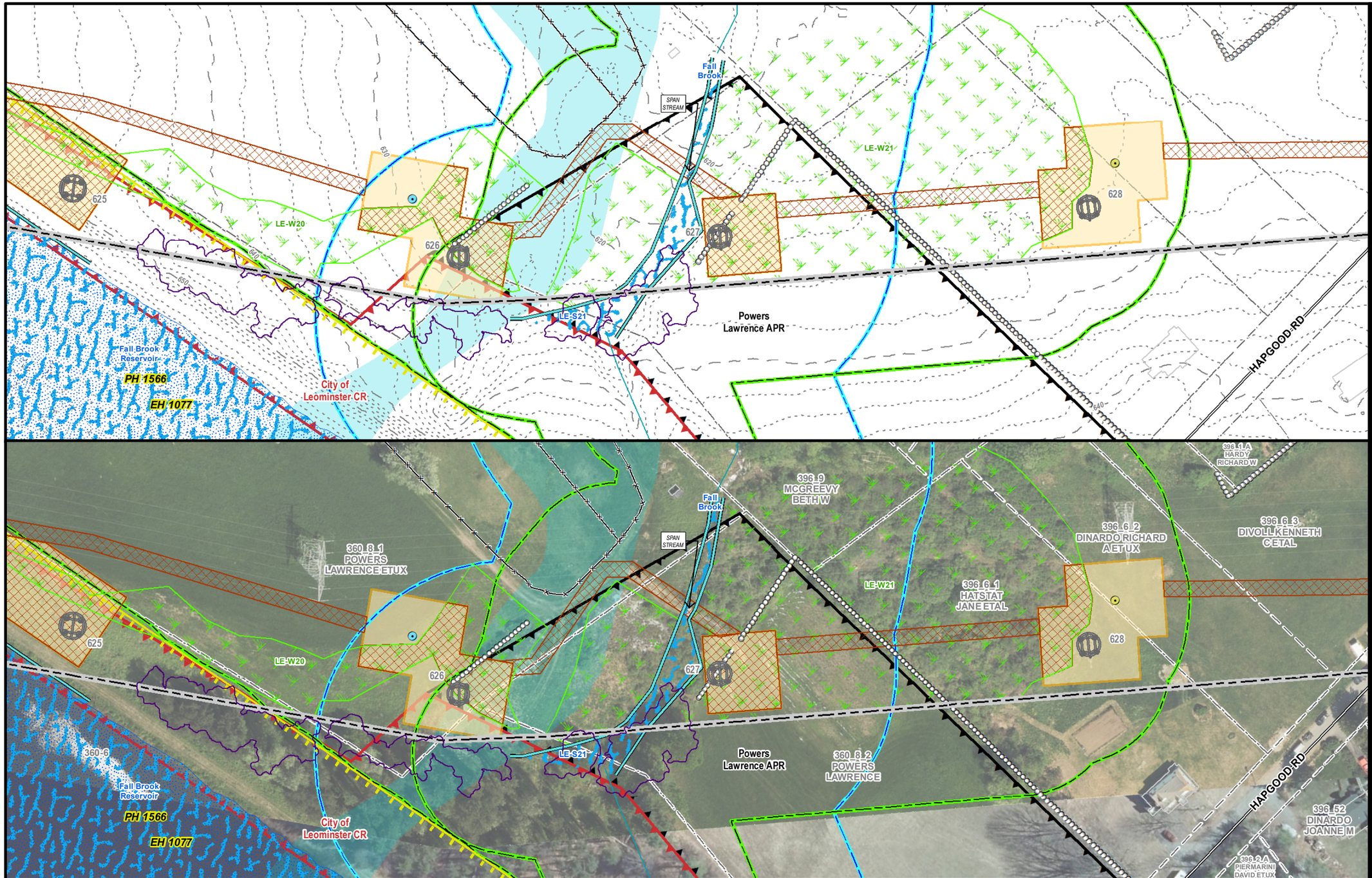
**Indicates Layers Set to Transparency*

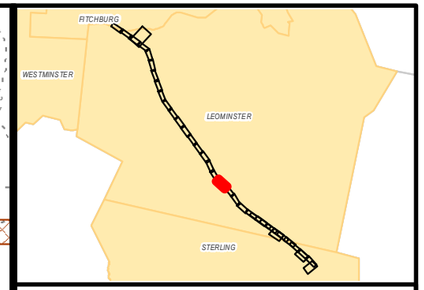
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

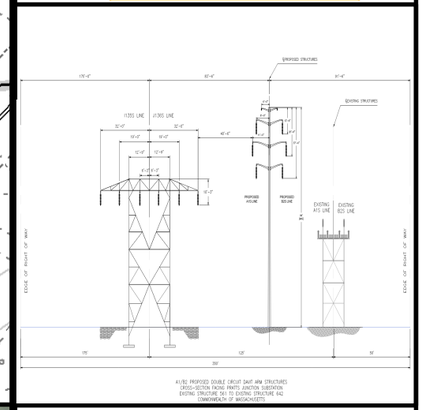
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 19 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

**Indicates Layers Set to Transparency*

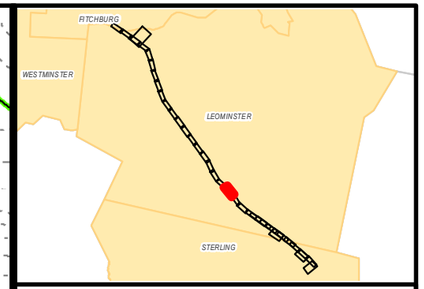
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

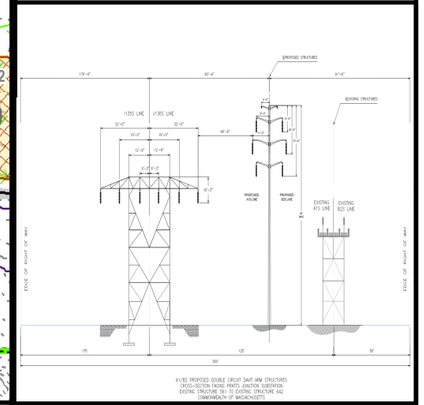
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 20 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

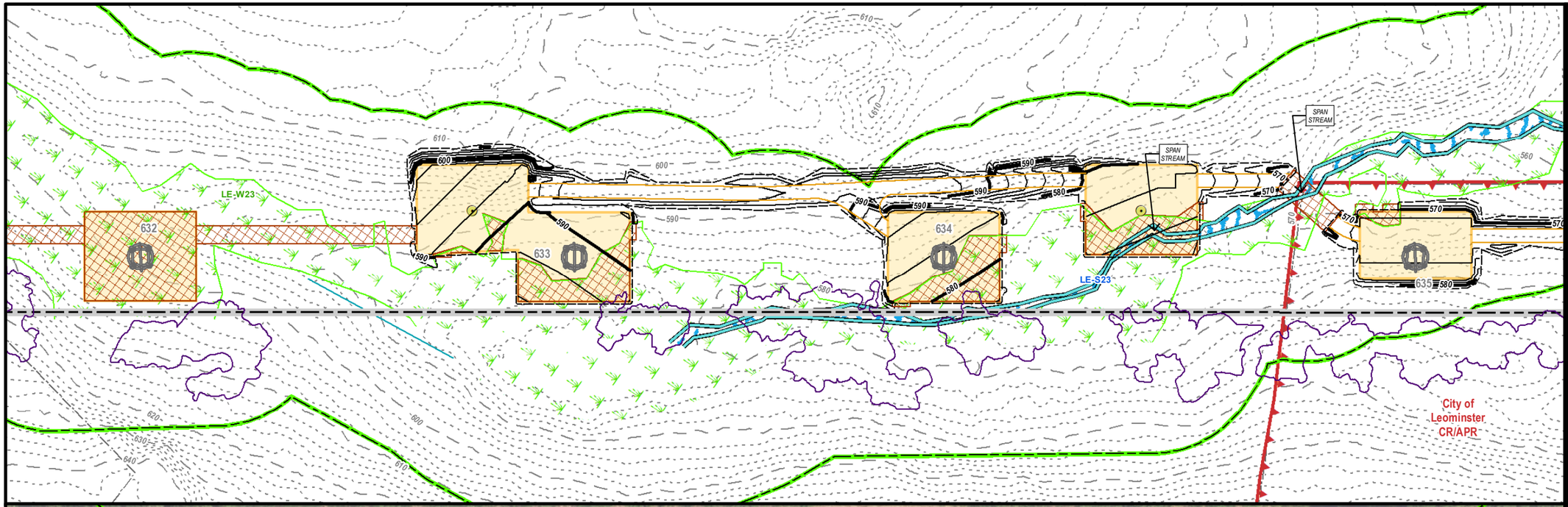
**Indicates Layers Set to Transparency*

PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

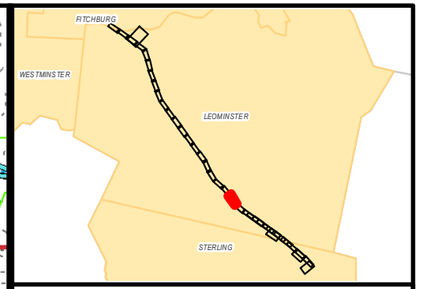
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

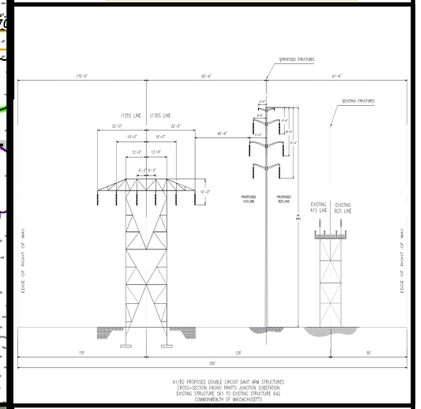
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 21 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

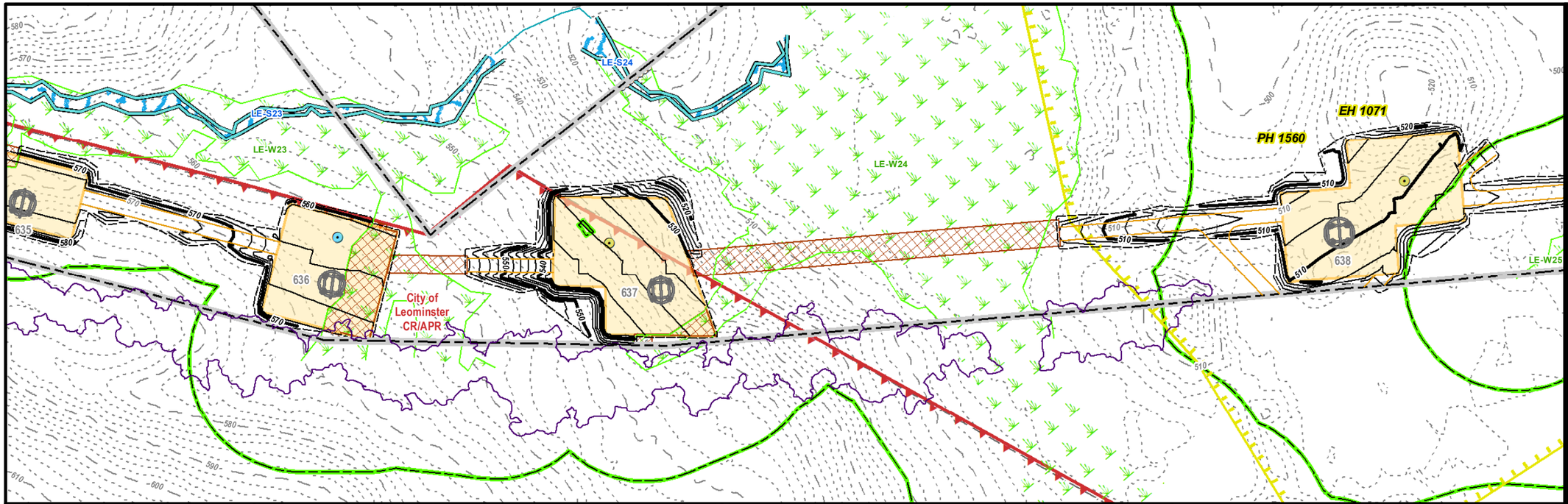
**Indicates Layers Set to Transparency*

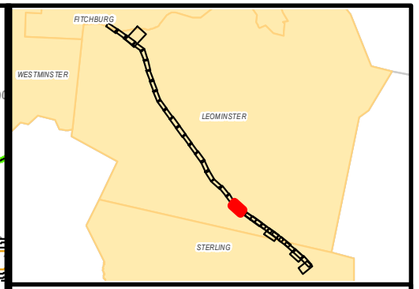
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

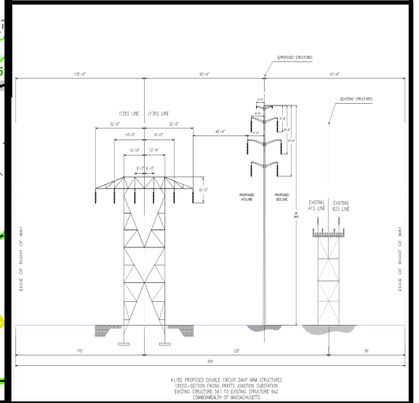
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

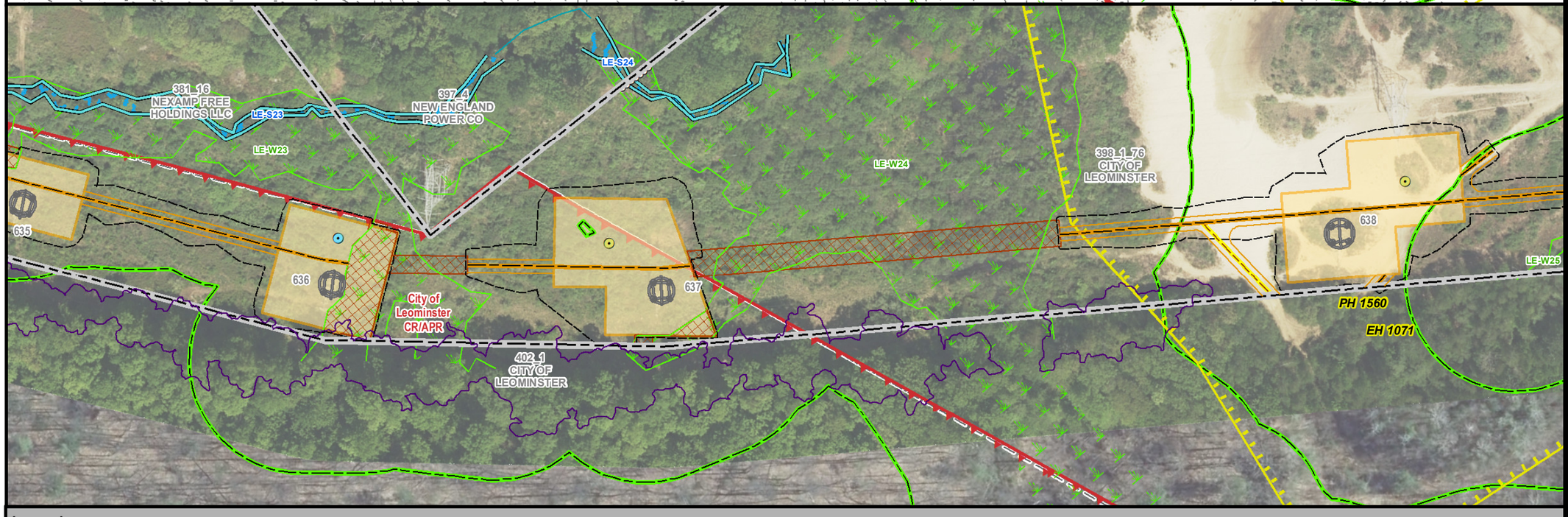
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 22 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

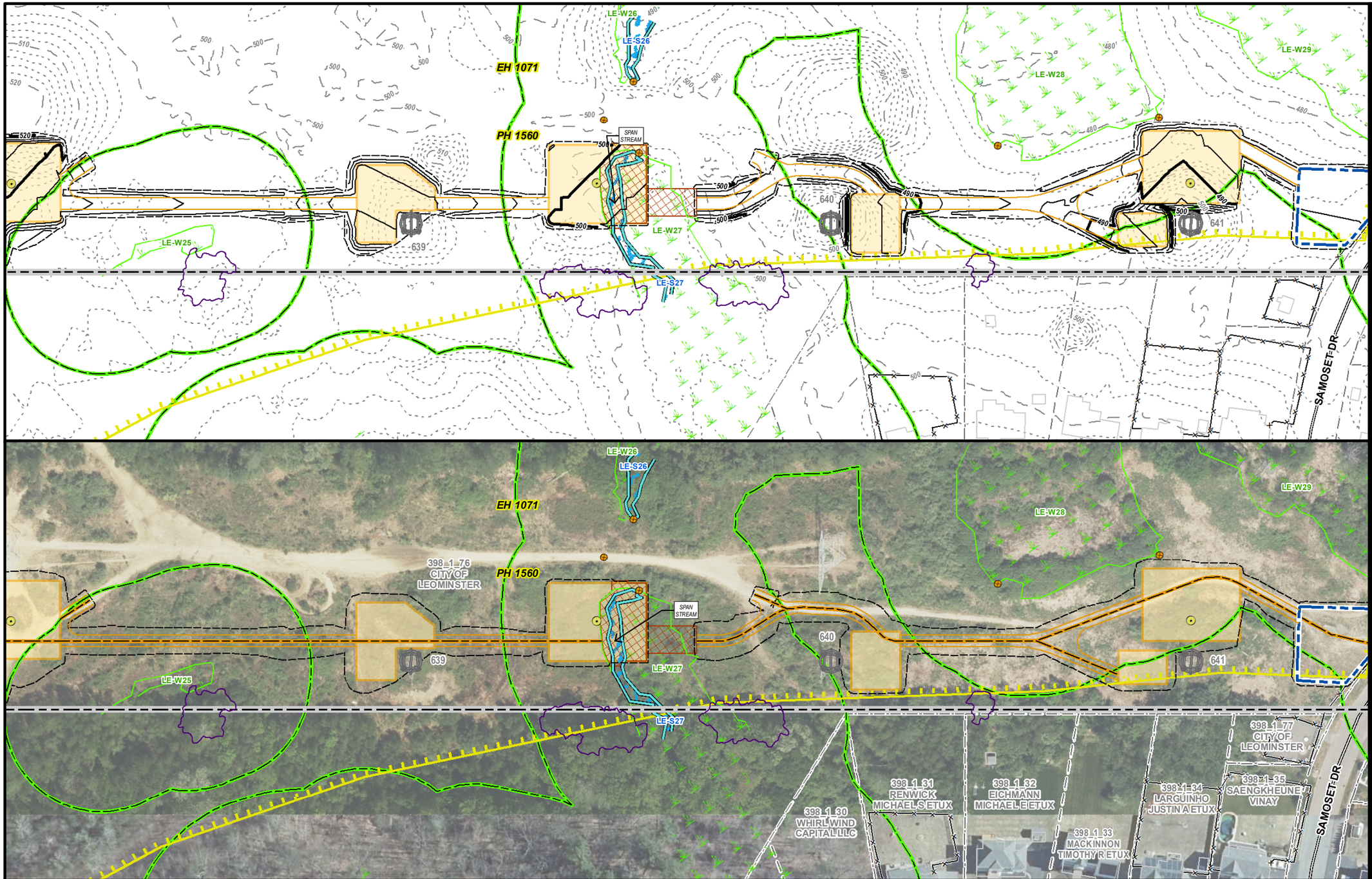
**Indicates Layers Set to Transparency*

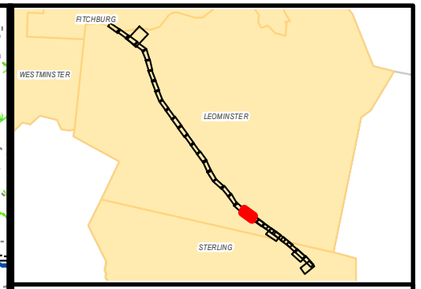
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

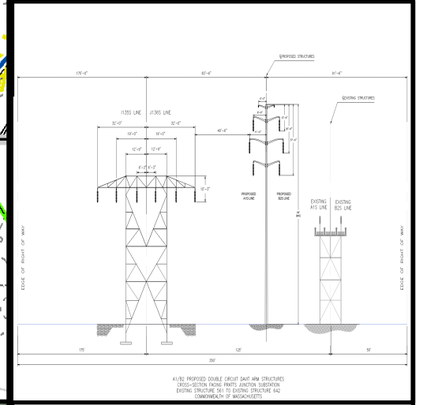
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 23 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

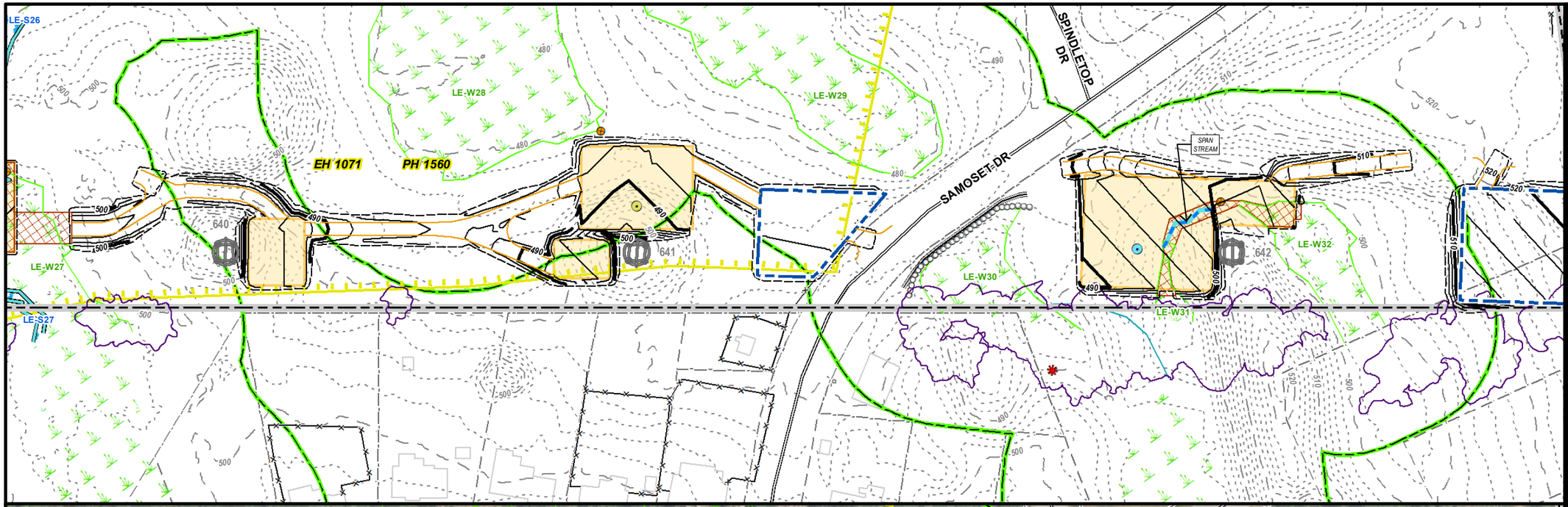
***Indicates Layers Set to Transparency*

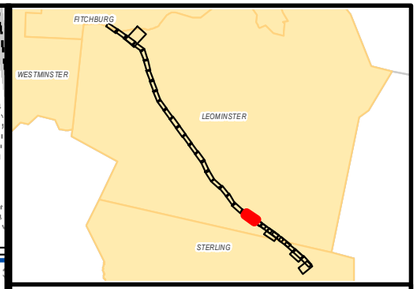
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

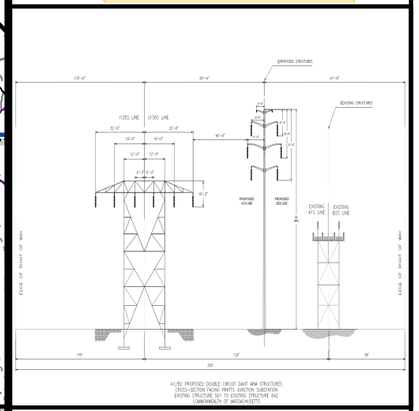
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

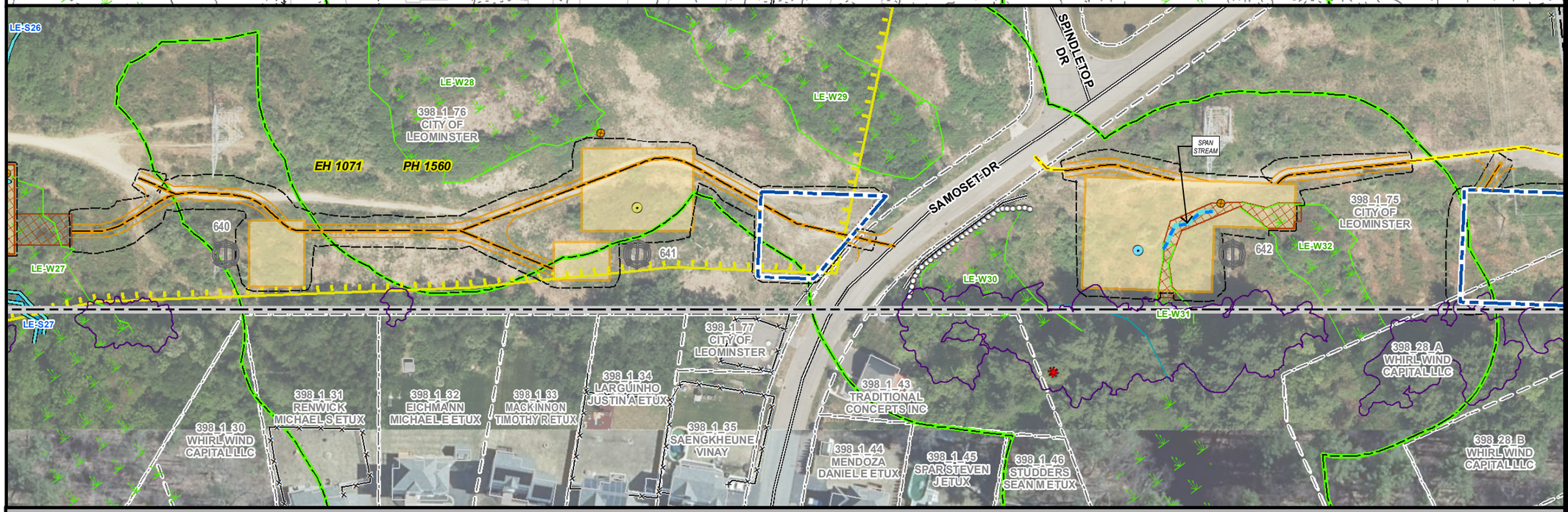
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 24 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

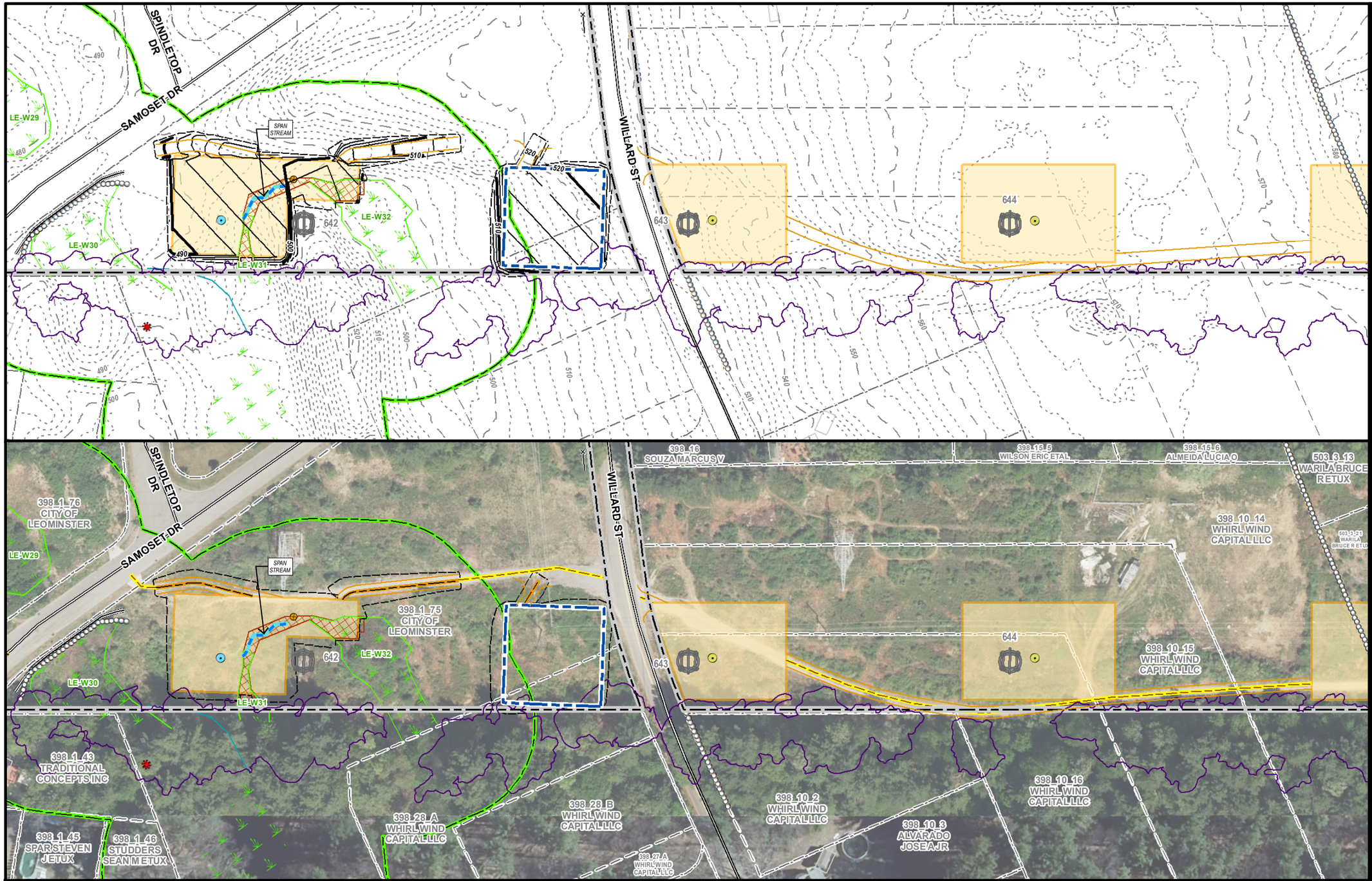
**Indicates Layers Set to Transparency*

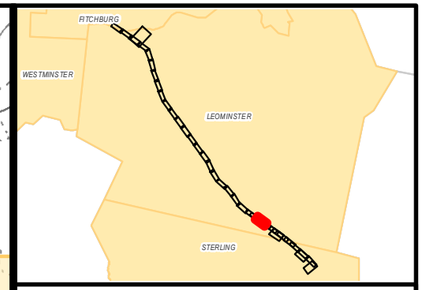
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

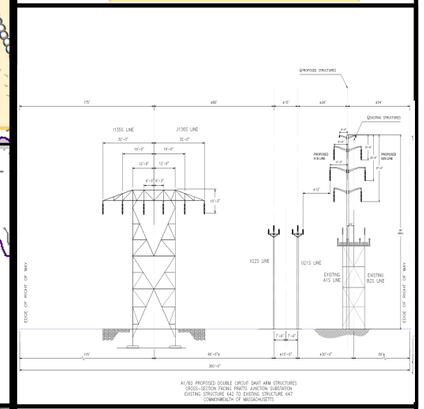
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 25 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

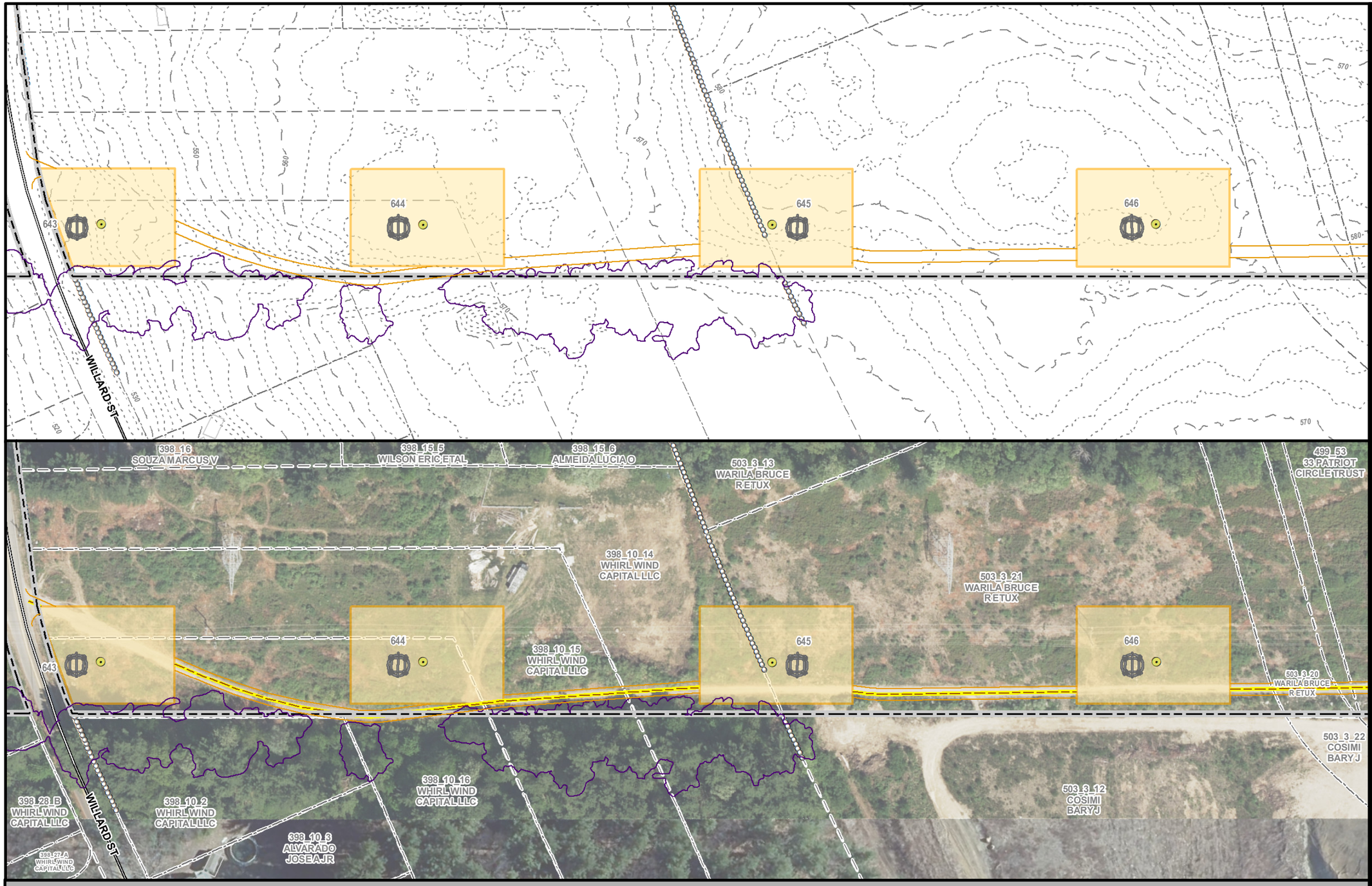
**Indicates Layers Set to Transparency*

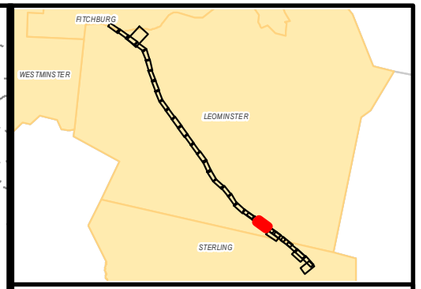
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

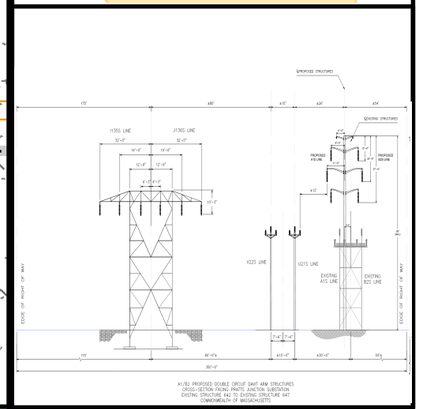
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 26 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

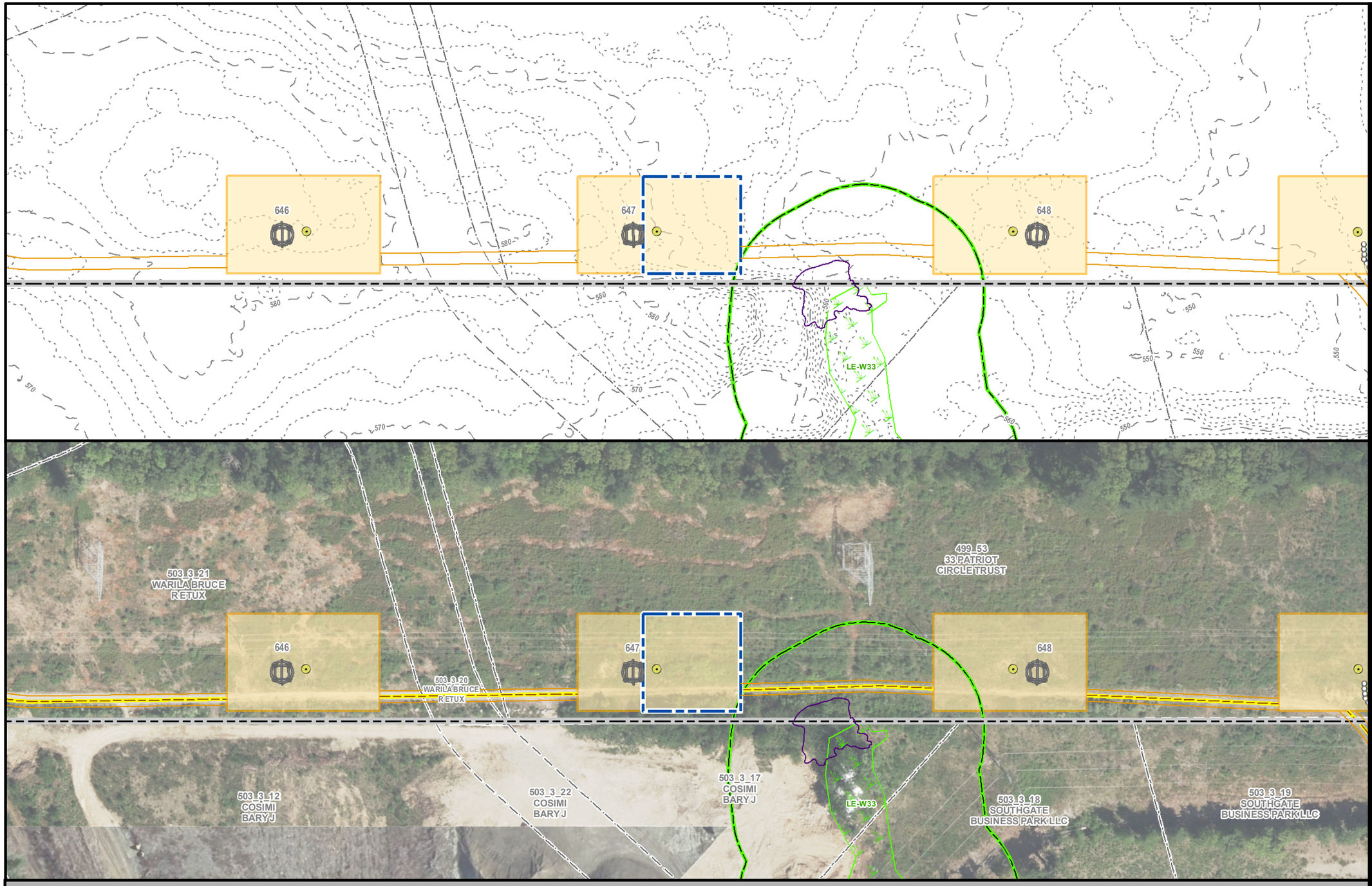
**Indicates Layers Set to Transparency*

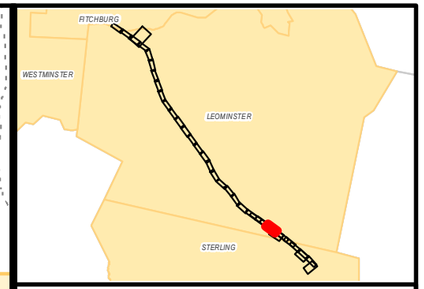
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

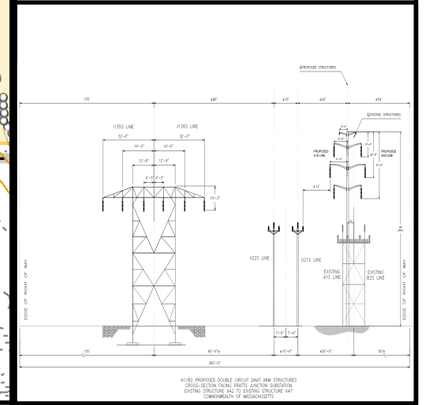
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 27 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

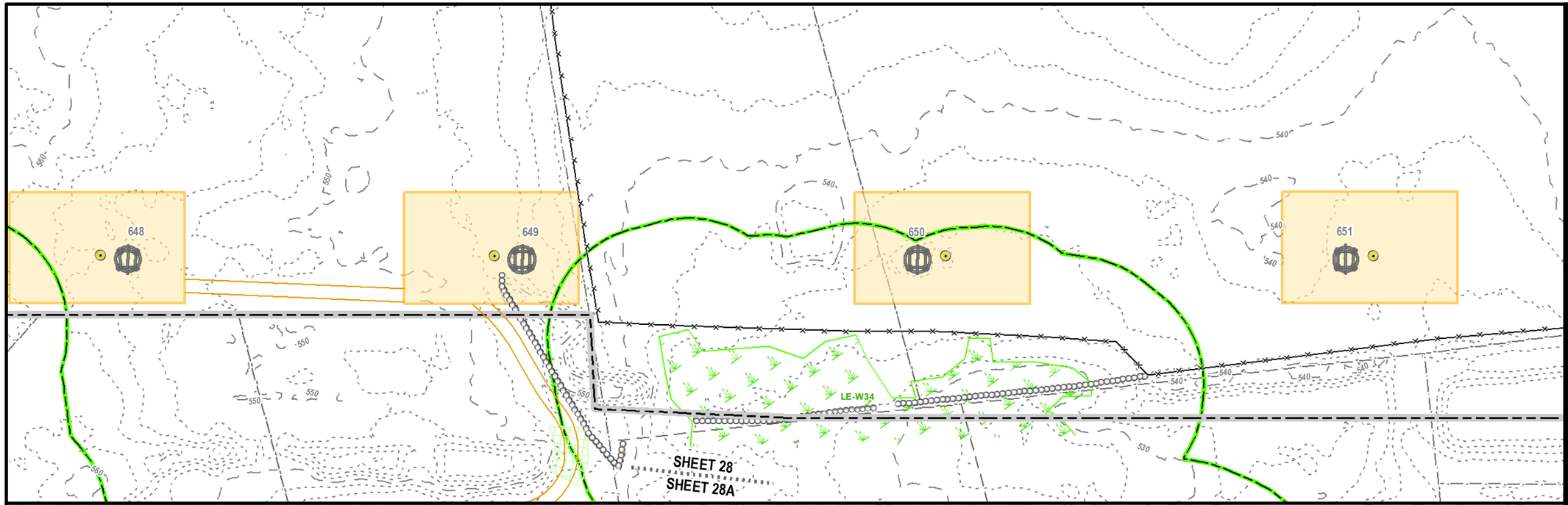
**Indicates Layers Set to Transparency*

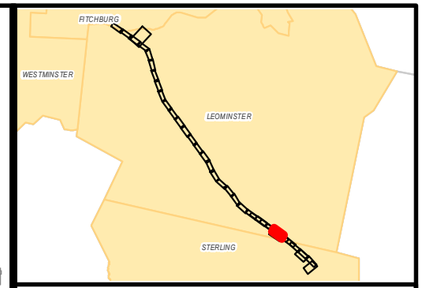
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

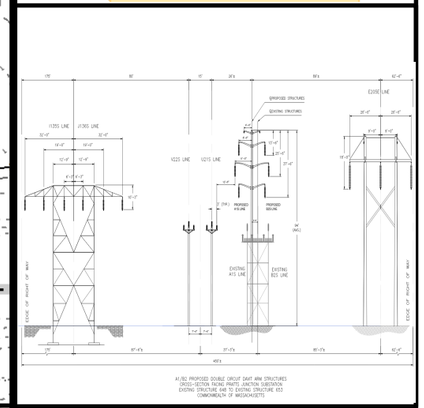
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

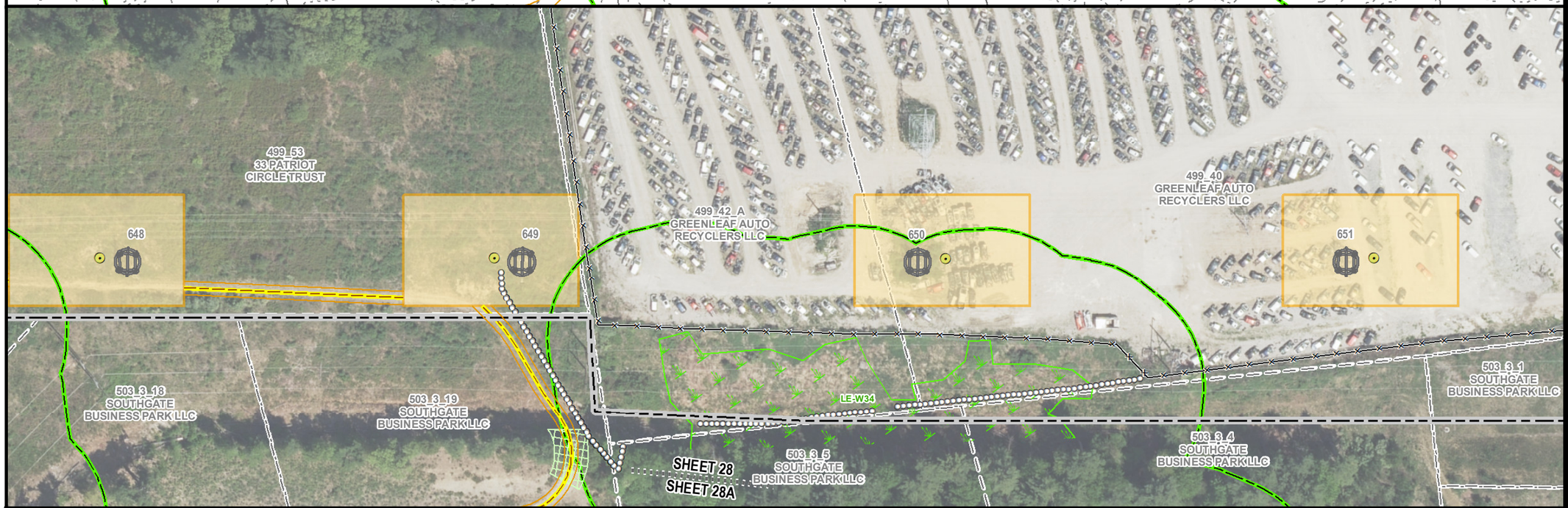
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 28 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

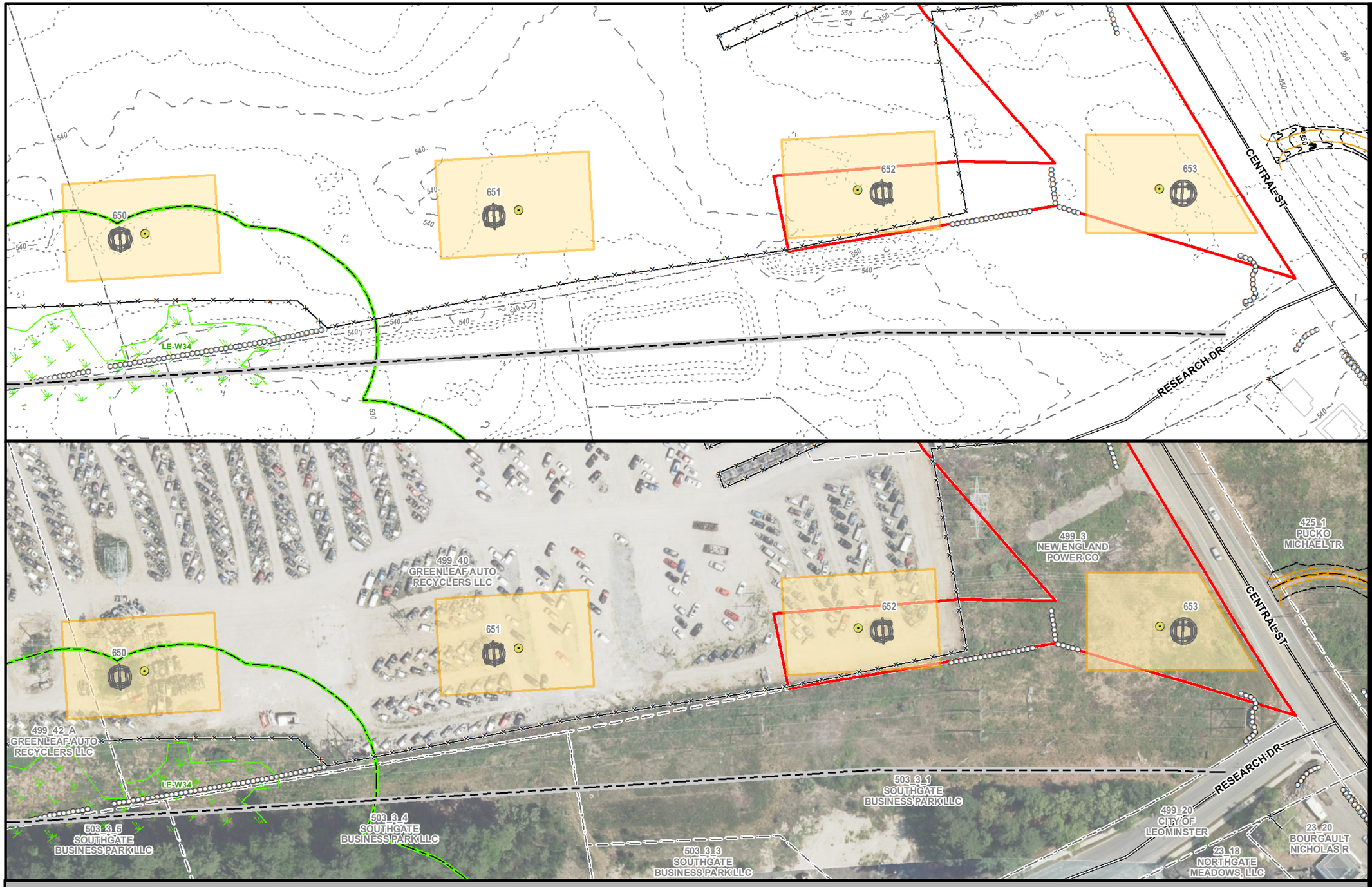
***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*
*Indicates Layers Set to Transparency**

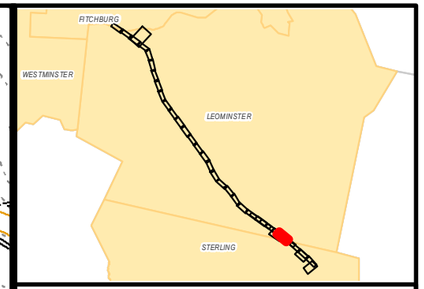
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

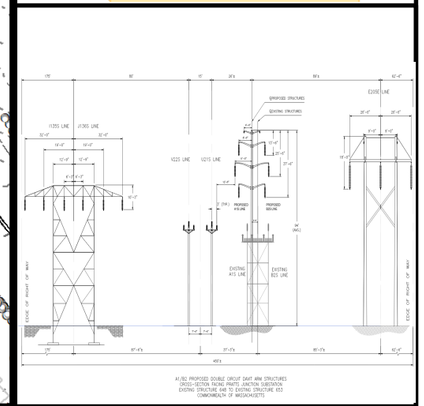
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER & STERLING, MA

1 inch = 100 feet

0 50 100

Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

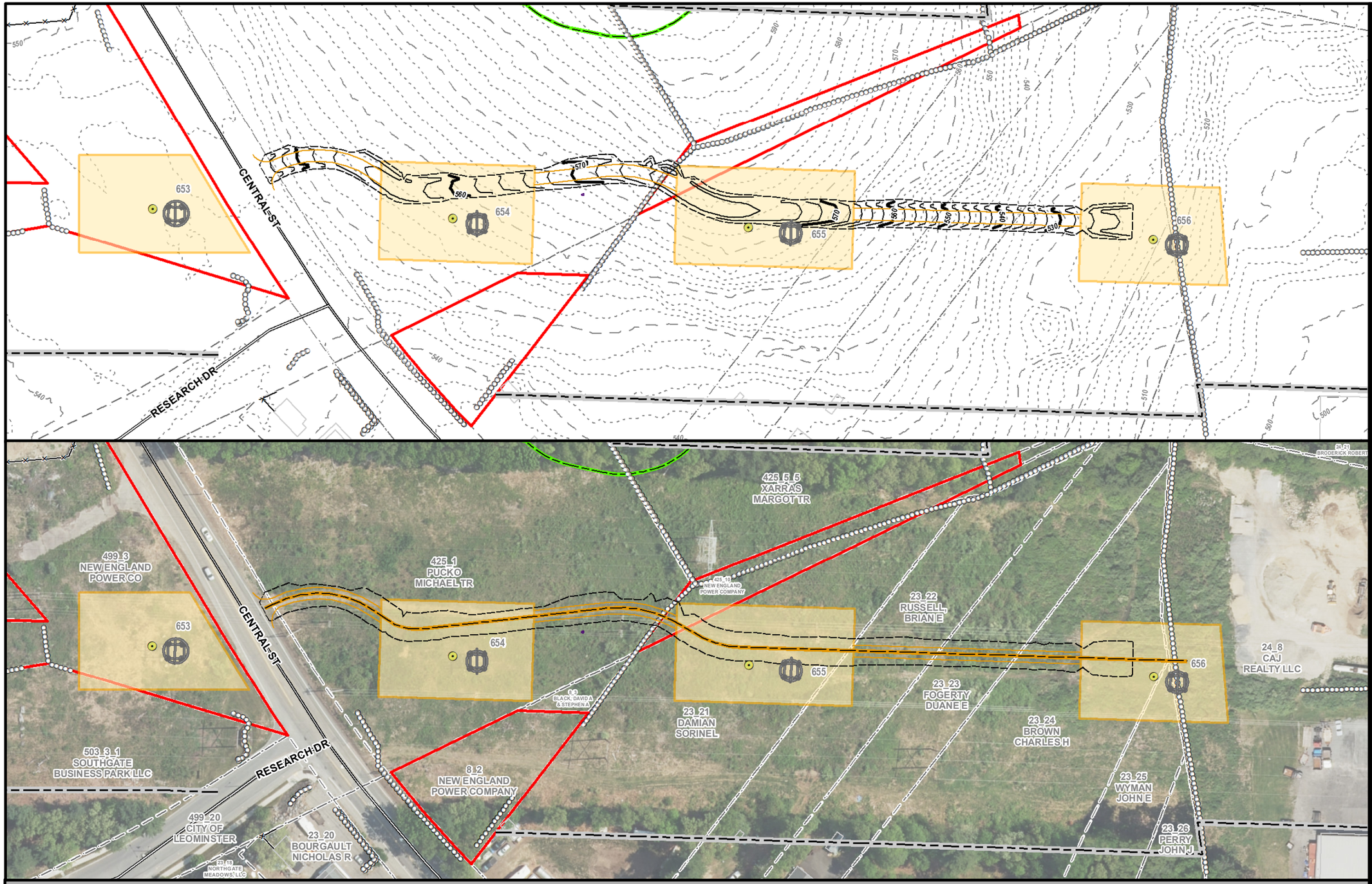
**Indicates Layers Set to Transparency*

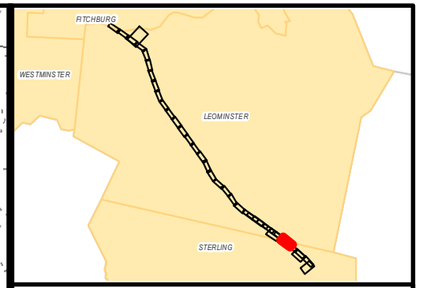
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

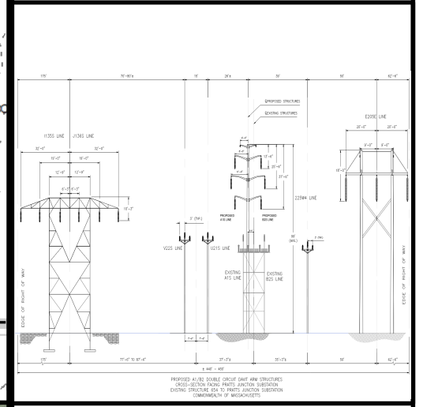
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER & STERLING, MA

1 inch = 100 feet

0 50 100

Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

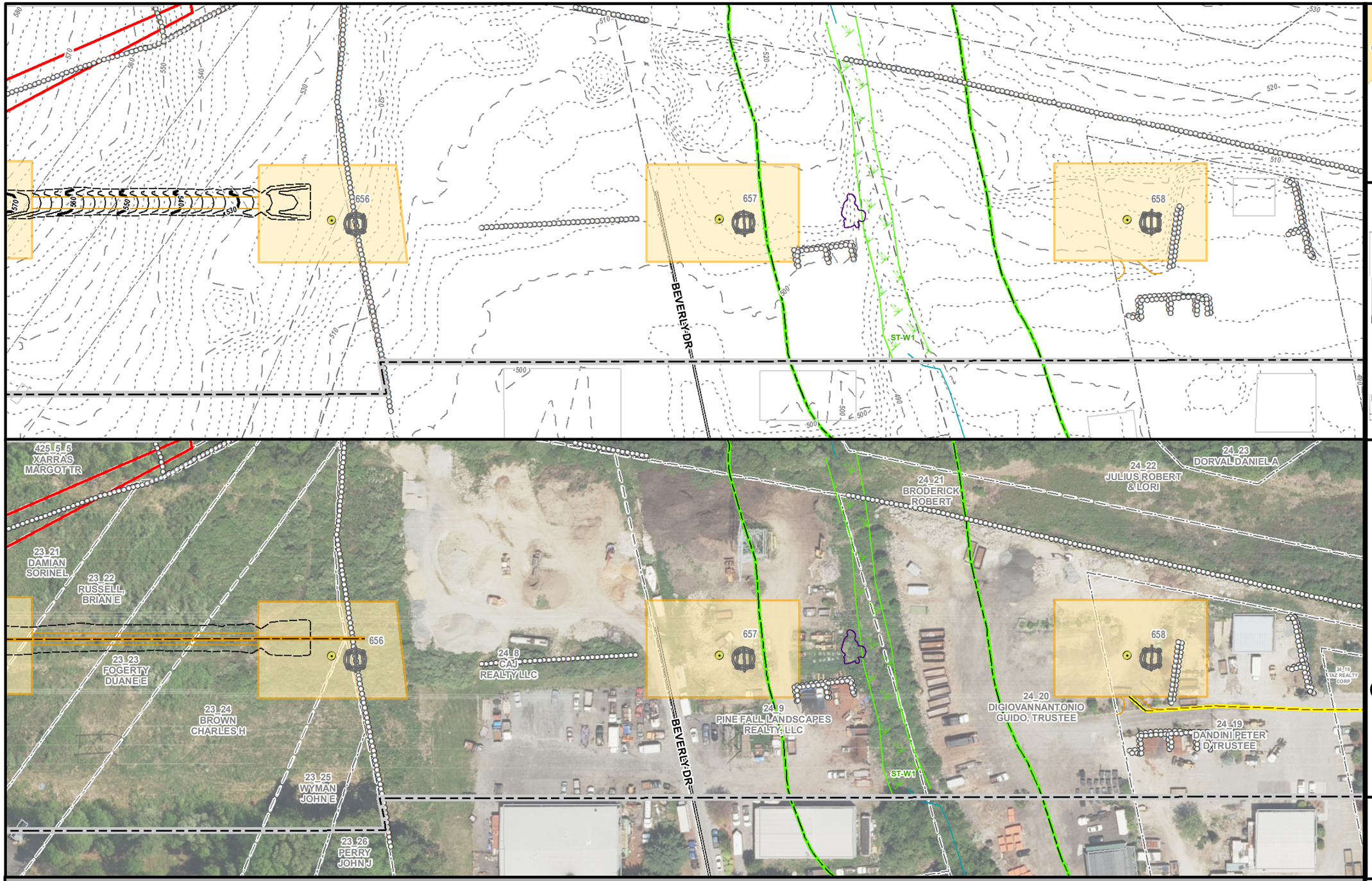
*Indicates Layers Set to Transparency

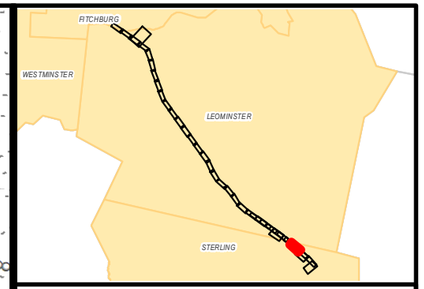
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

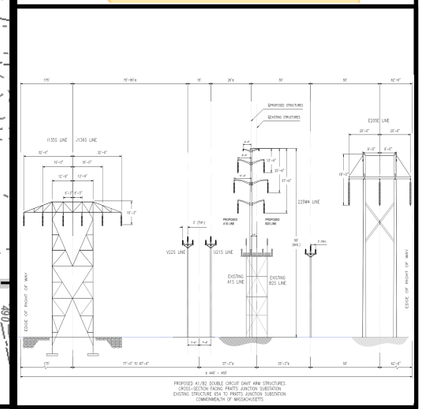
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER & STERLING, MA

1 inch = 100 feet

0 50 100

Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

**Indicates Layers Set to Transparency*

PREPARED FOR:

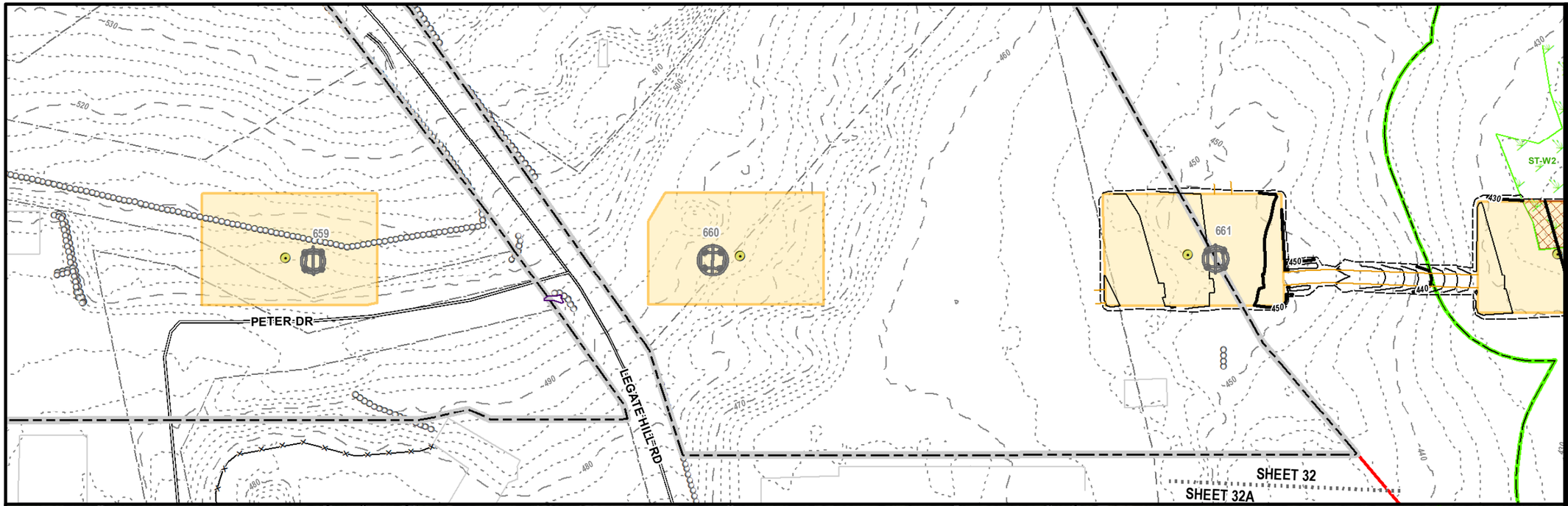
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

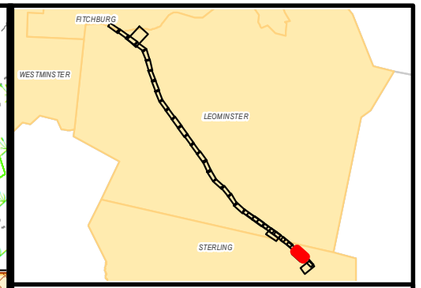
PREPARED BY:

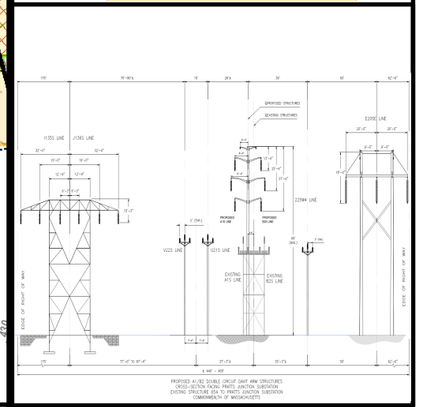
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

STERLING, MA
PAGE 32 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

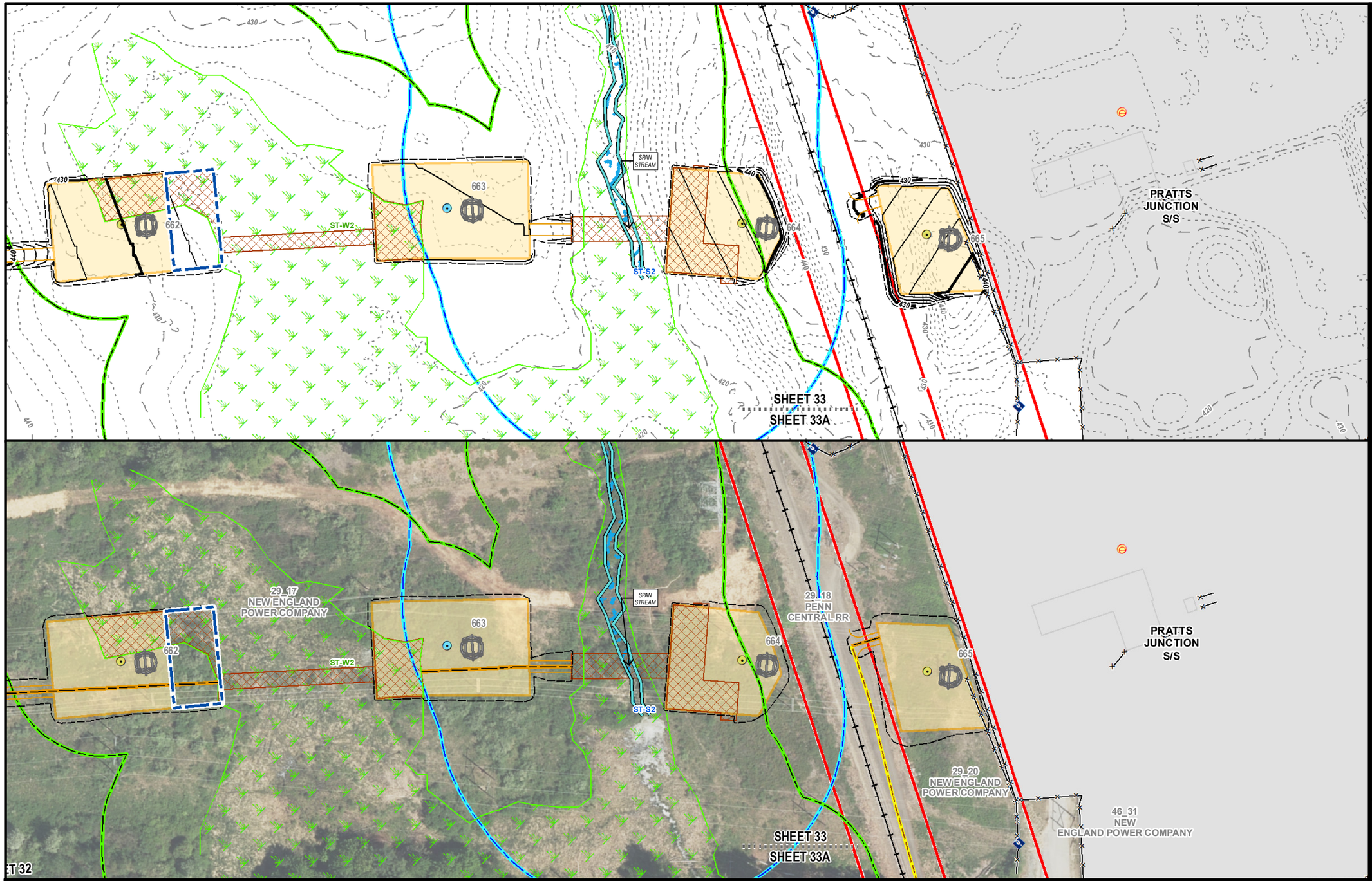
**Indicates Layers Set to Transparency*

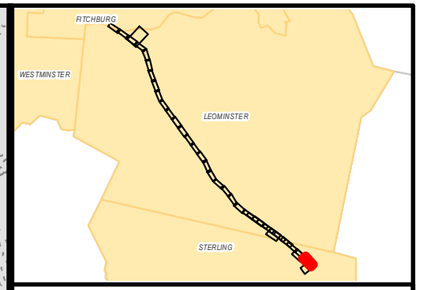
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

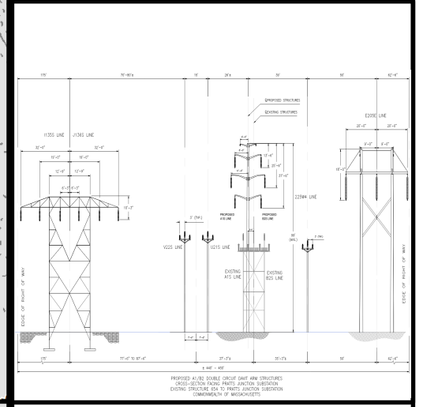
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

STERLING, MA
PAGE 33 OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

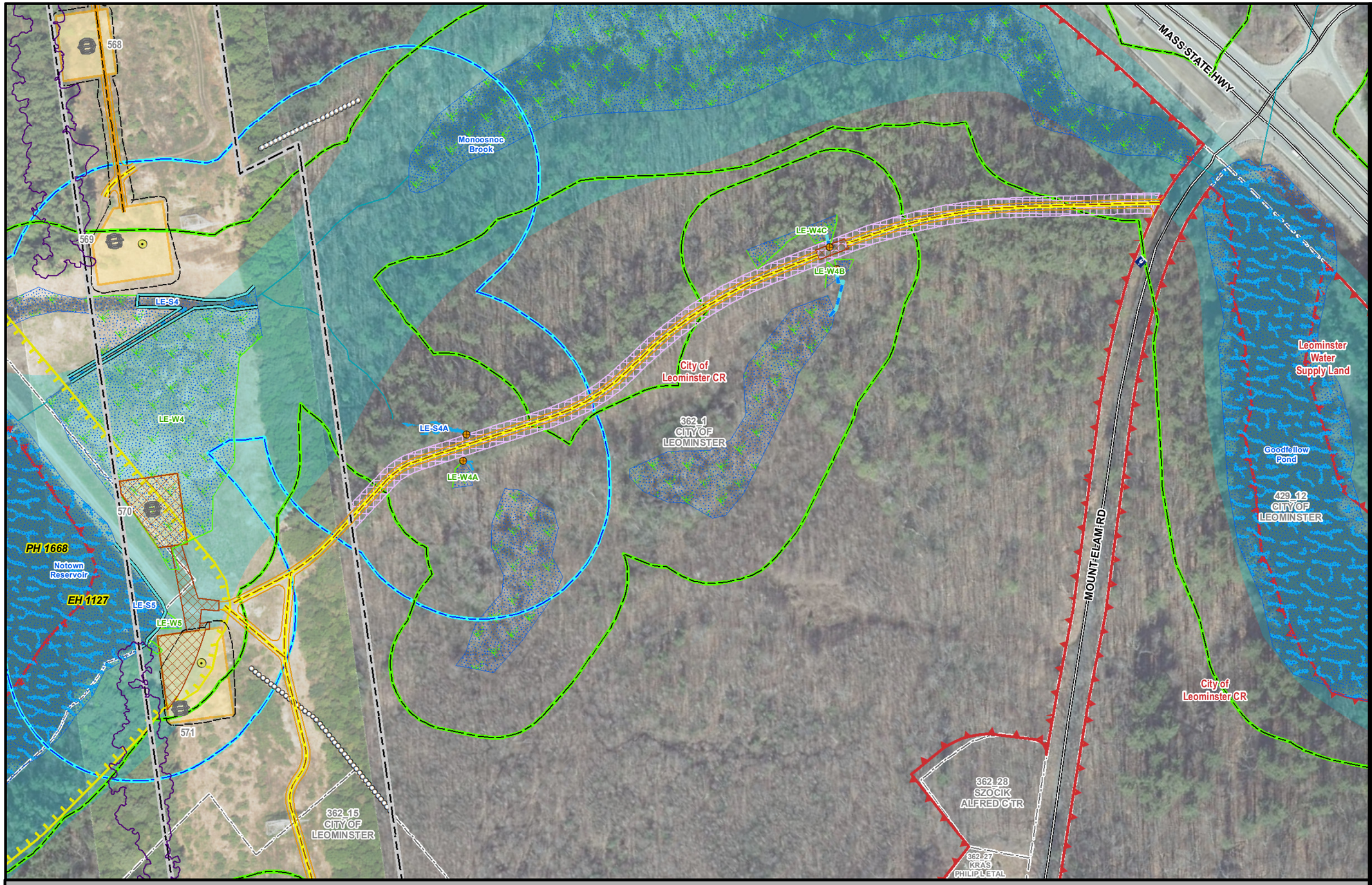
**Indicates Layers Set to Transparency*

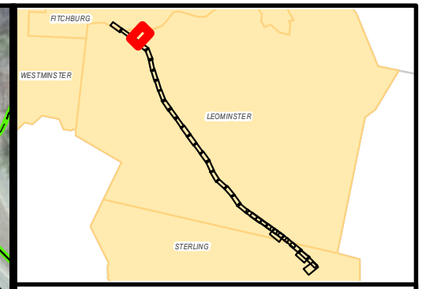
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.





MEPA General Purpose Plans

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER & FITCHBURG, MA
PAGE 3A OF 33

1 inch = 150 feet
0 80 160
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*
Indicates Layers Set to Transparency

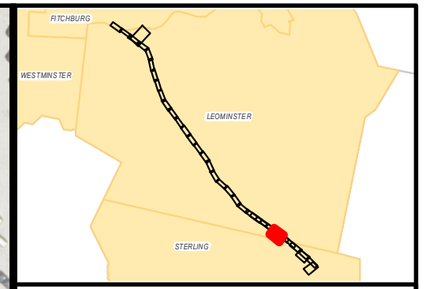
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.





MEPA General Purpose Plans

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER & STERLING, MA
PAGE 28A OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

**Indicates Layers Set to Transparency*

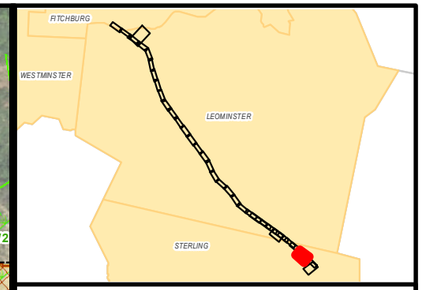
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.





MEPA General Purpose Plans

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

STERLING, MA
PAGE 32A OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

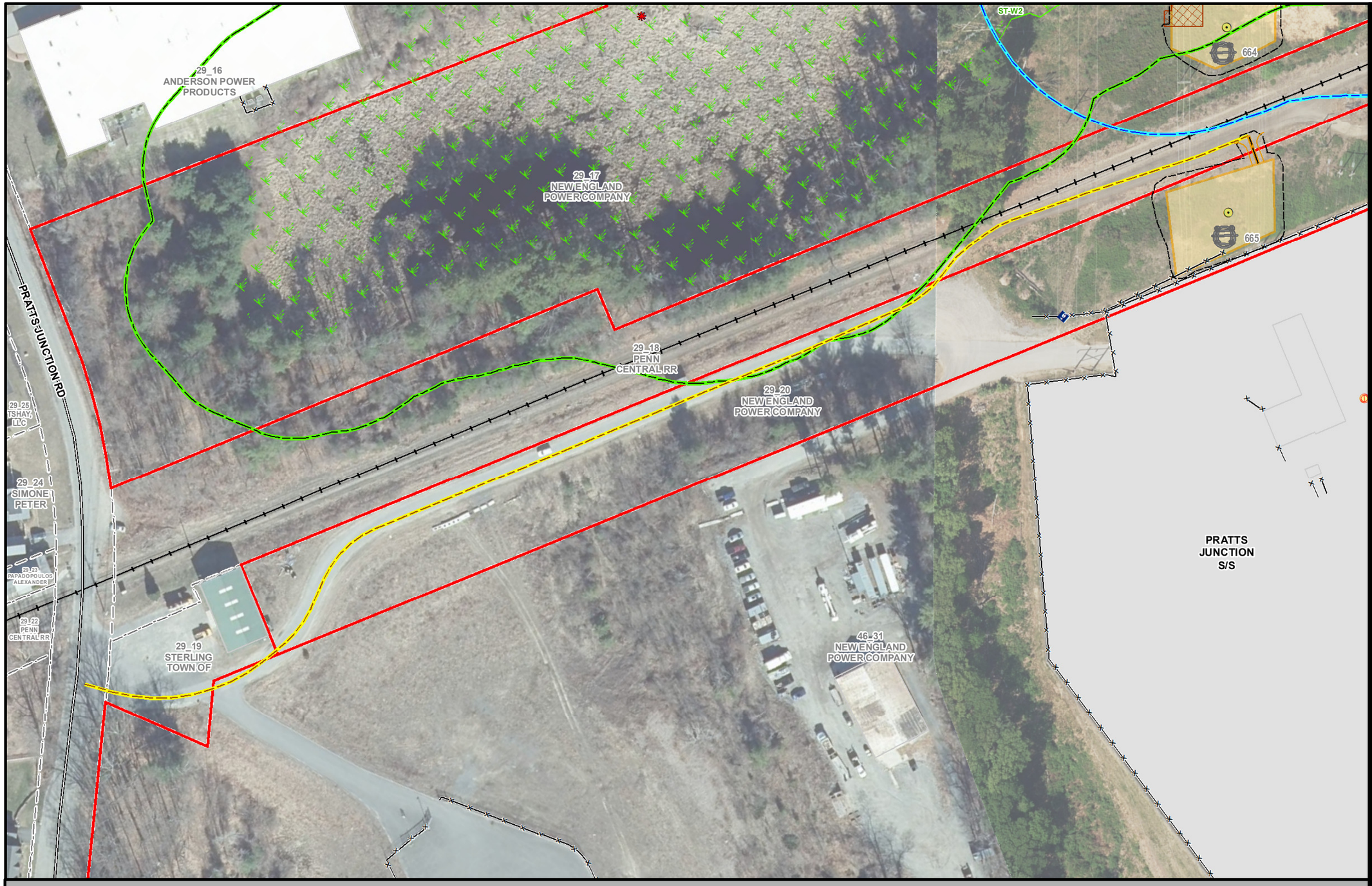
**Indicates Layers Set to Transparency*

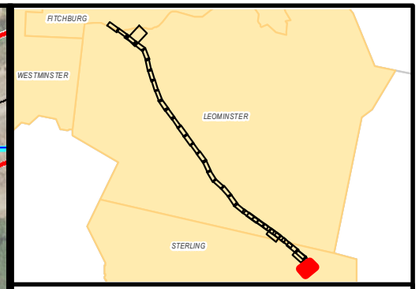
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.





MEPA General Purpose Plans

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

STERLING, MA
PAGE 33A OF 33

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

**Indicates Layers Set to Transparency*

PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.

Figure 2C - Athol Tap Lines

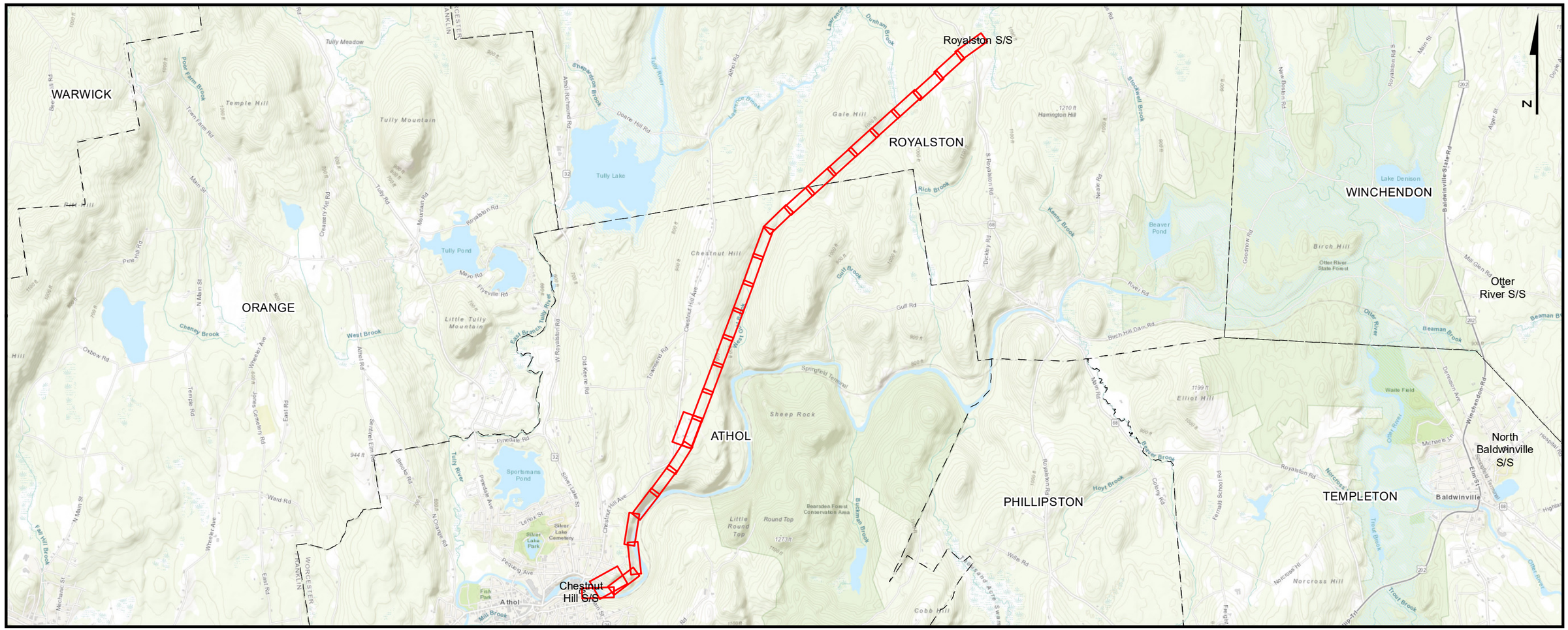
BSC Project Number: 89620.66

Asset Condition Refurbishment Project (ACR) - Athol Tap Lines

Royalston & Athol, MA

MEPA General Purpose Plans - 75% Design

October 26, 2023



PREPARED FOR:

nationalgrid

170 Data Drive
Waltham, MA 02451

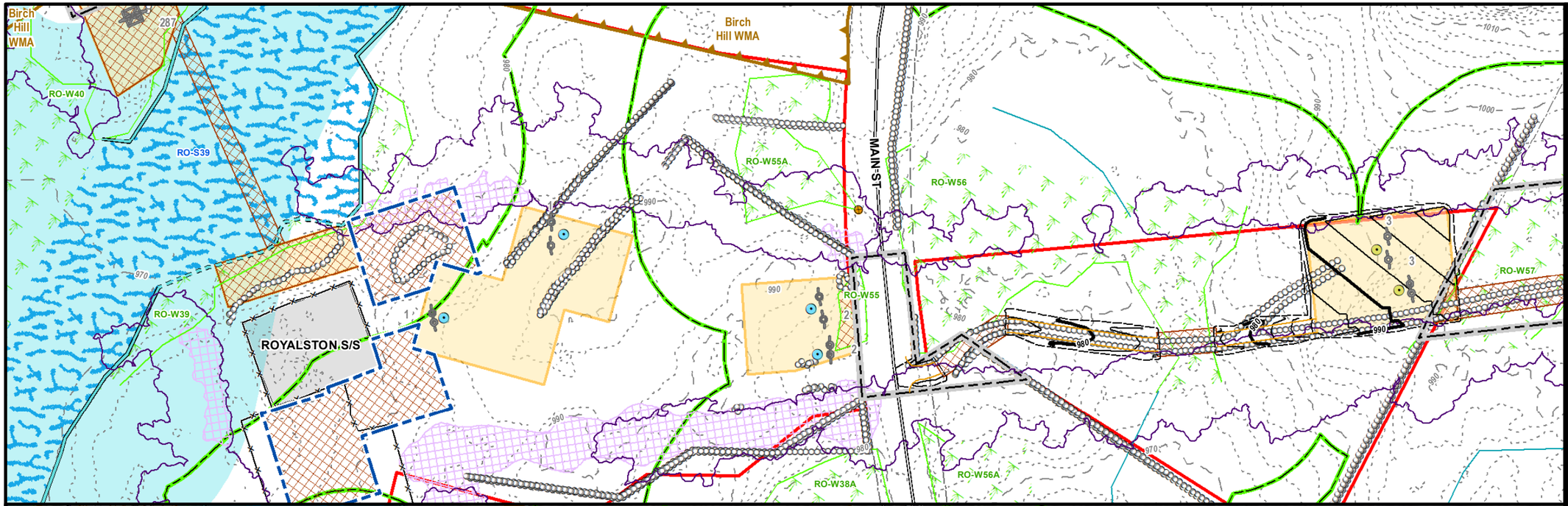
INDEX OF FIGURES

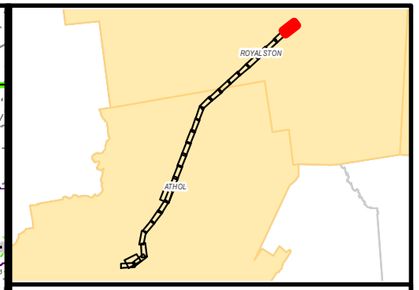
T1 - TITLE SHEET
1 - 25 - MAP SHEETS
1A - 25A - OFF ROW ACCESS SHEETS

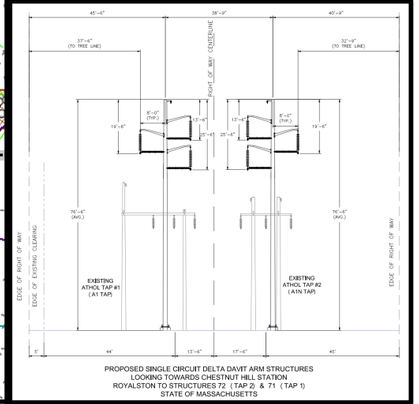
ISSUED FOR PERMITTING
NOT CONSTRUCTION

PREPARED BY:

BSC GROUP
1 Mercantile Street Suite 601
Worcester, MA 01608







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ROYALSTON, MA
PAGE 1 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

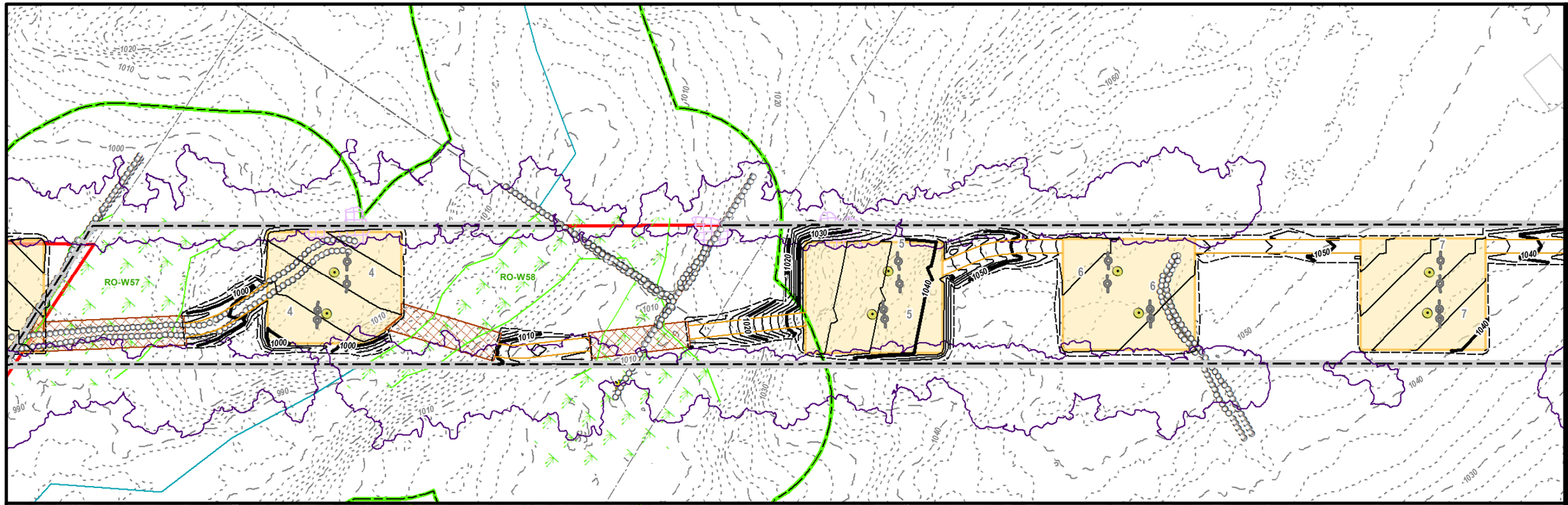
*Indicates Layers Set to Transparency

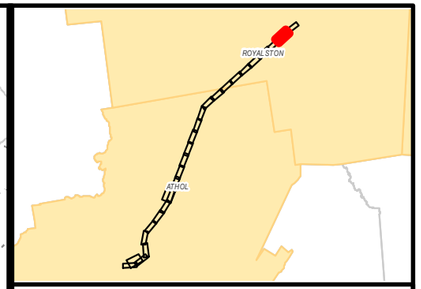
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

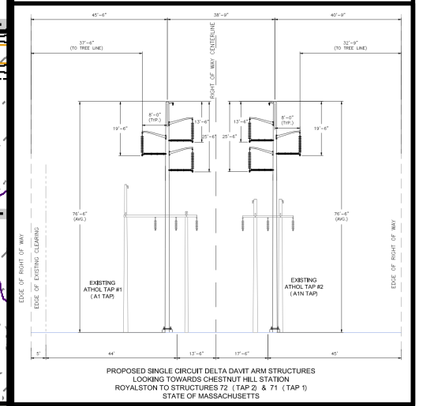
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

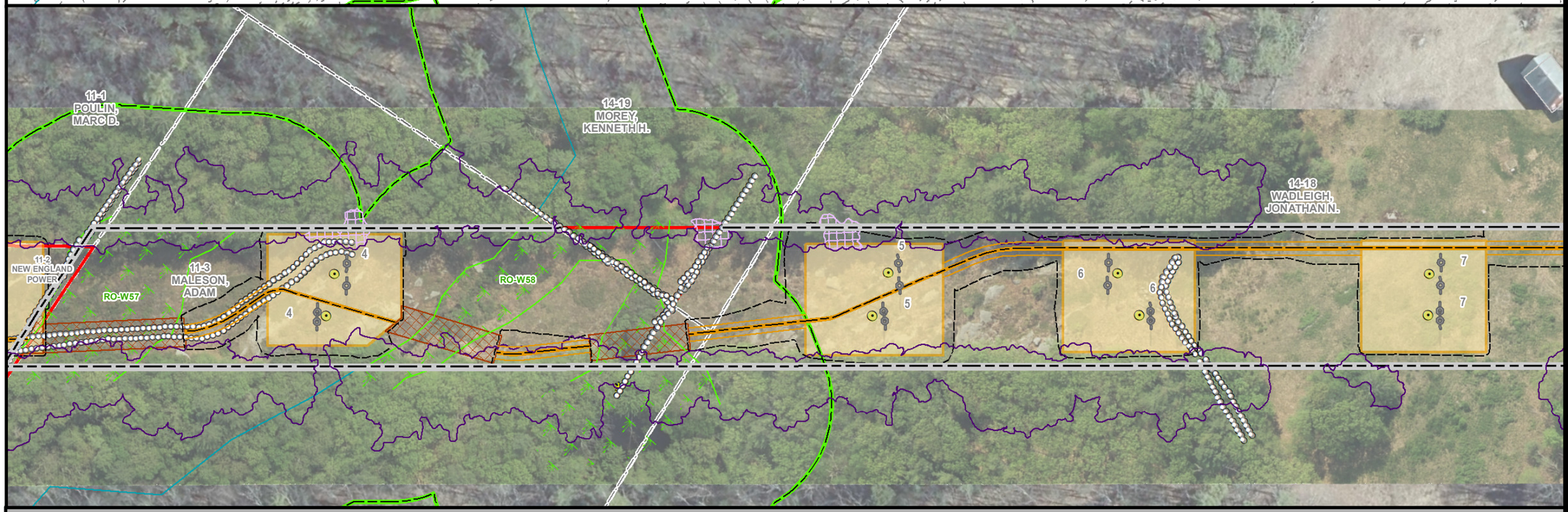
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ROYALSTON, MA
PAGE 2 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

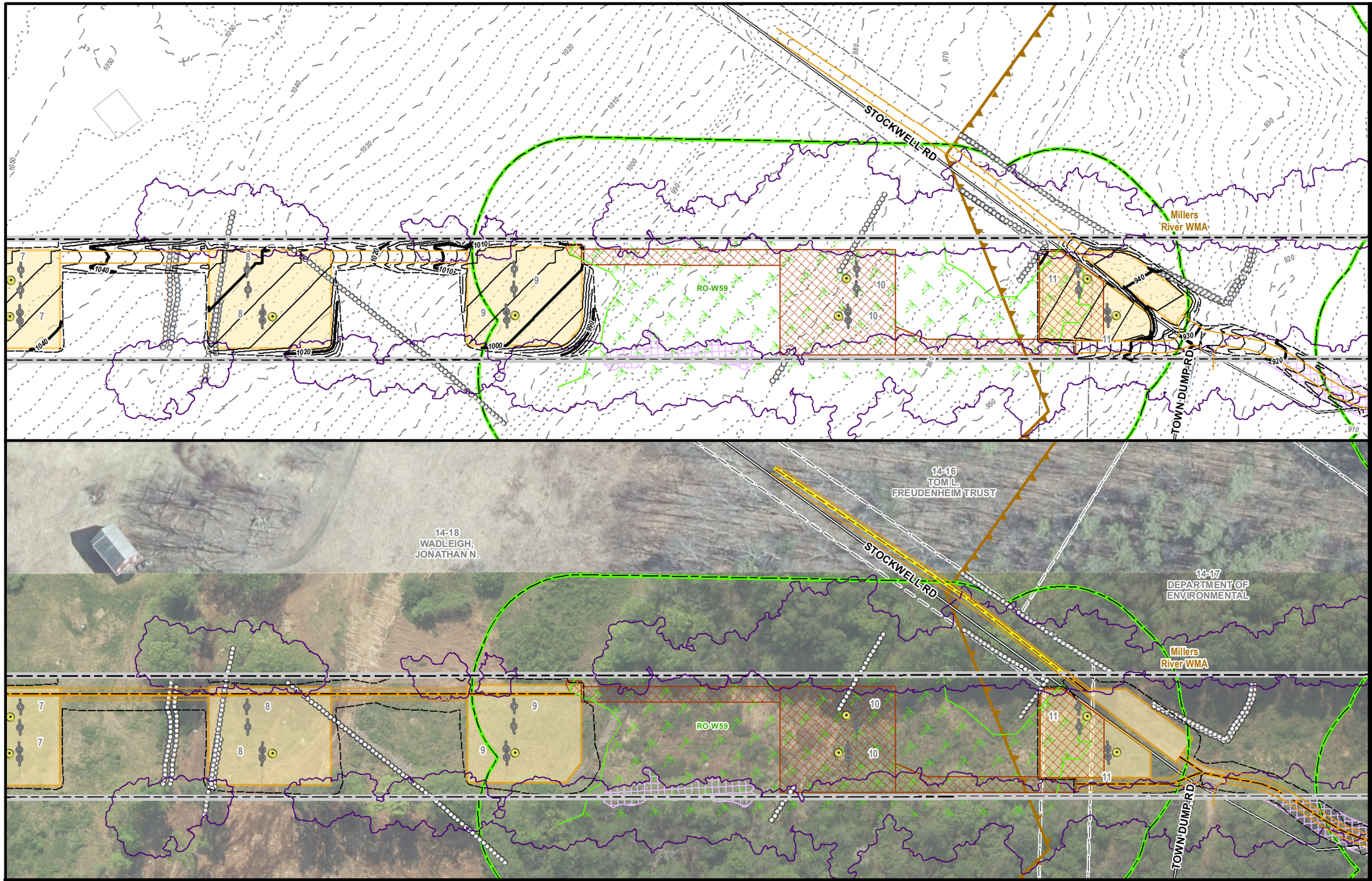
**Indicates Layers Set to Transparency*

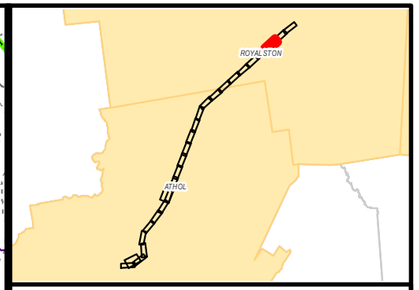
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

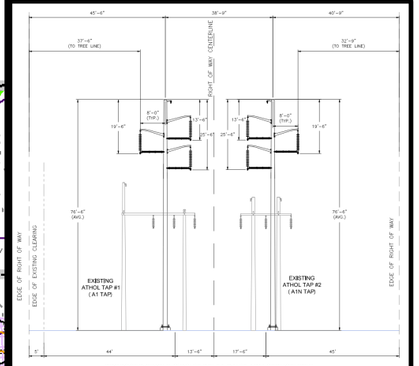
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED SINGLE CIRCUIT DELTA DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
ROYALSTON TO STRUCTURES 72 (TAP 2) & 71 (TAP 1)
STATE OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ROYALSTON, MA
PAGE 3 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

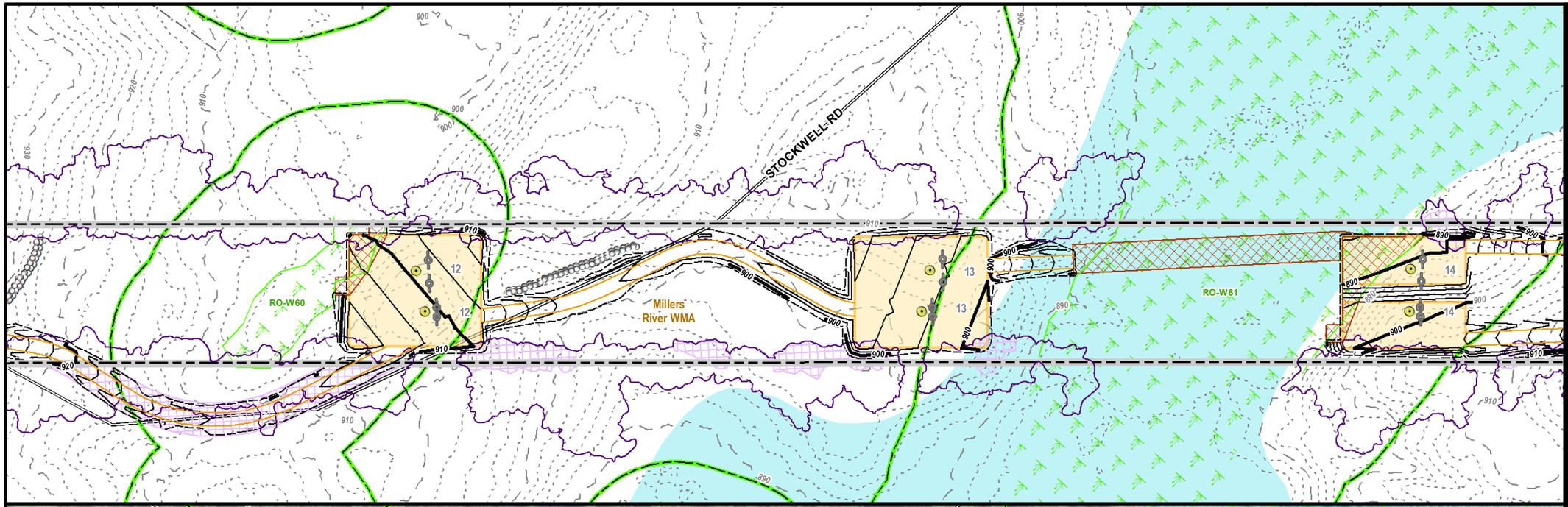
**Indicates Layers Set to Transparency*

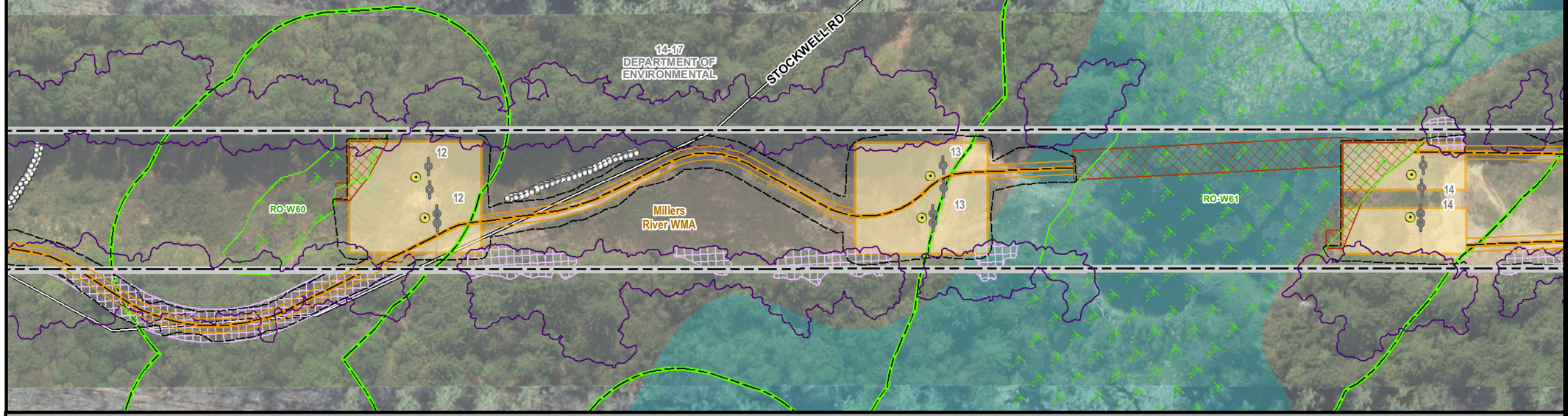
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

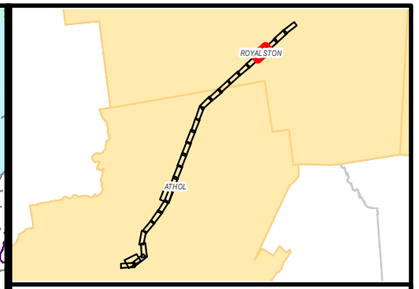
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

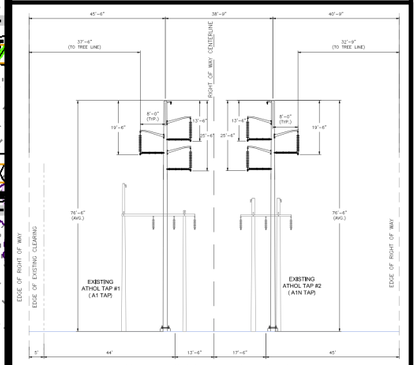
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









PROPOSED SINGLE CIRCUIT DELTA DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
ROYALSTON TO STRUCTURES 72 (TAP 2) & 71 (TAP 1)
STATE OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ROYALSTON, MA
PAGE 4 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.

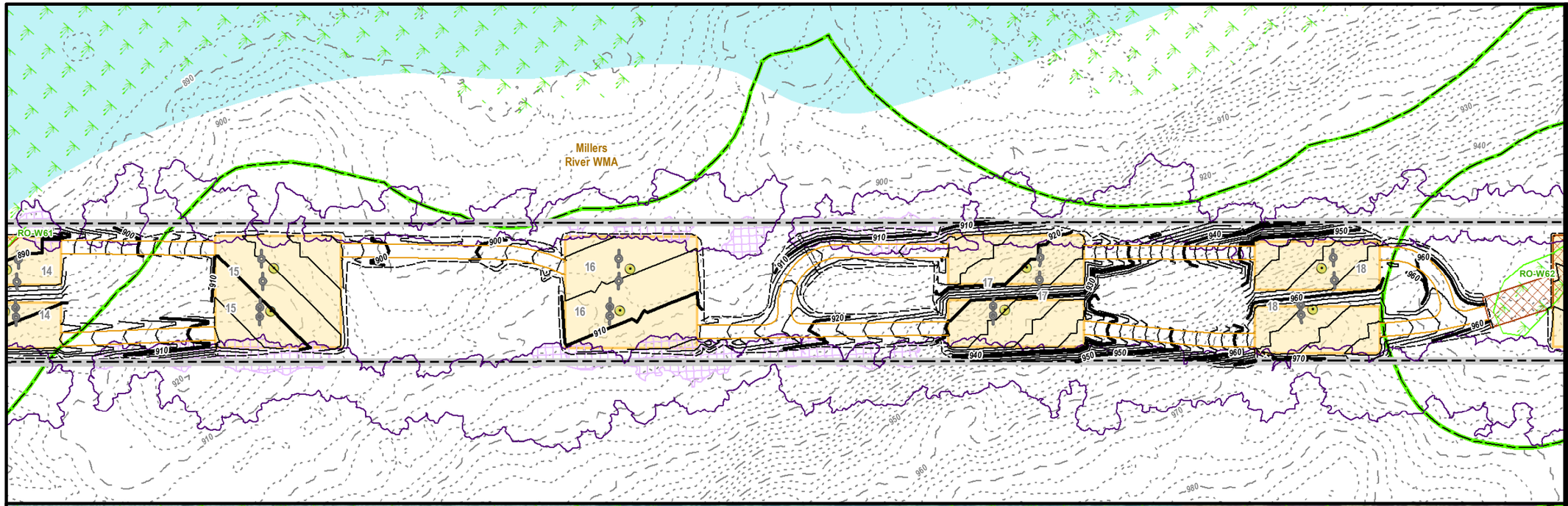
***Indicates Layers Set to Transparency**

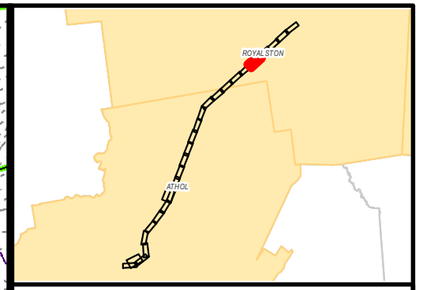
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

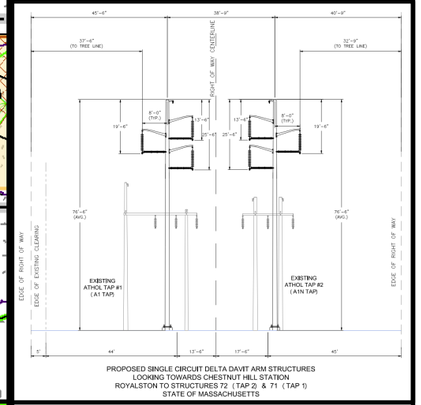
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

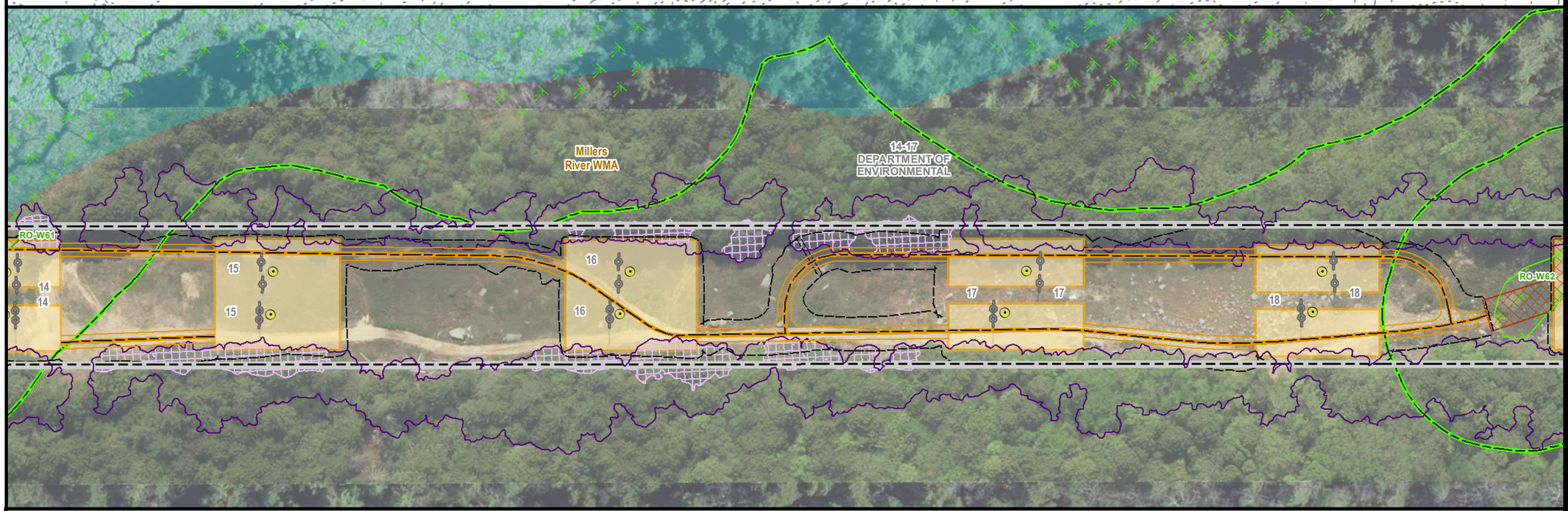
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED SINGLE CIRCUIT DELTA DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
ROYALSTON TO STRUCTURES 72 (TAP 2) & 71 (TAP 1)
STATE OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ROYALSTON, MA
PAGE 5 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

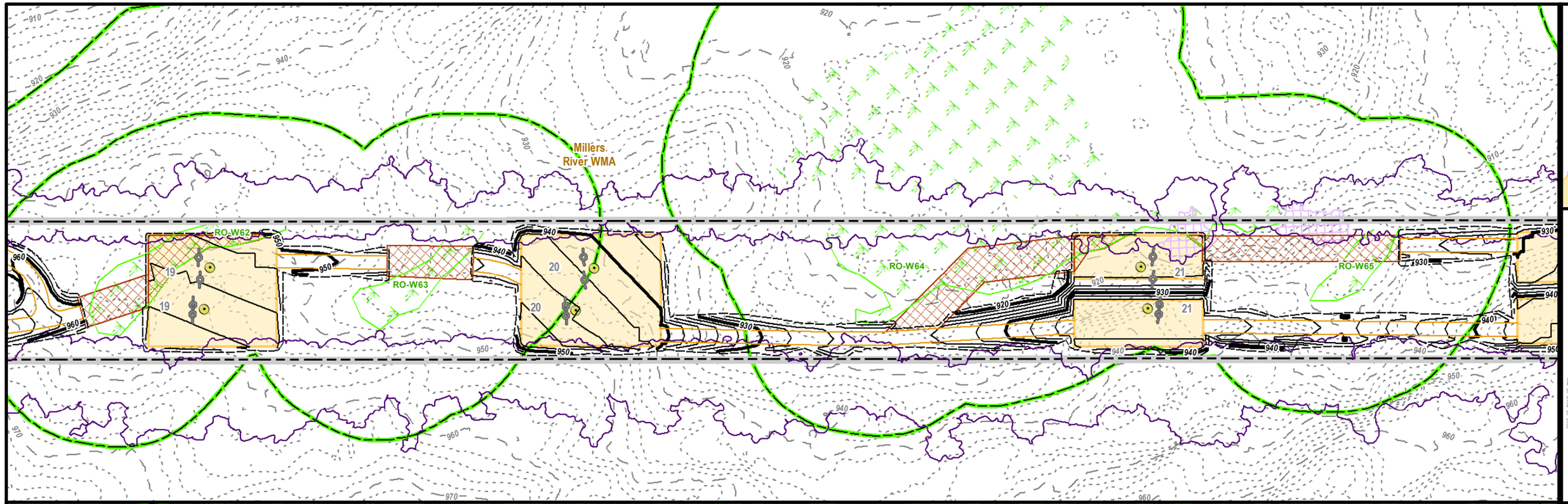
*Indicates Layers Set to Transparency

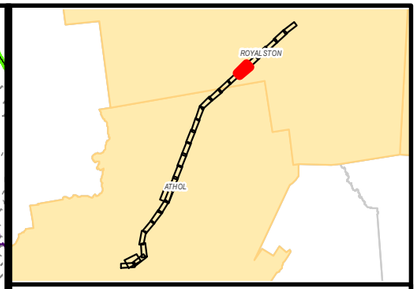
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

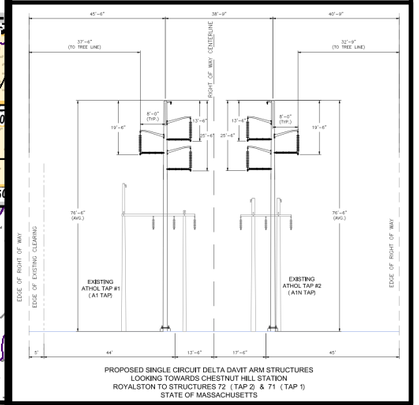
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

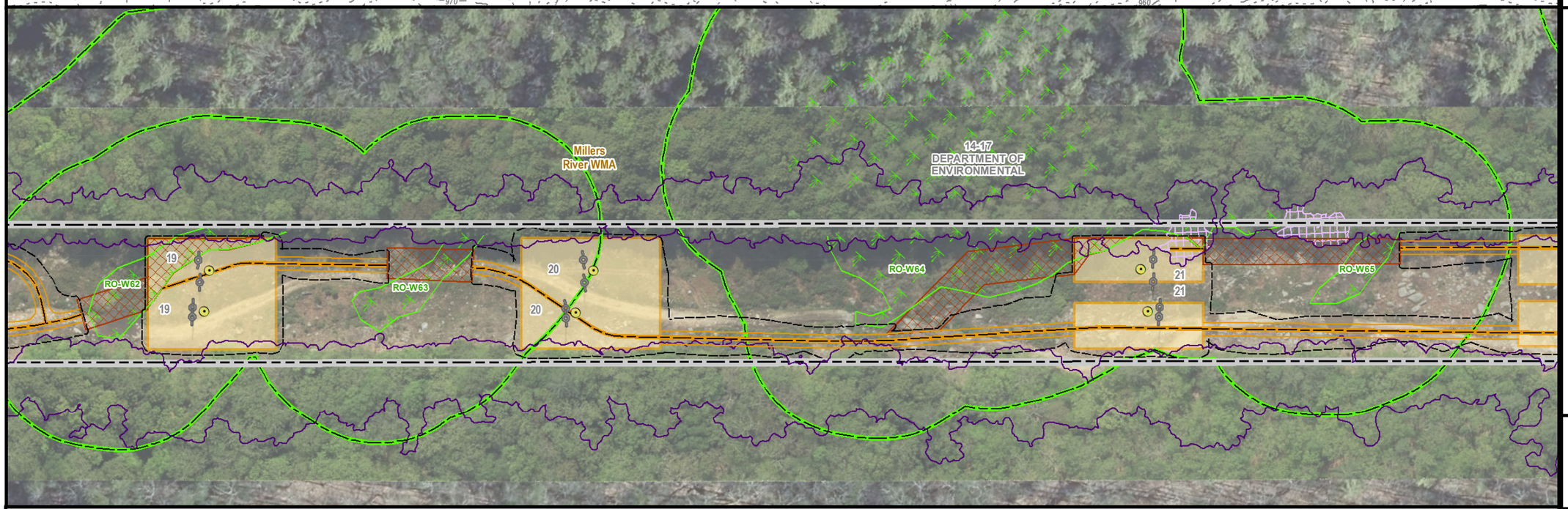
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED SINGLE CIRCUIT DELTA DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
ROYALSTON TO STRUCTURES 72 (TAP 2) & 71 (TAP 1)
STATE OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ROYALSTON, MA
PAGE 6 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

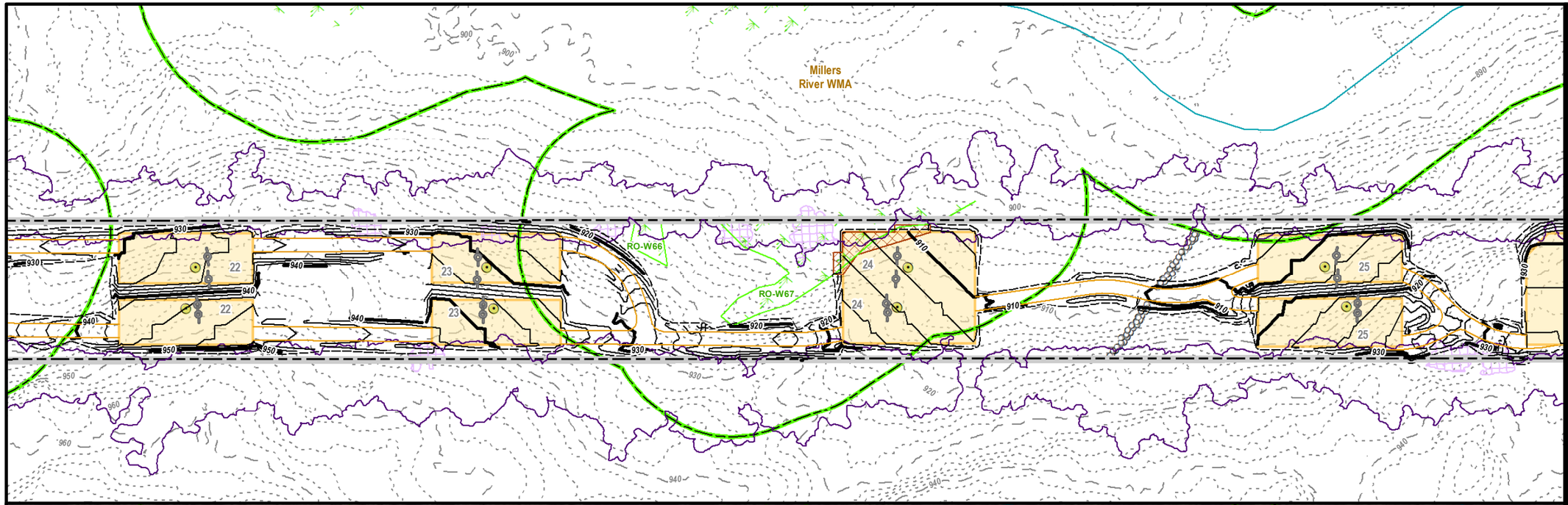
**Indicates Layers Set to Transparency*

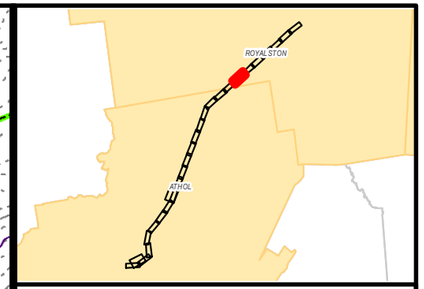
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

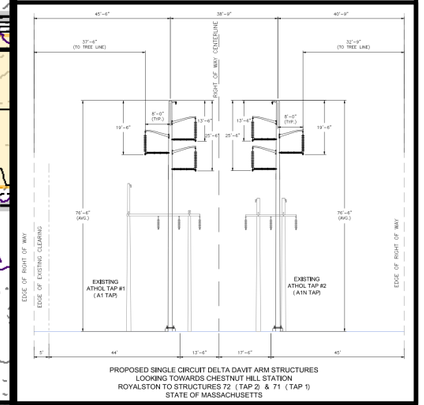
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

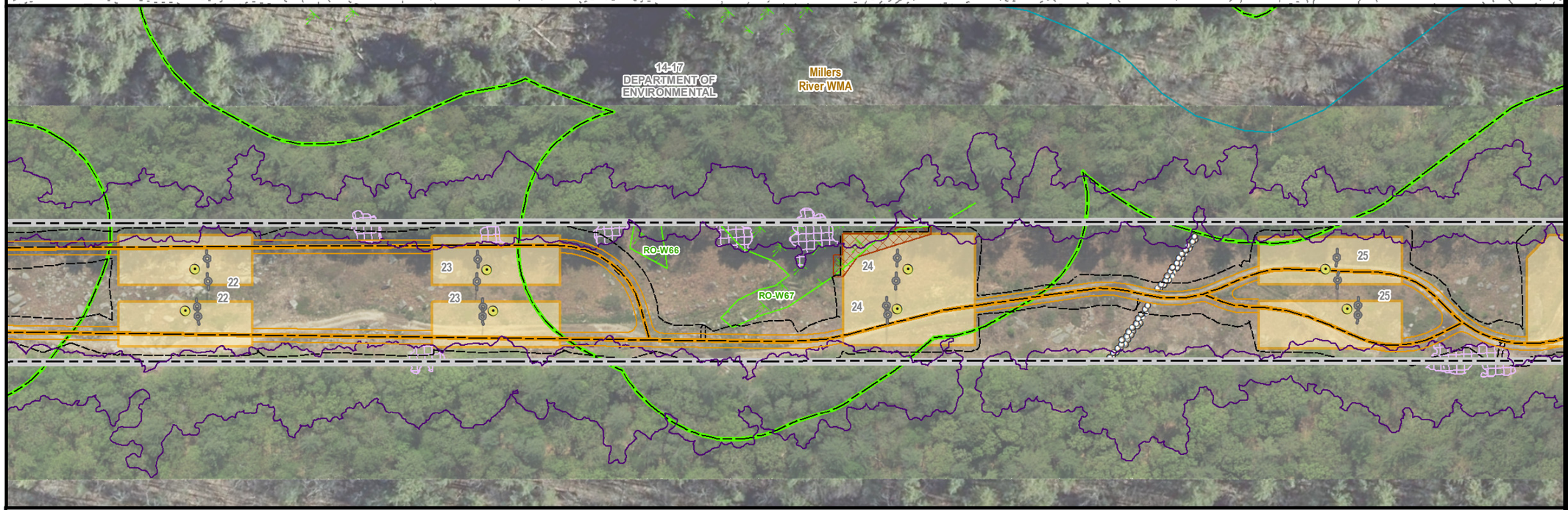
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED SINGLE CIRCUIT DELTA DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
ROYALSTON TO STRUCTURES 72 (TAP 2) & 71 (TAP 1)
STATE OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ROYALSTON, MA
PAGE 7 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

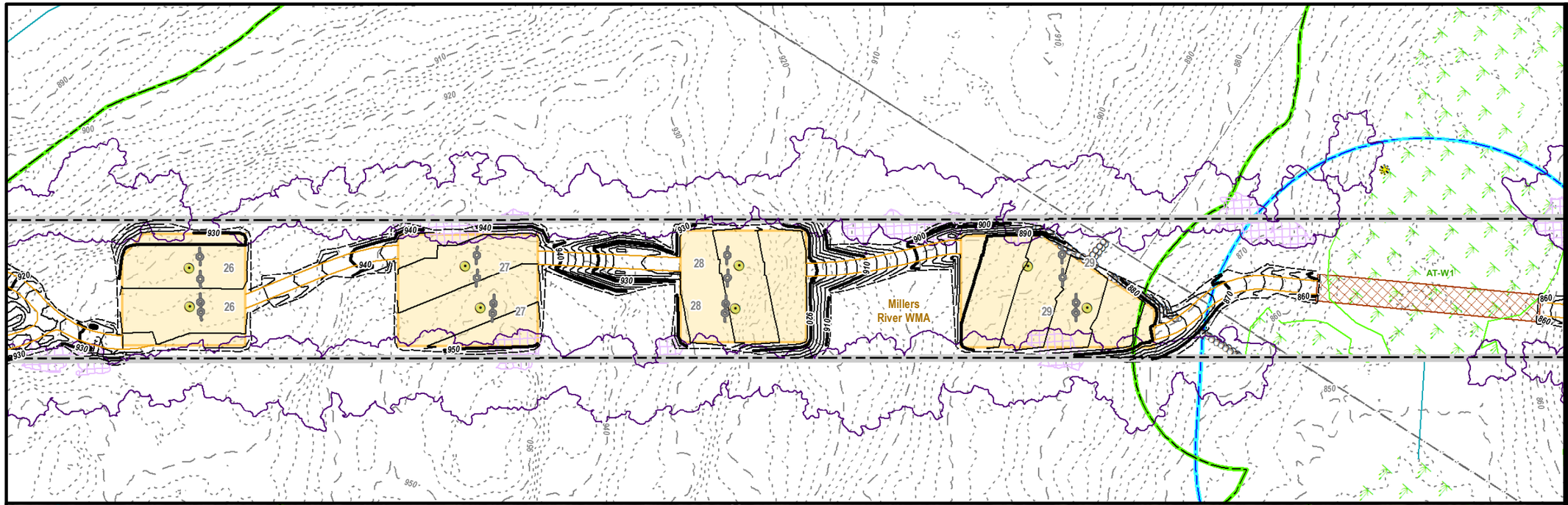
**Indicates Layers Set to Transparency*

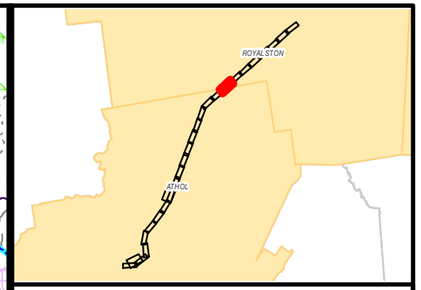
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

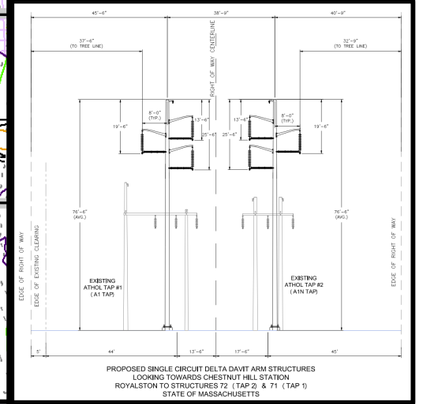
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

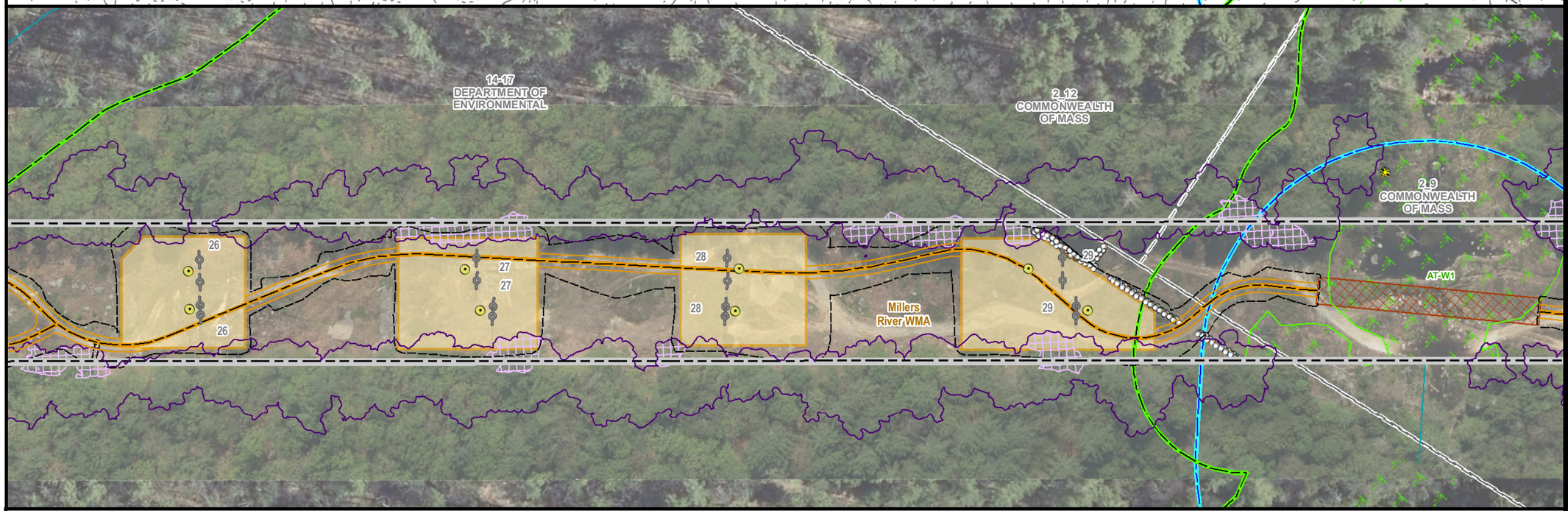
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED SINGLE CIRCUIT DELTA DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
ROYALSTON TO STRUCTURES 72 (TAP 2) & 71 (TAP 1)
STATE OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ROYALSTON & ATHOL, MA
PAGE 8 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

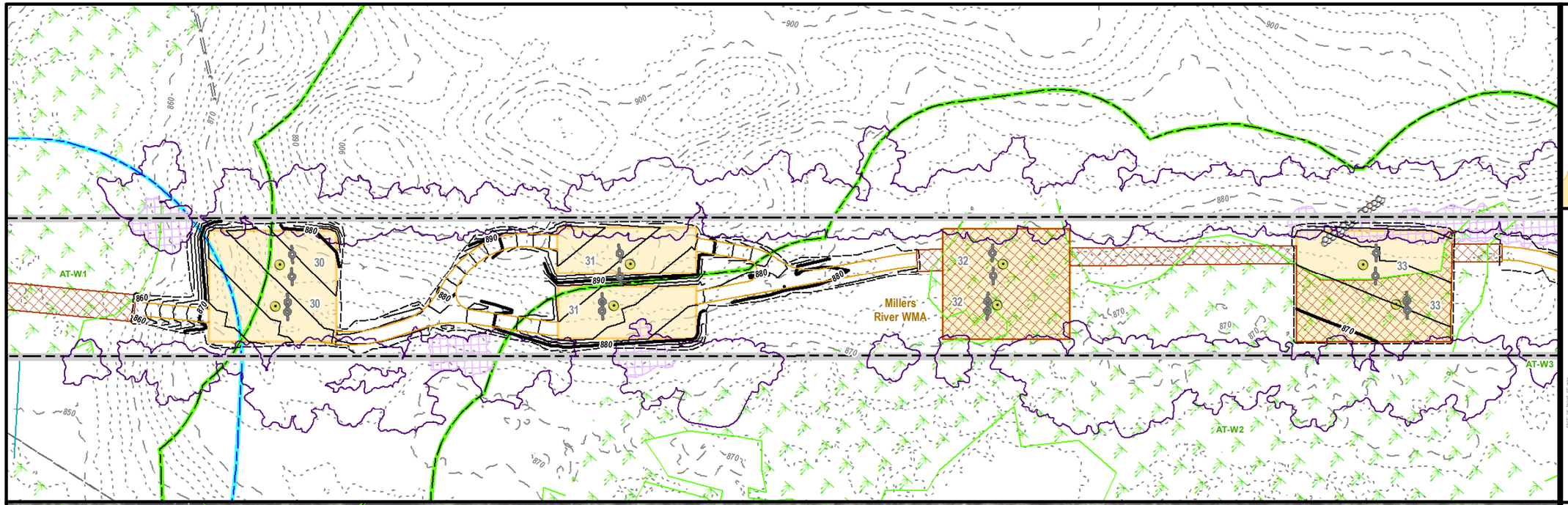
**Indicates Layers Set to Transparency*

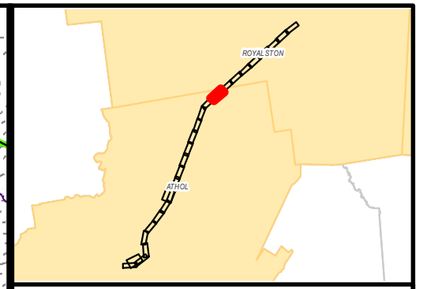
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

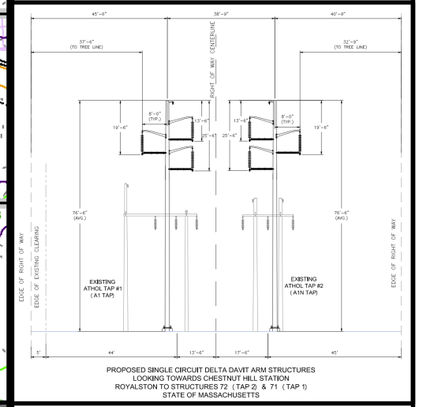
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

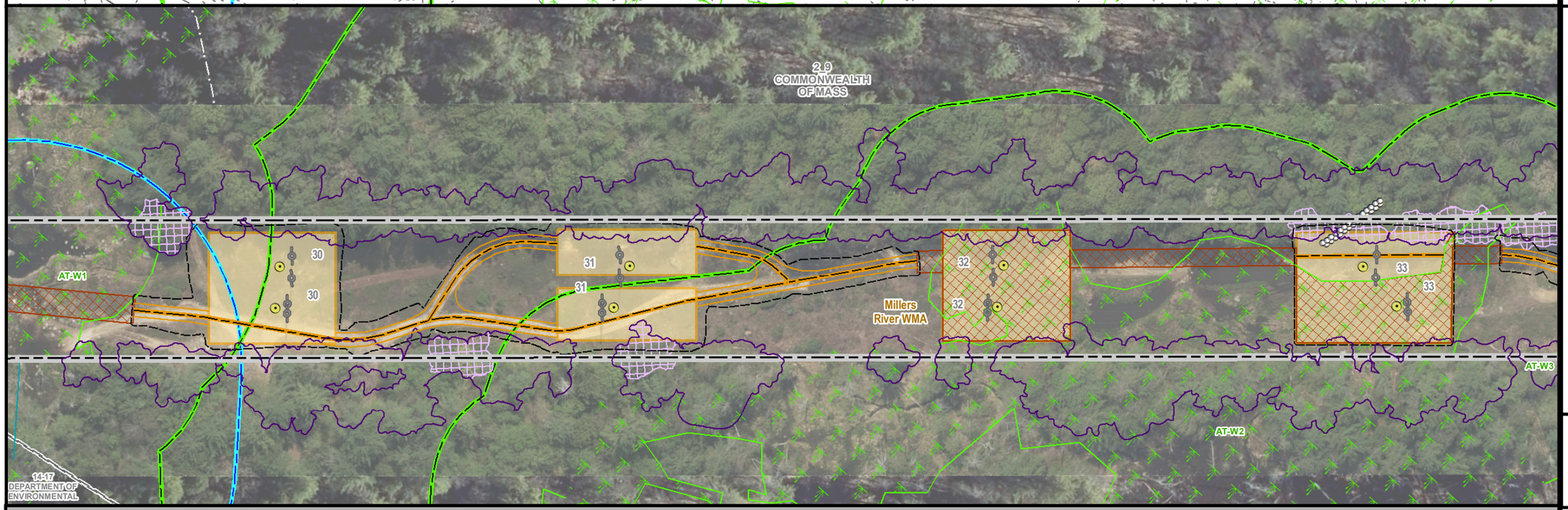
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED SINGLE CIRCUIT DELTA DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
ROYALSTON TO STRUCTURES 72 (TAP 2) & 71 (TAP 1)
STATE OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ROYALSTON & ATHOL, MA
PAGE 9 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

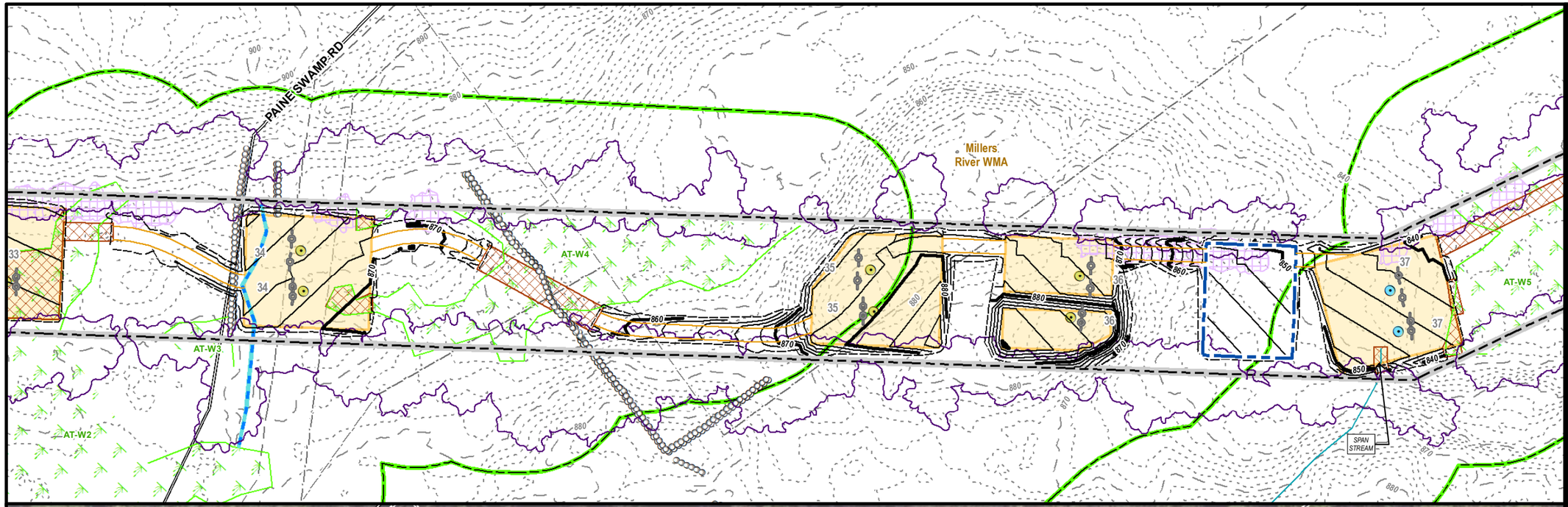
**Indicates Layers Set to Transparency*

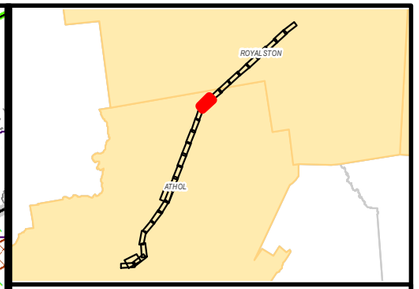
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

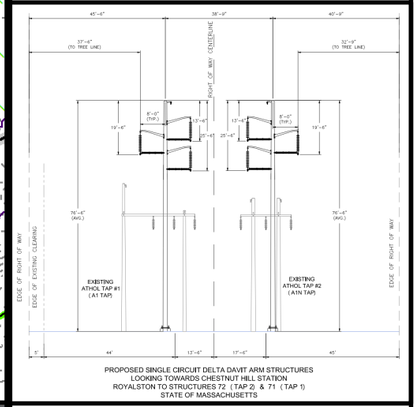
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

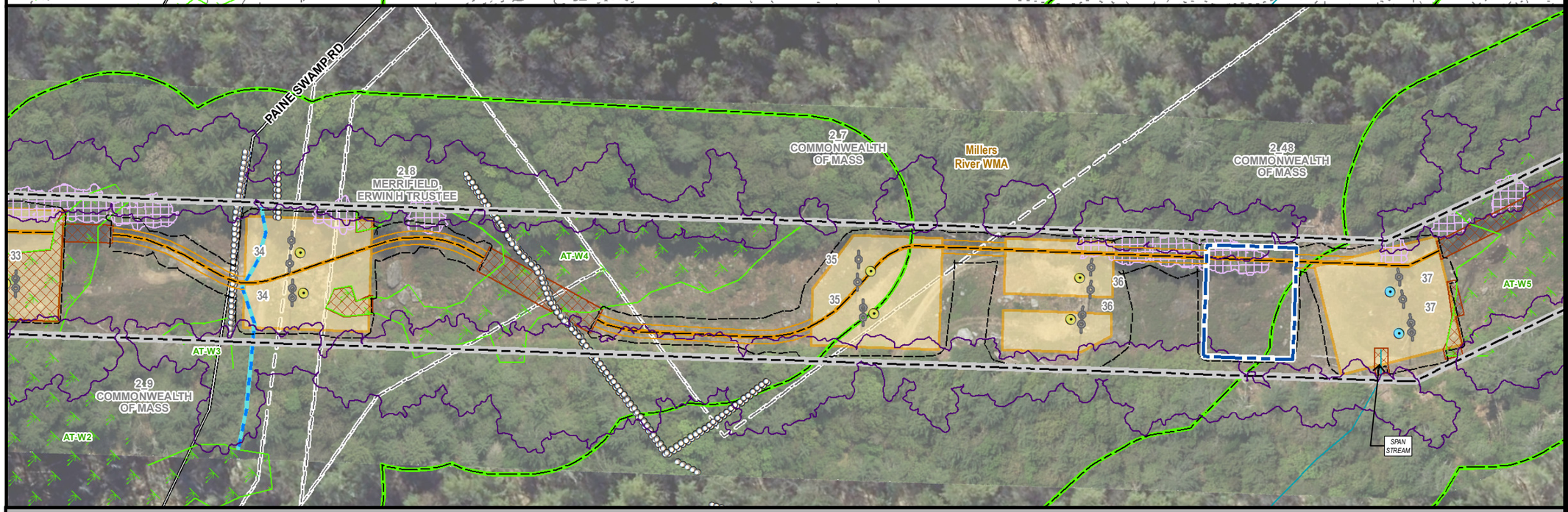
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED SINGLE CIRCUIT DELTA DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
ROYALSTON TO STRUCTURES 72 (TAP 2) & 71 (TAP 1)
STATE OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ATHOL, MA
PAGE 10 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

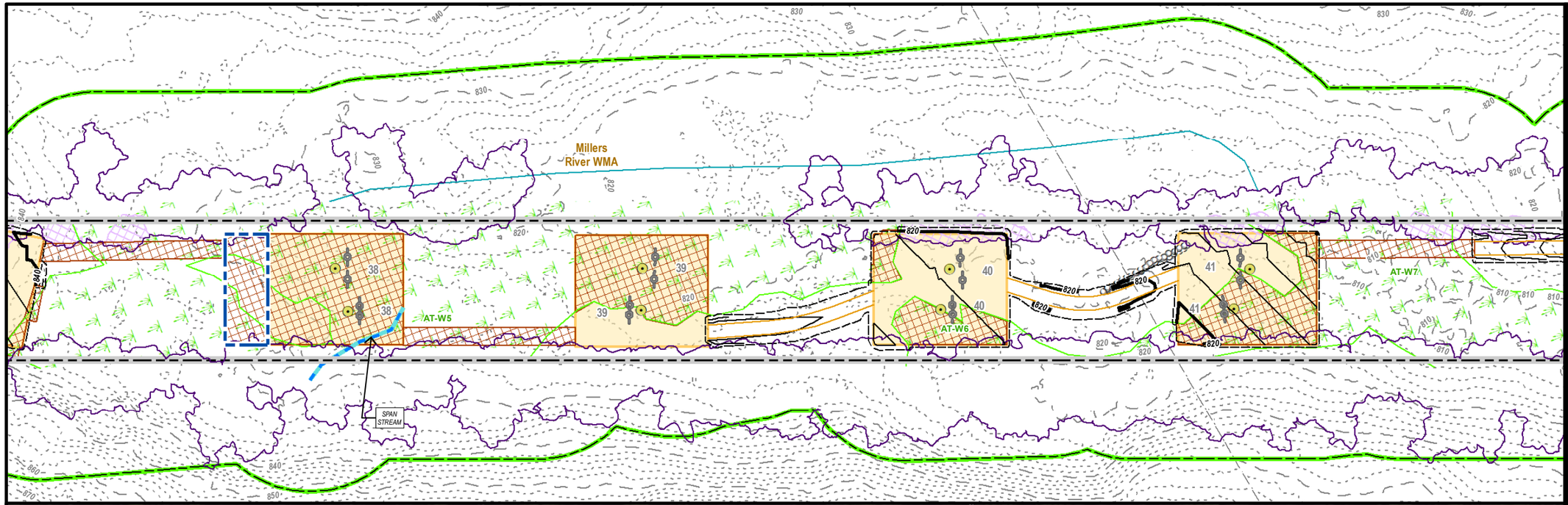
**Indicates Layers Set to Transparency*

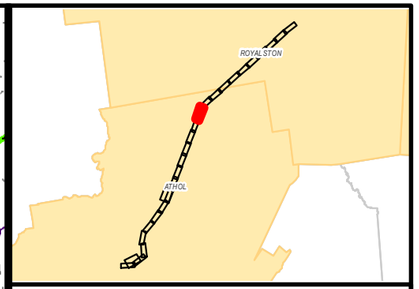
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

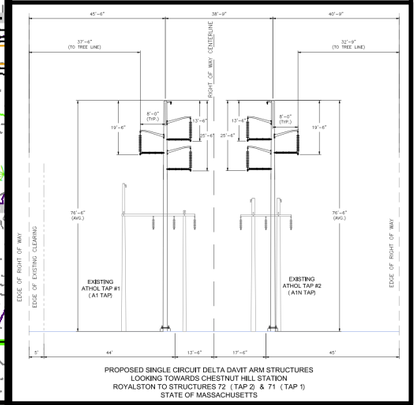
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

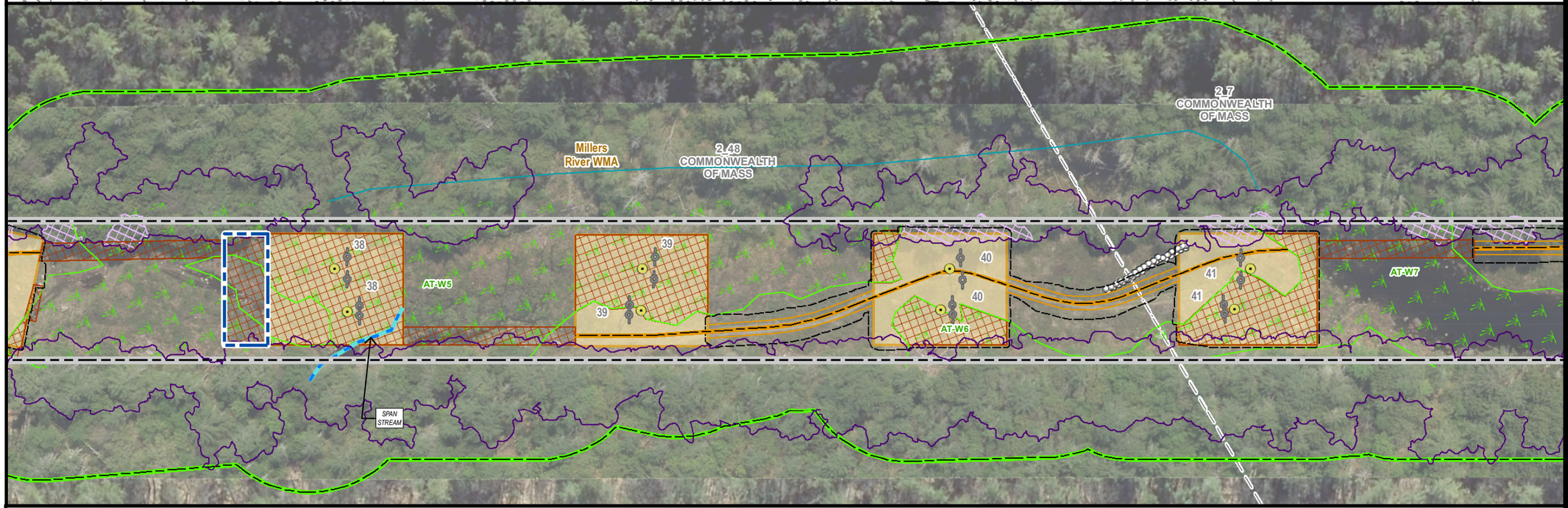
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED SINGLE CIRCUIT DELTA DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
ROYALSTON TO STRUCTURES 72 (TAP 2) & 71 (TAP 1)
STATE OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ATHOL, MA
PAGE 11 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

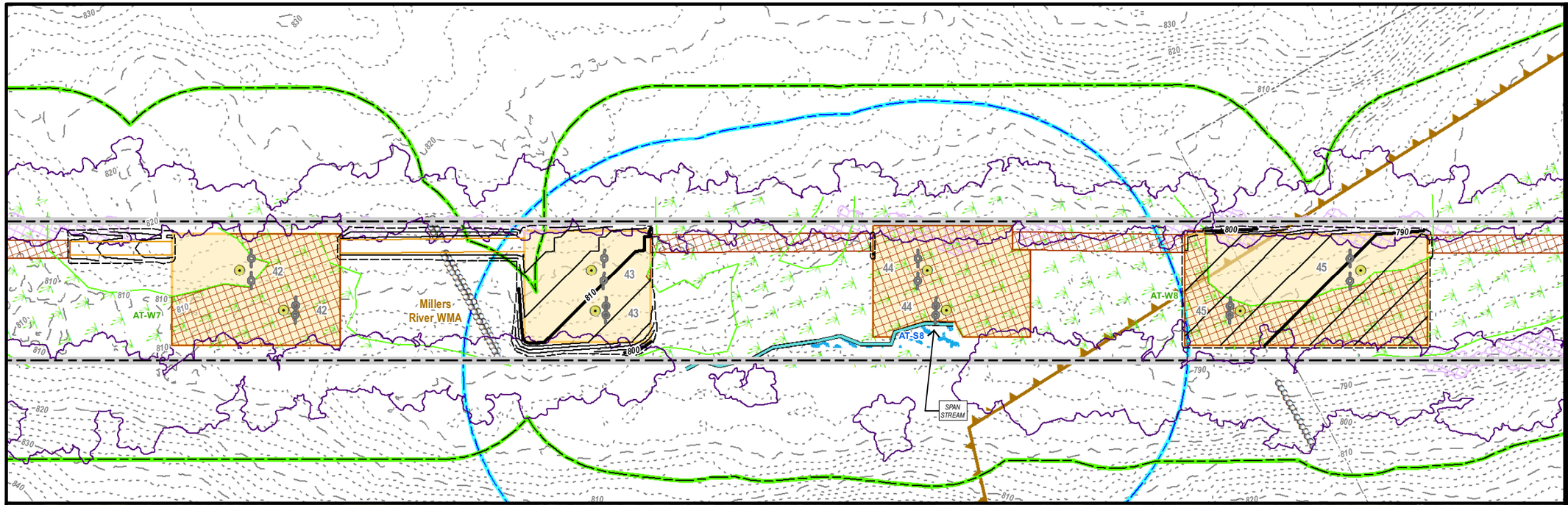
**Indicates Layers Set to Transparency*

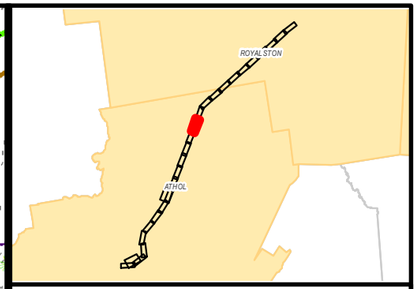
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

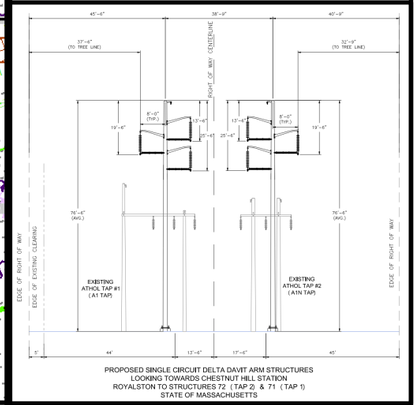
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

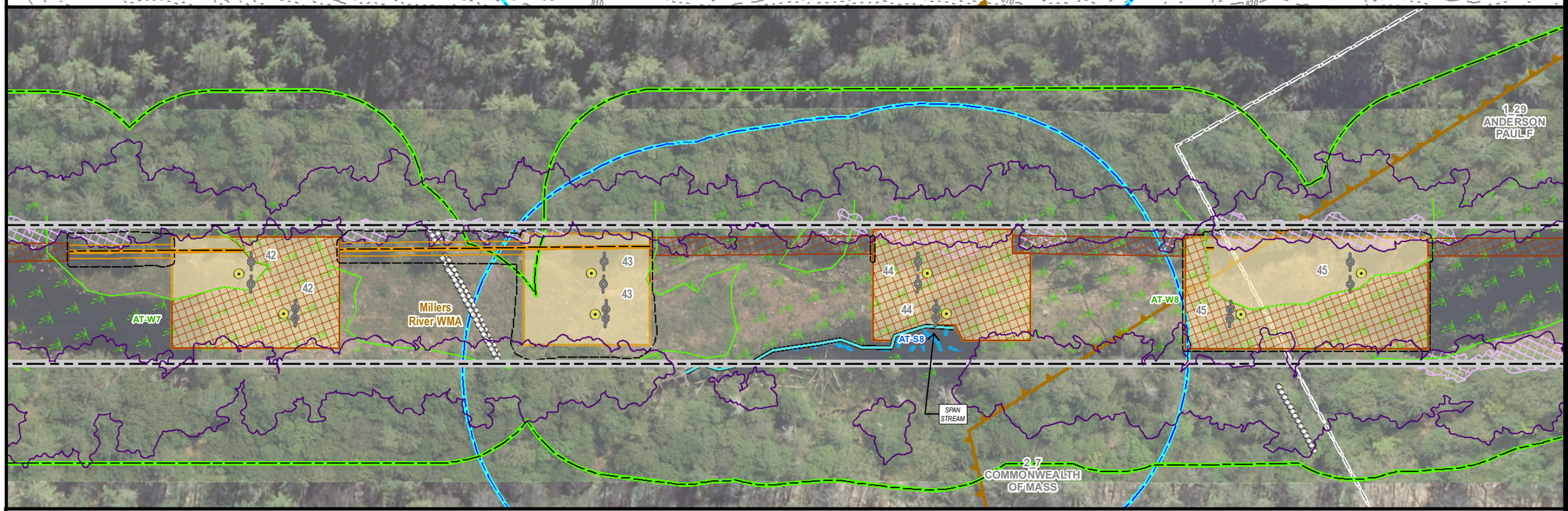
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED SINGLE CIRCUIT DELTA DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
ROYALSTON TO STRUCTURES 72 (TAP 2) & 71 (TAP 1)
STATE OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ATHOL, MA
PAGE 12 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

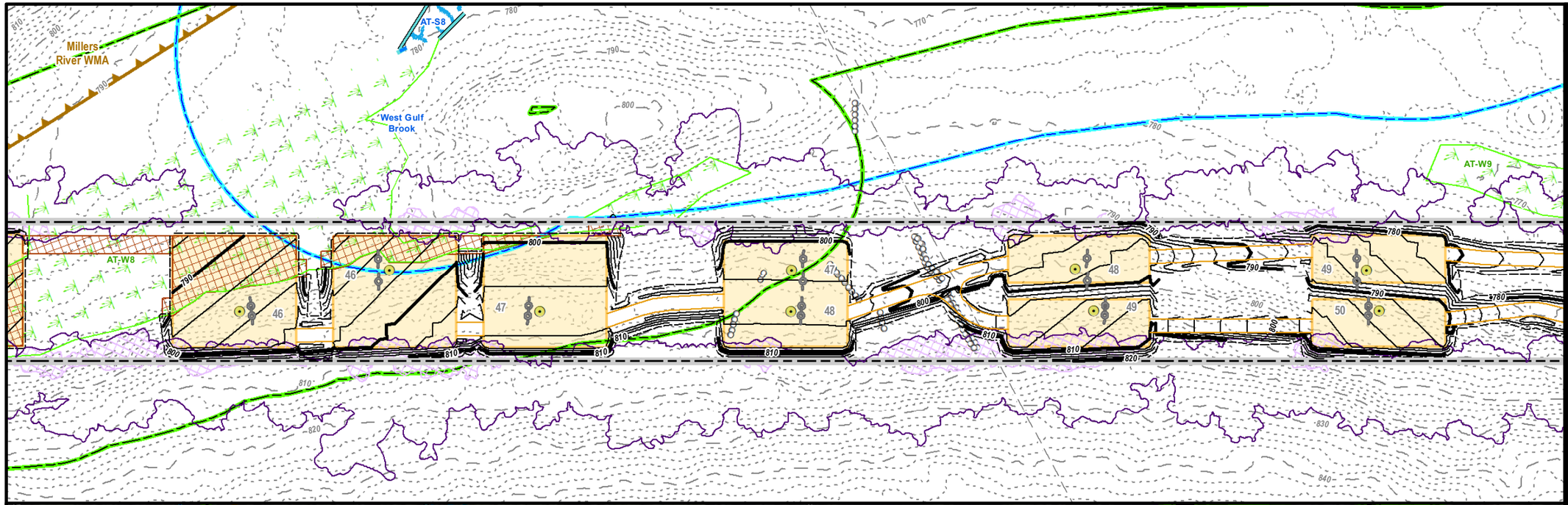
**Indicates Layers Set to Transparency*

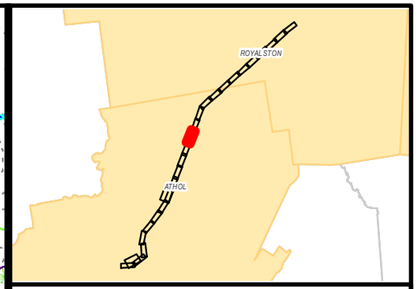
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

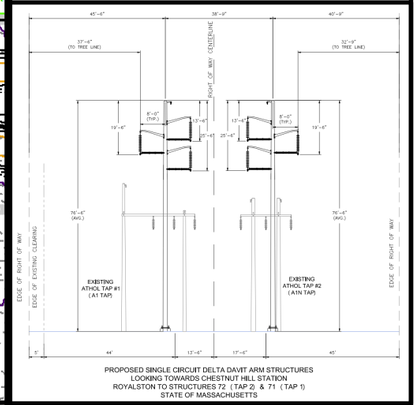
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

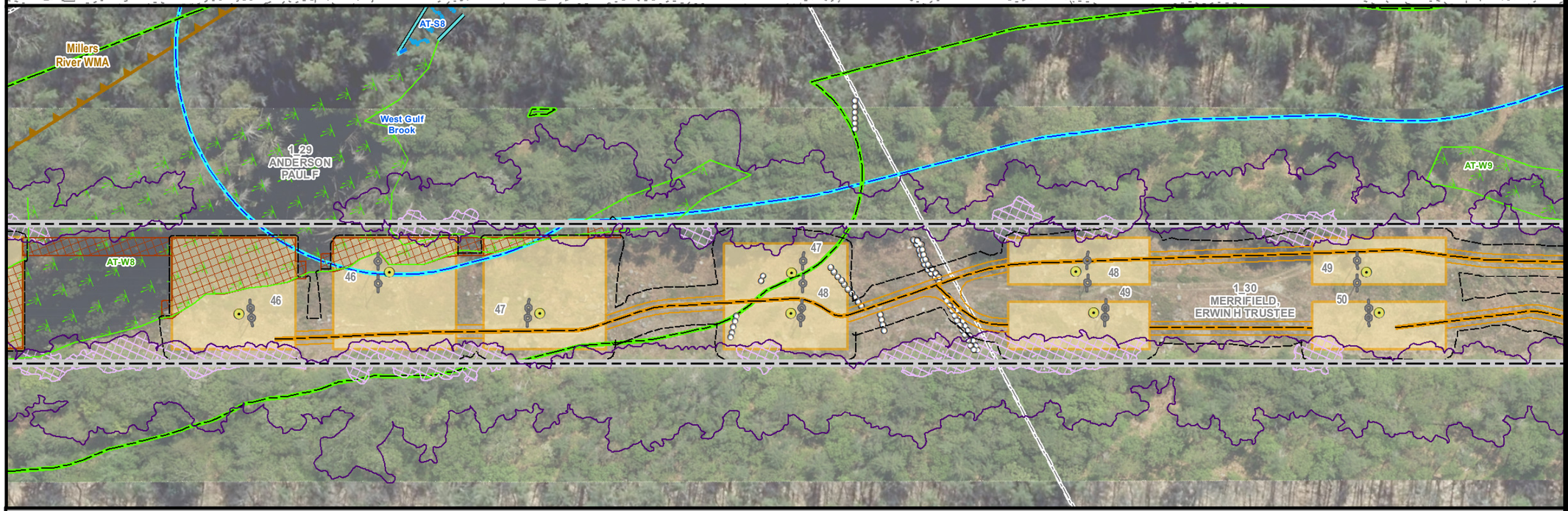
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED SINGLE CIRCUIT DELTA DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
ROYALSTON TO STRUCTURES 72 (TAP 2) & 71 (TAP 1)
STATE OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ATHOL, MA
PAGE 13 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.**

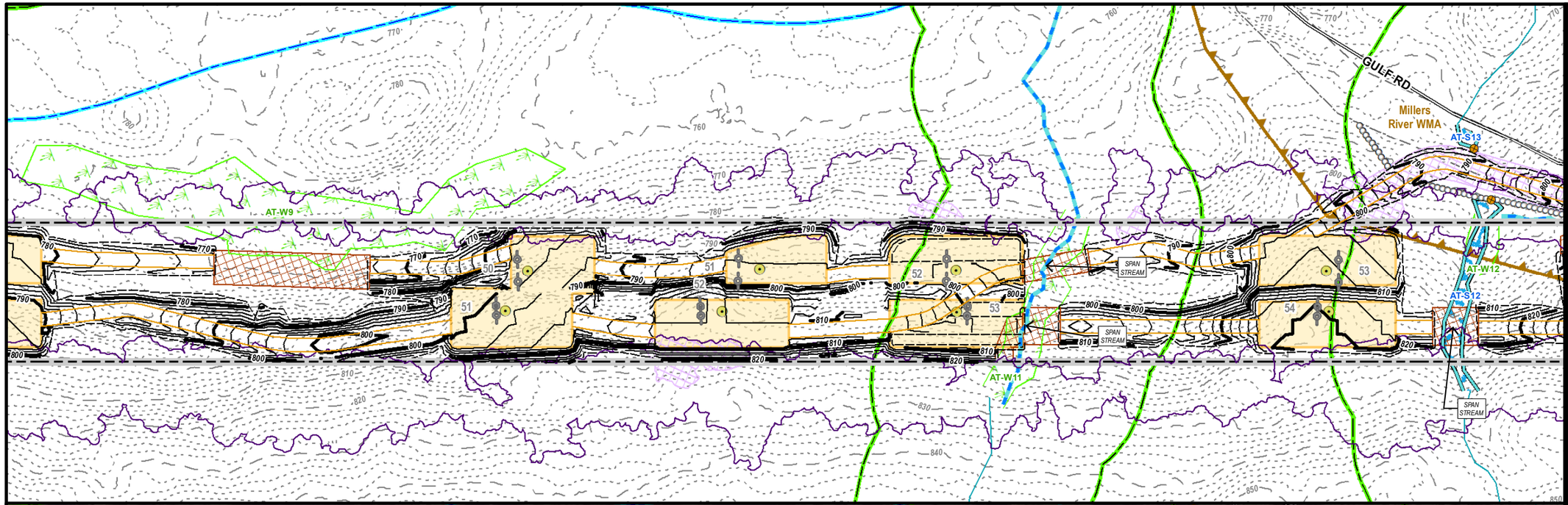
***Indicates Layers Set to Transparency**

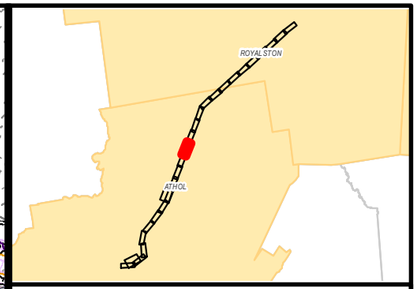
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

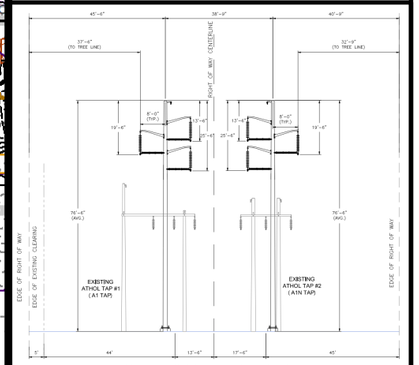
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

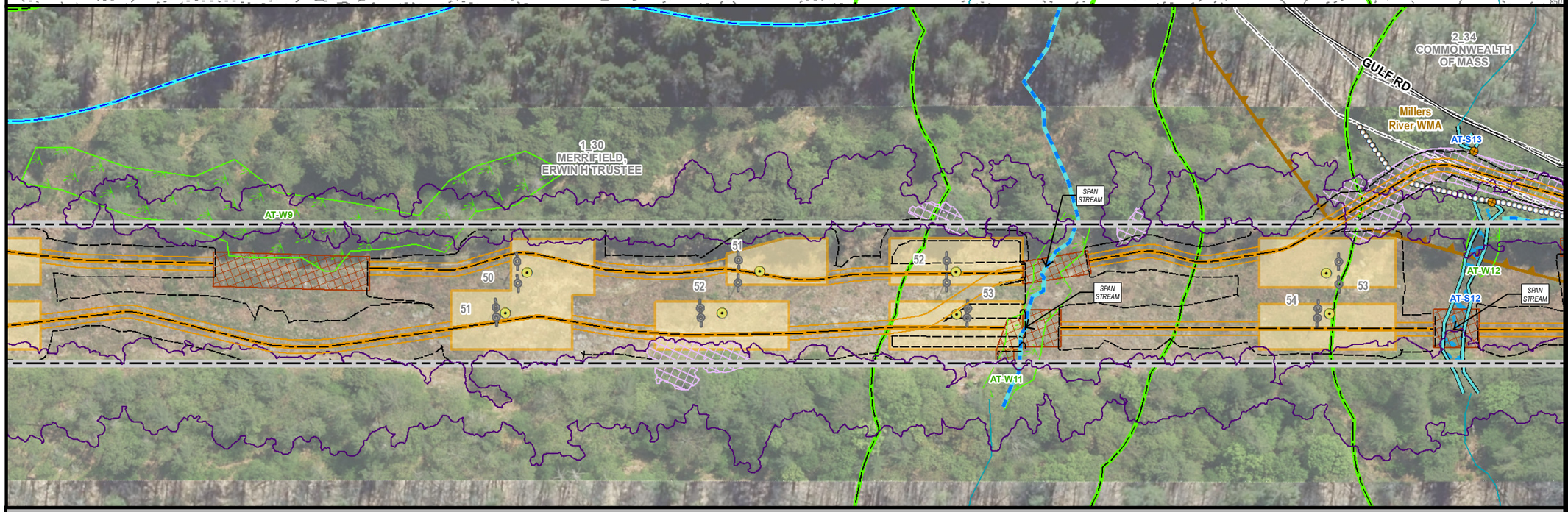
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED SINGLE CIRCUIT DELTA DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
ROYALSTON TO STRUCTURES 72 (TAP 2) & 71 (TAP 1)
STATE OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ATHOL, MA
PAGE 14 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

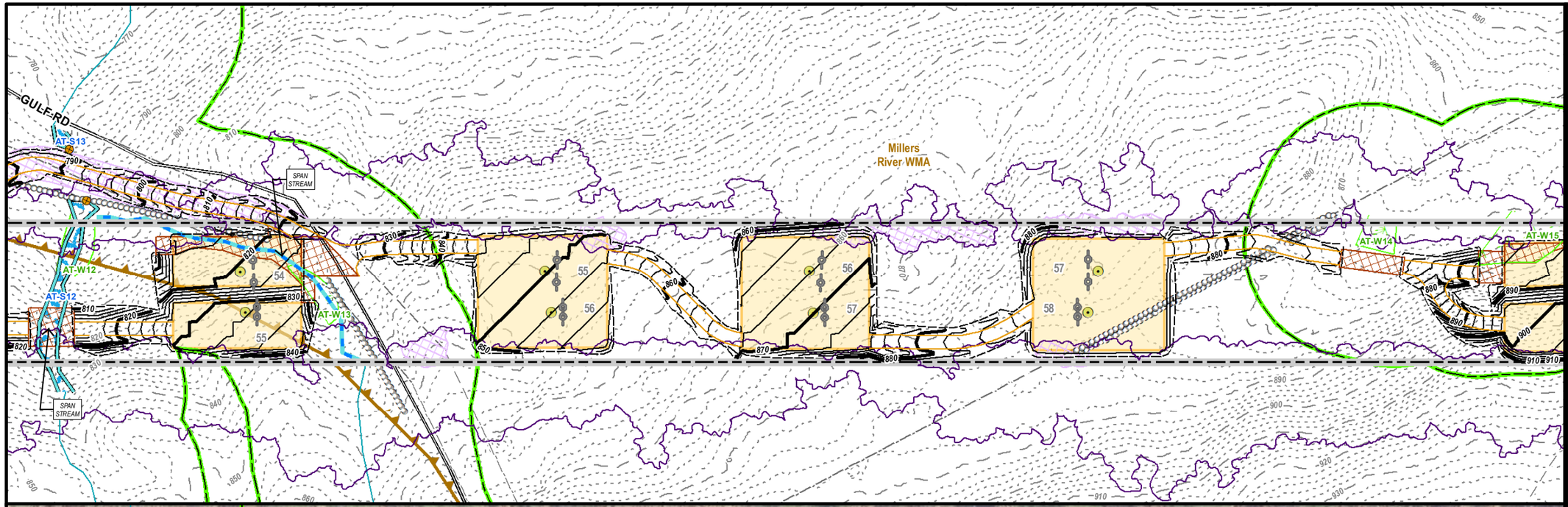
**Indicates Layers Set to Transparency*

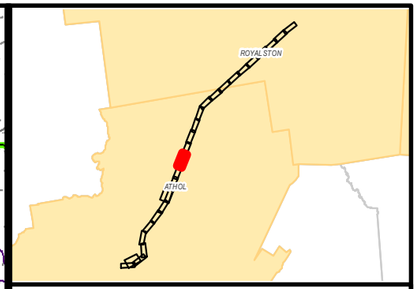
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

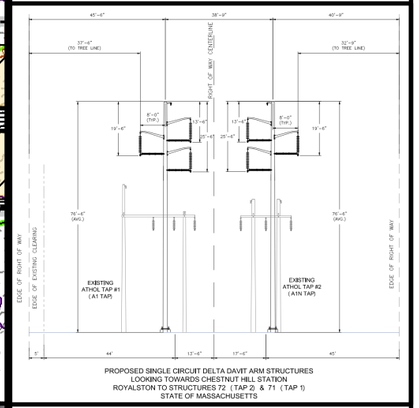
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

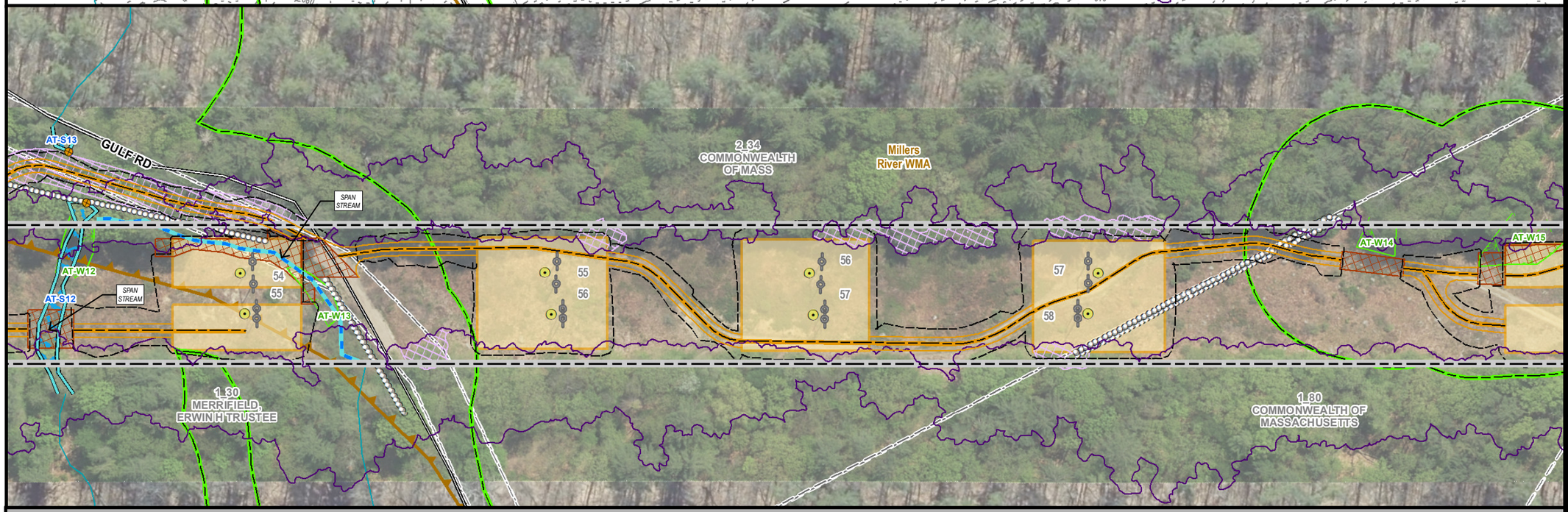
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED SINGLE CIRCUIT DELTA DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
ROYALSTON TO STRUCTURES 72 (TAP 2) & 71 (TAP 1)
STATE OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ATHOL, MA
PAGE 15 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

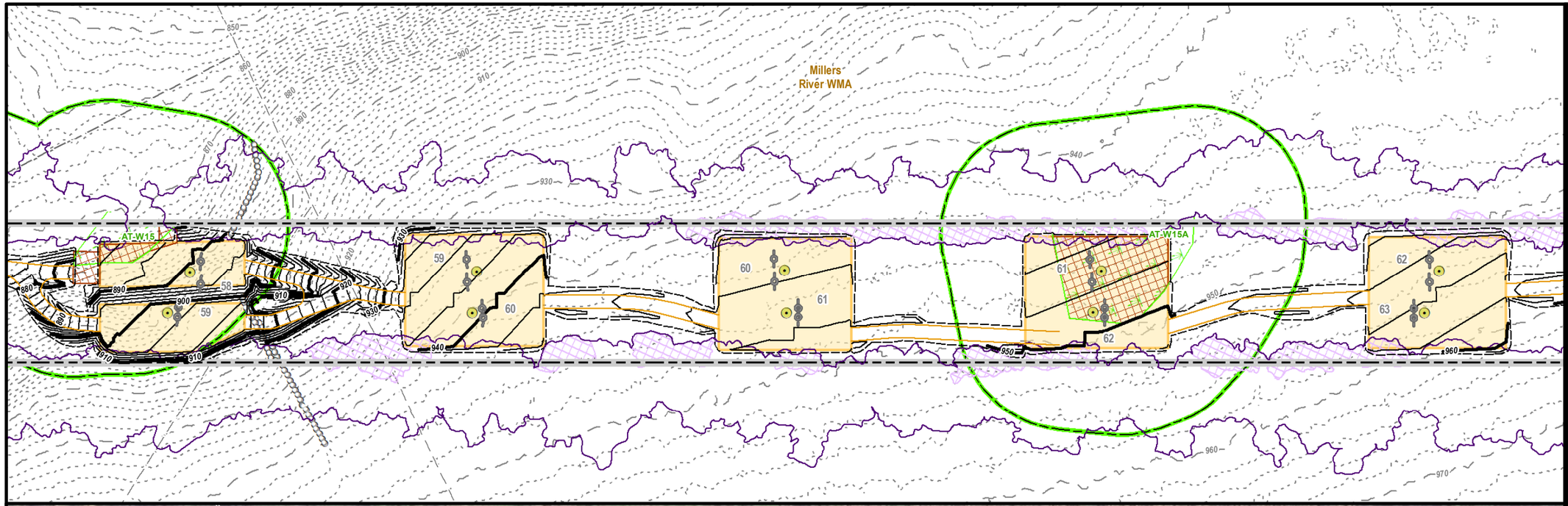
**Indicates Layers Set to Transparency*

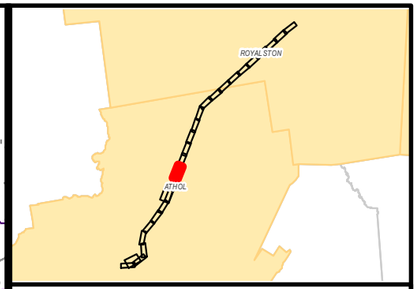
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

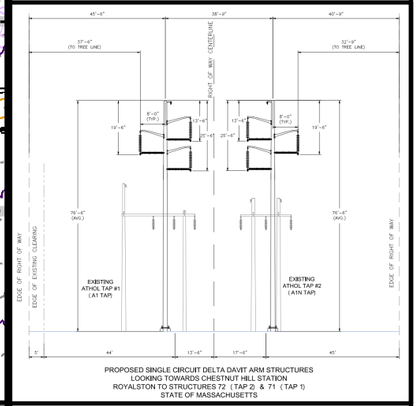
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

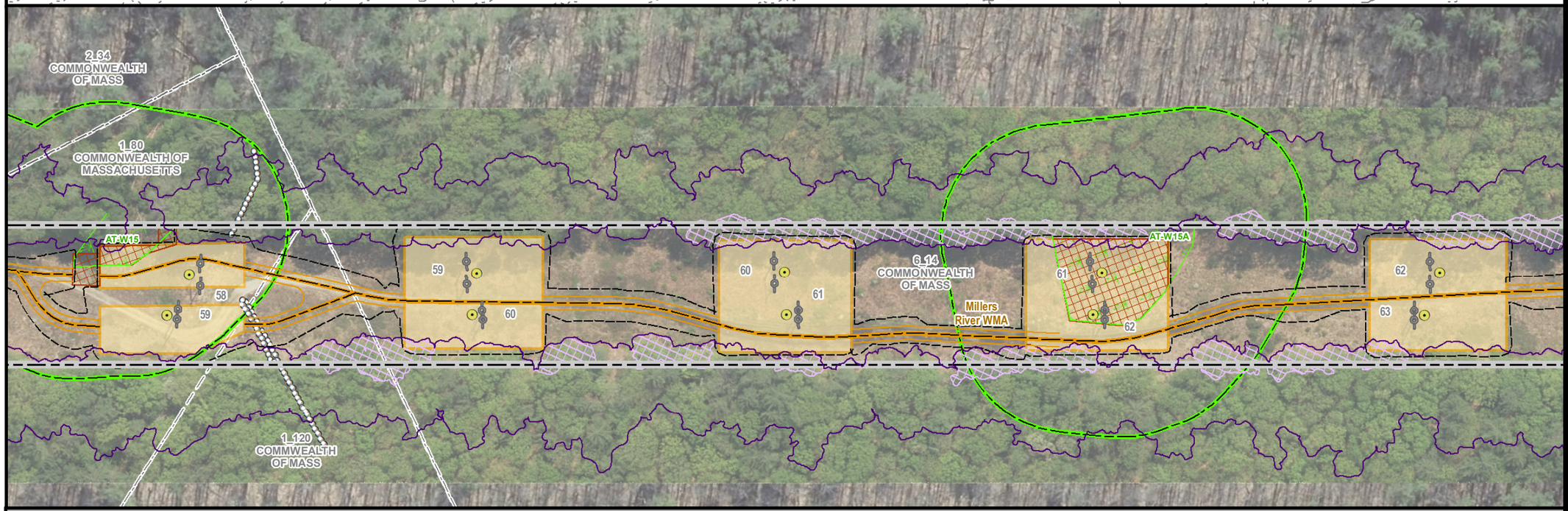
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED SINGLE CIRCUIT DELTA DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
ROYALSTON TO STRUCTURES 72 (TAP 2) & 71 (TAP 1)
STATE OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ATHOL, MA
PAGE 16 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

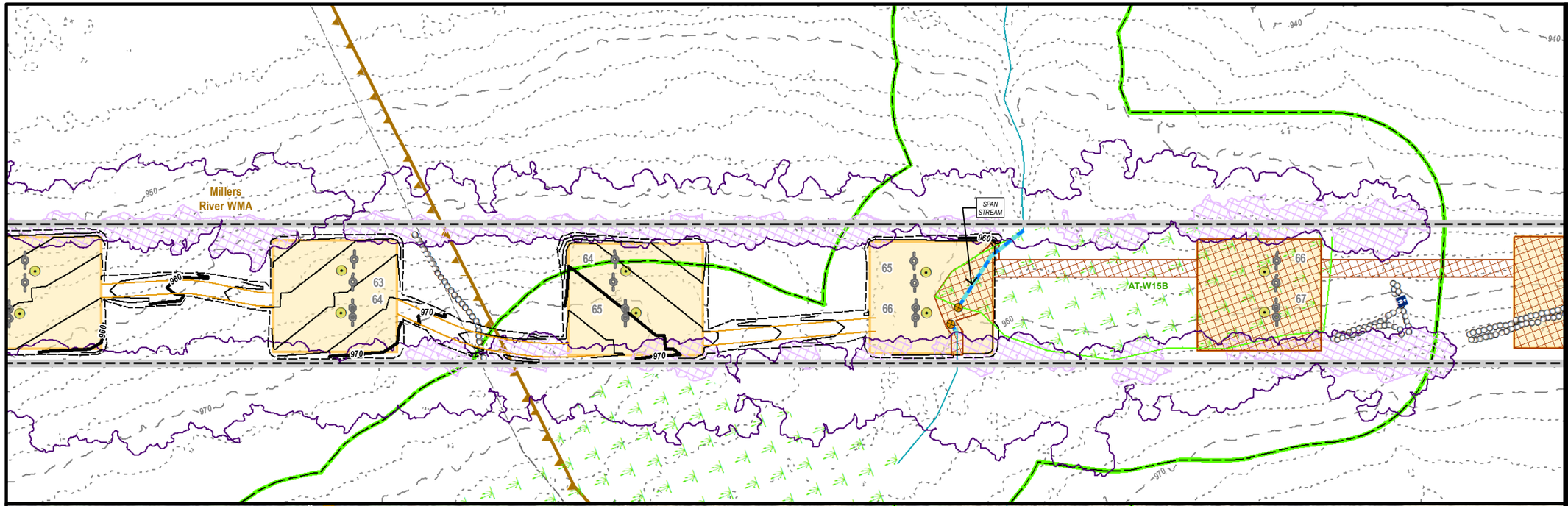
**Indicates Layers Set to Transparency*

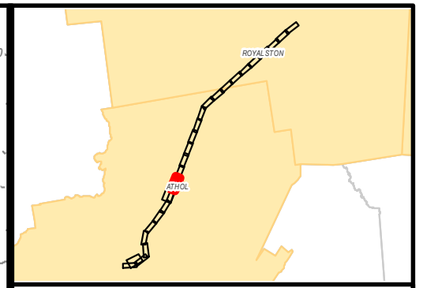
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

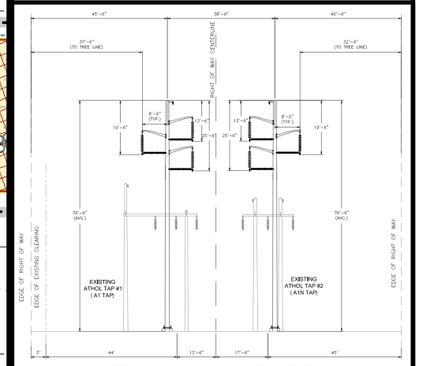
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

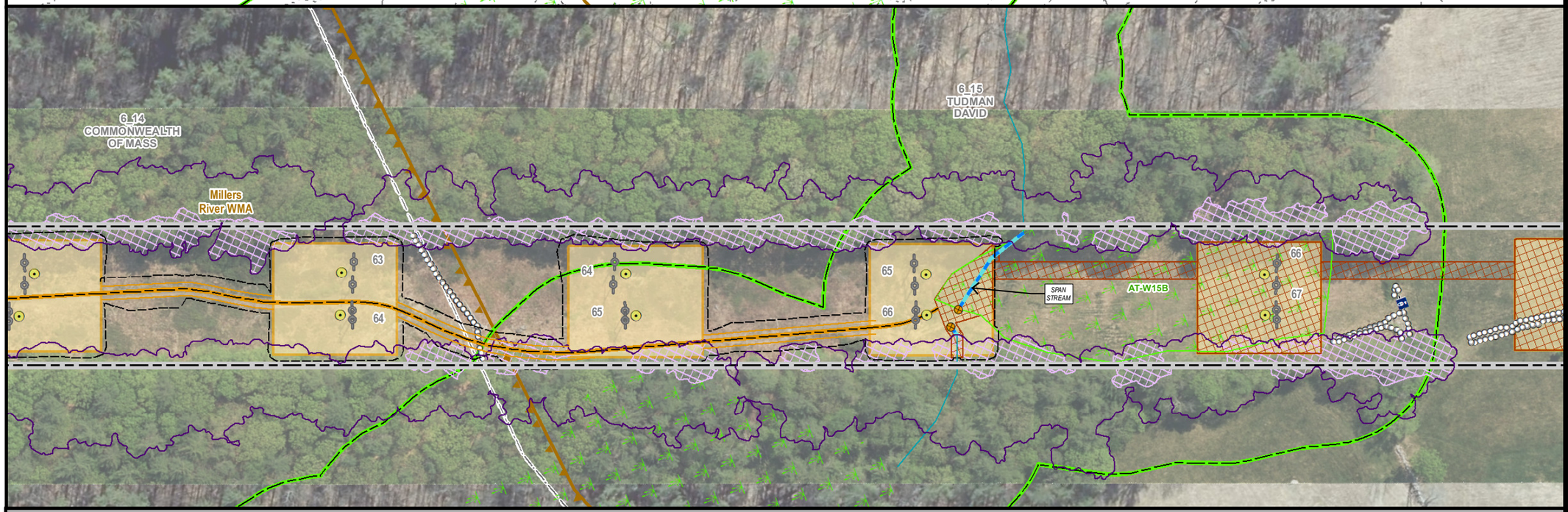
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED SINGLE CIRCUIT DELTA DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
ROYALSTON TO STRUCTURES 72 (TAP 2) & 71 (TAP 1)
STATE OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ATHOL, MA
PAGE 17 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

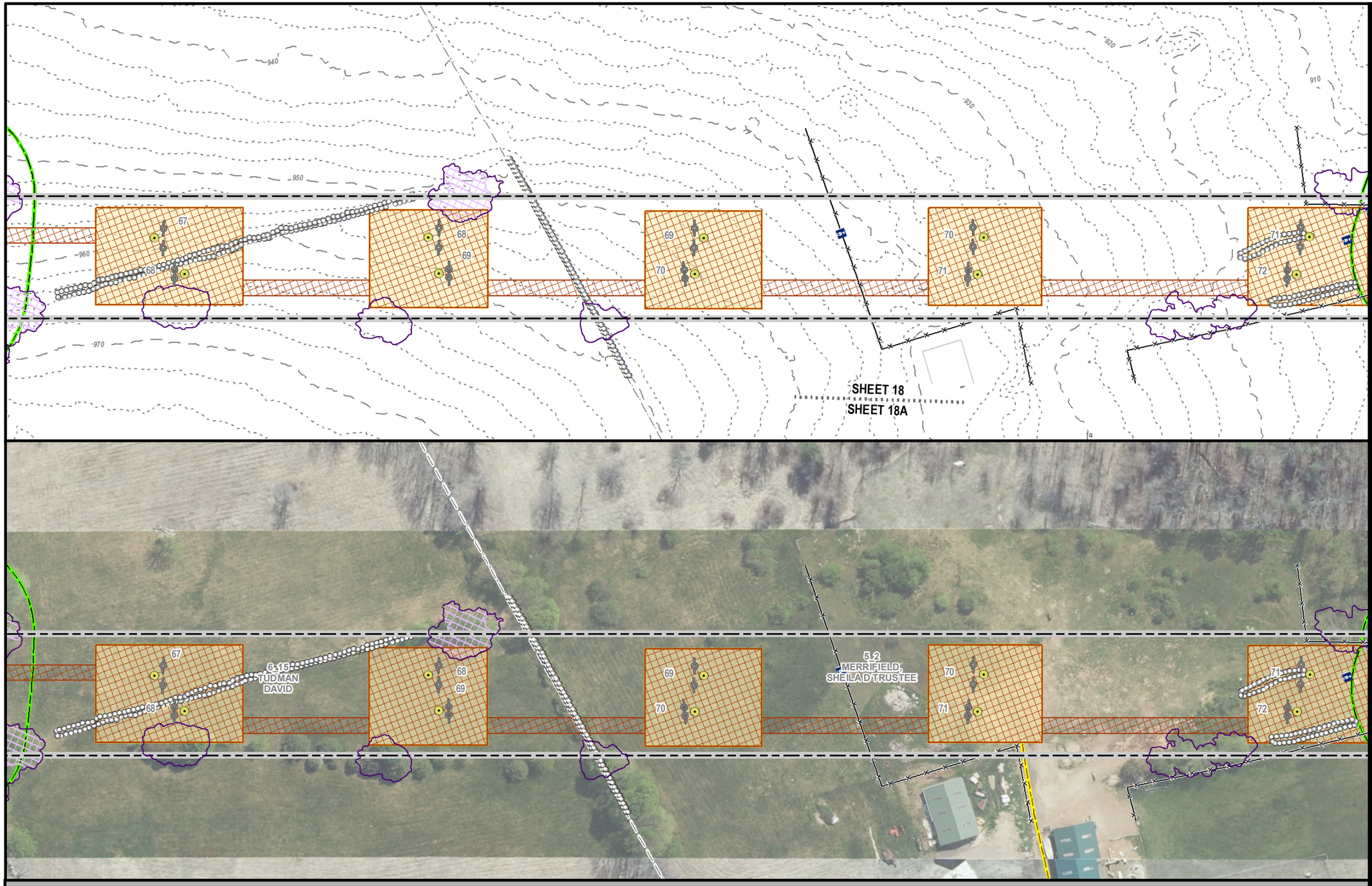
**Indicates Layers Set to Transparency*

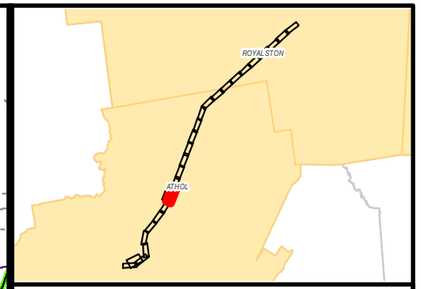
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

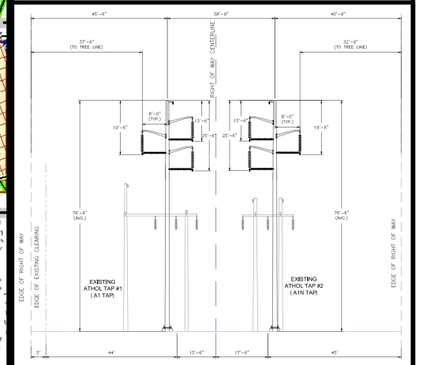
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED SINGLE CIRCUIT DELTA DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
ROYALSTON TO STRUCTURES 72 (TAP 2) & 71 (TAP 1)
STATE OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ATHOL, MA
PAGE 18 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

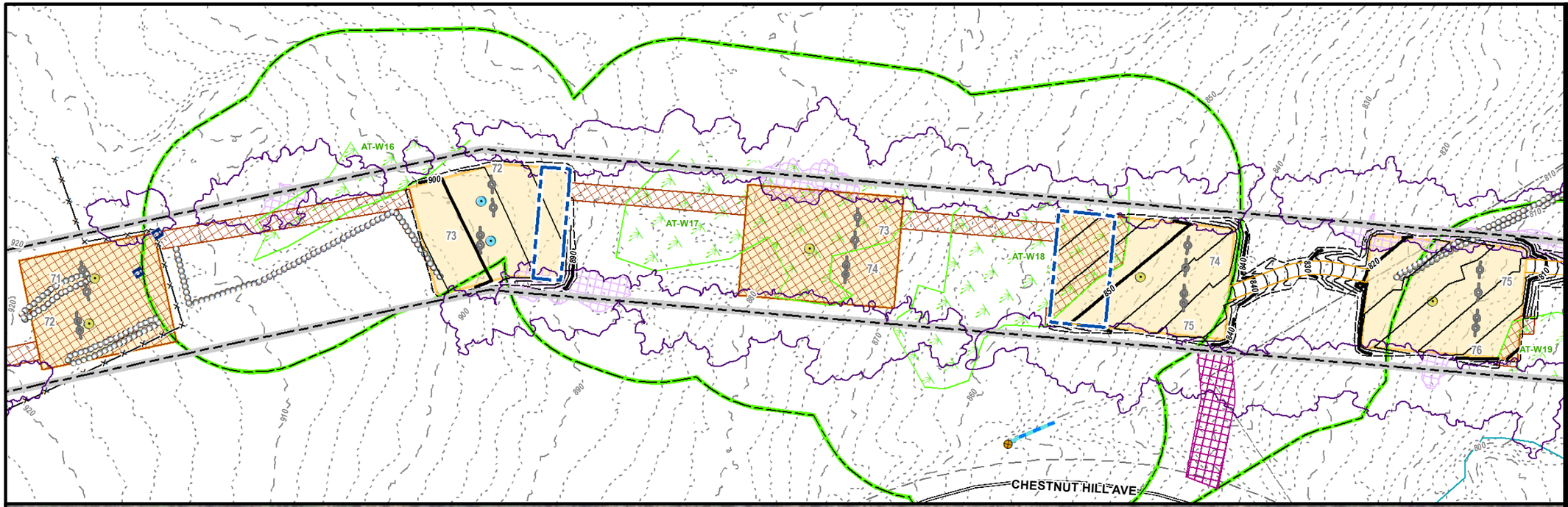
**Indicates Layers Set to Transparency*

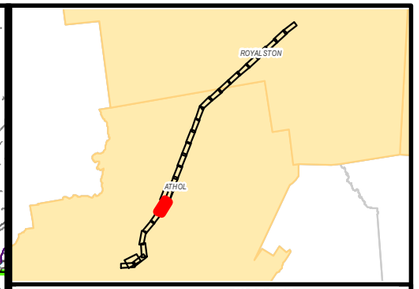
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

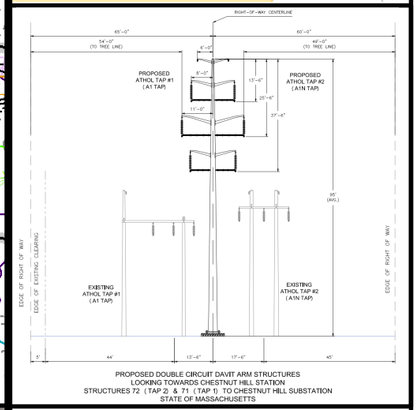
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
STRUCTURES 72 (TAP 2) & 71 (TAP 1) TO CHESTNUT HILL SUBSTATION
STATE OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ATHOL, MA
PAGE 19 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

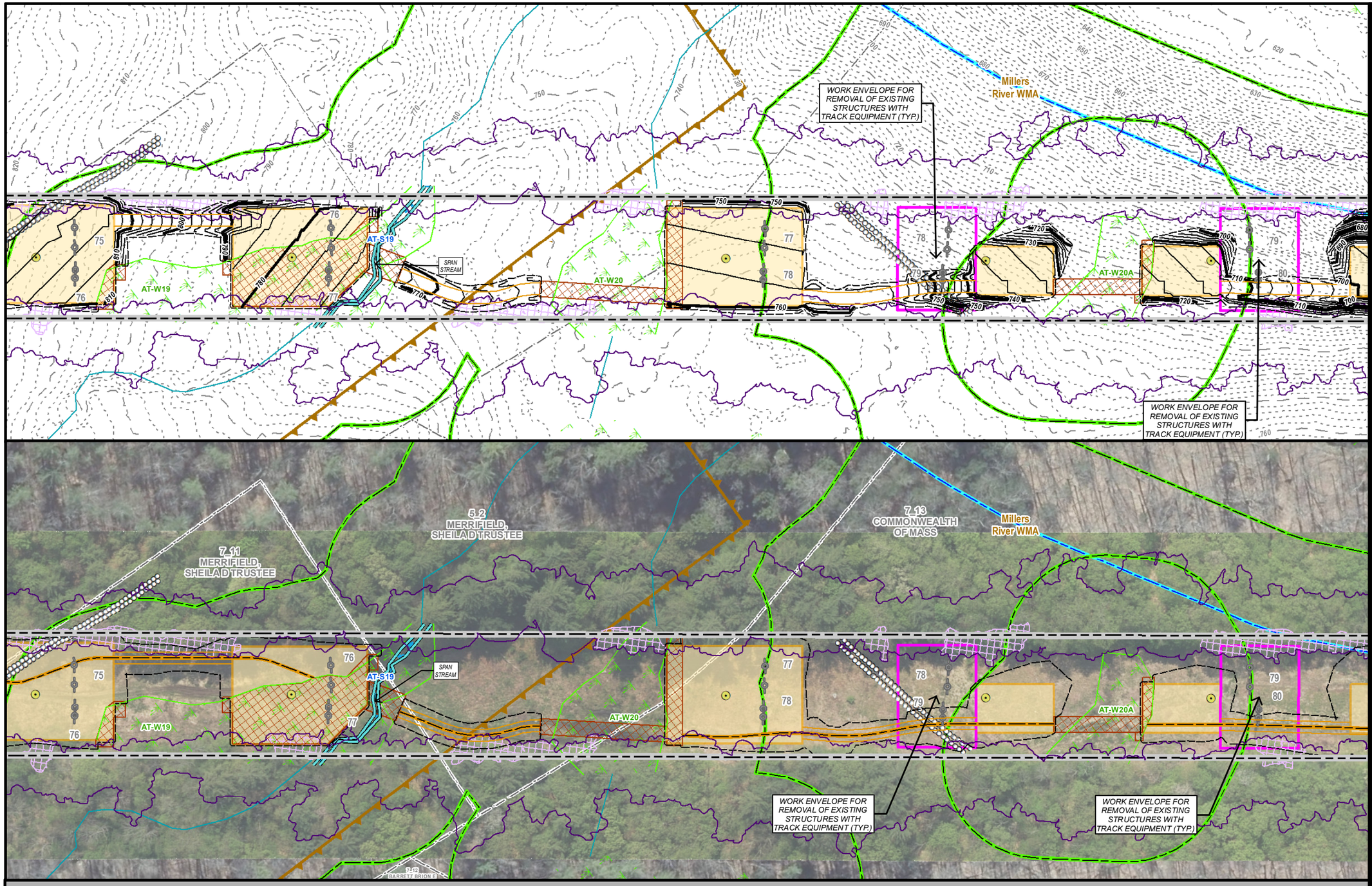
**Indicates Layers Set to Transparency*

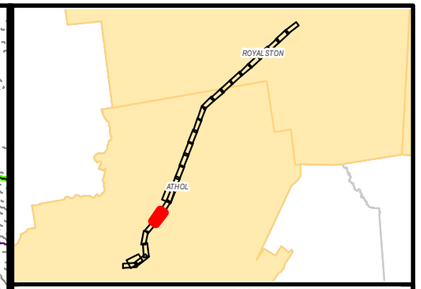
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

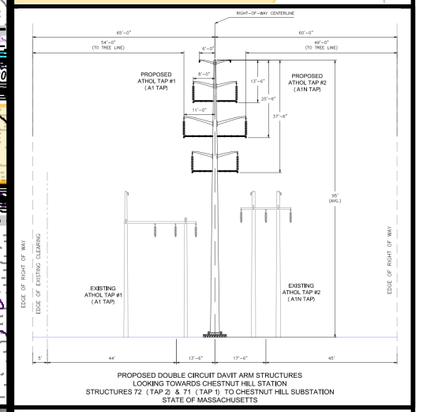
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
STRUCTURES 72 (TAP 2) & 71 (TAP 1) TO CHESTNUT HILL SUBSTATION
STATE OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ATHOL, MA
PAGE 20 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

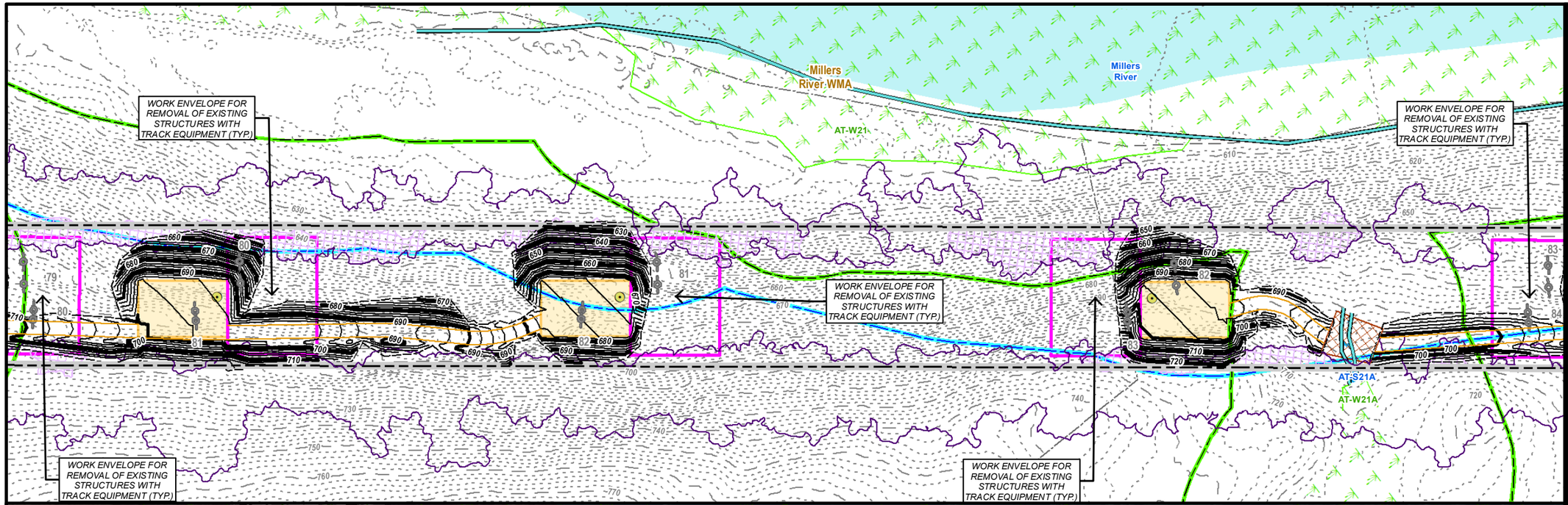
*Indicates Layers Set to Transparency

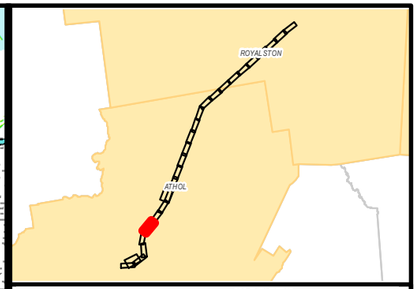
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

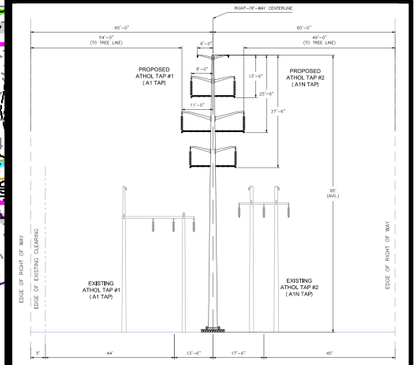
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

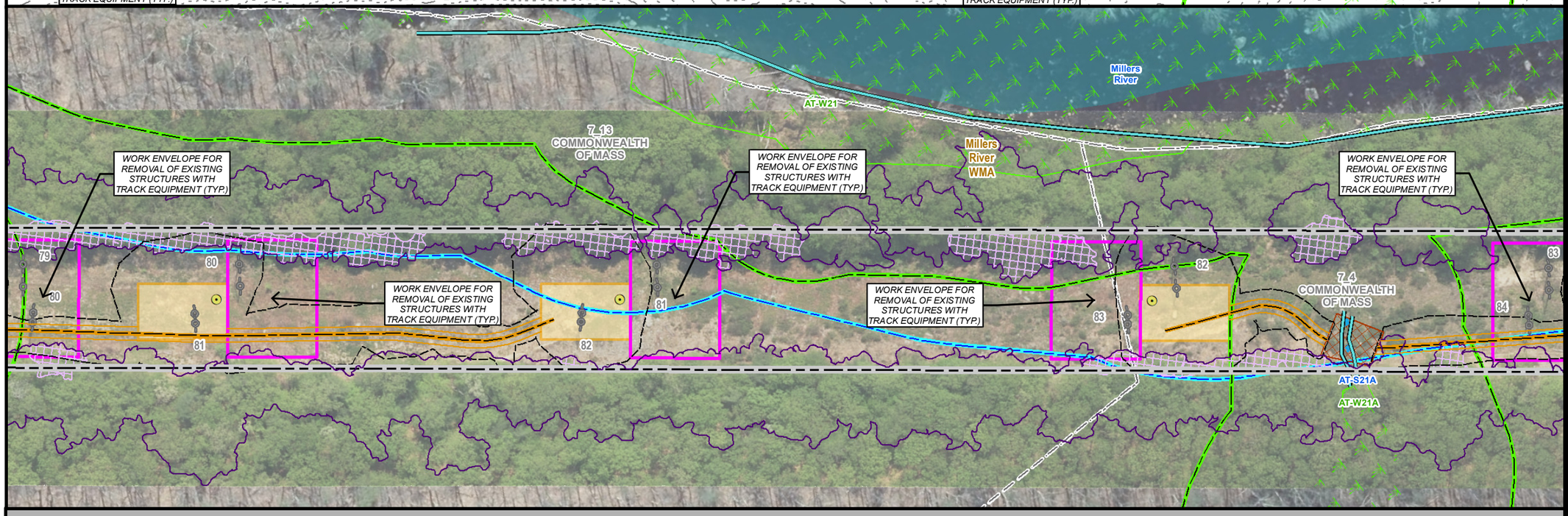
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
STRUCTURES 72 (TAP 2) & 71 (TAP 1) TO CHESTNUT HILL SUBSTATION
STATE OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ATHOL, MA
PAGE 21 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

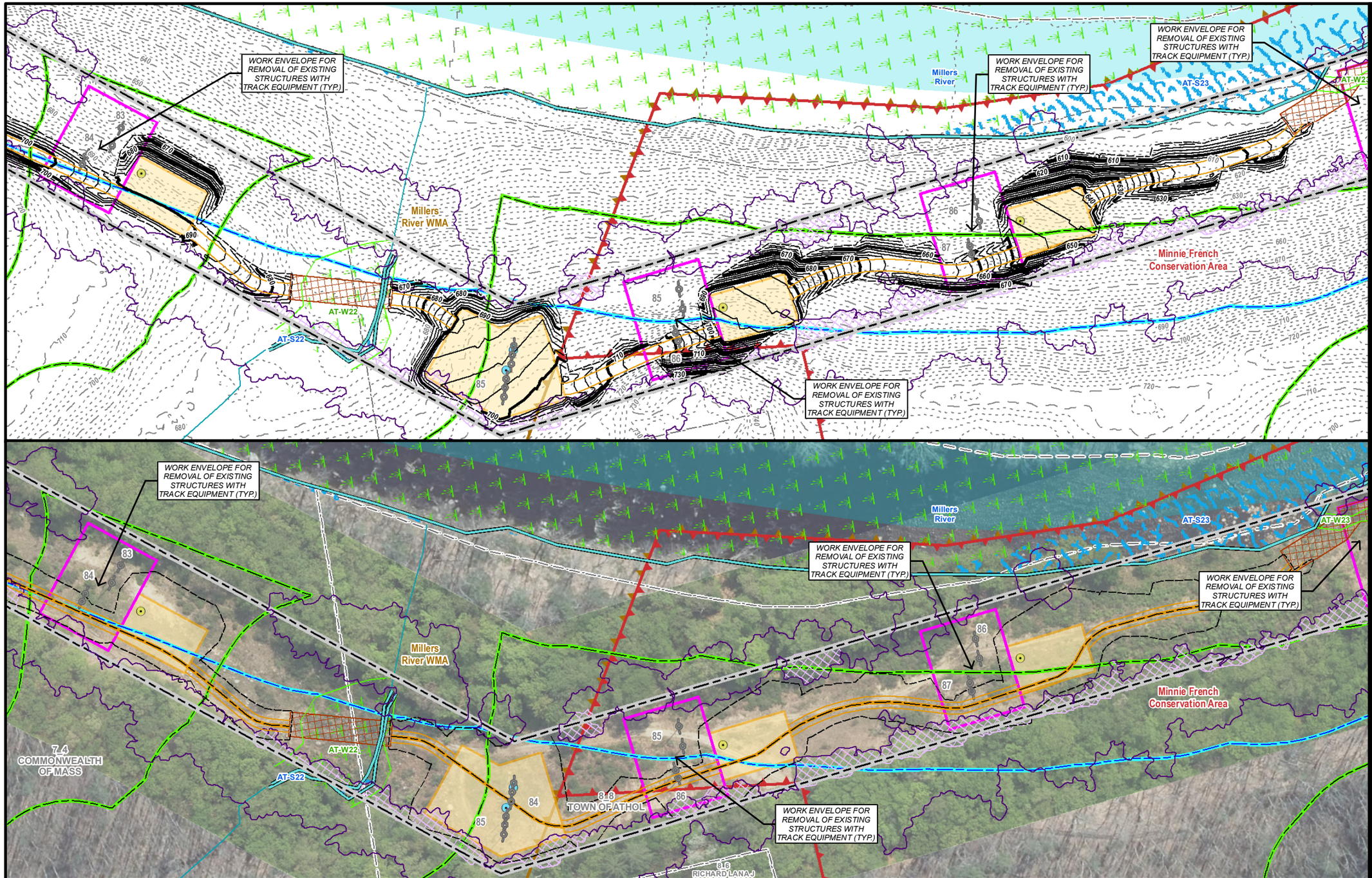
**Indicates Layers Set to Transparency*

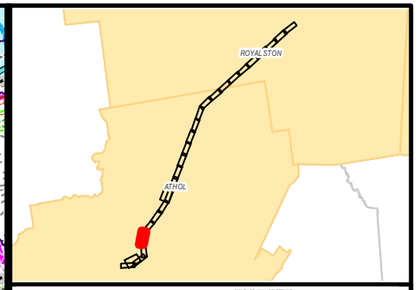
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

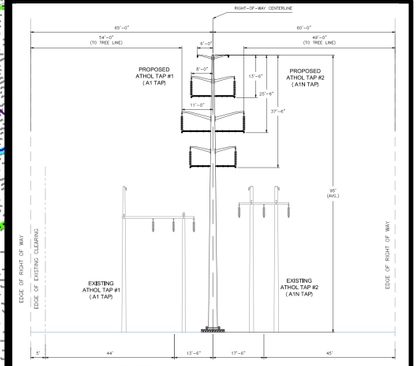
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
STRUCTURES 72 (TAP 2) & 71 (TAP 1) TO CHESTNUT HILL SUBSTATION
STATE OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ATHOL, MA
PAGE 22 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

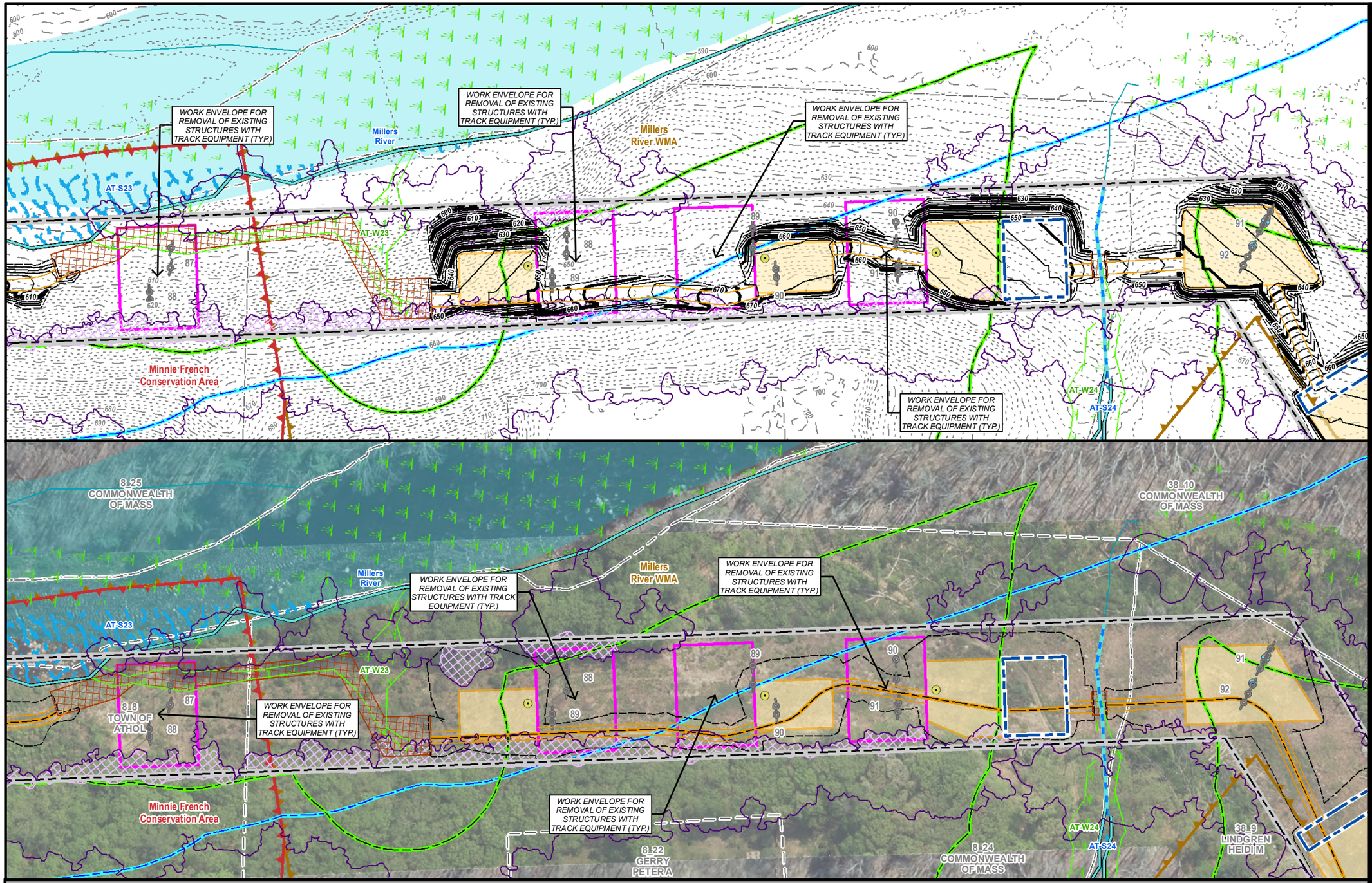
**Indicates Layers Set to Transparency*

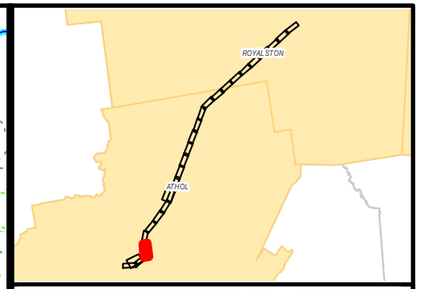
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

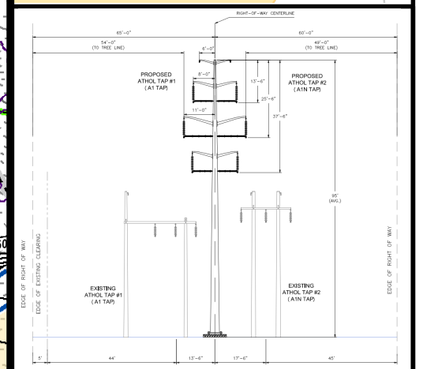
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ATHOL, MA
PAGE 23 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

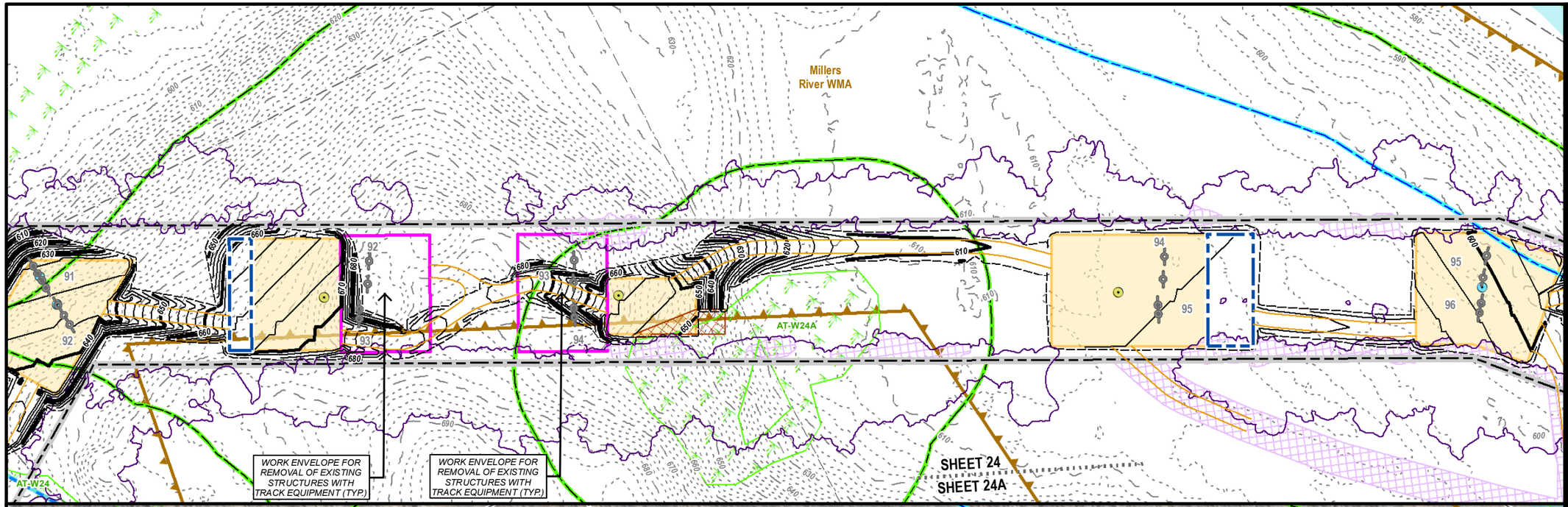
**Indicates Layers Set to Transparency*

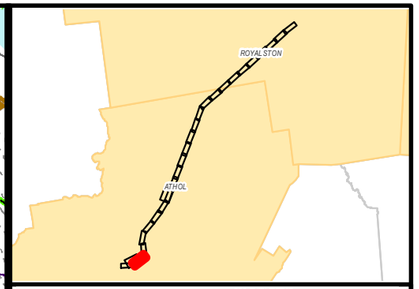
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

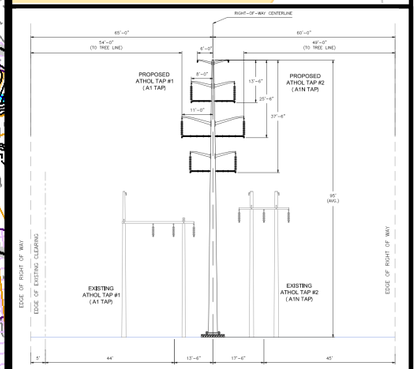
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

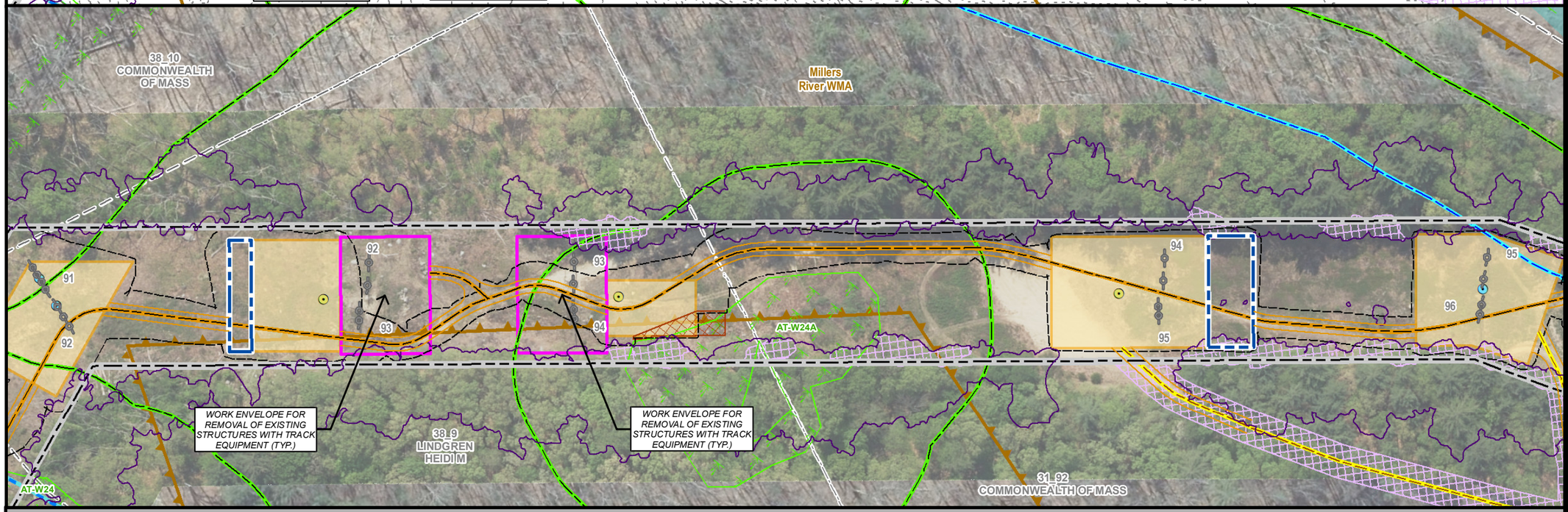
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
STRUCTURES 72 (TAP 2) & 71 (TAP 1) TO CHESTNUT HILL SUBSTATION
STATE OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ATHOL, MA
PAGE 24 OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

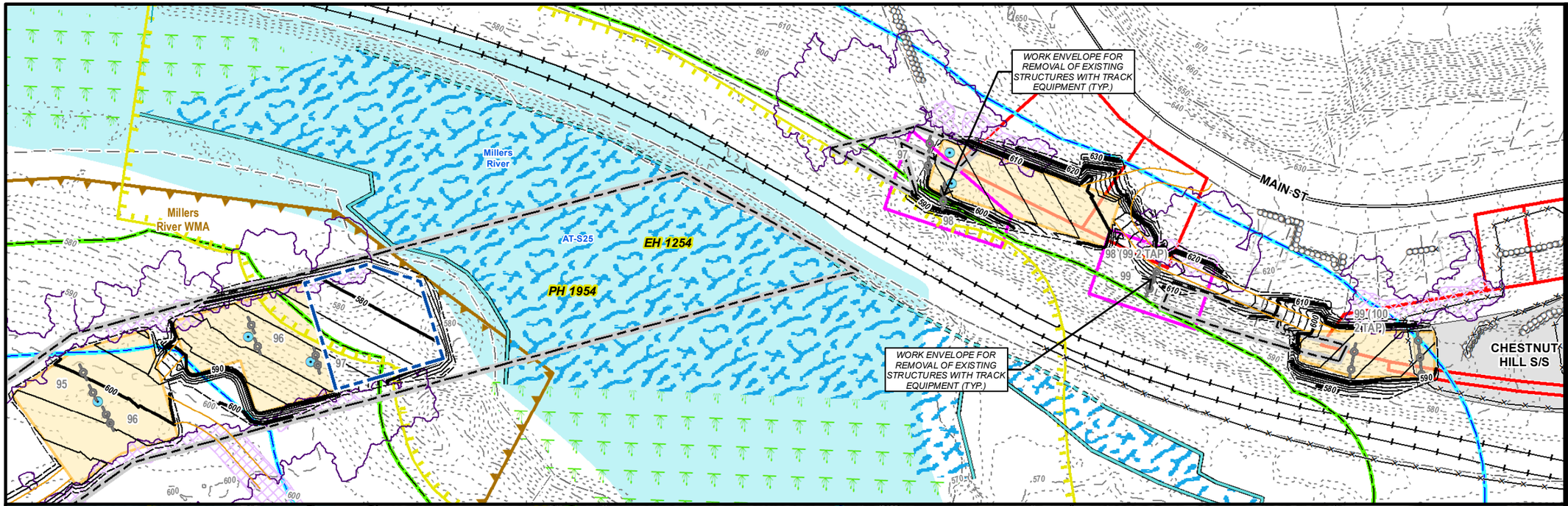
**Indicates Layers Set to Transparency*

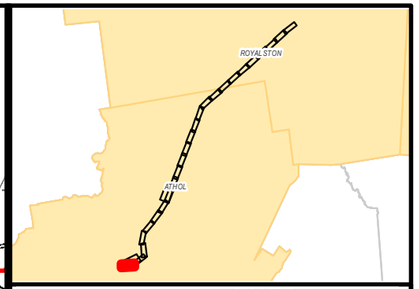
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

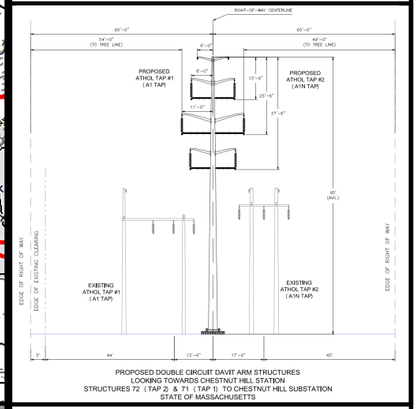
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
STRUCTURES 72 (TAP 2) & 71 (TAP 1) TO CHESTNUT HILL SUBSTATION
STATE OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ATHOL, MA
PAGE 25 OF 25

N

1 inch = 100 feet

0 50 100

Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.

Indicates Layers Set to Transparency

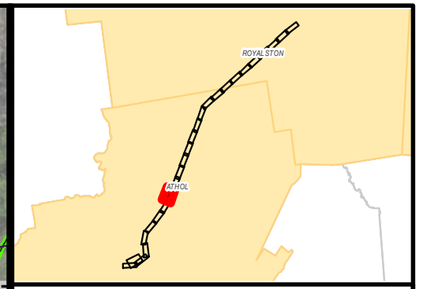
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.





MEPA General Purpose Plans

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ATHOL, MA
PAGE 18A OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

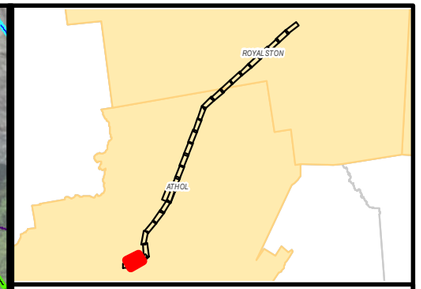
**Indicates Layers Set to Transparency*

PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.



MEPA General Purpose Plans

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ATHOL, MA
PAGE 24A OF 25

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

**Indicates Layers Set to Transparency*

PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.

Figure 2D - Crystal Lake Tap Lines

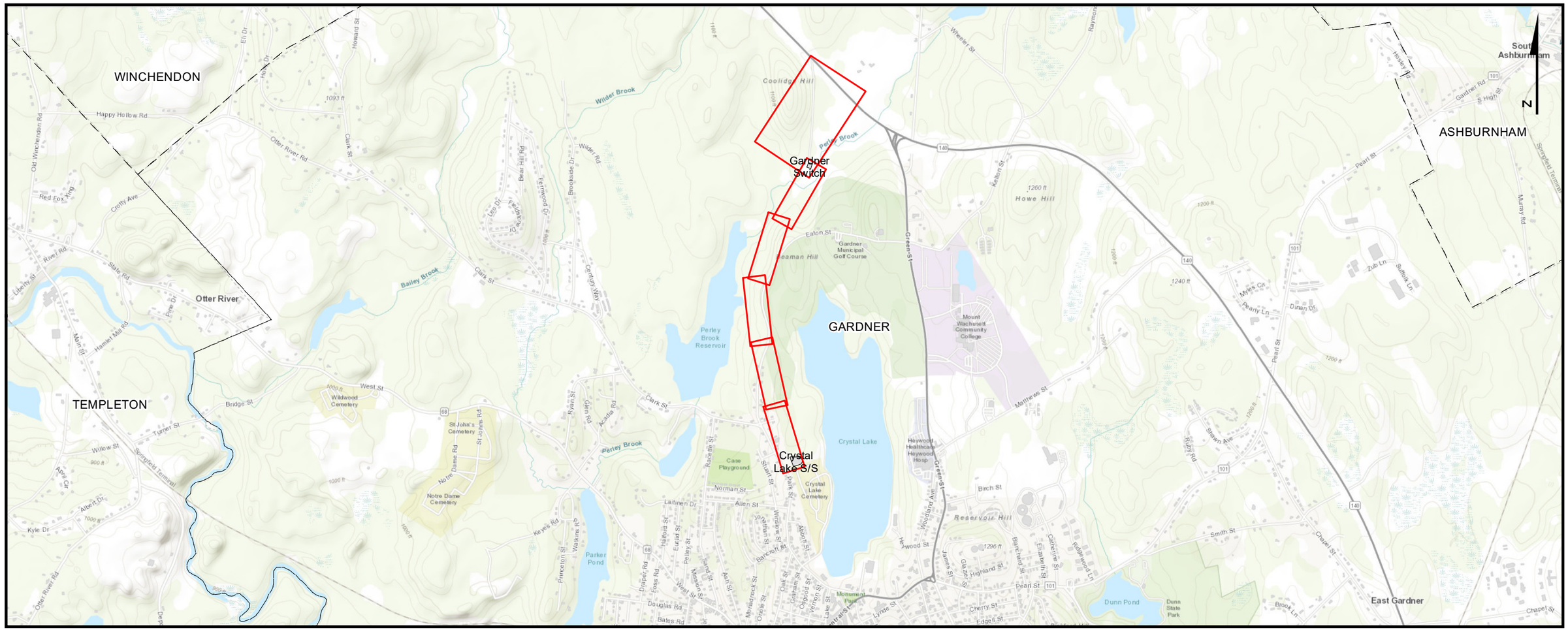
BSC Project Number: 89620.66

Asset Condition Refurbishment Project (ACR) - Crystal Lake Tap Lines

Gardner, MA

MEPA General Purpose Plans - 75% Design

October 26, 2023



PREPARED FOR:

nationalgrid

170 Data Drive
Waltham, MA 02451

INDEX OF FIGURES

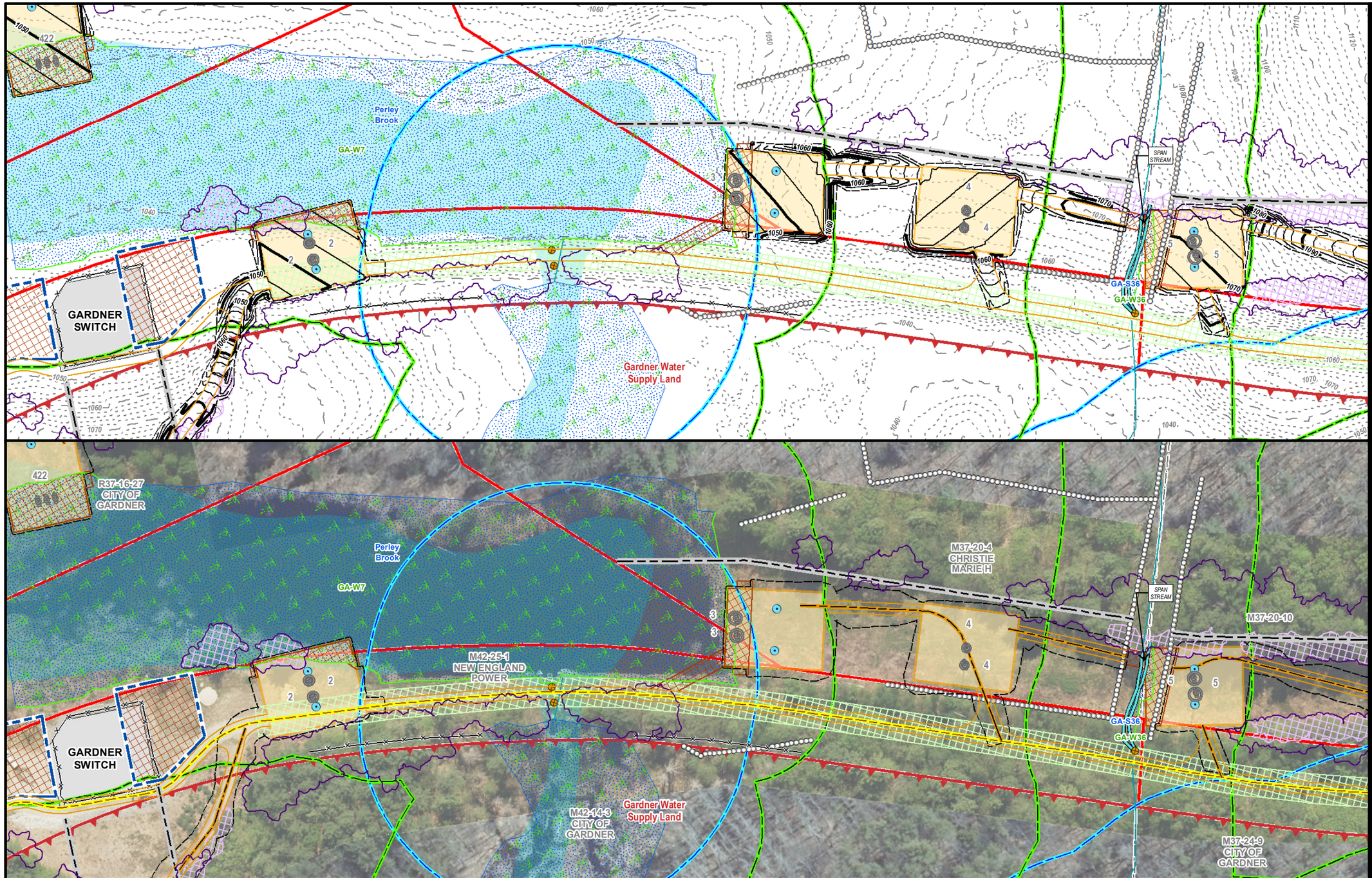
T1 - TITLE SHEET
1 - 5 - MAP SHEETS
1A - 5A - OFF ROW ACCESS SHEETS

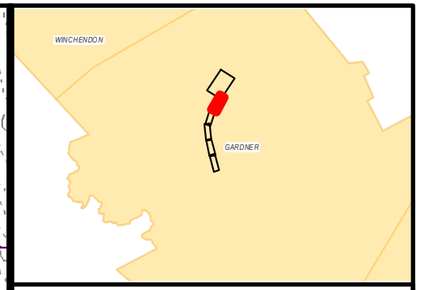
ISSUED FOR PERMITTING
NOT CONSTRUCTION

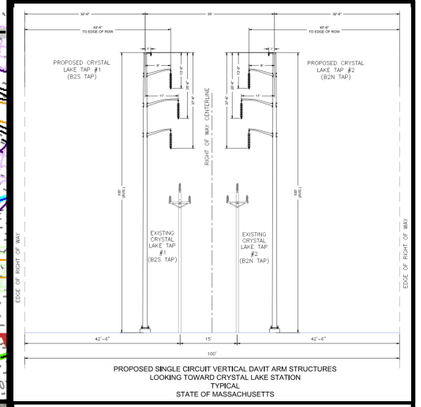
PREPARED BY:

BSC GROUP

1 Mercantile Street Suite 601
Worcester, MA 01608







MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - CRYSTAL LAKE TAP LINES

GARDNER, MA
PAGE 1 OF 5

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

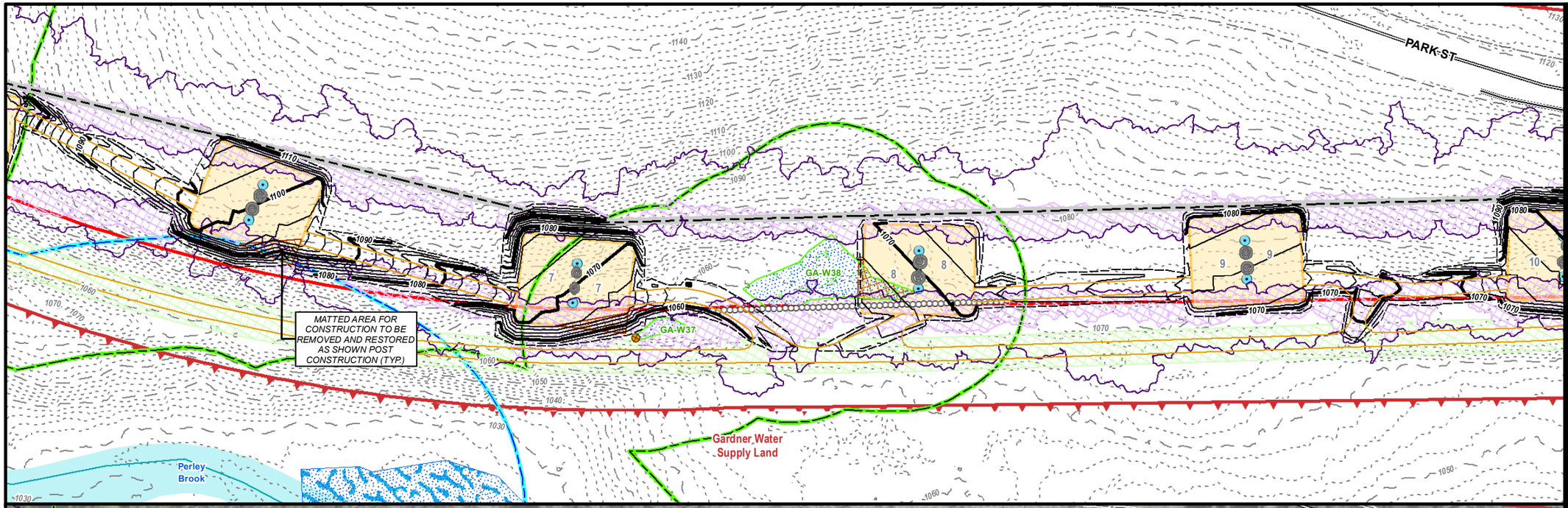
**Indicates Layers Set to Transparency*

PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

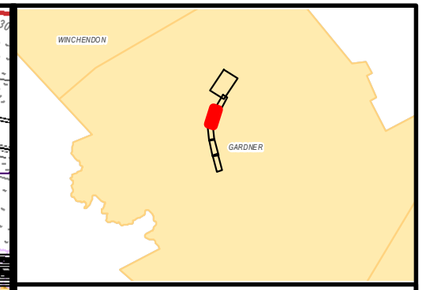
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

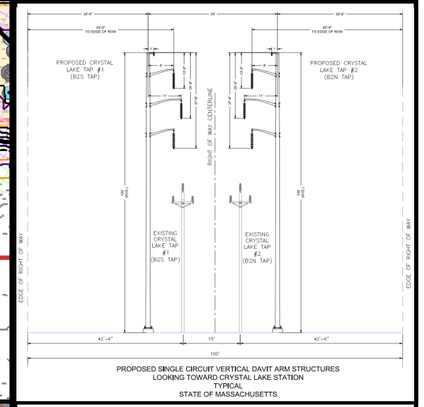
Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.









PROPOSED SINGLE CIRCUIT VERTICAL DAVIT ARM STRUCTURES
LOOKING TOWARD CRYSTAL LAKE STATION
TYPICAL
STATE OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - CRYSTAL LAKE TAP LINES

GARDNER, MA
PAGE 2 OF 5

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

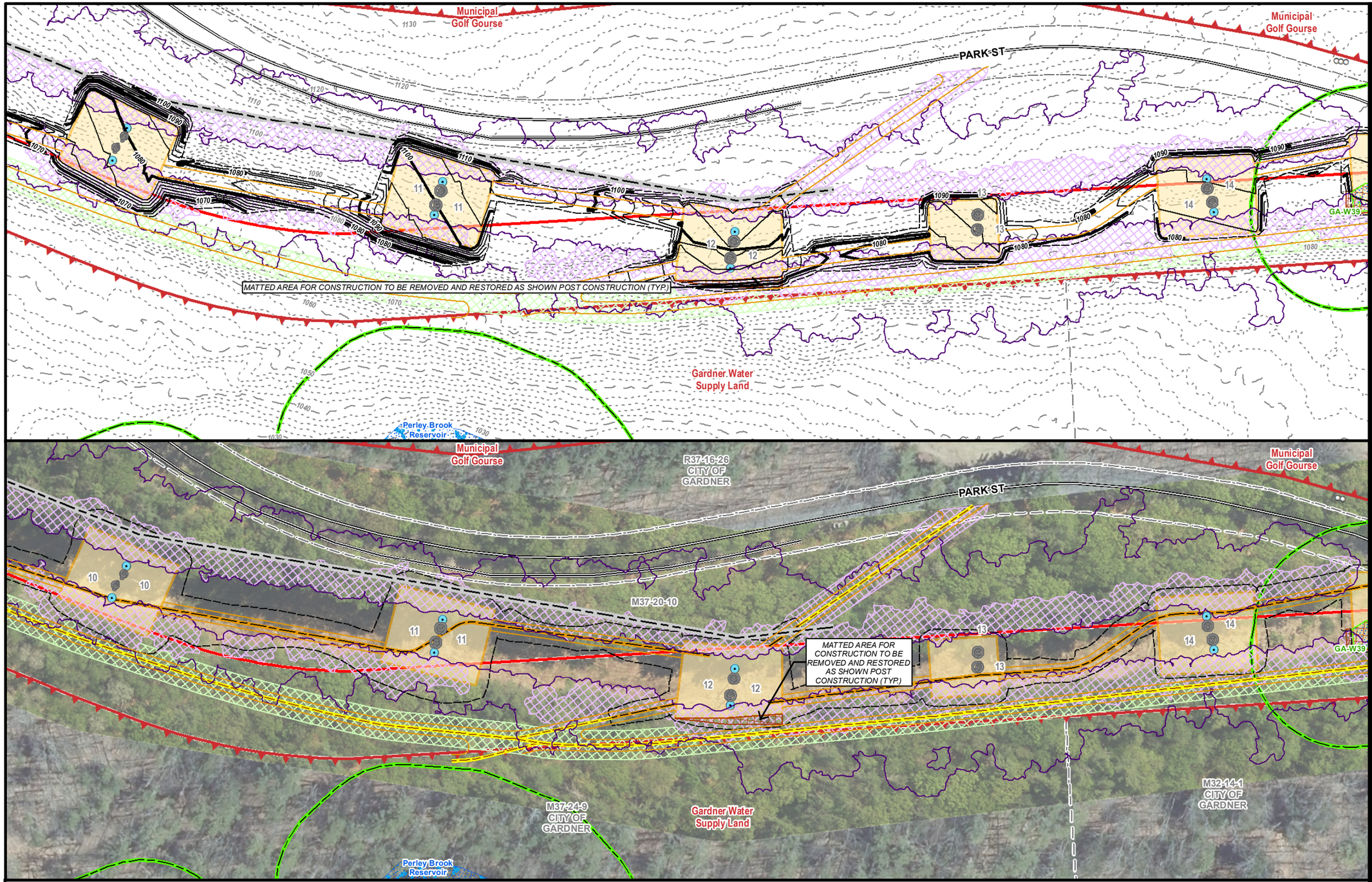
**Indicates Layers Set to Transparency*

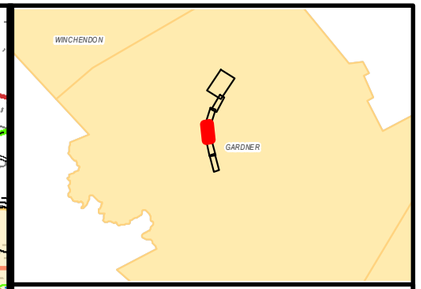
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

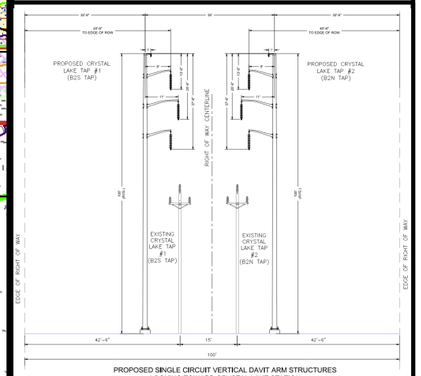
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED SINGLE CIRCUIT VERTICAL DAVIT ARM STRUCTURES
LOOKING TOWARD CRYSTAL LAKE STATION
TYPICAL
STATE OF MASSACHUSETTS

MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - CRYSTAL LAKE TAP LINES

GARDNER, MA
PAGE 3 OF 5

N

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

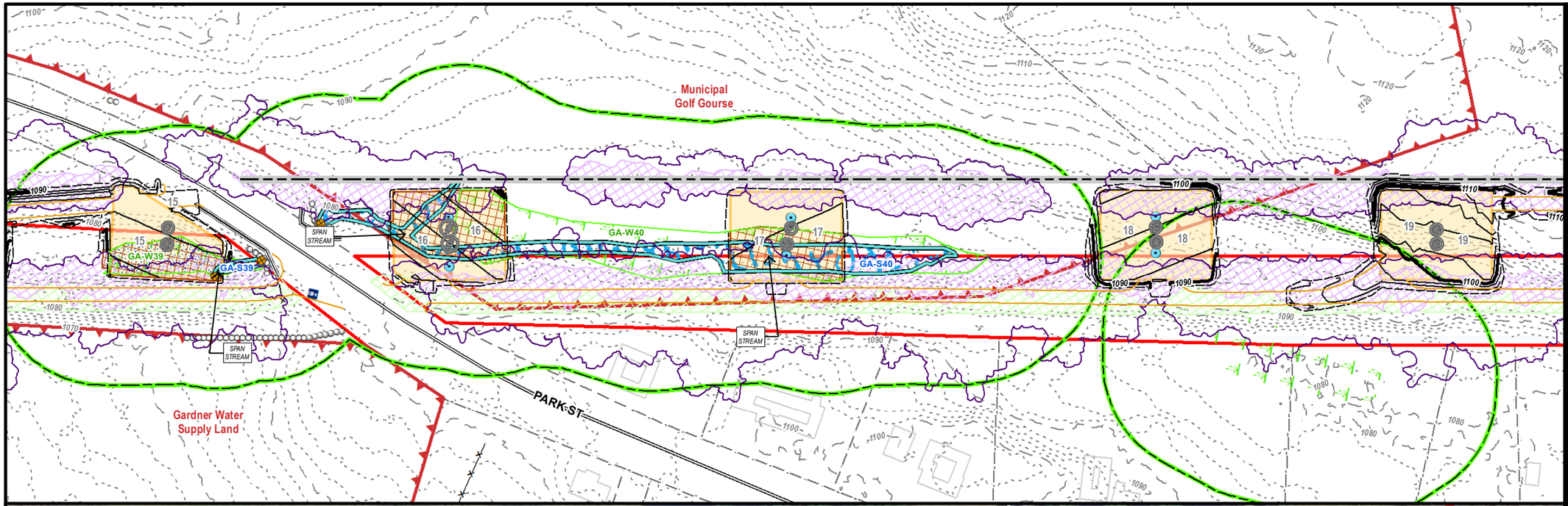
**Indicates Layers Set to Transparency*

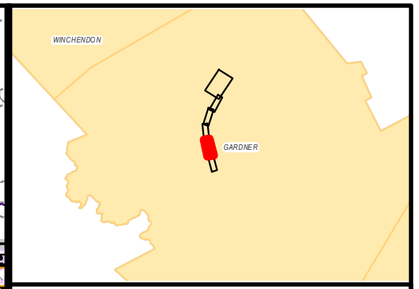
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

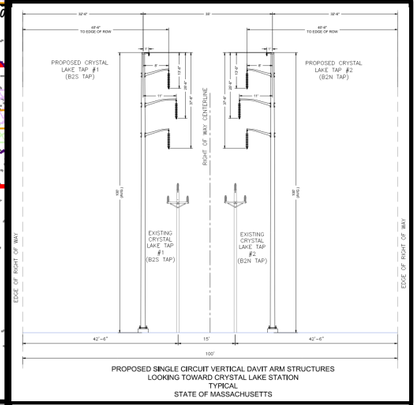
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

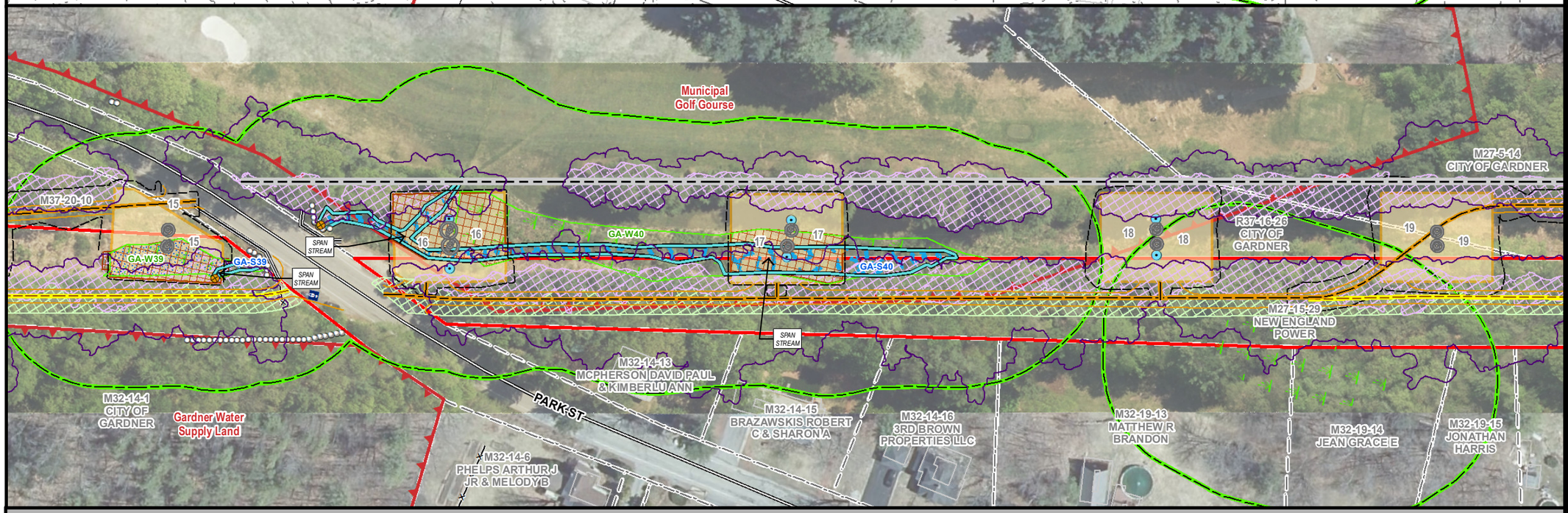
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED SINGLE CIRCUIT VERTICAL DAVIT ARM STRUCTURES
LOOKING TOWARD CRYSTAL LAKE STATION
TYPICAL
STATE OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - CRYSTAL LAKE TAP LINES

GARDNER, MA
PAGE 4 OF 5

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

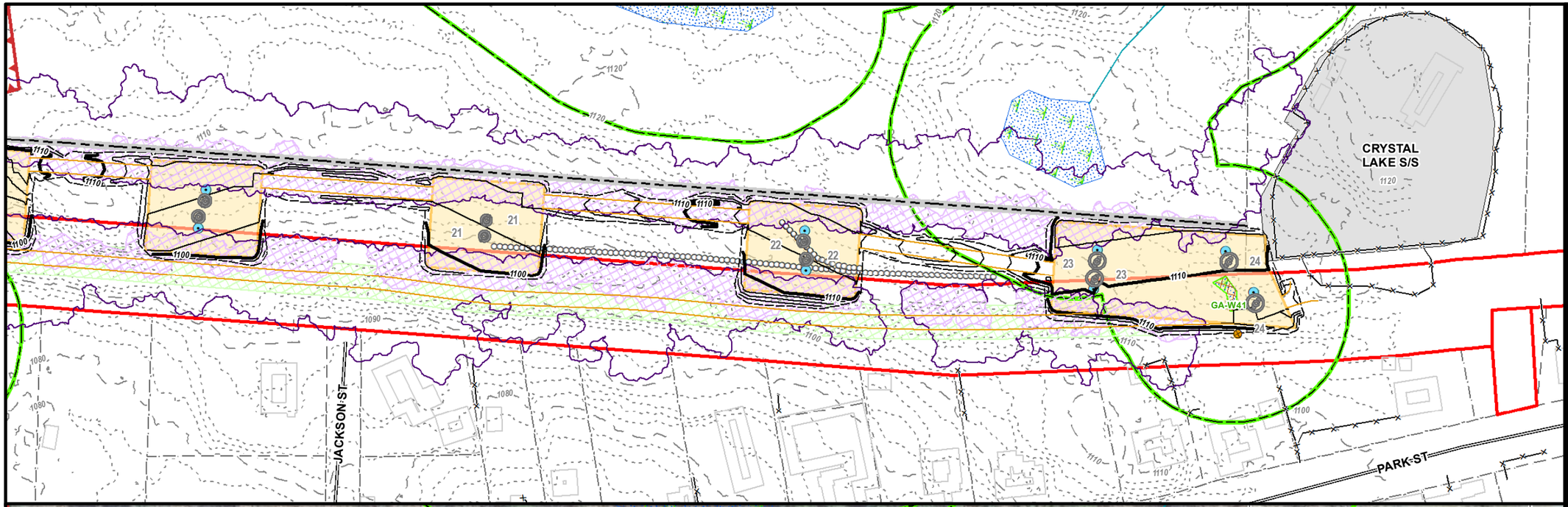
**Indicates Layers Set to Transparency*

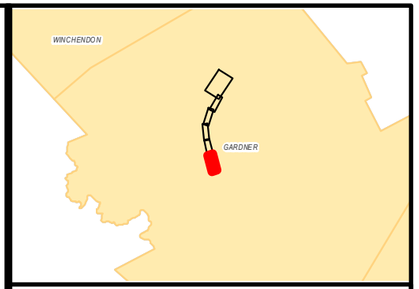
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

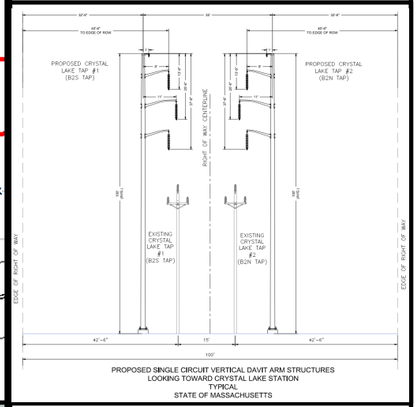
PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

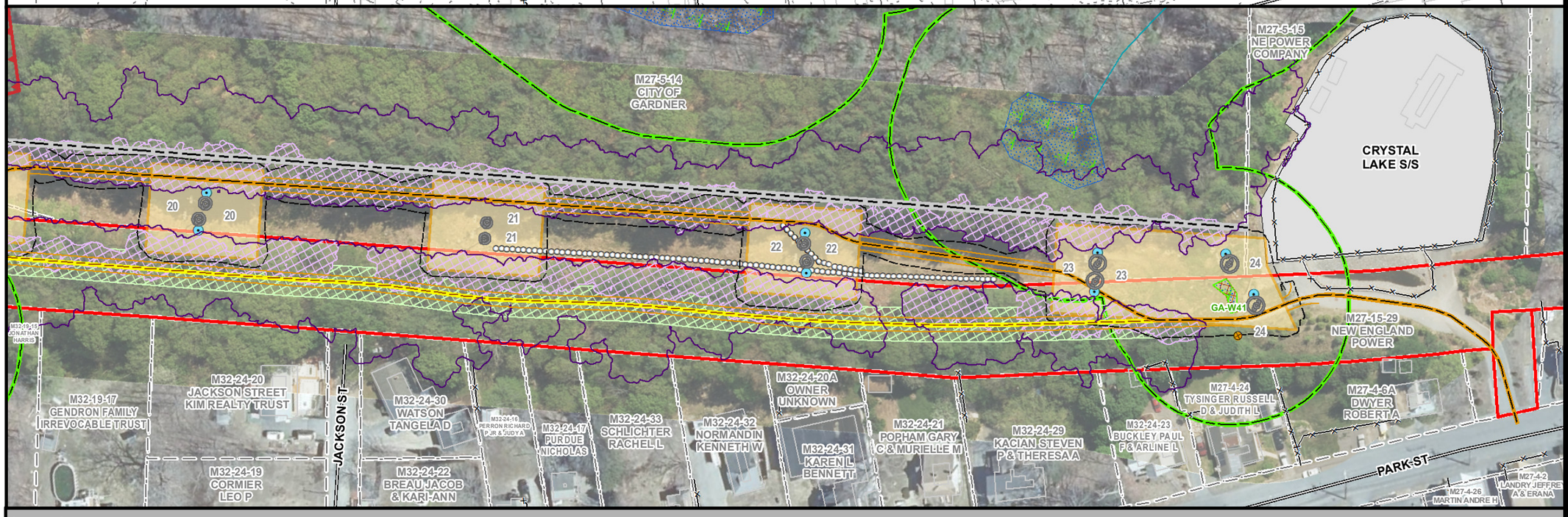
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.







PROPOSED SINGLE CIRCUIT VERTICAL DAVIT ARM STRUCTURES
LOOKING TOWARD CRYSTAL LAKE STATION
TYPICAL
STATE OF MASSACHUSETTS



MEPA General Purpose Plans

PLANIMETRIC & AERIAL

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - CRYSTAL LAKE TAP LINES

GARDNER, MA
PAGE 5 OF 5

1 inch = 100 feet
0 50 100
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail
- Existing Minor Contour
- Existing Major Contour
- Proposed Major Contour
- Proposed Minor Contour

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.**

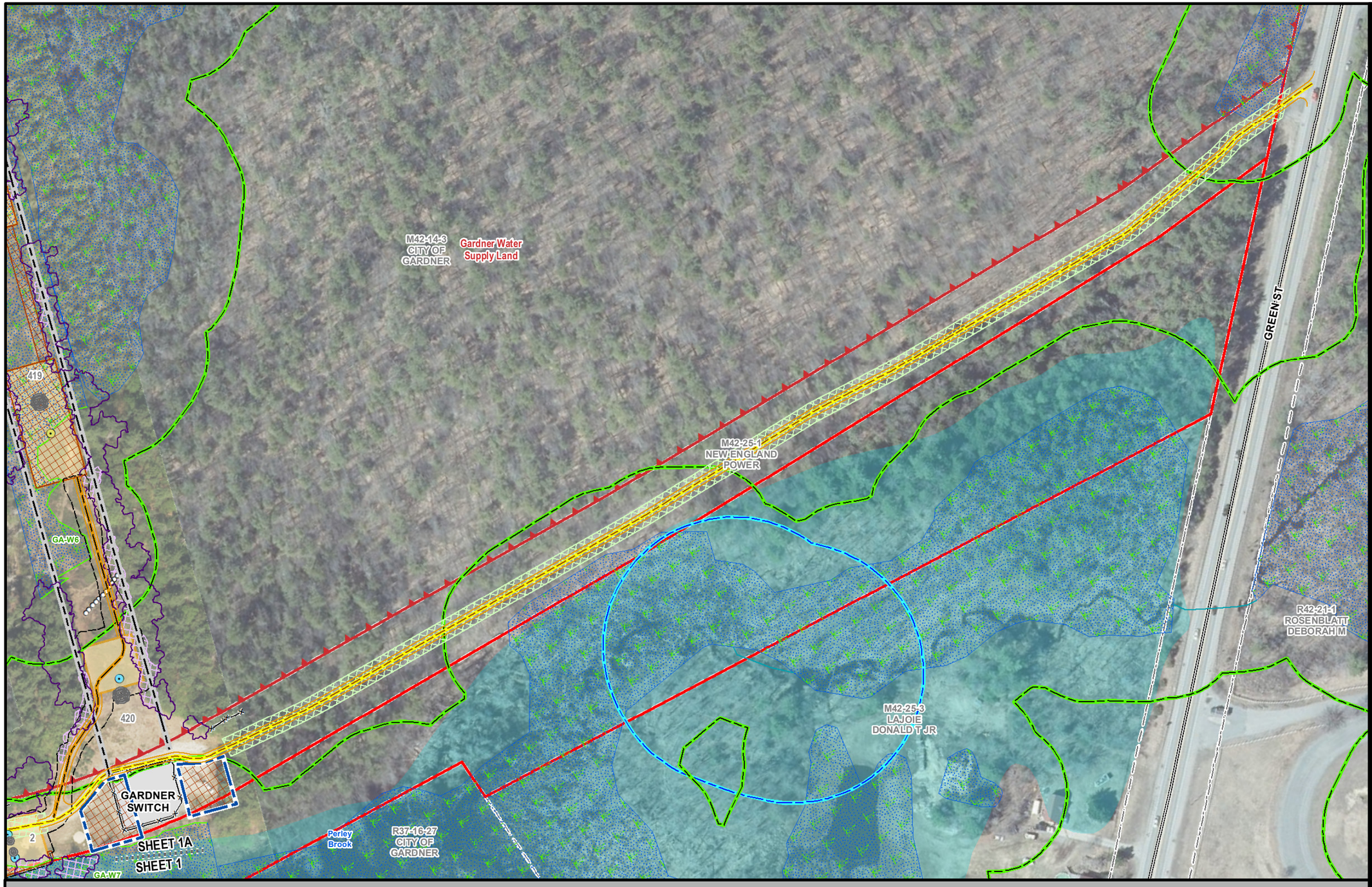
***Indicates Layers Set to Transparency**

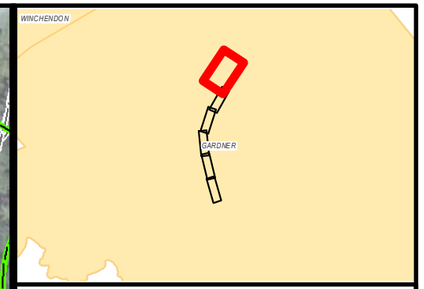
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.





MEPA General Purpose Plans

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - CRYSTAL LAKE TAP LINES

GARDNER, MA
PAGE 1A OF 5

1 inch = 150 feet
0 80 160
Feet

Legend

- Install Structure (Concrete Caisson)
- Install Structure (Direct Embed)
- Existing Structure to be Removed
- Edge of ROW
- Designed Road Type 3-5
- Standard Road Type 1 & 2
- Existing Access
- Proposed Road Limits
- Construction Matting
- Work Pad**
- Track Equipment Only
- Pull Pad
- Limit of Cut/Fill
- Wetland Edge
- Wetland Area*
- Vernal Pool Extent*
- Stream Bank
- Stream Centerline
- Ordinary High Water
- Approximate Stream Bank
- Approximate Centerline
- Approximate Ordinary High Water
- Approximate Swale
- State Stream
- Open Water
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority & Estimated Habitat
- Outstanding Resource Water
- MADEP (21E) Site
- MADEP AUL Site
- DCR Trails
- Hiking Trails
- Long Distance Trails
- Railroad
- Streets
- Town Boundary
- State Boundary
- National Grid Property
- Parcel Boundary
- Existing Tree Line
- Tree Removal
- Selective Tree Removal
- Pruning
- Gate
- Culvert
- Fence
- Stonewall
- Guardrail

Article 97 Lands

- DCR-State Parks & Recreation
- Department of Fish & Game
- Land Trust
- Municipal
- Private

***Hybrid work envelopes (part temp. construction matting and part gravel) may display contours within a wetland that are representative of matted work area elevations.*

**Indicates Layers Set to Transparency*

PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

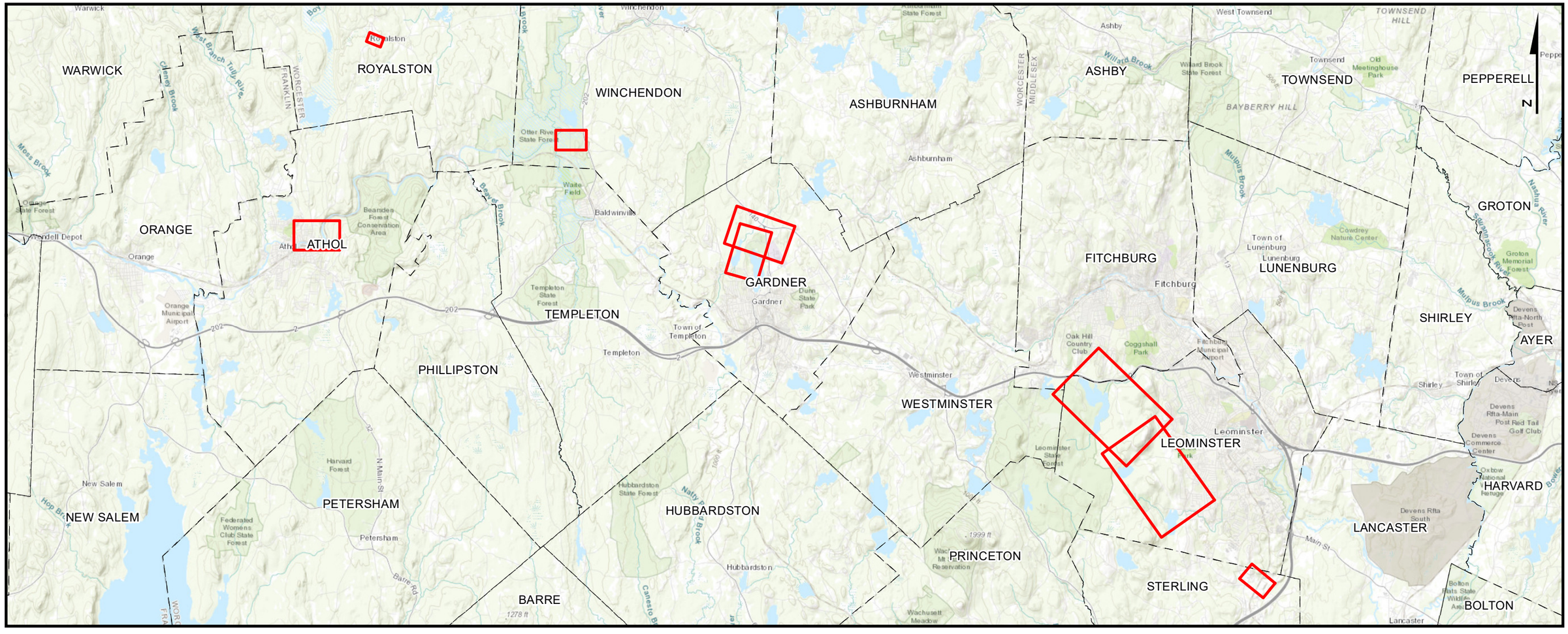
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.

Figure 3 - Water Supply Protection Areas

BSC Project Number: 89620.66

Asset Condition Refurbishment Project (ACR) - A1/B2

Water Supply Protection Areas
Royalston, Winchendon, Gardner, Fitchburg, Leominster, Sterling, & Athol, MA
October 27, 2023



PREPARED FOR:

nationalgrid

170 Data Drive
Waltham, MA 02451

INDEX OF FIGURES

T1 - TITLE SHEET
1 - 8 - MAP SHEETS

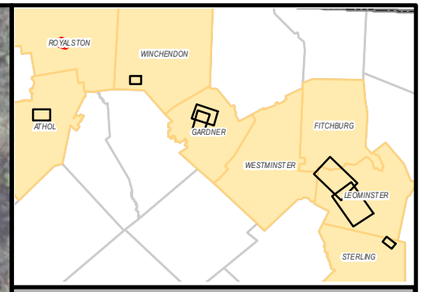
ISSUED FOR PERMITTING
NOT CONSTRUCTION

PREPARED BY:

BSC GROUP

1 Mercantile Street Suite 601
Worcester, MA 01608





Legend

- Existing Structure
- Edge of ROW
- Public Water Supply
- Interim Wellhead Protection Area
- Zone II Wellhead Protection Area
- Surface Water Protection Zone
- Surface Water (Active or Inactive)
- Aquifer
- Town Boundary
- National Grid Property
- Parcel Boundary
- Railroad

N

1 inch = 150 feet

0 75 150

Feet

WATER SUPPLY PROTECTION AREAS

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

ROYALSTON, MA
PAGE 1 OF 8

PREPARED FOR:

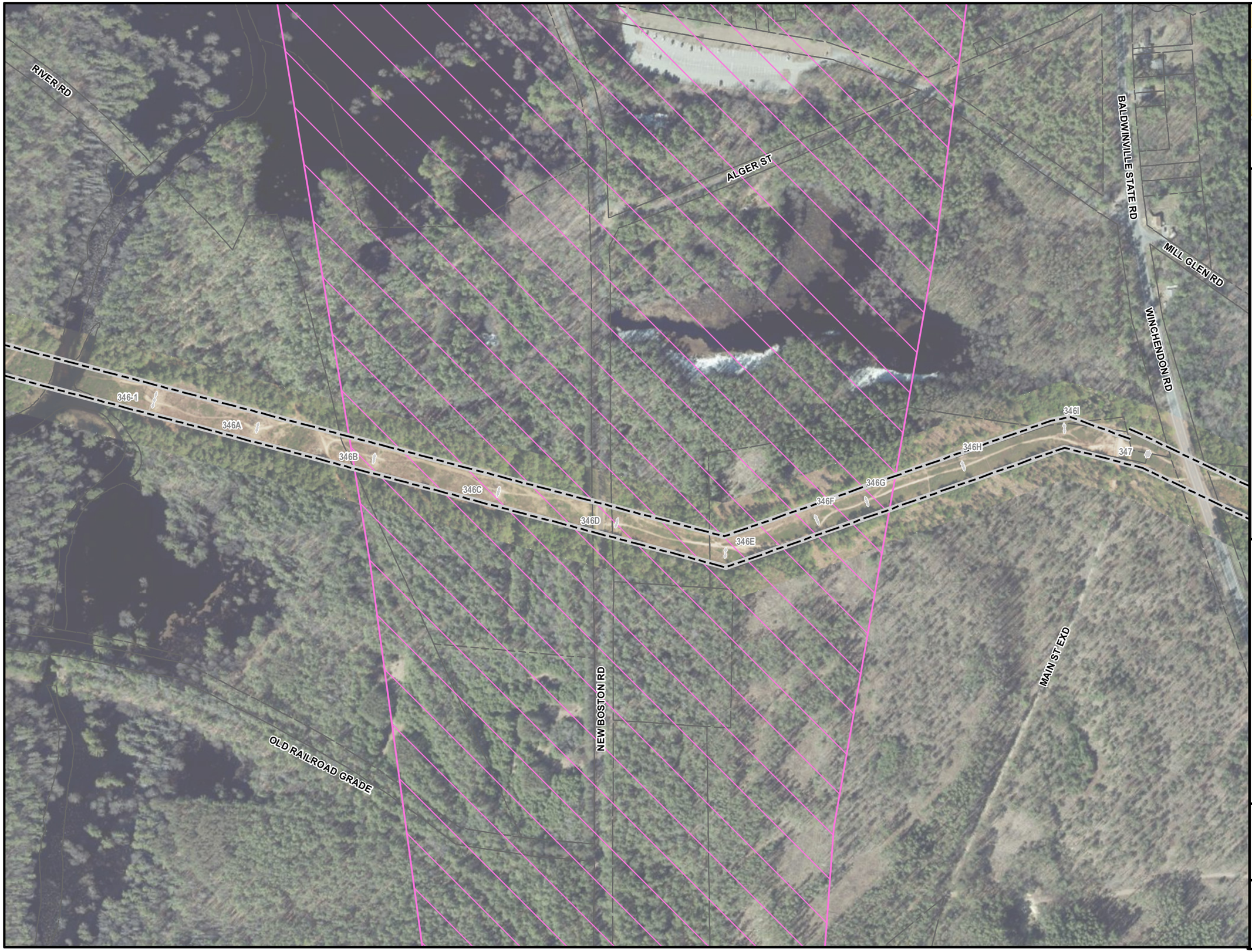
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

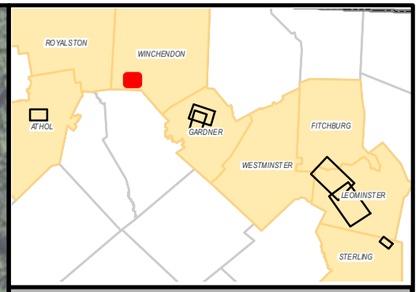
PREPARED BY:

BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.





Legend

- Existing Structure
- Edge of ROW
- Public Water Supply
- Interim Wellhead Protection Area
- Zone II Wellhead Protection Area
- Surface Water Protection Zone
- Surface Water (Active or Inactive)
- Aquifer
- Town Boundary
- National Grid Property
- Parcel Boundary
- Railroad

N

1 inch = 300 feet

0 150 300

Feet

WATER SUPPLY PROTECTION AREAS

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

WINCHENDON, MA
PAGE 2 OF 8

PREPARED FOR:

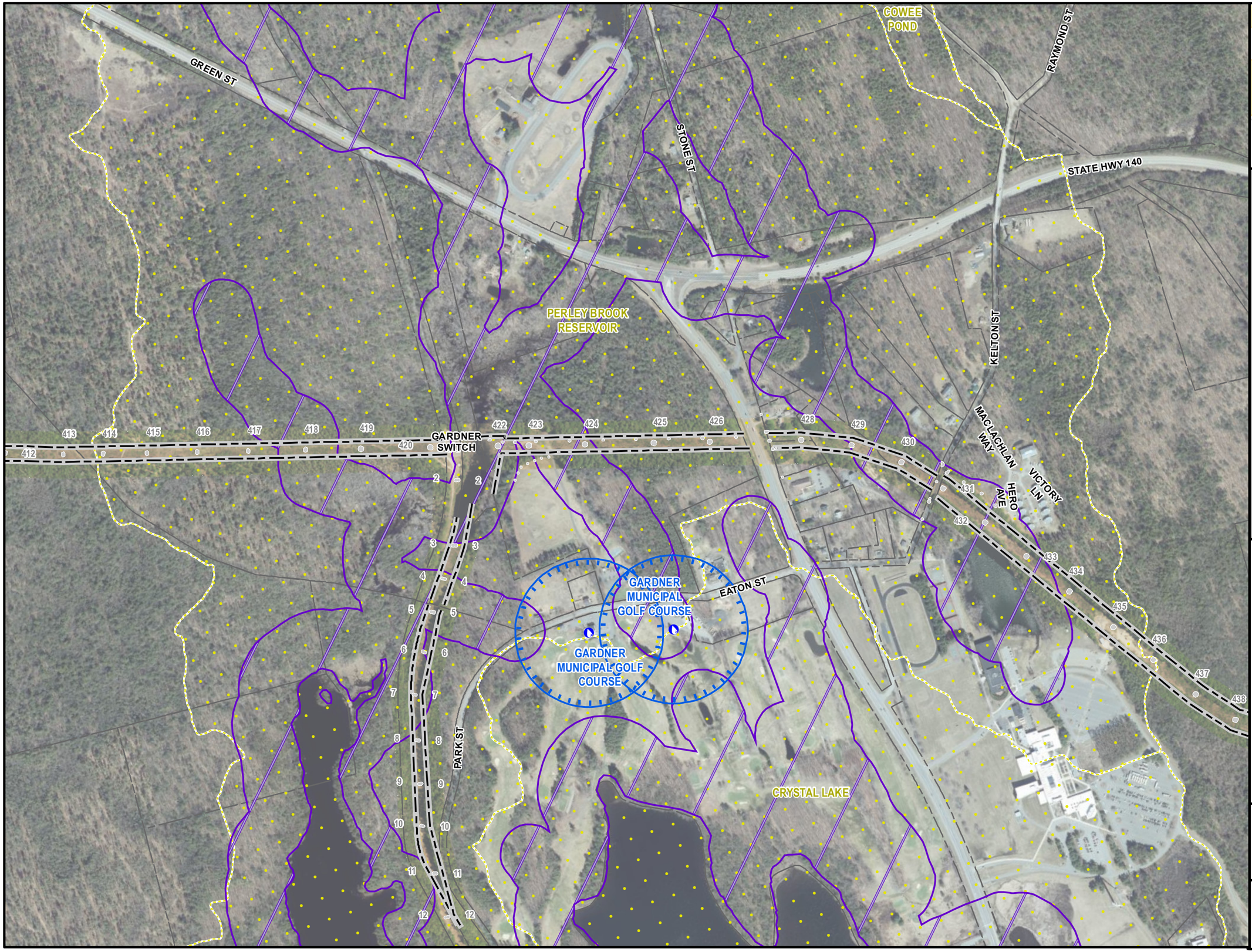
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

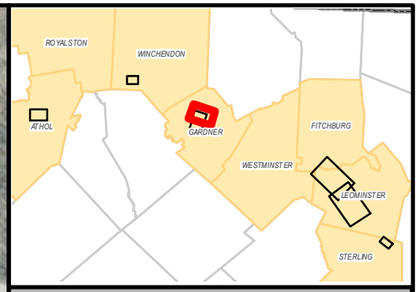
PREPARED BY:

BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.





Legend

- Existing Structure
- Edge of ROW
- Public Water Supply
- Interim Wellhead Protection Area
- Zone II Wellhead Protection Area
- Surface Water Protection Zone
- Surface Water (Active or Inactive)
- Aquifer
- Town Boundary
- National Grid Property
- Parcel Boundary
- Railroad

N

1 inch = 600 feet

0 300 600

Feet

WATER SUPPLY PROTECTION AREAS

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE

GARDNER, MA
PAGE 3 OF 8

PREPARED FOR:

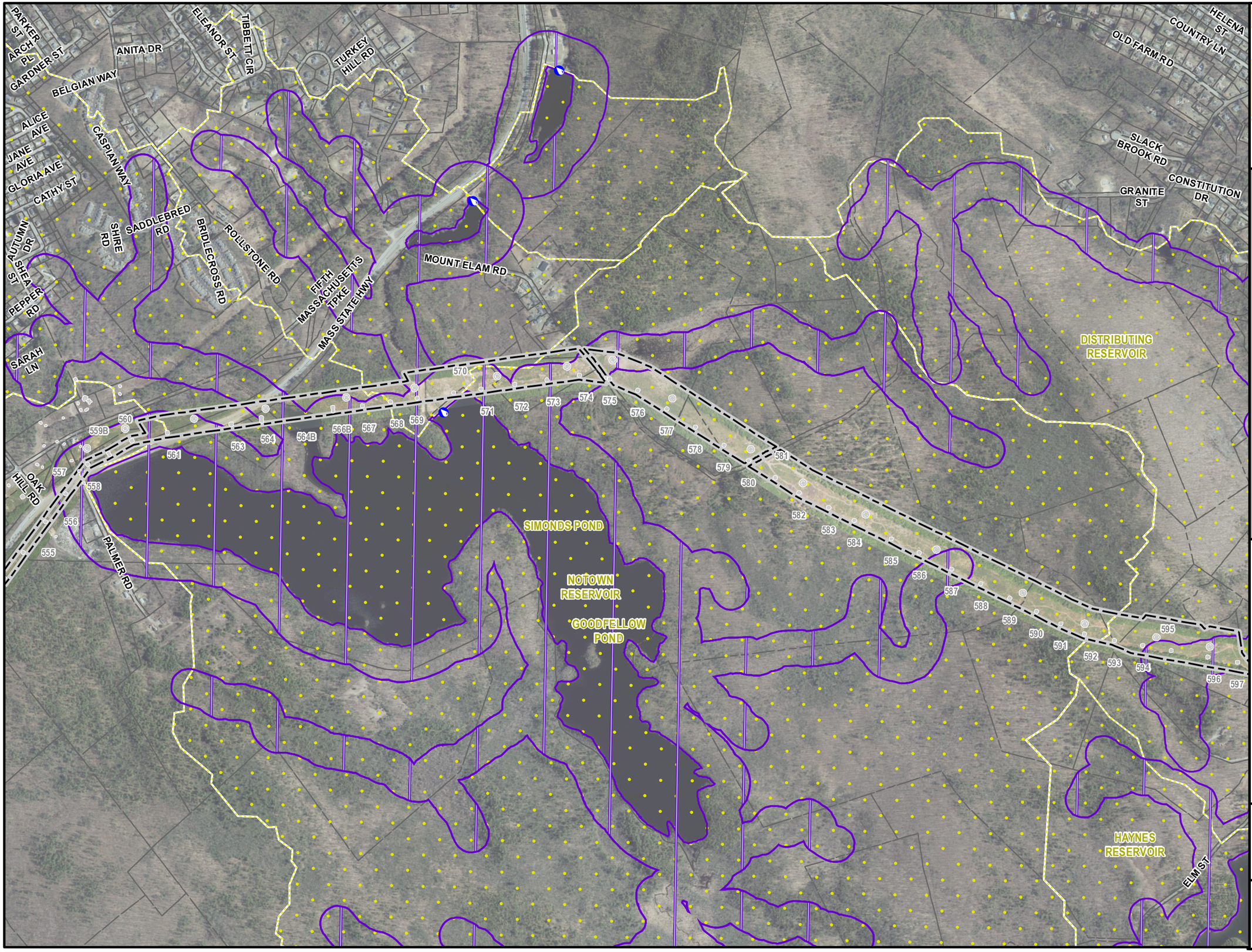
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

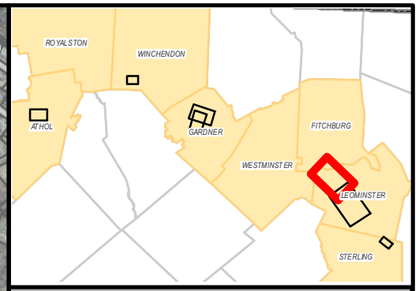
PREPARED BY:

BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.





Legend

- Existing Structure
- Edge of ROW
- Public Water Supply
- Interim Wellhead Protection Area
- Zone II Wellhead Protection Area
- Surface Water Protection Zone
- Surface Water (Active or Inactive)
- Aquifer
- Town Boundary
- National Grid Property
- Parcel Boundary
- Railroad

N

1 inch = 1,000 feet

0 500 1,000

Feet

WATER SUPPLY PROTECTION AREAS

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

FITCHBURG & LEOMINSTER, MA

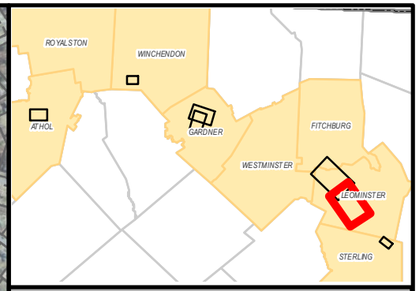
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.





Legend

- Existing Structure
- Edge of ROW
- Public Water Supply
- Interim Wellhead Protection Area
- Zone II Wellhead Protection Area
- Surface Water Protection Zone
- Surface Water (Active or Inactive)
- Aquifer
- Town Boundary
- National Grid Property
- Parcel Boundary
- Railroad

1 inch = 1,000 feet
0 500 1,000
Feet

WATER SUPPLY PROTECTION AREAS

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

LEOMINSTER, MA
PAGE 5 OF 8

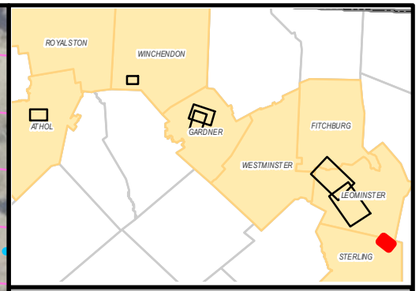
PREPARED FOR:
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

PREPARED BY:
BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.





Legend

- Existing Structure
- Edge of ROW
- Public Water Supply
- Interim Wellhead Protection Area
- Zone II Wellhead Protection Area
- Surface Water Protection Zone
- Surface Water (Active or Inactive)
- Aquifer
- Town Boundary
- National Grid Property
- Parcel Boundary
- Railroad

N

1 inch = 300 feet

0 150 300

Feet

WATER SUPPLY PROTECTION AREAS

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2 MAINLINE CENTERLINE CHANGE

STERLING, MA
PAGE 6 OF 8

PREPARED FOR:

nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

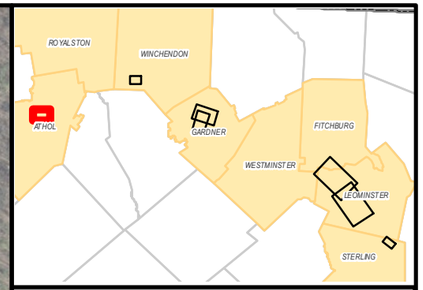
PREPARED BY:

BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.





Legend

- Existing Structure
- Edge of ROW
- Public Water Supply
- Interim Wellhead Protection Area
- Zone II Wellhead Protection Area
- Surface Water Protection Zone
- Surface Water (Active or Inactive)
- Aquifer
- Town Boundary
- National Grid Property
- Parcel Boundary
- Railroad

N

1 inch = 450 feet

0 225 450

Feet

WATER SUPPLY PROTECTION AREAS

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - ATHOL TAP LINES

ATHOL, MA
PAGE 7 OF 8

PREPARED FOR:

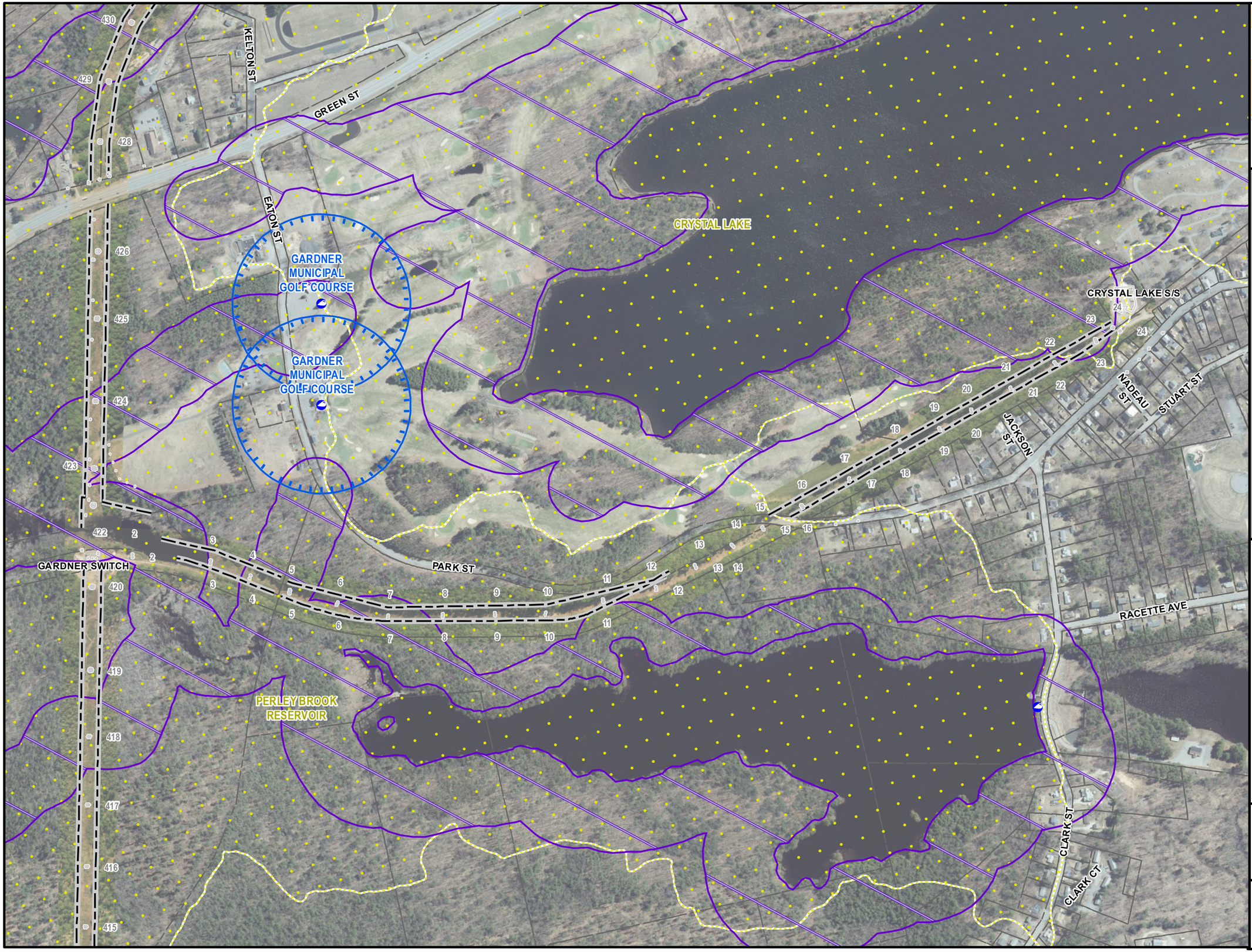
nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

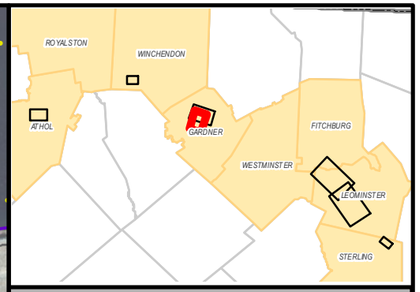
PREPARED BY:

BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.





Legend

- Existing Structure
- Edge of ROW
- Public Water Supply
- Interim Wellhead Protection Area
- Zone II Wellhead Protection Area
- Surface Water Protection Zone
- Surface Water (Active or Inactive)
- Aquifer
- Town Boundary
- National Grid Property
- Parcel Boundary
- Railroad

N

1 inch = 500 feet

0 250 500

Feet

WATER SUPPLY PROTECTION AREAS

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - CRYSTAL LAKE TAP LINES

GARDNER, MA
PAGE 8 OF 8

PREPARED FOR:

nationalgrid
170 DATA DRIVE
WALTHAM, MA 02451

PREPARED BY:

BSC GROUP
1 MERCANTILE STREET SUITE 601
WORCESTER, MA 01608

Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Hydrography; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protecton Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

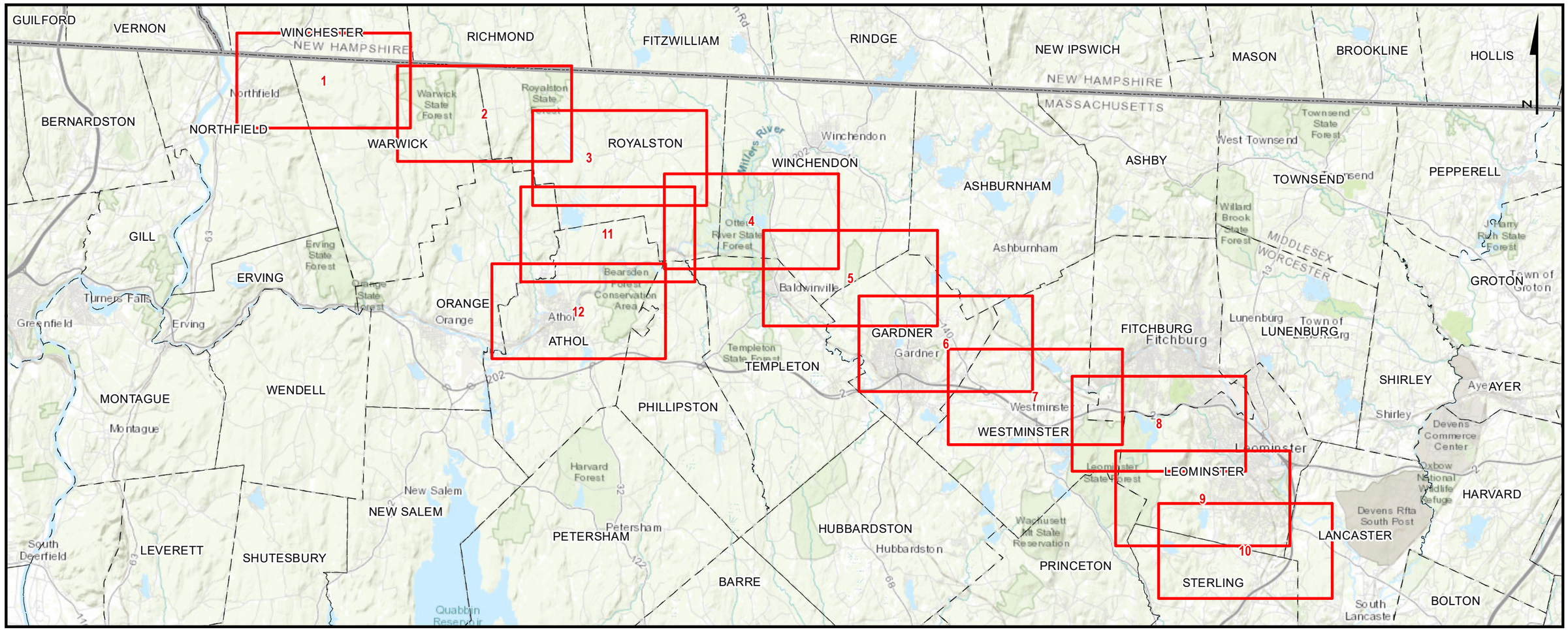
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.

Figure 4 - Proposed Tree Removal in Environmental Justice Communities and Hot Spots

BSC Project Number: 89620.66

Asset Condition Refurbishment Project (ACR) - A1/B2

Proposed Tree Removal in EJ Block Groups and Hot Spots within 1-mile DGA
Warwick, Royalston, Athol, Winchendon, Gardner, Westminster, Fitchburg, Leominster, & Sterling, MA
October 27, 2023



PREPARED FOR:

nationalgrid

170 Data Drive
Waltham, MA 02451

INDEX OF FIGURES

T1 - TITLE SHEET
S1 - SITE LOCATION MAP
1 - 12 - MAP SHEETS

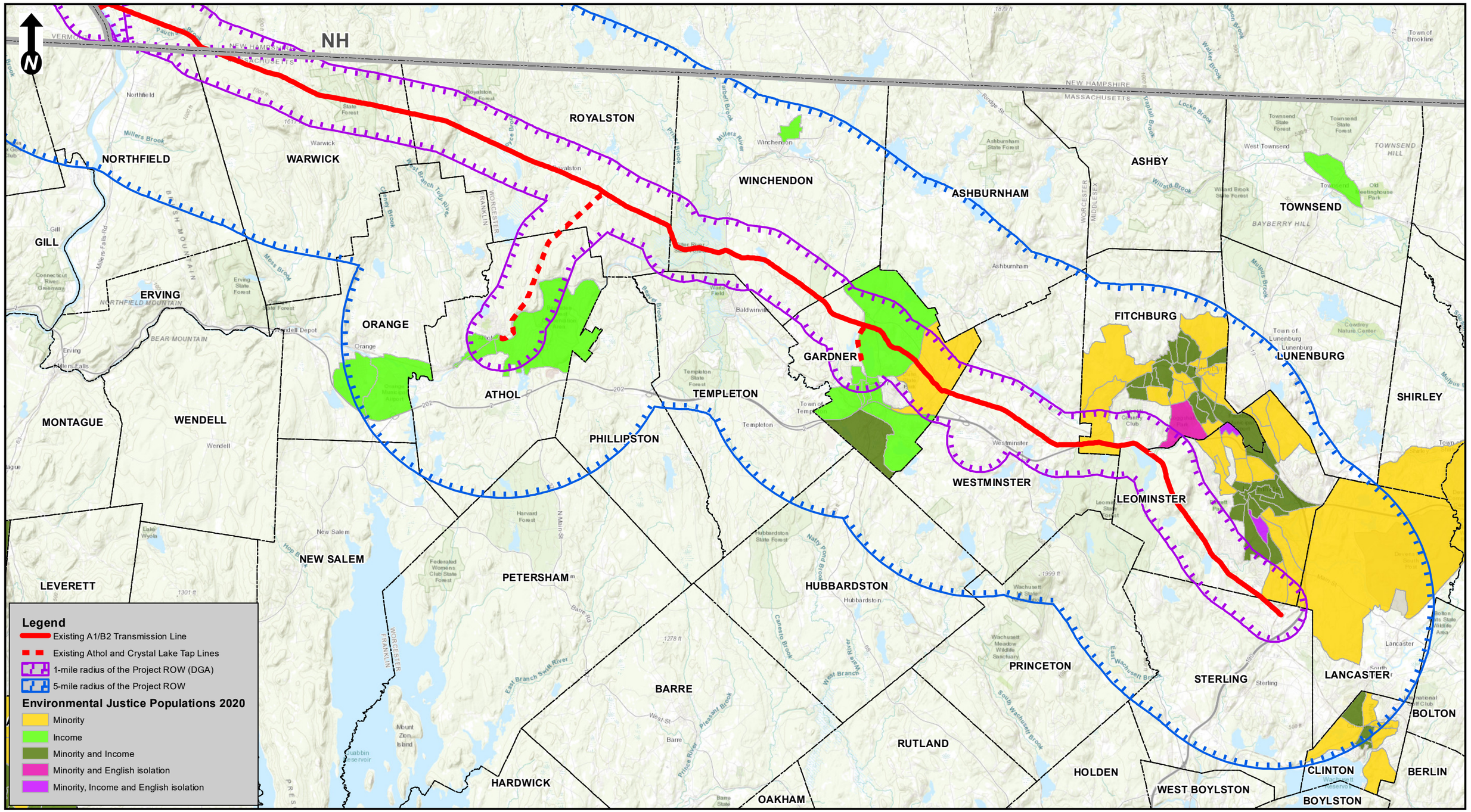
ISSUED FOR PERMITTING
NOT CONSTRUCTION

PREPARED BY:

BSC GROUP

1 Mercantile Street Suite 601
Worcester, MA 01608

Document Path: G:\GISPrj\8962066\Output\Maps\MXD\ReportMaps\MEPA_DEIR\A1B2_DEIR_EJLocus_20230627.mxd
Date Saved: 10/27/2023 10:35:18 AM



Scale:
1 inch = 15,000 feet
(page size: 11 X 17)
0 15,000 30,000
Feet

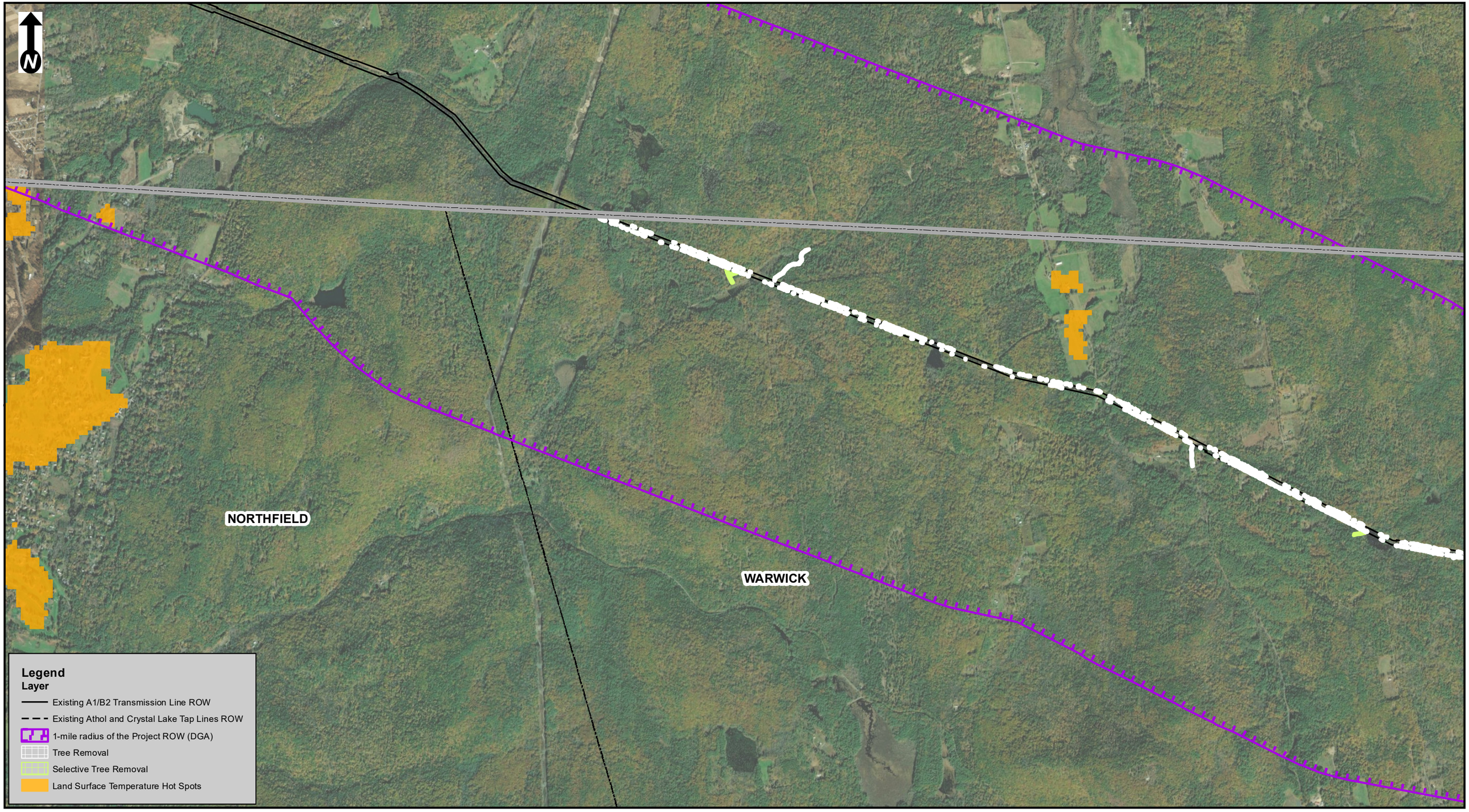
ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2
Environmental Justice Populations Site Location Map
Warwick, Royalston, Athol, Winchendon, Gardner, Westminster, Fitchburg, Leominster, & Sterling, MA

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

Document Path: G:\GISPrj\8962066\Output\Maps\MXD\ReportMaps\MEPA_DEIR\A1B2_DEIR_EJ_Aerial_20230706.mxd
Date Saved: 10/27/2023 10:33:53 AM



Scale:
1 inch = 2,000 feet
(page size: 11 X 17)
0 2,000 4,000
Feet

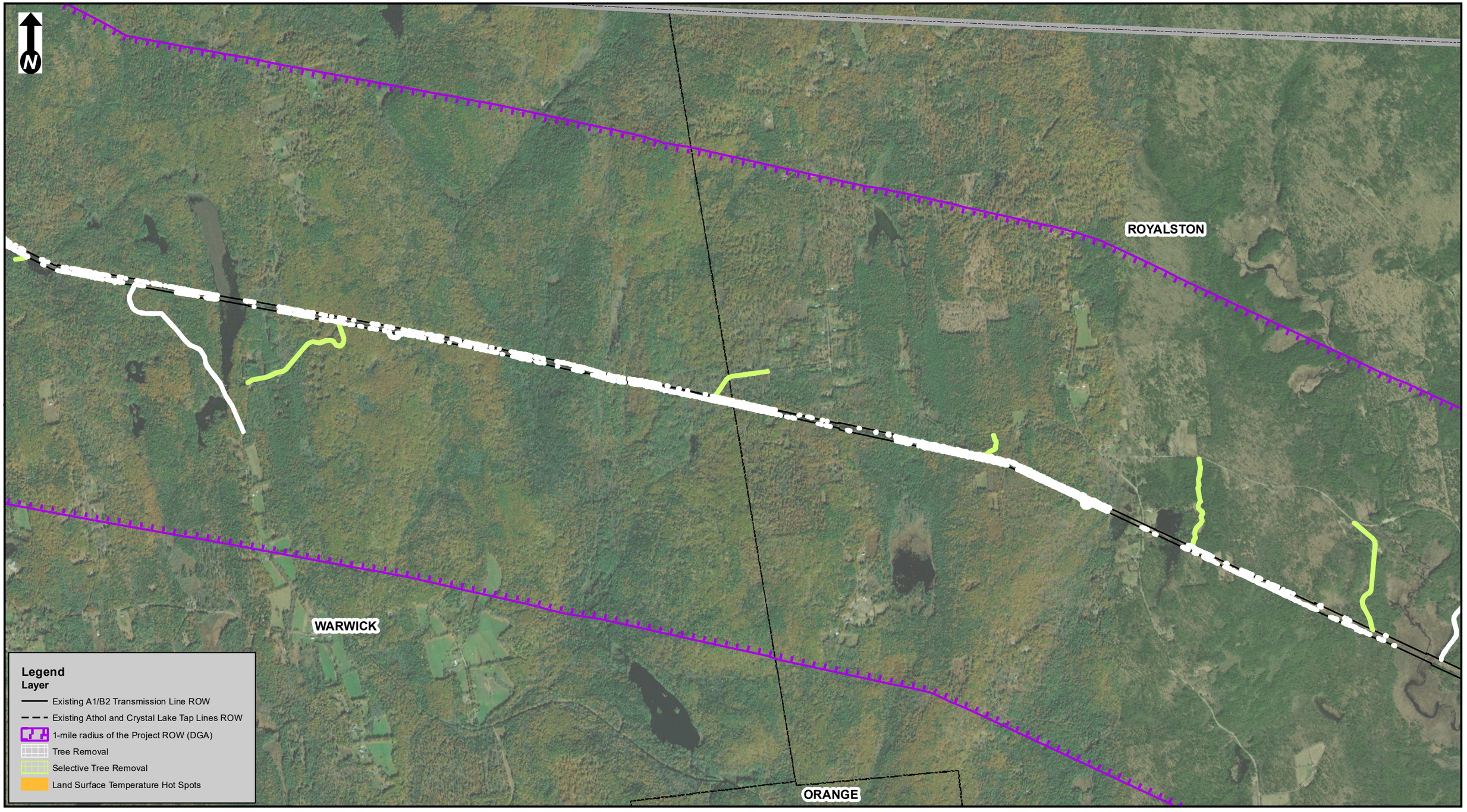
ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2
Proposed Tree Removal in EJ Block Groups and Hot Spots within 1-mile DGA
Warwick, MA
Page 1 of 12

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

Document Path: G:\GISPrj\8962066\Output\Maps\MXD\ReportMaps\MEPA_DEIR\A1B2_DEIR_EJ_Aerial_20230706.mxd
Date Saved: 10/27/2023 10:33:53 AM



Scale:
1 inch = 2,000 feet
(page size: 11 X 17)
0 2,000 4,000
Feet

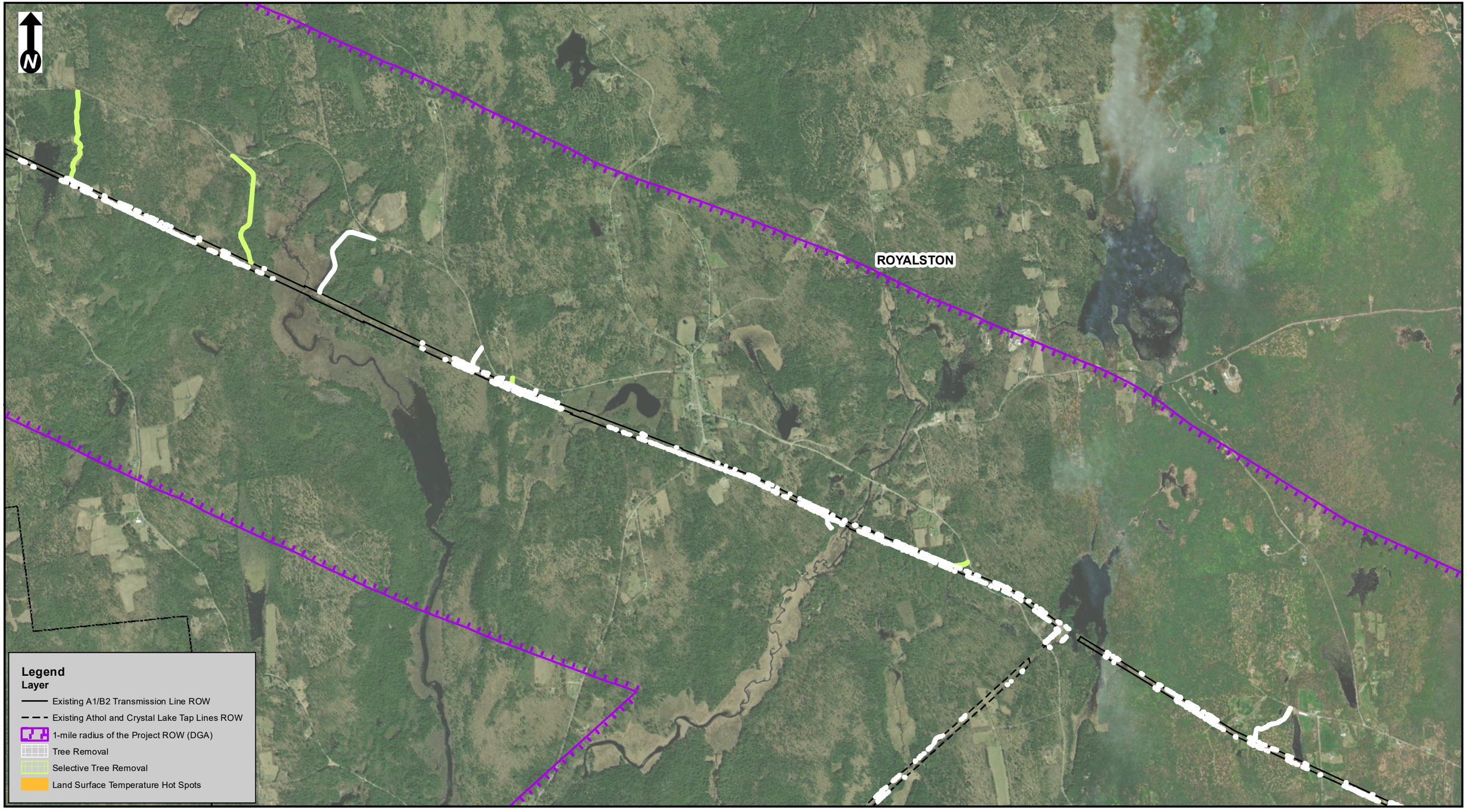
ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2
Proposed Tree Removal in EJ Block Groups and Hot Spots within 1-mile DGA
Warwick & Royalston, MA
Page 2 of 12

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

Document Path: G:\GISPrj\8962066\Output\Maps\MXD\ReportMaps\MEPA_DEIR\A1B2_DEIR_EJ_Aerial_20230706.mxd
Date Saved: 10/27/2023 10:33:53 AM



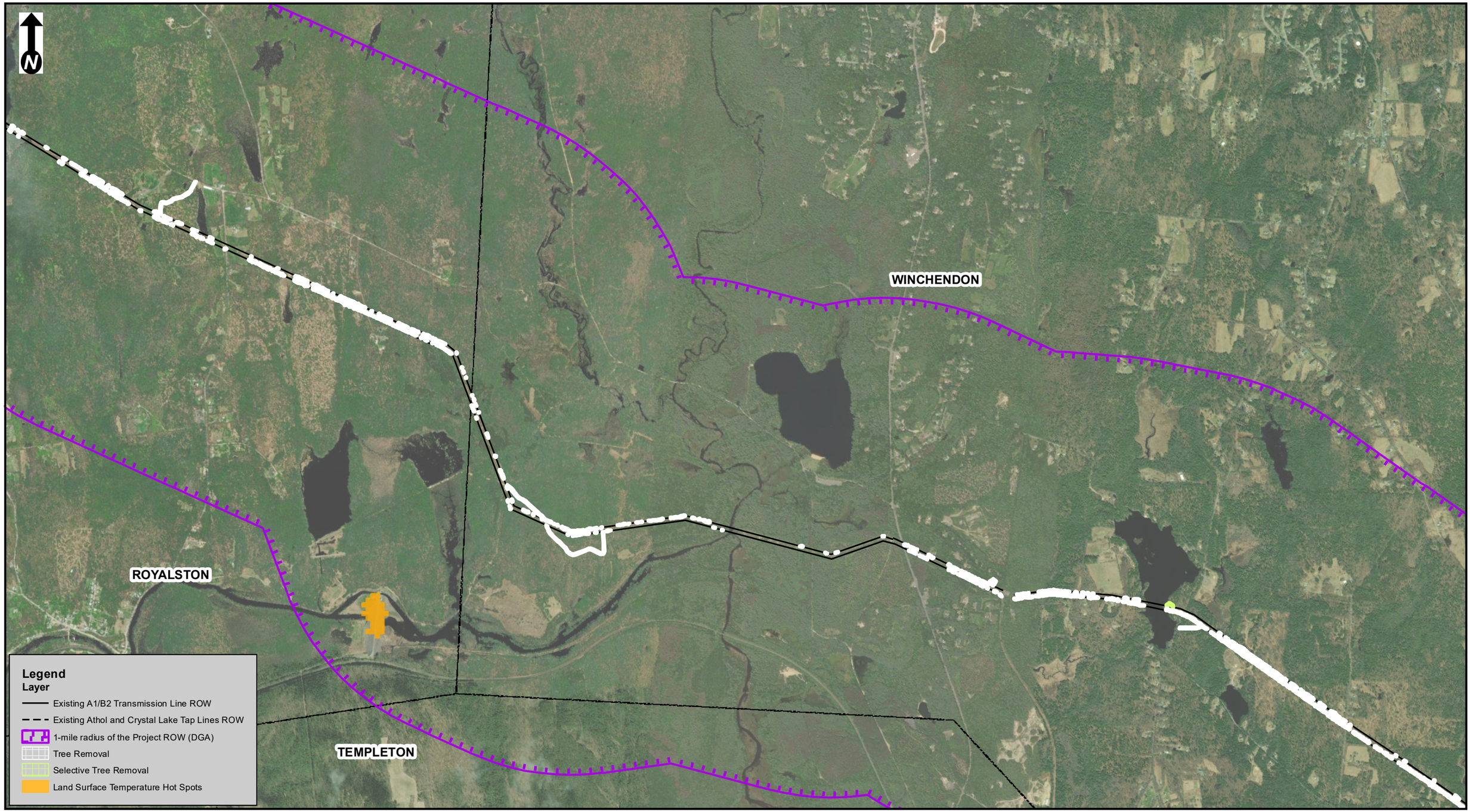
Scale:
1 inch = 2,000 feet
(page size: 11 X 17)
0 2,000 4,000
Feet

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2
Proposed Tree Removal in EJ Block Groups and Hot Spots within 1-mile DGA
Royalston, MA
Page 3 of 12

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE



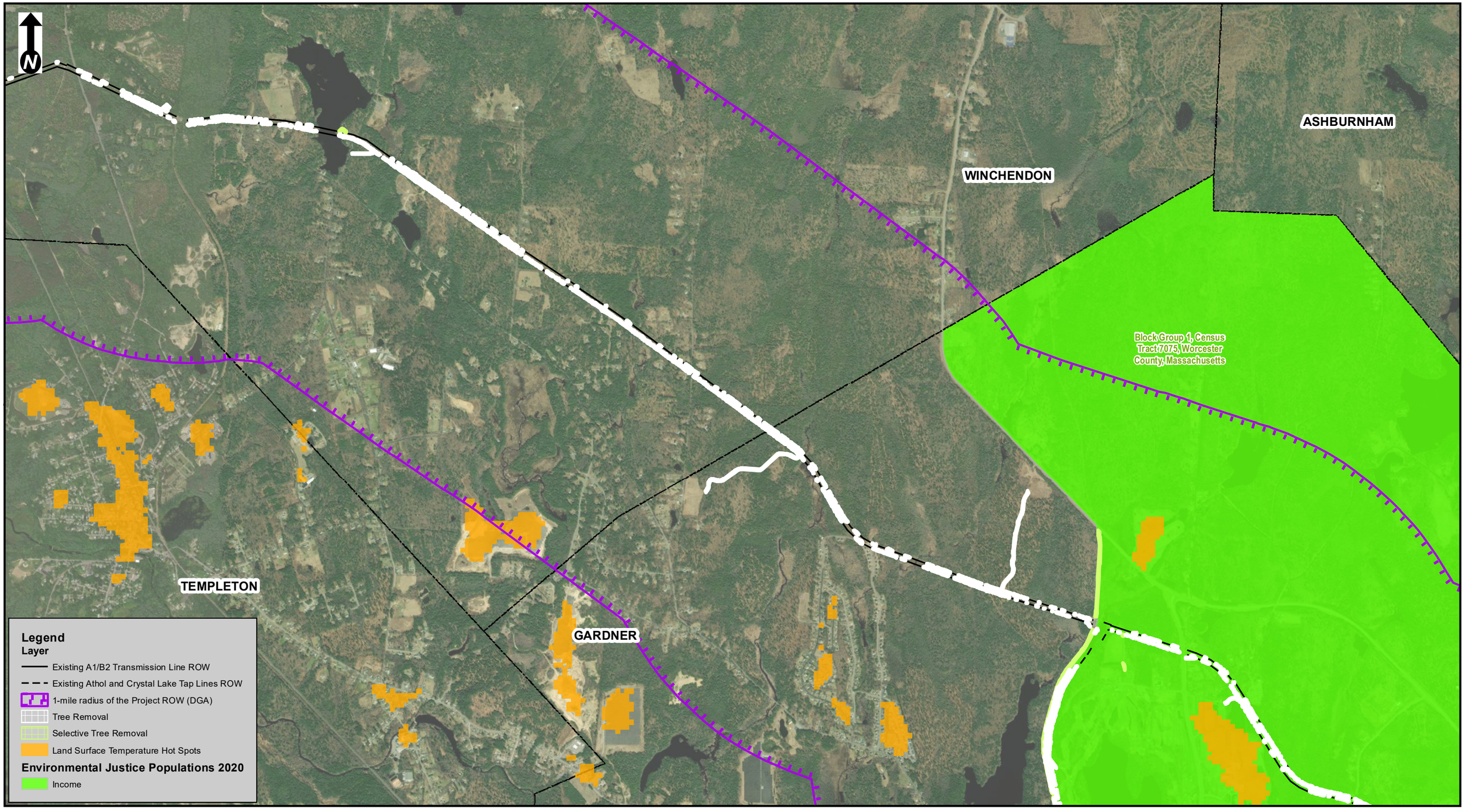
Scale:
1 inch = 2,000 feet
(page size: 11 X 17)
0 2,000 4,000
Feet

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2
Proposed Tree Removal in EJ Block Groups and Hot Spots within 1-mile DGA
Royalston & Winchendon, MA
Page 4 of 12

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE



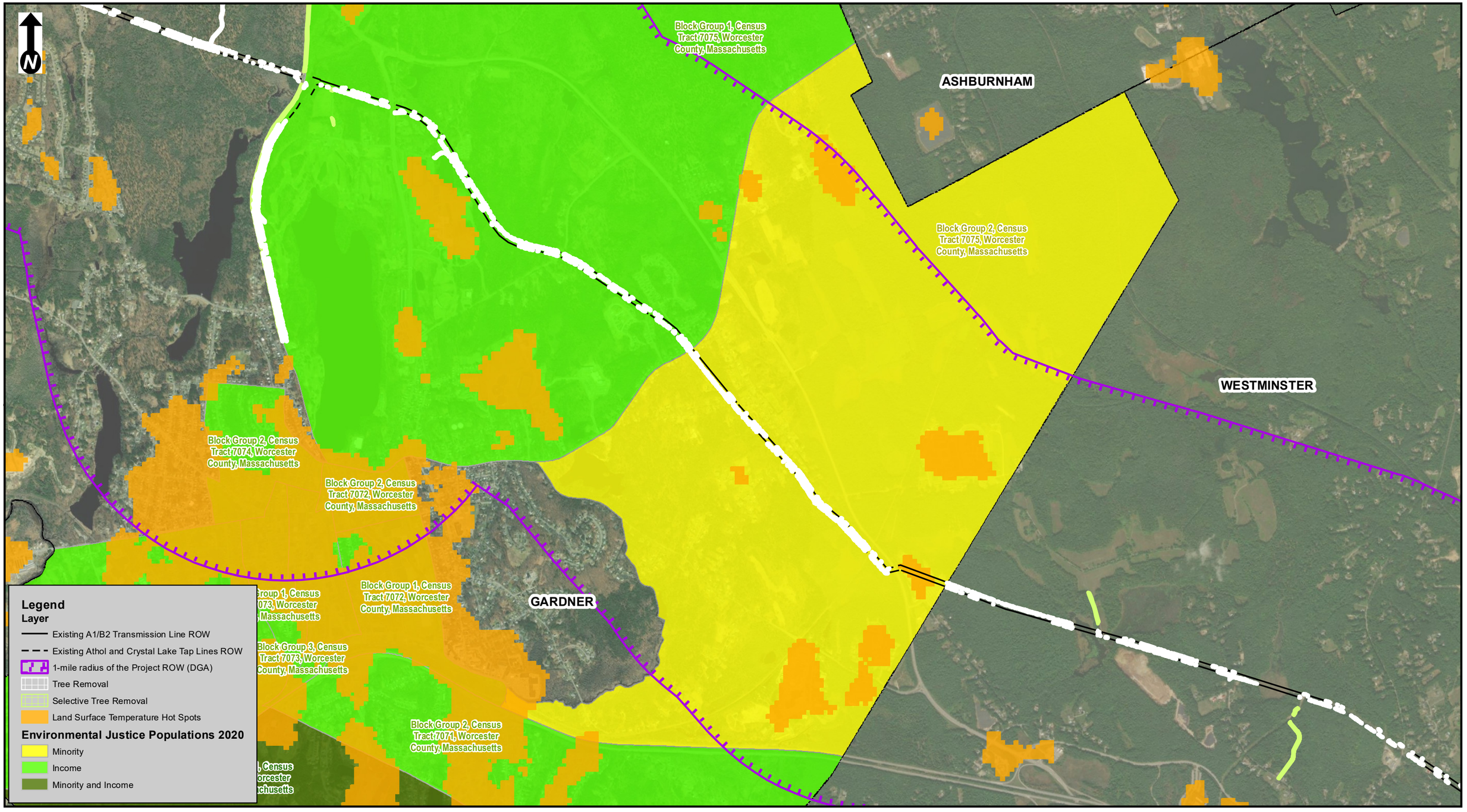
Scale:
1 inch = 2,000 feet
(page size: 11 X 17)
0 2,000 4,000
Feet

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2
Proposed Tree Removal in EJ Block Groups and Hot Spots within 1-mile DGA
Winchendon & Gardner, MA
Page 5 of 12

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE



Scale:
1 inch = 2,000 feet
(page size: 11 X 17)
0 2,000 4,000
Feet

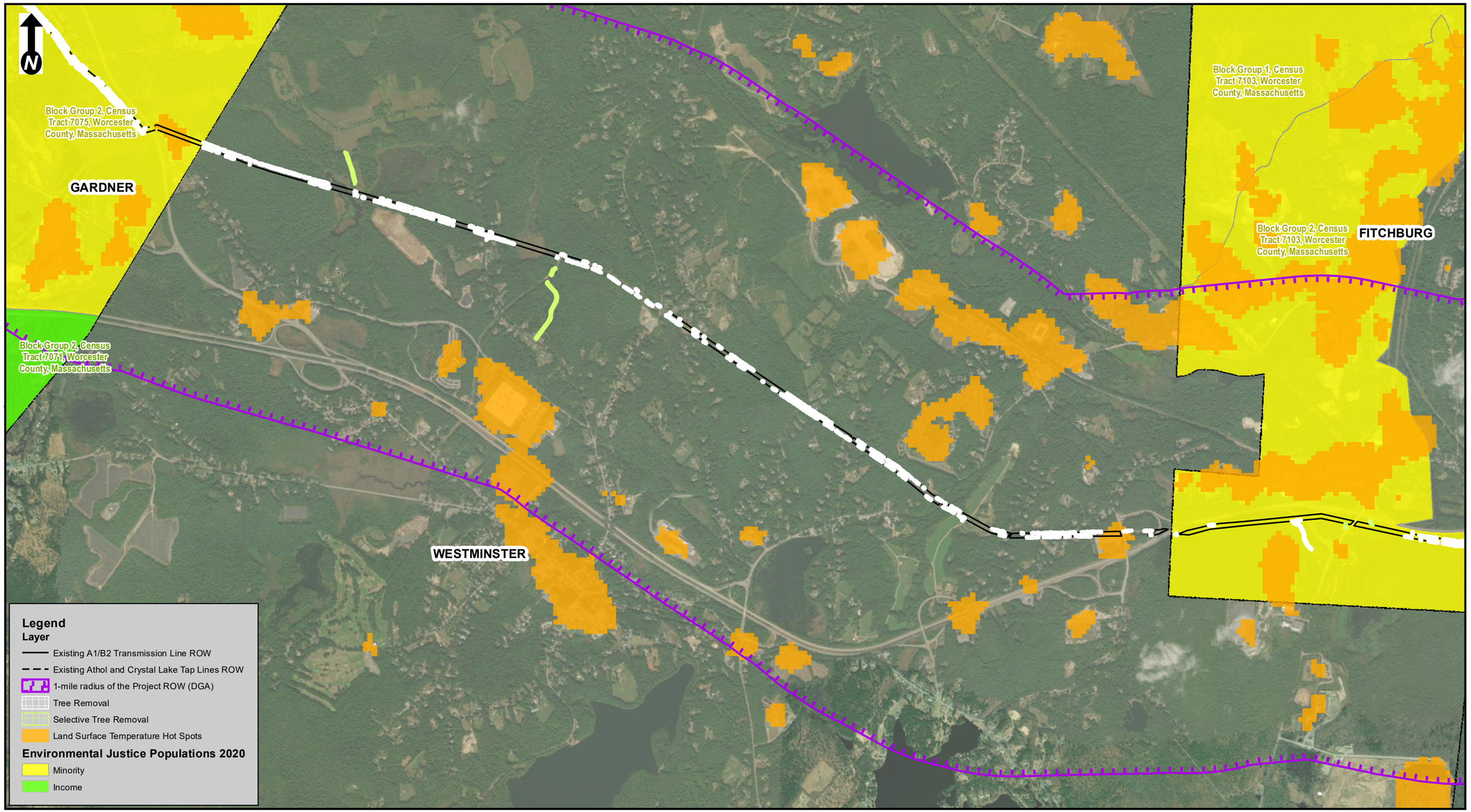
ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2
Proposed Tree Removal in EJ Block Groups and Hot Spots within 1-mile DGA
Gardner & Westminster, MA
Page 6 of 12

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

Document Path: G:\GISPrj\8962066\Output\Maps\MXD\ReportMaps\MEPA_DEIR\A1B2_DEIR_EJ_Aerial_20230706.mxd
Date Saved: 10/27/2023 10:33:53 AM



Scale:
1 inch = 2,000 feet
(page size: 11 X 17)
0 2,000 4,000
Feet

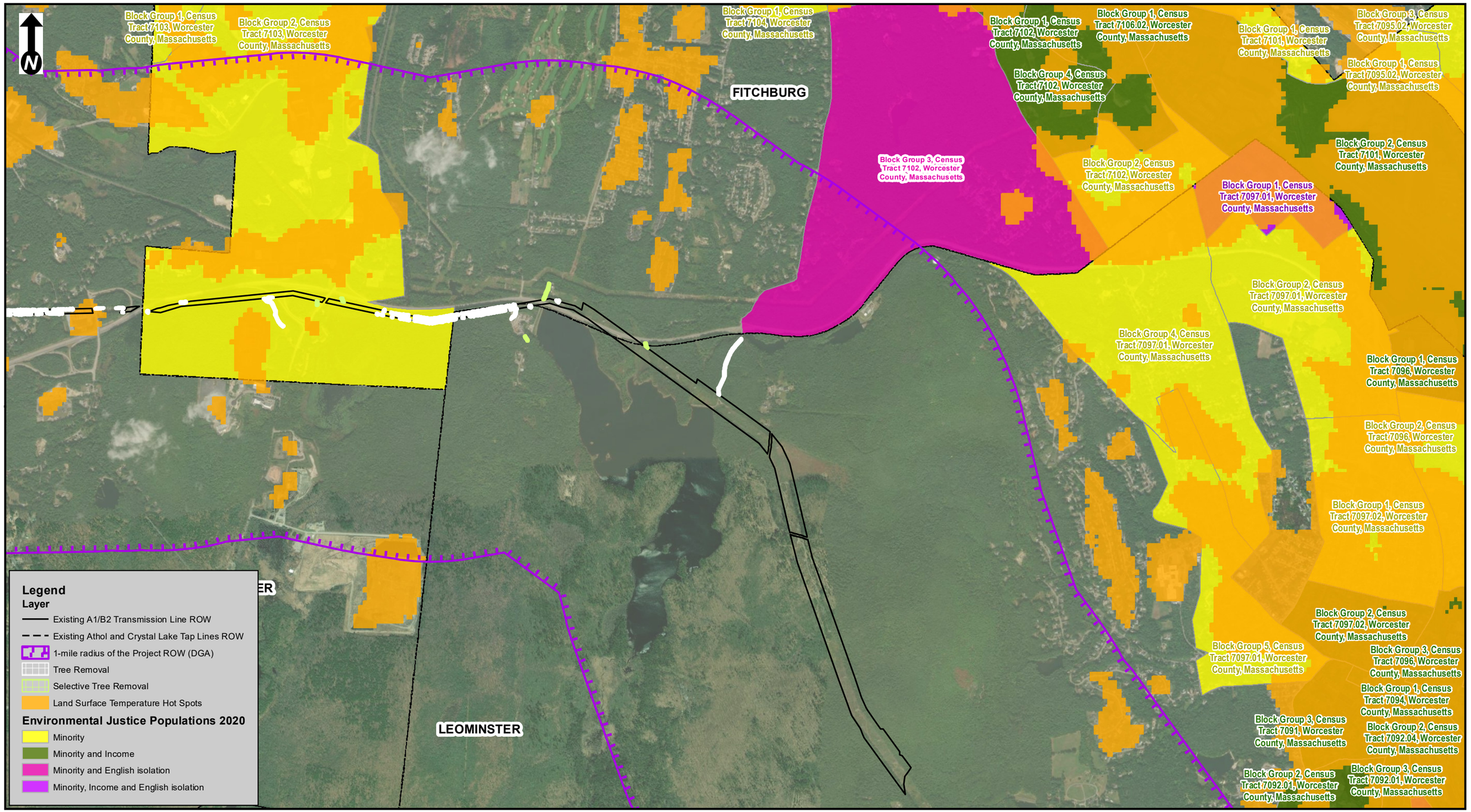
ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2
Proposed Tree Removal in EJ Block Groups and Hot Spots within 1-mile DGA
Gardner, Westminster, & Fitchburg, MA
Page 7 of 12

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

Document Path: G:\GISPrj\8962066\Output\Maps\MXD\ReportMaps\MEPA_DEIR\A1B2_DEIR_EJ_Aerial_20230706.mxd
Date Saved: 10/27/2023 10:33:53 AM



Scale:
1 inch = 2,000 feet
(page size: 11 X 17)
0 2,000 4,000
Feet

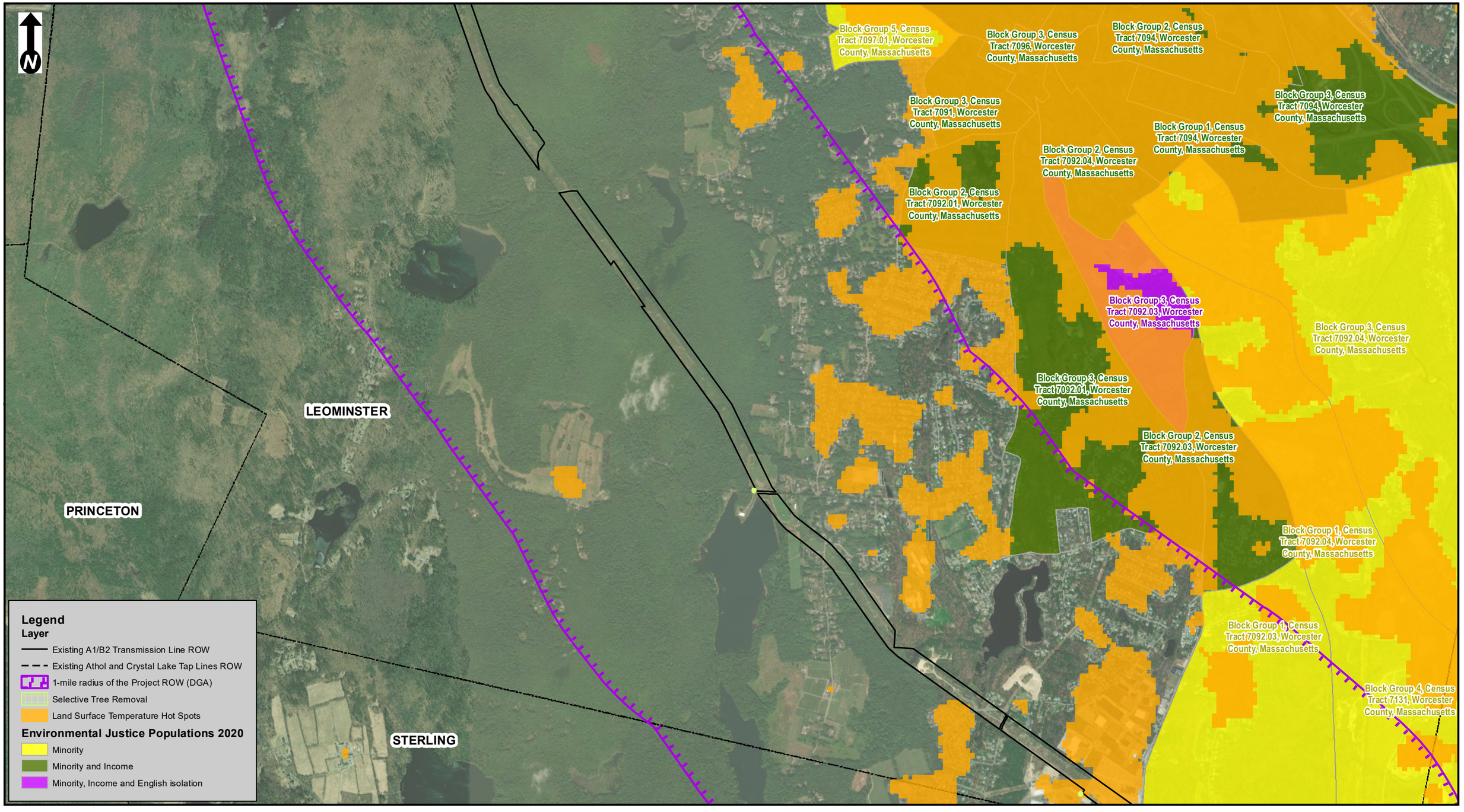
ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2
Proposed Tree Removal in EJ Block Groups and Hot Spots within 1-mile DGA
Westminster, Fitchburg, & Leominster, MA
Page 8 of 12

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

Document Path: G:\GISPrj\8962066\Output\Maps\MXD\ReportMaps\MEPA_DEIR\A1B2_DEIR_EJ_Aerial_20230706.mxd
Date Saved: 10/27/2023 10:33:53 AM



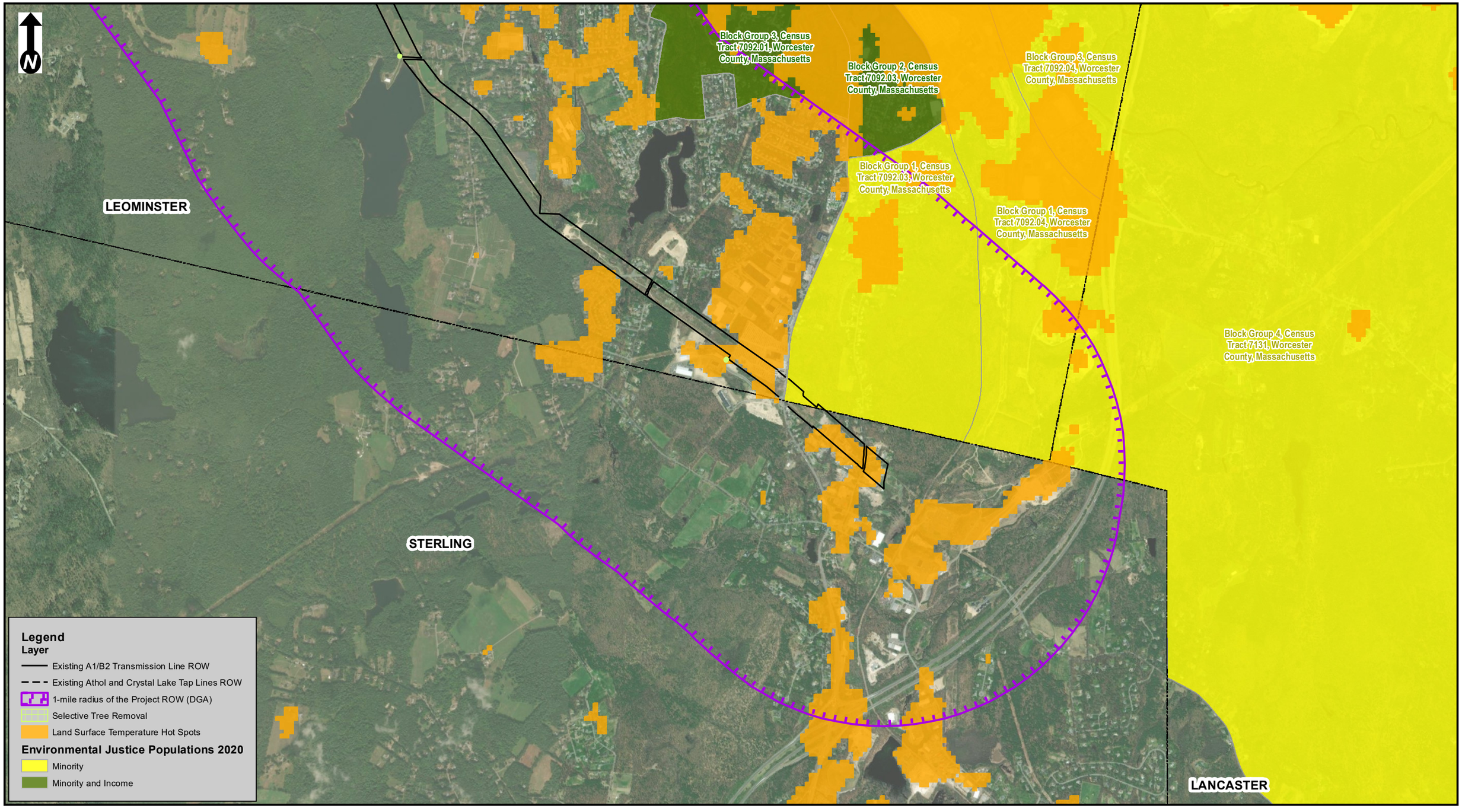
Scale:
1 inch = 2,000 feet
(page size: 11 X 17)
0 2,000 4,000
Feet

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2
Proposed Tree Removal in EJ Block Groups and Hot Spots within 1-mile DGA
Leominster, MA
Page 9 of 12

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE



Scale:
1 inch = 2,000 feet
(page size: 11 X 17)
0 2,000 4,000
Feet

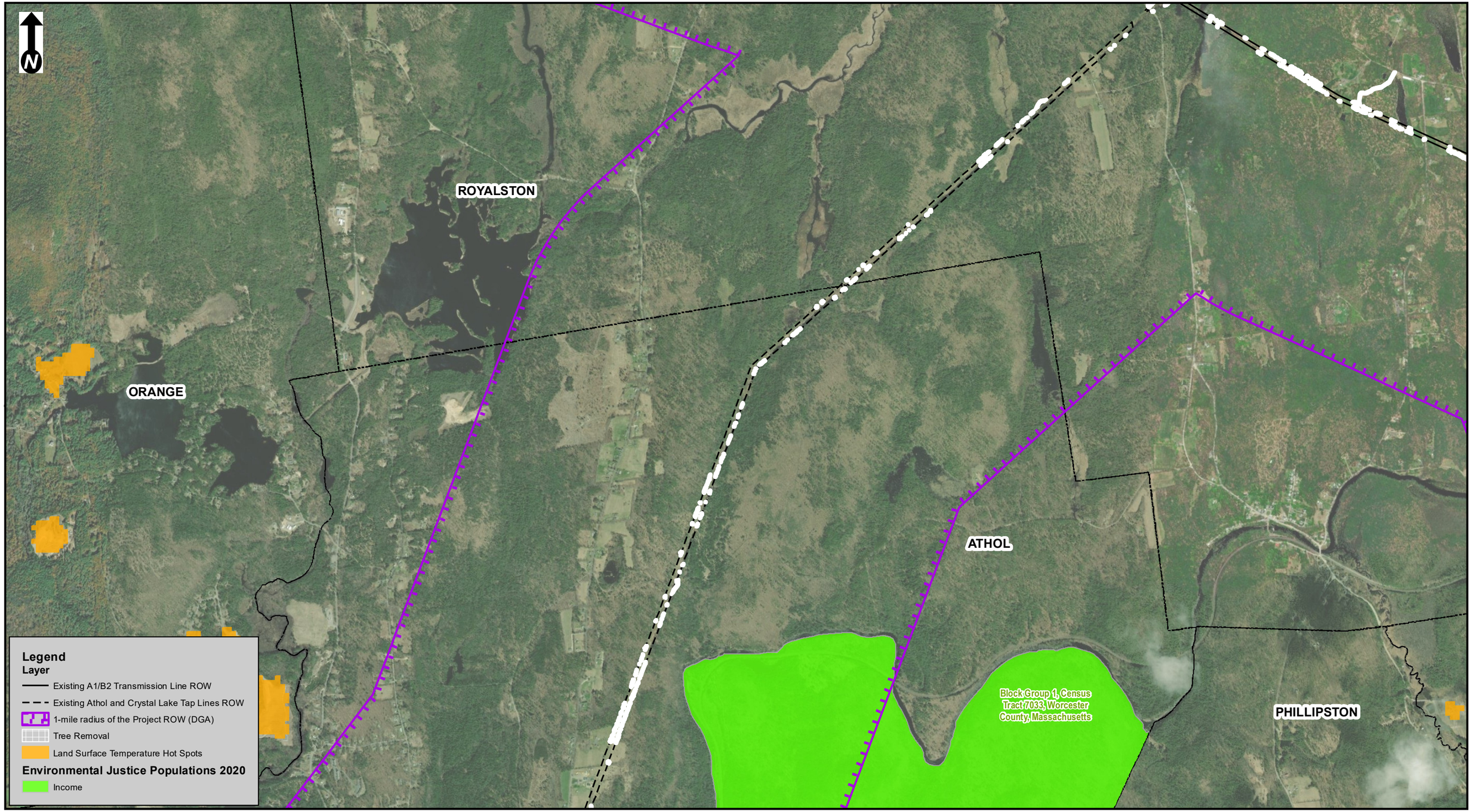
ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2
Proposed Tree Removal in EJ Block Groups and Hot Spots within 1-mile DGA
Leominster & Sterling, MA
Page 10 of 12

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

Document Path: G:\GISPrj\8962066\Output\Maps\MXD\ReportMaps\MEPA_DEIR\A1B2_DEIR_EJ_Aerial_20230706.mxd
Date Saved: 10/27/2023 10:33:53 AM



Scale:
1 inch = 2,000 feet
(page size: 11 X 17)
0 2,000 4,000
Feet

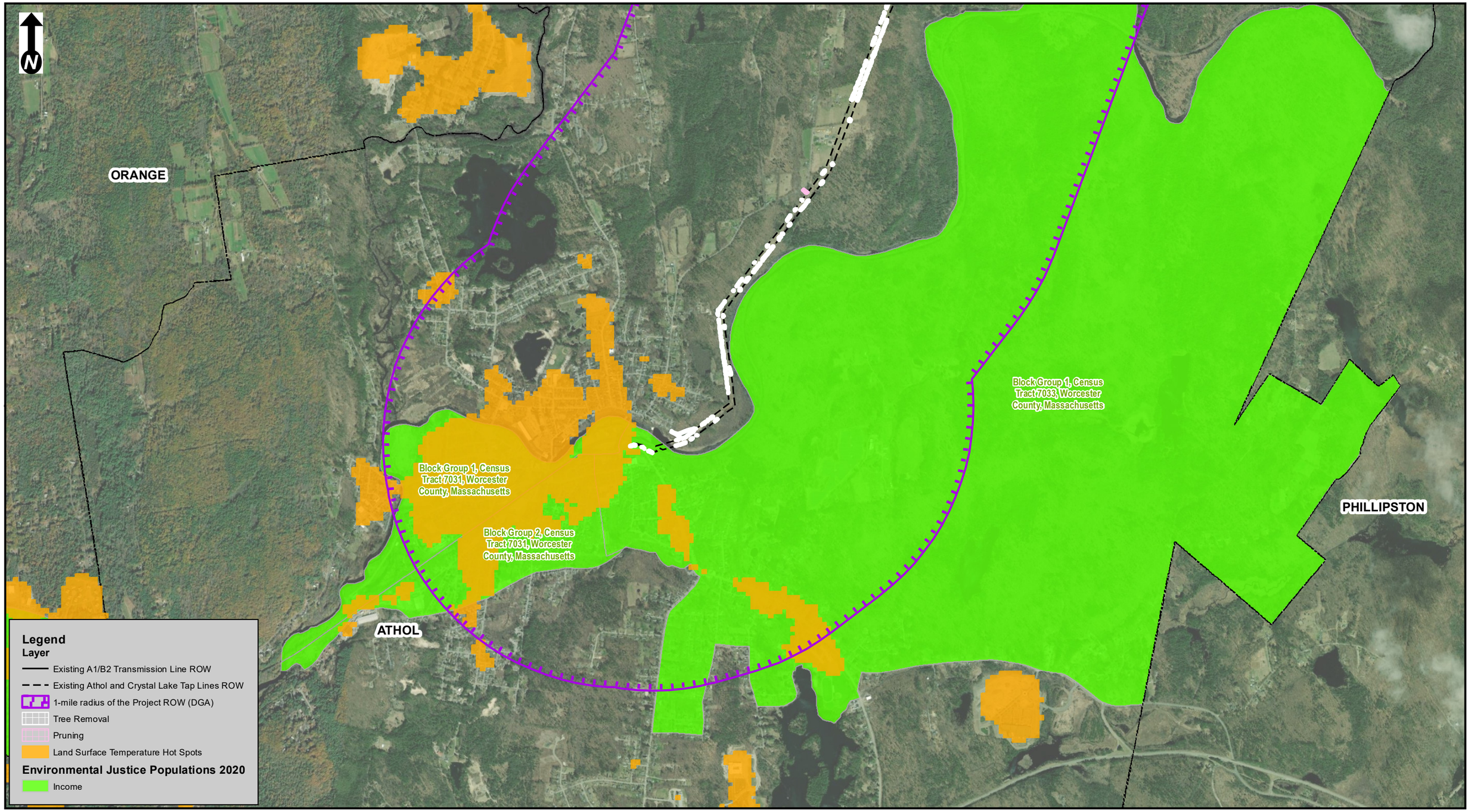
ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2
Proposed Tree Removal in EJ Block Groups and Hot Spots within 1-mile DGA
Royalston & Athol, MA
Page 11 of 12

Source: 2013 National Geographic Society, i-cubed

nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

Document Path: G:\GISPrj\8962066\Output\Maps\MXD\ReportMaps\MEPA_DEIR\A1B2_DEIR_EJ_Aerial_20230706.mxd
Date Saved: 10/27/2023 10:33:53 AM



Scale:
1 inch = 2,000 feet
(page size: 11 X 17)
0 2,000 4,000
Feet

ASSET CONDITION REFURBISHMENT PROJECT (ACR) - A1/B2
Proposed Tree Removal in EJ Block Groups and Hot Spots within 1-mile DGA
Athol, MA
Page 12 of 12

Source: 2013 National Geographic Society, i-cubed

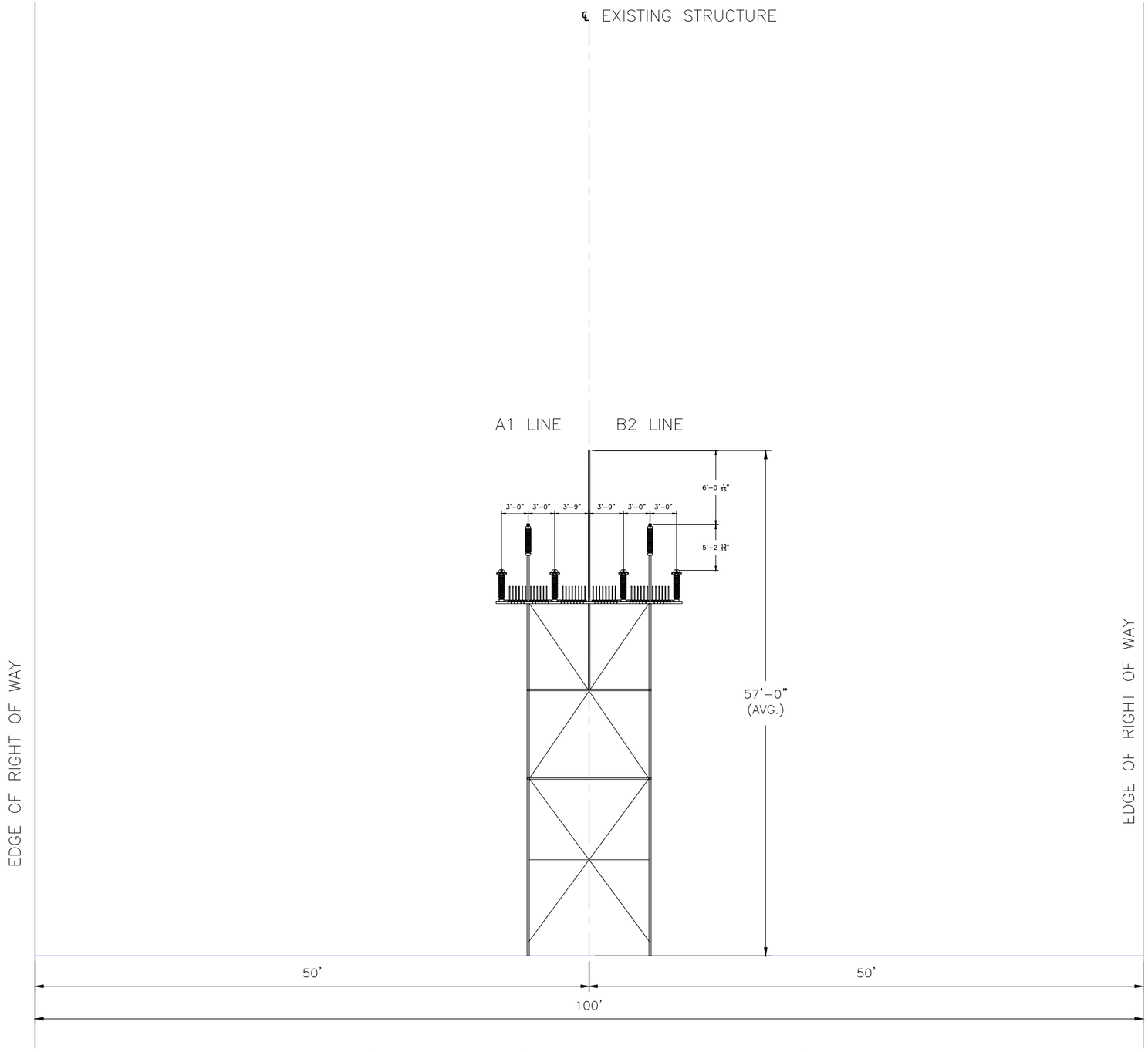
nationalgrid
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE

Figure 5 - Typical Cross Sections - Figure of 69 kV and 115 kV structure designs

400739-P-X-01-E

CONFIDENTIALITY STATEMENT: THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF NATIONAL GRID SOLELY IN CONNECTION WITH THE SPECIFIC PROJECT FOR WHICH IT HAS BEEN TRANSMITTED. ANY OTHER USE, ITS TRANSMITTAL TO THIRD PARTIES, OR ITS REPRODUCTION WITHOUT PRIOR EXPRESS WRITTEN AUTHORIZATION OF NATIONAL GRID IS STRICTLY PROHIBITED.



EXISTING DOUBLE CIRCUIT LATTICE TOWER STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

VER	DATE	VERSION DESCRIPTION
1	4/23/23	ISSUED FOR PERMITTING
2		
3		
4		
5		
6		
7		

PREPARED BY	REVIEWED BY	APPROVED BY
JTF	TBD	JTF

VERSION 1

nationalgrid

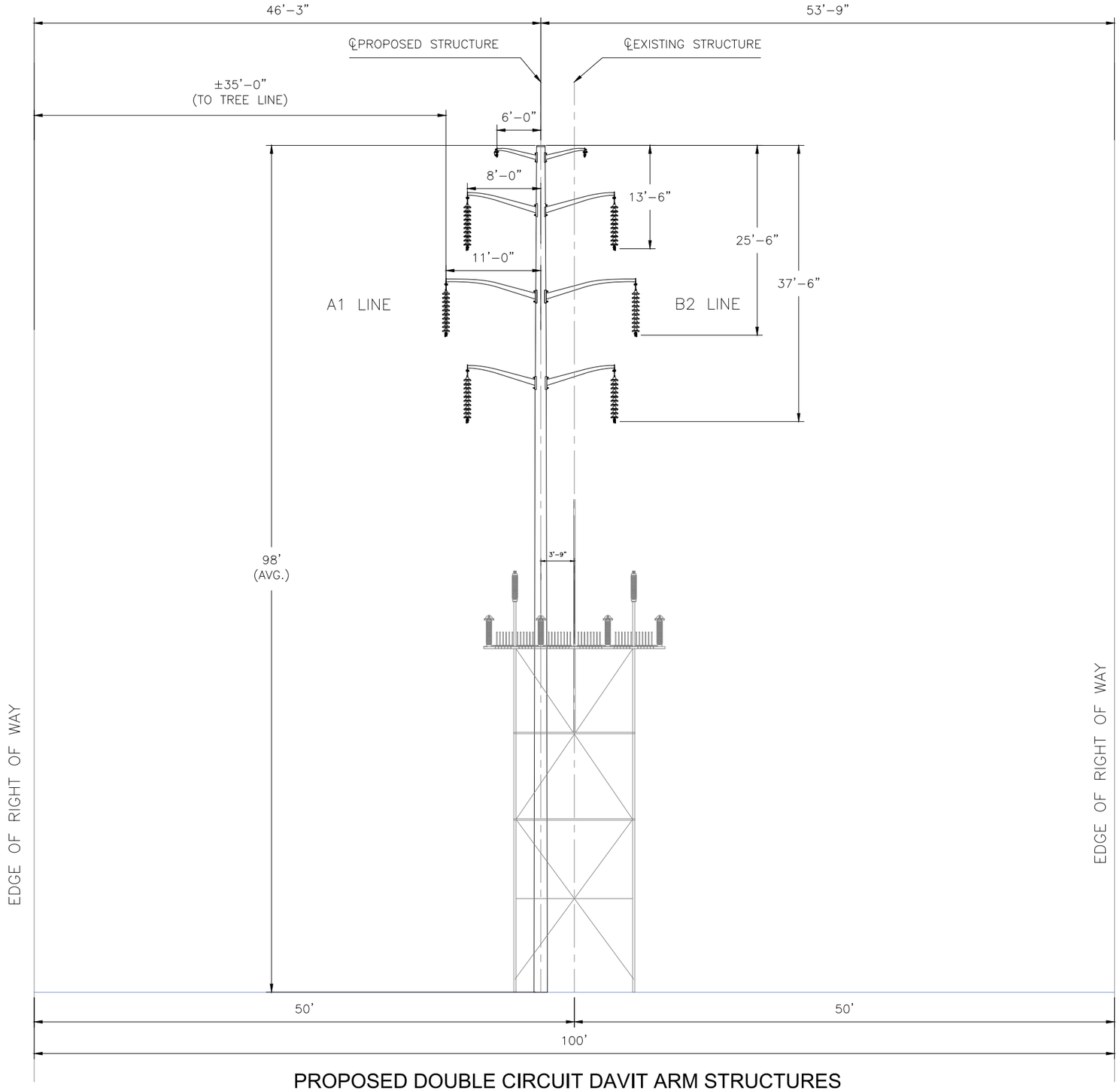
CROSS-SECTION
ROW (A1/B2 MAIN LINE - VERNON TO PRATTS JUNCTION)
PROJECT (A1/B2 REBUILD PROJECT)
FACING PRATTS JUNCTION - EXISTING
PROPOSED DOUBLE CIRCUIT STRUCTURES

PREPARED BY	JTF	4/23
REVIEWED BY	TBD	-
APPROVED BY	JTF	4/23
SCALE	AS NOTED	
SHEET	11 OF 22	
INDEX	400739	

PRINTED 4/23/2023 12:43 PM

PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR THE LATEST AUTHORIZED VERSION PLEASE REFER TO THE ENGINEERING DEPARTMENT DOCUMENTS CABINET IN DOCUMENTUM

CONFIDENTIALITY STATEMENT: THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF NATIONAL GRID. IT IS TO BE USED BY AUTHORIZED CONTRACTORS FOR NATIONAL GRID SOLELY IN CONNECTION WITH THE SPECIFIC PROJECT FOR WHICH IT HAS BEEN TRANSMITTED. ANY OTHER USE, ITS TRANSMITTAL TO THIRD PARTIES, OR ITS REPRODUCTION WITHOUT PRIOR EXPRESS WRITTEN AUTHORIZATION OF NATIONAL GRID IS STRICTLY PROHIBITED.



PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS PRATTS JUNCTION
MA/NH STATE LINE TO STRUCTURE 561
COMMONWEALTH OF MASSACHUSETTS

VER	DATE	VERSION DESCRIPTION	REVIEWED BY	APPROVED BY
1	4/23/23	ISSUED FOR PERMITTING	JTF	JTF
2			TBD	
3				
4				
5				
6				
7				

VERSION 1

PRINTED 4/23/2023 1:11 PM

nationalgrid

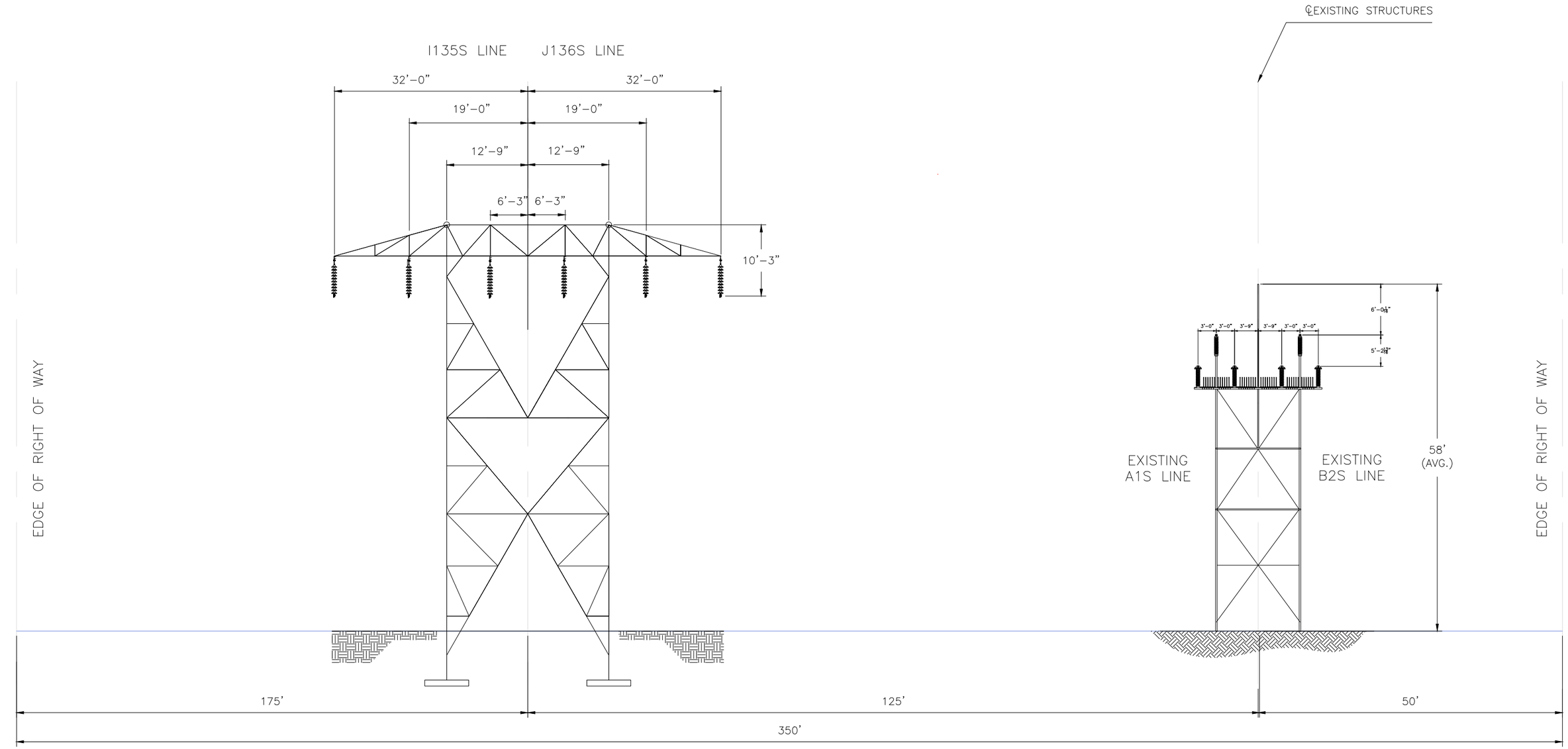
PREPARED BY	JTF
REVIEWED BY	TBD
APPROVED BY	JTF
SCALE	AS NOTED
SHEET	11 OF 22
INDEX	400739

CROSS-SECTION
ROW (A1/B2 MAIN LINE - VERNON TO PRATTS JUNCTION)
PROJECT (A1/B2 REBUILD PROJECT)
FACING PRATTS JUNCTION - PROPOSED
PROPOSED DOUBLE CIRCUIT STRUCTURES

PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR THE LATEST AUTHORIZED VERSION PLEASE REFER TO THE ENGINEERING DEPARTMENT DOCUMENTS CABINET IN DOCUMENTUM

INCHES ON ORIGINAL

CONFIDENTIALITY STATEMENT: THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF NATIONAL GRID SOLELY IN CONNECTION WITH THE SPECIFIC PROJECT FOR WHICH IT HAS BEEN TRANSMITTED. ANY OTHER USE, ITS TRANSMITTAL TO THIRD PARTIES, OR ITS REPRODUCTION WITHOUT PRIOR EXPRESS WRITTEN AUTHORIZATION OF NATIONAL GRID IS STRICTLY PROHIBITED.



A1/B2 EXISTING DOUBLE CIRCUIT LATTICE TOWER STRUCTURES
CROSS–SECTION FACING PRATTS JUNCTION SUBSTATION
EXISTING STRUCTURE 561 TO EXISTING STRUCTURE 642
COMMONWEALTH OF MASSACHUSETTS

VER	DATE	VERSION DESCRIPTION	REVIEWED	APPROVED
1	4/23/23	ISSUED FOR PERMITTING	JTF	TBD
2				JTF
3				
4				
5				
6				
7				

VERSION 1

nationalgrid

PREPARED BY	JTF	4/23
REVIEWED BY	TBD	4/23
APPROVED BY	JTF	4/23
SCALE	AS NOTED	
SHEET	16 OF 22	
INDEX	400739	

CROSS–SECTION
ROW (A1/B2 MAIN LINE – VERNON TO PRATTS JUNCTION)
PROJECT (A1/B2 REBUILD PROJECT)
FACING PRATTS JUNCTION – EXISTING
PROPOSED DOUBLE CIRCUIT STRUCTURES

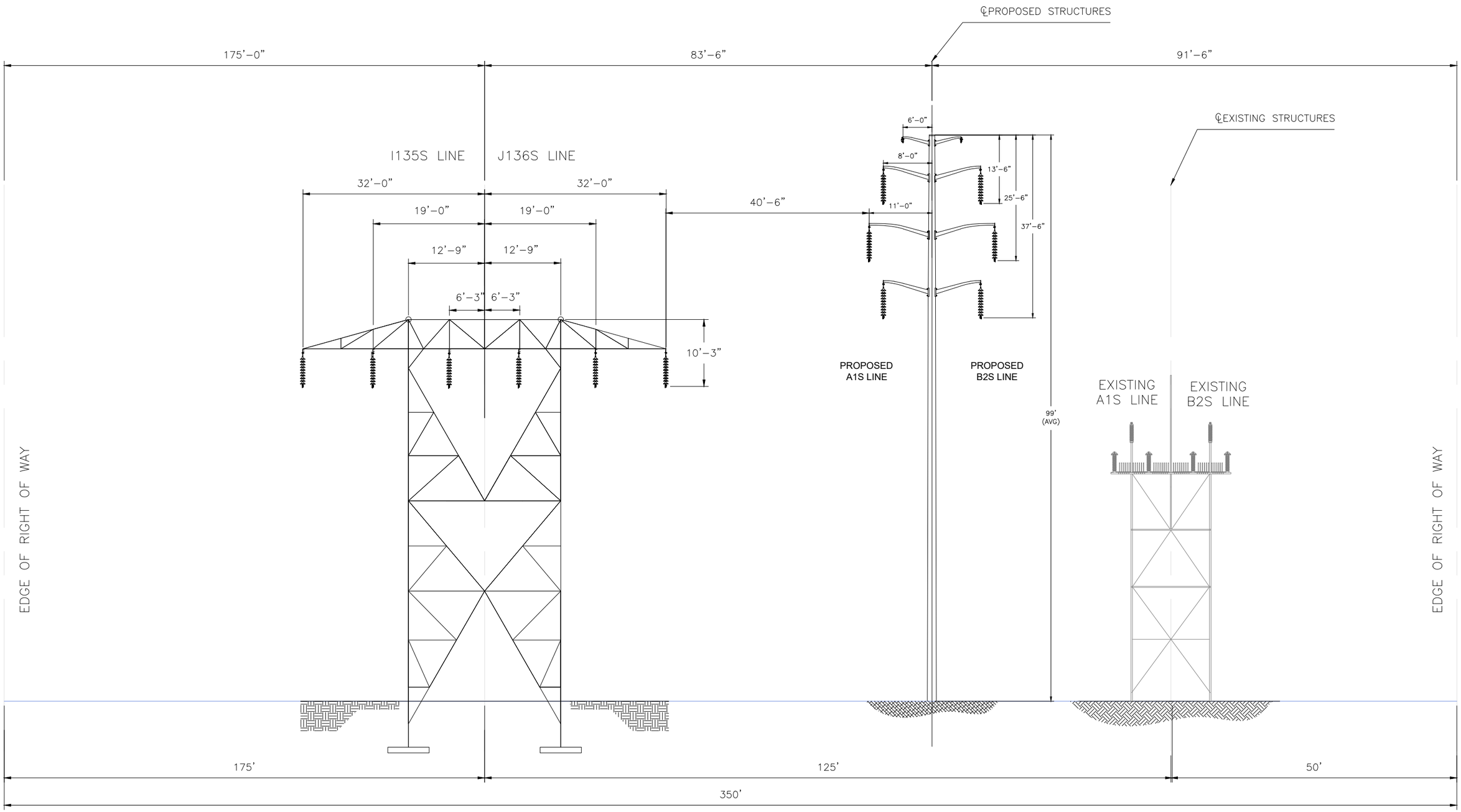
PRINTED 4/23/2023 1:33 PM

PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR THE LATEST AUTHORIZED VERSION PLEASE REFER TO THE ENGINEERING DEPARTMENT DOCUMENTS CABINET IN DOCUMENTUM

INCHES ON ORIGINAL

400739-P-X-02-P

CONFIDENTIALITY STATEMENT: THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF NATIONAL GRID SOLELY IN CONNECTION WITH THE SPECIFIC PROJECT FOR WHICH IT HAS BEEN TRANSMITTED. ANY OTHER USE, ITS TRANSMITTAL TO THIRD PARTIES, OR ITS REPRODUCTION WITHOUT PRIOR EXPRESS WRITTEN AUTHORIZATION OF NATIONAL GRID IS STRICTLY PROHIBITED.



A1/B2 PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
CROSS–SECTION FACING PRATTS JUNCTION SUBSTATION
EXISTING STRUCTURE 561 TO EXISTING STRUCTURE 642
COMMONWEALTH OF MASSACHUSETTS

VER	DATE	VERSION DESCRIPTION
1	4/23/23	ISSUED FOR PERMITTING
2		
3		
4		
5		
6		
7		

VERSION 1

REVISED BY	APPROVED BY
JTF	JTF
TBD	

PRINTED 4/23/2023 1:47 PM

nationalgrid

PREPARED BY	JTF	4/23
REVIEWED BY	TBD	4/23
APPROVED BY	JTF	4/23
SCALE	AS NOTED	
SHEET	16 OF 22	
INDEX	400739	

CROSS–SECTION

ROW (A1/B2 MAIN LINE – VERNON TO PRATTS JUNCTION)
PROJECT (A1/B2 REBUILD PROJECT)
FACING PRATTS JUNCTION – PROPOSED
PROPOSED DOUBLE CIRCUIT STRUCTURES

PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR THE LATEST AUTHORIZED VERSION PLEASE REFER TO THE ENGINEERING DEPARTMENT DOCUMENTS CABINET IN DOCUMENTUM

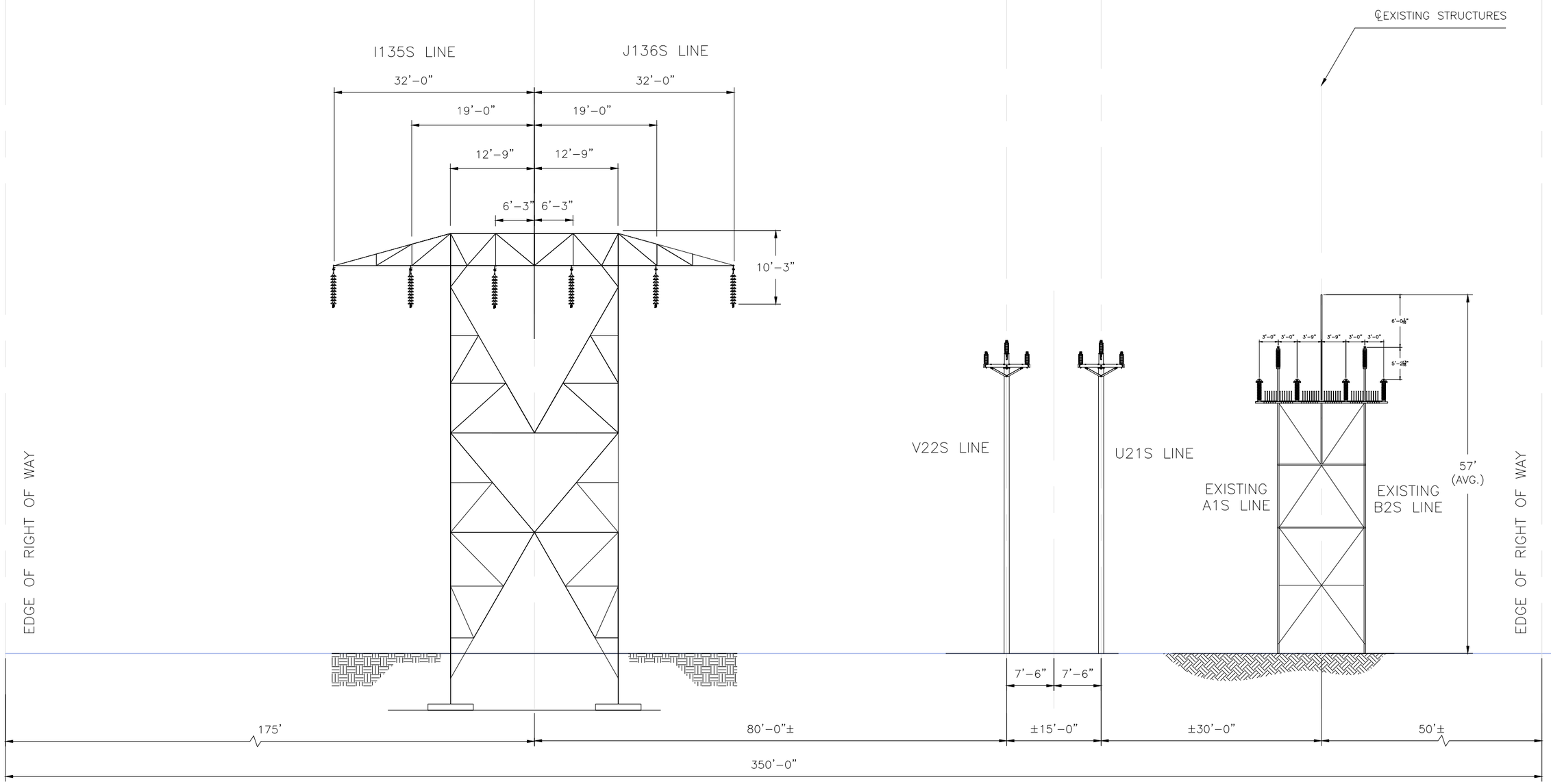
INCHES ON ORIGINAL

400739-P-X-02-P

400739-P-X-03-E

GRID. IT IS TO BE USED BY AUTHORIZED CONTRACTORS FOR NATIONAL GRID SOLELY IN CONNECTION WITH THE SPECIFIC PROJECT FOR WHICH IT HAS BEEN TRANSMITTED. ANY OTHER USE, ITS TRANSMITTAL TO THIRD PARTIES, OR ITS REPRODUCTION WITHOUT PRIOR EXPRESS WRITTEN AUTHORIZATION OF NATIONAL GRID IS STRICTLY PROHIBITED.

CONFIDENTIALITY STATEMENT: THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF NATIONAL GRID.



A1/B2 EXISTING DOUBLE CIRCUIT LATTICE TOWER STRUCTURES
CROSS–SECTION FACING PRATTS JUNCTION SUBSTATION
EXISTING STRUCTURE 642 TO EXISTING STRUCTURE 647
COMMONWEALTH OF MASSACHUSETTS

VER	DATE	VERSION DESCRIPTION
1	4/23/23	ISSUED FOR PERMITTING
2		
3		
4		
5		
6		
7		

REVIEWED BY	APPROVED BY
JTF	JTF
TBD	TBD

VERSION 1

nationalgrid

PREPARED BY	JTF	4/23
REVIEWED BY	TBD	4/23
APPROVED BY	JTF	4/23
SCALE	AS NOTED	
SHEET	19 OF 22	
INDEX	400739	

CROSS–SECTION
ROW (A1/B2 MAIN LINE – VERNON TO PRATTS JUNCTION)
PROJECT (A1/B2 REBUILD PROJECT)
FACING PRATTS JUNCTION – EXISTING
PROPOSED DOUBLE CIRCUIT STRUCTURES

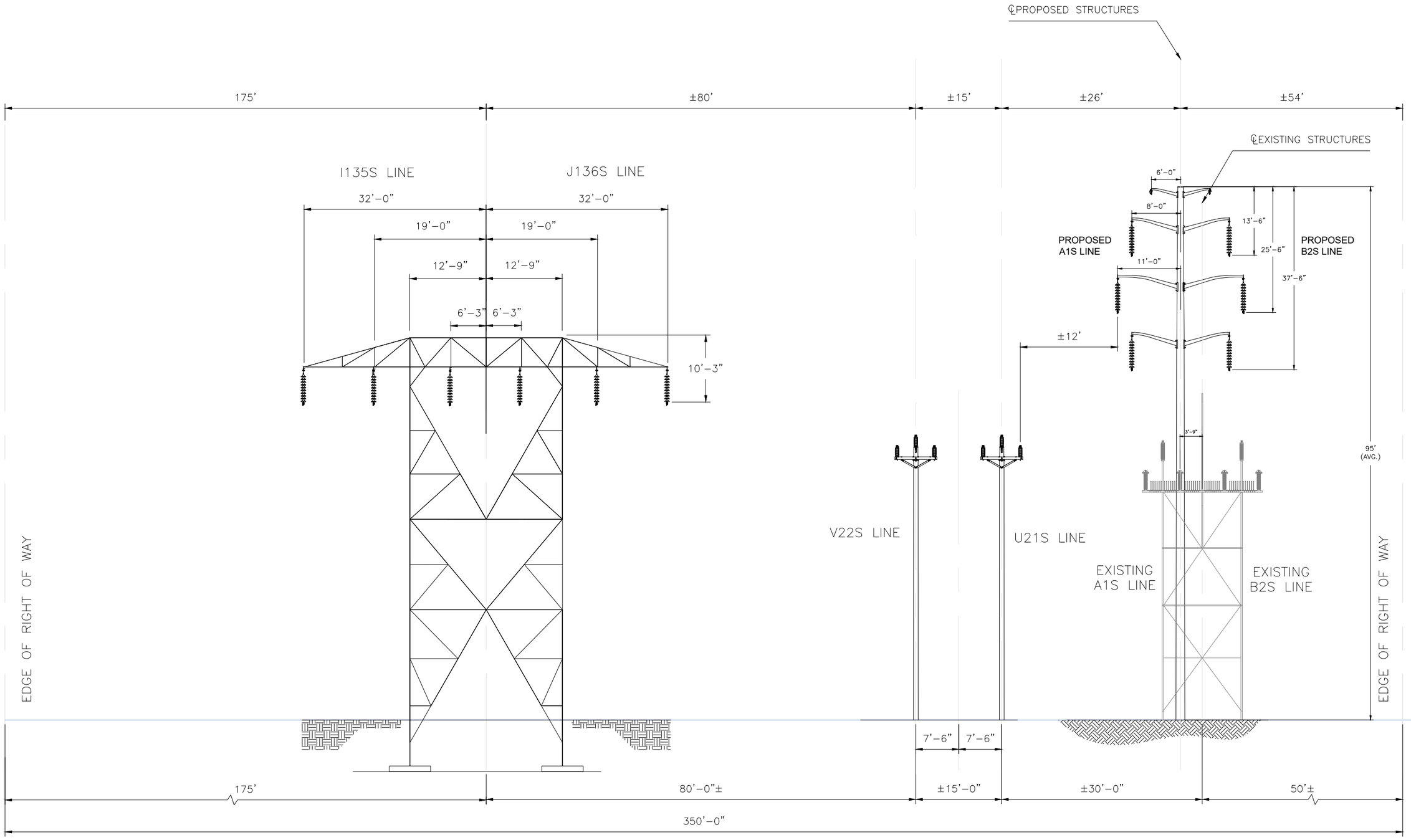
PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR THE LATEST AUTHORIZED VERSION PLEASE REFER TO THE ENGINEERING DEPARTMENT DOCUMENTS CABINET IN DOCUMENTUM

PRINTED 4/23/2023 2:04 PM

INCHES ON ORIGINAL

400739-P-X-03-P

CONFIDENTIALITY STATEMENT: THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF NATIONAL GRID. IT IS SPECIFIC PROJECT FOR WHICH IT HAS BEEN TRANSMITTED. ANY OTHER USE, ITS TRANSMITTAL TO THIRD PARTIES, OR ITS REPRODUCTION WITHOUT PRIOR EXPRESS WRITTEN AUTHORIZATION OF NATIONAL GRID IS STRICTLY PROHIBITED.



A1/B2 PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
CROSS–SECTION FACING PRATTS JUNCTION SUBSTATION
EXISTING STRUCTURE 642 TO EXISTING STRUCTURE 647
COMMONWEALTH OF MASSACHUSETTS

VER	DATE	VERSION DESCRIPTION
1	4/23/23	ISSUED FOR PERMITTING
2		
3		
4		
5		
6		
7		

VERSION 1

REVIEWED	APPROVED
JTF	JTF
TBD	

nationalgrid

PREPARED BY	JTF	4/23
REVIEWED BY	TBD	4/23
APPROVED BY	JTF	4/23
SCALE		AS NOTED
SHEET	19	OF 22
INDEX		400739

CROSS–SECTION
ROW (A1/B2 MAIN LINE – VERNON TO PRATTS JUNCTION)
PROJECT (A1/B2 REBUILD PROJECT)
FACING PRATTS JUNCTION – PROPOSED
PROPOSED DOUBLE CIRCUIT STRUCTURES

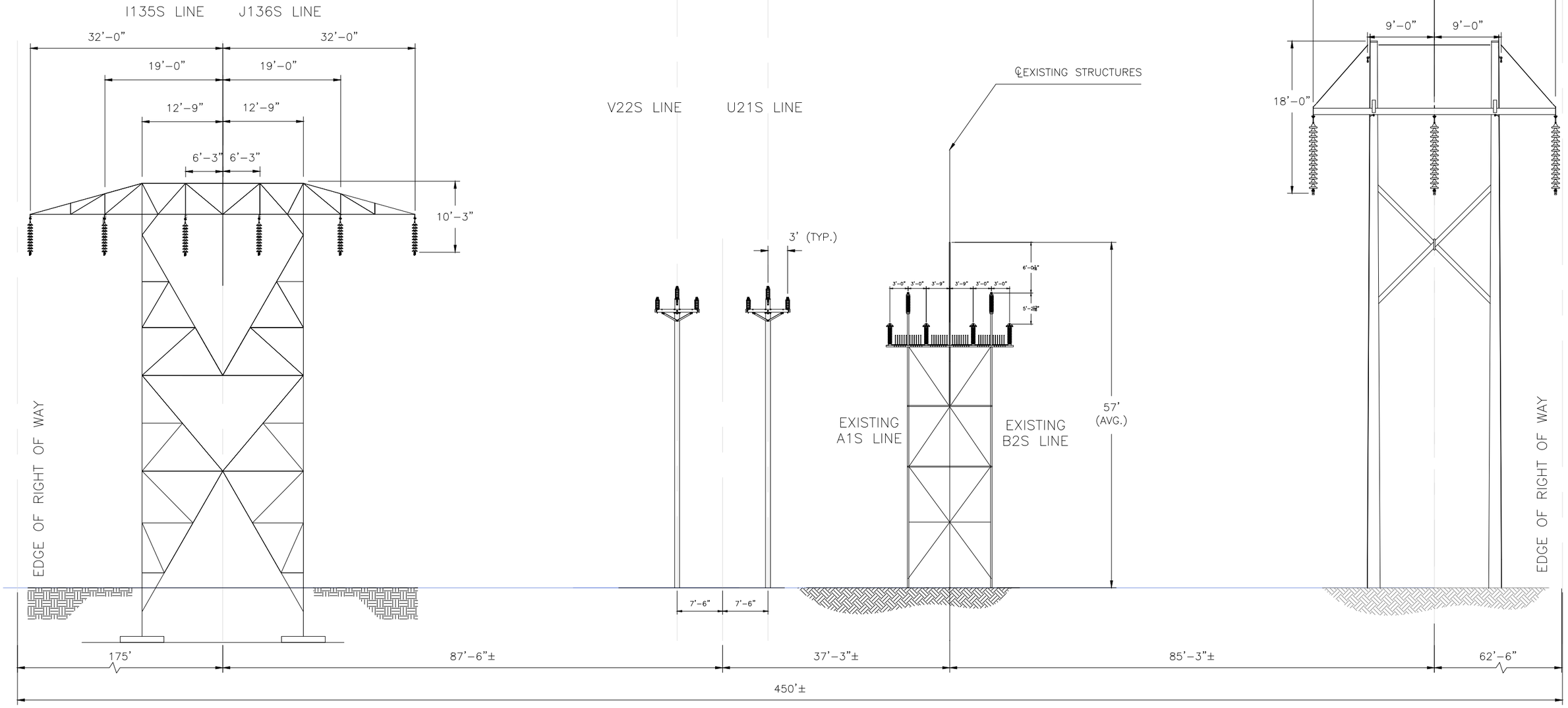
PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR THE LATEST AUTHORIZED VERSION PLEASE REFER TO THE ENGINEERING DEPARTMENT DOCUMENTS CABINET IN DOCUMENTUM

PRINTED 4/23/2023 3:55 PM

INCHES ON ORIGINAL

GRID. IT IS TO BE USED BY AUTHORIZED CONTRACTORS FOR NATIONAL GRID SOLELY IN CONNECTION WITH THE SPECIFIC PROJECT FOR WHICH IT HAS BEEN TRANSMITTED. ANY OTHER USE, ITS TRANSMITTAL TO THIRD PARTIES, OR ITS REPRODUCTION WITHOUT PRIOR EXPRESS WRITTEN AUTHORIZATION OF NATIONAL GRID IS STRICTLY PROHIBITED.

CONFIDENTIALITY STATEMENT: THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF NATIONAL GRID.



A1/B2 EXISTING DOUBLE CIRCUIT LATTICE TOWER STRUCTURES
CROSS–SECTION FACING PRATTS JUNCTION SUBSTATION
EXISTING STRUCTURE 648 TO EXISTING STRUCTURE 653
COMMONWEALTH OF MASSACHUSETTS

VER	DATE	ISSUED FOR PERMITTING
1	04/23/23	
2		
3		
4		
5		
6		
7		

REVISED BY	APPROVED BY
JTF	TBD

VERSION 1

PREPARED BY	JTF	4/23
REVIEWED BY	TBD	4/23
APPROVED BY	JTF	4/23
SCALE		AS NOTED
SHEET		20 OF 22
INDEX		400739

nationalgrid

CROSS–SECTION
ROW (A1/B2 MAIN LINE – VERNON TO PRATTS JUNCTION)
PROJECT (A1/B2 REBUILD PROJECT)
FACING TOWARD PRATTS JUNCTION – EXISTING
PROPOSED DOUBLE CIRCUIT STRUCTURES

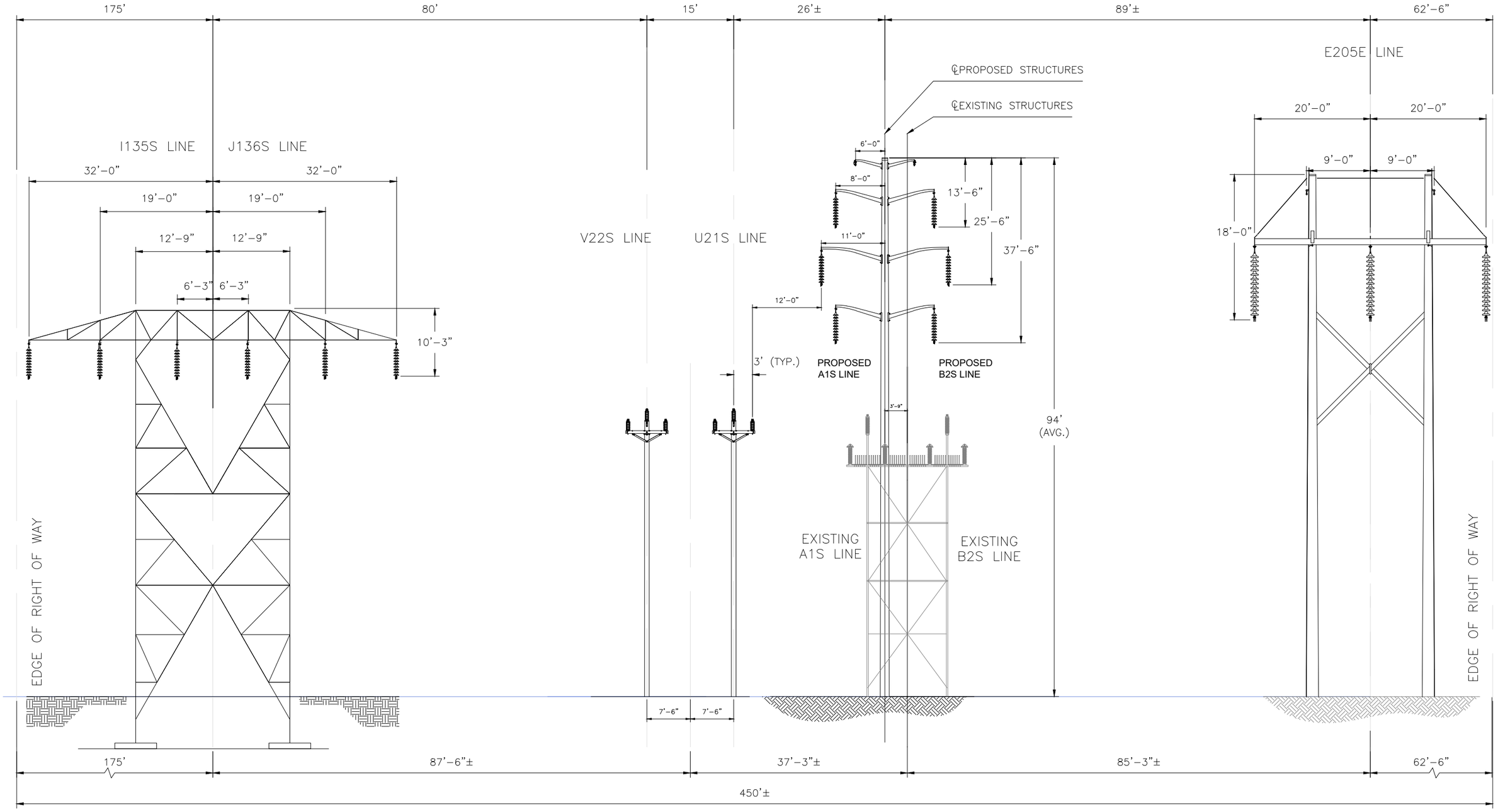
PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR THE LATEST AUTHORIZED VERSION PLEASE REFER TO THE ENGINEERING DOCUMENTUM CABINET IN

PRINTED 4/23/2023 5:08 PM

INCHES ON ORIGINAL

GRID. IT IS TO BE USED BY AUTHORIZED CONTRACTORS FOR NATIONAL GRID SOLELY IN CONNECTION WITH THE SPECIFIC PROJECT FOR WHICH IT HAS BEEN TRANSMITTED. ANY OTHER USE, ITS TRANSMITTAL TO THIRD PARTIES, OR ITS REPRODUCTION WITHOUT PRIOR EXPRESS WRITTEN AUTHORIZATION OF NATIONAL GRID IS STRICTLY PROHIBITED.

CONFIDENTIALITY STATEMENT: THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF NATIONAL GRID.



A1/B2 PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
CROSS–SECTION FACING PRATTS JUNCTION SUBSTATION
EXISTING STRUCTURE 648 TO EXISTING STRUCTURE 653
COMMONWEALTH OF MASSACHUSETTS

VERSION	1

REVISED BY	APPROVED BY
JTF	TBD

VER	DATE	VERSION DESCRIPTION
1	04/23/23	ISSUED FOR PERMITTING
2		
3		
4		
5		
6		
7		

PREPARED BY	JTF	4/23
REVIEWED BY	TBD	4/23
APPROVED BY	JTF	4/23
SCALE	AS NOTED	
SHEET	20 OF 22	
INDEX	400739	

nationalgrid

CROSS–SECTION
ROW (A1/B2 MAIN LINE - VERNON TO PRATTS JUNCTION)
PROJECT (A1/B2 REBUILD PROJECT)
FACING TOWARD PRATTS JUNCTION – PROPOSED
PROPOSED DOUBLE CIRCUIT STRUCTURES

PRINTED 4/23/2023 5:33 PM

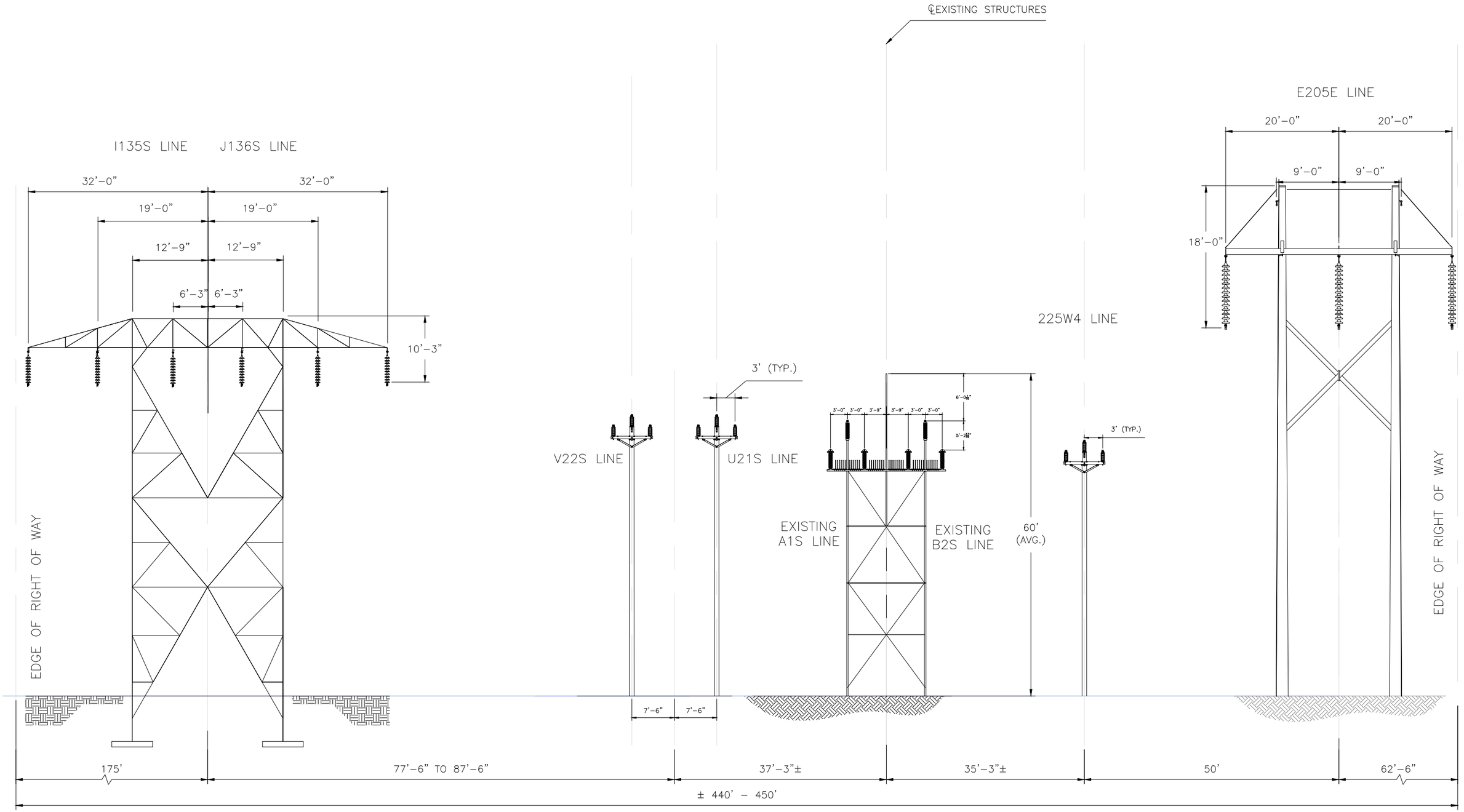
PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR THE LATEST AUTHORIZED VERSION PLEASE REFER TO THE ENGINEERING DEPARTMENT DOCUMENTS CABINET IN DOCUMENTUM

INCHES ON ORIGINAL

400739-P-X-05-E

GRID. IT IS TO BE USED BY AUTHORIZED CONTRACTORS FOR NATIONAL GRID SOLELY IN CONNECTION WITH THE SPECIFIC PROJECT FOR WHICH IT HAS BEEN TRANSMITTED. ANY OTHER USE, ITS TRANSMITTAL TO THIRD PARTIES, OR ITS REPRODUCTION WITHOUT PRIOR EXPRESS WRITTEN AUTHORIZATION OF NATIONAL GRID IS STRICTLY PROHIBITED.

CONFIDENTIALITY STATEMENT: THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF NATIONAL GRID.



EXISTING A1/B2 DOUBLE CIRCUIT LATTICE TOWER STRUCTURES
CROSS–SECTION FACING PRATTS JUNCTION SUBSTATION
EXISTING STRUCTURE 654 TO PRATTS JUNCTION SUBSTATION
COMMONWEALTH OF MASSACHUSETTS

VER	DATE	VERSION DESCRIPTION	REVISED BY	APPROVED BY
1	04/23/23	ISSUED FOR PERMITTING	JTF	TBD
2				
3				
4				
5				
6				
7				

VERSION 1

PREPARED BY: JTF 4/23
REVIEWED BY: TBD 4/23
APPROVED BY: JTF 4/23
SCALE: AS NOTED
SHEET 21 OF 22
INDEX 400739

nationalgrid

CROSS–SECTION
ROW (A1/B2 MAIN LINE – VERNON TO PRATTS JUNCTION)
PROJECT (A1/B2 REBUILD PROJECT)
FACING PRATTS JUNCTION – EXISTING
PROPOSED DOUBLE CIRCUIT STRUCTURES

PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR THE LATEST AUTHORIZED VERSION PLEASE REFER TO THE ENGINEERING DEPARTMENT DOCUMENTS CABINET IN DOCUMENTUM

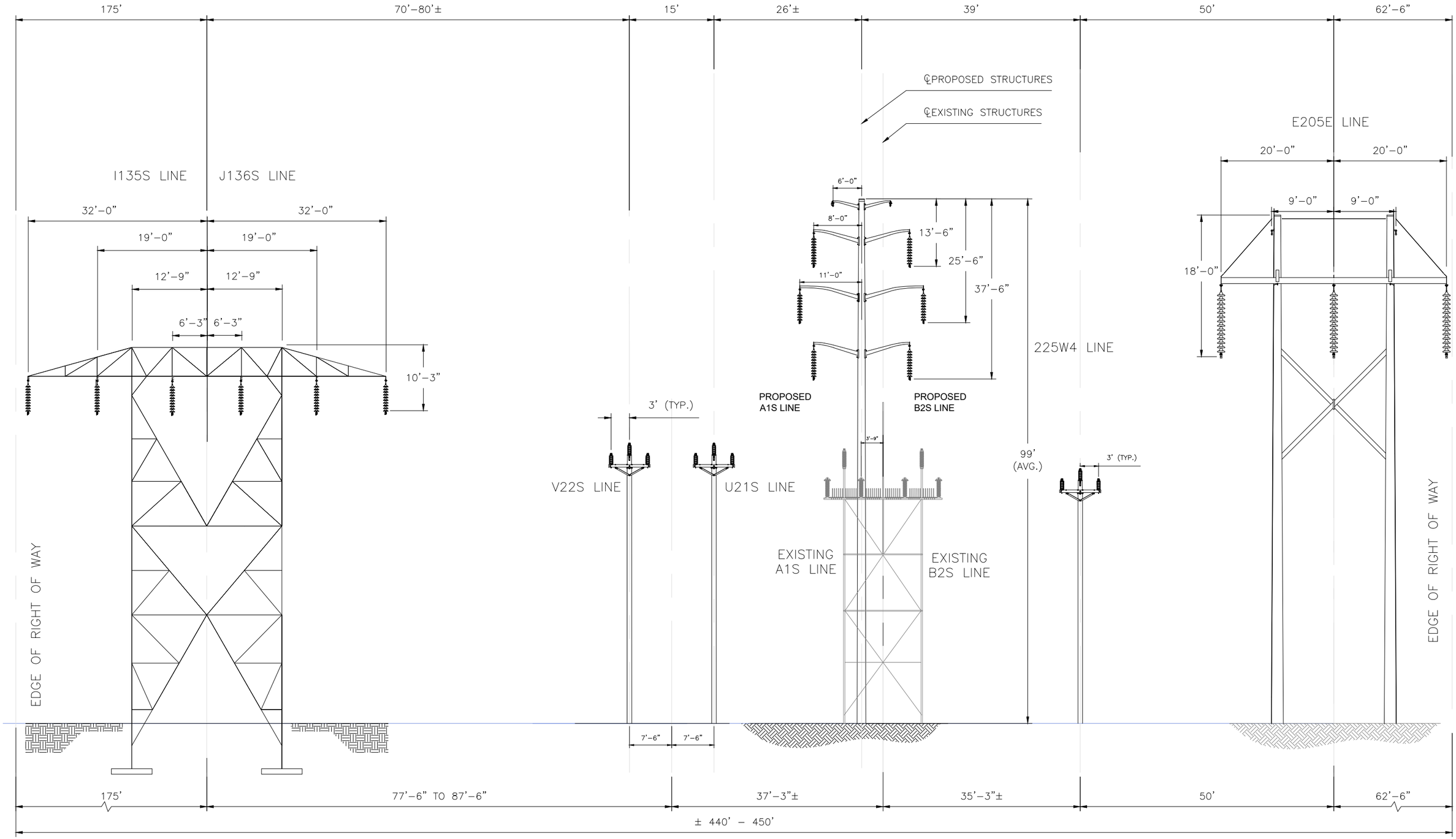
PRINTED 4/23/2023 6:03 PM

INCHES ON ORIGINAL

400739-P-X-05-P

GRID. IT IS TO BE USED BY AUTHORIZED CONTRACTORS FOR NATIONAL GRID SOLELY IN CONNECTION WITH THE SPECIFIC PROJECT FOR WHICH IT HAS BEEN TRANSMITTED. ANY OTHER USE, ITS TRANSMITTAL TO THIRD PARTIES, OR ITS REPRODUCTION WITHOUT PRIOR EXPRESS WRITTEN AUTHORIZATION OF NATIONAL GRID IS STRICTLY PROHIBITED.

CONFIDENTIALITY STATEMENT: THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF NATIONAL GRID.



PROPOSED A1/B2 DOUBLE CIRCUIT DAVIT ARM STRUCTURES
CROSS–SECTION FACING PRATTS JUNCTION SUBSTATION
EXISTING STRUCTURE 654 TO PRATTS JUNCTION SUBSTATION
COMMONWEALTH OF MASSACHUSETTS

VERSION	1

VER	DATE	ISSUED FOR PERMITTING	REVIEWED	APPROVED
1	04/23/23		JTF	TBD
2				
3				
4				
5				
6				
7				

nationalgrid

PREPARED BY	JTF	4/23
REVIEWED BY	TBD	4/23
APPROVED BY	JTF	4/23
SCALE		AS NOTED
SHEET	21	OF 22
INDEX		400739

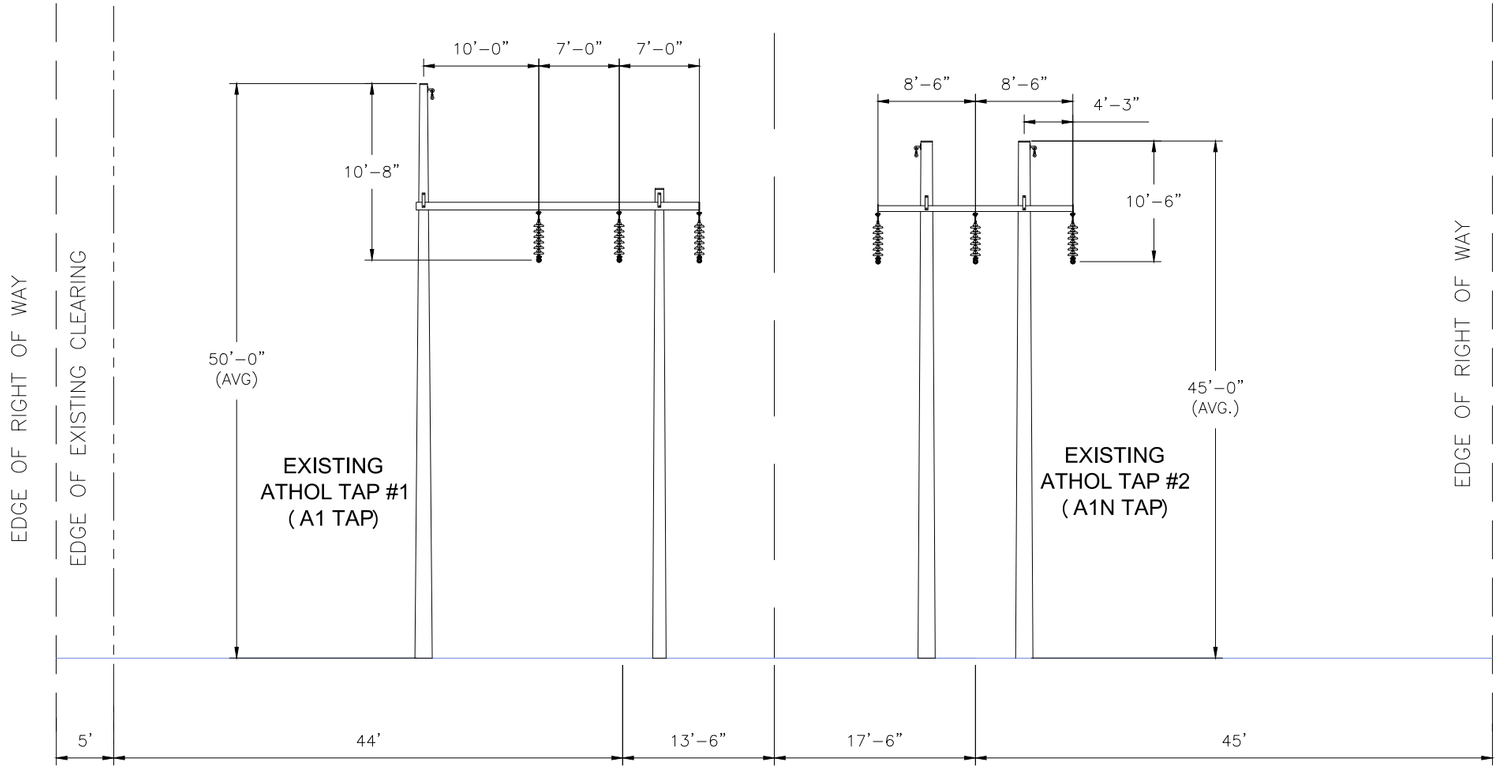
CROSS–SECTION
ROW (A1/B2 MAIN LINE – VERNON TO PRATTS JUNCTION)
PROJECT (A1/B2 REBUILD PROJECT)
FACING PRATTS JUNCTION – PROPOSED
PROPOSED DOUBLE CIRCUIT STRUCTURES

PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR THE LATEST AUTHORIZED VERSION PLEASE REFER TO THE ENGINEERING DOCUMENTUM CABINET IN DOCUMENTUM

PRINTED 4/23/2023 6:34 PM

INCHES ON ORIGINAL

CONFIDENTIALITY STATEMENT: THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF NATIONAL GRID SOLELY IN CONNECTION WITH THE SPECIFIC PROJECT FOR WHICH IT HAS BEEN TRANSMITTED. ANY OTHER USE, ITS TRANSMITTAL TO THIRD PARTIES, OR ITS REPRODUCTION WITHOUT PRIOR EXPRESS WRITTEN AUTHORIZATION OF NATIONAL GRID IS STRICTLY PROHIBITED.



EXISTING SINGLE CIRCUIT WOOD POLARM & H-FRAME STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
ROYALSTON TO STRUCTURES 72 (TAP 2) & 71 (TAP 1)
STATE OF MASSACHUSETTS

VER	DATE	VERSION DESCRIPTION
1	4/2/23	ISSUED FOR PERMITTING
2		
3		
4		
5		
6		
7		

	REVIEWED	APPROVED
	JTF	-

VERSION 1

nationalgrid

PREPARED BY	JTF	4/23
REVIEWED BY	TBD	-
APPROVED BY	JTF	4/23
SCALE	AS NOTED	
SHEET	1 OF 2	
INDEX	400739	

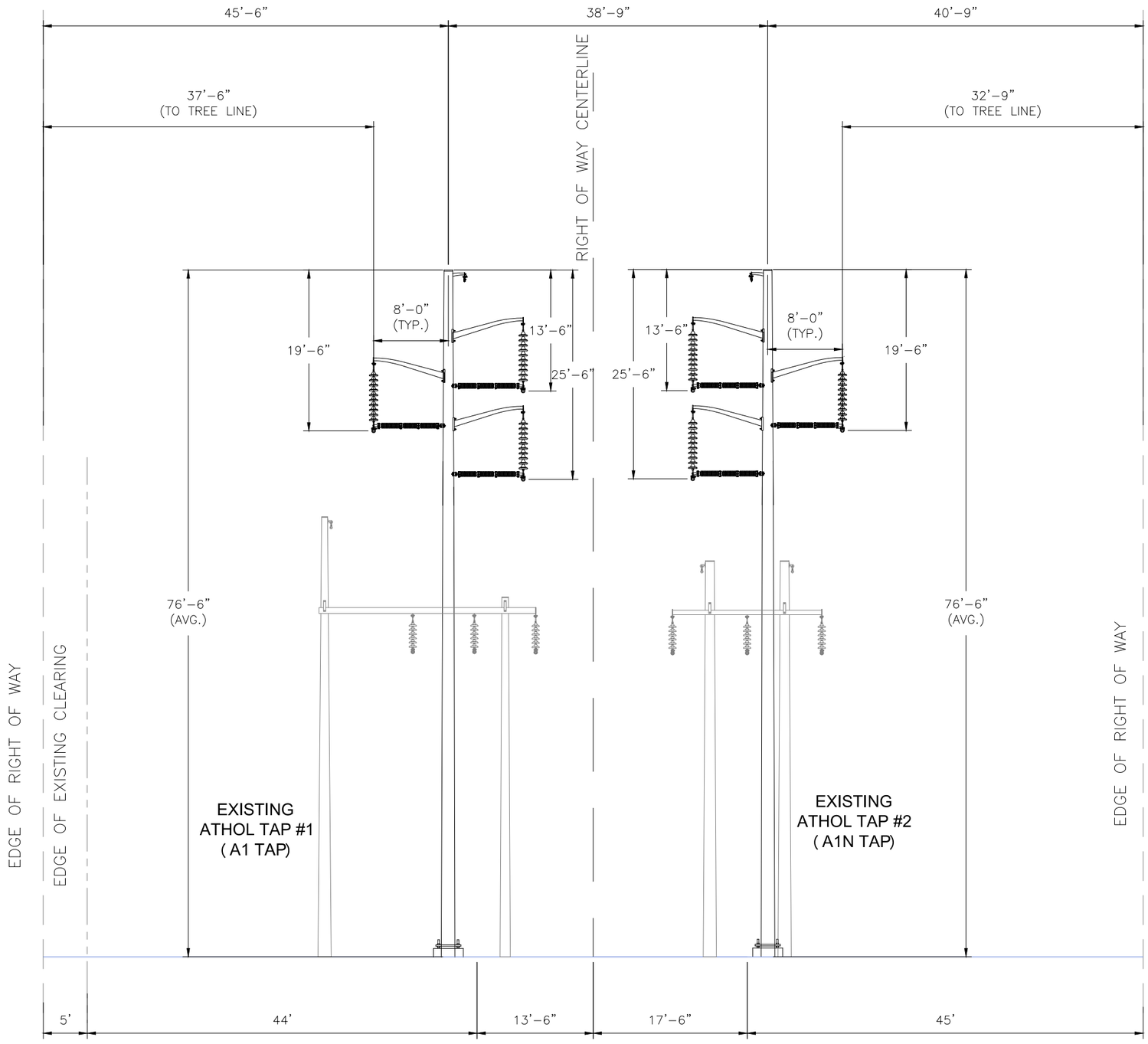
CROSS-SECTION
ROW (A1/B2 TAP TO CHESTNUT HILL)
PROJECT (A1/B2 REBUILD PROJECT)
FACING CHESTNUT HILL STATION – EXISTING
DELTA DAVIT ARM STRUCTURES

PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR THE LATEST AUTHORIZED VERSION PLEASE REFER TO THE ENGINEERING DEPARTMENT DOCUMENTS CABINET IN DOCUMENTUM

PRINTED 4/23/2023 10:53 AM

INCHES ON ORIGINAL

CONFIDENTIALITY STATEMENT: THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF NATIONAL GRID. IT IS TO BE USED BY AUTHORIZED CONTRACTORS FOR NATIONAL GRID SOLELY IN CONNECTION WITH THE SPECIFIC PROJECT FOR WHICH IT HAS BEEN TRANSMITTED. ANY OTHER USE, ITS TRANSMITTAL TO THIRD PARTIES, OR ITS REPRODUCTION WITHOUT PRIOR EXPRESS WRITTEN AUTHORIZATION OF NATIONAL GRID IS STRICTLY PROHIBITED.



PROPOSED SINGLE CIRCUIT DELTA DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
ROYALSTON TO STRUCTURES 72 (TAP 2) & 71 (TAP 1)
STATE OF MASSACHUSETTS

VERSION	1

REVIEWED	APPROVED
JTF	-

VER	DATE	VERSION DESCRIPTION
1	4/22/23	ISSUED FOR PERMITTING
2		
3		
4		
5		
6		
7		

nationalgrid

PREPARED BY	JTF	4/23
REVIEWED BY	TBD	-
APPROVED BY	JTF	4/23
SCALE	AS NOTED	
SHEET	1 OF 2	
INDEX	400739	

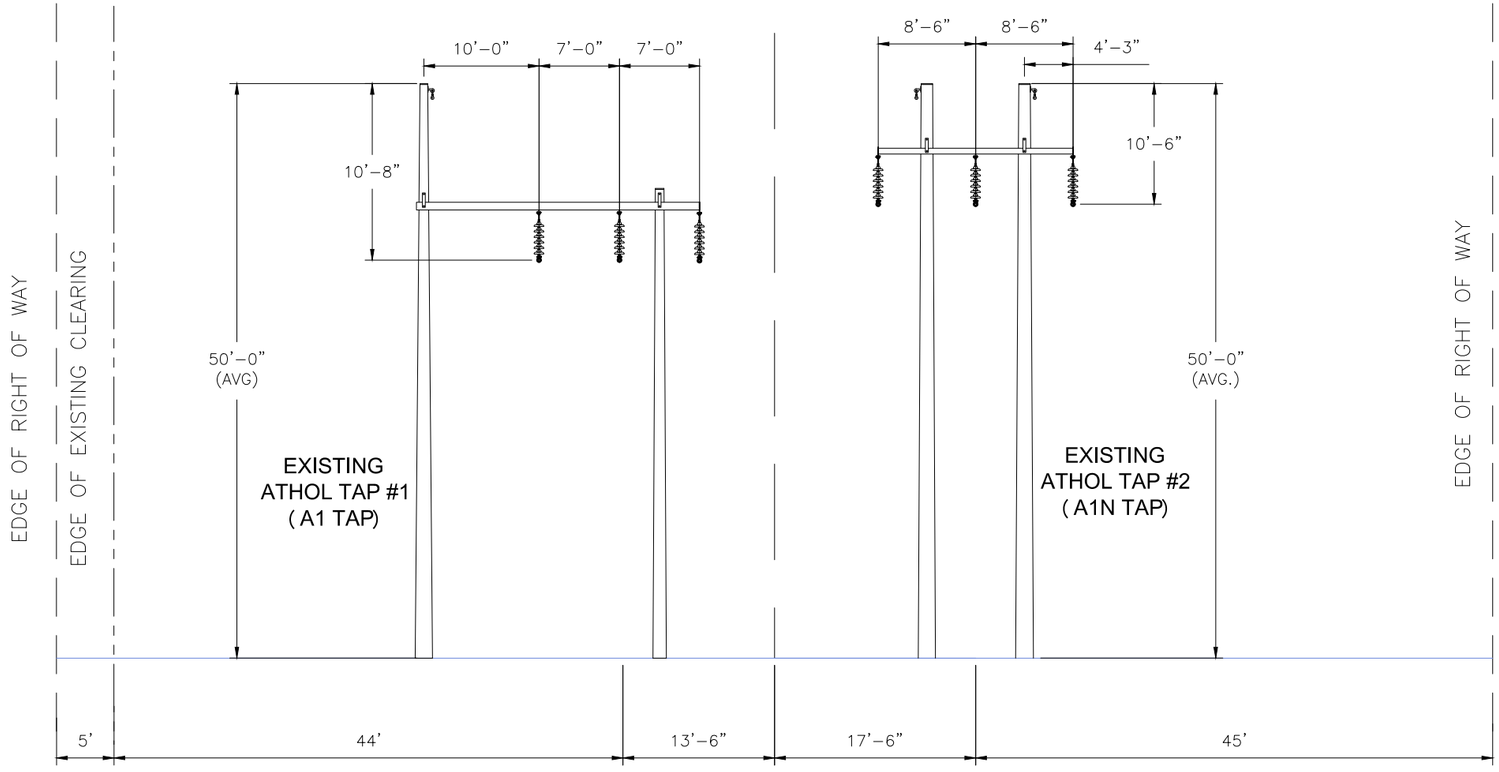
CROSS–SECTION
ROW (A1/B2 TAP TO CHESTNUT HILL)
PROJECT (A1/B2 REBUILD PROJECT)
FACING CHESTNUT HILL STATION – PROPOSED
VERTICAL DAVIT ARM STRUCTURES

PRINTED 4/22/2023 6:42 PM

PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR THE LATEST AUTHORIZED VERSION PLEASE REFER TO THE ENGINEERING DEPARTMENT DOCUMENTS CABINET IN DOCUMENTUM

INCHES ON ORIGINAL

CONFIDENTIALITY STATEMENT: THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF NATIONAL GRID SOLELY IN CONNECTION WITH THE SPECIFIC PROJECT FOR WHICH IT HAS BEEN TRANSMITTED. ANY OTHER USE, ITS TRANSMITTAL TO THIRD PARTIES, OR ITS REPRODUCTION WITHOUT PRIOR EXPRESS WRITTEN AUTHORIZATION OF NATIONAL GRID IS STRICTLY PROHIBITED.



EXISTING SINGLE CIRCUIT WOOD POLARM & H-FRAME STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
STRUCTURES 72 (TAP 2) & 71 (TAP 1) TO CHESTNUT HILL SUBSTATION
STATE OF MASSACHUSETTS

VER	DATE	VERSION DESCRIPTION	REVIEWED	APPROVED
1	4/22/23	ISSUED FOR PERMITTING	JTF	-
2				
3				
4				
5				
6				
7				

VERSION 1

nationalgrid

PREPARED BY	JTF	4/23
REVIEWED BY	TBD	-
APPROVED BY	JTF	4/23
SCALE	AS NOTED	
SHEET	1 OF 2	
INDEX	400739	

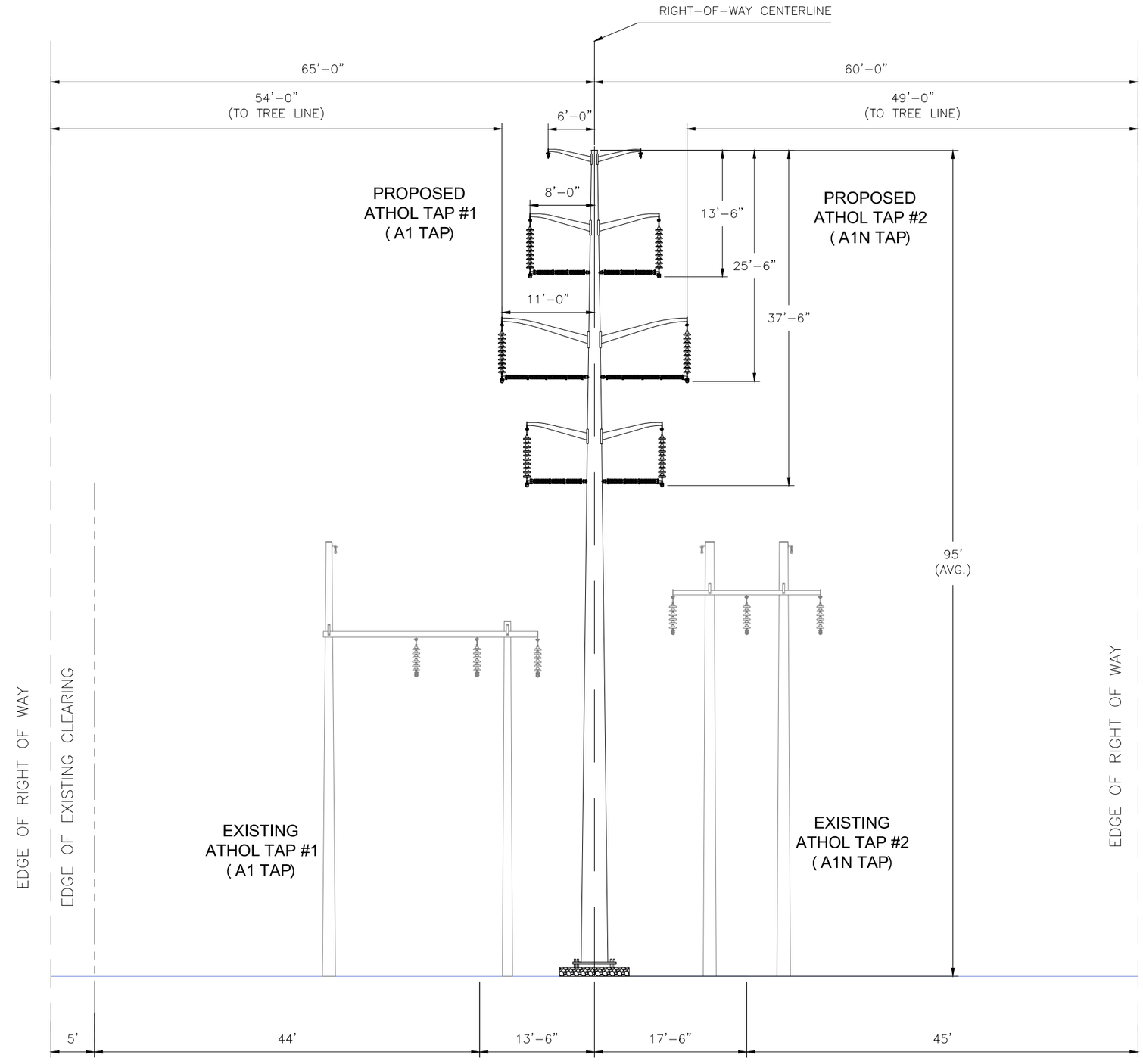
CROSS-SECTION
ROW (A1/B2 TAP TO CHESTNUT HILL)
PROJECT (A1/B2 REBUILD PROJECT)
FACING CHESTNUT HILL STATION – EXISTING
DOUBLE CIRCUIT DAVIT ARM STRUCTURES

PRINTED 4/23/2023 11:03 AM

PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR THE LATEST AUTHORIZED VERSION PLEASE REFER TO THE ENGINEERING DEPARTMENT DOCUMENTS CABINET IN DOCUMENTUM

INCHES ON ORIGINAL

CONFIDENTIALITY STATEMENT: THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF NATIONAL GRID SOLELY IN CONNECTION WITH THE SPECIFIC PROJECT FOR WHICH IT HAS BEEN TRANSMITTED. ANY OTHER USE, ITS TRANSMITTAL TO THIRD PARTIES; OR ITS REPRODUCTION WITHOUT PRIOR EXPRESS WRITTEN AUTHORIZATION OF NATIONAL GRID IS STRICTLY PROHIBITED.



PROPOSED DOUBLE CIRCUIT DAVIT ARM STRUCTURES
LOOKING TOWARDS CHESTNUT HILL STATION
STRUCTURES 72 (TAP 2) & 71 (TAP 1) TO CHESTNUT HILL SUBSTATION
STATE OF MASSACHUSETTS

VERSION	1

REVISED BY	APPROVED
JTF	-

VER	DATE	VERSION DESCRIPTION
1	4/22/23	ISSUED FOR PERMITTING
2		
3		
4		
5		
6		
7		

nationalgrid

PREPARED BY	JTF	4/23
REVIEWED BY	TBD	-
APPROVED BY	JTF	4/23
SCALE	AS NOTED	
SHEET	1 OF 2	
INDEX	400739	

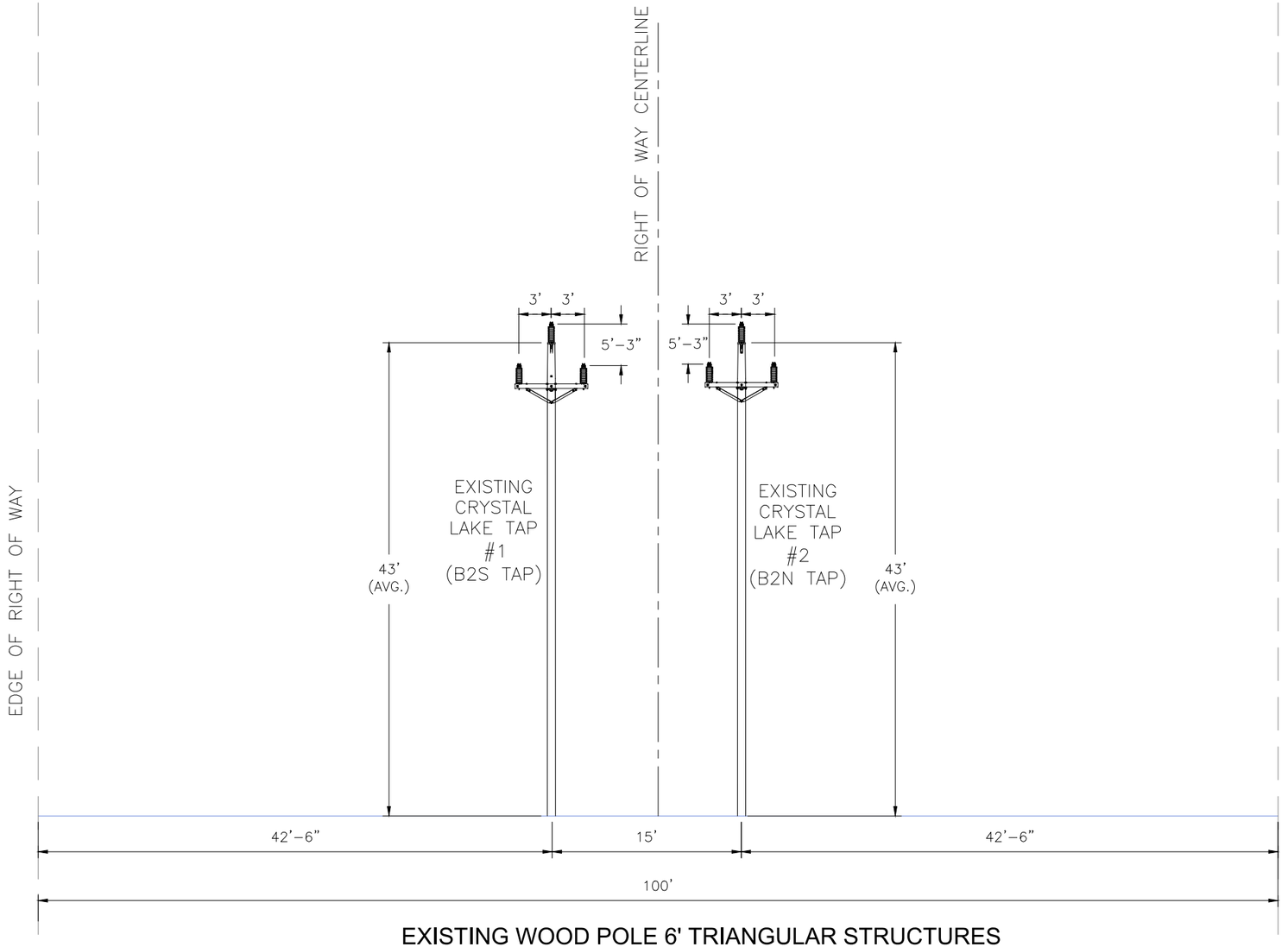
CROSS-SECTION
ROW (A1/B2 TAP TO CHESTNUT HILL)
PROJECT (A1/B2 REBUILD PROJECT)
FACING CHESTNUT HILL STATION - PROPOSED
DOUBLE CIRCUIT DAVIT ARM STRUCTURES

PRINTED 4/23/2023 11:29 AM

PRINTED COPIES ARE NOT DOCUMENT CONTROLLED, FOR THE LATEST AUTHORIZED VERSION PLEASE REFER TO THE ENGINEERING DEPARTMENT DOCUMENTS CABINET IN DOCUMENTUM

INCHES ON ORIGINAL

CONFIDENTIALITY STATEMENT: THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF NATIONAL GRID. IT IS TO BE USED BY AUTHORIZED CONTRACTORS FOR NATIONAL GRID SOLELY IN CONNECTION WITH THE SPECIFIC PROJECT FOR WHICH IT HAS BEEN TRANSMITTED. ANY OTHER USE, ITS TRANSMITTAL TO THIRD PARTIES, OR ITS REPRODUCTION WITHOUT PRIOR EXPRESS WRITTEN AUTHORIZATION OF NATIONAL GRID IS STRICTLY PROHIBITED.



EXISTING WOOD POLE 6' TRIANGULAR STRUCTURES
LOOKING TOWARD CRYSTAL LAKE STATION
TYPICAL
STATE OF MASSACHUSETTS

VER	DATE	VERSION DESCRIPTION
1	4/21/23	ISSUED FOR PERMITTING
2		
3		
4		
5		
6		
7		

REVISED	APPROVED
JTF	-

VERSION 1

nationalgrid

PREPARED BY	JTF	4/23
REVIEWED BY	TBD	-
APPROVED BY	JTF	4/23
SCALE	AS NOTED	
SHEET	1 OF 1	
INDEX	400739	

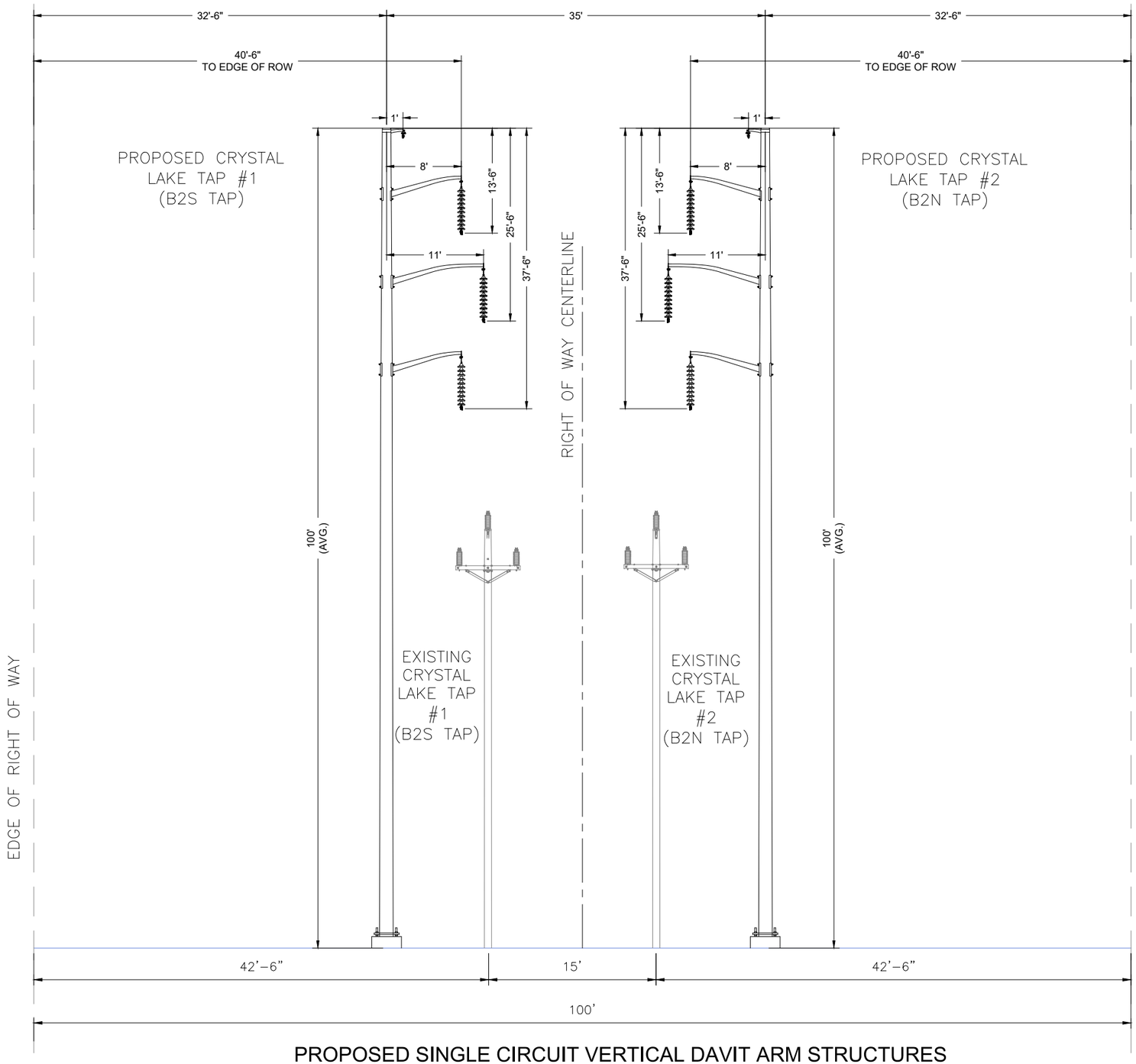
CROSS-SECTION
ROW (A1/B2 TAP TO CRYSTAL LAKE STATION)
PROJECT (A1/B2 REBUILD PROJECT)
FACING CRYSTAL LAKE STATION - EXISTING
SINGLE CIRCUIT VERTICAL DAVIT ARM STRUCTURES

PRINTED 4/21/2023 4:34 PM

PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR THE LATEST AUTHORIZED VERSION PLEASE REFER TO THE ENGINEERING DEPARTMENT DOCUMENTS CABINET IN DOCUMENTUM

INCHES ON ORIGINAL

CONFIDENTIALITY STATEMENT: THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF NATIONAL GRID SOLELY IN CONNECTION WITH THE SPECIFIC PROJECT FOR WHICH IT HAS BEEN TRANSMITTED. ANY OTHER USE, ITS TRANSMITTAL TO THIRD PARTIES, OR ITS REPRODUCTION WITHOUT PRIOR EXPRESS WRITTEN AUTHORIZATION OF NATIONAL GRID IS STRICTLY PROHIBITED.



PROPOSED SINGLE CIRCUIT VERTICAL DAVIT ARM STRUCTURES
LOOKING TOWARD CRYSTAL LAKE STATION
TYPICAL
STATE OF MASSACHUSETTS

VER	DATE	VERSION DESCRIPTION
1	4/21/23	ISSUED FOR PERMITTING
2		
3		
4		
5		
6		
7		

REVIEWED	APPROVED
JTF	JTF
-	

VERSION 1

PREPARED BY	JTF	4/23
REVIEWED BY	TBD	-
APPROVED BY	JTF	4/23
SCALE	AS NOTED	
SHEET	1 OF 1	
INDEX	400739	

nationalgrid

CROSS-SECTION
ROW (A1/B2 TAP TO CRYSTAL LAKE STATION)
PROJECT (A1/B2 REBUILD PROJECT)
FACING CRYSTAL LAKE STATION - PROPOSED
SINGLE CIRCUIT VERTICAL DAVIT ARM STRUCTURES

PRINTED 4/21/2023 4:35 PM

PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR THE LATEST AUTHORIZED VERSION PLEASE REFER TO THE ENGINEERING DEPARTMENT DOCUMENTS CABINET IN DOCUMENTUM

INCHES ON ORIGINAL

APPENDIX B

DEIR Circulation List

A1/B2 LINE ASSET CONDITION REFURBISHMENT PROJECT - MASSACHUSETTS
Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, & Sterling

STATE/REGULATORY AGENCIES [1]

Agency	Email Address	Address
Massachusetts Environmental Policy Act (MEPA) Office	MEPA@mass.gov	**MEPA Office** 100 Cambridge Street, Suite 900 Boston, MA 02144
Department of Environmental Protection, Boston Office	helena.boccadoro@mass.gov	**Commissioner's Office** One Winter Street Boston, MA 02108
Department of Environmental Protection, Appropriate Regional Office and to each program from which a permit will be sought	kathleen.fournier@mass.gov Catherine.skiba@mass.gov	**DEP/Western Regional Office** Attn: MEPA Coordinator State House West - 4th floor 436 Dwight Street Springfield, MA 01103
	andrea.briggs@mass.gov	**DEP/Central Regional Office** Attn: MEPA Coordinator 8 New Bond Street Worcester, MA 01606
Massachusetts Department of Transportation - Boston	MassDOTPPDU@dot.state.ma.us	**Public/Private Development Unit** 10 Park Plaza, Suite #4150 Boston, MA 02116
Massachusetts Department of Transportation – District Office	bao.lang@dot.state.ma.us garrett.postema@dot.state.ma.us	**District #2** Attn: MEPA Coordinator 811 North King Street Northampton, MA 01060
	jeffrey.r.gomes@dot.state.ma.us	**District #3** Attn: MEPA Coordinator 499 Plantation Parkway Worcester, MA 01605
Massachusetts Historical Commission	Mail a hard copy of the filing to MHC.	**The MA Archives Building** 220 Morrissey Boulevard Boston, MA 02125
If the Project is located within five miles of an Environmental Justice Population	EEA Environmental Justice Director MEPA-EJ@mass.gov	**MEPA Office** Attn: EEA EJ Director 100 Cambridge Street, Suite 900 Boston, MA 02144

[1] Retrieved from MEPA website revised 10/17/2023.

If the project site has been in agricultural use within the last fifteen years	barbara.hopson@mass.gov	**Department of Agricultural Resources** Attn: MEPA Coordinator 138 Memorial Avenue, Suite 42 West Springfield, MA 01089
If the Project site is within or contains designated significant or estimated habitat, or priority sites of endangered or threatened species or species of special concern in accordance with the Massachusetts Endangered Species Act	melany.cheeseman@mass.gov emily.holt@mass.gov	**Natural Heritage and Endangered Species Program** Division of Fisheries & Wildlife 1 Rabbit Hill Road Westborough, MA 01581
If the Project affects DCR roadways, watersheds or other properties or an ACEC	andy.backman@mass.gov	**DCR** Attn: MEPA Coordinator 251 Causeway St. Suite 600 Boston MA 02114
If the Project is subject to Greenhouse Gas Emissions Policy or to review by Energy Facilities Siting Board	andrew.greene@mass.gov geneen.bartley@mass.gov	**Energy Facilities Siting Board** Attn: MEPA Coordinator One South Station Boston, MA 02110
	paul.ormond@mass.gov	**Department of Energy Resources** Attn: MEPA Coordinator 100 Cambridge Street, 10th floor Boston, MA 02114
If the Project is in a municipality served by the Massachusetts Water Resources Authority (MWRA)	katherine.ronan@mwra.com	**Massachusetts Water Resource Authority** Attn: MEPA Coordinator 100 First Avenue Charlestown Navy Yard Boston, MA 02129

REGIONAL PLANNING AGENCIES

Regional Planning Agency	Email and/or Mailing Address
Central Massachusetts Regional Planning Commission (CMRPC)	mepafiling@cmrpc.org
Franklin Regional Council of Governments (FRCoG)	KMacPhee@frcog.org PSloan@frcog.org and 2 hard copies to: Kimberly MacPhee and Peggy Sloan FRCOG, 12 Olive Street, Greenfield, MA 01301
Montachusett Regional Planning Commission (MRPC)	mrpc@mrpc.org

LOCAL BOARDS/COMMISSIONS/LIBRARIES

Municipality	Email Address	Address
Athol, MA	Board of Selectmen barmentrout@townofathol.org	584 Main Street Athol, MA 01331
	Planning Board esmith@townofathol.org	
	Conservation Commission conservation@townofathol.org	
	Health Department dvondal@townofathol.org	
	Historical Commission jshaughnessy@cwmars.org	
	Library info@athollibrary.org	Athol Library Trustees Athol Public Library 568 Main Street, Athol, MA 01331
Fitchburg, MA	City Council cityclerk@fitchburgma.gov	Fitchburg Legislative Building 700 Main Street Fitchburg, MA 01420
	Board of Health scurry@fitchburgma.gov	
	Community Development MOHara@fitchburgma.gov aleblanc@fitchburgma.gov	718 Main Street Fitchburg, MA 01420
	Conservation Commission MOHara@fitchburgma.gov	
	Historical Commission HistoricCommission@fitchburgma.gov	
	Library librarytrustees@fitchburgma.gov	Fitchburg Library Trustees Fitchburg Public Library 610 Main St. Fitchburg, MA 01420
	Department of Public Works dpwdispatch@fitchburgma.gov	Fitchburg Commission of Public Works 301 Broad Street Fitchburg, MA 01420

Gardner, MA	City Council ekazinskas@gardner-ma.gov	Gardner City Council Council Chamber of City Hall 95 Pleasant Street 95 Pleasant Street Gardner, MA 01440
	Board of Health lsaunders@gardner-ma.gov mblondeau@gardner-ma.gov savallone62@gmail.com	
	Cultural Council jderoy@gardner-ma.gov	
	Conservation Commission kguertin@gardner-ma.gov sdorrow@gardner-ma.gov	115 Pleasant Street Gardner, MA 01440
	Planning Board cfucile@gardner-ma.gov	
	Zoning Board mnegron@gardner-ma.gov	
	Library tcaissie@cwmars.org	Levi Heywood Memorial Library 55 West Lynde St. Gardener, MA 01440
Leominster, MA	City Council mnadeau@Leominster-MA.gov tardinger@leominster-ma.gov	25 West Street, Leominster, MA 01453
	Planning and Development mnadeau@Leominster-MA.gov JSouza@leominster-ma.gov	
	Conservation Commission c/o City Clerk mnadeau@Leominster-MA.gov nkremp@leominster-ma.gov	
	Health Department jstephens@leominster-ma.gov kmumford@leominster-ma.gov	
	Historical Commission lhcomm@leominster-ma.gov	
	Cultural Council LCC01453@gmail.com Vbriggs@leominster-ma.gov	
	Zoning Board eirvine@leominster-ma.gov	

	Library alent@leominster-ma.gov	Leominster Public Library 30 West Street, Leominster, MA 01453
Royalston, MA	Select Board Michelle.deline@royalston-ma.gov	P.O. Box 125 Royalston, MA 01368
	Planning Board https://www.royalston-ma.gov/user/212/contact	
	Conservation Commission George01368@yahoo.com	
	Board of Health Michelle.deline@royalston-ma.gov	
	Library royalstonlibrary@gmail.com	
	Historical Commission HDC@royalston-ma.gov	
	Open Space and Recreation Committee Chris.long@royalston-ma.gov	
	Zoning Board Geoff.newton@royalston-ma.gov	
Sterling, MA	Select Board c/o Town Administrator bcaldwell@sterling-ma.gov	1 Park Street Sterling, MA 01564
	Planning Board ppage@sterling-ma.gov	
	Conservation Commission mmarro@sterling-ma.gov	
	Board of Health knickerson@sterling-ma.gov	
	Cultural Council kjayne@sterling-ma.gov	

	Historical Commission c/o Kama Jayne kjayne@sterling-ma.gov	
	Zoning Board ppage@sterling-ma.gov	
	Wachusett Regional School District Committee sherrie_haber@wrsd.net	
Warwick, MA	Selectboard c/o Town Clerk townclerk@town.warwick.ma.us	12 Athol Rd, Warwick, MA 01378
	Planning Board c/o Town Clerk townclerk@town.warwick.ma.us	
	Conservation Commission gbrodski@gmail.com	
	Department/Board of Health c/o Town Clerk townclerk@town.warwick.ma.us	
	Historical Commission c/o Town Clerk townclerk@town.warwick.ma.us	
	Open Space Committee c/o Town Clerk townclerk@town.warwick.ma.us	
	Zoning Board c/o Town Clerk townclerk@town.warwick.ma.us	
	Library warwick@cwmars.org	Warwick Public Library 4 Hotel Road Warwick, MA 01378
Westminster, MA	Select Board c/o Town Clerk esheehan@westminster-ma.gov	11 South Street Westminster, MA 01473
	Planning Board swallace@westminster-ma.gov	
	Conservation Commission mmarro@westminster-ma.gov	
	Health Department aconlin@westminster-ma.gov	

	Historical Commission nlanghart@westminster-ma.gov	
	Cultural Council c/o Town Clerk esheehan@westminster-ma.gov	
	Zoning Board klemay@westminster-ma.gov	
	Department of Public Works jhall@westminster-ma.gov	Department of Public Works 2 Oakmont Avenue PO Box 376 Westminster, MA 01473
	Library nlanghart@westminster-ma.gov	Forbush Memorial Library 118 Main Street PO Box 468 Westminster, MA 01473
Winchendon, MA	Board of Selectmen alabrie@townofwinchendon.com	109 Front Street Winchendon, MA 01475
	Planning and Development nroberts@townofwinchendon.com	
	Conservation Commission MMarro@townofwinchendon.com	
	Board of Health nroberts@townofwinchendon.com	
	Historical Commission doniel@townofwinchendon.com	
	Community Park Committee tnewton@townofwinchendon.com	
	Department of Public Works bellis@townofwinchendon.com	
	Zoning Board nroberts@townofwinchendon.com	
	Library mking@winchendon.com bealsmemoriallibrary@gmail.com	Beals Memorial Library, Library Trustees 50 Pleasant St. Winchendon, MA 01475

List of commenters on the EENF

Agency	Email Address
Town of Leominster Department of Public Works	jroseberry@dpw.leominster-ma.gov
MA DCR	Andy.backman@mass.gov
Massachusetts Division of Fisheries and Wildlife (DFW) Natural heritage and Endangered Species Program (NHESP)	lauren.glorioso@state.ma.us
MassDOT	Curtis.B.Wiemann@dot.state.ma.us
Executive Office of Energy and Environmental Affairs	josbel.mejia@state.ma.us

APPENDIX C

Agency Correspondence

Shrestha, Priyanka

From: Barnum, Sarah
Sent: Tuesday, August 15, 2023 4:01 PM
To: Shrestha, Priyanka
Subject: FW: A1/B2 MESA Checklist Submission
Attachments: A1B2_MESA_Checklist_Submittal_Package.pdf

Sarah Barnum, Ph.D., CWB NH Ecological Services Manager
(860) 781-6151
www.bscgroup.com

From: Barnum, Sarah
Sent: Tuesday, August 15, 2023 3:19 PM
To: Glorioso, Lauren (FWE) <lauren.glorioso@state.ma.us>; Cheeseman, Melany (FWE) <melany.cheeseman@state.ma.us>
Cc: Tyrrell, Michael <Michael.Tyrrell@nationalgrid.com>; Portante, Theresa <TPortante@bscgroup.com>
Subject: A1/B2 MESA Checklist Submission

Lauren, Melany,

Please find attached the A1/B2 ACR Project MESA Checklist submittal package. The Check will be sent with a hard copy tomorrow.

Let me know if you have any questions,

Sarah

Sarah Barnum, Ph.D., CWB
Threatened and Endangered Species Specialist
NH Ecological Services Manager
150 Dow Street, Ste. 450 / Manchester, NH 03101
O: 603-945-4526 / D: 860-781-6151 / C: 603-268-6040
sbarnum@bscgroup.com
www.bscgroup.com
BSC GROUP
BUILD | SUPPORT | CONNECT

Shrestha, Priyanka

From: Portante, Theresa
Sent: Tuesday, October 31, 2023 10:44 AM
To: Shrestha, Priyanka
Subject: FW: [EXTERNAL] RE: National Grid - A1/B2 ACR Project - GHG methodology

---

From: Kim, Tori (ENV) <tori.kim@state.ma.us>
Sent: Thursday, March 9, 2023 11:56 AM
To: Tyrrell, Michael <Michael.Tyrrell@nationalgrid.com>; Hughes, Jennifer (EEA) <jennifer.hughes@state.ma.us>; Gaertner, Kurt (ENV) <kurt.gaertner@state.ma.us>
Cc: Czepiga, Page (ENV) <page.czepiga@state.ma.us>; Agostino, Andrea <Andrea.Agostino@nationalgrid.com>; Kemen, Katherine <KKemen@bscgroup.com>; Portante, Theresa <tportante@bscgroup.com>; bas@regenerativedesigngroup.com
Subject: RE: [EXTERNAL] RE: National Grid - A1/B2 ACR Project - GHG methodology

Mike – thanks for the clarification. I just wanted to make sure that this was accounted for.

I don't have any more questions at this stage. Thank you for checking in.

-Tori

Tori T. Kim
Assistant Secretary / MEPA Director
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114
Tel: (857) 207-2996 (mobile)

Please note that the EEA EJ Maps Viewer was updated and will apply to MEPA filings starting January 4, 2023. See here for additional guidance.

The MEPA Office has amended 301 CMR 11.00 for promulgation on January 6, 2023. See here for details.

From: Tyrrell, Michael <Michael.Tyrrell@nationalgrid.com>
Sent: Thursday, March 9, 2023 10:57 AM
To: Kim, Tori (EEA) <tori.kim@mass.gov>; Hughes, Jennifer (EEA) <Jennifer.Hughes@mass.gov>; Gaertner, Kurt (EEA) <kurt.gaertner@mass.gov>
Cc: Czepiga, Page (EEA) <page.czepiga@mass.gov>; Agostino, Andrea <andrea.agostino@nationalgrid.com>; Kemen, Katherine <kkemen@bscgroup.com>; Portante, Theresa <tportante@bscgroup.com>; bas@regenerativedesigngroup.com
Subject: RE: [EXTERNAL] RE: National Grid - A1/B2 ACR Project - GHG methodology

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hi Tori,

Our consultant, Regenerative Design Group (RDG) will determine the sequestration rates from the same source they are using for the overall task. The US Forest Service's *Methods for Calculating Forest Ecosystem and Harvested Carbon with Standard Estimates for Forest Types of the United States* provides estimates of carbon stocks for specific forest types (e.g., Maple-Beech-Birch, p. 49) across multiple categories (live tree, dead standing tree, under-story, etc.). They will be modifying these values across a 30 year time horizon to account for the removal of the live trees, the removal of standing dead and down wood, and the reduction of the forest floor carbon over time. For soil carbon sequestration rates, RDG will be using the land cover adjusted values they developed through the Healthy Soils Action Plan to determine the starting soil organic carbon values based on the SSURGO soil type of the location. RDG will then adjust the soil organic carbon to account for the impact of the land cover conversion from forested to maintained scrub/shrub and herbaceous cover types.

Let me know if you have any questions.

Thanks

Mike

Michael Tyrrell
Lead Environmental Scientist,
Environment and Sustainability
New England Environmental Permitting
nationalgrid
new address effective January 1, 2023
170 Data Drive
Waltham, MA 02451
603.801.4140 (preferred cell)
603.316.4469 (company cell)
email: michael.tyrrell@nationalgrid.com

Advanced Notice of Vacation:

From: Kim, Tori (ENV) <tori.kim@state.ma.us>
Sent: Monday, March 6, 2023 10:49 AM
To: Tyrrell, Michael <Michael.Tyrrell@nationalgrid.com>; Hughes, Jennifer (EEA) <jennifer.hughes@state.ma.us>; Gaertner, Kurt (ENV) <kurt.gaertner@state.ma.us>
Cc: Czepiga, Page (ENV) <page.czepiga@state.ma.us>; Agostino, Andrea <Andrea.Agostino@nationalgrid.com>; Kemen, Katherine <kkemen@bscgroup.com>; Portante, Theresa <tportante@bscgroup.com>; bas@regenerativedesigngroup.com; Kim, Tori (EEA) <tori.kim@state.ma.us>
Subject: [EXTERNAL] RE: National Grid - A1/B2 ACR Project - GHG methodology

CAUTION: This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe. If you suspect this email is malicious, please use the 'Report Phish' button.

Mike – apologies for the late reply on this inquiry.

We discussed with Kurt, and as we indicated on the prior call, the decision to use a data source such as the Nature Conservancy habitat types to account for variations in tree types by factors like region and age/height is a positive step

above assuming a statewide rate. Without the benefit of comments and full review of the filing, we cannot provide a "concurrence" to this methodology, but it does appear responsive to the prior scope.

We also asked about your assumptions about carbon sequestration rate over time (e.g., 30 years)? Could you clarify what you plan to use for that?

Please let us know.

Thank you,

-Tori

Tori T. Kim
Assistant Secretary / MEPA Director
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114
Tel: (857) 207-2996 (mobile)

Please note that the EEA EJ Maps Viewer was updated and will apply to MEPA filings starting January 4, 2023. See here for additional guidance.

The MEPA Office has amended 301 CMR 11.00 for promulgation on January 6, 2023. See here for details.

From: Tyrrell, Michael <Michael.Tyrrell@nationalgrid.com>
Sent: Tuesday, February 14, 2023 3:50 PM
To: Hughes, Jennifer (EEA) <Jennifer.Hughes@mass.gov>; Kim, Tori (EEA) <tori.kim@mass.gov>; Gaertner, Kurt (EEA) <kurt.gaertner@mass.gov>
Cc: Czepiga, Page (EEA) <page.czepiga@mass.gov>; Agostino, Andrea <andrea.agostino@nationalgrid.com>; Kemen, Katherine <kkemen@bscgroup.com>; Portante, Theresa <tportante@bscgroup.com>; bas@regenerativedesigngroup.com
Subject: National Grid - A1/B2 ACR Project - GHG methodology

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hi Tori, Jennifer and Kurt,

Thank you for the call last Tuesday to review our revised methodology for estimating above ground carbon for the A1/B2 ACR Project – it is summarized below. As discussed, it has been modified to incorporate the MEPA office's response to our initial methodology. Please let me know if you concur with this approach so we can continue to move forward.

NEP's revised above ground carbon estimation methodology (see attached) utilizes data for above ground carbon for the northeast forest types by age from the USFS paper Methods for Calculating Forest Ecosystem and Harvested Carbon with Standard Estimates for Forest Types of the United States which provides above ground carbon estimates based on forest type and age. To use this data we need to determine both the USFS forest type and the age for each proposed area of tree removal. The methodology includes the following high-level steps:

1. ***Determine the USFS forest type of the proposed areas of tree removal. To have a higher resolution dataset that covered the project area, we correlated the more detailed Northeast Terrestrial Habitat types from the Nature Conservancy to the USFS forest types.***

2. ***Determine the age of the forest in the proposed areas of tree removal. To do this we used USFS data on height by age of the tree species in each USFS forest type. We then used this to determine the age based on the height of forest to be removed that we calculated from LiDAR data.***
3. ***With both the type and age determined, we calculated the above ground carbon loss for each proposed area of tree removal.***

Additionally, during the February 7th meeting, you inquired about our decision not to use a USFS tool for these calculations. The specific USFS tool was not specified by MEPA; however, prior to choosing the current method RDG did an evaluation of the alternatives. Several USFS tools were reviewed, below we summarize our review and reasons for not utilizing these tools:

- ***The US Forest Calculation Tool (CCT) only produces estimates at the state or national level and would not provide adequate granularity to assess at the project level.***
- ***The Carbon Online Estimator (COLE) tool, while not designed for the stand scale, may have been able to be adapted but unfortunately is no longer functioning.***
- ***The Forest Vegetation Simulator (FSV) tool would be appropriate at the stand scale but requires detailed tree inventory data.***
- ***We also looked at the Forest Biomass dataset. However, the dataset is very coarse with 820' pixels that are an average of the biomass of the land covers in that pixel. We rejected this because the value of every pixel in this area would also include the cleared area of the powerline or other non-forested adjacent areas.***

If you have any questions, please reach out.

Thanks

Mike

Michael Tyrrell
Lead Environmental Scientist,
Environment and Sustainability
New England Environmental Permitting
nationalgrid
new address effective January 1, 2023
170 Data Drive
Waltham, MA 02451
603.801.4140 (preferred cell)
603.316.4469 (company cell)
email: michael.tyrrell@nationalgrid.com

Advanced Notice of Vacation:

-----Original Appointment-----
From: Hughes, Jennifer (EEA) <Jennifer.Hughes@mass.gov>
Sent: Friday, February 3, 2023 9:52 AM
To: Hughes, Jennifer (EEA); Kim, Tori (EEA); Gaertner, Kurt (EEA); Tyrrell, Michael
Cc: Czepiga, Page (EEA)
Subject: [EXTERNAL] Meeting with National Grid - A1/B2 ACR Project - GHG methodology
When: Tuesday, February 7, 2023 4:00 PM-4:45 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

CAUTION: This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe. If you suspect this email is malicious, please use the 'Report Phish' button.

Microsoft Teams meeting

Join on your computer, mobile app or room device
Click here to join the meeting

Meeting ID: 297 186 551 719
Passcode: FRjNot
Download Teams | Join on the web

Learn More | Meeting options

This e-mail, and any attachments are strictly confidential and intended for the addressee(s) only. The content may also contain legal, professional or other privileged information. If you are not the intended recipient, please notify the sender immediately and then delete the e-mail and any attachments. You should not disclose, copy or take any action in reliance on this transmission.

You may report the matter by contacting us via our UK Contacts Page or our US Contacts Page (accessed by clicking on the appropriate link)

Please ensure you have adequate virus protection before you open or detach any documents from this transmission. National Grid plc and its affiliates do not accept any liability for viruses. An e-mail reply to this address may be subject to monitoring for operational reasons or lawful business practices.

For the registered information on the UK operating companies within the National Grid group please use the attached link: https://www.nationalgrid.com/group/about-us/corporate-registrations

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

March 31, 2023

Christopher Donta
Cultural Resources Lead
SWCA Environmental Consultants
15 Research Drive
Amherst, MA 01002

RE: New England Power Company Lines A1/B2 Asset Condition Refurbishment Project, Warwick, Royalston, Winchendon, Athol, Templeton, Gardner, Westminster, Fitchburg, Leominster, and Sterling, MA. **MHC #RC.69601.**

Dear Mr. Donta:

Staff of the Massachusetts Historical Commission (MHC), have reviewed the draft report *Intensive (Locational) Archaeological Survey Report for the Asset Condition Refurbishment Project on the New England Power Company A1/B2 Lines in Franklin and Worcester Counties, Massachusetts*, prepared for the project referenced above.

The second volume of the report was submitted in a 3-ring vinyl binder that cannot be accommodated in the MHC's report files. Vinyl damages the printed contents, the ring binding does not provide a secure fastener for the pages, and the ring binding makes it difficult to use without tearing pages. Please submit reports using appropriately sized spiral binding.

Please add to the report title the names of the municipalities in which the survey occurred.

In the abstract, provide the names and towns for the ancient period archaeological site. For the F. Chase Farm Site indicate that is in Royalston.

Please prepare revised MHC site inventory forms.

To each form, please add a USGS topographic quadrangle locus map with the site location clearly indicated and labeled.

For each form, correct the bibliographic reference to the report, and use *American Antiquity* style. List all authors' full names as they appear on the report title page, then the year, then the correct (revised) report title as it appears on the title page.

For the Structure 575 Site and Structure 483 Site inventory forms, correct instances of "isolate" to isolated.

For the F. Chase Farmstead Site, reformat the page layout so that it is consistent with the MHC site form. When additional space is needed, use a continuation sheet. Format the bibliographic reference to Caswell in *American Antiquity* style.

220 Morrissey Boulevard. Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.state.ma.us/sec/mhc

Please provide the MHC with two (2) copies of the revised report, a CD with a Word file listing the report authors, date, title, page count, and including the revised report abstract; and revised MHC archaeological site inventory forms.

State Archaeologist's Permit #4100 has been extended to expire on March 31, 2024.

These comments are offered to assist in compliance with the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 Fed. Reg. 190, September 29,1983) and M.G.L. c. 9, ss. 26A & 27C (950 CMR 70). If you have any questions or need more information, please contact Edward L. Bell. Deputy State Historic Preservation Officer and Senior Archaeologist at the MHC.

Sincerely,

Brona Simon

Brona Simon
State Historic Preservation Officer
Executive Director
State Archaeologist
Massachusetts Historical Commission

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

PERMIT TO CONDUCT ARCHAEOLOGICAL FIELD INVESTIGATION

Permit Number 4100 Date of Issue June 7, 2021

Expiration Date June 7, 2022

SWCA is hereby authorized to conduct an archaeological field investigation pursuant to Section 27C of Chapter 9 of General Laws and according to the regulations outlined in 950 CMR 70.00.

National Grid Line A1/B2 Refurbishment, Warwick, Royalston, Athol, Winchendon, Gardner, Westminster, Fitchburg, Leominster, and Sterling
Project Location

Brona Simon

Brona Simon, State Archaeologist
Massachusetts Historical Commission

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.sec.state.ma.us/mhc

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

April 22, 2021

Christopher Donta
Cultural Resources Lead
SWCA
15 Research Drive
Amherst, MA 01002

RE: New England Power Company Lines A1/B2 Asset Condition Refurbishment Project, Warwick, Royalston, Winchendon, Athol, Templeton, Gardner, Westminster, Fitchburg, Leominster, and Sterling, MA. MHC #RC.69601.

Dear Mr. Donta:

Staff of the Massachusetts Historical Commission (MHC) have reviewed the Project Notification Form (PNF) and State Archaeologist's permit application to conduct intensive (locational) archaeological survey, prepared and submitted by SWCA, for the project referenced above.

The PNF is incomplete. Please submit a complete set of scaled existing and proposed conditions project plans for the project, sized no larger than 11" by 17" inches, and a summary table describing project aspects that require demolition, new construction and/or rehabilitation, to the MHC. The summary table should be organized by town and project location, including the A1/B2 right-of-way, Athol A1-1 Tap, North Baldwinville Tap, Westminster Tap, and Crystal Lake Tap aspects of the overall project.

Additional scaled existing and proposed conditions project plans showing additional geotechnical work areas, access routes, laydown areas, and work pads, should be submitted to the MHC as they are developed. Additional project impact areas, including project impact areas required for the Westminster Tap and North Baldwinville Tap aspects of the project not described in this submittal, should be evaluated by SWCA for their archaeological sensitivity and recommendations regarding additional intensive (locational) archaeological survey submitted to the MHC for review and comment.

The MHC requires additional information to evaluate the propose research design and methodology. Please submit a revised research design and methodology that addresses the following comments.

Research Design
Please submit a copy of the Cultural Resources Due Diligence (Donta 2020) and the Cultural Resource Sensitivity Assessment letter report (Donta 2021) prepared for the project.

Please propose to consult with the Nipmuc Tribal Nation, Massachusetts Commission on Indian Affairs, and US Army Corps land managers for Corps properties in Royalston and Winchendon, in addition to the groups described on page 28. Tribal and/or Local Historical Commission representatives should be invited to be present during fieldwork.

Please add a statement of expected resources that incorporates previous relevant research. Please add a justification for the one kilometer boundaries of the research area (page 4) based on the known and expected archaeological site types. Please explain how the sensitivity areas (Appendix C) were defined and bounded in relation to the known and expected archaeological resources, and project impact areas.

Please propose to review previous relevant research reports, including but not limited to the following reports (Fiedel et al. 2017 [MHC #25-3819] in Warwick; Atwood 2005 [25-2604] in Royalston; Donohue et al. 2010 [25-3820] in Winchendon; Donta 2000 [25-2005] in Gardner, etc.). Please show previous testing within and/or immediately adjacent to project impact areas within the right-of-way (ROW) on archaeological testing maps as appropriate. Previous testing should be clearly cited and labeled in archaeological testing map keys.

Please add a sentence to the fourth full paragraph on page 32 describing how testing will be conducted within cultural stratigraphy that is not otherwise identified as an archaeological feature.

Please revise the last paragraph on page 32 to clarify how archaeological testing datum(s) will be located within the ROW. Please locate the cell tower described in the second sentence of this paragraph on project plans in relation to the project.

The project impact area is in proximity to many marked cemeteries (pp. 24-28). Please add a section to page 32 that describes the methodology and procedures for the identification and treatment of unmarked burials, consistent with the Massachusetts Unmarked Burial Law (M.G.L. Chapter 7, Section 38A; Chapter 38, Section 6; Chapter 9, Section 26A and 27C; and, Chapter 114, Section 17, all as amended).

Please revise description of the archaeological report on pages 45 and 46 to explain that the proposed report will only describe the results of archaeological testing at currently proposed structure locations within the right-of-way and two out of four tap lines.

Figures/Tables

Please revise the New Structure Location column in Table 8 to add relative compass directions from the existing structures to the new structure locations. It is unclear on Appendix C map sheets what 25' ahead or 65' back means in relation to existing structure locations within the ROW, because no project impact areas or new construction locations are shown on Appendix C map pages in relation to archaeologically sensitive areas.

Please revise the title of map B-4 to correctly describe the tap line that is shown in this map.

Please revise the Appendix C sensitivity maps to show the proposed project impact areas and archaeological testing described in Table 8 for the currently know archaeologically sensitive portions of project impact areas. Please revise Appendix C map keys to describe all tap-line related acronyms (e.g. "TNB"; "CLT"; "WT").

Please revise the Appendix C map scales to include graded increments less than 100 feet. Please add a comparable metric scale to Appendix C maps to be consistent with the proposed new structure locations (feet) and testing methodology (meters) described in Table 8. For example, Structure 551C (Appendix C page 69) is proposed to be moved 25 feet ahead (25 feet east of the existing structure?) and 3 shovel test pits will be excavated at 7.5 intervals at this new structure location. MHC staff are unable to ascertain if the new location of Structure 551C is within Sensitive Area 131 because the scale, directions and relative sensitive area boundaries are not presented in detail at a large enough scale on map page 69.

These comments are offered to assist in compliance with the Massachusetts State Archaeologist Permit regulations (950 CMR 70). If you have any questions or need further information or assistance, please contact Jonathan K. Patton of my staff.

Sincerely,

Brona Simon

Brona Simon
State Historic Preservation Officer
Executive Director
State Archaeologist
Massachusetts Historical Commission

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

April 8, 2022

Christopher Donta
Cultural Resources Lead
SWCA Environmental Consultants
15 Research Drive
Amherst, MA 01002

RE: New England Power Company Lines A1/B2 Asset Condition Refurbishment Project, Warwick, Royalston, Winchendon, Athol, Templeton, Gardner, Westminster, Fitchburg, Leominster, and Sterling, MA. MHC #RC.69601.

Dear Mr. Donta:

Staff of the Massachusetts Historical Commission (MHC), have reviewed the request to amend and extend State Archaeologist's Permit #4100 for the project referenced above.

Please note the correct State Archaeologist's Permit number.

Pertaining to the research design and methodology for curation, all original paper format records shall be preserved in original paper format and not destroyed.

State Archaeologist's Permit #4100 is hereby amended and extended to expire on April 8, 2023.

These comments are provided to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800), the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 Fed. Reg. 190) (September 29, 1983)), and 950 CMR 70. If you have questions or require additional information, please contact Edward L. Bell at this office.

Sincerely,

Brona Simon

Brona Simon
State Historic Preservation Officer
Executive Director
State Archaeologist
Massachusetts Historical Commission

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.state.ma.us/sec/mhc

APPENDIX D

A1/B2 Carbon Accounting Report

A1/B2 Carbon Accounting

AUGUST 25, 2023

PREPARED FOR

National Grid

PREPARED BY

SWCA Environmental Consultants

A1/B2 CARBON ACCOUNTING

Prepared for

National Grid

Prepared by

SWCA Environmental Consultants
1101 Telegraph Road, Building B
West Chester, Pennsylvania 19380
www.swca.com

August 25, 2023

EXECUTIVE SUMMARY

NEP is committed to completing the required system improvements to address the poor asset condition, mitigate potential risks of electrical failure, and to provide long-term reliable delivery of electrical service and maintenance of the A1/B2 Line. The existing lines and taps must be replaced to allow NEP to continue to meet regional demands for a reliable supply of electricity and will support connection of increasing amounts of renewable energy in central and western Massachusetts, consistent with the Commonwealth's and region's carbon reduction targets.

In the process of accomplishing these goals, 100.1 acres of existing forested right-of-way (ROW) will be converted to scrub shrub habitat and 31.5 acres of access roads will be created or improved in forest habitat. Along with the increased reliability and resilience the Project will bring to the A1/B2 line, the forest disturbance will affect future greenhouse gas (GHG) emission levels.

This analysis was prepared to ensure that the Massachusetts Environmental Protection Act (MEPA) office is informed of the expected change in GHG emission likely to be brought about by the Project. Following the Council on Environmental Quality (CEQ) January 2023 Interim Guidance on Greenhouse Gas Emissions, this includes an analysis of the net GHG emission associated with the Project. That is, this assessment considers the real world setting in which the Project will take place and then uses the best available scientific and economic information to estimate the actual change in GHG emissions likely to be brought about by the Project.

After considering NEP's programmatic effort to ensure that trees felled as a result of the Project are put to beneficial use, as well as the Project-related increases in grid reliability and resiliency, NEP believes the Project is likely to bring about a reduction of approximately 117,424 metric tons of CO2e.

CONTENTS

1 Report Purpose and Need 3

2 Calculating the Project-Related Change in GHG EMissions 3

2.1 Maximum Potential Release of Carbon 4

2.2 Accounting for NEP's Programmatic Efforts 4

2.2.1 Wood Retained by Landowners 4

2.2.2 Wood Taken to Sawmills 5

2.2.3 Wood Donated for Use as Firewood 6

2.2.4 Carbon and CO2e Release After Adjusting for NEP's Programmatic Efforts to Reduce the Release of CO_2 6

2.3 Accounting for Project-Related Increases in Grid Reliability and Resiliency 7

2.3.1 Increased Reliability 7

2.3.2 Increased Resiliency 9

2.3.3 CO2e Release After Adjusting for Grid Reliability and Resiliency 11

3 Summary 11

4 Literature Cited 13

Tables

Table 1. Maximum Potential Change in Carbon Released from Disturbed Forest Acres 4

Table 2. Carbon and CO2e Release After Accounting for NEPs Programmatic Efforts 6

Table 3. Carbon and CO2e Release After Accounting for Increased Grid Reliability and Resiliency 11

Table 4. CO2e Release After Adjusting for NEP's Programmatic Efforts and Increased Grid Reliability and Resiliency 12

1 REPORT PURPOSE AND NEED

NEP is working to ensure New England's power grid is reliable today and resilient in the face of future demand increases, efforts to integrate low-carbon energy resources, and an expected increase in the frequency and intensity of extreme weather events. To that end, National Grid plans to replace the existing A1/B2 Lines and Taps along the Massachusetts portion of the A1/B2 corridor and improve vegetation maintenance within the existing rights-of-way (ROW). Together, these efforts represent the Project.

The Project's upgraded assets are designed with additional capacity to meet known and anticipated future requirements, including the interconnection of new renewable energy projects, and to accommodate increasing electricity transfers in support of the region's low-carbon electrification goals. To accomplish the preceding objectives, 100.1 acres of existing forested right-of-way (ROW) will be converted to scrub shrub habitat and 31.5 acres of access roads will be created or improved.

This analysis was prepared to ensure that the Massachusetts Environmental Protection Act (MEPA) office is informed of the expected change in greenhouse gas (GHG) emissions likely to be brought about by the Project. Following CEQ's January 2023 Interim NEPA Guidance on Greenhouse Gas Emissions[1], this includes an analysis of the net GHG emissions. The methods used to estimate the net change in GHG emissions are described in the following section.

2 CALCULATING THE PROEJCT-RELATED CHANGE IN GHG EMISSIONS

This analysis estimates the change in GHG emissions associated with the Project by asking three questions.

1. From a biological perspective, what is the maximum potential release of carbon arising from forest disturbance?

2. How will NEP's programmatic efforts reduce the release of carbon relative to the maximum potential release?

[1] Federal Register / Vol. 88, No. 5 / Monday, January 9, 2023 / Notices

3. How will the Project-related increases in grid reliability and grid resiliency act to further reduce the level of GHG emissions relative to the maximum potential release?

2.1 Maximum Potential Release of Carbon

The maximum potential release of carbon from disturbed forest acres was estimated by Regenerative Design Group (RDG) and is reported in Table 1. A detailed description of RDG's methodology is provided in RDG (2023). In the RDG report: 1) carbon stored as live aboveground biomass, live belowground biomass, dead wood, and forest litter is collectively referred to as "non-soil carbon;" 2) carbon stored in the soil is referred to as "soil carbon." RDG assumes there is a one-time release of carbon currently stored in both the non-soil and soil carbon pools. RDG further assumes there is a net loss in future carbon sequestration when forest is converted to scrub shrub.

Table 1. Maximum Potential Change in Carbon Released from Disturbed Forest Acres

Source	One-Time Loss (mt C)	Net Loss in Future Sequestration (mt C)	Actual Change in Stored Carbon (mt C)[c]
Non-Soil[a]	8,355	376	8,731
Soil[b]	2,844	589	3,433
Total	11,199	965	12,164

[a] Non-Soil refers to carbon stored in live aboveground biomass, live belowground biomass, dead wood, and forest litter.
[b] Soil refers to soil organic carbon.
[c] Calculated as: (One-Time Loss) + (Net Loss in Future Sequestration). The abbreviation mt C refers to metric tons of carbon.

2.2 Accounting for NEP's Programmatic Efforts

NEP is working with landowners, its contractors, local organizations and the state to ensure that marketable timber and biomass suitable for use as firewood is utilized. These actions reduce the level of GHG emission that will actually occur when the forest is disturbed.

To determine the actual change in carbon emission brought about by Project-related forest disturbance, it is necessary to consider if and how people will use the trees felled as a result of the Project. This analysis identified four potential fates for these trees: 1) retained by landowners, 2) taken to sawmills, 3) donated for use as firewood, and 4) left to decay. These fates, and their implication on the actual change in carbon emissions associated with disturbed forest, are discussed in the following sub-sections.

2.2.1 Wood Retained by Landowners

Landowners have been offered the opportunity to retain felled wood for their private use. So long as felled wood is used for some useful enterprise, even if does not enter a formal market, humans will respond in a manner that offsets some of the GHG emissions that would otherwise be associated with forest disturbance; this effect is commonly called "leakage"[2].

[2] The Intergovernmental Panel on Climate Change (IPCC) Special Report on Land Use, Land Use Change and Forestry (LULUCF) defines leakage as "…the indirect impact that…an activity in a certain place at a certain time has on carbon storage at another place or time" (IPCC 2000, section 2.3.5.2, p. 71). From an economics perspective, leakage occurs when a project causes a shift in market equilibria that results in market participants behaving in a manner that offsets (either partially or in its entirety) a change in GHG emission that would otherwise be brought about by a project. To illustrate the leakage concept, consider a community that cuts 131 acres of forest each summer to produce 1,000 cords of wood for home heating. Now assume that management on 131 acres of ROW results in 1,000 cords of firewood being put into the community's firewood supply chain in the fall season. The additional 1,000 cords of firewood entering the market in the fall will not cause the community to double their firewood consumption. Given the

This analysis assumes that wood retained by landowners would be used as firewood. The fraction of wood assigned to this fate is based on the preliminary results of NEP's ongoing coordination with landowners. Specifically, NEP recently sent flyers to 198 landowners along the ROW asking them if they would like to retain felled wood for their private use. While the survey is ongoing, at the time this report was drafted, 26 flyers had been returned to NEP. Of those 26 responses, 8 landowners asked that felled wood be left for their personal use. Assuming that the 26 responses are representative of the population of landowners and noting that these individuals own a typical share of the overall acreage to be cleared, it is assumed that 31 percent of the trees felled because of the Project will be retained by landowners.

The maximum potential carbon estimates are adjusted for this observation as follows.

- The estimated one-time loss of 11,199 metric tons of carbon (see Table 1) is reduced by 15.5 percent[3]. This reflects the assumption that, when landowners are provided wood free of cost, they will adjust their behavior in a way that ultimately reduces forest disturbance that would otherwise occur. For example, a landowner provided 1 acre's worth of felled trees might chose to use those trees for timber and so reduce by 0.5 acres the amount of forest they otherwise would have cleared to obtain timber.

- The estimated net loss in future sequestration, 965 metric tons of carbon as reported in Table 1, is not adjusted. This reflects the conservative (i.e., tending to overstate the Project-related increase in GHG emission) assumption that the forest the landowner would have disturbed "but for the trees provided by NEP" would have been allowed to regrow whereas the forest disturbed by NEP will be maintained as scrub shrub.

2.2.2 Wood Taken to Sawmills

Wood not retained by landowners may be taken to sawmills (or other commercial wood users) at the discretion of National Grid's vegetation management contractors. As previously noted, so long as felled wood is used for some useful enterprise, market behavior (i.e., leakage) will offset some of the GHG emissions that would otherwise be associated with the forest disturbance.

---

increased availability of firewood, they might increase usage to 1,100 cords and save the remaining 900 cords for the following year. When the following summer arrives, the community will already have 900 cords of firewood available. As such, rather than cutting 131 acres of forest, they will only cut 13.1 acres to ensure that a total of 1,000 cords of firewood are available. In this hypothetical example, absent any ROW management, 262 acres of forest would have been cleared by the community to create 2 years' worth of firewood. Because ROW management increased the local firewood supply, the community cleared only 144.1 acres (131 in the first summer and 13.1 in the second summer). Along with the 131 acres cleared during ROW management, this brings the total amount of forest clearing over the two years to 275.1. Thus, the ROW project caused total forest clearing to increase from 262 acres to 275.1 acres. Carbon accounting is properly based on the 13.1-acre net increase in tree clearing. In other words, because logs were placed into the market, economic linkages offset 90 percent of the GHG releases that might otherwise be associated with the ROW management.

[3] To estimate the actual leakage effect, it is noted that the Climate Action Reserve's Climate Forward Reforestation Methodology, Version 2.0 (2022), suggests that, when project logs are placed into markets, and so long as the projects do not occur on existing commercial forest land, leakage is likely to offset 24 to 50 percent of the GHG changes that would otherwise be associated with a project. Herein it is assumed that, when project logs are used as timber, firewood, or other forestry products, leakage reduces GHG releases by 50 percent (i.e., the upper end of the Climate Action Reserve's range). The upper end was selected based on a firewood and heating oil analysis reported in ADEC (2019) and an analysis of general energy use in U.S. buildings reported in EIA (2021). SWCA believes 50 percent is more likely to understate than overstate the true effect of leakage because the wood at issue will either be a) provided at no cost as part of firewood donation programs or being provided at no cost to either landowners or vegetation management contractors to do with as they choose. In contrast, the 24 to 50 percent estimate and the associated literature on leakage are generally based on price differentials instead of "zero costs." A 50 percent leakage adjustment halves the mitigating effect. Thus, if 31% of the wood is used by landowners, this will reduce impacts to some other forest in an amount equal to 15.5 percent of the Project-related forest disturbance.

Because National Grid does not require its contractors to remove wood to sawmills or other commercial wood users, this assessment conservatively assigns this fate to none of the wood felled as a result of the Project.

2.2.3 Wood Donated for Use as Firewood

If landowners choose not to retain wood and contractors choose not to deliver it to sawmills, NEP is working with state and local organizations to donate the trees for use as firewood. Doing so mitigates GHG emissions that would otherwise be associated with tree cutting for the purpose of creating firewood.

The Massachusetts Department of Conservation and Recreations (DRC) Community Wood Bank Program provided 100 cords of wood to residents in need of energy from 2015 to 2020 (DRC Community Wood Bank Program 2020). They are willing and able to accept a maximum of 80 cords of wood per year. This represents 1.7 percent of the trees felled because of the Project[4].

The maximum potential carbon estimates are adjusted for this observation as follows.

- The estimated one-time loss of 11,199 metric tons of carbon (See Table 1) is reduced by . 0.85 percent[5]. This reflects the assumption that, when recipients receive firewood free of cost, they will adjust their behavior in a way that ultimately reduces forest disturbance that would otherwise occur. For example, a firewood user provided 1 acre's worth of free firewood will choose to reduce by 0.5 acres the amount of forest they otherwise would have cut to obtain firewood.

- The estimated net loss in future sequestration, 965 metric tons of carbon as reported in Table 1, is not adjusted because it is conservatively (i.e., tending to overstate the Project-relate increase in GHG emission) assumed that the forest the firewood recipient would have disturbed "but for the wood provided by National Grid" would have been allowed to regrow whereas the forest disturbed by NEP will be maintained as scrub shrub.

2.2.4 Carbon and CO2e Release After Adjusting for NEP's Programmatic Efforts to Reduce the Release of CO_2

Table 2 reports SWCA's best estimate of the amount of carbon released from forested acres because of the Project after accounting for NEPs programmatic efforts to reduce the release of CO_2. Table 2 also converts carbon loss estimates to carbon dioxide equivalent (CO2e)[6] estimates so they can be directly compared to reductions in GHG emissions likely to be brought about by Project-related increases in grid resiliency and reliability.

[4] A typical cord of hardwood weighs 2.27 metric tons. For the 80 cords that will be donated, this equates to 181.6 metric tons. Wood is approximately 50 percent carbon by weight, so a donation of 181.6 metric tons of wood contains 90.8 metric tons of carbon. In an oak-hickory forest, 48 percent of carbon is stored in aboveground biomass (Catanzaro and D'Amato, no date), so the 90.8 metric tons of carbon donated as firewood is associated with 189.2 metric tons of forest carbon, representing 1.7 percent of the 11,199-metric ton one-time loss.

[5] A 50 percent leakage adjustment effectively cuts in half the mitigating effect of using Project-related wood. Thus, if 1.7 percent of the wood is donated for firewood, this will reduce impacts to some other forest area in an amount equal to 0.85 percent of the Project-related forest disturbance.

[6] To convert carbon emissions into CO2e, the amount of carbon, measured in metric tons, is divided by 0.27292 because carbon represents 27.292 percent of the mass of a carbon dioxide molecule.

Table 2. Carbon and CO2e Release After Accounting for NEPs Programmatic Efforts

Source	One-Time Loss	Net Loss in Future Sequestration	Actual Change
Maximum Potential Carbon Loss (mt C)	11,199	965	12,164
Leakage Adjusted Carbon Loss (mt C)	9,374[a]	965	10,339
Leakage Adjusted CO2e Loss (mt)	34,347	3,536	37,883

[a] Calculated as the one-time loss multiplied by 0.837, where 0.837 represents the fraction of carbon released after accounting for wood retained and used by landowners and wood donated to firewood distribution centers.

2.3 Accounting for Project-Related Increases in Grid Reliability and Resiliency

The Project is being implemented for two reasons.

1. The existing A1/B2 Lines and Taps are, today, among the least reliable on the NEP's transmission system. In the 5 years from 2017 through 2021 there were two sustained outages that likely resulted in the use of backup generators (BUGs) and food loss; in the past 14 months there were two short outages (flickers) that likely affected manufacturers and businesses. Moreover, it is expected that the changing climate will increase the future frequency of extreme weather events to which the aging A1/B2 infrastructure would be increasingly susceptible. The Project is designed to increase A1/B2 ***reliability*** by significantly reducing outages and flickers and so acting to reduce GHG emissions.

2. A series of solar generation and electric storage projects are currently on hold because the existing A1/B2 Lines would experience thermal overloads if the new projects were tied into the existing Lines. The Project is designed to accommodate the previously proposed solar generation and/or electric storage projects. Further, the ISO-NE 2050 Study points to the need for a significant investment in electric transmission resources over the next 25 years to meet existing renewable energy, clean energy, GHG reduction and net-zero carbon policies. The Project has been designed to also address these grid resiliency concerns. The Project-related increase in grid ***resiliency*** will reduce the use of higher carbon intensity generation assets and so act to reduce GHG emissions.

The GHG implications of Project-related increases in reliability and resiliency are addressed in the following sections.

2.3.1 Increased Reliability

The Project would significantly reduce outages and flickers associated with the A1/B2 Lines; this is referred to as an increase in reliability.

Kenward and Raja (2014) report that between 2003 and 2014, weather-related power outages[7] affected an average of 15 million U.S. homes or businesses each year. These outages, which result primarily from damages to transmission lines, substations, and lower-level distribution lines, are estimated to cost the economy $18 billion to $33 billion annually (Moore 2021). Kenward and Raja (2014) and GAO (2021) further report that between 2003 and 2014 the rate of outages more than doubled and that the increased f

[7] Kenward and Raja define an outage as the loss of power for 4 or more hours.

requency was driven by a combination of aging infrastructure and an increasing frequency of extreme weather events such as hurricanes, ice storms, floods, heat waves, droughts, and wildfires. Lastly, there is a consensus that extreme weather and climate-related events are expected to become more frequent and intense in the future, which, unless steps are taken to harden the grid, will cause the frequency of weather-related power outages to continue to increase in the future (GAO 2021; Moore 2021; Kenward and Raja 2014).

Efforts similar to the Project have been identified by the President's Council of Economic Advisers, the U.S. Department of Energy's Office of Electricity Delivery and Energy Reliability, the White House Office of Science and Technology and ISO-NE as cost effective ways to increase grid reliability[8]. This increased reliability will reduce the probability of power outages which, in turn, will not only benefit the U.S. economy, but it will also reduce outage-related spikes in GHG emissions that occur when society reacts to a power outage[9].

1. Moss and Bilich (2022) evaluated the GHG implications of citizens responding to power interruptions by installing and using back-up-generation units (BUGs). They report that, in response to recent reductions in the reliability of California's grid, the Bay area and South Coast generating capacity of BUGs increased rapidly such that, when outages occur, BUGs compensate for approximately 20 percent of the lost power. Further, most BUGs are diesel-fired and release GHG at rates similar to the 1.4 metric tons of CO2e per MWh associated with Massachusetts' local dispatchable generators. To put that in the context of an outage, a typical household uses about 1.2 KWh each hour,[10] so the 2020 A1/B2 outage that affected 5,700 customers for 17 hours likely resulted in 23,256 KWh being generated by BUGs, which is equivalent to 23.256 MWh.[11] This, in turn, likely resulted in the release of approximately 33 metric tons of CO2e.
2. When the power goes out, residences and commercial operations lose refrigeration. The risk of spoilage causes homes and commercial operations to dispose of food that would otherwise be eaten. The U.S. EPA (2021) reports that, for every pound of food wasted in the United States, between 1 and 2 pounds[12] of CO2e are unnecessarily emitted into the atmosphere as part of the production process needed to replace that food. In addition, when placed into landfills, a pound of food waste will generate about 5 pounds of CO2e during decomposition (Brown et al. 2007). While approximately half of those GHGs will be captured (Landfill Gas Expert 2019), the remaining 2.5 pounds of CO2e are released. Thus, between the two sources of CO2e, each pound of food wasted results in approximately 4 pounds of CO2e being released unnecessarily into the atmosphere. The July 13, 2019, New York City outage, which lasted only 3 hours and affected 73,000 customers, is estimated to have resulted in the loss of 29 metric tons of food[13] or about 0.[14]

[8] See President's Council of Economic Advisers, U.S. Department of Energy's Office of Electricity Delivery and Energy Reliability, and the White House Office of Science and Technology, 2013.

[9] A 2019 article in the USA Today, titled *The New York City Blackout was Actually Bad for the Environment,* reports that *"*you might think that when the lights go out, the amount of greenhouse gases emitted as people go about their day would go down. But you'd be wrong. The [carbon] footprint grows because whenever you have a power failure you have all kinds of inefficiencies and waste that cascades through the system."

[10] The EIA reports that an average house uses 893 KWh per month (https://www.eia.gov/tools/faqs/faq.php?id=97&t=3#:~:text=Frequently%20Asked%20Questions%20%28FAQs%29%20-%20U.S.%20Energy%20Information,an%20average%20of%20about%20893%20kWh%20per%20month.). This equates to approximately 1.2 KWh per hour.

[11] KWh of loss is calculated as 5,700 affected customers × 17-hour blackout duration × 1.2 KWh per hour × 20 percent compensation via BUGs. To convert to MWh, note that 1 MWh = 1,000 KWh.

[12] U.S. EPA (2021) reports that each year, 161 to 335 billion pounds of food is wasted, resulting in approximately 374 billion pounds of CO2e being unnecessarily emitted.

[13] As reported in USA Today (2019); the unit is assumed to be a metric ton.

[14] This is equivalent to only 0.88 pounds per customer.

0004 metric tons of food per customer. Applying that to an outage affecting 5,700 customers implies the loss of 2.3 metric tons of food. Noting that each metric ton of food lost results in 4 metric tons of CO2e release, it is estimated that the 2020 A1/B2 outage resulted in the release of 9.2 metric tons of CO2e.

3. Hussain (2019) reports that, in industrial and manufacturing operations, even seemingly small power flickers can have a significant impact. This is because manufacturers are especially vulnerable to equipment damage during outages and the electrical surges that may occur when power is restored. Ericson and Lisell (2020) refer to these types of impacts (e.g., damage to machinery and process interruptions resulting in failed output) as "fixed costs" associated with an outage and estimate that, regardless of duration, medium-sized manufacturing operations can incur costs of up to $30,000 with smaller operations incurring losses in the hundreds of dollars. To the extent these losses are driven by the need to replace damaged equipment, remanufacture products that were being manufactured when the power went out, and/or bring production processes back up to temperature, those monetary losses are associated with otherwise unnecessary increases in CO2e emissions. Even a flicker that affects 0.04 percent of New England[15] is estimated to result in the otherwise unnecessary release of approximately 5 metric tons of CO2e.[16]

Noting that, in the 5 years from 2017 through 2021, problems on the A1/B2 Line caused 2 sustained local outages and that, over the past 14 months, problems on the A1/B2 Line have caused 2 short term outages, it is likely that Project-related reliability increases will prevent the release of at least[17] 25 metric tons[18] of CO2e annually over the next 30 years. That is, the reliability increase brought about by the project is likely to reduce GHG emissions by at least 750 metric tons of CO2e over its projected 30-year lifespan.

[15] There are 14.85 million residents of New England. An outage affecting 5,700 persons is affecting 0.04 percent of the new England population.

[16] The estimate was derived using the following set of calculations. First, note that New England will require at least 125,000 GWh annually from 2023 forward and the industrial sector represents about 26 percent of total retail electricity consumption in the United States (EIA 2022) or about 32,500 GWh annually in New England (calculated as 0.26*125 GWH), which is equivalent to 32,500,000,000 kWh annually. Dividing by 8,760 hours per year, 32,500,000,000 kWh equates to 3,710,000 kW of demand from New England industries. Next, note that Balducci et al. (2022) used interruption cost data for 32 standard industrial classification (SIC) groups that were aggregated and weighted based on relative shares of sector GDP and estimated that, for a 1-hour interruption, industry incurs a loss of $26.35/kW in 2022 dollars. Thus, a power outage affecting .04 percent of the ISO New England service area (calculated as 5,700 customers affected ÷ 14.85 million New England residents) would cost approximately $39,000 in GDP (calculated as 3,710,000 kW X 0.04 percent of facilities effected X $26.35 per Kw). Finally, note that every million dollars of U.S. GDP is associated with approximately 270 metric tons CO2e (Climate Watch 2022). Thus, $39,000 of lost GDP is associated with 10 metric tons CO2e. If half of the "at-risk" CO2e is associated with damaged equipment, partially completed products that will need to be replaced, and/or extra energy required to restart industrial processes, then each outage prevented also prevents the release of 5 metric tons of CO2e.

[17] This estimate is considered a lower bound for three reasons. First, the New England population is increasing. Second, it is expected that climate change will increase the frequency and intensity of extreme weather events which will, in turn, increase the frequency of weather-related outages all else equal. Finally, if not replaced, the existing A1/B2 Lines and Taps will continue to age which will reduce their reliability.

[18] The expected annual benefit of preventing flickers is 8.57 metric tons CO2e which is calculated as 1.71 flickers per year X 5 metric tons of CO2e released per flicker. The expected annual benefit of preventing outages is estimated to be 16.88 metric tons which is calculated as 0.4 outages per year X (33 metric tons of CO2e emitted by BUGs per outage + 9.2 metric tons of CO2e emitted from food waste per outage). Thus the expected annual benefit of increased reliability is 25.45 metric tons which is calculated as 8.57 metric tons CO2e associated with flickers + 16.88 metric tons CO2e associated with outages.

2.3.2 Increased Resiliency

The Project would facilitate a reduction in the overall carbon intensity of the electricity in Massachusetts by enabling increased utilization of low carbon electric generation and storage facilities; this is a benefit of increased grid resiliency.

Specifically, there are currently 20.5 MW of solar generation and battery energy storage system (BESS) projects on hold because the existing A1/B2 Lines would experience thermal overloads if the new projects were tied into the Lines. These include the 8 MW Crystal Lake BESS project, the 4.99 MW East Westminster solar and BESS project, and the 7.5 MW Royalston solar and BESS project. Together these projects are assumed to represent no less than 6 MW of new generation capacity.

The A1/B2 Asset Condition Refurbishment Project is designed to accommodate these proposed solar generation and BESS projects, as well as potential future clean energy projects. Thus, the Project would increase grid resiliency in two ways:

1. When not being used to charge the electric storage batteries, the low-carbon solar generation facilitated by the Project will lower the overall carbon intensity of the electricity being generated at that moment in time.

2. The solar generated electricity stored in the batteries would, to the extent practical, be released during peak demand periods which prevents the dispatch of other high-carbon intensity units. This lowers the overall carbon intensity of the electricity that would be generated at these "peak moments" by substituting zero carbon electricity for electricity that typically has an above average carbon intensity.

The resulting reduction in CO2e emission is conservatively quantified as follows.

- The average carbon intensity of electricity generated in Massachusetts is 947 pounds of CO2/MWh, which is equivalent to 0.4735 U.S. tons CO2/MWh (EIA, 2021).

- When a renewable energy project is brought online, it displaces electricity that would otherwise be generated at some other facility. Because the renewable energy facilitated by the Project would include BESS, it is likely that much of the electricity generated by the newly enabled solar projects would be dispatched at a time of peak energy demand and so displace electricity produced at other dispatchable facilities which tend to have carbon intensities well above the Massachusetts average. However, it is conservatively (tending to underestimate the resulting CO2 emissions reduction) assumed that the electricity generation displaced by the newly enabled solar and BESS projects has an average carbon intensity of 0.4735 U.S. tons CO2/MWh.

- U.S. EPA's AVERT model[19] reports a capacity factor for New England solar facilities of 22.82%. That is, over the 8,760 hours in a year, a typical solar facility will generate electricity for approximately 1,999 hours (calculated as 8,760 hours in a year X 0.2282 utilization). Thus the 6 MW of solar generation enabled by the Project would result in a 5,679 U.S. ton reduction in CO2 annually (calculated as 6 MW X 1,999 hours of operation X 0.4735 reduction in CO2e per MWh o

[19] U.S. EPA's AVoided Emissions and geneRation Tool (AVERT) model predicts the effect of energy policies and programs such as energy efficiency, renewable energy, and electric vehicles lead to changes in air emissions, including CO_2, from electric power plants at a county, state, or regional level.

f generation). Over the 30-year project lifespan, that equates to a reduction of 170,370 U.S. tons CO2e[20].

The preceding bullets indicate that the increase in resiliency brought about by the Project is likely to reduce GHG emissions by at least 170,370 U.S. tons of CO2e over its projected 30-year lifespan. This is equivalent to 154,557 metric tons of CO2e.

2.3.3 CO2e Release After Adjusting for Grid Reliability and Resiliency

Table 3 reports SWCA's best estimate of the amount of carbon released from forested acres because of the Project after accounting for 1) NEP's programmatic efforts to reduce the release of CO_2 and 2) the Project-related increase in grid reliability and resilience. A summary of the underlying calculations for this estimate is illustrated in Table 4.

Table 3. Carbon and CO2e Release After Accounting for Increased Grid Reliability and Resiliency

Source	CO2e Emissions
Leakage Adjusted CO2e Loss (mt) from Table 2	37,883
CO2e Release Due to Increased Reliability (mt)	-750
CO2e Release Due to Increased Resiliency (mt)	-154,557
Project-Related Change in CO2e Emissions (mt)	**-117,424**

3 SUMMARY

The proposed A1/B2 Asset Condition Refurbishment Project is part of NEP's effort to ensure grid reliability and prepare the grid to meet an increase in demand from electrification, integrate clean energy resources, and better withstand the extreme weather events scientists predict will become more frequent as the climate changes.

Specifically, NEP plans to replace the existing A1/B2 Lines and Taps within the Massachusetts portion of the A1/B2 corridor and to improve vegetation maintenance within the existing right-of-way (ROW). The Project will reduce the number of outages and flickers customers experience because of existing problems on the A1/B2 Line. In addition, the to-be-upgraded assets have been designed with the capacity to meet known and anticipated future requirements, including the interconnection of new renewable energy projects, which will support ongoing and future low carbon electrification efforts.

To accomplish these goals, 100.1 acres of existing forested right-of-way (ROW) must be converted to scrub shrub habitat and 31.5 acres of access roads will need to be created or improved in forest habitat. While this forest clearing will result in the release of some carbon that would otherwise be sequestered in the affected acreage, NEP's programmatic efforts to assure that wood is not left to decay in the ROW combined with the Project-related increase in grid reliability and resiliency ensure that the Project will result in a net reduction in CO2e emissions (refer to Table 4).

[20] This estimate is somewhat less than the estimated by U.S. EPA's web based AVERT tool which reports that adding 6 MW of solar capacity in New England will result in a 6,010 U.S. ton annual reduction or 180,300 U.S. tons CO2e over a 30-year lifespan. The divergence in estimates is due to the conservative nature of the bulleted calculations.

Table 4. CO2e Release After Adjusting for NEP's Programmatic Efforts and Increased Grid Reliability and Resiliency



Maximum potential release of carbon from soil and non-soil sources was estimated by RDG as 44,571 mt CO2e. This is the sum of the one-time loss associated with forest disturbance (41,035 mt CO2e) and the loss of future carbon sequestration due to habitat conversion (3,536 mt CO2e).	An ongoing survey suggests that 31% of landowners will retain felled wood for private use. So long as the wood is used for some useful enterprise, it will displace some of the tree clearing that would have been implemented ***but for*** the Project. To account for this source of leakage, the maximum potential release of carbon associated with the one-time loss (41,035 mt CO2e) is reduced by 15.5%.	NEP is working with organizations to donate trees for firewood. It is assumed that 1.7% of the felled trees will reach local firewood organizations (this is their maximum capacity to process donations). The donated firewood will displace some of the tree clearing that would have been implemented ***but for*** the Project. To account for this source of leakage, the maximum potential release of carbon associated with the one-time loss (41,035 mt CO2e) is reduced by 0.85%.	The Project would significantly reduce outages and flickers associated with the A1/B2 Lines. When power interruptions occur, less-efficient back-up-generation units are dispatched, food soils, and partially finished products are lost. Improving the reliability of the A1/B2 Lines will prevent the release of 25 mt CO2e annually, or approximately 750 mt CO2e over the 30-year time horizon.	The Project would facilitate a reduction in the overall carbon intensity of electricity in Massachusetts by enabling increased utilization of low carbon electric generation and storage facilities. By facilitating the incorporation of 6 MW of solar-generation plus BESS, the Project will reduce sector related emissions by 5,152 mt CO2e annually, or 154,557 mt CO2e over the 30-year time horizon.	Due to NEP's programmatic efforts, the one-time loss associated with forest disturbance is reduced by 16.3%, from 41,035 mt CO2e to 34,347 mt CO2e. The loss of future carbon sequestration (3,536 mt CO2e) is unchanged. Improved reliability and resiliency of the A1/B2 Lines will further reduce emissions by 155,307 mt CO2e over the 30-year time horizon. Thus, the net effect of the Project will be to reduce CO2e emissions by approximately 117,424 mt CO2e over the 30-year time horizon.

4 LITERATURE CITED

Alaska Department of Conservation (ADEC). 2019. Estimating FNSB Home Heating Elasticities of demand using the Proportionally-Calibrated Almost Idea Demand System (PCAIDS) Model: Postcard Data Analysis. Available at: https://dec.alaska.gov/media/17115/estimation-of-pcaids-model-04302019-final.pdf. Accessed January 17, 2023.

Balducci, Patrick J, Roop, Joseph M, Schienbein, Lawrence A, DeSteese, John G, and Weimar, Mark R. Electric Power Interruption Cost Estimates for Individual Industries, Sectors, and U.S. Economy. United States: N. p., 2002. Web. doi:10.2172/926127.

Brown S., Kruger, C., and S. Subler. 2007. Greenhouse Gas Balance for Composting Operations. Journal of Environmental Quality. 37:1396–1410.

Catanzaro P. and A. D'Amato. No Date. Forest Carbon: An essential natural solution for climate change. Available at https://masswoods.org/sites/masswoods.org/files/Forest-Carbon-web_1.pdf. Accessed August 15, 2022.

Climate action Reserve. 2022. Reforestation Methodology Version 2.0. Available at Reforestation_Forecast_Methodology_v2.0.pdf (climateforward.org). Accessed August 28, 2022.

Climate Watch: 2022. United States Emissions per GDP. Available at: https://www.climatewatchdata.org/countries/USA?end_year=2019&start_year=1990. Accessed November 1, 2022.

Energy Information Administration (EIA). 2021. State Electricity Profiles for 2021. Available at: Massachusetts Electricity Profile 2021 - U.S. Energy Information Administration (EIA). Accessed August 23, 2023.

Ericson, S., and L. Lisell. 2020. A Flexible Framework for Modeling Customer Damage Functions for Power Outages. Energy systems. DOI: 10.1007/s12667-018-0314-8.

Hussain, A. 2019. A Day without Power, Outage Costs for Businesses. Available at https://www.bloomenergy.com/blog/a-day-without-power-outage-costs-for-businesses/. Accessed September 27, 2022.

Intergovernmental Panel on Climate Change (IPCC). 2000. Land Use, Land Use Change, and Forestry, edited by Watson, R.T., Noble, I.R., Bolin, B., Ravindranath, N.H., Verado, D.J., and D.J. Dokken, Chapter 5, Project Based Activities, edited by Brown, S., Masera, O. and J. Sathaye. Available at: http://www.grida.no/climate/ipcc/land_use/index.htm. Accessed September 27, 2022.

ISO New England. 2022. Projected Annual Energy Use with and without EE and PV Savings. Available at: https://www.iso-ne.com/about/key-stats/electricity-use. Accessed November 1, 2022.

Kenward, A., and U. Raja. 2014. Blackout: Extreme Weather, Climate Change and Power Outages. Available online at: https://www.ourenergypolicy.org/wp-content/uploads/2014/04/climate-central.pdf. Accessed September 27, 2022.

Landfill Gas Expert. 2019. Fugitive Emissions of Methane and Landfill Gas Explained. Available online at: https://landfill-gas.com/fugitive-emissions-of-methane-landfill-gas. Accessed September 29, 2022.

Massachusetts Department of Conservation and Recreation (DCR). 2020. Community Wood Bank Program. Available online at: https://www.mass.gov/guides/community-wood-bank-program. Accessed June 29, 2023.

Moore, A. 2021. Lights Out: Climate Change Could Plunge America into Darkness. Here's Why. Available at: https://cnr.ncsu.edu/news/2021/03/lights-out-climate-change-could-plunge-america-into-darkness-heres-why/. Accessed September 27, 2022.

Moss S. and A. Bilich. 2022. Diesel Back-Up Generator Population Grows Rapidly in the Bay Area and Southern California. Available online at: https://www.bloomenergy.com/wp-content/uploads/diesel-back-up-generator-population-grows-rapidly.pdf. Accessed September 27, 2022.

President's Council of Economic Advisers, U.S. Department of Energy's Office of Electricity Delivery and Energy Reliability, and the White House Office of Science and Technology, 2013. Economic Benefits of Increasing Electric Grid Resilience to Weather Outages. Available at: https://www.energy.gov/sites/prod/files/2013/08/f2/Grid%20Resiliency%20Report_FINAL.pdf. Accessed September 27, 2022.

Regenerative Design Group (RDG). 2023. Estimation of GHG Emissions from Land Alteration. Memo from RDG to National Grid and BSC Group sent on June 16, 2023.

U.S. Environmental Protection Agency (EPA). 2021. From Farm to Kitchen: The Environmental Impacts of U.S. Food Waste. Available online at: https://www.epa.gov/system/files/documents/2021-11/from-farm-to-kitchen-the-environmental-impacts-of-u.s.-food-waste_508-tagged.pdf. Accessed September 27, 2022.

U.S. Government Accountability Office (GAO). 2021. Electricity Grid Resilience: Climate Change Is Expected to Have Far-Reaching Effects and DOE and FERC Should Take Actions. Available online at: https://www.gao.gov/assets/gao-21-346.pdf. Accessed September 27, 2022.

APPENDIX E

2050 Transmission Study



2050 Transmission Study

Solution Development Update

Dan Schwarting, P.E.

MANAGER | TRANSMISSION PLANNING

Purpose & Outline of Today's Presentation

- Today's presentation is a progress update on transmission solution development for the 2050 Transmission Study
- All results presented today are preliminary and subject to change as the study progresses
- Today's presentation will cover the following topics:
  - 2050 Transmission Study Overview
  - Key Lessons Learned to Date
  - Solution Development Progress
  - Summary & Next Steps

2050 TRANSMISSION STUDY OVERVIEW

2050 Transmission Study Overview

- In accordance with a recommendation from NESCOE's October 2020 "*New England States' Vision for a Clean, Affordable, and Reliable 21st Century Regional Electric Grid*," ISO-NE is conducting the 2050 Transmission Study in order to determine:
  - Transmission needs in order to serve load while satisfying NERC, NPCC, and ISO-NE reliability criteria in 2035, 2040, and 2050
  - Transmission upgrade "roadmaps" to satisfy those needs considering both constructability and cost
- ISO-NE has coordinated with NESCOE throughout this study
  - In November 2021, ISO-NE introduced the 2050 Transmission Planning Study Scope of Work, preliminary assumptions, and methodology
  - ISO-NE presented results showing transmission reliability concerns in peak load snapshots in March 2022, April 2022, and July 2022
- Today's presentation is an update on transmission solution development

2050 Study Solution Development Process

Presented
April 28, 2022
PAC Meeting

2035 & 2040

- Subsets of primary solution set to fully address needs in 2035 and 2040

Primary Set

- 2050 Winter Evening Sensitivity (51 GW load)
- 2050 Summer Daytime Peak Sensitivity
- 2050 Summer Evening A & B

57 GW Winter

- Additional solutions to fully address original 2050 Winter Peak (57 GW load)

2050 Study Solution Development: Current Status

2035 & 2040

- Subsets of primary solution set to fully address needs in 2035 and 2040

Primary Set

- 2050 Winter Evening Sensitivity (51 GW load)
- 2050 Summer Daytime Peak Sensitivity
- 2050 Summer Evening A & B

57 GW Winter

- Additional solutions to fully address original 2050

Currently, solution development is underway for the primary solution set. Details on the exact work performed so far will follow later in this presentation.

KEY LESSONS LEARNED TO DATE

Key Lessons Learned To Date

- While solution development is still in progress, the process has already revealed a number of key lessons
- These lessons may help illuminate:
  - General approaches to developing the transmission system needed for 2035, 2040, and 2050
  - Strategic decisions that the region will face while interconnecting new renewable energy sources
  - Questions to be answered prior to undertaking more detailed studies

Key Lessons Learned To Date

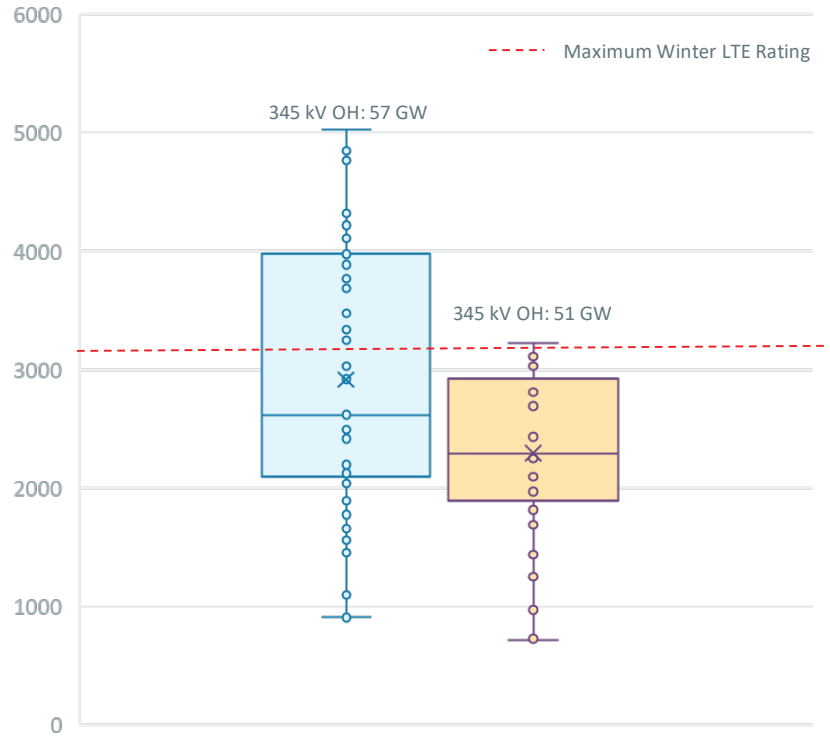
The following slides will discuss each of these lessons in further detail:

- Increasing Capacity of Existing Lines Is Effective
- 345/115 kV Transformers Are Critical
- Generator Sizes and Locations Can Affect Overloads
- Solutions Are Sensitive To Load Distribution

Increasing Capacity of Existing Lines Is Effective

- In many locations in New England, fully utilizing existing overhead transmission rights-of-way is enough to address many load-serving concerns in 2035, 2040, and 2050
- Solutions may include:
  - Reconductoring existing lines to increase current-carrying capacity
  - Replacing single conductors with double-bundled conductors
  - Rebuilding existing lines to accommodate the weight of larger conductors
  - Upgrading lines to higher operating voltage (e.g. 230 kV to 345 kV)

Increasing Capacity of Existing Lines Is Effective: Example



- Each dot on the graph represents the loading on an overloaded 345 kV line in the 51 GW and 57 GW 2050 Winter Peak snapshots
- The red line represents the typical maximum winter LTE rating of a 345 kV line
- Many overloads can be resolved by upgrading 345 kV lines to the largest standard conductor, rather than building brand-new lines
- Similar trend is true for 115 kV lines

345/115 kV Transformers Are Critical

- New England's future transmission system will need to transfer power from remote renewable sources to dense population centers on 345 kV lines, and then step power down to 115 kV to serve individual substations
- In the 51 GW 2050 Winter Peak snapshot, 62 of New England's 345/115 kV transformers are overloaded
- These transformers are expensive, and have a long lead time between the time an order is placed and delivery

Addressing 345/115 kV Transformer Overloads

- In some cases, a single new 345/115 kV transformer can mitigate overloads on multiple existing transformers
- At other substations, overloads are severe enough that two new transformers are required
- When new renewable sources interconnect in or near load centers, interconnecting at 115 kV rather than 345 kV can reduce the need for additional 345/115 kV capacity

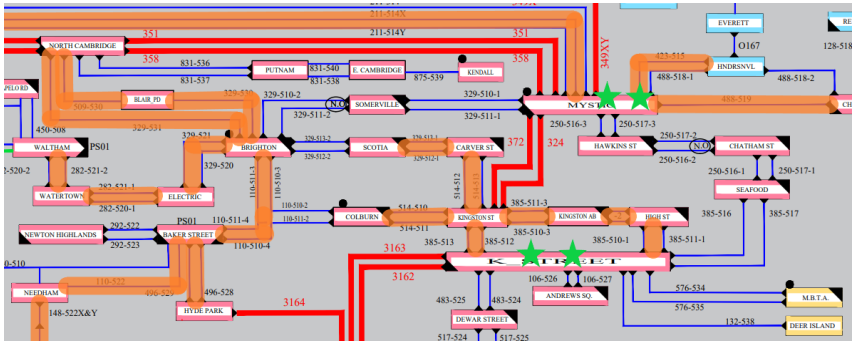


Generator Sizes and Locations Can Affect Overloads

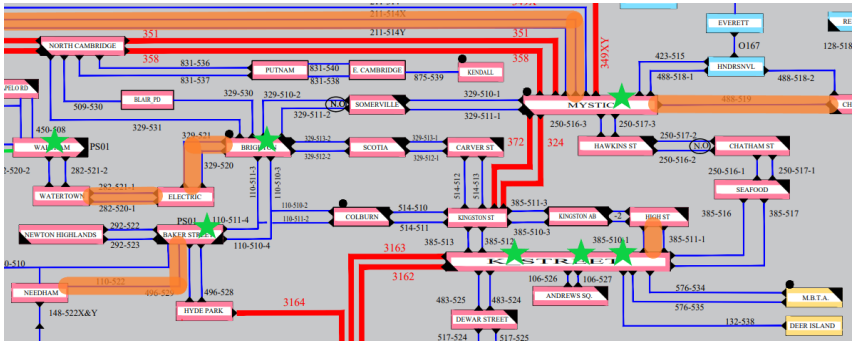
- Strategically locating points of interconnection (POIs) for new generating resources can reduce transmission overloads
- Previous 2050 Transmission Study presentations discussed locating generation in southern New England to reduce North-South stresses
- Further analysis has shown that location on a finer scale is also critical to limiting overloads
  - Choice of individual substations in urban areas
  - Choice of voltage level within a substation (115 vs. 345 kV)

Impacts of Generator Size and Location

Original approach: multiple large offshore wind interconnections at Mystic and K Street 345 kV



Potential optimized approach: smaller individual offshore wind interconnections at various 115 kV stations in and around Boston (including relocations from outside Boston)



In both figures, **orange** highlights show overloaded lines in the 51 GW 2050 Winter Peak snapshot. **Green** stars show the location of offshore wind interconnections.

Generator Size: Inherent Trade-Offs

- Large offshore wind interconnections, especially in Boston, can lead to overloads leaving the point of interconnection
- Smaller offshore wind interconnections can avoid this problem, but a trade-off exists:

Smaller wind interconnections
- Lower transmission upgrade costs
- Higher number of offshore connections
- Higher number of HVDC converters
- Higher generator lead costs

Larger wind interconnections
- Higher transmission upgrade costs
- Lower number of offshore connections
- Lower number of HVDC converters
- Lower generator lead costs



Generator Size: Proposal for Further Analysis

- To ensure efficient solution development in the Boston area, ISO-NE proposes to continue optimizing wind farm POI locations
- The trade-off between wind farm size and transmission upgrades will be addressed by choosing a standard wind farm size of 1200 MW for POIs in the Greater Boston area
  - 1200 MW is a common size in European offshore wind interconnections
  - Minimizes the number of HVDC converter stations and offshore connections without exceeding the 1200 MW source loss limit or requiring extensive transmission upgrades at the POIs
- Substations with multiple offshore wind interconnections (totaling greater than 1200 MW) will remain outside of Greater Boston, where fewer overloads are encountered in moving large amounts of wind out of POIs

Solutions Are Sensitive to Load Distribution

- Distribution of load among the substations in New England plays a critical role in transmission line/transformer loading
- Maximum load loss criteria of 300 MW for an N-1-1 contingency pair further sensitizes results to load distribution
- Load distribution is unlikely to drastically change the New England-wide total cost of upgrades, but influences the exact solutions chosen for longer-term transmission studies

Load Distribution: Examples

- A 115 kV load-serving substation in the Boston area is fed by two 115 kV lines, and has 308 MW of load
  - To avoid a 300 MW N-1-1 load loss, at least one new transmission line is required
  - A 10 MW reduction in load would eliminate this requirement
  - Other stations in the Boston area have just under 300 MW, and could drive new transmission lines if load is slightly increased
- A 115 kV overhead transmission line in central Vermont is loaded to 101.3% of its LTE rating
  - A small (~5 MW) shift in load from one end of the line to the other could be enough to drop the line's flow below 100% of LTE, eliminating an upgrade from the final solutions set

Load Distribution: Future Data Requirements

- In the 2050 Transmission Study, ISO-NE assumed that electrification leads to equal rates of load growth at each substation in a state
- Unequal load growth rates and changes in load distribution over time may eliminate some concerns identified in this study, or lead to other concerns not identified here
- In future longer-term transmission studies, ISO-NE may request substation-specific load growth information from transmission/distribution companies

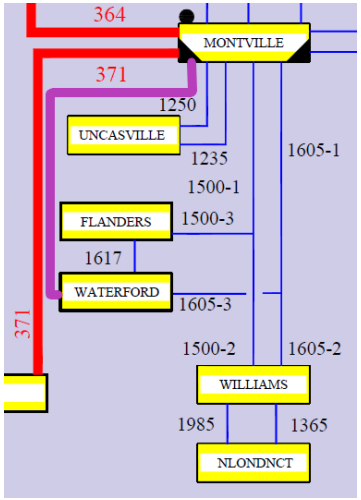
SOLUTION DEVELOPMENT PROGRESS

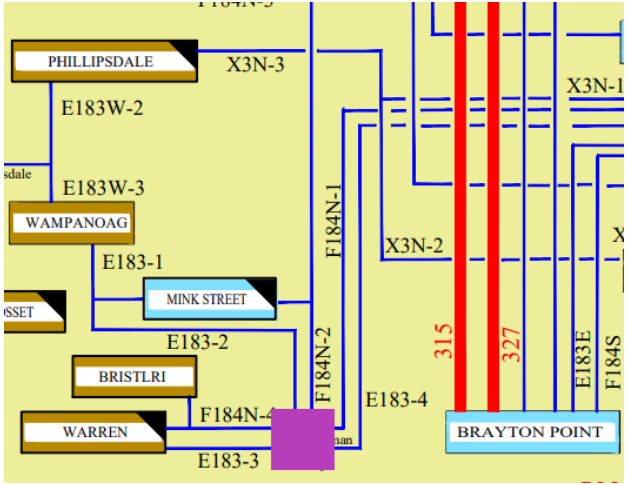
Solution Development Approach

- Most solution development so far has focused on urban areas
  - Highest density of load
  - More underground transmission, which cannot be upgraded in-place as easily as overhead transmission
  - The 2050 Transmission Study will suggest solutions for any location in New England where overloads are observed, whether in an urban area or not
- Focus is initially on the 51 GW 2050 Winter Peak snapshot
  - Winter peak snapshot shows the greatest extent of overloads, and solutions for winter peak will likely address summer peak overloads
  - Offshore wind POI relocation is occasionally spot-checked in summer peak snapshots, where wind output is assumed to be lower, to ensure that solutions remain effective during summer peak conditions

Solutions to Address 300 MW N-1-1 Load Loss

- A number of solutions are proposed to address N-1-1 contingency pairs that result in the loss of >300 MW of load
- For example:
  - Third line into an area served by two lines (center)
  - Switching station to break up line with multiple tapped load-serving stations (at right)





Overhead Line Rebuilds

- As described in the April 2022 PAC presentation, ISO-NE will use per-mile cost assumptions for line rebuild/reconductoring
- Cost assumptions have been developed through an analysis of past asset condition rebuilds
- Assumed costs shown at right

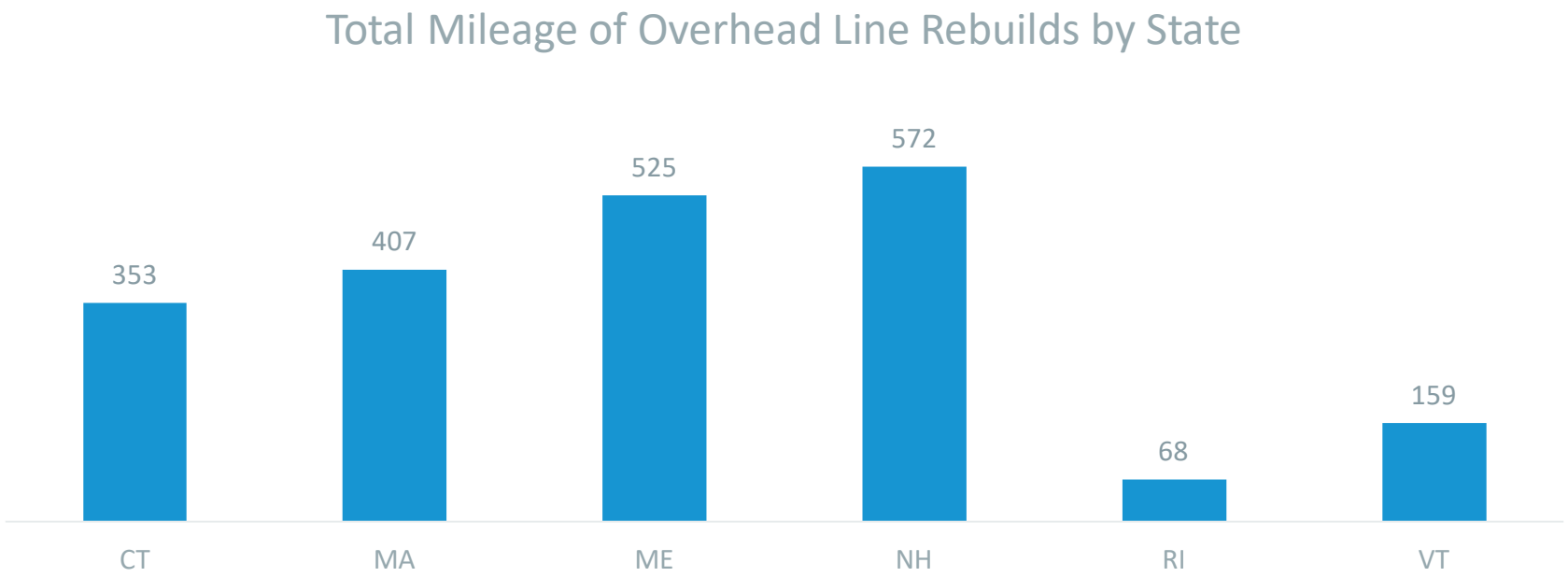
Voltage	Assumed Cost
69 kV	$2M/mile
115 kV	$2M/mile
230 kV	$3M/mile
345 kV	$5M/mile

Overhead Line Rebuilds

- Preliminary total mileage of existing lines to be rebuilt for higher capacity, and assumed cost, shown here
  - Breakdown of mileage by state shown on the next slide
- Some lines may need to be rebuilt for asset condition by 2050, so estimated costs may partially overlap with asset condition projects

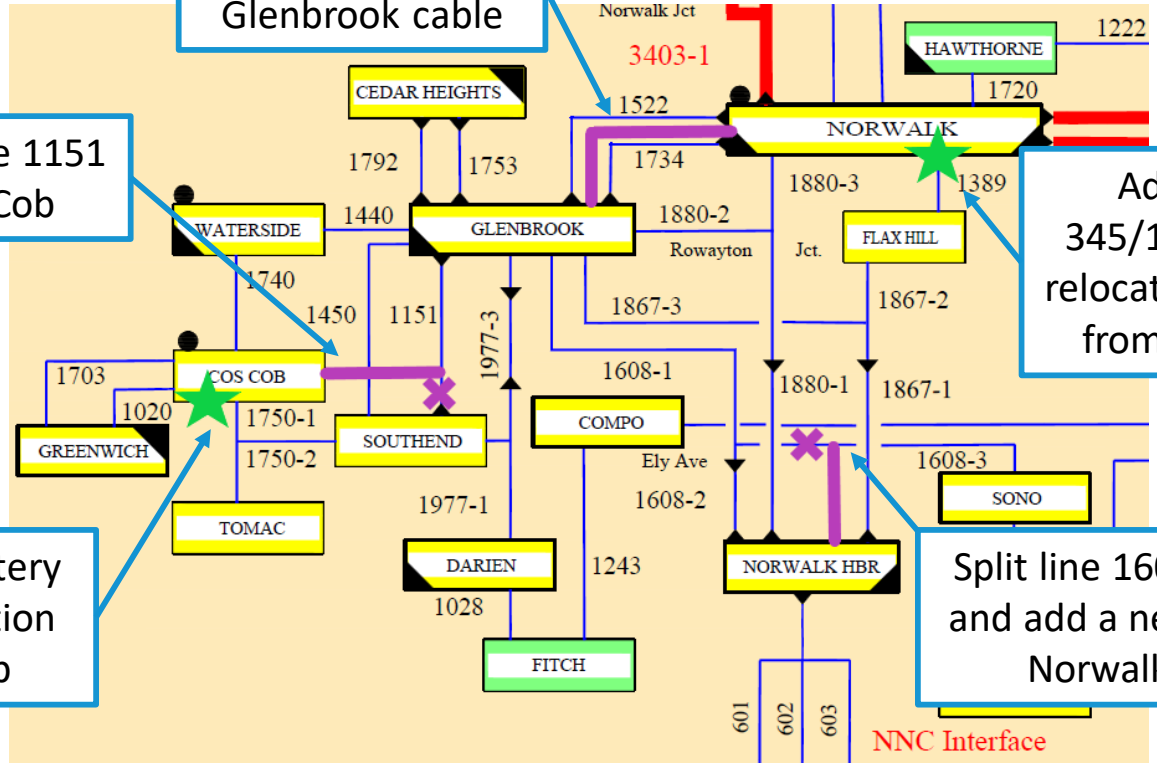
Voltage	Miles of Rebuilt Lines	Assumed Cost
69 kV	111	$0.22 billion
115 kV	1,491	$2.98 billion
230 kV	63	$0.19 billion
345 kV	419	$2.09 billion
Total	**2,084**	**$5.48 billion**

Overhead Line Rebuilds: Mileage by State



Numbers indicate preliminary total mileage of existing lines to be rebuilt for higher capacity. Results subject to change as study progresses.

Southwest Connecticut: Preliminary Solutions



Boston Area: Solution Development Progress

- Strategic relocation of offshore wind POIs has reduced the extent of overloads in Boston
  - Preliminary list of POIs shown at right

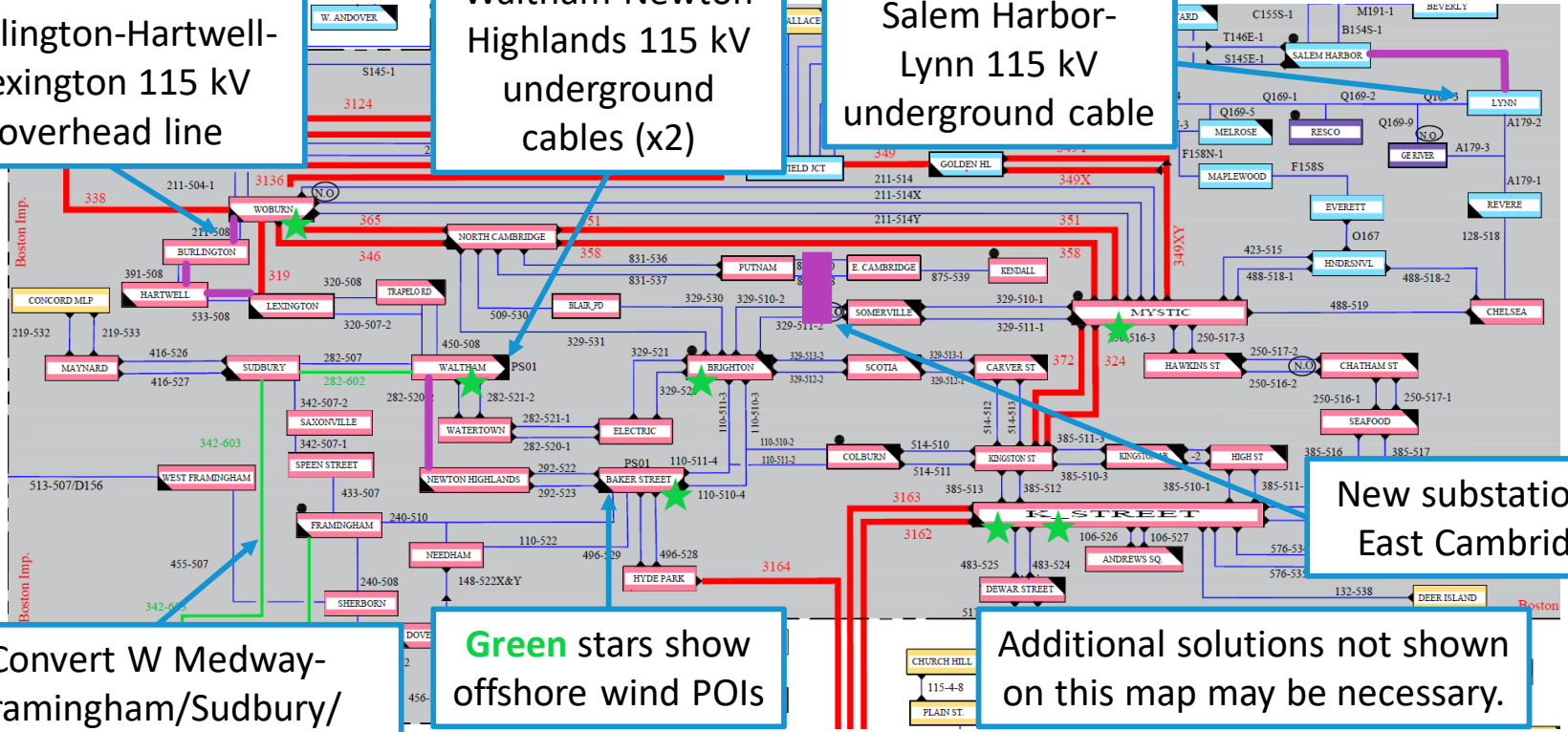
Substation	OSW Size
K Street 345 kV	1200 MW
Mystic 115 kV	1200 MW
K Street 115 kV	1200 MW
Woburn 115 kV	1200 MW
Brighton 115 kV	1200 MW
Waltham 115 kV	1200 MW
Baker Street 115 kV	1200 MW

Boston Area: Preliminary Solutions

Second Woburn-Burlington-Hartwell-Lexington 115 kV overhead line

Waltham-Newton Highlands 115 kV underground cables (x2)

Salem Harbor-Lynn 115 kV underground cable



Convert W Medway-Framingham/Sudbury/ Waltham 230 kV to 345 kV

Green stars show offshore wind POIs

Additional solutions not shown on this map may be necessary.

New substation in East Cambridge

SUMMARY AND NEXT STEPS

Summary and Key Take-Aways

Increasing Capacity of Existing Lines Is Effective

345/115 kV Transformers Are Critical

Generator Sizes and Locations Can Affect Overloads

Solutions Are Sensitive To Load Distribution

Solution development is still in progress, so exact transmission solutions shown today should be regarded as preliminary and subject to change.

Next Steps

- Feedback on this 2050 Transmission Study presentation may be submitted to pacmatters@iso-ne.com by January 3, 2023
- Solution development work will be ongoing throughout 2023
- Consultant has begun to develop cost estimates for more complex/challenging solution components
- Next update to PAC anticipated in late Q1/early Q2 2023

Questions



APPENDIX F

Best Management Practices (BMPs)

National Grid's Environmental Guidance for Row Access, Maintenance and Construction Best Management Practices (EG-303)
Release Notification in Massachusetts (EG-501MA)
Spill Response Procedures and Notification (EG-502MA)
And Excess Soil Management from Construction Projects on Rights-of-Way (EG-1707)

SUBJECT	REFERENCE
Excess Soil Management from Construction Projects on Rights-of-Way	**EP No. 17 – Construction Projects**

PURPOSE: To document the procedure to appropriately manage excess soils generated during construction projects conducted on rights-of-way (ROWs) in Massachusetts.

SCOPE: This guidance document applies to all construction projects conducted by National Grid employees or contractors on National Grid ROWs in Massachusetts.

RESPONSIBILITIES: It is the responsibility of the person managing the excess soils, usually a National Grid Project Manager or Contractor Project Manager, to ensure that this guidance is followed.

PROCEDURE: The table incorporated into this guidance document shall be used to determine appropriate methods of disposal for excess soil generated from construction projects on ROWs.

SUBJECT	REFERENCE
Excess Soil Management from Construction Projects on Rights-of-Way	**EP No. 17 – Construction Projects**

Guidance for Disposal of Excess Soil from Construction Projects on ROWs

		Origin of Excess Soil		
		From Greenfields Site[1]	*From Around Base of Existing Structure*	
			Wood Pole	*Metal Structure*
Disposal Options	***Ship Off Site***	No sampling required – **Ship off site to sand & gravel operation. Does not require National Grid Environmental Department approval**	**Sample prior to disposal at National Grid-approved facility**[2]	**Sample prior to disposal at National Grid-approved facility**[3]
	Lose on Site in Appropriate Location[4]	**Yes, with prior approval of National Grid Environmental Department**	If stained soil exists around base of pole – **Yes, if in immediate vicinity of existing structure. Requires prior approval of National Grid Environmental Department**[5] If no stained soil is present around base of pole – **Yes, with prior approval of National Grid Environmental Department**[5]	**Yes, with prior approval of National Grid Environmental Department**[5]

Notes:

1) **"Greenfields Site" -** Defined as previously undeveloped land within a National Grid ROW and land in ROW outside of the boundary of the original footprint of existing structures.
2) See National Grid Approved Disposal Facilities List. Samples will be collected from the top six inches of soil around the base of the pole and will be analyzed for parameters required by the disposal facility. Soil samples will be collected at an appropriate frequency from around representative poles. Sampling plan must be approved by the National Grid Environmental Department before samples are collected.
3) See National Grid Approved Disposal Facilities List. Sampling around metal structures will be collected from the top six inches of soil around base of structure. Samples around base of structure will be composited into one sample and analyzed for Pb, PCBs, Cr, and Cd and any other parameter required by the disposal facility prior to disposal at a National Grid-approved facility or sand and gravel operation. Soil samples will be collected at an appropriate frequency from around representative structures. Sampling plan must be approved by the National Grid Environmental Department before samples are collected.
4) **"Appropriate Location" -** Defined as <u>not</u> located within a floodplain, buffer zone, wetlands, priority habitat, Area of Critical Environmental Concern, or at an archaeologically sensitive site. Additionally, the grade of the site must be relatively flat and the placement of the soil must not create any safety clearance violation or a "moonscape" appearance. The soil must be free of invasive vegetation. The proximity of abutters or other nearby residents/land owners must be considered. The soil placement must be entirely within the ROW and approved by the National Grid Environmental Department. Placement of material in an existing ROW road for repair of potholes should be prioritized. As warranted, the area should be re-seeded and mulched for stabilization.
5) Approval shall be documented in written form such as an e-mail and may be location-specific or general for the entire project.

Record of Change		
Date of Review/Revision:		
Revision	**Date**	**Description**
0	01/27/10	Initial issue.

SPILL RESPONSE PROCEDURES & NOTIFICATIONS

Below is a summary of procedures to follow and notifications to make in the event of a spill. **Please note that the EG-501 series details steps to take in the immediate moments after a spill. This document supplements those activities, as well as those activities in EP-5 that further guide the actions of the Environmental Scientist/Engineer.**

SPILLS TO WATER

Oil spills to water are Category 1 classified in accordance with National Grid Environmental Procedure No. 15, if they are likely to result in an enforcement action from a regulatory agency.

If any quantity of oil, regardless of PCB content or other hazardous material, is released to water (*wetlands, streams, lakes, ponds, storm or sanitary sewer*) contact:

DEP	ASAP (No later than 2 hours)
NRC	Within 2 hours
LEPC	Within 2 hours
Local Fire Dept.	Within 2 hours
Clean-up Contractor	ASAP

If any quantity of oil with concentrations of PCBs ≥50 ppm or greater additionally notify:

EPA	Within 24 hours

SPILLS TO GROUND

Spills of over 250 gallons or containing 1 pound or PCBs ≥ 500 ppm are Category 1 classified in accordance with National Grid Environmental Procedure No. 15.

If 10 or more gallons of transformer oil with PCBs ≥2 ppm, or any other oil (e.g., hydraulic fluid, motor oil, etc.), are released to ground (soil, pavement) contact:

DEP	ASAP (No later than 2 hours)
Local Fire Dept.	Within 2 hours
Clean-up Contractor	ASAP

If PCB concentrations are ≥50 ppm or unknown, additionally notify:

LEPC	Within 2 hours

If ***any quantity*** of oil is released to ground with concentrations of ***PCBs ≥500 ppm*** contact:

DEP	ASAP (No later than 2 hours)
LEPC	Within 2 hours

Local Fire Dept.	Within 2 hours
Clean-up Contractor	ASAP

If PCB concentrations are between *50-499 ppm and over 2,700 gallons* are released or PCB concentrations are ≥*500 ppm , and 270 gallons* are released, *additionally notify*:

EPA	Within 24 hours

If 25 or more gallons of transformer oil, with PCBs < 2 ppm are released to ground (soil, pavement) contact:

DEP	ASAP (No later than 2 hours)
Local Fire Dept.	Within 2 hours
Clean-up Contractor	ASAP

SPILLS TO VEGETABLE GARDENS, FARM LAND, GRAZING LAND

If any quantity of oil with detectable levels of PCBs is released to gardens, farms, or grazing land, contact:

DEP	ASAP (No later than 2 hours)
Local Fire Dept.	ASAP
Clean-up Contractor	ASAP
Environmental Engineer/Scientist	ASAP

If concentrations of PCBs are ≥**50 ppm**, additionally contact:

EPA	Within 24 hours
LEPC	Within 2 hours

AGENCY TELEPHONE NUMBERS

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (MA DEP)
MASSACHUSETTS EMERGENCY MANAGEMENT AGENCY (MEMA)

MA DEP / MEMA 24 hours per day	**888.304.1133**

NOTE: THE MEMA DISPATCHER WILL ROUTE CALL TO APPROPRIATE MA DEP REGION.

NATIONAL RESPONSE CENTER (NRC)	**800.424.8802**
ENVIRONMENTAL PROTECTION AGENCY (EPA)	**617.223.7265**

LOCAL EMERGENCY PLANNING COMMITTEES (LEPCs)

MUNICIPALITY	CHAIRPERSON	PHONE NUMBER
Abington	Chief David Majenski	(781) 878-3232
Acton	Chief Robert Craig	(978) 264-9645
Adams	John Morocco	(413) 662-3102
Alford	Doreen Hutchinson	(413) 528-0790 x3031
Amesbury	Chief James Broderick	(978) 388-8185
Andover	Jeff Coco/James Michitson	(978) 682-5212
Arlington	Chief William Middlemiss	(781) 862-0272
Ashburnham	James Wright	(978) 249-8275
Athol	James Wright	(978) 249-8275
Attleboro	Bob McDonald	(508) 223-2220
Auburn	Chief William Whynot	(508) 832-7800
Avon	Carl S. Fisher	(508) 583-5361
Ayer	William Shute	(978) 804-2084
Barnstable	Chief George Baker	(508) 375-6618
Barre	James Wright	(978) 249-8275
Bedford	Chief William Middlemiss	(781) 862-0272
Belchertown	Lt. Mike Spanknebel	(413) 584-0883
Bellingham	James Haughey	(508) 928-1007
Belmont	Chief William Middlemiss	(781) 862-0272
Berlin	Chief John T. Fleck	(978) 365-3502
Beverly	Dep. Chief James Coughlin	(978) 531-3447
Billerica	Mark Boldrighini	(978) 459-5552
Blackstone	Chief Michael Sweeney	(508) 883-1030
Bolton	Chief John T. Fleck	(978) 365-3502
Boston	Captain James Bruuynell	(617) 343-2116
Bourne	Chief George Baker	(508) 375-6618
Braintree	Chief Kenneth McHugh	(781) 843-3602 x4405
Brewster	Chief George Baker	(508) 375-6618
Boylston	Bruce Baker	(978) 422-6253
Boxborough	Chief Geoffrey Neagle	(978) 263-1116
Boxford	Robert Hazelwood	(978) 887-3135
Bridgewater	Herb Lemon	(508) 697-6191
Brimfield	Robert Corry	(413) 245-7334
Brockton	Morton Schleffer	(508) 588-7871
Brookfield	Joe Gadbois	(508) 867-6420

MUNICIPALITY	CHAIRPERSON	PHONE NUMBER
Brookline	Chief William Middlemiss	(781) 862-0272
Burlington	Chief William Middlemiss	(781) 862-0272
Carlisle	Chief David Flannery	(978) 369-2888
Charlemont	John Taylor	(413) 774-3167
Charlton	John Hart	(508) 765-9771
Chatham	Chief George Baker	(508) 375-6618
Chelmsford	Mark Boldrighini	(978) 459-5552
Chelsea	Captain Richard Tustin	(781) 729-1802
Cheshire	John Morocco	(413) 662-3102
Clarksburg	John Morocco	(413) 662-3102
Clinton	Chief John T. Fleck	(978) 365-3502
Cohasset	Chief Robert Silvia	(781) 383-0616
Concord	Chief Kenneth MacLean	(978) 443-2239
Danvers	Dep. Chief James Coughlin	(978) 531-3447
Dennis	Chief George Baker	(508) 375-6618
Dighton	Jeffrey Allie	(508) 669-6611
Douglas	Pauline Labrecque	(508) 476-2267
Dracut	Mark Boldrighini	(978) 459-5552
Dudley	John Hart	(508) 765-9771
Dunstable	William Shute	(978) 804-2084
East Bridgewater	Deputy Fairburn	(508) 378-2071
East Brookfield	Jason Messenger	(508) 867-6575
East Longmeadow	Brian Falk	(413) 525-5400 x 420
Eastham	Chief George Baker	(508) 375-6618
Easthampton	Lt. Mike Spanknebel	(413) 584-0883
Easton	Thomas Stone	(508)230-0750
Egremont	Doreen Hutchinson	(413) 528-0790 x3031
Erving	John Taylor	(413) 774-3167
Essex	Dep. Chief James Coughlin	(978) 531-3447
Everett	Captain Richard Tustin	(781) 729-1802
Fall River	Richard Aquiar	(508) 324-2733
Falmouth	Chief Paul D. Brodeur	(508) 495-2517
Florida	John Morocco	(413) 662-3102
Foxborough	Gerald McNamara Sr.	(508) 543-1230
Franklin	Chief Gary McCarraher	(508) 528-2323
Gardner	James Wright	(978) 249-8275
Georgetown	Chief Albert B. Beardsley	(978) 352-5757
Gloucester	Dep. Chief James Coughlin	(978) 531-3447

MUNICIPALITY	CHAIRPERSON	PHONE NUMBER
Goshen	Lt. Mike Spanknebel	(413) 584-0883
Grafton	Katharine Cederberg	(508) 826-0740
Granby	Lt. Mike Spanknebel	(413) 584-0883
Great Barrington	Doreen Hutchinson	(413) 528-0790 x3031
Groton	William Shute	(978) 804-2084
Groveland	Jeff Coco/James Michitson	(978) 682-5212
Halifax	Chief David Rich	(781) 585-2633
Hamilton	Jeff Coco/James Michitson	(978) 682-5212
Hampden	Doug Mellis	(413) 566-8011
Hancock	Chief Robert Czerwinski	(413) 448-9764
Hanover	James Purcell	(781) 826-3001
Hanson	Allen Hoyte	(781) 293-9571
Hardwick	James Wright	(978) 249-8275
Harwich	Chief George Baker	(508) 375-6618
Harvard	William Shute	(978) 804-2084
Haverhill	Jeff Coco/James Michitson	(978) 682-5212
Hawley	John Taylor	(413) 774-3167
Heath	John Taylor	(413) 774-3167
Hingham	Chief Mark J. Duff	(781) 741-1480
Holbrook	James Reichert	(781) 767-4312
Holland	James Gagne	(413) 245-9733
Hopedale	Chief Tom Daige	(508) 473-1050
Hubbardston	James Wright	(978) 249-8275
Hull	Chief Jane Walsh	(781) 925-8111
Ipswich	Jeff Coco/James Michitson	(978) 682-5212
Lancaster	Chief John T. Fleck	(978) 365-3502
Lawrence	Jeff Coco/James Michitson	(978) 682-5212
Leicester	Robert Wilson	(508) 892-7022
Lenox	Chief Robert Czerwinski	(413) 448-9764
Leominster	Charles Coggins	(978) 534-7580
Lexington	Chief William Middlemiss	(781) 862-0272
Lincoln	Chief Kenneth MacLean	(978) 443-2239
Littleton	William Shute	(978) 804-2084
Lowell	Mark Boldrighini	(978) 459-5552
Lynn	Dep. Chief James Coughlin	(978) 531-3447
Lynnfield	Paul Romano	(617) 334-3132
Malden	Captain Richard Tustin	(781) 729-1802
Manchester by the Sea	Dep. Chief James Coughlin	(978) 531-3447

MUNICIPALITY	CHAIRPERSON	PHONE NUMBER
Marblehead	Dep. Chief James Coughlin	(978) 531-3447
Marlborough	Donald P. Cusson	(508) 481-1933
Mashpee	Chief George Baker	(508) 375-6618
Medford	Captain Richard Tustin	(781) 729-1802
Melrose	Captain Richard Tustin	(781) 729-1802
Mendon	Chief John Touhey	(508) 473-5330
Merrimac	Chief James Broderick	(978) 388-8185
Methuen	Jeff Coco/James Michitson	(978) 682-5212
Middleton	Jeff Coco/James Michitson	(978) 682-5212
Milford	Chief John Touhey	(508) 473-1214
Millbury	Robert Beausoleil	(508) 865-6957
Millville	Chief John Mullaly	(508) 883-4740
Milton	Mark Williams	(617) 821-1659
Monroe	John Taylor	(413) 774-3167
Monson	Jeremy Bedson	(413) 267-4128
Monterey	Doreen Hutchinson	(413) 528-0790 x3031
Mount Washington	Doreen Hutchinson	(413) 528-0790 x3031
Nahant	Dep. Chief James Coughlin	(978) 531-3447
Nantucket	Chief George Baker	(508) 375-6618
New Braintree	James Wright	(978) 249-8275
New Salem	John Taylor	(413) 774-3167
New Marlborough	Doreen Hutchinson	(413) 528-0790 x3031
Newbury	Chief James Broderick	(978) 388-8185
Newburyport	Chief Steven Cutter	(978) 465-4427
Newton	Chief Joseph LaCroix	(617) 796-2201
North Adams	John Morocco	(413) 662-3102
North Andover	Jeff Coco/James Michitson	(978) 682-5212
North Attleboro	Chief Peter Lamb	(508) 699-0140
North Brookfield	Douglas Blood	(508) 867-0206
North Reading	Captain Richard Tustin	(781) 729-1802
Northampton	Lt. Mike Spanknebel	(413) 584-0883
Northborough	Chief David Durgin/Brad Newman	(508) 393-1537
Northbridge	Chief Gary Nestor	(508) 234-8448
Norton	Chief Richard Gomes	(508) 285-0240
Norwell	Chief Paul Rosebach	(781) 659-8158
Norwood	Dan Matthews	(781) 461-6159
Oakham	James Wright	(978) 249-8275
Orange	John Taylor	(413) 774-3167

MUNICIPALITY	CHAIRPERSON	PHONE NUMBER
Orleans	Chief George Baker	(508) 375-6618
Oxford	Jeff Wilson	(508) 987-6009
Palmer	Chief Alan J. Roy	(413) 283-3861
Peabody	Dep. Chief James Coughlin	(978) 531-3447
Pembroke	Jim Neenan	(781) 293-5414
Pepperell	William Shute	(978) 804-2084
Petersham	James Wright	(978) 249-8275
Phillipston	James Wright	(978) 249-8275
Plainville	Chief Merrick	(508) 695-7115
Quincy	Tom Gorman	(617) 376-1105
Randolph	Chief Charles D. Foley, Jr.	(781) 961-0992
Reading	Captain Richard Tustin	(781) 729-1802
Rehoboth	William Maiorano	(508) 252-6415
Revere	Captain Richard Tustin	(781) 729-1802
Rockland	Robert Bowles	(781) 878-5025
Rockport	Dep. Chief James Coughlin	(978) 531-3447
Rowe	John Taylor	(413) 774-3167
Rowley	Chief James Broderick	(978) 388-8185
Royalston	James Wright	(978) 249-8275
Rutland	James Wright	(978) 249-8275
Salem	Dep. Chief James Coughlin	(978) 531-3447
Salisbury	Chief James Broderick	(978) 388-8185
Sandwich	Chief George Baker	(508) 375-6618
Saugus	Captain Richard Tustin	(781) 729-1802
Scituate	Chief Edward Hurley	(781) 545-8748
Seekonk	Allan Jack	(508) 336-8510
Sheffield	Doreen Hutchinson	(413) 528-0790 x3031
Shrewsbury	Don Filiere	(508) 841-8422
Shirley	William Shute	(978) 804-2084
Shutesbury	John Taylor	(413) 774-3167
Somerset	Chief Steven J. Rivard	(508) 646-2810
Sterling	Bruce Baker	(978) 422-6253
Southborough	Neal Aspesi	(508) 485-3235
Southbridge	John Hart	(508) 765-9771
Spencer	Robert Parsons	(508) 885-3555
Stockbridge	Arthur Dutil	(413) 298-3691
Stoneham	Captain Richard Tustin	(781) 729-1802
Stoughton	David Jarden and Doug Campbell	(781) 344-3132

MUNICIPALITY	CHAIRPERSON	PHONE NUMBER
Sturbridge	Chief Thomas Ford	(508) 347-2500
Sudbury	Chief Kenneth MacLean	(978) 443-2239
Sutton	Paul Maynard	(508) 865-8737
Swampscott	Dep. Chief James Coughlin	(978) 531-3447
Swansea	Chief Peter J. Burke	(508) 672-4305
Templeton	James Wright	(978) 249-8275
Tewksbury	Mark Boldrighini	(978) 459-5552
Topsfield	Charles Denault	(978) 887-5148
Tyngsboro	Wes Russell	(978) 649-7504
Upton	Chief Michael J.. Bradford, Sr.	(508) 529-3421
Uxbridge	Sgt. Peter Emerick	(508) 278-7755
Wakefield	Captain Richard Tustin	(781) 729-1802
Wales	Hank DeCoteau	(413) 245-7571
Waltham	Lt. Randy Mullin	(617) 421-0280
Ware	Lt. Mike Spanknebel	(413) 584-0883
Wareham	Chief Robert McDuffy	(508) 295-2973
Warren	Joe Laflower	(413) 436-9595
Warwick	John Taylor	(413) 774-3167
Watertown	Chief William Middlemiss	(781) 862-0272
Wayland	Chief Kenneth MacLean	(978) 443-2239
Webster	Chris Jolda	(508) 949-3840
Wellesley	Chief Kevin Rooney	(781) 235-1300
Wendell	John Taylor	(413) 774-3167
Wenham	Chief Robert A. Blanchard	(978) 468-5508
West Boylston	Bruce Baker	(978) 422-6253
West Bridgewater	Leonard T. Hunt	(508) 586-3232
West Brookfield	Bryce Lesily	(508) 867-1405
West Newbury	Chief James Broderick	(978) 388-8185
West Stockbridge	Doreen Hutchinson	(413) 528-0790 x3031
Westborough	Lt. Robert Rand	(508) 366-3040
Westford	William Shute	(978) 804-2084
Weston	Chief Kenneth MacLean	(978) 443-2239
Westminster	Brenton MacAloney	(978) 874-2313
Westport	Charlene Wood	(508) 636-1110
Weymouth	John Mulveyhill	(781) 340-5048
Whitman	Robert Schmidt	(781) 447-7677
Wilmington	Mark Boldrighini	(978) 459-5552
Winchendon	James Wright	(978) 249-8275

MUNICIPALITY	CHAIRPERSON	PHONE NUMBER
Winchester	Captain Richard Tustin	(781) 729-1802
Winthrop	Captain Richard Tustin	(781) 729-1802
Wilbraham	Nick Yarmac	(413) 596-3122
Williamsburg	Lt. Mike Spanknebel	(413) 584-0883
Williamstown	Chief Robert Czerwinski	(413) 448-9764
Winchendon	Captain Richard Tustin	(781) 729-1802
Woburn	Captain Richard Tustin	(781) 729-1802
Worcester	Thomas Gingras	(508) 799-1840
Wrentham	Joseph Heck	(508) 384-5400
Yarmouth	Chief George Baker	(508) 375-6618

During non-business hours, or if a LEPC member cannot be reached, inform the local fire department.

COMPANY CONTACTS

IMPORTANT: On-call Environmental Engineers switch on-call every other week for nights/weekends; therefore, please obtain assistance from Environmental Engineer through the Electric or Gas Dispatch.

Environmental Engineers/Scientists

New England North Division

Beverly Auxford-Paiva (Bay State North)
508.922.6309 (mobile)
781.388.5244 (office)

Joanne Lupa (Bay State West)
508.328.5635 (mobile)
508.860.6484 (office)

New England South Division

Deborah Blanch (Bay State South)
617.908.8881 (mobile)
508.897.5520 (office)

William Howard (Ocean State)
401.255.2888 (mobile)
401.784.7490 (office)

Environmental Manager

Peter Harley
401.255.5195 (mobile)
781-907-3701 (office)

Gas Dispatch: 877-304-1203
Central Electric Dispatch: 877-247-3608
MV & Granite Electric Dispatch: 877-247-3607
North Shore Electric Dispatch: 877-247-3606
Southeast Electric Dispatch: 866-411-3812
South Shore Electric Dispatch: 866-411-5599
Western Electric Dispatch: 877-247-3609

ENVIRONMENTAL CONSULTANT AND CLEAN UP CONTRACTOR CONTACTS

CLEAN HARBORS **800.645.8265**
(Clean up Contractor) (1-800 OIL TANK)

CONECO ENGINEERS AND SCIENTISTS **508.312.0090**
(Environmental Consultant)
After using pager number above, wait for call back. If page not returned within 10 to 15 minutes, try the mobile phone numbers, below:

Brian Klingler - **508.962.6277** (mobile)
John Aevazelis - **508.962.7423** (mobile)

TIGHE & BOND
(Environmental Consultant)
For Spills in Central MA area, contact Ken Gendron at **508.479.2924** (mobile)
For Spills in Western MA area, contact ER Pager at **413.263.0957**

ENVIRONMENTAL SPILL RESPONSE PROCEDURES

In the immediate moments following any spill event, the procedures outlined in the EG-501 series must be followed. As described in EG-501, it is the responsibility of the Environmental Scientist/Engineer to assume responsibility for directing the cleanup. In addition to those actions outlined in the applicable section of the EG-501 series, the Environmental Scientist/Engineer should consult EP-5 for more specific guidance.

Record of Change		
Date of Review/Revision:		
Revision	**Date**	**Description**
0	04/01/06	New EG for MA.
1	06/01/09	Updated to reflect changes in assignments of Environmental Engineers and telephone information for spill notifications. Also, combined three previous EG's (EG-502MA-BSN, EG-502MA-BSS, & EG-502MA-BSW).
2	12/28/09	Updated Environmental Engineer contact information.
3	09/30/10	Update contacts and phone numbers.
4	01/04/2012	Updates due to organizational changes
5	05/03/13	Updated to reflect current roles and responsibilities of personnel involved in spill response and procedures relative to the content of EG-501MA, updated section on Environmental Spill Response Procedures.

1. PURPOSE: This guidance document provides instructions for general employees and Westboro Dispatch staff in reporting a release/spill of oil or any other chemical to the environment.

2. SCOPE: This guidance document covers oil and chemical releases to the environment in Massachusetts.

3. DEFINITIONS:

a. **Oil** – means oil of any kind, including petroleum and mineral oil in electrical equipment, motor oil, fuel oil, hydraulic fluid, diesel fuel, etc.
b. **PCB Contaminated Oil** – means oil containing PCBs in the quantity ranging from 50-499 ppm.
c. **PCB Oil –** means oil containing PCBs in a concentration at or greater than 500 ppm.
d. **Release** – means any spilling, leaking pumping, pouring, emitting, emptying, or a substance to the environment.
e. **Reportable Quantity (RQ) –** means that quantity of a material released to the environment as defined in 40 CFR Part 117 and 40 CFR Part 302.

4. RESPONSIBILITIES:

a. **Any Employee** – All employees are responsible to report any release of oil or chemical to their supervisor or Westboro Dispatch.
b. **Divisional Engineer** – Responsible for determining whether or not a chemical has exceeded the Reportable Quantity, and follow up notification and reporting as required in EP-5. Responsible for two hour notification to the Massachusetts Department of Environmental Protection, Local Emergency Planning Coordinator (LEPC) and notification to the National Response Center, if required.

5. PROCEDURE

5.1 GENERAL EMPLOYEES:

a. Upon discovery of any oil or chemical spill, immediately notify your supervisor and/or the Trouble Center.

Trouble Center: 1.888.367.7693

NOTE: ALL OIL SPILLS ARE REQUIRED TO BE CALLED IN TO YOUR SUPERVISOR, NO MATTER WHAT THE VOLUME.

b. Provide as much information as possible including:
- location of release(including pole number)
- what the material was released/spilled
- when the spill was discovered

- estimated amount spilled
- what caused the release
- a description of the spill area
- any other pertinent information

c. Contact Environmental Engineer directly or call the Trouble Center to determine on-call environmental engineer.

5.2 Trouble Center – For After Hours Spills

a. Upon notification from the field of a release, gather information from the caller as to substance spilled, volume, cause, date and time of spill, etc.
b. Contact on-call environmental engineer or designated representative and relay appropriate information.

5.3 DIVISIONAL ENVIRONMENTAL ENGINEER

a. Determine if release is reportable and contact Massachusetts Department of Environmental Protection / Massachusetts Emergency Management Agency (MEMA) within two hours if it is. Call the 888.304.1133 number and you will be routed to correct DEP Regional Office.
b. In addition, report oil spills to water and PCB oil spills (see definition section) to the National Response Center at 1-800-424-8802.
c. Provide assistance in deploying spill clean up resources (equipment, contractors) when requested.
d. Complete Spill Report form.
e. Report spill to other required agencies per EP-5, as required.
f. Provide assistance to clean up crews in making arrangements for clean up debris disposal.
g. Categorize the spill as a Category 1 or Category 2 spill.
h. Confirm clean up.
i. Provide additional information to state agency to close out the spill.

RELEASE INFORMATION

Location of Release: _____
Town / City: _____
County: _____
District / Region:_____
Spill Number (NY): _____

Date of Release: _____
Time of Release:_____
Weather Conditions:_____
NG Employee Reporting Release: _____
Telephone Number: _____

Material Released: _____
Quantity Released: _____
Source of Release: _____

Cause and Brief Description: _____
_____
_____
_____
_____
_____
_____

Non-PCB Label? ☐ Yes ☐ No ☐ Unknown

Material Released To:

☐ LAND ☐ WATER ☐ AIR
- ☐ soil ☐ lake/pond
- ☐ street ☐ stream/river
- ☐ farmland/grazing land ☐ wetland
- ☐ vegetable garden ☐ catch basin/drain

☐ OTHER _____

NOTIFICATION INFORMATION

Agency Notified	Person Contacted	Date Reported	Time Reported	Agency Report #
In-house Only				
State Environmental Agency				
State Emergency Response Commission				
Local Emergency Response Commission				
Local Sewer/Water Authority				
National Response Center (NRC)				
Environmental Protection Agency (EPA)				
Other				
Other				

.

DIELECTRIC FLUID INFORMATION

PCB Concentration of Fluid:	**Based On:**
☐ No PCBs (<2 ppm)	☐ Nameplate Information or manufacturer's label
☐ Non-PCB (<50 ppm)	☐ Clor-N-Oil® Test
☐ PCB Contaminated (50-499 ppm)	☐ Lab Test
☐ PCB (≥500 ppm)	☐ Assumed 50-499 ppm*

**** If equipment was manufactured prior to July 2, 1979 and/or not labeled, and a Clor-N-Oil® Test cannot be conducted, then the oil must be considered "PCB Contaminated."***

***** Clor-N-Oil® test results are to be used for interim handling only. All wastes from unlabeled transformers requires laboratory analysis by gas chromatography prior to disposal. Field screening tests such as Clor-n-Oil tests cannot be used to determine PCB content for ultimate waste disposal purposes.***

SOURCE OF RELEASE

Source of Release (type of equipment): _____
Manufacturer: _____
Size: _____
Serial or Badge # (if available): _____

RELEASE RESPONSE INFORMATION

In-house crews used ☐
Contractor used: _____

Consultant used: _____

Describe nature of cleanup: _____
_____
_____
_____
_____
_____
_____
_____
_____

IN-HOUSE NOTIFICATION INFORMATION

Copies of Release Report Sent To:

☐ NY or NE Manager of Environmental Compliance
☐ Spill Database Updated / Release Report kept in local file

CERTIFICATION

Completed By:_____

Date:_____

INCIDENT CATEGORY
(to be completed by NG Division Environmental Engineer)

☐ Category 1 – Significant Incident
☐ Category 2 – Non Significant Incident
☐ Near Miss Incident

ADDITIONAL COMMENTS / INFORMATION

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

.

SUBJECT	REFERENCE
ROW Access, Maintenance and Construction Best Management Practices for New England	EP-3; Natural Resource Protection

PURPOSE/OBJECTIVE:

This document provides National Grid personnel, consultants and contractors with Best Management Practices (BMPs) for conducting work on electric and natural gas transmission and distribution rights-of-ways (ROWs) and substations in New England.

WHO:

These BMPs are to be followed by all personnel conducting work on Company electric and gas ROWs and substations in New England. These BMPs do not apply to Company employees and contractors performing routine vegetation management activities that are not a part of construction or re-construction projects. Employees and contractors maintaining vegetation on Company ROWs and substations must follow the National Grid ROW Vegetation and Substation Vegetation Management Plans.

DEFINITIONS:

Refer to **Glossary** in **Appendix 1** and **Acronyms** in **Appendix 2**.

WHAT TO DO:

1.0 Project Planning

Prior to the start of any project (proposed new facilities or maintenance of existing facilities), the Project Engineer or other project planner shall determine whether any environmental permits or approvals are required, per the state-specific EG-301 environmental checklists. Any questions regarding which activities may be conducted in regulated areas or within environmentally sensitive areas shall be referred to the National Grid Environmental Scientist or Project Environmental Consultant.

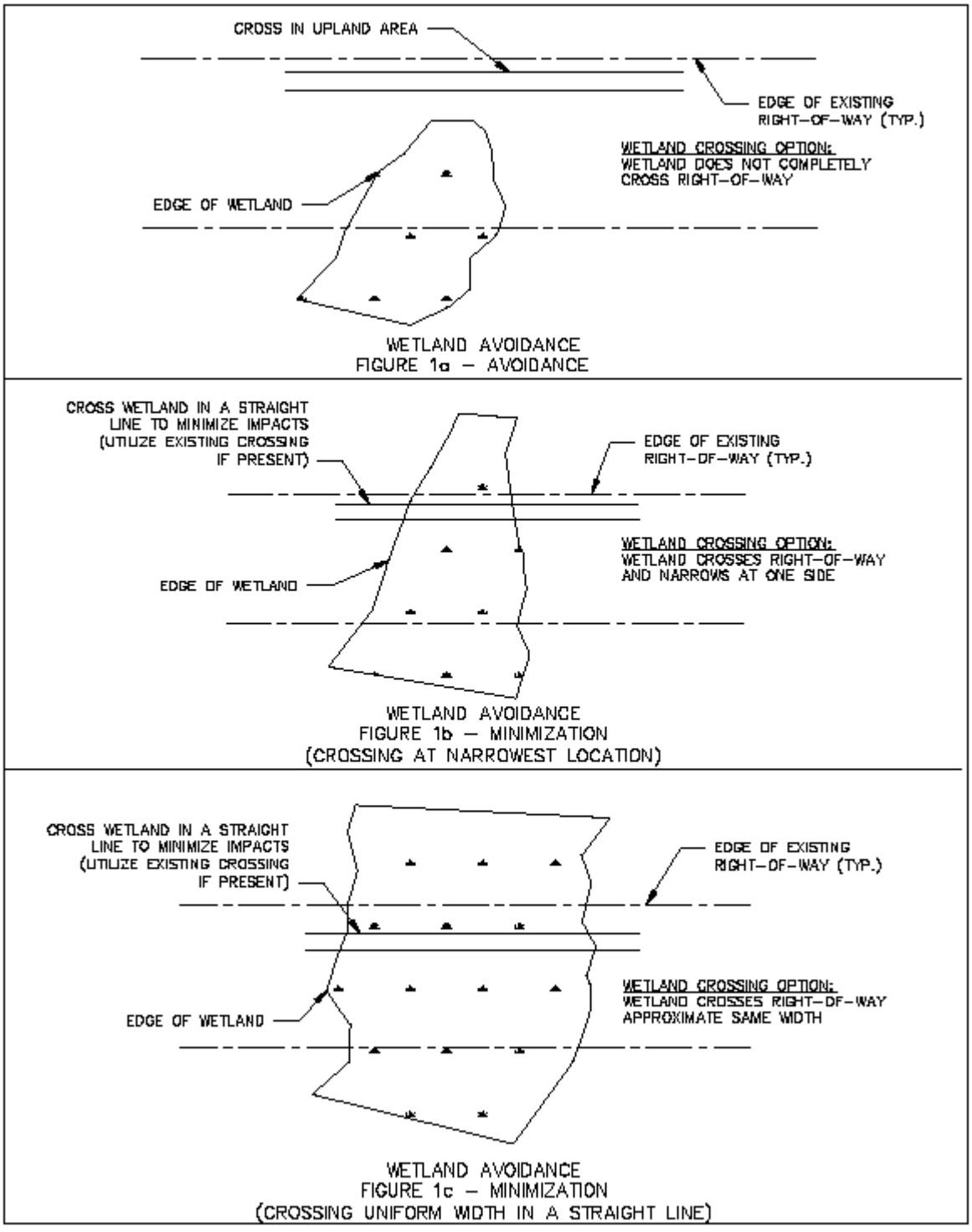
All new construction and maintenance projects shall follow clear and enforceable environmental performance standards, which is the purpose for which these BMPs have been compiled.

1.1 Avoidance and Minimization

Measures shall always be taken to avoid impacts to wetlands, waterways, rare species habitats, known below and above ground historical/archeological resources and other environmentally sensitive areas. If avoidance is not possible, then measures shall be taken to minimize the extent of impacts. Alternate access routes or staging areas shall always be considered. Below is a list of methods that shall be considered where impacts are unavoidable:

- Use existing ROW access where available. Keep to approved routes and roads without deviating from them or making them wider.
- Off-ROW access shall never be assumed and shall be coordinated through National Grid Real Estate before being implemented.
- Where no existing ROW access is present, avoid wetlands and if a wetland crossing is necessary, cross wetlands at the most narrow point possible or at the location of a previously used crossing (if evident). Figure 1 below illustrates this minimization technique.

- Avoid and minimize stream crossings.
- Minimize the width of typical access roads through wetlands to a maximum width of 16 feet.
- Conduct work manually (without using motorized equipment) in wetlands, wherever possible.
- Use construction mats in wetlands to minimize soil disturbance and rutting when crossing or working within wetlands. When not using mats for access, standard vehicles shall not be allowed to drive across wetlands without the prior approval of the National Grid Environmental Scientist. Use of a low ground pressure (LGP) vehicle may be a feasible alternative to mats provided that such LGP vehicle use has been reviewed and approved by the National Grid Environmental Scientist. See Section 7.0.
- Coordinate the timing of work to cause the least impacts during the regulatory low-flow period under normal conditions, when water/ground is frozen, after the spring songbird nesting season, and, outside of the anticipated amphibian migration window (mid-February to mid-June). Refer to the United States Army Corps of Engineers (USACE) state-specific General Permit for the definition of the low-flow period in each state at: http://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/. A summary table is provided in Section 7.0.
- Seek alternative routes or work methods to minimize impact.


CROSS IN UPLAND AREA
EDGE OF EXISTING RIGHT-OF-WAY (TYP.)
WETLAND CROSSING OPTION:
WETLAND DOES NOT COMPLETELY CROSS RIGHT-OF-WAY
EDGE OF WETLAND
WETLAND AVOIDANCE
FIGURE 1a – AVOIDANCE
CROSS WETLAND IN A STRAIGHT LINE TO MINIMIZE IMPACTS (UTILIZE EXISTING CROSSING IF PRESENT)
EDGE OF EXISTING RIGHT-OF-WAY (TYP.)
WETLAND CROSSING OPTION:
WETLAND CROSSES RIGHT-OF-WAY AND NARROWS AT ONE SIDE
EDGE OF WETLAND
WETLAND AVOIDANCE
FIGURE 1b – MINIMIZATION
(CROSSING AT NARROWEST LOCATION)
CROSS WETLAND IN A STRAIGHT LINE TO MINIMIZE IMPACTS (UTILIZE EXISTING CROSSING IF PRESENT)
EDGE OF EXISTING RIGHT-OF-WAY (TYP.)
WETLAND CROSSING OPTION:
WETLAND CROSSES RIGHT-OF-WAY APPROXIMATE SAME WIDTH
EDGE OF WETLAND
WETLAND AVOIDANCE
FIGURE 1c – MINIMIZATION
(CROSSING UNIFORM WIDTH IN A STRAIGHT LINE)

Appı

1.2 Historically Significant Areas

Areas that have been identified as historically and/or culturally significant shall be avoided in accordance with site-specific avoidance plans, as applicable. Refer to the project-specific Environmental Field Issue (EFI) for any applicable avoidance plans or consult with the National Grid Environmental Scientist. Demarcation of these areas to be avoided shall use staked orange snow fencing or an equivalent physical barrier (not just ribbon flagging) and signage. Refer to Section 14.0 for signage guidance.

1.3 Rare Species Habitat

Work within areas that have been identified as mapped rare species habitat shall follow site-specific requirements, as applicable. In Massachusetts, maintenance activities within mapped habitat (known as Priority Habitat of Rare Species) shall follow the BMPs outlined in the Natural Heritage Endangered Species Program (NHESP)-approved National Grid Operation and Maintenance Plan. Work in mapped rare species habitat may require, at a minimum, turtle training for crews and sweeps of work areas for turtles, botanist identification of rare plant locations and avoidance of these locations, and protection of vernal pools, all prior to the start of work. Demarcation of these areas to be avoided (e.g., rare plant populations, overwintering turtles, nests) shall use staked orange snow fencing or an equivalent physical barrier (not just ribbon flagging) and signage. Refer to Section 14.0 for signage guidance.

Where new substations are being constructed or existing substations are undergoing a rebuild or expansion, and the substations are located in mapped rare turtle habitat, project team members should consider fenceline improvements or measures needed to prevent/eliminate turtle entrance into the substation or allow multiple points for easy egress such that turtles are not trapped within the substation fenceline.

Other requirements may apply in NH, VT and RI. Refer to the project-specific EFI for any applicable measures or consult with the National Grid Environmental Scientist.

1.4 Meetings

Pre-permitting meetings shall take place early in the project development process to determine what permits are triggered by the proposed work and the timeline required for permitting. During these meetings, the team shall develop access plans and BMPs to be used during construction of the project.

Field / Constructability review meetings shall take place on-site to evaluate construction site access and job site set-up, to ensure that the project can proceed as permitted. It is at this point in time where work areas, pulling locations, laydown areas, parking areas, and equipment storage areas are evaluated and located. Off-ROW areas under consideration should be included in this discussion.

Prior to submitting permit plans to regulatory authorities, the construction group (contractor or National Grid) shall review the plans for final sign off.

Pre-construction meetings are typically held prior to the commencement of all work to appoint responsible parties, discuss timing of work, and further consider options to avoid and/or minimize impacts to sensitive areas. These meetings can occur on- or off-site and shall include all the willing and available stakeholders (i.e., utility employees, contractors, consultants, inspectors, and/or monitors, and regulatory personnel). Training of crews and supervisors of the EFI, Stormwater Pollution Prevention Plan (SWPPP), rare species, and other permit requirements shall be conducted at a pre-construction meeting.

Pre-job briefings shall be conducted daily or otherwise routinely scheduled meetings shall be conducted on-site with the work crew throughout the duration of the work. These meetings are a way of keeping everyone up to date, confirming there is consensus on work methods and responsibilities, and ensuring that tasks are being fulfilled with as little impact to the environment as possible.

The Project Environmental Scientist/Monitor and Construction Project Manager shall communicate regularly (e.g. weekly or bi-weekly meetings or phone conversations) to discuss the work completed since last communication (i.e. work locations, wetland impacts, equipment used, and unexpected delays or work conditions). These meetings or calls shall include the expected schedule of construction for the upcoming week, the long term construction plans, and planned methods for working near/in wetlands. Both the Project Environmental Scientist/Monitor and Construction Project Manager shall work together so the Project complies with all environmental permits and regulations. When changes to the Project scope or agreed work plan are proposed they shall be done so with the final approval of the National Grid Environmental Scientist.

1.5 Communication of Project Specific Environmental Requirements

Project specific environmental concerns, to include sensitive resources, permits, approved access and time-of-year or other restrictions, shall be communicated to the project team and be included as part of the Pre-Bid and Pre-Construction Meetings. Project specific requirements shall be communicated to the project manager/construction manager/engineering group using the following guidelines:

Environmental Field Issue – The EFI will be a full document consisting of narrative, project permits, access and matting plans. A table summarizing pertinent (but not all) permit conditions and the responsible party for those conditions shall be included in the EFI. Copies of all permits should be included as attachments. This will be prepared for most projects with multiple permits or large, complex projects (siting board, Section 404, 401 WQC, SWPPP). There shall be EFI training at the pre-construction meeting. The National Grid EFI template is located in **EI-303NE**.

Simplified Environmental Field Issue – The Simplified EFI is a memorandum containing environmental resources present, project permit(s), access and matting plans and a table summarizing relevant permit conditions and responsible party for those conditions. Copies of all permits should be included as attachments. The Simplified EFI will be prepared for most projects with 1 or 2 permits (Order of Conditions, S404 Cat 1). The Simplified EFI should also be provided for projects that have environmental resources present, but the scope of the project does not trigger environmental permitting (e.g., the scope of work qualifies for maintenance exemption(s)). The resources present

shall be discussed at the Pre-Bid and Pre-Construction meetings and any changes in scope will require additional review by the National Grid project team.

E-mail delivery of Permit and any Sediment/Erosion control or BMP plan – For those projects with only one permit (eg., MA Order of Conditions, RI DEM permit, RI CRMC permit, NH Utility Notification) or projects with a sediment & erosion control plan (local town requirement or for exempt maintenance work), a copy of the permit and any applicable plan will be emailed to the Project Manager (and the project team where deemed necessary) to be incorporated into the Construction Field Issue.

STORMS work management system input – For STORMS work, no EFI is prepared unless multiple permits are required for the project (see guidance above). If only a MA Order of Conditions, MA Determination of Applicability, RI DEM permit, RI CRMC permit, RI SESC Approval, or NH Utility Notification is required, then the permit is attached in the Documents tab and conditions noted in Remarks/Comments section. Standard STORMS boilerplate language is located in **EI-303NE**.

1.6 Timing of Work

Regulatory authorities may place seasonal or time-of-year restrictions on project construction elements. These time-of-year restrictions may be state or permit-specific, and shall be adhered to.

Work during frozen conditions. Activities conducted once wetland areas are frozen sufficient to minimize rutting and other impacts to the surrounding environment may be authorized by the National Grid Environmental Scientist. Work during this time also generally reduces disturbance of aquatic and terrestrial wildlife movement by avoiding sensitive breeding and nesting seasons. When not using mats for access, vehicles shall not be allowed to drive across wetlands without the prior approval of the National Grid Environmental Scientist.

Work during the regulatory low-flow period. Conducting work during the low-flow period can reduce impacts to surface water and generally avoids spawning and breeding seasons of aquatic organisms. If the water is above normal seasonal levels, adjustments to work activities and methods are required.

1.7 Alternate Access

1.7.1 Manual Access

In some cases such as for smaller projects, work areas can be accessed manually. This includes access on foot through upland and shallow wetland areas, access by boat through open water or ponded areas, and climbing of structures where possible. Smaller projects, such as repair of individual structures, or parts of structures, that do not categorically require the use of heavy machinery, shall be accessed manually to the greatest extent practicable.

1.7.2 Use of Overhead/Aerial Access

Using helicopters can be expensive and is not always feasible, but it may be appropriate in some situations in order to get workers and equipment to a site that otherwise may be very difficult to access. The use of overhead and/or aerial equipment may be beneficial for work in areas where larger water bodies, deep crevices, or mountainous areas hinder ground access. The landing area for

helicopters shall be reviewed for environmentally sensitive resources. Use of helicopters requires Project Manager and Senior Management approval.

2.0 Inspection, Monitoring and Maintenance

All construction practices and controls shall be inspected on a regular basis and in accordance with all applicable permits and local, state, and federal regulations to avoid and correct ANY damage to sensitive areas.

The construction crews shall be responsible for completing daily inspections, and IMMEDIATELY bring any **damage or observed erosion, or failed erosion controls** to the attention of the Person-In-Charge and the National Grid Environmental Scientist. Where applicable and/or as directed by environmental permits issued for the project, the Project Environmental Consultant shall conduct weekly (at a minimum) inspections of the project work areas and shall document their inspection using the Stormwater, Wetlands & Priority Habitat Environmental Compliance Site Inspection / Monitoring Report form found in **Appendix 3** and issue the report within 24 hours. The Person-in-Charge shall work with the National Grid Environmental Scientist and the Project Environmental Consultant to determine when and how the repairs shall be made.

Project-specific Action Logs and Long-Term Restoration Logs are prepared as needed by the National Grid Environmental Scientist or the Project Environmental Consultant to track issues and/or repairs and assign responsible parties.

3.0 Best Management Practices

The BMP sections presented in this EG address access, construction, snow and ice management, structures in wetlands, access road maintenance and repair, clean-up and restoration standards, ROW gates, field refueling and maintenance operations, management of spills/releases, and a summary of key construction BMPs.

Note that BMPs shown on any permit drawings for a specific project may need to be revised and or supplemented during the execution of a project based on unforeseen or unexpected factors such as extreme weather or unknown subsurface conditions. It is the responsibility of the Contractor to work with the National Grid Environmental Scientist and/or the Project Environmental Consultant to identify necessary changes and to ensure that construction-related impacts to wetlands, water bodies and other environmentally sensitive areas are avoided.

Any deviation from the approved BMPs shown in the EFI and/or SWPPP plans shall be communicated immediately to the National Grid Environmental Scientist as it may require additional permitting or could result in a permit violation.

3.1 Wetland Boundary Demarcation

Prior to the start of any activity conducted under an environmental permit, wetland boundaries shall be reviewed. Flagging for wetland boundaries, stream banks and other resource areas shall be

refreshed as needed. This may become particularly important when the original flagging was placed in previous seasons and now may have become obscured.

3.2 Sedimentation and Erosion Controls

Appropriate sedimentation and erosion control devices shall be installed at work sites, in accordance with permit conditions and/or regulatory approvals, and as needed to prevent adverse impacts to water resources and adjacent properties.

The overall purpose of such controls is to prevent and control the movement of disturbed soil and sediment from work sites to adjacent, undisturbed areas, and particularly to water resources, public roads and adjacent properties. All proprietary controls shall be installed per manufacturer's recommendations and specifications.

Appropriate sedimentation and erosion control devices include but are not limited to: silt fencing, straw bales, wood chip bags, straw wattles, compost socks, erosion control blankets, mulch, slope interruption practices, flocculent powder/blocks and storm drain/catch basin inlet protection. Such controls shall be installed between the work area and environmentally sensitive areas such as wetlands, streams, drainage courses, roads and adjacent property when work activities shall disturb soils and result in a potential for causing sedimentation and erosion.

In Massachusetts, use of monofilament-encased wattles shall be avoided in mapped Priority Habitat for snakes and amphibians. For projects with work within mapped Priority Habitat for snakes and amphibians, wattles that are encased in a sock, hemp, fiber, or movable jute netting are required to prevent entrapment. Also, "wildlife gaps" should occur every 50 feet, if possible, given wetland permit conditions. This spacing of the wattles allows snakes and amphibians to move across the ROW. Refer to the Amphibian and Reptile BMPs in **Appendix 4**.

Staked straw bales often serve as the demarcation of the limits of work and/or sensitive areas to be avoided. Work shall never be conducted outside the limit of erosion controls without prior approval from the National Grid Environmental Scientist.

Project plans depict proposed erosion controls, however field conditions may warrant additional practices be implemented (e.g., wet conditions, frozen conditions, poorly drained soils, steep slopes, materials used for work pads, transition areas to construction mats, number of trips across work areas, etc.).

Any deviation from the approved erosion controls shown in the EFI and/or SWPPP plans needs to be communicated immediately to the National Grid Environmental Scientist as it may require additional permitting or result in a permit violation.

Appendix 4 provides typical sketches of common sedimentation and erosion controls. If a SWPPP is required for the project, maintenance and inspection of erosion controls shall follow the SWPPP requirements. Sedimentation and erosion controls shall be properly maintained and inspected on a

periodic basis, until work sites are properly stabilized and restored. Inspections shall be documented using the Inspection Form "Storm Water, Wetlands & Priority Habitat Environmental Compliance Site Inspection/Monitoring Report" (**Appendix 3**).

The sequence and timing of the installation of sedimentation and erosion control measures is critical to their success. Sedimentation and erosion controls shall be installed prior to commencing construction activities that may result in any soil disturbance or cause otherwise polluted site runoff. Inspection of these devices may be required by the National Grid Environmental Scientist or by regulators prior to the start of work. The installation of water bars and other erosion control measures shall be installed shortly thereafter.

3.3 Concrete Wash Outs

Concrete wash outs shall be used for management of concrete waste. Concrete and concrete washout water shall not be deposited or discharged directly on the ground, in wetlands or waterbodies, or in catch basins or other drainage structures. Where possible, concrete washouts shall be located away from wetlands or other sensitive areas. Consult the National Grid Environmental Scientist on proposed concrete wash out locations prior to their use. Following the completion of concrete pouring operations, the wash outs shall be disposed of off-site with other construction debris. Refer to BMPs in **Appendix 4**.

3.4 Construction Activities in Standing Water

The use of silt curtains or turbidity barriers may be required when working in or adjacent to standing water such as ponds, reservoirs, low flowing rivers/streams, or coastal areas. Silt curtains and turbidity barriers prevent sediment from migrating beyond the immediate work area into the resource areas.

Coffer dams constructed using sheet piling or large sandbags (Trade names such as "the Big Bag" or "DamItDams") may be used to temporarily isolate and contain a work area in standing water.

When working in standing water, an oil absorbent boom, in addition to a silt curtain or other temporary barrier, shall be placed around the work area for spill prevention.

Work in drinking water reservoirs or other waters may require extensive regulatory agency review, even for maintenance work, which could result in additional time required for permitting, review and material procurement prior to the start of work.

3.5 Dewatering

Where excavations require the need for dewatering of groundwater or accumulated stormwater, the water shall be treated before discharge. Appropriate controls include dewatering basins, flocculent blocks, filter bags, filter socks, or weir tanks. Schematics of these BMPs are included in **Appendix 4**. Water trucks or fractionation tanks may be utilized if watertight containers are desired for controlled on-site discharge or for off-site discharge into an approved dewatering area when site restrictions make it difficult to utilize other dewatering methods on-site. Dewatering discharge water shall never be directed into wetlands, streams/rivers, other sensitive resource areas, catch basins, other

stormwater devices, or substation Trenwa trenches. Dewatering flow shall be controlled so that it does not cause scouring or erosion through the use of a dewatering basin, filter sock, or equivalent. If it is determined that the chosen controls are not appropriately filtering the fine sediment from the dewatering pumpate then the National Grid Environmental Scientist shall be notified immediately and the controls shall be revised or supplemented.

When establishing a dewatering basin, consideration should be given to the anticipated volume of water and rate of pumping in determining the size of the dewatering basin. Dewatering basins shall be constructed on level ground. Once pumping commences, the basin shall be monitored frequently to assure that the rate of water delivery to the structure is low enough to prevent water from flowing, unfiltered, over the top of the basin walls. The basin shall be monitored throughout the dewatering process because the rate of filtration shall decrease as sediment clogs the filter fabric. If the basin is not appropriately filtering the fine sediment from the dewatering pumpate then the basin may need to be supplemented with a flocculent block. Field conditions shall dictate how often the basin should be inspected.

Distance to sensitive areas, direction of flow (toward or away from protected, or sensitive areas, such as wetlands, ponds, or streams), amount of vegetative ground cover between the basin and nearby sensitive areas, ground conditions (ledge, frozen, etc.), volume of water being pumped, and pump-rate, are some of the factors to be considered when determining an inspection frequency. Clogged filter fabric shall be replaced and accumulated sediment shall be removed as necessary from the basins to maintain efficacy.

Any new dewatering location (not previously reviewed and approved by the National Grid Environmental Scientist during project planning or permitting) shall be reviewed and the discharge location approved by the National Grid Environmental Scientist before use.

Complex projects that require large scale dewatering shall require individual review by the National Grid Environmental Scientist and may trigger additional permitting.

Dewatering in areas of known chemical contamination may require a separate NPDES permit, or other approval, and treatment or containment system. Consult with the National Grid Environmental Scientist.

3.5.1 Overnight Dewatering

Some projects may necessitate 24-hour dewatering for on-site construction activities. Overnight dewatering will be evaluated on a case-by-case basis by the National Grid Environmental Department.

If it is necessary to conduct overnight dewatering on a project, a dewatering plan must be submitted to the Environmental Department for review and approval **5 business days prior to beginning dewatering activities**. Sufficient knowledge of flow, discharge, and re-infiltration rate of water must be obtained and submitted for review. The Environmental Department

may require monitored dewatering for a period of time in order to provide this data in support of a request for 24-hour dewatering. The dewatering plan must include at a minimum:

1. Location of dewatering system, system components (basin, frac tank, etc), and materials.
2. Location of discharge and distance from closest wetland.
3. Location of erosion controls. A secondary perimeter of erosion controls will be required around the dewatering system for overnight dewatering.
4. Peak flow, discharge rate and re-infiltration rates.
5. Visual monitoring plan for discharge. Expected duration of dewatering.
6. Emergency provisions if overnight, unattended dewatering is proposed.

3.5.2 Dewatering Clean Up/Restoration

Basins shall be cleaned and removed as soon as dewatering is complete. Sediment removed from the dewatering basin shall be allowed to dry before being disposed of by evenly spreading it over unvegetated upland areas where erosion is not a concern if clean or removing it from the site for proper disposal. Off-site trucking of wet soils is prohibited. The sediment disposal area shall be approved by the National Grid Environmental Scientist or the Project Environmental Consultant prior to use. Stabilization measures shall also need to implemented and approved by the National Grid Environmental Scientist or the Project Environmental Consultant. Soils/sediments shall be dewatered and dried to the point practicable for either on-Site reuse or off-Site transport.

3.6 Check Dams

Check dams are a porous physical barrier installed perpendicular to concentrated storm water flow. They are used to reduce erosion in a swale by reducing runoff energy (velocity), while filtering storm water, thereby aiding in the removal of suspended solids.

Check dams should only be used in small drainage swales that shall not be overtopped by flow once the dams are constructed. These dams should not be placed in streams. Check dams are typically installed in ROWs or on other construction sites prior to the start of soil disturbing work. Per the Rhode Island Soil Erosion and Sediment Control Handbook, no formal design is required for a check dam if the contributing drainage area is 2 acres or less and its intended use is shorter than 6 months; however, the following criteria should be adhered to when specifying check dams.

- The drainage area of the ditch or swale being protected should not exceed 10 acres.
- The maximum height of the check dam should be 2 feet.
- The center of the check dam must be at least 6 inches lower than the outer edges.
- The maximum spacing between the dams should be such that the toe at the upstream dam is at the same elevation as the top of the downstream dam.

Per the NHDES stormwater manual, the use of check dams should be limited to swales with longitudinal slopes that range between 2 to 5 percent that convey drainage from an area less than 1 acre. Existing conditions that exceed these limitations should be assessed in the field and discussed

with the National Grid Environmental Scientist to determine the viability of this BMP for the specific application. Check dams are often comprised of stone, straw bales, sand bags, or compost/silt socks. Use of check dams should be coordinated with the National Grid Environmental Scientist to ensure that the material selection, spacing and construction method are appropriate for the site. Check dams composed of biodegradable materials (e.g. straw bales or wattles, wood chip bags) may require periodic replacement for continued proper functioning[1]. Refer to BMPs in **Appendix 4**.

3.7 Water Bars

Water bars should be used on sloping ROWs to divert storm water runoff from unstabilized or active access roads when needed to prevent erosion. Surface disturbance and tire compaction promote gully formation by increasing the concentration and velocity of runoff. Water bars are constructed by forming a ridge or ridge and channel diagonally across the sloping ROW. Each outlet should be stable. The height and side slopes of the ridge and channel are designed to divert water and to allow vehicles to cross. When siting water bars, consideration shall be given to the sensitivity of the area receiving the diverted runoff. For example, runoff should not be directed into a wetland, waterbody, other environmentally sensitive areas, or to private property or public roadways. Refer to BMPs in **Appendix 4**.

3.8 Retaining Walls

In some situations, retaining walls comprised of concrete blocks, gabions, boulders or other comparable materials may be required to stabilize the shoulder of existing access roads and/or supplement required erosion controls. Installation of such measures shall not be allowed as a maintenance activity. Should these controls be considered for a project, it shall be reviewed by the National Grid Environmental Scientist, as design and additional permitting may be required.

3.9 Slope Stabilization

Temporary slope stabilization practices help to keep exposed, erodible soils stabilized while vegetation is becoming established. Acceptable temporary slope stabilization practices may include the use of erosion control blankets, or hydraulic erosion control. Erosion control blankets, often comprised of natural fibers (e.g., jute, straw, coconut, or other degradable materials) are a useful slope stabilization, erosion control and vegetation establishment practice for ditches or steep slopes. Blankets are typically installed after final grading and seeding for temporary or permanent seeding applications. Hydraulic erosion control practices, including Bonded Fiber Matrix or hydroseed with a soil stabilizer (e.g., tackifier and/or mulch) may be an acceptable or desirable alternative form of temporary slope stabilization. For all practices, manufacturer's specifications should be followed for installation depending on slope and other field conditions. Consult the National Grid Environmental Scientist prior to selecting and installing any slope stabilization practices. Refer to BMPs in **Appendix 4**.

3.10 Maintenance of Sedimentation and Erosion Controls

[1] Grass growth on a biodegradable type check dam is evidence that the material is decomposing. While this doesn't mean it is no longer functioning, it means it may be in a weakened condition and could potentially fail under high flow velocity. It is acceptable for grass to be growing on a stone check dam.

Sedimentation and erosion controls shall be maintained in good operational condition during the course of the work. This includes, but is not limited to, replacing straw bales that are no longer in good condition, re-staking straw bales, replacing or re-staking silt fence, and removing accumulated sediment. Remove sediment before it has accumulated to one half the height of any exposed silt fence fabric, straw bales, other filter berm, check dams or water bars. Accumulated sediment shall be removed from sedimentation basins to maintain their efficacy. Manage the removed sediment by evenly spreading it over unvegetated upland areas where erosion is not a concern, by stockpiling and stabilizing, or by disposing of off-site. Stabilization measures shall also need to be implemented and approved by the National Grid Environmental Scientist or the Project Environmental Consultant. Where a SWPPP has been prepared for a specific site, the guidelines documented therein shall govern the management of sediment.

4.0 Right-of-Way (ROW) Access

Whenever possible, access shall be gained along existing access routes or roads within the ROW. However, in some cases there is no existing access. In many cases, temporary access can be utilized. The following practices provide general guidance on accessing a ROW. Check with a National Grid Environmental Scientist to determine if any environmental permitting is required before utilizing a temporary access.

Note that the building of new roads or enlargement of existing roads is **prohibited** unless this activity is allowed by a project-specific permit, and the new roads appear on the Site Plans that were authorized in the regulatory approvals.

4.1 Off-ROW Access

Off-ROW access shall be evaluated for wetlands, rare species, cultural resources and other potential sensitive receptors, as applicable. National Grid Real Estate and Stakeholder Relations shall also be contacted as soon as possible once off-ROW access is determined to be needed.

4.2 Stabilized Construction Entrance/Exit for Access to ROWs from Public or Private Roads

A suitable (minimum 15-foot wide by 50-foot long) construction entrance/exit shall be installed at the intersection of the ROW access road/route with public/private paved roads, or other such locations where equipment could track mud or soil onto paved roads. The construction entrance/exit should be comprised of clean stone installed over a geotextile fabric. Geotextile fabric may be omitted for permanent construction entrances/exits on a case-by-case basis with the approval of the National Grid Environmental Scientist. Refer to BMPs in **Appendix 4**.

Construction entrance areas shall be monitored and maintained to ensure that stone or other material is not deposited onto the roadway, causing a safety concern. Where track-out of sediment has occurred onto a roadway, it shall be swept off the road by the end of that same work day.

If a construction entrance/exit is clogged with sediment and no longer functions, the sediment and stone may require removal and replacement with additional clean stone (clean stone refreshment) to

ensure this tracking pad is performing its intended function adequately. Heavier traffic use may require this clean stone refreshment multiple times throughout a project. Reinforcement of these stabilized construction entrance/exits with asphalt binder or asphalt millings is not likely to be considered "maintenance" and may trigger additional permitting requirements[2]. In some cases, heavily used construction entrances/exits may benefit from the installation of a 5-15 foot strip of asphalt binder or asphalt millings closest to the paved roadway to capture any stone that is tracked from the stone apron. Such cases shall be evaluated on an individual basis with the National Grid Environmental Scientist.

Once work is complete, the construction entrance/exit shall either be removed or retained, depending upon future maintenance-related access needs, property ownership, and/or project-specific approvals. If removed, the area shall be graded, seeded (if adequate root and seed stock are absent) and mulched. Proper approvals for leaving access roads in place shall be obtained; contact the National Grid Environmental Scientist and Property Legal.

4.3 Maintenance of Existing Access Roads

In many cases, the existing access road may need to be maintained to allow passage of the heavy equipment required for scheduled maintenance work. Access roads cannot deviate from the approved and permitted access plans. Maintenance of these roads may include adding clean gravel or clean crushed stone to fill depressions and eroded areas. This activity shall be conducted only within the width of the existing access road footprint and does not include widening existing access roads

If gravel begins to migrate onto the existing vegetated road shoulder, this gravel shall be removed during the project and/or after the completion of use of the road to ensure the road fill is not spreading into adjacent resource areas, or resulting in the road becoming much wider than its pre-existing or permitted condition. In some areas of mapped rare species habitat or other sensitive areas where project-specific permit conditions require the prevention of the migration of sediments into adjacent resources, an engineered stabilization system (e.g., GeoWeb or similar) may be suitable to prevent sedimentation while allowing for unrestricted wildlife migration.

In Massachusetts, any proposed widening of access roads in turtle Priority Habitat would require individual consultation with NHESP and, depending on the level of impact proposed, may require a Project Review filing. The limited filling of ruts or potholes is compatible with the National Grid Operation and Maintenance Plan approved by NHESP under the Massachusetts Endangered Species Act, however, severely rutted access roads in turtle Priority Habitat that require extensive linear feet of stone for safe passage will require individual consultation with NHESP.

Major reconstruction projects may require multiple permits. In all cases, the fill to be used for existing access roads shall be clean and free of construction debris, trash or woody debris. Use of processed

[2] Depending on the road, use of an asphalt binder or asphalt millings as a construction entrance/exit may trigger state or local permit requirements.

gravel may be approved by the Person-In-Charge and the National Grid Environmental Scientist, on a case-by-case basis. If clean stone is used then addition of more erosion controls may not be necessary.

4.5 Maintenance of Existing Culverts

Damaged culverts may not be repaired or replaced without consulting with the National Grid Environmental Scientist to determine if a permit is required. For functioning culverts, care shall be taken to protect adjacent wetlands and watercourses by installing appropriate sedimentation and erosion controls around the downstream end of the culvert. Culverts shall be repaired/replaced in kind and shall not be changed in size unless approval has been obtained from the National Grid Environmental Scientist. In-kind replacement is replacement using the same material, functional inverts, diameter and length as the existing culvert. Changes to any of these characteristics shall require permitting. Installation of any **new** culvert is not allowed without obtaining all necessary permits first. Refer to BMPs in **Appendix 4**.

If, at the time of anticipated replacement, there is heavy flow through the culvert, the Person-In-Charge shall consult with the National Grid Environmental Scientist, to verify whether the culvert shall be replaced at that time. Water may need to be temporarily diverted during culvert repair/replacement. There typically are seasonal restrictions limiting both the replacement of existing culverts as well as installation of new culverts to the low-flow period. The low-flow period can vary from state to state. If any unexpected conditions are encountered during culvert replacement, the National Grid Environmental Scientist shall be contacted immediately prior to the work being completed for additional consultation.

4.6 Temporary Construction Access over Drainage Ditch or Swale

In some situations, construction access from paved roads onto ROWs may require the crossing of drainage ditches or swales along the road shoulder. In these situations, the installation of construction mats, mat bridges or temporary culverts may facilitate construction access over the ditches or swales. These culverts shall be temporary only, sized for peak flow, and shall be removed after construction is complete. Consult with the National Grid Environmental Scientist prior to installation. In addition, if access over existing culverts may require extending the culvert, consult with the National Grid Environmental Scientist. Refer to BMPs in **Appendix 4**.

4.7 Construction Material along ROW

After preparing a site by clearing and/or installing any necessary erosion and sediment controls and prior to the start of construction, material such as poles, cross-arms, cable, insulators, stone and other engineered backfill materials may be placed along the ROW, as part of the project. The stockpiling of stone and other unconsolidated material on construction mats shall be avoided, if determined necessary due to access and work pad constraints, the material must be placed on a geotextile fabric and be properly contained with a sedimentation barrier such as straw wattle. No construction material shall be placed in wetlands or other sensitive resource areas unless authorized by the National Grid Environmental Scientist or Project Environmental Consultant.

5.0 Winter Conditions

5.1 Snow Management

Refer to **Appendix 6** for the current Snow Disposal Guidelines.

5.2 De-Icing

Where allowed, calcium chloride is preferred as a de-icing agent when applied according to manufacturer's guidelines in upland areas. Sand shall be used on construction mats through wetland areas.

Consult with the National Grid Environmental Scientist on de-icing agents when working in a facility or substation close to resource areas. Many municipalities have specific requirements for de-icing agents allowed within 100 feet of wetland resources and other sensitive areas.

5.3 Snow and Ice Management on Construction Mats

Proper snow removal on construction mats shall avoid the formation of ice. To avoid the formation of ice, snow shall be removed from construction mats before applying sand. Prior to their removal from wetlands, sand shall be collected from the construction mats and disposed of in an upland area. A round street sweeping brush mounted on the front of a truck may be an effective way to remove snow from construction mats. Propane heaters may also be suitable solutions for snow removal and/or de-icing of construction mats.

Once construction mats are removed, wetlands shall be inspected for build up of sand that may have fallen through construction mats. Care shall be taken to inspect wetland crossings as each mat is removed to ensure sand is properly removed and disposed of off-site.

6.0 Construction Mats

The use of construction mats allows for heavy equipment access within wetland areas. The use of construction mats minimizes the need to remove vegetation beneath the access way and helps to reduce the degree of soil disturbance and rutting in soft wetland soils. Construction mats most often used by National Grid are wooden timbers bolted together typically into 4-ft by 16-ft sections, wooden lattice mats, or composite mats. In some cases, construction mats or other mats are used for staging or access in upland areas based on site conditions (e.g., agricultural field access). Refer to BMPs in **Appendix 4**.

Typically construction mats may be installed on top of the existing vegetation, however in some instances cutting large woody vegetation may be required. Check with National Grid Environmental Scientist prior to cutting or clearing vegetation for construction mat placement.

Where an extended period of time has lapsed since wetland delineation and start of construction, and new vegetative growth has concealed wetland flagging or flagging is simply no longer obviously visible, wetland boundaries should be re-flagged where necessary prior to the installation of matting.

Follow the approved plans in the EFI for construction mat installation and do not deviate from the plans. **Any deviation from the approved plans needs to be communicated immediately to the National Grid Environmental Scientist as it may require additional permitting, require stopping the project or result in a permit violation or revocation.**

6.1 Construction Mats and Mowing

Close coordination with the mowing contractor shall be required to ensure that access plans are followed, and construction mats are utilized when necessary. Sometimes mowing contractors may have to work off the leading edge of a construction mat to mow in order to lay the next construction mat and continue further into the wetland. Under no circumstances shall trees or shrubs be allowed to be pulled out of the wetland by the root ball. The root ball of trees and shrubs shall remain intact. Chipping debris and excessive amounts of slash shall not be placed in wetlands or other resource areas. In some instances, it may be beneficial to pile a reasonable amount of slash within a nearby upland area to create habitat for wildlife. This activity shall be approved by the National Grid Environmental Scientist.

6.2 Stream Crossings and Stream Bank Stabilization

Stream crossings shall be bridged with construction mats or other temporary minimally-intrusive measures unless fording is acceptable for the site and is authorized by the National Grid Environmental Scientist. Care shall be taken when installing a construction mat bridge to insure that the stream bed and banks are not damaged during installation and removal and that stream flow is not unduly restricted. Where stream width allows, construction mats shall be installed to span the watercourse in its entirety without stringer placement in the water or any restriction of stream flow. Environmental permits may be required to cross or disturb protected waters, depending upon state-specific regulatory requirements. Refer to BMPs in **Appendix 4**. Immediately following construction mat removal, all stream banks shall be stabilized and restored to prevent sedimentation and erosion.

6.3 Cleaning of Construction Mats

Mats shall be certified clean by the vendor prior to installation. The vendor shall use the certification form provided as **Appendix 5** to document compliance. Clean is defined as being free of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials prior to being brought to the project site. Any equipment or timber mats that have been placed or used within areas containing invasive species within the project site shall be cleaned of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials at the site of the invasive species prior to being moved to other areas on the project site to prevent the spread of invasive species from one area to another[3]. **Mats shall be cleaned prior to being removed at the completion of the project: exceptions to this requirement may be made on a case-by-case basis.** Consult with the National Grid Environmental Scientist prior to discharging or disposing of any waste water or waste material from the cleaning of construction mats.

[3] On ROW projects where multiple wetlands may be dominated by the same invasive species, cleaning may not be required for movement along the ROW. Check with the National Grid Environmental scientist for guidance.

6.4 Stone Removal for Construction Mat Placement

For situations where the matting contractor determines that stones or boulders must be removed or relocated within wetland areas in order to install safe and level structure work pads or access roads the boulders shall be moved in a manner which does not result in significant soil disturbance (i.e., pushing with a bull dozer is not allowed). The boulders shall not be placed on any existing vegetated areas within wetlands or within vernal pools. When numerous boulders shall be removed from a wetland area, they shall be deposited in an upland area outside of the flagged wetland limits, outside of any cultural resource areas and outside of any RTE species populations. Any boulders that shall be placed within buffers (In MA, the 100-foot buffer zone, and in RI, the 50-foot Perimeter Wetland, 100-foot or 200-foot Riverbank Wetlands) shall be placed to avoid causing soil disturbance and they shall be within an approved limit of work. When there is a significant number of boulders that need to be removed, the National Grid Environmental Scientist shall be consulted for guidance.

6.5 Transition onto Mats

Erosion controls and stone or wood chip ramps shall be installed to promote a smooth transition to and minimize sediment tracking onto construction mats. Geotextile may be added beneath stone or wood chip transitions to facilitate removal, as necessitated by site or permit conditions. Mat transitions shall be removed once construction mats have been removed and during restoration. Refer to BMPs in **Appendix 4**.

6.6 Construction Material on Mats

The stockpiling of stone, drill spoils and other unconsolidated material on construction mats shall be avoided unless determined necessary due to access and work pad constraints. Additional controls, such as watertight mud boxes and geotextile/filter fabric over or between construction mats shall be considered for stockpile management. If material is placed on construction mats and falls through into wetlands, the material must be removed by hand. Saturated soils shall be allowed to dewater prior to off-site transport for sufficient time to ensure that water/sediment is not deposited onto construction mats or public roads during transport.

6.7 Mat Anchoring

The National Grid Environmental Scientist and Project environmental consultant shall indicate to the project team when mat anchoring may or shall be necessary. The matting contractor will propose the method of mat anchoring, which will be approved by the National Grid Environmental Scientist and the National Grid Construction Supervisor. The need for anchoring should be noted in the project EFI, on the project access and matting plans, and in the scope of the bid document (if externally sourced).

Anchoring of construction mats should be considered when any of the following conditions are presented at a project work location:

Location	Considerations
Stream crossings Shorelines of Ponds/Lakes Wetlands Floodplains	When located in a mapped flood area (A). When mapped 100-year flood elevations (AE) are greater than 2 ft above existing grades. Where past flash flood events have occurred. Where steep terrain is present or surrounds the project location When mats will be in place during hurricane season for greater than 2 weeks.
Tidal areas	When located in a Velocity (V or VE) Zone. When mats will be in place during a moon tide cycle. When mats will be in place during hurricane season for greater than 2 weeks.

Examples of mat anchoring are provided below, but the implementation methods for anchoring mats are not limited to these examples. Where anchoring is determined to be necessary, the matting contractor should propose a method suitable based on field conditions and that takes crew safety, slip/trip/fall hazards, size of matting footprint, and other project and site-specific factors into consideration. Refer to BMPs in **Appendix 4**.

Limited sets of mats

- Cable or rope in chain pockets and run linearly, or
- Linear ropes anchored using helical screws, manta ray anchors, or posts.

Larger sets of mats or those without chain pockets

- Chain link fence posts or other posts driven in along mat edge every 3-4 feet and ropes then laced across mats between opposing posts before storm event, or
- Anchor bolts added to mats, then cable is laced between bolts and tied to helical or manta ray anchor.

6.8 Corduroy Roads

Corduroy roads are a wetland crossing method where logs are cut from the immediate area and used as a road bed to prevent rutting from equipment crossing. This technique is designed to be used in areas of wetland crossings where there is no defined channel or stream flow and should never be used in streams. Corduroy logs shall be placed in the narrowest area practicable for crossing with the logs placed perpendicular to the direction of travel across wet area. The use of corduroy logs shall only be in emergencies when approved by the National Grid Environmental Scientist or when they have been specifically permitted as part of a project. Refer to BMPs in **Appendix 4**.

6.9 Construction Mat Removal

Once construction mats are removed, wetlands shall be inspected for build up of sand or other materials that may have fallen through construction mats. Care shall be taken to inspect wetland

crossings as each mat is removed to ensure any materials are properly removed and disposed of off-site.

6.10 Utility Air Bridging

In ROWs where other utility facilities (including but not limited to gas, oil, fiber optic, electric, water, and sewer) are co-located within the transmission ROW, bridging may be required to cross those facilities. The project team shall coordinate with the respective utility company prior to determining if bridging or permanent crossings are required.

7.0 LGP Equipment Use

Only when approved by the National Grid Environmental Scientist on a case-by-case basis shall equipment with a LGP **psi that meets the state-specific USACE General Permit requirement when loaded** be allowed to access through wetlands. Refer to the state-specific General Permit for the definition of LGP in each state at: http://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/, or to the summary table provided below. The National Grid Environmental Scientist's approval of the use of LGP equipment through wetlands depends on several criteria including:

- Time of year. LGP equipment use may be allowed if weather and field conditions at the time of construction are suitable to eliminate/minimize the concern of rutting or other impacts. Frozen, frozen snow pack, low flow, drought conditions, or unsaturated surface soil conditions are typically acceptable conditions. Spring and fall construction, due to the typical higher precipitation, are not suitable times of year for LGP equipment use.
- Number of trips. Multiple trips through a wetland have shown to increase the potential for damage and require matting. LGP equipment use shall likely only be approved if trips are limited to one trip in and one trip out.
- Type of wetland system. Some wetlands have harder soils/substrate, and may be passable without causing significant damage. Some of the wetlands along National Grid ROWs have existing hard bottom roads that have been vegetated over time and may be traversed with LGP equipment without construction mats.
- Emergencies. LGP equipment use may be allowed during emergency or storm conditions for outage restoration.
- State-specific USACE General Permit Performance Standards. The standard is for no impact to the wetland, which may be obtained by using LGP equipment **when loaded**). "*Where construction requires heavy equipment operation in wetlands, the equipment shall either have low ground pressure (as specified in the USACE GP), or shall not be located directly on wetland soils and vegetation; it shall be placed on construction mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation*."
- Local bylaws. Municipal wetland bylaws, where applicable, shall be reviewed for prohibitive conditions or applicable performance standards.

LGP equipment is prohibited in the following resources areas:

- Stream crossings
- State listed-species habitat
- Outstanding Resource Waters (ORWs)
- Vernal pools
- Archaeological sensitive areas

Where LGP equipment use is desired in lieu of construction mats, the construction supervisor should identify these areas on marked-up access plans. A site visit with the Project Environmental Monitor should be scheduled to assess if the proposed locations are potential candidates. The Project Environmental Monitor will document potentially suitable locations and dismiss others as unsuitable.

ACOE New England District General Permit Requirements

State	Restrictions	Maximum PSI (when loaded) for Use without Mats	Reference
MA	*One of the following must apply:* Equipment operated within wetlands shall: a) Have low ground pressure; b) Be placed on timber mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation; or c) Equipment must be operated on adequately dry or frozen conditions such that shear pressure does not cause subsidence of the wetlands immediately beneath equipment and upheaval of adjacent wetlands.	3 psi	MA General Permit, General Condition 13
NH	*One of the following must apply:* Equipment operated within wetlands shall: a) Have low ground pressure; b) Be placed on timber mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation; or c) Be operated on frozen wetlands.	4 psi	NH General Permit, General Condition 17
VT	*One of the following must apply:* Equipment operated within wetlands shall: a) Have low ground pressure; b) Be placed on timber mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation; or c) Be operated on frozen wetlands such that shear pressure does not cause subsidence of the wetlands immediately beneath equipment and upheaval of adjacent wetlands. Note: Written authorization from the Corps required to waive the use of mats during frozen or dry conditions.	3 psi	Vermont General Permit, General Condition 14
RI	*One of the following must apply:* Equipment operated within wetlands shall: a) Have low ground pressure; b) Be placed on timber mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation; or c) Be operated on frozen wetlands such that shear pressure does not cause subsidence of the wetlands immediately beneath	6 psi	Rhode Island General Permit, General Condition 15

State	Restrictions	Maximum PSI (when loaded) for Use without Mats	Reference
	equipment and upheaval of adjacent wetlands. Note: Written authorization from the Corps required to waive the use of mats during frozen or dry conditions.		

Due to the fact that ground conditions may change between the time of the evaluation and construction, LGP equipment approval is required **at the time of construction for each wetland crossing** and shall be dependent upon the above conditions. In addition, LGP equipment use and approval shall be assessed by the National Grid Environmental Scientist or Project Environmental Monitor during construction on a continuing basis

Once a location is approved for the use of LGP equipment:

- The Construction Supervisor must check-in with the Project Environmental Monitor at least two weeks before construction begins to ensure conditions remain suitable for LGP equipment use, and weather conditions are favorable.
- The Project Environmental Monitor must observe the equipment when in use.
- LGP equipment use shall cease immediately if field conditions are found to be unsuitable (i.e. soil rutting greater than six inches or the destruction of vegetation root systems beyond the capacity of natural revegetation).
- **If wetlands damage occurs, the use of the LGP equipment shall be suspended, and the wetlands be restored.**
- Any LGP equipment used within areas containing invasive species within the project site shall be cleaned of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials at the site of the invasive species prior to being moved to other areas on the project site to prevent the spread of invasive species from one area to another.

8.0 Soil Disturbing Activities

8.1 Dust Control

Cutting activities shall be conducted to minimize the impacts of dust on the surrounding areas. Dust suppression is an important consideration. Water or application of calcium chloride or other National Grid approved equivalent in accordance with the manufacturer's guidelines may be used for dust control along ROWs in upland areas. During application of water for dust control, care shall be taken to ensure that water does not create run-off or erosion issues. Refer to BMPs in **Appendix 4.**

8.2 Clearing

Clearing is not allowed without specific permission as it constitutes soil disturbance under several regulatory programs and may trigger permitting by increasing the project's footprint of disturbance. If

clearing is required for a project, the limit of clearing shall be established with flagging or construction fencing and/or erosion controls. Clearing shall be done in accordance with project specific permits. Following the completion of clearing, the limits of work shall be re-established. Refer to BMPs in **Appendix 4**.

8.3 Grubbing

Grubbing is not allowed without specific permission as it constitutes soil disturbance under several regulatory programs and likely triggers permitting by increasing the project's footprint of disturbance. If grubbing is required for a project, the limit of grubbing shall be re-established after clearing has been completed. The area of grubbing shall be identified with flagging or construction fencing and/or erosion controls. Grubbing shall be conducted in accordance with project-specific permits.

8.4 Blasting, Noise and Vibration Control

If blasting is anticipated, the project team, including the National Grid Environmental Scientist, shall be consulted. If possible, plan work in residential areas to avoid noisy activities at night, weekends or during evenings. Emergency work in residential areas should be carried out in such a way as to keep noise to a minimum at night and weekends. Equipment should be maintained as per the manufacturer's guidance to minimize noise and vibration.

Work plans must consider local noise ordinances and provide specific controls to ensure noise levels are maintained within specified limitations.

8.5 Site Grading

The work site shall not be graded other than in accordance with project permits. Any proposed grading shall be reviewed by the National Grid Environmental Scientist for wetlands, rare species habitat, areas of cultural and historical significance, and other environmentally sensitive areas prior to start of work. In some cases, additional testing for cultural or historical resources may be triggered by proposed grading; alternatives to grading may be sought due to protracted time frame of obtaining the permit associated with testing and performing the testing. Grading outside of a regulated area shall be kept to the minimum extent necessary for safe and efficient operations and shall comply with the project permit plans.

Grading shall be performed in a manner which does not increase the erosion potential at the Site (e.g., terraces or slope interruptions shall be utilized). Graded sites shall be promptly stabilized by applying a National Grid approved seed mix (if adequate root and seed stock are absent), and mulching with hay, straw or cellulose (use straw or cellulose hydromulch where the potential introduction of invasive plant species is of concern) to reduce erosion and visual impact, as soon as possible following completion of work at the site. Grading within a regulated area shall be subject to the review and approval of the National Grid Environmental Scientist.

In some municipalities, site grading activities require the prior approval of the Town Engineer, Building and Zoning Official, or Public Works Director. Local ordinances or bylaws should be reviewed for applicable restrictions and permitting thresholds

8.6 Grounding Wells

The installation of grounding wells shall require erosion controls and proper soil management. Due to the typical depth required for grounding wells (typically 50 to 200 feet or more), erosion controls shall be installed around the proposed well location when working in buffer zone, in proximity to sensitive resources or near slopes. Also, dewatering basins may be required for the proper management of groundwater. The National Grid Environmental Scientist shall be consulted for the disposal of any excess soil.

8.7 Counterpoise and Cathodic Protection

The installation of counterpoise or cathodic protection shall require erosion controls and proper soil management. The National Grid Environmental Scientist shall be consulted for the disposal of any excess soil.

8.8 Work Pads

When work pads are being constructed, only clean material shall be used in their construction. Work pads shall only be constructed in areas approved by the National Grid Environmental Scientist and shown on the approved permit access plans.

8.9 Site Staging and Parking

During the project planning and permitting process, locations shall be identified for designated crew parking areas, material storage, and staging areas. Where possible, these areas should be located outside of buffer zones, watershed protection areas, and other environmentally sensitive areas. Any proposed locations shall be evaluated for all sensitive receptors and for new projects requiring permitting, shall be incorporated onto permitting and access plans.

8.10 Soil Stockpiling

Soil stockpiles shall be located in upland areas and, if in close proximity to wetlands and wetland buffers, shall be enclosed by staked straw bales or another erosion control barrier. The stockpiling of stone, drill spoils and other unconsolidated material on construction mats shall be avoided unless determined necessary due to access and work pad constraints. Additional controls, such as watertight mud boxes and geotextile/filter fabric over or between construction mats shall be considered for stockpile management. If material is placed on construction mats and falls through into wetlands, the material must be removed by hand. Saturated soils shall be allowed to dewater prior to off-site transport for sufficient time to ensure that water/sediment is not deposited onto construction mats or public roads during transport.

8.11 Top Soil/High Organic Content Soil

When the work site requires excavation and grading, the top soil shall be stockpiled separately from the material excavated. This top soil shall be spread as a top dressing over the disturbed area during restoration of the site.

In some instances where work is occurring within wetlands, high organic content soil may be displaced. Such high organic content soil shall be segregated from other excavated materials and stockpiled for use in wetland restoration areas. Care shall be taken to minimize the handling of high organic content soil. Preferably, the soil shall be stockpiled in one location until it is moved to the restoration area.

9.0 Stone Wall Dismantling and Re-building

Removal or alteration of stonewalls shall be avoided, whenever possible. As appropriate, some stonewalls removed or breached by construction activities shall be repaired or rebuilt. Rebuilt stone walls shall be placed on the same alignment that existed prior to temporary removal, to the extent that it shall not interfere with operations. The removal and rebuilding of stone walls requires approval from the National Grid Environmental Scientist and Property Legal, and may require several weeks lead time for coordination. Note that not all states allow this technique and that dismantling may not be allowed at all due to quality or significance of the wall. Once a stone wall has been identified as requiring dismantling, the following procedures shall be followed:

- Identify stone wall that is required to be temporarily dismantled and notify project team that a site visit is warranted to review the stone wall.
- The National Grid Environmental Scientist, with support from Property Legal and/or cultural/historical consultant, shall determine if permitting or additional permissions are required prior to dismantling stone wall.
- Once permit or permissions have been received, full documentation of wall dimensions (measurements and photographs) shall be submitted to the National Grid Environmental Scientist. Documentation of the wall dimensions shall be marked onto a copy of the applicable EFI access plan (or equivalent plan) with a useful reference for future locating such as GPS coordinates and/or measurement from a permanent reference point (closest structure location or closest cross street, etc.). The wall shall be photographed from all sides with a written description of the photograph (i.e. southern side of wall looking north). In addition, documentation of the length of wall to be dismantled shall be recorded. Take special care to note if granite property bounds (or other marker) are located within the wall so additional survey can be accomplished prior to dismantling in cases where the stone wall represents a property boundary. Site visits by project team (which shall include the National Grid Environmental Scientist) are a mandatory requirement prior to dismantling.
- No dismantling shall take place until documentation has been submitted to the National Grid Environmental Scientist and approved as sufficient documentation.
- Stones from the wall shall be removed from the work area and temporarily stored in nearby location, away from wetlands; buffer zones; rare species habitat and other historical/archeological concerns.
- Avoid dismantling via the “bulldozer” method when possible as this method makes it nearly impossible to rebuild the wall in the same alignment due to its uncontrolled nature. Dismantling shall be conducted either by hand, with stones stacked as they are removed, or on

less "sensitive" walls to use an excavator with a thumb to grab each stone and build a stockpile. Significant ground disturbance below the wall shall be avoided.

- Once construction and access in the area has been completed, the wall shall be rebuilt to pre-dismantled conditions or better. If rebuilding a stone wall can not be placed on the same alignment that existed prior to temporary removal, approval from the National Grid Environmental Scientist and Property Legal is required. **Note that if the wall represents a legal property boundary or is historically or culturally significant (or was previously determined to be in a very high quality condition), a professional stone masonry company may be required to document wall alignment, and conduct the dismantling and rebuilding.**

10.0 Avian Nest Removal

Avian nest removal shall be done in accordance with EG-304. Consult the National Grid Environmental Scientist prior to removing any nests. There are seasonal restrictions of the removal of avian nests and federal or state permits may be necessary prior to removal.

11.0 Drilling Fluids and Additives

When installing subsurface structures, Contractors shall take all necessary steps to prevent potential adverse effects on drinking water aquifers and groundwater quality. Efforts should be made to utilize natural bentonite clay type slurries, in place of polymer based slurries. If polymer based slurries are deemed required by the Contractor, the Contractor shall provide all the necessary information regarding the proposed product to be used to National Grid as part of their *initial* bid package.

Polymer based slurries and additives may only be used when approved by the Environmental Department and the applicable state environmental regulating authorities governing the state in which the work will be completed. Contractors are responsible for securing a written determination for use from all applicable environmental regulatory agencies prior to utilizing a polymer based slurry and/or additive. Documented proof of the regulatory approval/determination for each project must be provided to the National Grid Environmental Department upon its approval and prior to its use. Approvals may vary by state.

If a polymer based slurry is approved for use, Contractor will designate a qualified individual who will confirm/verify and document the specific use of polymer and/or additives at each location, including add-mix ratios, surface area treated, volume of water within excavation, volumes/weight of additives used, and any other measurements specified by the manufacturer. No mixing will be allowed in the drilled shaft excavation. The Contractor is solely responsible for neutralizing all slurries and additives in accordance with the manufacturer's specifications. This shall be performed following removal from the excavation and while held in holding tanks. A qualified person shall be designated by the Contractor who will confirm/verify and document the appropriate neutralization of additives at each location, as necessary.

The Contractor is solely responsible for properly treating, containerizing, testing, transporting and disposing of any/all slurries and additive-containing fluids and solids generated during their activities. Relevant documentation shall be maintained by the Contractor, and shall include volume of material treated and disposed and the location/facility at which it was disposed.

The activities detailed above shall be documented by the contractor and the information provided to National Grid project manager for document retention. Soils that may have come into contact with polymers and associated additive wastes will not be disposed of on National Grid properties, discharged to the ground surface or subsurface, or placed on 3rd party properties. National Grid will not be identified as the disposal generator for any polymer based slurry waste or additives generated by Contractor activities. All wastes must be disposed of in accordance with federal and state regulations.

The Contractor assumes full responsibility for the safe storage of all polymers and additives during use and also assumes full responsibility for improper use and application of said polymers and additives that are deemed to have contravened aquifer and/or groundwater quality. Contractor assumes responsibility to ensure that all polymer and additive use is completed in strict adherence with the management, storage, mixing, transporting, disposing and any other requirements of state and federal regulatory approvals and permits, as applicable.

National Grid reserves the right to refuse and terminate the use of a specific polymer based slurry or additive at any time.

12.0 Water Withdrawal for Geotechnical Investigations

The use of water during geotechnical drilling operations may be required, and is most common during the “drive and wash” drilling technique, where 4- or 6-inch diameter casing is driven into the ground, and the soil inside the casing is washed out using a pump and hollow rods. Soil samples are generally collected at periodic intervals using a split spoon sampler (e.g., every 5 vertical feet).

The National Grid Environmental Scientist and/or Project Environmental Monitor may approve withdrawals from wetlands and waterways on a case-by-case basis should the geotechnical team advise no other options are available. Generally, the amount of water required for withdrawal is between 100 and 200 gallons, and the water is then recycled continuously in the drilling process. Certain scenarios may require additional water usage if water is lost down the boring (e.g., lost due to bedrock fractures during rock coring). The following general guidance should be adhered to when determining whether water withdrawals may be allowed during geotechnical investigations on the ROW. Approval from the National Grid Environmental Scientist and/or Project Environmental Monitor is required prior to initiating water withdrawals during geotechnical investigations.

- Withdrawals from perennial streams, ponds, lakes and large wetlands systems are preferred over small isolated wetlands to ensure the water level, water table, and hydroperiod are not affected.

Prior to start of work, the Contractor shall identify which water source they prefer to withdraw from. The National Grid Environmental Scientist and/or the Project Environmental Monitor will confirm whether these sources are appropriate.

- Care should be taken to avoid alteration of wetlands or the beds and banks of surface waters. Examples of alterations include, but are not limited to, the following:

  (a) the changing of pre-existing drainage characteristics, flushing characteristics, salinity distribution, sedimentation patterns, flow patterns and flood retention areas;

  (b) the lowering of the water level or water table;

  (c) the destruction of vegetation; and

  (d) the changing of water temperature, biochemical oxygen demand (BOD), and other physical, biological or chemical characteristics of receiving waters.

- Wetlands and waterways providing habitat for rare species should be avoided unless all other options are exhausted. Under no circumstances should water be withdrawn from a Vernal Pool.
- Withdrawal pipes or stingers should be elevated off the bottom of wetlands and streams during the duration of pumping. Additionally, fabric or screening should be covering the withdrawal pipes to eliminate inadvertent harm to wildlife.
- Withdrawals should be performed in a manner that does not damage vegetation, disturb sediment, or result in the release of temporary or permanent fill material (e.g., sediment, spoils, or turbid water) into the wetland/waterway. Additional detail from geotechnical experts may be required to solidify BMP recommendations.
- Any water used for geotechnical drilling operations (including water withdrawn from surface water, brought on-site, or from other sources) shall be discharged into the open borehole or to an upland area such that the water infiltrates to the ground and is not discharged to a wetland or surface water resource area. Consultation with the National Grid Environmental Scientist and/or the Project Environmental Monitor is required if this is not feasible. At no time should water withdrawals result in a temporary or permanent fill/discharge of material (e.g. sediment, spoils, or turbid water) into the wetland or waterway.
- If water sourcing options is not determined prior to mobilization, necessary water shall be brought in by tank truck. Should withdrawal from surface water sources become necessary during soil boring work, the National Grid Environmental Scientist and/or the Project Environmental Monitor shall be notified prior to beginning withdrawal. If initial withdrawal from surface water is approved by the National Grid Environmental Scientist and/or the Project Environmental Monitor, the driller may withdraw from the surface water, as long as the above criteria are met.
- If excessive water withdrawal is necessary, the National Grid Environmental Scientist and/or the Project Environmental Monitor shall be consulted to determine whether the water source is appropriate for withdrawal.
- In New Hampshire, withdrawals made from state-owned property require written permission from the agency with primary responsibility for monitoring and/or maintaining the site.

13.0 Gates

When not in use, gates shall be locked with a company-approved lock or double locked with the property owner's lock. New gates may be installed during a project, however, installation of a gate requires permission from the property owner, and may require environmental permitting. Consult with National Grid Real Estate and the National Grid Environmental Scientist prior to installing a new gate, as well as with the appropriate engineering department for the current company gate specifications. Refer to BMPs in **Appendix 4**. Installation of ROW access restrictions (e.g., stone, bollards, other) at road crossings also require consultation with the National Grid Environmental Scientist and Property Legal.

14.0 Signage

Specific signage may be required by permits or be specified in the EFI to limit access in certain sensitive areas. Signs shall be used to clarify allowed access and sensitive areas, such as:

- "No snow stockpiling beyond this point";
- "Approved access (to structures A-F)";
- "Do not cross this area until construction mats are in place";
- "No vehicle crossing";
- "Areas to avoid"; and
- "Environmentally Sensitive Area – Keep Out."

Signs shall be used in conjunction with snow fencing or other physical barriers as demarcation for sensitive areas (e.g., rare species areas, sensitive archeological locations, etc.) that need to be protected and avoided by construction activities. In addition, permit signs required by the regulatory agencies shall be present (i.e. MADEP, RIDEM, EPA (SWPPP), ACOE, etc) at construction sites and/or ROW access points. Construction signage shall be installed and maintained by the contractor performing the work during the project. Absence of signage does not eliminate the need to comply with access plans, permit conditions, and other regulatory requirements. Refer to BMPs in **Appendix 4**.

15.0 Refueling and Maintenance Operations

15.1 Spill Prevention and Response Plan

Spill controls shall be provided on every field vehicle. Bulk storage of fuels (55 gallons or greater) shall be approved by the National Grid Environmental Scientist prior to being brought on site. The need for a field spill plan shall be evaluated specific to the project for regulatory requirements under SPCC regulations or local ordinances. A field spill plan would include information on fuels and oils being used, approximate amounts in each container or type of equipment, location, fueling location, secondary containment, response and notification procedures, including contact phone numbers, etc. All personnel shall be briefed on spill prevention and response prior to the commencement of construction. The state-specific EG-501 and EG-502 shall be followed in the event of a spill.

Typical construction activities do not require the use or storage of large quantities of oil or hazardous materials (i.e., greater than 55 gallons). However, oil and/or hazardous materials (OHM) may be required in limited quantities to support construction or vehicle operations. Best practices shall be followed in the use and storage of OHM which include but are not limited to: storage and refueling greater than 100 feet from resource areas; maintenance of spill response equipment at work locations sufficient to handle incidental releases from operating equipment; general training for on-site personnel for spill clean up response for incidental releases of OHM; and contracting with an on-call spill response contractor that is capable of managing incidental and significant releases of OHM. There may situations that additional precautions shall be required for the storage or use of OHM (i.e., within wellhead protection areas, GA/GAA areas, Zone IIs). Storage of OHM shall be done in accordance with any applicable regulatory requirements.

15.2 Field Refueling

Small equipment such as pumps and generators shall be placed in small swimming pools or on absorbent blankets/pads, to contain any accidental fuel spills. Small swimming pools with absorbent blankets/pads, and/or other secondary containment, shall be used for refueling of fixed equipment in wetlands and should be maintained to prevent accumulation of precipitation.

15.3 Grease, Oil, and Filter Changes

Routine vehicle maintenance shall not be conducted on project sites.

15.4 Other Field Maintenance Operations

When other vehicle or equipment maintenance operations (such as emergency repairs) occur, company personnel or contractors at field locations shall bring vehicles or equipment to an access location a minimum of 100 feet away from environmentally sensitive areas (e.g., wetlands or drinking water sources). A paved area, such as a parking lot or roadway, is a preferred field maintenance location to minimize the possibility of spills or releases to the environment.

Crews shall take all usual and reasonable environmental precautions during repair or maintenance operations. Occasionally, it is infeasible to move the affected vehicle or equipment from an environmentally sensitive area to a suitable access area. When this situation occurs, precautions shall be taken to prevent oil or hazardous material release to the environment. These precautions include (but are not limited to) deployment of portable basins or similar secondary containment devices, use of ground covers, such as plastic tarpaulins, and precautionary placement of floating booms on nearby surface water bodies.

15.5 Tools and Equipment

Cleaning of tools and equipment shall be conducted away from environmentally sensitive areas (such as wetlands, buffer zones or drinking water sources) to the maximum extent possible. A paved area such as a parking lot or roadway is preferred, to minimize the possibility of spill or release to the environment. Crews shall wipe up all minor drips or spills of grease and oil at field locations.

16.0 Stabilization Deadlines for Projects Subject to EPA Construction General Permit

16.1 Deadlines to Initiate Stabilization Activities (Permanent and Temporary)

Soil stabilization measures shall be implemented immediately whenever earth-disturbing activities have permanently or temporarily ceased on any portion of the project. The following are some examples of activities that constitute initiation of stabilization:

- Preparing the soil for vegetative or non-vegetative stabilization;
- Applying mulch or other non-vegetative product to the exposed area;
- Seeding or planting the exposed area;
- Finalizing the arrangements to have stabilization product fully installed in compliance with the deadlines to complete stabilization in Section 15.2 below.

16.2 Deadlines to Complete Stabilization Activities (Permanent and Temporary)

As soon as practicable, but no later than 14 calendar days or 7 calendar days (for areas discharging to a sensitive water) after the initiation of soil stabilization measures commence the following should be completed:

- For vegetative stabilization, all activities necessary to initially seed or plant the area to be stabilized; and
- For non-vegetative stabilization, the installation or application of all such non-vegetative measures.

16.3 Vegetative Stabilization (all except for arid, semi-arid, or on agricultural lands)

- Provide established uniform vegetation (e.g., evenly distributed without large bare areas), which provides 70% or more of the density of coverage that was provided by vegetation prior to commencing earth-disturbing activities. Avoid the use of invasive species as cover.
- For final stabilization, vegetative cover must be perennial; and
- Immediately after seeding or planting a disturbed area to be vegetatively stabilized, a non-vegetative erosion control must be implemented to the area while the vegetation is becoming established. Examples include; mulch and rolled erosion control products.

16.4 Vegetative Stabilization (Agricultural Lands)

- Disturbed areas on land used for agricultural purposes that are restored to their pre-construction agricultural use are not subject to vegetative stabilization standards.

16.5 Non-Vegetative Stabilization

If using non-vegetative controls to stabilize exposed portions of your site, or if you are using such controls to temporarily protect areas that are being vegetatively stabilized, you must provide effective non-vegetative cover to stabilize any such exposed portions of the site. Examples of non-vegetative stabilization techniques include, but are not limited to, rip-rap, gabions, and geotextiles.

17.0 Clean-up and Restoration Standards

The following steps shall be taken once construction has been completed at each location along the ROW or within the project site. The following are minimum guidelines for clean-up and stabilization standards. Please refer to permit conditions for project-specific related standards. Refer to the EFI for applicable permit requirements and to determine if the site needs to be reviewed and approved by the permitting authorities prior to removal of erosion controls.

17.1 Removal of Sedimentation and Erosion Controls

After all work has been satisfactorily completed and vegetation has been re-established to a minimum of 75% cover, and upon approval by the National Grid Environmental Scientist, all non-biodegradable materials (e.g., siltation fencing, straw bale strings, stakes, straw wattle mesh casing, etc.) shall be disposed of properly off-site.

Dependent on permit requirements, sedimentation and erosion controls may not be allowed to be removed until after inspection and approval by one or more permitting authority. In most cases, removed straw bales may be used to mulch disturbed areas. Remaining straw bales that do not block the flow of water may be left in place unless they are required to be removed pursuant to permit conditions. Straw bales that block the flow of water shall be removed.

Prior to project construction being completed, the project team will develop post-construction inspection intervals to ensure timely removal of temporary BMPs. BMPs will be removed when the area is stabilized, which typically occurs when the area has either naturally stabilized (75% cover), or seed and mulch that was installed has achieved 75% cover.

17.2 In-Situ Restoration

Unless otherwise specified in permits or prescribed by the National Grid Environmental Scientist or the Project Environmental Consultant, all disturbed areas, including stream banks, wetlands and access routes, shall be restored following the completion of work. When the work is completed and construction mats have been removed, the National Grid Environmental Scientist or Project Environmental Consultant shall conduct an inspection. Wetlands shall be inspected for build up of sand or other materials that may have fallen through construction mats. Care shall be taken to inspect wetland crossings carefully after construction mat removal to ensure any materials are properly removed and disposed of off-site.

Restoration of Soil Compaction. If rutting or soil compaction following construction mat removal is observed, the area shall be returned to pre-existing conditions, and comparable to the surrounding area, by light hand raking or by back-blading with machinery. Restoration shall be overseen by the Project Environmental Consultant or National Grid Environmental Scientist. Deep ruts (>12”) shall be filled in using available, loose soil from the work area.

Seeding and Mulching. If adequate root and seed stock are absent and have been stripped from the area, graded sites shall be promptly stabilized by applying an approved seed mix and mulching with straw to reduce erosion and visual impact. Seeding and mulching shall be completed as soon as possible following completion of work at the site. For some wetland areas, natural re-vegetation may be more appropriate than seeding disturbed sites. Wetland areas where adequate root and seed stock are absent will be

seeded using an approved wetland native seed mix. For some wetland areas, natural re-vegetation may be more appropriate than seeding disturbed sites. Refer to BMPs in **Appendix 4** for seed mix tables and mulch ratio tables.

If needed, the import of quality topsoil onto the ROW will be required. Topsoil should be tested, and approved by the Project Environmental Consultant or National Grid Environmental Scientist to determine its suitability for site conditions. Fertilizers will be approved on a case-by-case basis.

For upland areas, the disturbed vegetation and soil shall be restored and stabilized[4] by regrading the area to pre-existing conditions, if needed, seeding (if adequate root and seed stock are absent) and mulching the exposed soil, and removing strings and stakes from straw bales and using broken up straw bales for the mulch. Siltation fencing, strings and stakes shall be removed for disposal as ordinary waste. Refer to BMPs in **Appendix 4** for seed mix tables and mulch ratio tables.

For sites with excess boulders, additional boulders could be used at proposed and existing gate locations to use on either side of the gates as a deterrent for unauthorized vehicle access or be placed along the edges of work pads where steep slopes are present for safety purposes. The final placement of boulders should be reviewed prior to installation with Real Estate and the National Grid Environmental Scientist or Project Environmental Consultant.

Unless otherwise specified in Project-specific permit conditions, the National Grid Environmental Scientist or Project Environmental Consultant shall develop an inspection frequency to monitor restored areas for stabilization, germination and successful revegetation.

17.3 Invasive Species

All equipment shall be certified clean[5] utilizing the attached form (**Appendix 5**) or equivalent as approved by the vendor prior to mobilization to the work site. The vendor shall use the certification from provided as **Appendix 5** to document compliance with invasive species management BMPs. Clean is defined as being free of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials prior to being brought to the project site. Any equipment that has been placed or used within areas containing invasive species within the project site shall be cleaned of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials at the site of the invasive species prior to being moved to other areas on the project site to prevent the spread of invasive species from one area to another[6]. **Equipment shall be cleaned prior to being removed at the completion of the project: exceptions to this requirement shall be determined on a case-by-case basis.** Consult with the National Grid Environmental Scientist prior to discharging or disposing of any waste water or waste material from the cleaning of equipment.

[4] For projects subject to the 2012 CGP, stabilization is required within 14 days, or within 7 days for sensitive areas.

[5] The **Appendix 5** certification form (or equivalent as approved by National Grid Environmental Scientist) shall be used to document the clean certification

[6] On ROW projects where multiple wetlands may be dominated by the same invasive species, cleaning may not be required for movement along the ROW. Check with the National Grid Environmental Scientist for guidance.

17.4 Cleaning of Equipment

At the completion of the project, equipment shall be cleaned prior to being de-mobilized to prevent tracking of material onto roads and causing safety issues. Consult with the National Grid Environmental Scientist prior to discharging or disposing of any waste water or waste material from the cleaning of equipment.

17.5 Access Roads

Constructed gravel roads shall be left in place following project completion unless permit conditions require their removal. Refer to the specific permit conditions for these provisions. If the road is to be removed, the crushed stone and geotextile fabric shall be removed from the work site. Seeding and/or mulching of gravel roads is generally not required, unless necessary to prevent erosion. Pre-existing sandy soils within mapped rare turtle habitat shall not be seeded unless directed by the National Grid Environmental Scientist so as to not alter nesting habitat.

17.6 Stone Work Pads

Unless permit conditions or property owner's require the removal of constructed stone work pads following project completion, constructed work pads shall be left in place. Refer to the specific permit conditions for these provisions.

17.7 Construction Materials on ROWs

As soon as the structure work has been completed, all used parts and trash are to be picked up and removed from the project site. Retired poles shall be removed in accordance with National Grid Engineering Standard SP.06.01.301. In some cases, the used material from structure work may be temporarily stored at the work area by placing it out of the wetlands or other sensitive resource area until work in the adjacent areas has been completed. However, treated wood poles shall never be stored in standing water or in wetlands. If the project is cancelled, all material shall be removed from the project site. Excess material brought to the project site shall be removed upon project completion. Consult with the National Grid Environmental Scientist on whether the work site shall be restored in addition to the measures outlined above

17.8 Improved Areas

Yards, lawns, agricultural areas, and other improved areas shall be returned to a condition at least equal to that which existed at the start of the project. Off-ROW access shall never be assumed and shall be coordinated through Real Estate before being implemented. Depending on the access point, construction matting or other BMPs may be required to prevent ruts, lawn damage, or other property damage. Restoration following the completion of work and any use of improved areas shall be conducted in accordance with the measures outlined above.

17.9 Property Damage

All damage to property occurring as a result of a project shall be immediately repaired or replaced. In some locations, it may be desirable to document pre-existing damage prior to work commencing in that area in order to demonstrate afterwards that the damage did not result from the project. Work crews, the

Project Environmental Consultant or the National Grid Environmental Scientist shall document repairs that were performed in response to damage from unauthorized vehicle use.

17.10 Overall Work Site

Upon satisfactory completion of work, the construction personnel shall remove all work-related trailers, buildings, rubbish, waste soil, temporary structures, and unused materials belonging to them or used under their direction during construction, or waste materials from previous construction and maintenance operations. All areas shall be left clean, without any litter or equipment (wire, pole butts, anchors, insulators, cross-arms, cardboard, coffee cups, water bottles, etc.) and restored to a stable condition and as near as possible to its original condition, where feasible. Debris and spent equipment shall be returned to the operating facility or contractor staging area for disposal or recycling (cardboard) as appropriate in accordance with EI-111.

17.11 Material Storage/Staging and Parking Areas

Upon completion of all work, all material storage yards, staging areas, and parking areas shall be completely cleared of all waste and debris. Unless otherwise directed or unless other arrangements have been made with an off ROW or off-property owner, material storage yards and staging areas shall be returned to the condition that existed prior to the installation of the material storage yard or staging area. Regardless of arrangements made with a landowner, all areas shall be restored to their pre-construction condition or better. Also any temporary structures erected by the construction personnel, including fences, shall be removed by the construction personnel and the area restored as near as possible to its original condition, including seeding and mulching as needed.

18.0 Notification of Emergency Work

Because it is sometimes difficult to identify wetlands and other sensitive environmental areas, the National Grid Environmental Scientist shall be notified within 24 hours or by the next working day whenever emergency off-road repair work takes place. Although the routine maintenance and emergency repair work is generally allowed, due to site conditions or the scope of the project, notification to the regulating agencies may be required.

19.0 Appendices

APPENDIX 1:	Glossary
APPENDIX 2:	Acronyms
APPENDIX 3:	Storm Water, Wetlands & Priority Habitat Environmental Compliance Site Inspection / Monitoring Report Form
APPENDIX 4:	BMP Drawings and Guidelines
APPENDIX 5:	Certification Sheet for Invasive Species Control
APPENDIX 6:	Snow Disposal Guidelines

Appendix 1 – Glossary

Access Road – An existing, periodically maintained road often consisting of gravel and/or exposed soils or vegetated with grasses but devoid of woody vegetation, that is visible on aerial photography and shown on ROW T-sheets. May include newly permitted permanent roads (i.e., roads to be constructed in accordance with a project-specific permit).

Access Route - A pathway previously used or proposed to be used by crews for access along the ROW. Routes may be shown on ROW T-sheets or previous project access plans but are not improved as maintained gravel/exposed soil roads. Access routes may be mown and can consist of trails utilized by recreational vehicles.

Action Logs – Project-specific log used to document action items required for permit compliance. The log identifies timeframes for completion and responsible parties. The log is typically updated by the Project Environmental Consultant or the National Grid Environment Scientist and circulated to the project team on a weekly, or more frequent, basis.

Bank – The transitional slope immediately adjacent to the edge of a surface water body, the upper limit of which is usually defined by a break in slope, or, for a wetland, where a line delineated in accordance with applicable state and federal regulations that indicates a change from wetland to upland.

BMP – Best Management Practice. Individual engineered constructions or operating procedures intended to minimize and mitigate soil disturbance, erosion, sedimentation, turbid discharges, and/or impacts to sensitive receptors.

Clean - Free of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials prior to being brought to the project site.

Clean Gravel – Gravel is a type of coarse-grained soil that consists of small stones and other mineral particles. Clean Gravel shall meet the requirements in accordance with National Grid Standard Construction Specification for Electric Stations (Engineering Standard SP.08.00.001) Clean Gravel will not have fine materials that could lead to a turbid discharge.

Clean Stone (Crushed Stone) – Clean Stone (Crushed Stone) shall meet the requirements in accordance with National Grid Standard Construction Specification for Electric Stations (Engineering Standard SP.08.00.001). Clean Stone will not have fine materials that could lead to a turbid discharge.

Clearing – The cutting of trees and large bushes by hand and/or mechanical means.

Compost Socks – Tubular devices comprised of non-degradable, photodegradable, or biodegradable mesh tubing containing organic compost matrix. Compost socks are effective for intercepting site runoff, trapping

sediment, and treating for soluble pollutants by filtering stormwater runoff. . Compost socks are a useful sedimentation control device along construction site perimeters, as check dams in drainage channels, as a slope interruption practice on long and/or steep slopes, and around drain or street curb inlets.

Construction Mats - **C**onstruction, swamp, and timber mats ("construction mats") are generic terms used to describe structures that distribute equipment weight to minimize disturbance to wetland soil and vegetation while facilitating passage and providing work platforms for workers and equipment. They are comprised of sheets or mats made from a variety of materials in various sizes.

Corduroy Road – Corduroy roads are cut trees and/or saplings with the crowns and branches removed, and the trunks lined up next to one another.

Dewatering Basin – An established containment area for saturated materials and pumped discharges. This measure is used for the purpose of de-watering soils prior to transport off site or for use in another location on site, and for allowing suspended sediment to settle out of pumped discharges.

Detention/Retention Basin – A detention/retention basin is designed for the purpose of detaining or retaining water. A dewatering basin is a form of detention basin

Dewatering – Use of a system of pumps, pipes and temporary holding dams to drain or divert waterways or wetlands, or lower the groundwater table before and during excavation activities.

Drainage Ditch or Swale – A clearly noticeable channel that is typically dry, except after precipitation events. Intermittent and perennial streams and rivers are not included in this definition.

Dredge – To dig, excavate, or otherwise disturb the contour or integrity of sediments in the bank or bed of a wetland, a surface water body, or other area within the regulating bodies' jurisdiction.

Dredge Spoils – Material removed as the result of dredging.

Embankment – A protective bank constructed of mounded earth or fill materials located between a roadway (or rail bed) and a seasonal stream or other wetland.

Environmental Field Issue – Document that contains copies of all project-specific environmental permits and summarizes all environmental permit conditions. The EFI is prepared by the Project Environmental Consultant or the National Grid Environment Scientist and copies are provided to the Project Manager, Construction Supervisor(s), and other team members as appropriate.

Environmental Monitoring Records – Examples of checklists and/or monitoring reports suggested for use by the Company Environmental Engineer to document conformance of the project with this Environmental Guidance and or project specific permit/license conditions.

Environmental Scientist – Formerly Environmental Engineer. The National Grid Environmental Department representative for the project or the territory where the work is located. For a map of Environmental Department staff territories, refer to the Environmental page of the National Grid infonet.

Environmentally Sensitive Areas – Examples of environmentally sensitive areas that may be found on National Grid properties are rivers, streams, ponds, lakes, wetlands, bogs, swamps, salt marshes, rare species habitat, wellhead protection areas, cultural sites, parks, preserves, schools and as otherwise defined by Federal, State or local regulations. Refer to EG-301.

Erosion Controls – The utilization of methods to prevent soil detachment and minimize displacement or washing down slopes by rainfall or run-off. Common practices include, but are not limited to:

(a) Temporary and Permanent Seeding.

(b) Mulching, Soil Binders, Tackifiers.

(c) Erosion Control Blankets.

(d) Hydraulic Erosion Control.

Excavate/Excavation – To dig, remove, or form a cavity or a hole in an area within the department's jurisdiction.

Fill (n.) – Any rock, soil, gravel, sand or other such material that has been deposited or caused to be deposited by human activity.

Fill (v.) – To place or deposit materials in or on a wetland, surface water body, bank or otherwise in or on an area within the jurisdiction of the department.

Flats – Relatively level landforms composed of unconsolidated mineral and organic sediments usually mud or sand, that are alternately flooded and exposed by the tides and that usually are continuous with the shore.

Frozen Condition – Field conditions when the upper portion of the ground surface freezes or when areas of standing water freeze solid such that vehicle passage over these areas is supported without any resulting soil disturbance. The frozen conditions must have been affected by severe cold (maximum daily temperatures less than 32 degrees F) for a continuous 2-week period.

GAA – Rhode Island groundwater classification, groundwater resources that are known, or presumed to be suitable for drinking water use without treatment, and are located in one of the three areas described below.

a) The state's major stratified drift aquifers that are capable of serving as a significant source for a public water supply ("groundwater reservoirs") and the critical portion of their recharge area as delineated by DEM;

b) The wellhead protection area for each public water system community water supply well. Community water supply wells are those that serve resident populations and have at least 15 service

connections or serve at least 25 individuals, e. g. municipal wells and wells serving nursing homes, condominiums, mobile home parks, etc.; and

c) Groundwater dependent areas that are physically isolated from reasonable alternative water supplies and where existing groundwater warrants the highest level of protection. At present only Block Island has been designated as meeting this criterion.

GA – Rhode Island groundwater classification, groundwater resources that are known, or presumed to be suitable for drinking water use without treatment. However, groundwater classified by GA does not fall within any of the three priority areas described under the GAA classification.

Grade/Grading – The movement of soil and fill material to change the elevation of the land. The term refers to the combined actions of excavating and filling to change elevation or shape.

Grubbing – The removal of stumps/roots by mechanical means during site preparation activities.

Immediately - As soon as practicable, but no later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased.

In-kind Replacement - Replacement using the same material, functional inverts, diameter and length as the existing item. In-kind replacement includes the substitution of a structure with a similar structure in approximately the same location as is practicable, and is approximately the same in design. The design may be altered to meet applicable utility standards, and may include alternate materials designed to prolong the life of that service.

Intermittent Stream – A stream that flows for sufficient time to develop and maintain a defined channel, but which might not flow during dry portions of the year.

In the Dry – Work done either during periods of low water or behind temporary diversions, such as Earth Dike / Drainage Swale and Lined Ditches designed and installed in accordance with best management practices.

Limit of Work/Disturbance – The approved project limits within regulated areas. All project related activities in regulated areas must be conducted within the approved limit of work/disturbance. The limit of work/disturbance shall be depicted on the approved permit site plans and in the EFI plans. Where it is warranted National Grid may require that these limits be identified in the field by flagging, construction fencing, and/or perimeter erosion controls.

Long-Term Restoration Logs - Project-specific log used to document restoration required following the completion of construction or as areas of the project have been completed (i.e., segments of ROW for a multi-mile project). The log is typically updated by the Project Environmental Consultant or the National Grid Environment Scientist and circulated to the project team on a weekly basis.

Low Flow Conditions – Low water flow that generally occurs during the summer, as a result of decreased precipitation and the removal of water by increased evaporation and evapotranspiration by vegetation. Work done under low-flow conditions minimizes the potential for environmental damage. The USACE defines the calendar dates for low flow conditions in its New England state-specific Programmatic General Permits.

Low Ground Pressure – Equipment that meets the USACE GP state-specific defined Pounds per Square Inch (PSI) ground pressure when loaded. Use of LGP equipment ***requires approval*** from the National Grid Environmental Scientist.

Marsh – A wetland:

a) That is distinguished by the absence of trees and shrubs;

b) Dominated by soft-stemmed herbaceous plants such as grasses, reeds, and sedges; and

c) Where the water table is at or above the surface throughout the year, but can fluctuate seasonally.

Methods – Are the construction practices and procedures that take place through choosing the proper equipment, trucks and labor to execute the earth moving activities based on the existing conditions and implementing creative and sensitive scheduling for the daily activities.

NHESP - Natural Heritage Endangered Species Program; a department within the Massachusetts Division of Fisheries and Wildlife that is responsible for protecting the 176 species of vertebrate and invertebrate animals and 259 species of native plants that are officially listed as Endangered, Threatened or of Special Concern in Massachusetts.

Perennial – A stream that contains water at all times except during extreme drought.

Permanently Ceased – Is applicable to earth disturbance activities when clearing and excavation within any area of the Project that will not include permanent structures has been completed.

Person-in-Charge – A National Grid Project Engineer, Manager, Supervisor, Field Construction Coordinator or equivalent Contractor personnel assigned to oversee and coordinate work activities.

Processed Gravel – Processed Gravel shall meet the requirements in accordance with National Grid Standard Construction Specification for Electric Stations (Engineering Standard SP.08.00.001). Processed Gravel will not have fine materials that could lead to a turbid discharge. Gravel consisting of inert material that is hard, durable stone and is free from loam and clay, surface coatings and deleterious materials.

Regulating Body – Federal, State, or local authority that has jurisdiction over resource areas that may be impacted by company operations

Regulated Wetland Area – Those areas that are subject to federal, state or local wetland regulation, including certain buffer or adjacent areas.

Repair – The restoring of an existing legal structure by partial replacement of work, or broken, or unsound parts (Env-Wt 101.73).

Replacement – The substitution of a new structure for an existing legal structure with no change in size, dimensions, location, configuration, construction, or which conforms in all material aspects to the original structure

Right-of-Way – A corridor of land where National Grid has legal rights (either fee ownership, lease or easement) to construct, operate, and maintain an electric power line and/or natural gas pipeline and may include work on customer owned properties.

River – A watercourse that is larger than a perennial stream and flows all year long.

Routine Utility Rights-of-Way Maintenance Activity – Includes but is not limited to vegetation management and repair or replacement of existing utility structures.

Sedimentation Controls – Silt fences, straw bales, compost socks/berms and other barrier devices strategically placed to intercept and treat sediment-laden site runoff.

Sensitive Water - Includes any sediment or nutrient impaired water or a water that is identified by the state, tribe or EPA as Tier 2, 2.5 or Tier 3 for antidegradation purposes.

Siltation Curtain – An impervious barrier erected to prevent silt and sand and/or fines from being washed into a wetland, surface water body or other area of concern.

Surface Water Body or Surface Waters – Those portions of waters which have standing or flowing water at or on the surface of the ground.

Spill Prevention, Control and Countermeasure Plans – Required for site operations that involve the storage of 1,320 gallons or greater of fuel and oils, both in storage containers and stored in equipment. Response actions to spills and releases are specified in these plans.

Stormwater Pollution Prevention Plan – A site-specific, written document that, among other things: (1) identifies potential sources of stormwater pollution at a construction site; (2) describes stormwater control measures to reduce or eliminate pollutants in stormwater discharge from a construction site; and (3) identifies procedures the operator will implement to comply with the terms and conditions of EPA NPDES Construction General Permit (CGP). SWPPPs must be prepared, maintained on-site, and amended as necessary in order to obtain NPDES permit coverage for specific construction site stormwater discharges under the EPA NPDES CGP.

Temporarily Ceased - Is applicable when there are earth disturbance activities such as clearing, grading, and/or excavation that are not complete, but will be idle in one area for a period of up to 14 or more calendar days, and which will resume in the future. The 14 calendar day timeframe begins as soon as you now that construction work on a portion of the Project will be left incomplete and idle. In circumstances where there are unanticipated delays and you do not know at first how long the work stoppage will continue, the requirement to immediately initiate stabilization is triggered as soon as you know with reasonable certainty that work will be stopped for 14 or more additional calendar days.

Tidal Wetlands – A wetland whose vegetation, hydrology or soils are influenced by periodic inundation or tidal waters.

Topsoil – The uppermost part of the soil, ordinarily moved in tillage, or its equivalent in uncultivated soils and ranging in depth from 2 to 10 inches.

Turbidity – The condition in which solid particles suspended in water make the water cloudy or even opaque in extreme cases.

United States Geological Survey Topographic Map – A map that uses contour lines to represent the three-dimensional features of a landscape on a two-dimensional surface. These maps use a line and symbol representation of natural and artificially created features in an area.

Wetland – An area that is inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal conditions does support, a prevalence of vegetation (more than 50 percent) typically adapted for life in saturated soil conditions (hydric soils). Wetlands include but are not limited to swamps, marshes, bogs, and similar areas.

Work Site – An area where work is performed.

Worker – Company employee, contractor, consultant working on site.

Zone II - Massachusetts - That area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated (180 days of pumping at safe yield, with no recharge from precipitation). It is bounded by the groundwater divides which result from pumping the well and by the contact of the aquifer with less permeable materials such as till or bedrock. In some cases, streams or lakes may act as recharge boundaries. In all cases, Zone IIs shall extend up gradient to its point of intersection with prevailing hydrogeologic boundaries (a groundwater flow divide, a contact with till or bedrock , or a recharge boundary).

Appendix 2 – Acronyms

ASTM	American Society for Testing and Materials
BMP	Best Management Practices
EFI	Environmental Field Issue
EG	Environmental Guidance
EPA	Environmental Protection Agency
GA/GAA	Rhode Island Groundwater Classifications – see glossary
LGP	Low Ground Pressure
MA	Massachusetts
MA DEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation
NE	New England
NH	New Hampshire
NH DES	New Hampshire Department of Environmental Services
NHESP	Natural Heritage Endangered Species Program
NPDES	National Pollutant Discharge Elimination System
OHM	Oil and/or Hazardous Materials
PSI	Pounds per square inch
RI	Rhode Island
RI DEM	Rhode Island Department of Environmental Management
RI CRMC	Rhode Island Coastal Resources Management Council
RI SESC	Rhode Island soil erosion and sediment control
ROW	Right-of-Way
RTE	Rare, Threatened or Endangered
SPCC	Spill Prevention, Control and Countermeasure
SWPPP	Storm Water Pollution Prevention Plan
TOY	Time-of-Year
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
VT	Vermont

VT DEC	Vermont Department of Environmental Conservation
Zone II	Massachusetts Groundwater Protection district – see glossary

Appendix 3

See EG303NE_Appendix3_Reporting Form published separately

National Grid
Storm Water, Wetlands & Priority Habitat Environmental Compliance
Site Inspection / Monitoring Report

Project Name:		**Date:**	
City / Town:		**Time:**	
WO / WR #			

IHC or Contractor? (Company Name):

Current Weather Conditions:

Precipitation Since Last Inspection (Date, Est. Duration and Est. Amount from Each Storm):

Activities / Structures / Locations Inspected:

Identify Locations / Activities / Structures within Designated Priority Habitat (Identify Rare species Observations, if any) and Mitigation / Restoration Measures Implemented:

Any Significant Discharges of Sediment to Water Bodies or Wetlands? (If "yes", state locations):

National Grid
Storm Water, Wetlands & Priority Habitat Environmental Compliance
Site Inspection / Monitoring Report

Compliance with SWPPP Storm Water Controls, O&M Plan, Order of Conditions or Other Applicable Environmental Requirements? (Explain if "no" for any feature inspected):

Additional BMPs or Other Corrective Action Needed and, if so, Where?

Compliance with Previous Observations?

National Grid
Storm Water, Wetlands & Priority Habitat Environmental Compliance
Site Inspection / Monitoring Report

Are Spill Control Supplies Available	**Yes**	**No**
Are Oil and / or Hazardous Materials Stored On Site?	**Yes**	**No**
If So, Are they Properly Labeled and Managed?	**Yes**	**No**
Are Wastes Stored On Site?	**Yes**	**No**
If So, Are they Properly Managed?	**Yes**	**No**

Miscellaneous (e.g., dumping?):

Comments:

Inspection Completed by (Name, Title, Company):

Inspector's Signature for Certification:

National Grid Environmental Dept. Representative - Signature for Certification:

Date:

Appendix 4 – BMPs

See EG303NE_Form1 for a list of BMPS

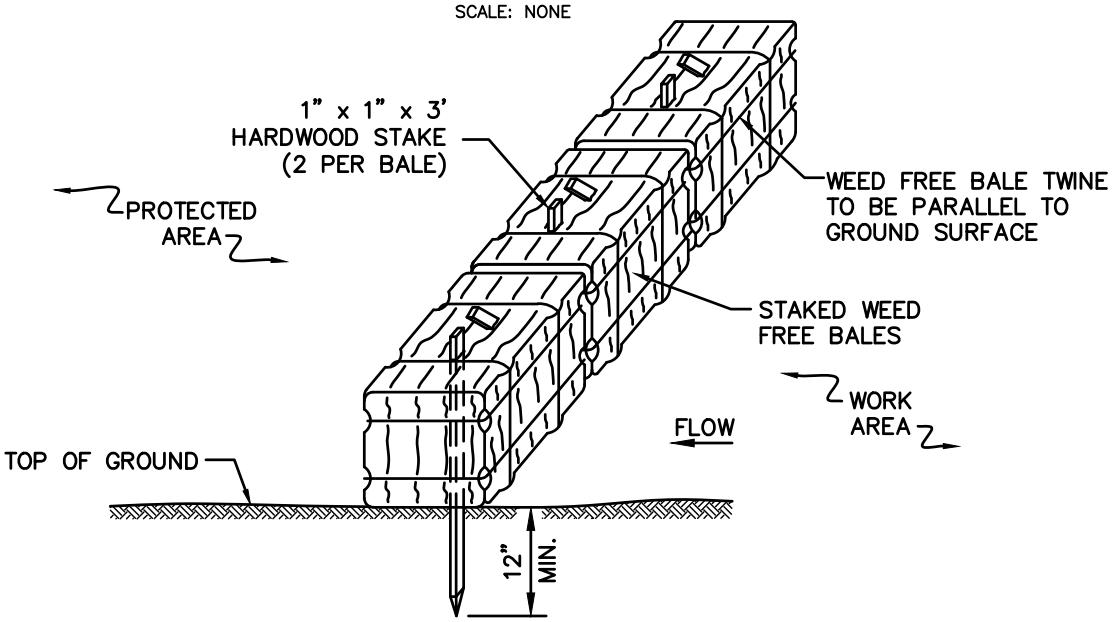
See EG303NE_Form2 for BMP details

	BMP #	Measure
Sediment & Erosion Controls	SEC-1	Weed free bale barrier
	SEC-2	Sediment control fence
	SEC-3	Silt fence / weed free barrier
	SEC-4	Silt Soxx
	SEC-5	Straw Wattle
	SEC-6	Erosion Control Blanket - Ditch
	SEC-7	Erosion Control Blanket - Slope
	SEC-8	Hydroseeding with Tackifier (slope stabilization)
	SEC-9	Mulch materials, rates and uses (from NY)
	SEC-10	Seeding options - Upland Seed Mixes
	SEC-11	Seeding options - Wetland Seed Mix
	SEC-12	Distribution Pole Erosion Control
Crossing Measures	CM-1	Prefabricated mats
	CM-2	Construction mat bridge
	CM-3	Construction mat layout (with transition)
	CM-4	Construction mat layout (with transition & BMPs)
	CM-5	Construction mat - Air Bridge
	CM-6	Corduroy road
	CM-7	Rock Ford
	CM-8	Temporary construction entrance / exit
	CM-9	Temporary construction culvert
	CM-10	Access way stabilization
	CM-11	Construction signage
	CM-12	Construction Mat Anchoring
Advanced Applications	AA-1	Reinforced silt fence
	AA-2	Sediment filter
	AA-3	Stone check dams
	AA-4	Straw / haybale check dam
	AA-5	Waterbar
	AA-6	Sandbag check dam
	AA-7	Earth dike
	AA-8	Drainage swale and lined ditch
	AA-9	Sedimentation basin
	AA-10	Dewatering basin - Small scale
	AA-11	Dewatering basin - Large scale
	AA-12	Dirtbag
	AA-13	Concrete waste sump

	AA-14	Outpak concrete washout
Advanced Applications	AA-15	Barrier fence (construction fence)
	AA-16	ROW gates / fences
	AA-17	Bollard
	AA-18	Dust control
	AA-19	Catch Basin Inlet Protection
	AA-20	Silt Sack
	AA-21	Turbidity Curtain
	AA-22	Siltsoxx Amphibian & Reptile Crossing #1
	AA-23	Siltsoxx Amphibian & Reptile Crossing #2
	AA-24	Siltsoxx Amphibian & Reptile Crossing #3
	AA-25	Cultural Avoidance

BMP DETAIL

SCALE: NONE



NOTES:

1. THE GROUND SHALL BE PREPARED TO PROVIDE COMPLETE CONTACT WITH THE BALES.

BMP PICTURE



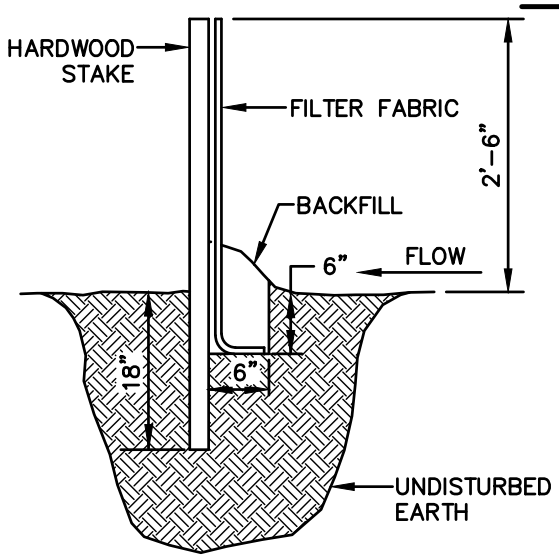
APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES
PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR LATEST AUTHORIZED VERSION PLEASE REFER TO THE NATIONAL GRID ENVIRONMENTAL INFONET SITE.

SEC-1
WEED FREE BALE BARRIER

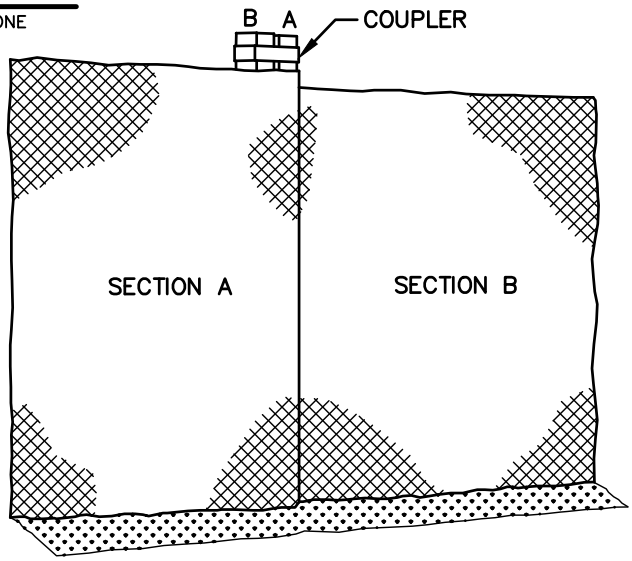
File: BALE_BARRIER.DWG

BMP DETAIL

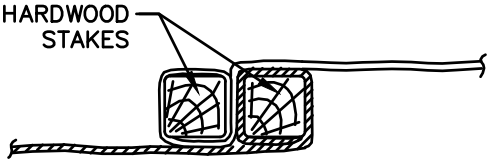
SCALE: NONE



PROFILE



SECTION



PLAN

BMP PICTURE

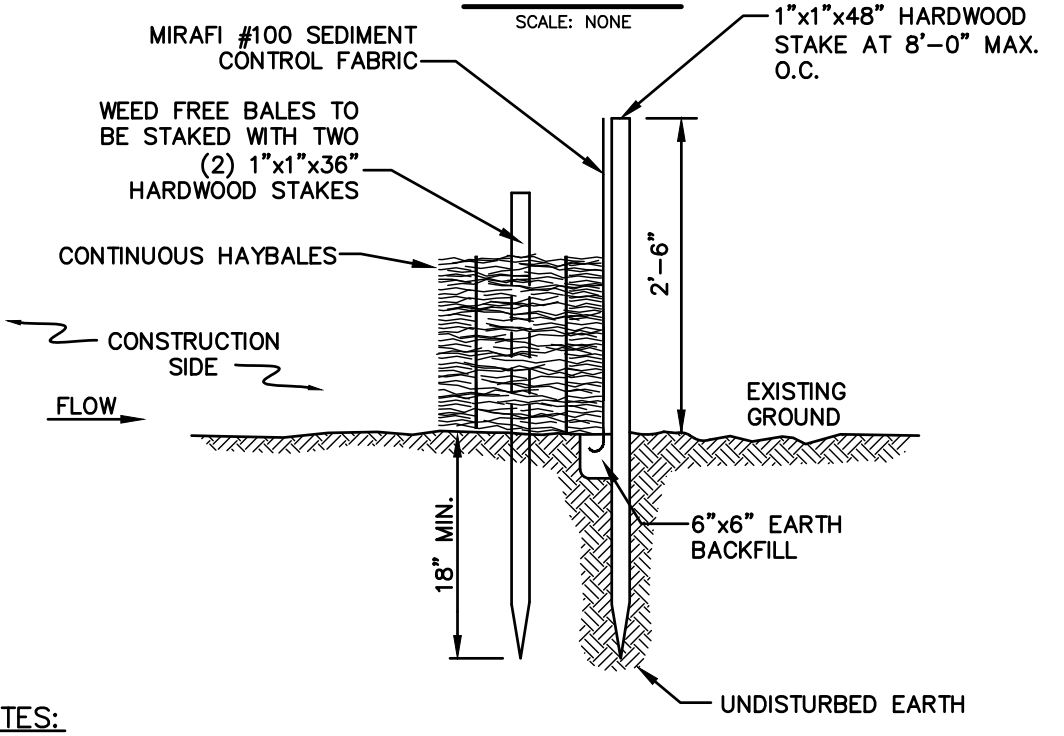


SEC-2
SEDIMENT CONTROL FENCE

File: Sediment_Fence.dwg

BMP DETAIL

SCALE: NONE



NOTES:

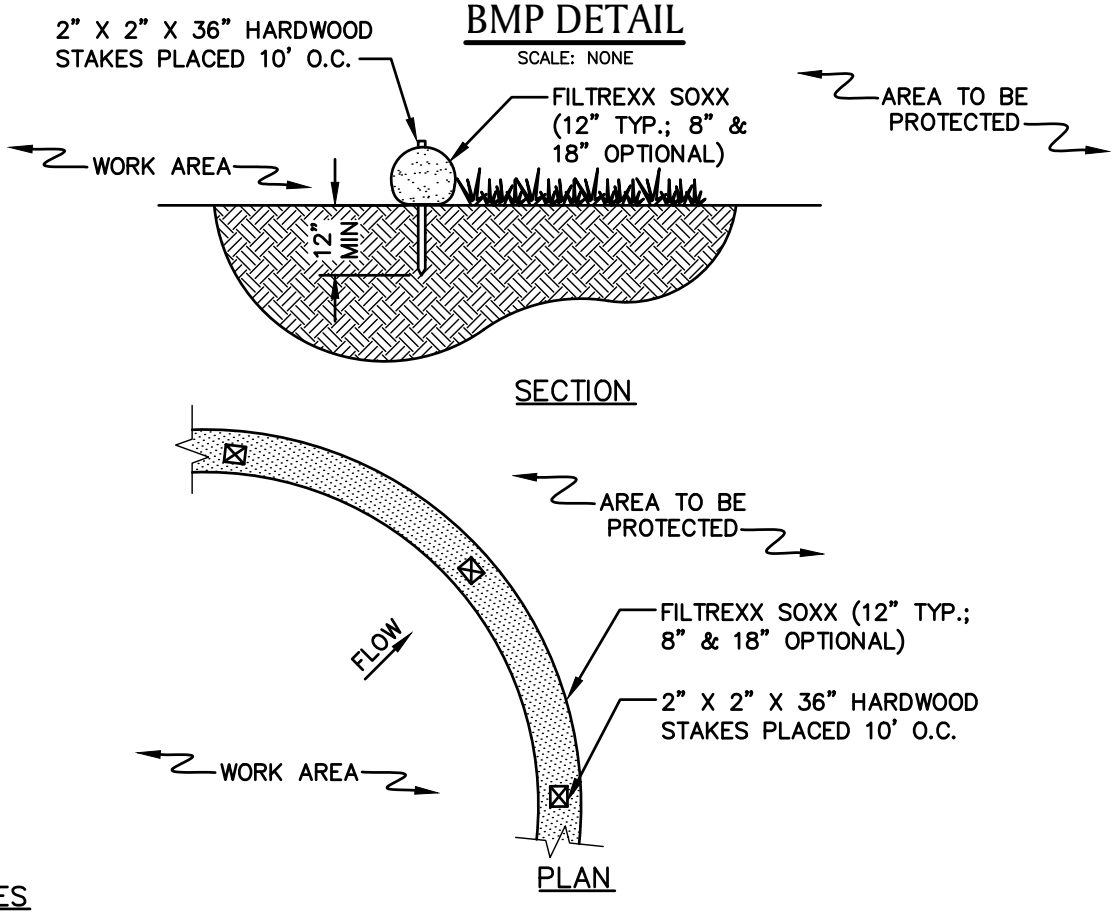
1. BALES SHALL BE PLACED IN A ROW WITH THE ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. BALES SHALL BE SECURELY ANCHORED IN PLACE BY TWO (2) 1"X1"X36" HARDWOOD STAKES DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
3. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
4. BALES SHALL BE REMOVED AND REPLACED WHEN THEY BECOME FILLED WITH SEDIMENT AND BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
5. BALES SHALL BE REMOVED WHEN THE EMBANKMENTS STABILIZE.
6. BALES TO BE TWINE BOUND.

BMP PICTURE



BMP DETAIL

SCALE: NONE



NOTES

1. PRODUCT TO BE FILTREXX SILT SOXX OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
3. FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
4. MESH CONTAINMENT MATERIAL SHOULD BE KNITTED PHOTODEGRADABLE OR BIODEGRADABLE MATERIAL, WITH OPENING SIZES BETWEEN 1/8" – 3/8".
5. COMPOST MEDIA SHOULD HAVE PARTICLE SIZE WHERE 99% < 2", 50% > 1/2".
6. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE



*** PICTURE AND DETAIL PROVIDED BY FILTREXX LAND IMPROVEMENT SYSTEMS**

APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES

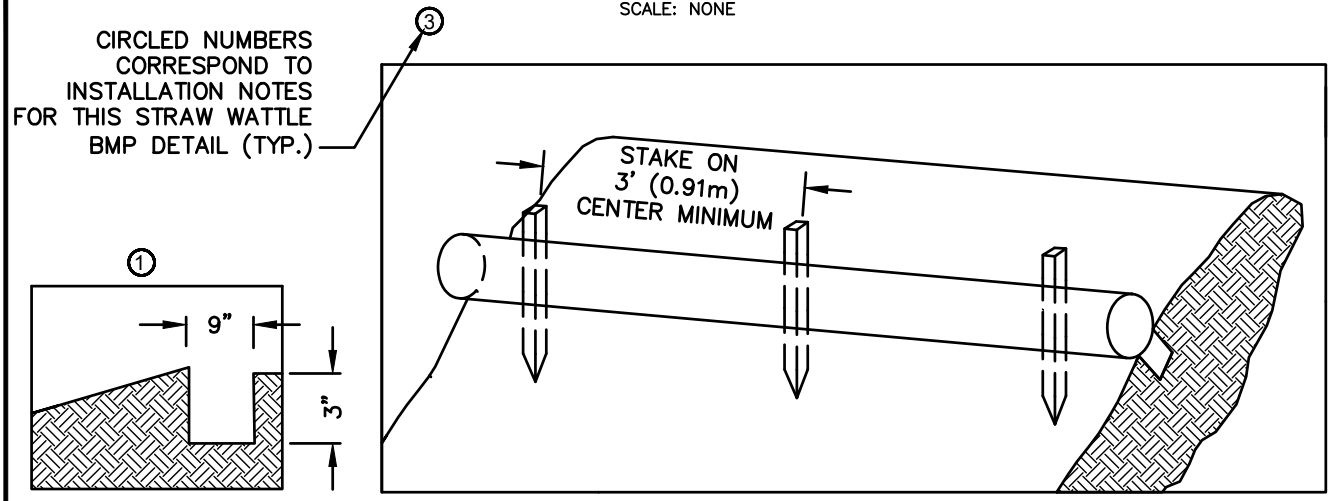
PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR LATEST AUTHORIZED VERSION PLEASE REFER TO THE NATIONAL GRID ENVIRONMENTAL INFONET SITE.

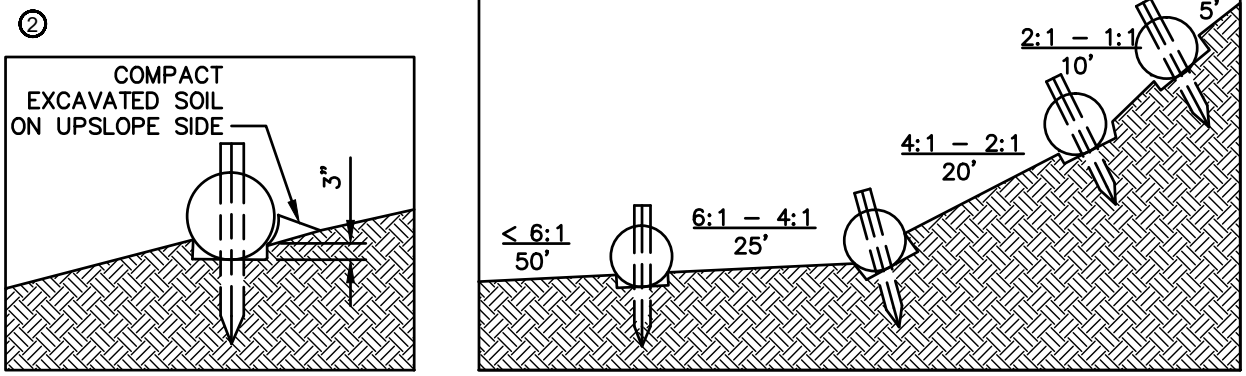
SEC-4
SILT SOXX *

File: SiltSOXX.dwg

BMP DETAIL

SCALE: NONE





TYPICAL WATTLE SPACING DETAIL

NOTES:

1. PRODUCT TO BE TENSAR NORTH AMERICAN GREEN STRAW WATTLE OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. TYPICAL WATTLE SPACING BASED ON SLOPE GRADIENT. COORDINATE SPACING AND LOCATION WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
3. MINIMUM 12" DIAMETER WATTLES SHOULD BE USED FOR HIGHLY DISTURBED AREAS (I.E., HEAVILY USED ACCESS ROAD WITH ADJACENT WETLAND) AND MINIMUM 9–10" WATTLES SHOULD BE USED FOR LESS DISTURBED SOILS.

INSTALLATION NOTES:

1. BEGIN AT THE LOCATION WHERE THE WATTLE IS TO BE INSTALLED BY EXCAVATING A 2–3" DEEP X 9" WIDE TRENCH ALONG THE CONTOUR OF THE SLOPE. EXCAVATED SOIL SHOULD BE PLACED UPSLOPE FROM THE ANCHOR TRENCH.
2. PLACE THE WATTLE IN THE TRENCH SO THAT IT CONTOURS TO THE SOIL SURFACE. COMPACT SOIL FROM THE EXCAVATED TRENCH AGAINST THE WATTLE ON THE UPHILL SIDE. ADJACENT WATTLES SHOULD TIGHTLY ABUT.
3. SECURE THE WATTLE WITH 18–24" HARDWOOD STAKES EVERY 3–4' AND WITH A STAKE ON EACH END. STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE WATTLE LEAVING AT LEAST 2–3" OF STAKE EXTENDING ABOVE THE WATTLE. STAKES SHOULD BE DRIVEN PERPENDICULAR TO THE SLOPE FACE.

*** DETAIL AND PICTURE PROVIDED BY TENSAR NORTH AMERICAN GREEN**

APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES

PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR LATEST AUTHORIZED VERSION PLEASE REFER TO THE NATIONAL GRID ENVIRONMENTAL INFONET SITE.

SEC-5

STRAW WATTLE * (1 OF 2)

File: Straw_Wattle.dwg

BMP PICTURE



STRAW WATTLE – SHALLOW SLOPE (≤4:1)
(ALTERNATE STAKING)

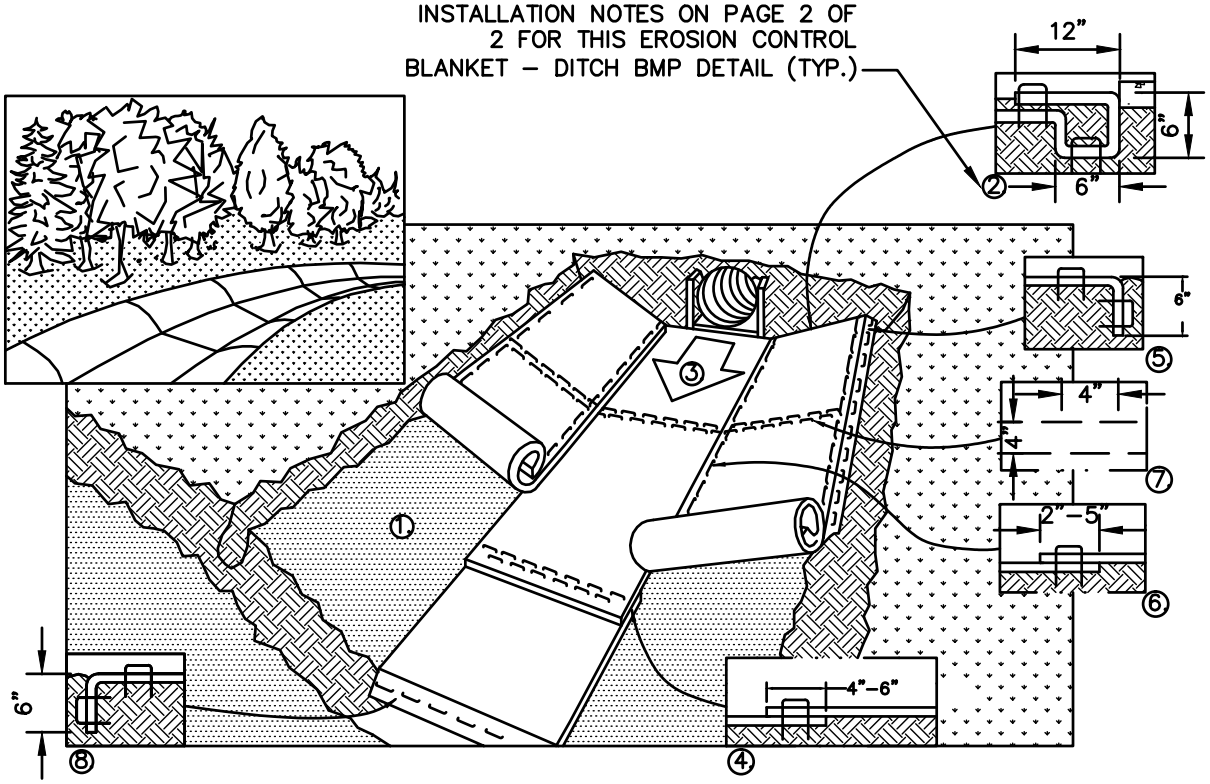
ALTERNATE STAKING INSTALLATION NOTES:

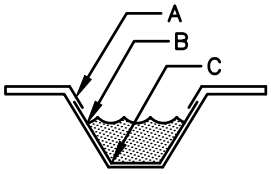
1. ON SHALLOW SLOPES (≤4:1), STRAW WATTLE MAY BE SECURED WITH 18–24" HARDWOOD STAKES DRIVEN AGAINST THE SIDES OF THE WATTLE INSTEAD OF THROUGH. STAKES SHALL ALTERNATE SIDES, AND BE SPACED 3–4' MAX.
2. TWINE SHALL BE TIED FROM STAKE TO STAKE, CRISS–CROSSING THE STRAW WATTLE. TIE TWINE TO STAKES BELOW THE HEIGHT OF THE WATTLE.

BMP DETAIL

SCALE: NONE

CIRCLED NUMBERS CORRESPOND TO INSTALLATION NOTES ON PAGE 2 OF 2 FOR THIS EROSION CONTROL BLANKET – DITCH BMP DETAIL (TYP.)





CRITICAL POINTS
A. OVERLAPS AND SEAMS
B. PROJECTED WATER LINE
C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

NOTES:

1. PRODUCT TO BE NORTH AMERICAN GREEN EROSION CONTROL BLANKET OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.
3. IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY ANCHOR THE ROLLED EROSION CONTROL PRODUCTS (RECP's).

BMP DETAIL

INSTALLATION NOTES:

1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30 CM) OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMAPCT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) ACROSS THE WIDTH OF THE RECP's.
3. ROLL CENTER RECP's IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. ™ WHEN USING THE DOT SYSTEM , STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. PLACE CONSECUTIVE RECP's END OVER END (SHINGLE STYLE) WITH A 4" – 6" (10 CM –15 CM) OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10 CM) APART AND 4" (10 CM) ON CENTER TO SECURE RECP's.
5. FULL LENGTH EDGE OF RECP's AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT RECP's MUST BE OVERLAPPED APPROXIMATELY 2" – 5" (5 CM –12.5 CM) (DEPENDING ON RECP's TYPE) AND STAPLED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT (9 M – 12 M) INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10 CM) APART AND 4" (10 CM) ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
8. THE TERMINAL END OF THE RECP's MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.

BMP PICTURE



*** PICTURE AND DETAIL PROVIDED BY TENSAR NORTH AMERICAN GREEN**
APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES

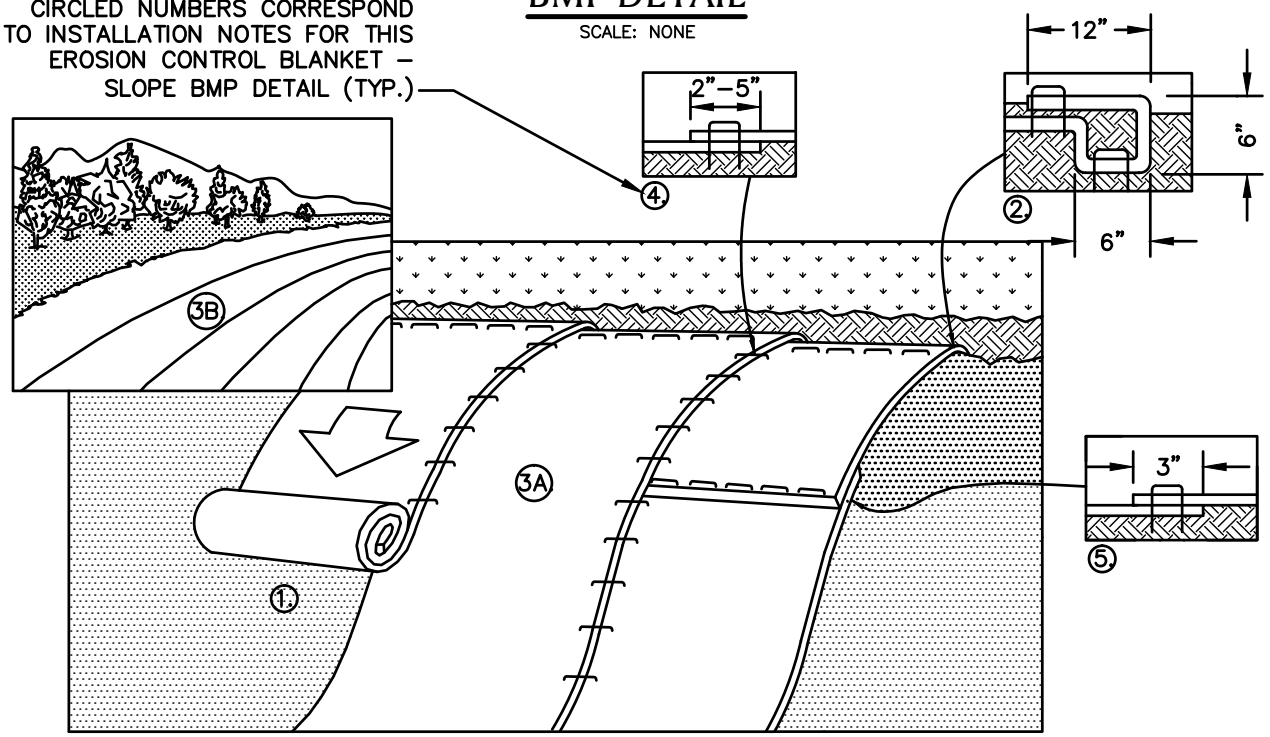
PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR LATEST AUTHORIZED VERSION PLEASE REFER TO THE NATIONAL GRID ENVIRONMENTAL INFONET SITE.

SEC-6
EROSION CONTROL BLANKET - DITCH * (2 OF 2)

File: Erosion_Blanket_Ditch.dwg

BMP DETAIL

SCALE: NONE



NOTES:

1. PRODUCT TO BE NORTH AMERICAN GREEN EROSION CONTROL BLANKET OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. IN LOOSE SOIL CONDITIONS, THE USE OF STAPLES OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.

INSTALLATION NOTES:

1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL–O–SEED DO NOT SEED PREPARED AREA. CELL–O–SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30 CM) OF RECP's EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECP's.
3. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM , STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" – 5" (5 CM – 12.5 CM) OVERLAP DEPENDING ON RECP's TYPE.
5. CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP's WIDTH.

*** PICTURE AND DETAIL PROVIDED BY TENSAR NORTH AMERICAN GREEN**

SEC-7
EROSION CONTROL BLANKET - SLOPE * (1 OF 2)

File: Erosion_Blanket_Slope.dwg

BMP PICTURE



File: Erosion_Blanket_Slope.dwg

*** PICTURE AND DETAIL PROVIDED BY TENSAR NORTH AMERICAN GREEN**
APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES
PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR LATEST AUTHORIZED VERSION PLEASE REFER TO THE NATIONAL GRID ENVIRONMENTAL INFONET SITE.

SEC-7
EROSION CONTROL BLANKET - SLOPE * (2 OF 2)

BMP PICTURE



NOTES:

1. COORDINATE MIXTURE TYPE AND APPLICATION AREAS WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST PRIOR TO CONSTRUCTION.
2. A MINIMUM OF 1500 LBS. PER ACRE OF A PAPER/CORN FIBER OR EQUIVALENT WITH NATURAL TACKIFIERS WILL BE USED ON SLOPES LESS THAN 3:1.
3. A BFM (BONDED FIBER MATRIX) WILL BE USED ON SLOPES GREATER THAN 2:1.
4. A FGM (FLEXIBLE GROWTH MATRIX) OR ESM (EXTREME SLOPE MATRIX) WILL BE USED ON SLOPES GREATER THAN 1:1.
5. REFER TO BMP #10 FOR SEED MIXTURE OPTIONS.

*** PICTURE PROVIDED BY TENSAR NORTH AMERICAN GREEN**
*** TACKIFIER INFORMATION PROVIDED BY FILTREXX LAND IMPROVEMENT SYSTEMS AND TENSAR NORTH AMERICAN GREEN**

APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES
PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR LATEST AUTHORIZED VERSION PLEASE REFER TO THE NATIONAL GRID ENVIRONMENTAL INFONET SITE.

SEC-8
HYDROSEEDING WITH TACKIFIER
(SLOPE STABILIZATION) *

File: Hydroseeding.dwg

BMP

Definition

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface.

Purpose

The primary purpose is to provide initial erosion control while a seeding or shrub planting is establishing. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch is also used alone for temporary stabilization in non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedings and shrub plantings. Mulch is useful on soils with low infiltration rates by retarding runoff.

Criteria

Site preparation prior to mulching requires the installation of necessary erosion control or water management practices and drainage systems.

Slope, grade and smooth the site to fit needs of selected mulch products.

Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Apply mulch after soil amendments and planting is accomplished or simultaneously if hydroseeding is used.

Select appropriate mulch material and application rate or material needs. Determine local availability.

Select appropriate mulch anchoring material.

NOTE: The best combination for grass/legume establishment is straw (cereal grain) mulch applied at 2 ton/acre (90 lbs./1000sq.ft.) and anchored with wood fiber mulch (hydromulch) at 500 – 750 lbs./acre (11 – 17 lbs./1000 sq. ft.). The wood fiber mulch must be applied through a hydroseeder immediately after mulching.



NOTE:

1. PICTURE DEPICTS STRAW MULCH APPLICATION (FROM MULCH SPREADER) ON STEEP SLOPE WITH AN IMPROVED DRAINAGE SWALE.
2. COORDINATE MULCH MATERIALS AND RATES WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

* BMP INFORMATION FROM "NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (AUGUST, 2005)." INFORMATION OBTAINED VIA WEBSITE: http://www.dec.ny.gov/chemical/29066.html

SEC-9
MULCH MATERIALS, RATES AND USES (FROM NY) *

File: Mulch_Materials.dwg

UPLAND ROW RESTORATION MIX – GENERAL

Species Composition Options:

- Andropogon gerardii; Niagra Big Bluestem
- Schizachyrium scoparium; Little Bluestem
- Elymus Canadensis; Canada Wild Rye
- Elymus virginicus; Virginia Wildrye
- Lolium multiflorum; Annual Ryegrass
- Sorghastrum nutans; Indiangrass
- Chamaecrista fasciculate; Partridge Pea
- Desmodium canadense; Showy Tick Trefoil
- Helioposis helianthoides; Ox–Eye Sunflower
- Panicum virgatum; Switchgrass
- Rudbeckia hirta; Black Eyed Susan
- Poa palustris; Fowl Bluegrass
- Agrostis perennans; Upland Bentgrass
- Agrostis alba; Redtop
- Festuca rubra; Red Fescue
- Lotus corniculatus; Birds–Foot Trefoil
- Chrysanthemum leucanthem; Ox–Eye Daisy
- Aster novae–angliae; New England Aster

Example Seed Mixes:

1. Native Upland wildlife forage and Cover Meadow Mix – Ernst Conservation Seeds (ERNMX–123)
2. Eastern Ecotype Native Grass Mix– Ernst Conservation Seeds (ERNMX–177)
3. New England Native Warm Season Grass Mix – New England Wetland Plants, Inc.
4. New England Logging Road Mix – New England Wetland Plants, Inc.
5. Northeast Upland Wildflower/Restoration Erosion Mix – Southern Tier Consulting (STCMX–2)

UPLAND ROW RESTORATION MIX – DRY/ROCKY SITES

Species Composition Options:

- Festuca rubra; Red Fescue
- Schizachyrium scoparium; Little Bluestem
- Elymus Canadensis; Canada Wild Rye
- Bouteloua gracillis; Blue Grama
- Lolium multiflorum; Annual Ryegrass
- Lolium perenne; Perennial Ryegrass
- Agrostics scabra; Rough Bentgrass
- Agrostis perennans; Upland Bentgrass
- Sorghastrum nutans; Indiangrass

Example Seed Mixes:

1. New England Erosion Control/ Restoration Mix for Dry Sites – New England Wetland Plants, Inc.
2. Ernst Conservation Seeds and similar companies can create a custom seed mix matching the composition above (with site specific additions if necessary).

WETLAND ROW RESTORATION MIX

Species Composition Options:

- Agrostis stolonifera; Creeping Bentgrass
- Poa trivialis; Rough Bluegrass
- Alopecurus arundinaceus; Creeping Meadow Foxtail
- Lolium multiflorum; Annual Ryegrass
- Festuca rubra; Creeping Red Fescue
- Elymus virginicus; Virginia Wildrye
- Schizachyrium scoparium; Little Bluestem
- Andropogon gerardii; Niagra Big Bluestem
- Carex vulpinoidea; Fox sedge
- Panicum virgatum; Switchgrass
- Agrostis scabra; Rough Bentgrass
- Aster novae–angliae; New England Aster
- Eupatorium perfoliatum; Boneset
- Euthamia graminifolia; Grass Leaved Goldenrod
- Scirpus atrovirens; Green Bulrush
- Verbene hastate; Blue Vervain
- Juncus effusus; Soft Rush
- Scirpus cyperinus; Wool Grass
- Panicum clandestinum; Deertongue

Example Seed Mixes

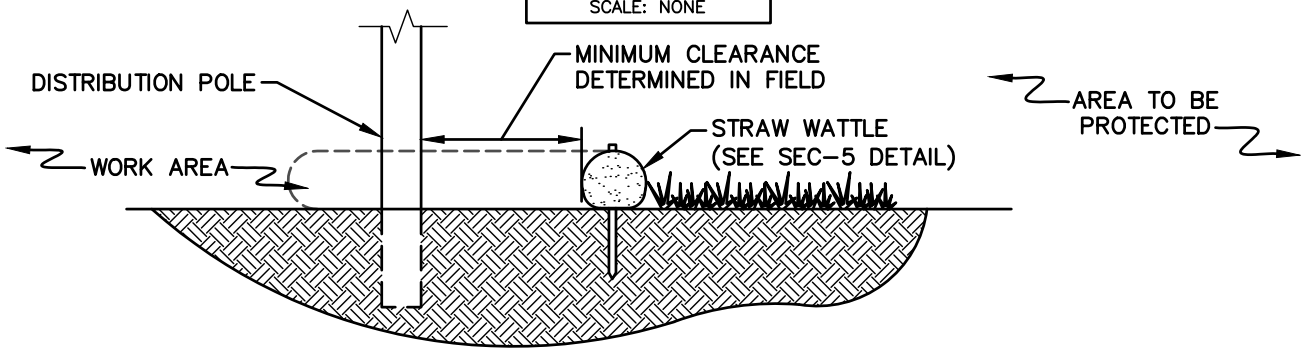
1. New England Erosion Control/Restoration Mix for Detention Basins and Moist Sites – New England Wetland Plants, Inc.
2. Northeast Wetland Grass Seed Mix – Southern Tier Consulting (STCMX–7)
3. Ernst Conservation Seeds and similar companies can create a custom seed mix matching the composition above (with site specific additions if necessary).

GERNERAL NOTES:

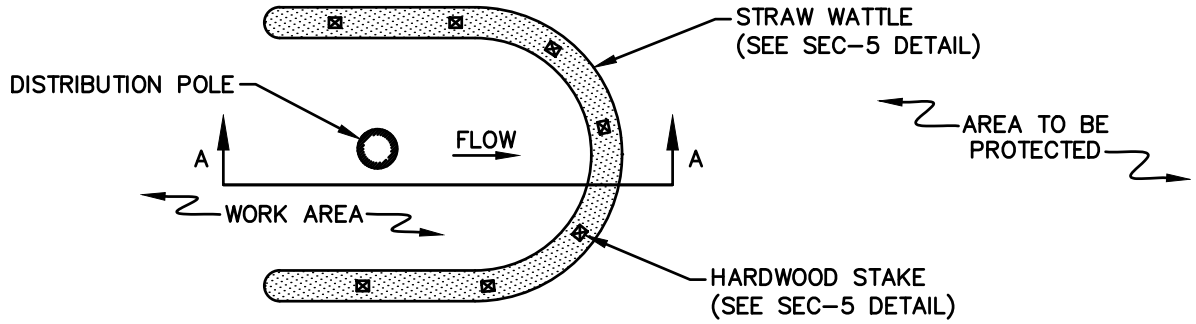
1. Seed mixes described herein are intended to cover a variety of typical new england landscapes. However, site specific seed mixes will need to be evaluated in coastal or mountainous regions.
2. Seed mixes described herein are intended for general ROW restoration. Site specific wetland seed mixes may be required by local, state and/or federal regulators for certain impacts to wetlands.
3. All seed mixes are to be approved by National Grid Environmental Scientist prior to construction and must conform with all project permits.
4. Seedbed preparation and maintenance as well as temporary erosion and sediment controls are crucial to the establishment of newly seeded areas. Coordinate with National Grid Environmental Scientist on seed bed preparation and maintenance as well as temporary erosion and sediment controls prior to construction.

BMP DETAIL

SCALE: NONE



SECTION A–A



PLAN

NOTES

1. PRODUCT TO BE STRAW WATTLE OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST (SEE SEC–5 BMP DETAIL).
2. STRAW BALE BARRIER PER SEC–1 BMP DETAIL TO BE AN AVAILABLE ALTERNATE DEPENDING ON SITE CONDITIONS AT THE DIRECTION OF NATIONAL GRID ENVIRONMENTAL SCIENTIST (SEE FIGURE 2).
3. MINIMUM CLEARANCE BETWEEN POLE AND EROSION CONTROL TO BE DETERMINED BY CONDITIONS OF POLE INSTALLATION/REPLACEMENT WORK AND ASSOCIATED DISTURBANCE.

BMP PICTURE



FIGURE 1: TYP. STRAW WATTLE APPLICATION



FIGURE 2: ALT. STRAW BALE APPLICATION

BMP PICTURE

SCALE: NONE

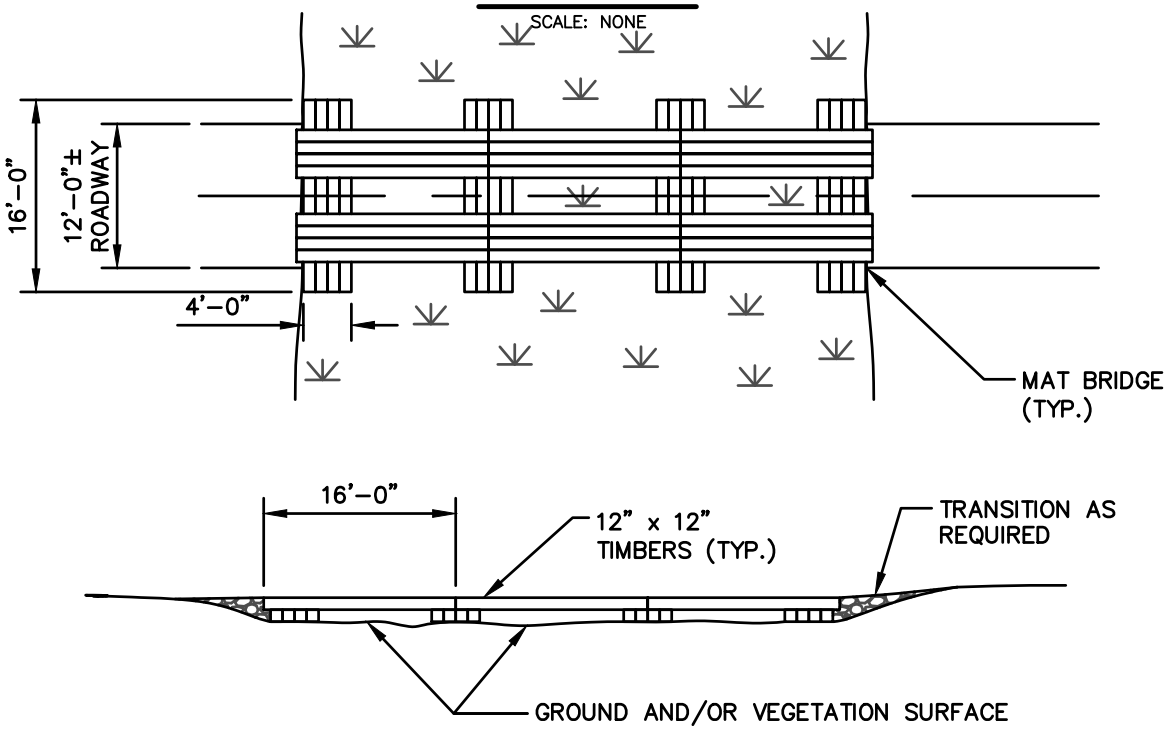


NOTES:

1. PRODUCT TO BE ALTURNAMATS' PREFABRICATED MATS OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. PRODUCT AVAILABLE IN 4X8' UNITS.
3. IF MATS ARE INSTALLED IN A WETLAND AREA, INSTALL EROSION CONTROLS TO CONTAIN MATERIAL UTILIZED IN THE MAT TRANSITIONS.

BMP DETAIL

SCALE: NONE



NOTES:

1. IF MATS ARE INSTALLED IN A WETLAND AREA, INSTALL EROSION CONTROLS TO CONTAIN MATERIAL UTILIZED IN THE MAT TRANSITIONS.

BMP PICTURE



CM-2
CONSTRUCTION MAT BRIDGE
(1 OF 2)

APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES
PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR LATEST AUTHORIZED VERSION PLEASE REFER TO THE NATIONAL GRID ENVIRONMENTAL INFONET SITE.

File: Mat_Bridge.dwg

BMP PICTURE - SINGLE SPAN

SCALE: NONE





NOTES:

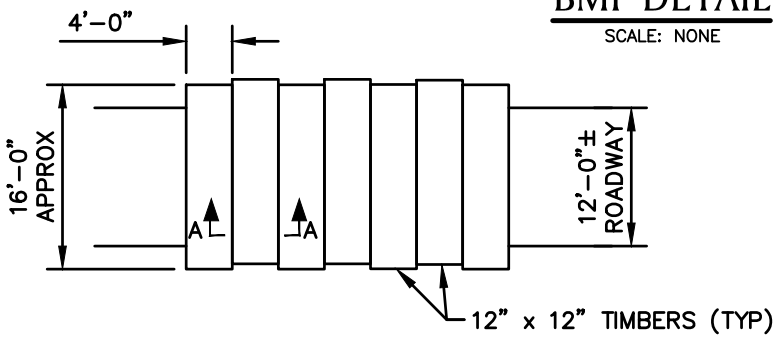
1. WHERE STREAM WIDTH ALLOWS, INSTALL CONSTRUCTION MATS TO SPAN THE WATERCOURSE IN ITS ENTIRETY WITHOUT STRINGER PLACEMENT IN THE WATER OR ANY RESTRICTION OF STREAM FLOW.

2. INSTALLATION OF THE CONSTRUCTION MAT BRIDGE SHALL NOT DAMAGE THE STREAM BED AND BANKS. WHERE POSSIBLE, FOOTERS SHALL BE PLACED PARALLEL TO THE TOP OF THE STREAM BANKS, WITH ACCESS MATTING PLACED ACROSS THE TOP OF THE STRINGERS DISTRIBUTING THE WEIGHT OF THE CONSTRUCTION EQUIPMENT.

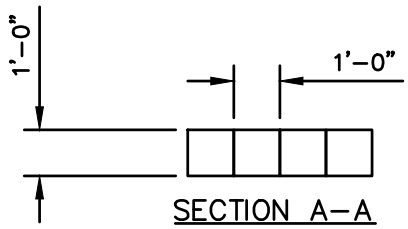
3. AT STREAM CROSSINGS THAT CANNOT BE SPANNED BY A SINGLE SECTION OF CONSTRUCTION MATTING, AND WHERE PERMITS ALLOW, STRINGERS SHALL BE PLACED ATOP THE STREAM BED PARALLEL TO THE FLOW OF WATER.

BMP DETAIL

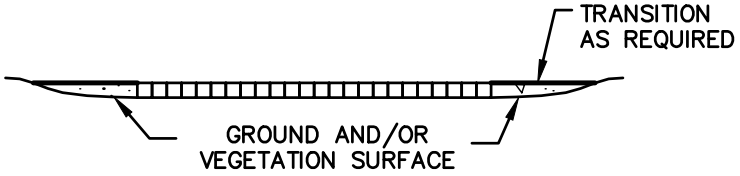
SCALE: NONE



TYPICAL PLAN VIEW



SECTION A–A
TYPICAL MAT SECTION
BOLTED TOGETHER



TYPICAL SECTION VIEW

NOTES:

1. TO BE INSTALLED IF NECESSARY TO PREVENT RUTTING, TO ACCESS STRUCTURES.
2. THIS DETAIL SHOWS TYPICAL DIMENSIONS. SOME CONTRACTOR'S CONSTRUCTION MATS ARE DIMENSIONALLY DIFFERENT FROM WHAT IS SHOWN HERE.
3. DEPENDENT ON SITE CONDITIONS, MULTIPLE LAYERS OF CONSTRUCTION MATS MAY BE INSTALLED.

BMP PICTURE



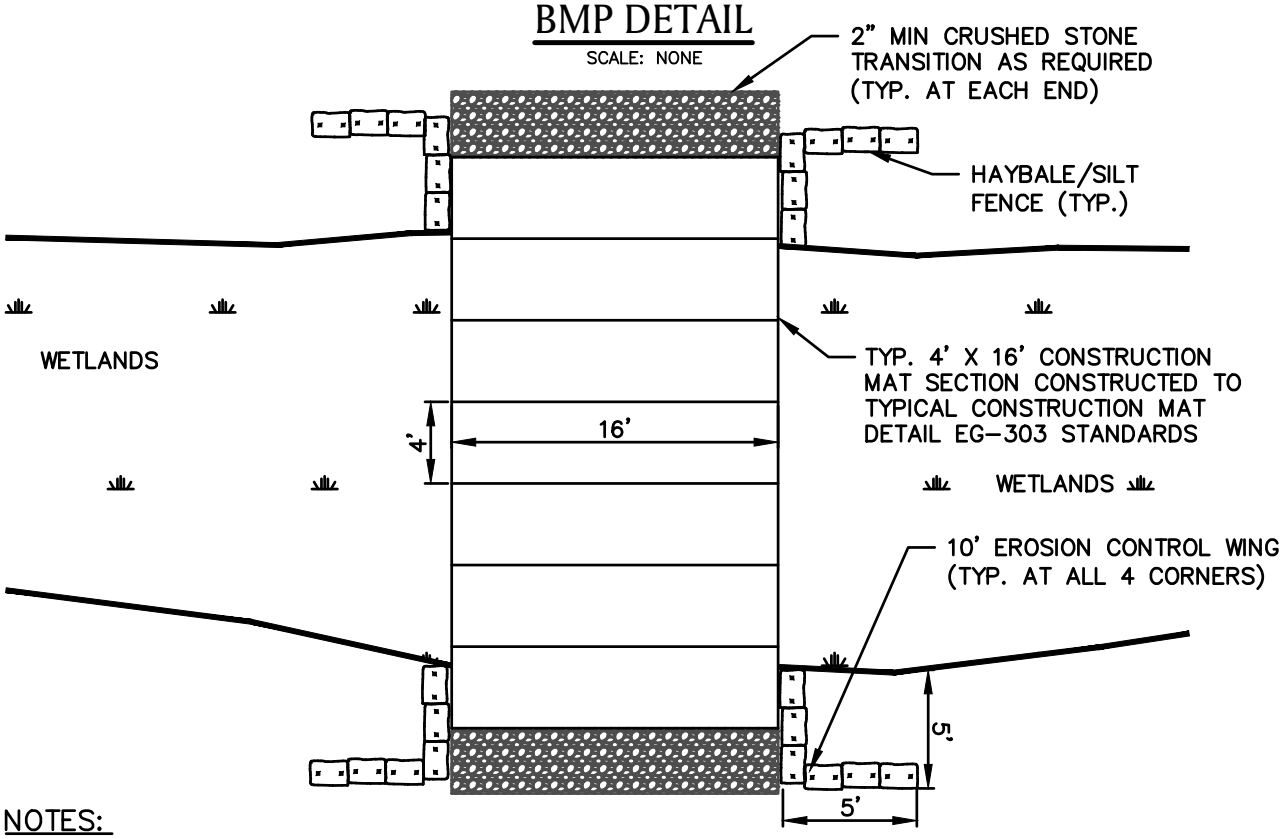
CM-3
CONSTRUCTION MAT LAYOUT
(WITH TRANSITION)

APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES
PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR LATEST AUTHORIZED VERSION PLEASE REFER TO THE NATIONAL GRID ENVIRONMENTAL INFONET SITE.

File: Swamp_Mat_Layout.dwg

BMP DETAIL

SCALE: NONE



NOTES:

1. ADD FILTER FABRIC AS NEEDED UNDER STONE TRANSITION RAMPS.
2. ALL MEASUREMENTS AND LOCATIONS ARE APPROXIMATE.

BMP PICTURE



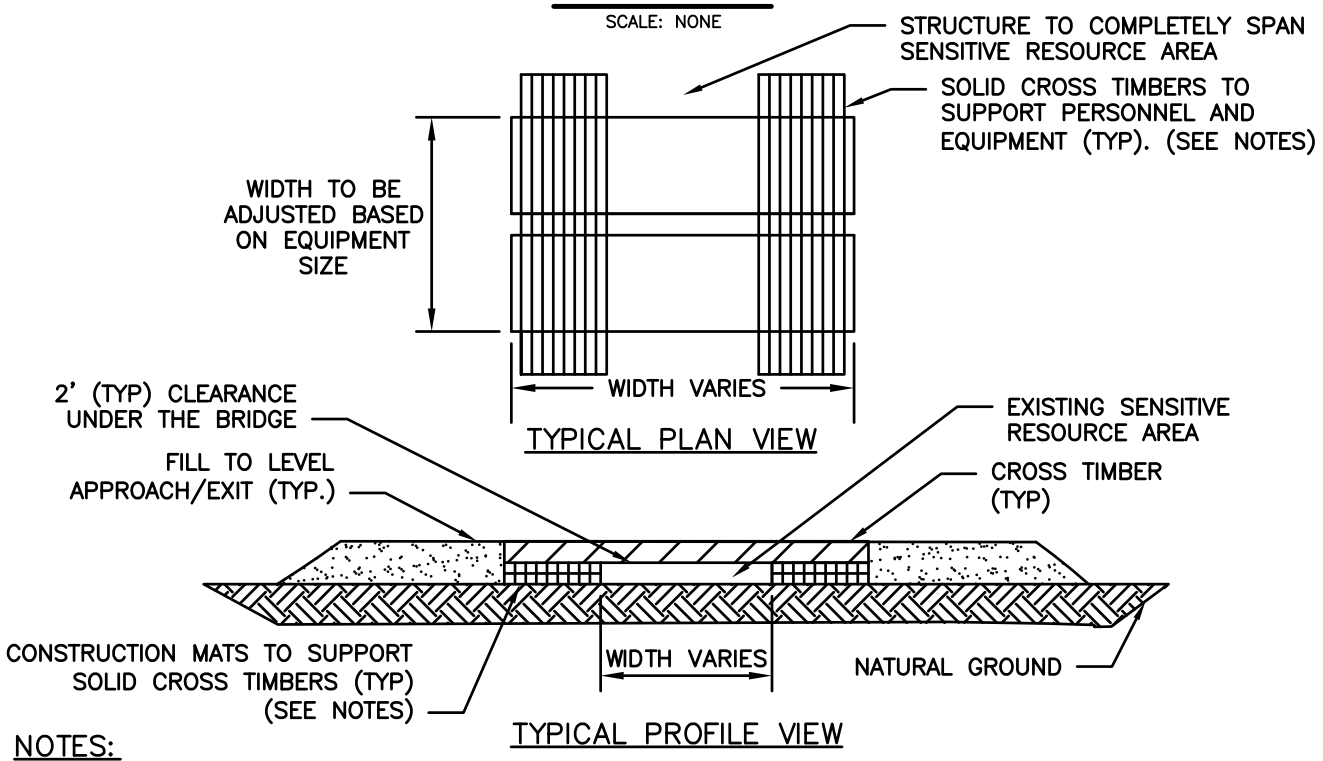
CM-4
CONSTRUCTION MAT LAYOUT
(WITH TRANSITION AND BMPs)

APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES
PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR LATEST AUTHORIZED VERSION PLEASE REFER TO THE NATIONAL GRID ENVIRONMENTAL INFONET SITE.

File: Swamp_Mat_Transition and BMPs.dwg

BMP DETAIL

SCALE: NONE



NOTES:

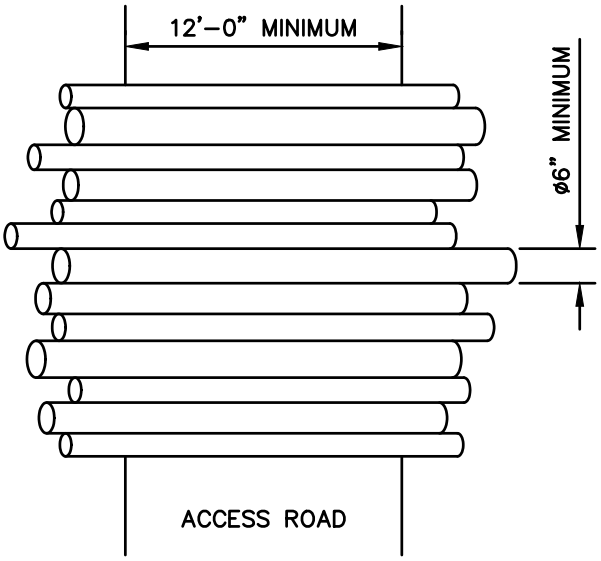
1. THE DETAIL SHOWN IS CONCEPTUAL. CONSTRUCTION MATS AND CROSS TIMBERS SHALL BE SIZED AND SELECTED BASED ON SPAN WIDTH, CROSSING EQUIPMENT AND FIELD CONDITIONS.
2. THE NUMBER OF CONSTRUCTION MATS MAY VARY DEPENDING ON THE CLEARANCE HEIGHT.
3. EQUIPMENT AND PERSONNEL LOAD SHALL BE DISTRIBUTED ON ALL TIMBERS.
4. EACH EQUIPMENT OPERATOR AND USER OF THE FIELD BRIDGE SHALL BE FAMILIAR WITH THE DESIGN AND THE MAXIMUM EQUIPMENT AND PERSONNEL LOADS.
5. THIS DETAIL MAY NOT BE APPLICABLE IN ALL FIELD CONDITIONS.
6. INSTALL EROSION CONTROLS ADJACENT TO THE CULVERT ENDS TO PROTECT THE WATERWAY FROM ROADWAY DEBRIS.

BMP PICTURE



BMP DETAIL

SCALE: NONE



RANDOM LENGTH AND DIAMETER LOGS PLACED ACROSS AN ACCESS ROAD

NOTE:

1. A SIMILAR BRUSH MAT INSTALLATION CONSISTING OF SMALLER DIAMETER STEMS AND LOGS CAN BE USED.
2. CORDUROY ROADS SHALL ONLY BE USED IN EMERGENCIES OR AFTER APPROVAL FROM THE PROJECT ENVIRONMENTAL CONSULTANT OR NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE

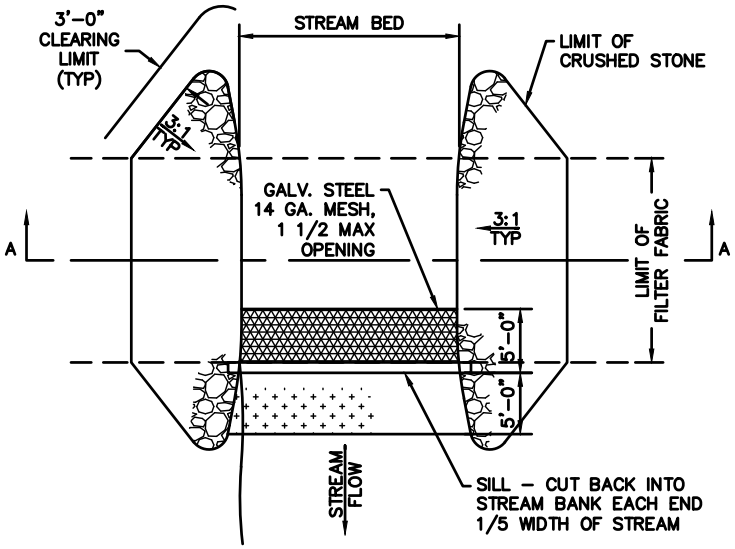


CM-6
CORDUROY ROAD

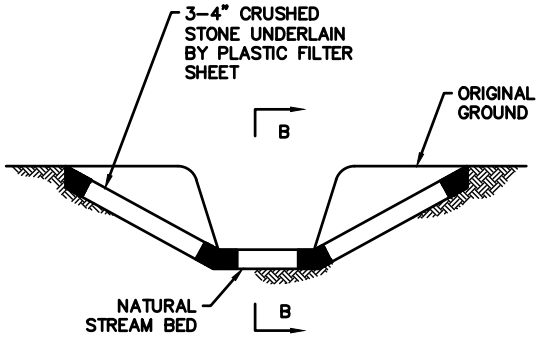
File: Corduroy_Road.dwg

BMP DETAIL

SCALE: NONE



PLAN VIEW



SECTION 'A-A'

BMP PICTURE





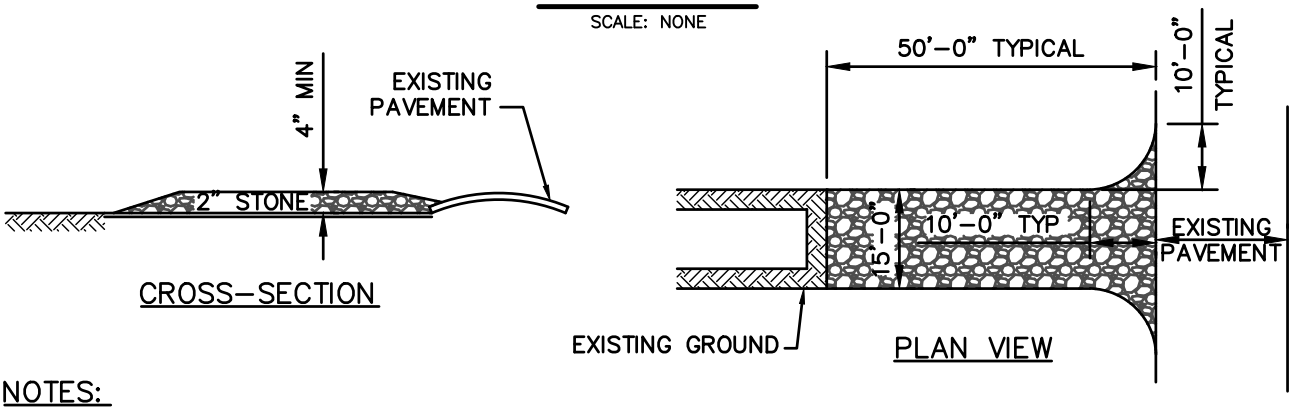
APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES
PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR LATEST AUTHORIZED VERSION PLEASE REFER TO THE NATIONAL GRID ENVIRONMENTAL INFONET SITE.

CM-7
ROCK FORD

File: Rock_Ford.dwg

BMP DETAIL

SCALE: NONE



NOTES:

1. STONE SIZE – USE 2" STONE (MINIMUM) TO 6" STONE (MAXIMUM)
2. LENGTH – GREATER THAN OR EQUAL TO 50 FEET
3. THICKNESS – 4"
4. WIDTH – FIFTEEN (15) FOOT TYP., BUT NOT LESS THAN FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
5. SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS ENTRANCE. IF PIPING IS IMPRACTICAL, MOUNTABLE BERM SHALL BE PERMITTED.
6. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY MUST BE REMOVED IMMEDIATELY.
7. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED.
8. THE CLEAN STONE SHOULD BE INSTALLED OVER A GEOTEXTILE FABRIC. GEOTEXTILE FABRIC MAY BE OMITTED FOR PERMANENT CONSTRUCTION ENTRANCES/EXITS ON A CASE–BY–CASE BASIS WITH THE APPROVAL OF THE NATIONAL GRID ENVIRONMENTAL SCIENTIST.
9. FOLLOWING CONSTRUCTION, THE CONSTRUCTION ENTRANCE/EXIT SHALL BE REMOVED AND THE AREA GRADED, SEEDED, AND MULCHED AS NEEDED. ENTRANCE/EXITS MAY REMAIN DEPENDING UPON FUTURE ACCESS NEEDS AND/OR PROJECT–SPECIFIC APPROVALS BUT REQUIRES APPROVALS FROM THE NATIONAL GRID ENVIRONMENTAL SCIENTIST AND PROPERTY LEGAL.

BMP PICTURE

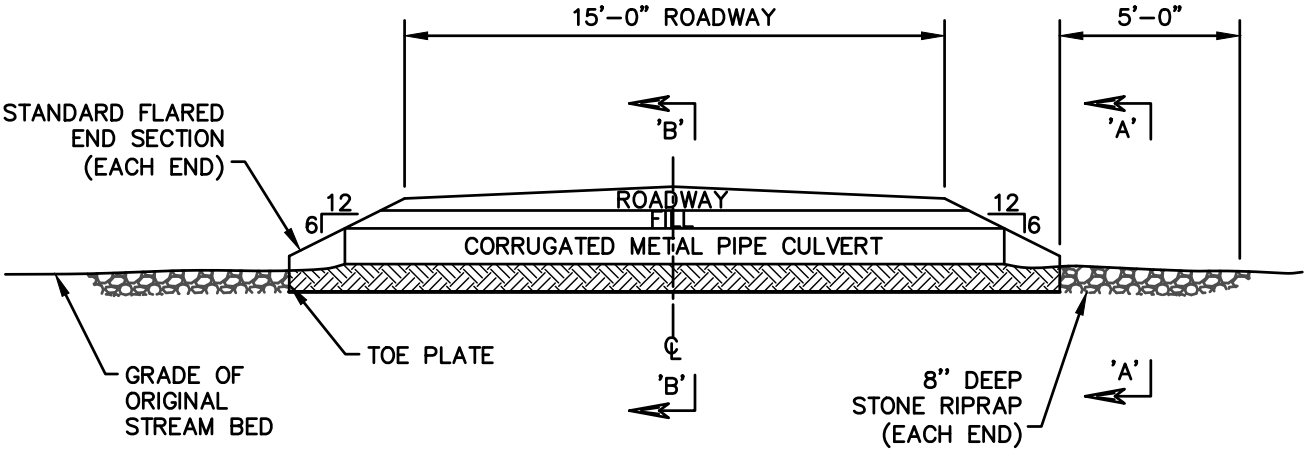


CM-8
TEMPORARY CONSTRUCTION ENTRANCE/ EXIT

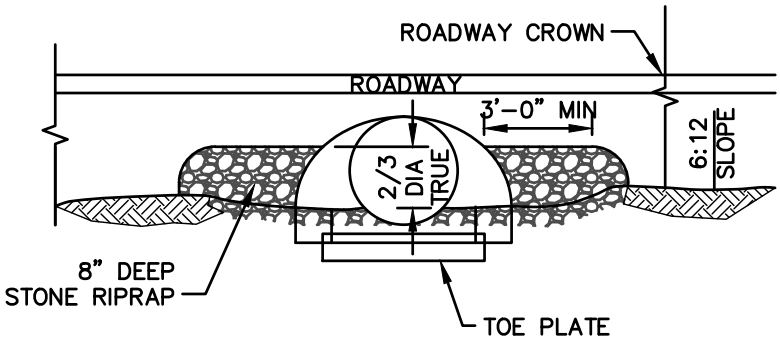
File: Temp_Construction_Ent.dwg

BMP DETAIL

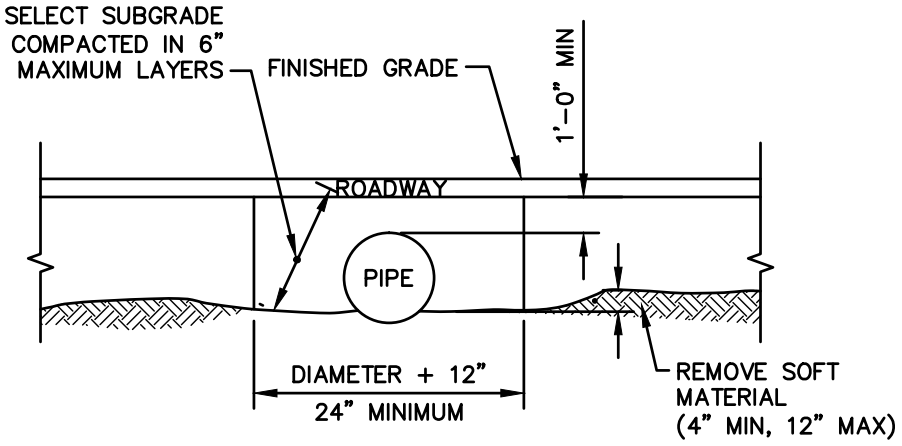
SCALE: NONE



CROSS SECTION



SECTION 'A–A'
(SAME BOTH ENDS)



SECTION 'B–B'

CM-9
TEMPORARY CONSTRUCTION
CULVERT (1 OF 2)

File: Temp_Constr_Culvert.dwg

BMP DETAIL

SCALE: NONE

NOTES:

1. CULVERT DESIGN AND LAYOUT SHALL BE COORDINATED WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST (NGES).
2. CROWN ROADWAY 1/2 INCH PER FOOT.
3. LAY THE CULVERT STRAIGHT AND AS NEARLY AS POSSIBLE ALONG THE EXISTING STREAM BED AND WITH THE INVERTS AT OR SLIGHTLY BELOW BED ELEVATION.
4. CORRUGATED METAL PIPE IS TO BE GALVANIZED STEEL, OR ALUMINIZED STEEL (TYPE 2), WITH BOLTED CONNECTORS.
5. DIAMETERS SHALL BE AS PER THE PROJECT DRAWINGS AND THE SPECIFICATION. THE PIPE GAGE SHALL BE AS FOLLOWS:

DIAMETER (INCHES)	GAGE
12" – 15"	.004"
18" – 24"	.079"
30" – 36"	.109"

6. INSTALLATION OF CULVERTS LARGER THAN 36 INCH DIAMETER SHALL REQUIRE SPECIAL ENGINEERING DESIGN.
7. SELECT SUBGRADE SHALL BE A GRANULAR MATERIAL AS DESCRIBED IN NYSDOT SPECIFICATION ITEM 203–2.02C, OR AS APPROVED BY A NGES.
8. STONE RIPRAP SHALL BE AS DESCRIBED IN NYSDOT SPECIFICATION ITEM 203–2.02D, WITH 8 INCH MAXIMUM SIZE, OR AS APPROVED BY A NGES. EXCEPT WHERE PROTECTED BY STONE, ALL EMBANKMENT SLOPES ARE TO BE STABILIZED, MULCHED AND SEEDED AS PER PROJECT SPECIFICATIONS.
9. OUTLET SHOULD BE CONFIGURED NOT TO CREATE HYDRAULIC JUMP OR PLUNGE POOL.
10. INSTALL EROSION CONTROLS ADJACENT TO THE CULVERT ENDS TO PROTECT THE WATERWAY FROM ROADWAY DEBRIS.

BMP PICTURE



BMP PICTURE



NOTE:

1. PICTURE SHOWS VIEW OF ACCESS WAY STABILIZATION ADJACENT TO A WETLAND.
2. COORDINATE STABILIZATION DESIGN AND PRODUCT WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE




NO ACCESS – WETLAND/STREAM CROSSING MATS REQUIRED







NO ACCESS – A.) PROJECT LIMITS E.G. ROW LIMITS
B.) HISTORICAL/CULTURAL
C.) ENVIRONMENTALLY SENSITIVE E.G. THREATENED & ENDANGERED
D.) OTHER

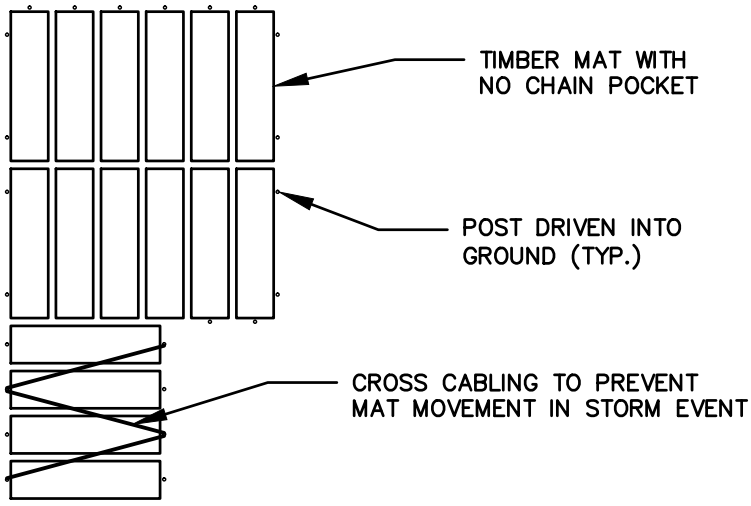




APPROVED ACCESS

BMP DETAIL 1

SCALE: NONE



TYPICAL PLAN VIEW

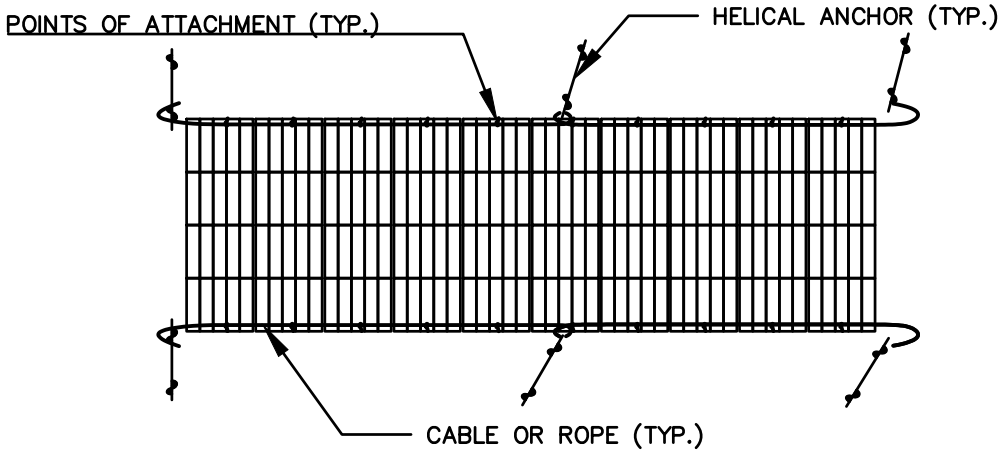
NOTES:

1. EXAMPLES OF ANCHORING ONLY. MATTING CONTRACTOR SHALL PROPOSE THE METHOD OF ANCHORING BASED ON FIELD CONDITIONS.
2. ANCHORING METHOD TO BE APPROVED BY THE NATIONAL GRID ENVIRONMENTAL SCIENTIST AND TRANSMISSION LINE CONSTRUCTION SUPERVISOR.

BMP DETAIL 2

NOTES:

1. TYPICAL HELICAL ANCHOR AND CABLE CONFIGURATION FOR MAT CONTAINMENT IN FLOODPLAINS/LAND SUBJECT TO FLOODING.
2. TYPICAL POINTS OF ATTACHMENT HEAVY STAPLES, EYE BOLTS OR OTHER SUITABLE HARDWARE TO SECURE ATTACHMENT OF MAT TO LINEAR CABLE. IF CHAIN POCKETS ARE PRESENT IN THE MATS CABLE OR ROPE CAN BE LOOPED THROUGH RODS.



BMP PICTURE 1



BMP PICTURE 2



CM-12
EXAMPLE OF CONSTRUCTION MAT ANCHORING (2 OF 2)

File: Const_Mat_Anchoring.dwg

BMP DETAIL

SCALE: NONE

WIRE BACKED SILT FENCE



MUTUAL INDUSTRIES WIRE BACKED SILT FENCE
PART # 1776-14-24
36" X 100'
36" MISF 1776 FABRIC
24" 14GA WIRE MESH
OPENING OF MESH 2" X 4"
FABRIC HOG RINGED EVERY 12"-18" ALONG THE TOP OF THE FENCE

ROLL WEIGHT 40 LBS

32 ROLLS PER PALLET

NOTES:

1. PRODUCT TO BE MUTUAL INDUSTRIES' WIRE BACKED SILT FENCE OR APPROVED EQUAL BY NATIONAL ENVIRONMENTAL SCIENTIST.
2. COORDINATE INSTALLATION METHOD AND LOCATION WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

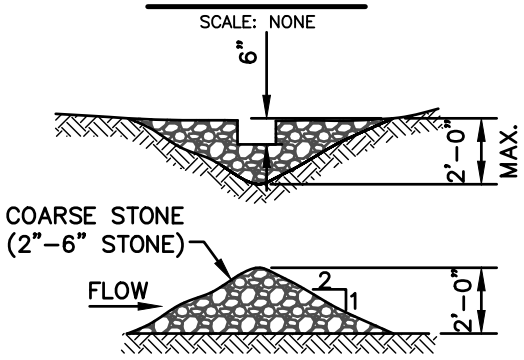
BMP PICTURE



NOTE:

1. PICTURE SHOWS SEDIMENT FILTER WITHIN A WETLAND.

BMP DETAIL



STONE CHECK DAM

NOTES:

1. USE CHECK DAMS TO SLOW WATER FLOWS AND AS SMALL SEDIMENT TRAPS IN DITCHES ALONG ACCESS ROADS.
2. CLEAN SEDIMENT AND REPLACE DAMS AS NECESSARY.
3. THE CENTER OF THE CHECK DAM MUST BE AT LEAST 6" LOWER THAN THE OUTER EDGES.
4. COORDINATE SPACING WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
5. MAX. SPACING: TOE OF THE UPSTREAM DAM IS SAME ELEVATION AS TOP OF DOWNSTREAM DAM.
6. STONE SHALL BE FREE OF FINE PARTICLES TO PREVENT TURBID DISCHARGES.

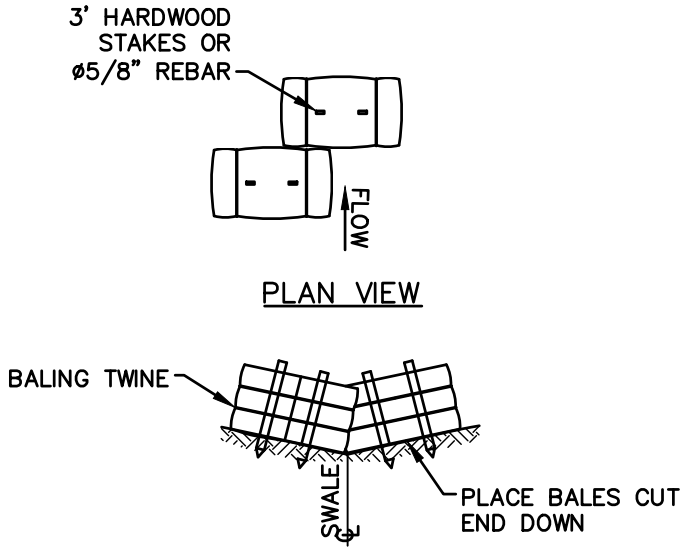
BMP PICTURE



NOTE: A SMALLER STONE SIZE IS SHOWN IN THIS PICTURE.

BMP DETAIL

SCALE: NONE



NOTES:

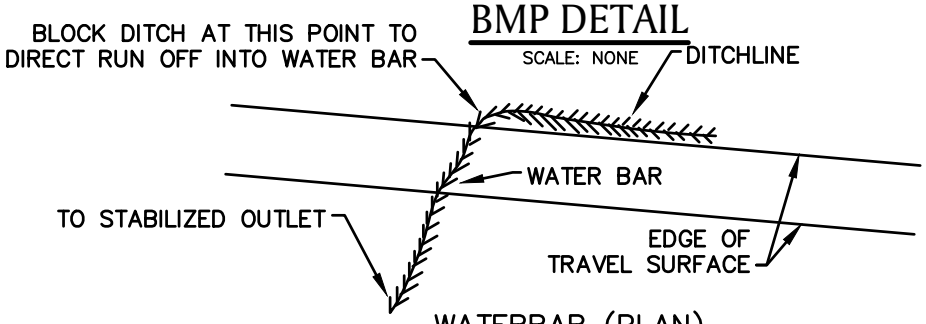
1. USE CHECK DAMS TO SLOW WATER FLOWS AND AS SMALL SEDIMENT TRAPS IN DITCHES ALONG ACCESS ROADS.
2. CLEAN SEDIMENT AND REPLACE DAMS AS NECESSARY.
3. COORDINATE SPACING WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE

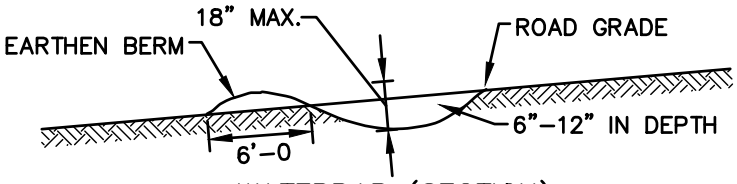


BMP DETAIL

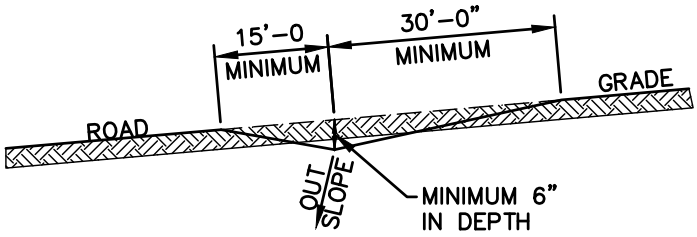
SCALE: NONE



WATERBAR (PLAN)



WATERBAR (SECTION)



DISCHARGE (SECTION)

NOTE:

1. LINE WITH 2"–6" STONE UNDERLAIN BY GEOTEXTILE FILTER FABRIC, KEYED INTO ROAD SURFACE AT LEAST 10 FEET EACH SIDE OF WATERBAR.
2. COORDINATE SPACING WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

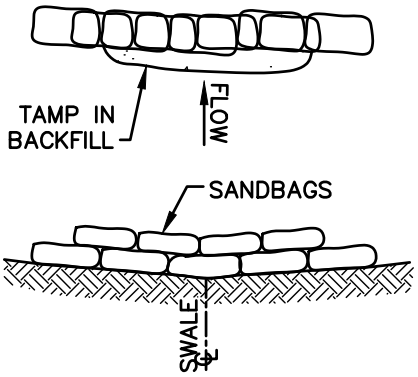
BMP PICTURE





BMP DETAIL

SCALE: NONE



SANDBAG
CHECK DAM

NOTES:

1. USE CHECK DAMS TO SLOW WATER FLOWS AND AS SMALL SEDIMENT TRAPS IN DITCHES ALONG ACCESS ROADS.
2. CLEAN SEDIMENT AND REPLACE DAMS AS NECESSARY.
3. COORDINATE SPACING WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE



NOTE:

1. PICTURE DOES NOT DEPICT "TAMP IN BACKFILL"

BMP PICTURE

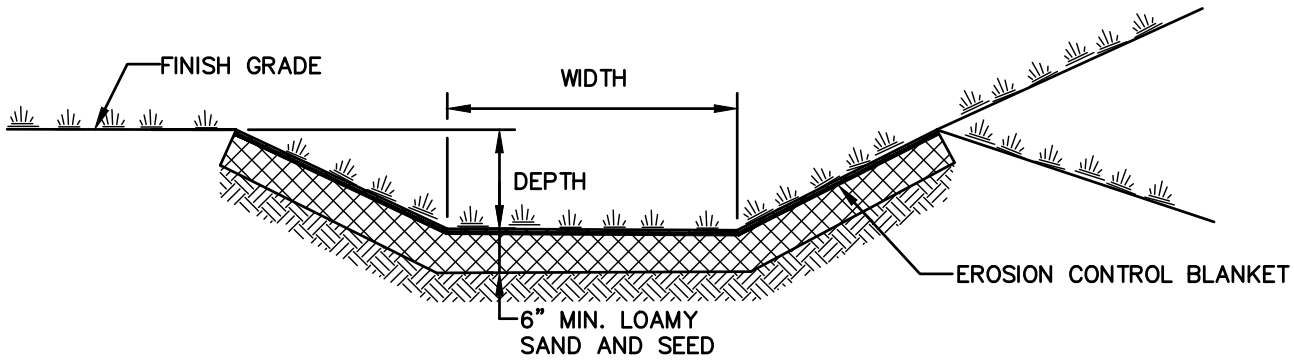


NOTE:

1. EXACT SIZE, LOCATION AND DESIGN IS DEPENDANT ON SITE CONDITIONS, AND LOCAL AND STATE REGULATIONS. COORDINATE THIS BMP WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST PRIOR TO CONSTRUCTION.

BMP DETAIL

SCALE: NONE



NOTES:

1. WIDTH AND DEPTH OF SWALE, AND EROSION CONTROL BLANKET TYPE TO BE COORDINATED WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. REFER TO DETAILS SEC–10 AND SEC–11 FOR SEED MIXTURE OPTIONS.

BMP PICTURE

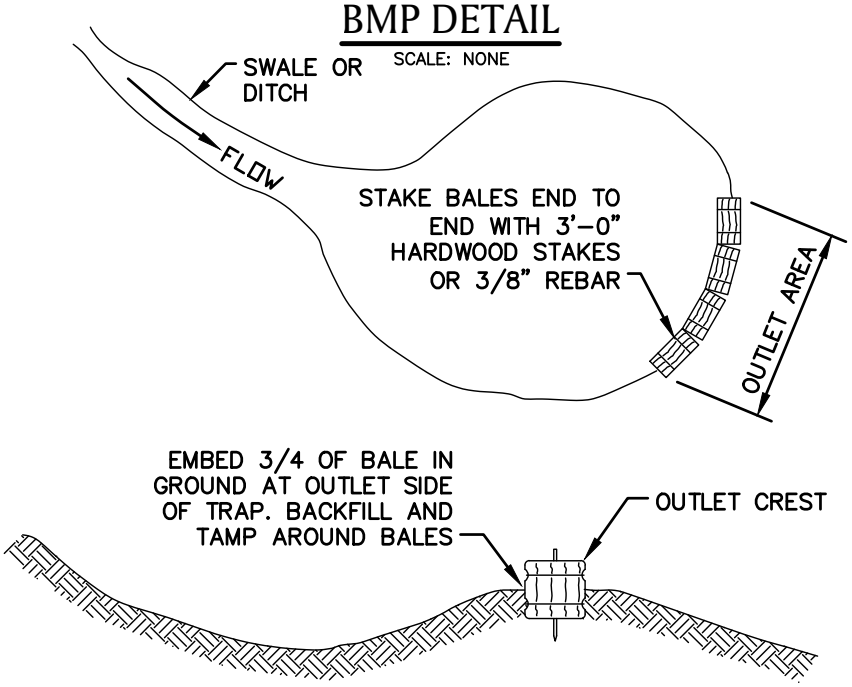


AA-8
DRAINAGE SWALE AND
LINED DITCH

File: Lined_Drainage_Swale.dwg

BMP DETAIL

SCALE: NONE



TYPICAL PROFILE

NOTES

1. SIZE, SHAPE AND PROFILE OF SEDIMENT WILL VARY ACCORDING TO ANTICIPATED FLOW VOLUME AND SURROUNDING TERRAIN AND SHALL BE COORDIANTED WITH THE NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. THE BASIN SHALL BE CUT BELOW THE GROUNDLINE. FILL SHALL NOT BE USED TO HOLD WATER UNLESS ROLLED AND COMPACTED.
3. OUTLET AREA IS TO REMAIN FREE OF EXCAVATION SPOILS.
4. OUTLET CREST ELEVATION SHALL BE LOWER THAN INLET ELEVATION AND AT LEAST 1'–0" BELOW THE TOP OF THE BASIN.ARMOUR SLOPES >8% IN OUTLET AREA WITH STONE OF APPROPRIATE SIZE TO PREVENT SCOUR.
5. ARMOUR SLOPES >8% IN OUTLET AREA WITH STONE OF APPROPRIATE SIZE TO PREVENT SCOUR.

BMP PICTURE

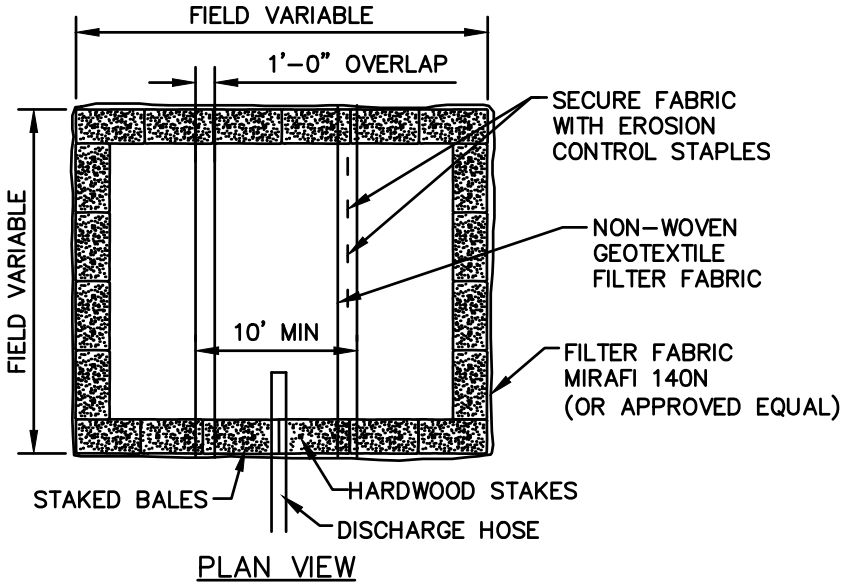


AA-9
SEDIMENTATION BASIN

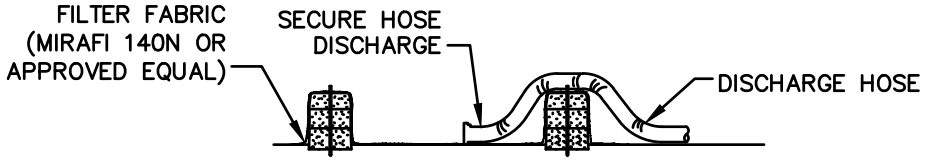
File: Sedimentation_Basin.dwg

BMP DETAIL

SCALE: NONE



PLAN VIEW



CROSS–SECTION

NOTES:

1. NUMBER OF BALES MAY VARY DEPENDING ON SITE CONDITIONS,
2. THE BASIN TO BE SIZED TO PREVENT DISCHARGE WATER FROM OVERTOPPING BASIN.
3. KEEP AS FAR FROM WETLANDS AS PRACTICAL.
4. CLEAN AND REMOVE AS SOON AS DEWATERING IS COMPLETE.

BMP PICTURE



AA-10
DEWATERING BASIN
(SMALL SCALE)

File: Dewat_Bas_Small.dwg

BMP PICTURE

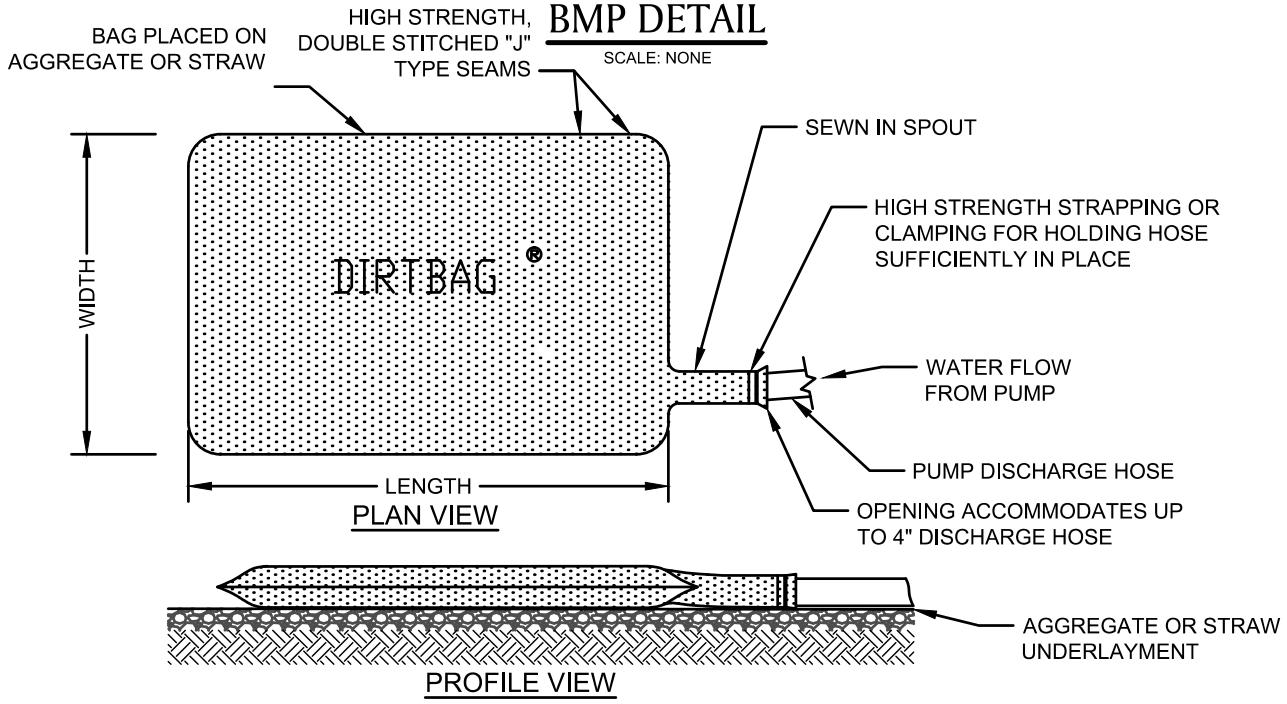


NOTE:

1. EXACT SIZE, LOCATION AND DESIGN IS DEPENDANT ON SITE CONDITIONS, AND LOCAL AND STATE REGULATIONS. COORDINATE THIS BMP WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST PRIOR TO CONSTRUCTION.

BMP DETAIL

SCALE: NONE



NOTE:
ONCE PUMPING COMMENCES, THE DIRT BAG SHALL BE MONITORED FREQUENTLY TO ASSURE THAT THE CONNECTIONS ARE SECURELY FASTENED AND THE RATE OF WATER DELIVERY TO THE STRUCTURE IS LOW ENOUGH TO PREVENT UNFILTERED WATER FROM FLOWING FROM THE HOSE CONNECTIONS OR BAG.

BMP PICTURE



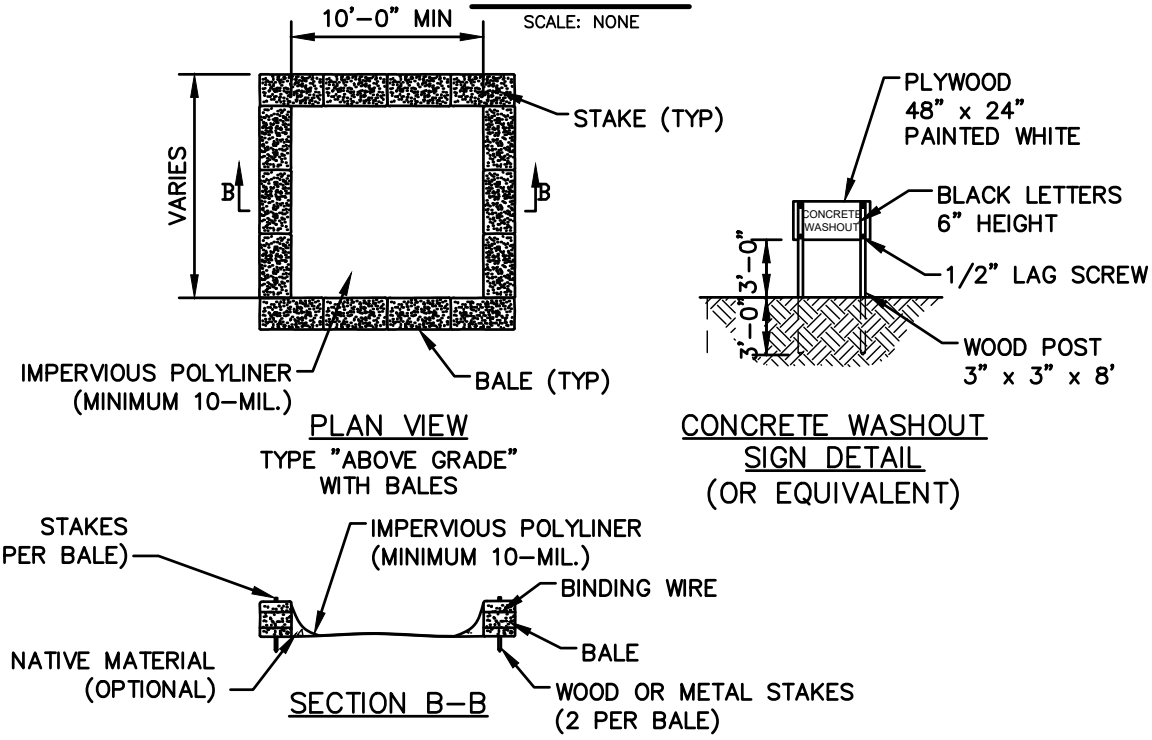
* PICTURE AND DETAIL PROVIDED BY ACF ENVIRONMENTAL

APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES
PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR LATEST AUTHORIZED VERSION PLEASE REFER TO THE NATIONAL GRID ENVIRONMENTAL INFONET SITE.

AA-12
DIRTBAG *

File: Dirtbag.dwg

BMP DETAIL



NOTES:

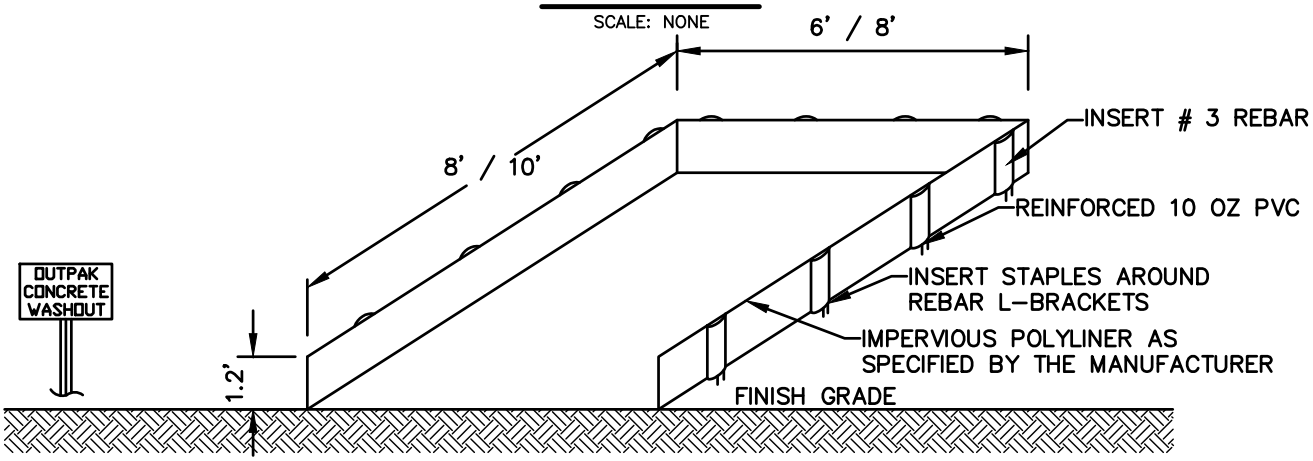
1. NUMBER OF BALES MAY VARY DEPENDING ON SITE CONDITIONS. COORDINATE SIZE AND LOCATION OF CONCRETE WASTE SUMP WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. KEEP AS FAR FROM DRAINAGE CHANNELS AND WETLAND AREAS AS PRACTICAL.
3. SUMPS TO BE CLEANED AND WASTE CONCRETE REMOVED AND PROPERLY DISPOSED OF UPON COMPLETION OF WORK.
4. SEE ADDITIONAL NOTES ON DETAIL AA–14.

BMP PICTURE



BMP DETAIL

SCALE: NONE



CROSS SECTION

NOTES:

1. PRODUCT TO BE OUTPAK PVC CONCRETE WASHOUT OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. THE CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT.
3. SIGNS SHALL BE PLACED AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT.
4. THE CONCRETE WASHOUT AREA WILL BE REPLACED AS NECESSARY TO MAINTAIN CAPACITY FOR WASTE CONCRETE AND OTHER LIQUID WASTE.
5. WASHOUT RESIDUE SHALL BE REMOVED FROM THE SITE AND DISPENSED OF AT AN APPROVED WASTE SITE.
6. DO NOT MIX EXCESS AMOUNTS OF FRESH CONCRETE OR CEMENT ON-SITE.
7. DO NOT WASH OUT CONCRETE TRUCKS INTO STORM DRAINS, OPEN DITCHES, STREETS, OR STREAMS.
8. AVOID DUMPING EXCESS CONCRETE IN NON-DESIGNATED DUMPING AREAS.
9. LOCATE WASHOUT AREA AT LEAST 50' FROM STORM DRAIN, OPEN DITCHES, OR WATERBODIES. COORDINATE LOCATION WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
10. WASH OUT WASTES INTO THE OUTPAK WASHOUT WHERE THE CONCRETE CAN SET, BE BROKEN UP, AND THEN DISPOSED OF PROPERLY.
11. A SECURE, NON-COLLAPSING, NON-WATER COLLECTING COVER MUST BE PLACED OVER CONCRETE WASHOUT PRIOR TO PREDICTED WET WEATHER TO PREVENT ACCUMULATION AND OVERFLOW OF PRECIPITATION.

BMP PICTURE



*** PICTURE AND DETAIL PROVIDED BY OUTPAK WASHOUT**

APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES

PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR LATEST AUTHORIZED VERSION PLEASE REFER TO THE NATIONAL GRID ENVIRONMENTAL INFONET SITE.

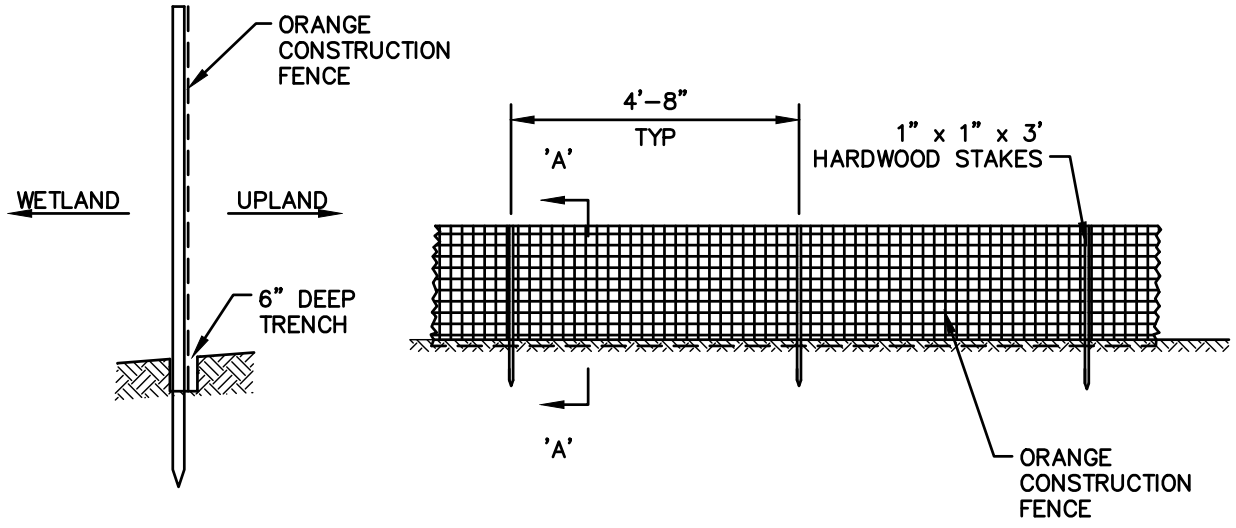
AA-14

OUTPAK CONCRETE WASHOUT *

File: Outpak_Washout.dwg

BMP DETAIL

SCALE: NONE



SECTION A-A

BMP PICTURE



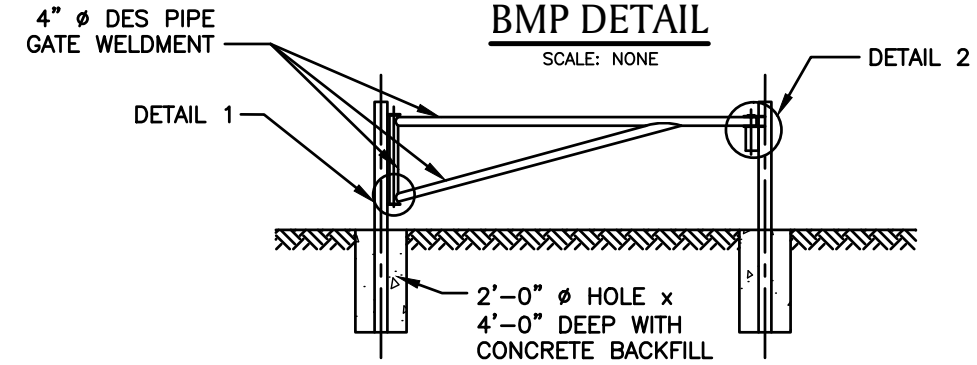
APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES
PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR LATEST AUTHORIZED VERSION PLEASE REFER TO THE NATIONAL GRID ENVIRONMENTAL INFONET SITE.

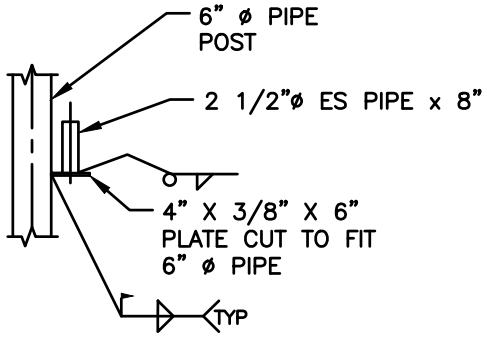
AA-15
BARRIER FENCE
(CONSTRUCTION FENCE)

File: Barrier_Fence.dwg

BMP DETAIL

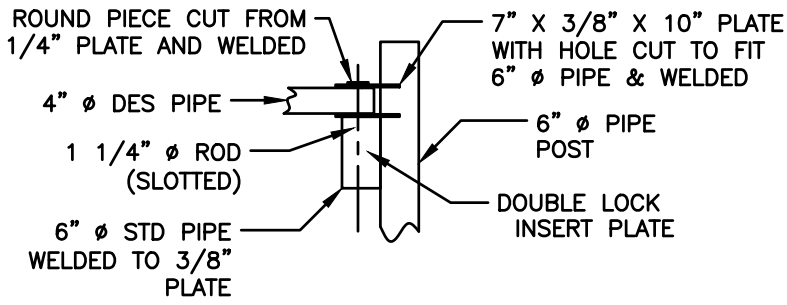
SCALE: NONE





DETAIL 1

SIMILAR DETAIL AT TOP



DETAIL 2

NOTES:

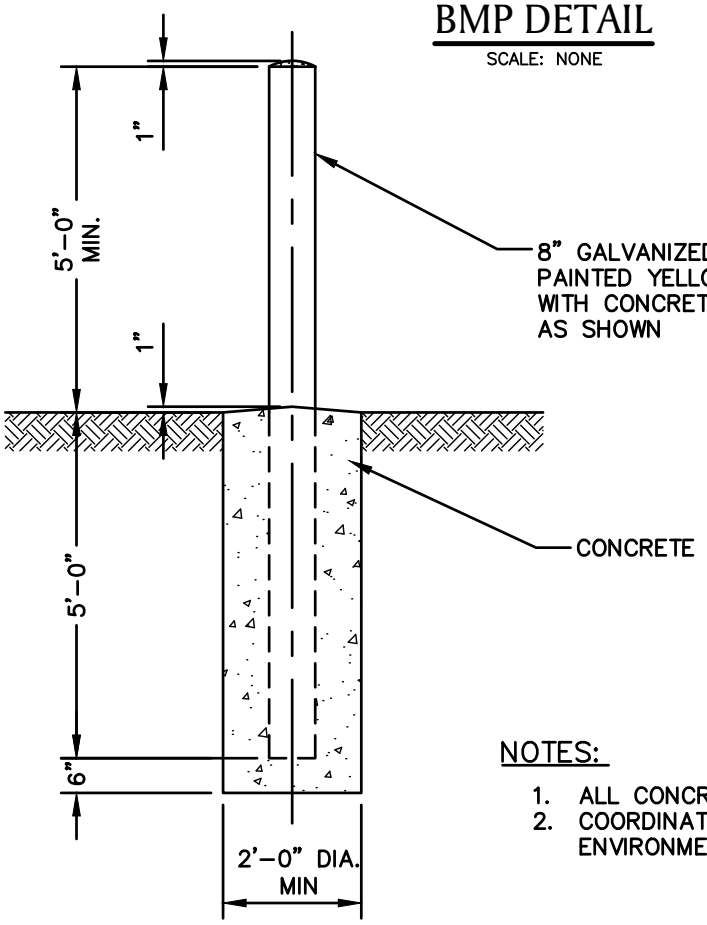
1. ALL GATE STEEL PIPES SHALL BE IN ACCORDANCE WITH ASTM A–501, PLATES SHALL BE ASTM A–36.
2. ALL STEEL PIPES SHALL BE PRIMED WITH ZINC–CHROMATE PRIMER AND FINISHED WITH AN APPROVED OSHA "SAFETY YELLOW" TOP COAT COMPATIBLE WITH THE PRIMER AND FOR EXTERIOR EXPOSURE.
3. REFLECTORS SHALL BE SPACED AT 3 FEET ALONG THE LENGTH OF THE CROSSBAR AND BRACE
4. BACKFILL AT POSTS TO BE COMPACTED.

BMP PICTURE



BMP DETAIL

SCALE: NONE



NOTES:

1. ALL CONCRETE TO BE 2500 P.S.I. MINIMUM.
2. COORDINATE LOCATIONS WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE



BMP



Definition

The control of dust resulting from land-disturbing activities.

Purpose

To prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems.

Conditions Where Practice Applies

On construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing where off-site damage may occur if dust is not controlled.

Design Criteria

Construction operations should be scheduled to minimize the amount of area disturbed at one time. Buffer areas of vegetation should be left where practical. Temporary or permanent stabilization measures shall be installed. No specific design criteria is given; see construction specifications below for common methods of dust control.

Water quality must be considered when materials are selected for dust control. Where there is a potential for the material to wash off to a stream, ingredient information must be provided to the local permitting authority.

Construction Specifications

A. Non-driving Areas – These areas use products and materials applied or placed on soil surfaces to prevent airborne migration of soil particles.

Vegetative Cover – For disturbed areas not subject to traffic, vegetation provides the most practical method of dust control (see Section 3).

Mulch (including gravel mulch) – Mulch offers a fast effective means of controlling dust. This can also include rolled erosion control blankets.

Spray adhesives – These are products generally composed of polymers in a liquid or solid form that are mixed with water to form an emulsion that is sprayed on the soil surface with typical hydroseeding equipment. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations for the specific soils on the site. In no case should the application of these adhesives be made on wet soils or if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators and others working with the material.

B. Driving Areas – These areas utilize water, polymer emulsions, and barriers to prevent dust movement from the traffic surface into the air.

Sprinkling – The site may be sprayed with water until the surface is wet. This is especially effective on haul roads and access routes.

Polymer Additives – These polymers are mixed with water and applied to the driving surface by a water truck with a gravity feed drip bar, spray bar or automated distributor truck. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations. Incorporation of the emulsion into the soil will be done to the appropriate depth based on expected traffic. Compaction after incorporation will be by vibratory roller to a minimum of 95%. The prepared surface shall be moist and no application of the polymer will be made if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators working with the material.

Barriers – Woven geotextiles can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads. Stone can also be used for construction roads for effective dust control.

Windbreak – A silt fence or similar barrier can control air currents at intervals equal to ten times the barrier height. Preserve existing wind barrier vegetation as much as practical.

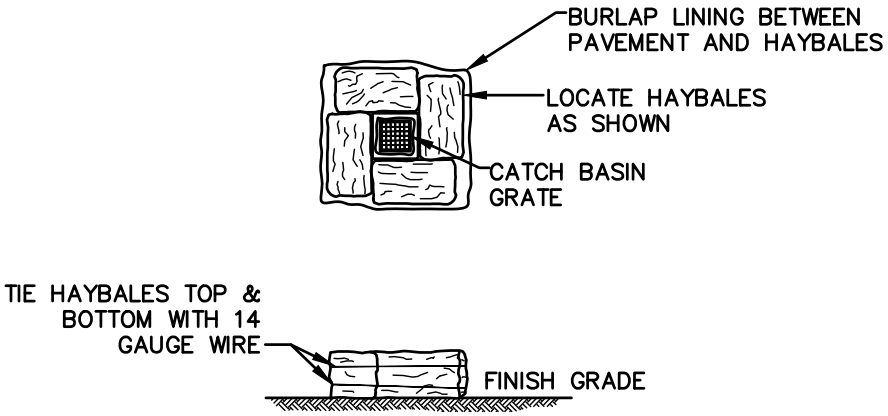
* BMP INFORMATION FROM "NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (AUGUST, 2005)." INFORMATION OBTAINED VIA WEBSITE: http://www.dec.ny.gov/chemical/29066.html

AA-18
DUST CONTROL (FROM NY) *

File: Dust_Control.dwg

BMP DETAIL

SCALE: NONE



NOTES:

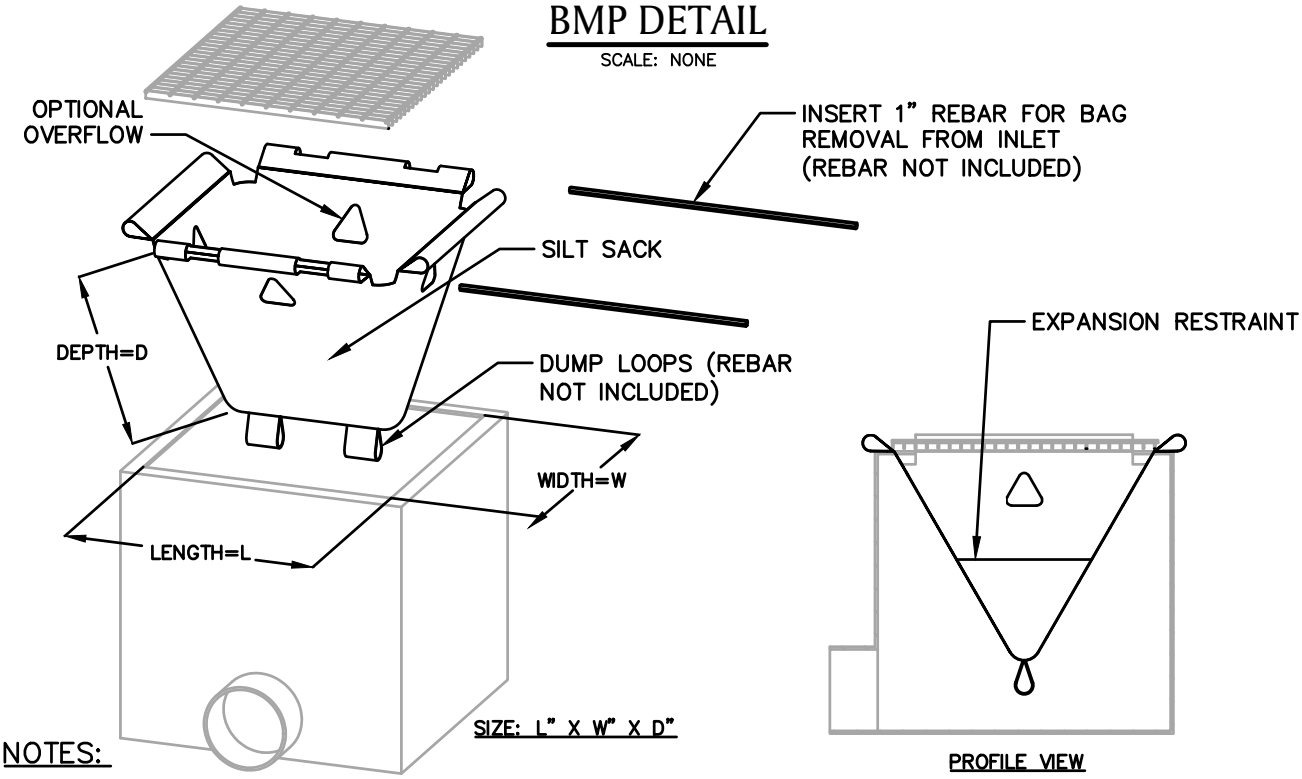
1. SURROUND STREET DRAINAGE STRUCTURE INLET WITH HAY BALES PRIOR TO CONSTRUCTION AND MAINTAIN UNTIL CONSTRUCTION IS COMPLETED. ACCUMULATED SEDIMENTS SHALL BE REMOVED.
2. HAYBALES PLACED ON PAVEMENT SHALL HAVE BURLAP PLACED BETWEEN PAVEMENT AND HAYBALE

BMP PICTURE



BMP DETAIL

SCALE: NONE



NOTES:

1. PRODUCT TO BE SILT SACK OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. THE USE OF A SILT SACK OPTIONAL OVERFLOW AND OVERALL DIMENSIONS ARE TO BE COORDINATED WITH A NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE



*** DETAIL PROVIDED BY ACF ENVIRONMENTAL**

APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES

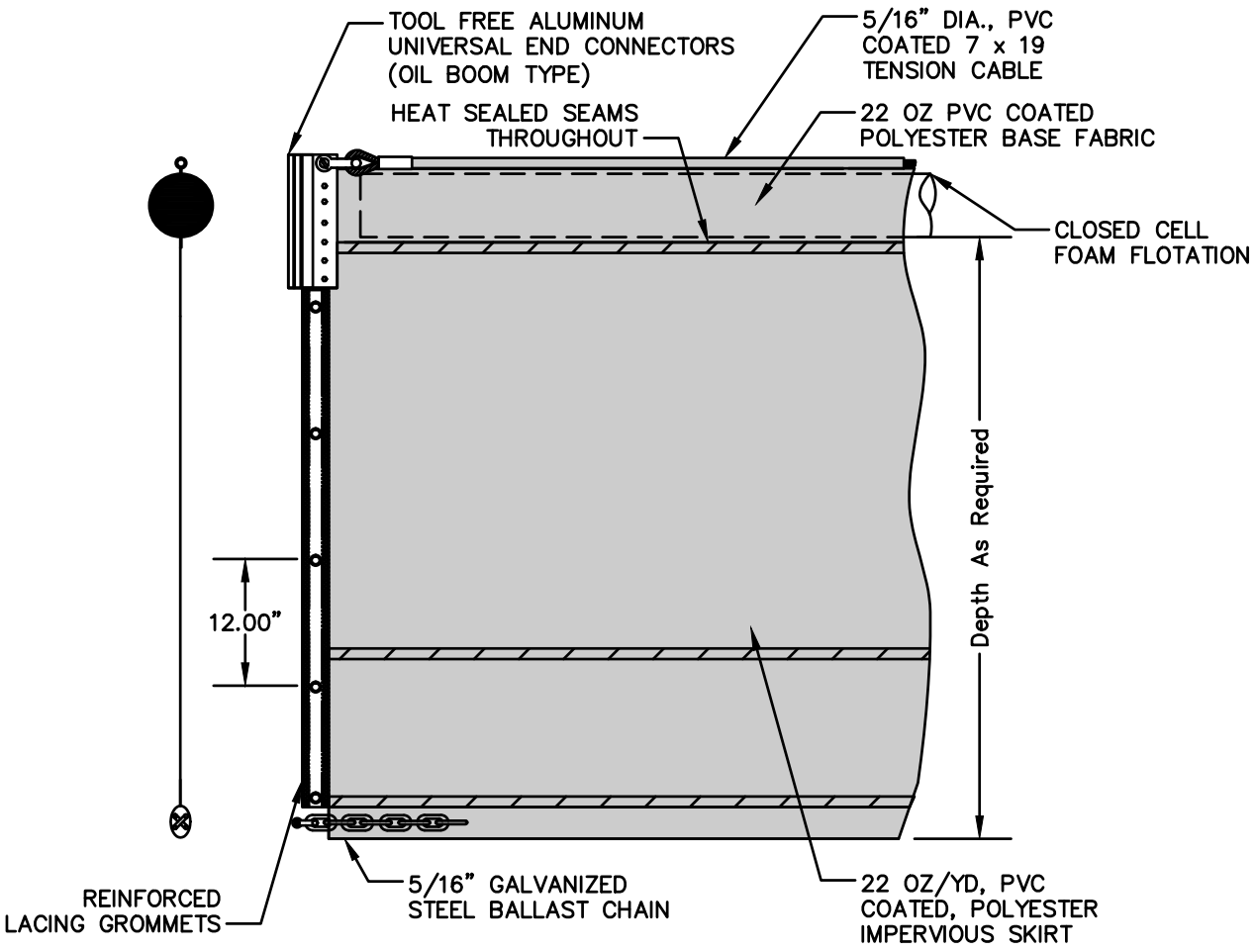
PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR LATEST AUTHORIZED VERSION PLEASE REFER TO THE NATIONAL GRID ENVIRONMENTAL INFONET SITE.

AA-20
SILT SACK *

File: SILT SACK.dwg

BMP DETAIL

SCALE: NONE



BMP PICTURE



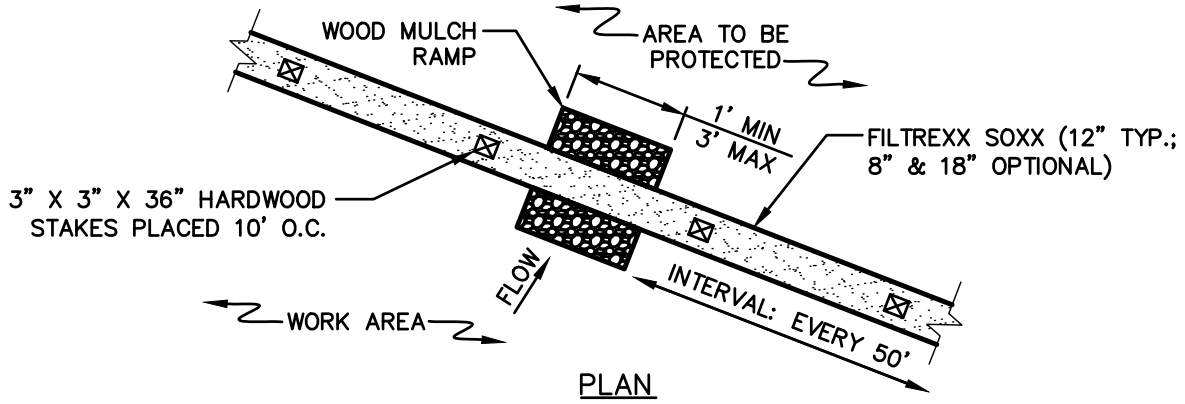
*** DETAIL PROVIDED BY BROCKTON EQUIPMENT / SPILLDAM INC.**
APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES
PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR LATEST AUTHORIZED VERSION PLEASE REFER TO THE NATIONAL GRID ENVIRONMENTAL INFONET SITE.

AA-21
TURBIDITY CURTAIN *

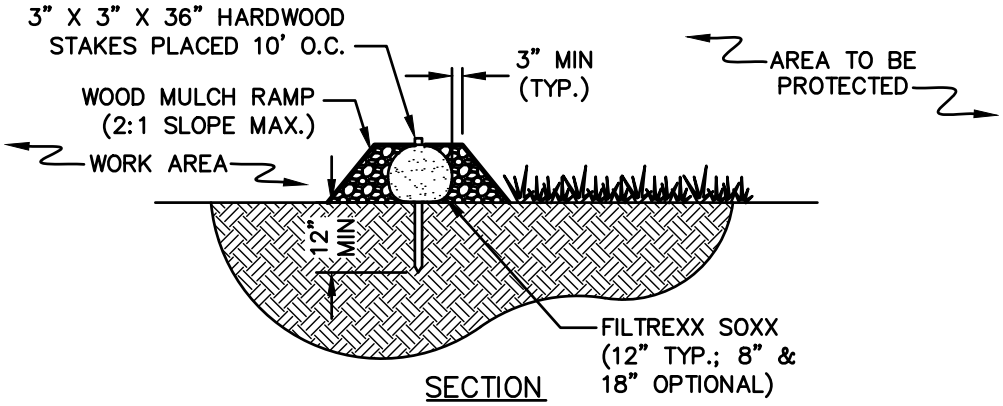
File: Turbidity_Curtain.dwg

BMP DETAIL

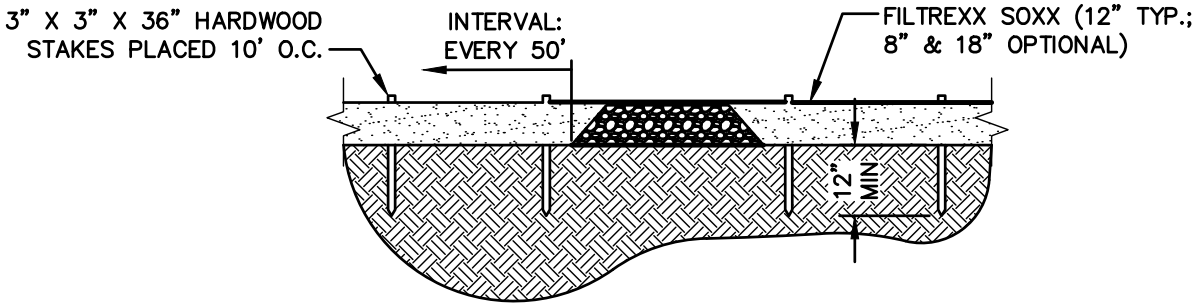
SCALE: NONE



PLAN



SECTION



PROFILE

NOTES

1. PRODUCT TO BE FILTREXX SILT SOXX OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
3. FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
4. NON-MONOFILAMENT CONTAINMENT MATERIAL SHOULD BE KNITTED PHOTODEGRADABLE OR BIODEGRADABLE MATERIAL, WITH OPENING SIZES BETWEEN 1/8" – 1/4".
5. COMPOST MEDIA SHOULD HAVE PARTICLE SIZE WHERE 99% < 2", 50% > 1/2".
6. COMPOST MATERIAL TO BE DISPOSED OF ON-SITE, OR IN ACCORDANCE WITH ENVIRONMENTAL PERMITS AS APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
7. WOOD MULCH RAMP IS OPTIONAL DEPENDING ON SUBSTRATE/SITE CONDITIONS, AND TO BE APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP # AA-22
SILTSOXX AMPHIBIAN & REPTILE CROSSING #1 (1 OF 2)

File: Alternate_Mulch_Ramp_Siltsoxx.dwg

BMP PICTURE



SALAMANDER AND SNAKE CROSSING #1

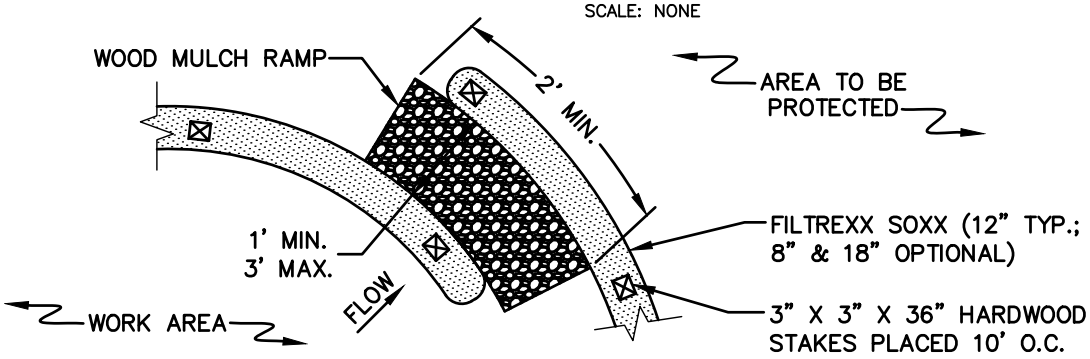
ALTERNATE WOOD MULCH RAMP SILTSOXX NOTES:

1. SILTSOXX, BY FILTREX INTERNATIONAL, OR APPROVED EQUAL PRODUCT SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES.

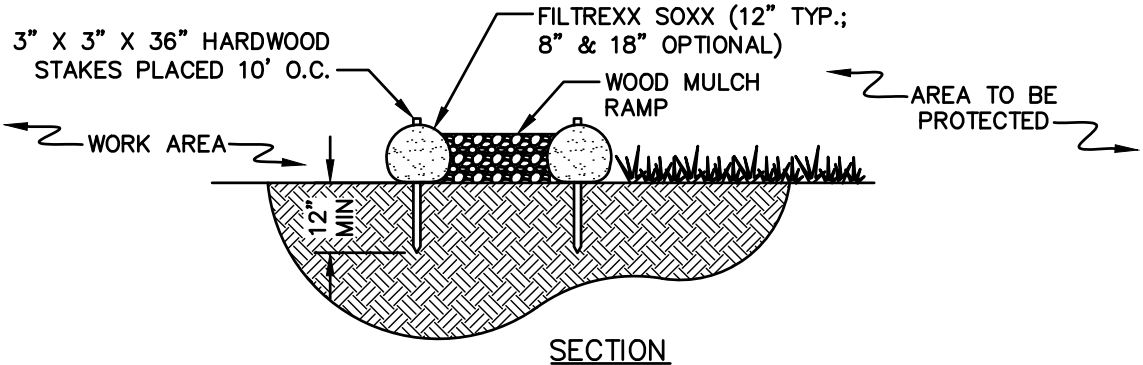
2. BMP SHOULD ONLY BE UTILIZED IN AREAS WHERE RARE SALAMANDER AND SNAKE HABITAT OCCURS, OR AT THE DIRECTION OF THE NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP DETAIL

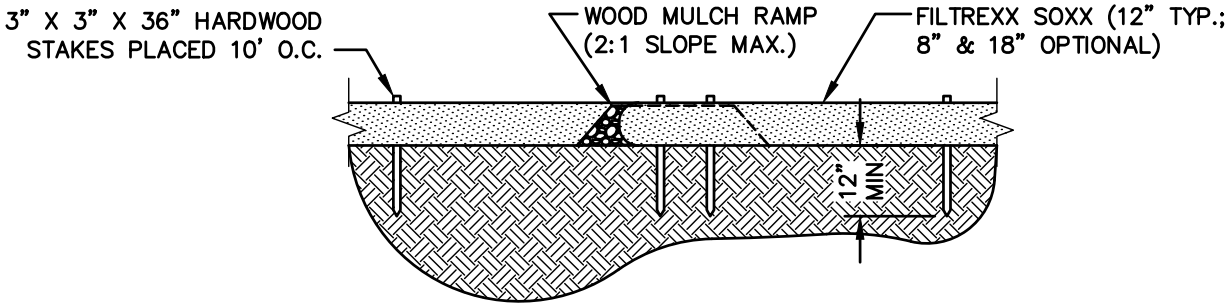
SCALE: NONE



PLAN



SECTION



PROFILE

NOTES

1. PRODUCT TO BE FILTREXX SILT SOXX OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
3. FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
4. NON-MONOFILAMENT CONTAINMENT MATERIAL SHOULD BE KNITTED PHOTODEGRADABLE OR BIODEGRADABLE MATERIAL, WITH OPENING SIZES BETWEEN 1/8" – 1/4".
5. COMPOST MEDIA SHOULD HAVE PARTICLE SIZE WHERE 99% < 2", 50% > 1/2".
6. COMPOST MATERIAL TO BE DISPOSED OF ON-SITE, OR IN ACCORDANCE WITH ENVIRONMENTAL PERMITS AS APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
7. WOOD MULCH RAMP IS OPTIONAL DEPENDING ON SUBSTRATE/SITE CONDITIONS, AND TO BE APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
8. GAPS TO BE SPACED EVERY 50 FT, IF POSSIBLE GIVEN WETLAND PERMIT CONDITIONS.

BMP # AA-23
SILTSOXX AMPHIBIAN & REPTILE CROSSING #2 (1 OF 2)

File: Alternate_Siltsoxx.dwg

BMP PICTURE



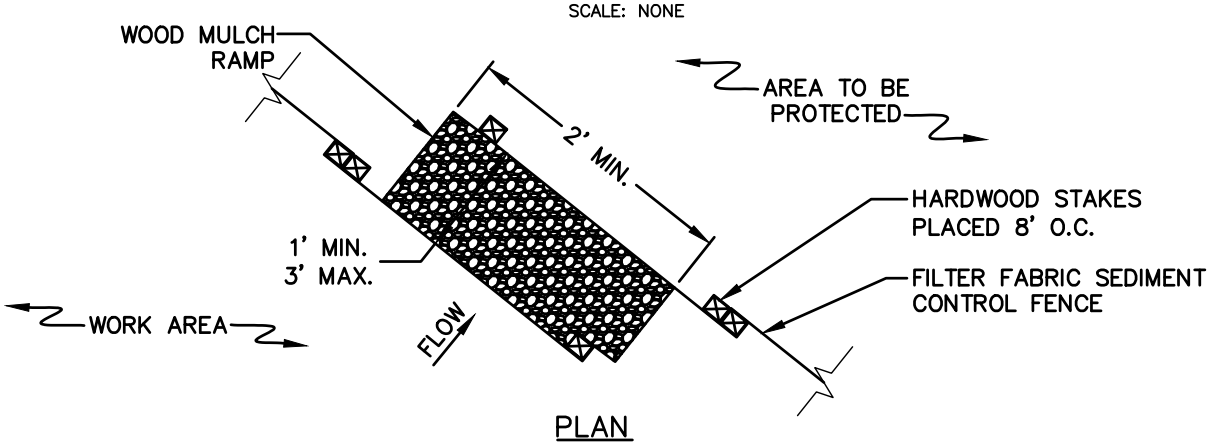
SILTSOXX AMPHIBIAN & REPTILE CROSSING #2

ALTERNATE WOOD MULCH RAMP SILTSOXX NOTES:

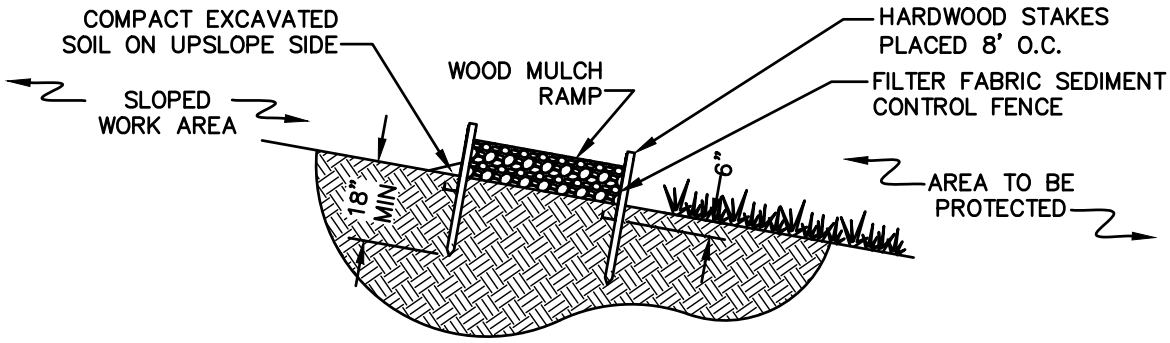
1. SILTSOXX, BY FILTREX INTERNATIONAL, OR APPROVED EQUAL PRODUCT SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES.
2. BMP SHOULD ONLY BE UTILIZED IN AREAS WHERE RARE SALAMANDER AND SNAKE HABITAT OCCURS OR AT THE DIRECTION OF THE NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP DETAIL

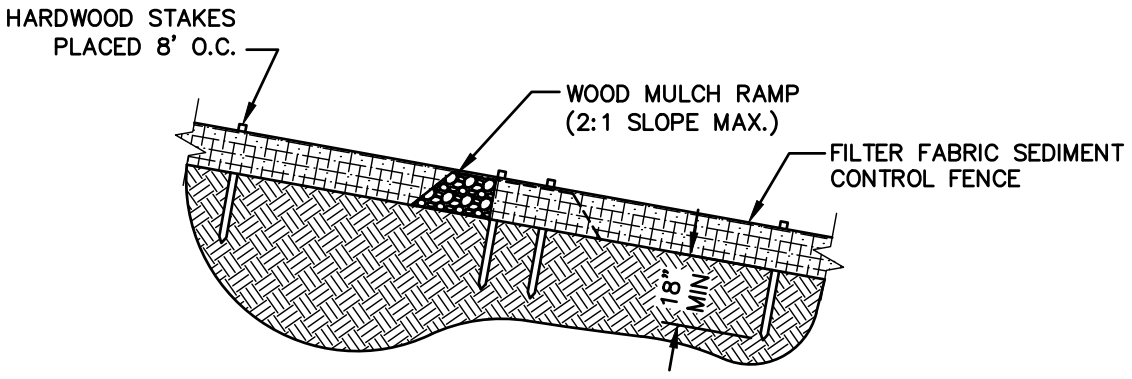
SCALE: NONE



PLAN



SECTION



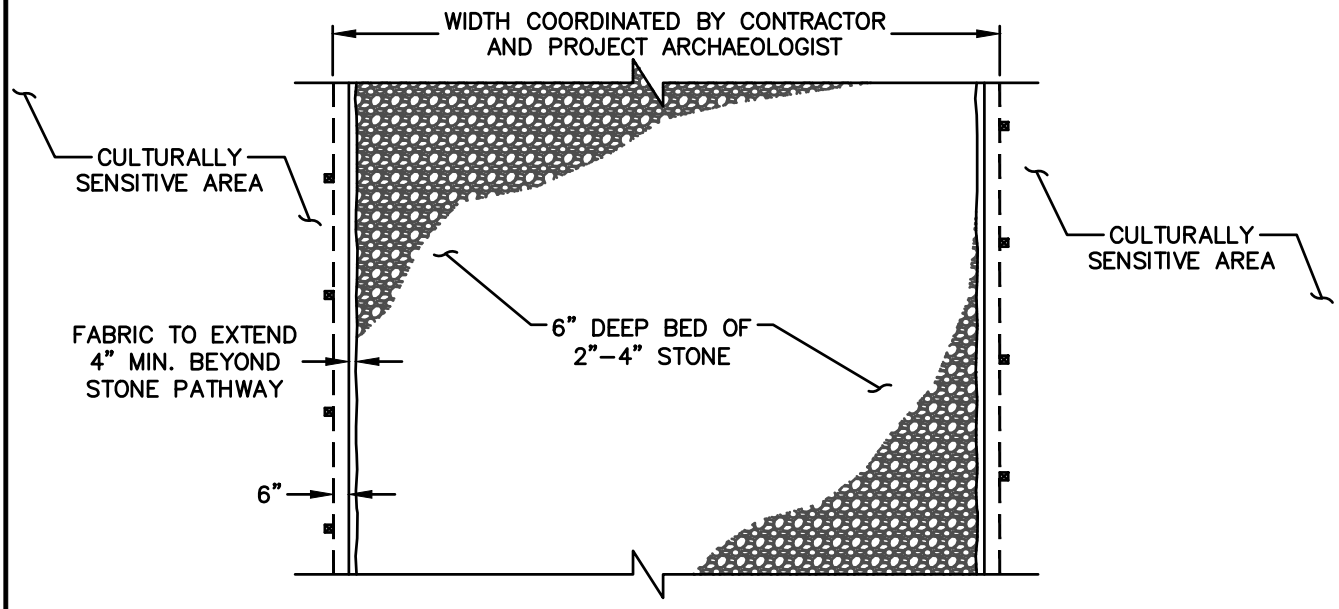
PROFILE

NOTES

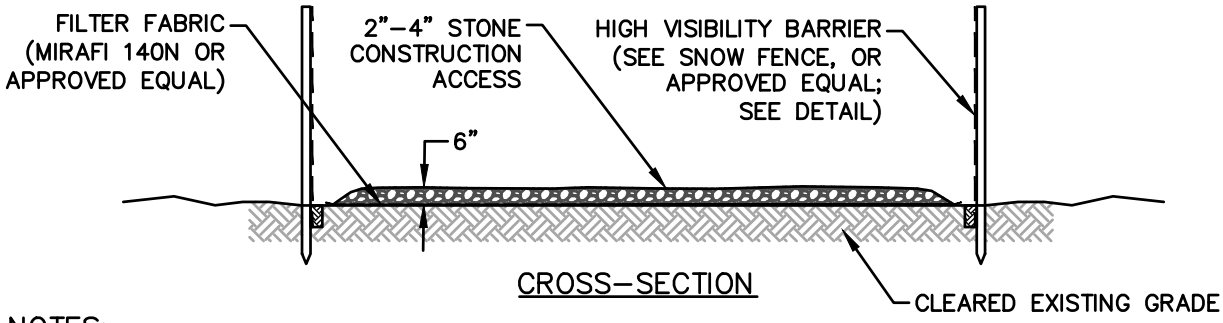
1. IN AREAS WHERE SLOPES OR RUN-OFF VOLUME PROHIBIT USE OF SILTSOXX, CROSSINGS CAN BE PROVIDED THROUGH TRENCHED SILT FENCE.
2. INTALL SILT FENCE TO SPECIFICATIONS IN EG303 APPENDIX 7 "SEC-2 SEDIMENT CONTROL FENCE."
3. WOOD MULCH RAMP IS OPTIONAL DEPENDING ON SUBSTRATE/SITE CONDITIONS, AND TO BE APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
4. GAPS TO BE SPACED EVERY 50 FT, IF POSSIBLE GIVEN WETLAND PERMIT CONDITIONS.

BMP DETAIL

SCALE: NONE



PLAN VIEW



CROSS–SECTION

NOTES:

1. ARCHAEOLOGICAL SITE BOUNDARIES, AS DEFINED BY INTENSIVE ARCHAEOLOGICAL SURVEY AND SITE AVOIDANCE AND PROTECTION PLANS, WILL BE DEMARCATED BY STAKING BY THE PROJECT ARCHAEOLOGIST.
2. GEOTEXTILE AND STONE MAY REMAIN IN PLACE FOLLOWING CONSTRUCTION IF PERMANENT PROTECTION IS NECESSARY AND DEPENDENT ON EASEMENT RIGHTS.
3. WHERE APPROVED BY THE PROJECT–SPECIFIC SAPP, CONSTRUCTION MATTING MAY BE ADDED OVER, OR IN PLACE OF, THE FABRIC AND STONE.
4. INSTALLATION AND REMOVAL OF FABRIC AND STONE, EROSION CONTROLS, AND/OR CONSTRUCTION MATTING WILL BE MONITORED BY THE PROJECT ARCHAEOLOGIST AT EACH LOCATION(S).
5. INSTALLATION OF THESE MEASURES WILL BE CONDUCTED WITH LOW–GROUND PRESSURE VEHICLES WHERE FEASIBLE.
6. WHERE REQUIRED BY THE PROJECT–SPECIFIC SAPP, TEMPORARY, HIGH VISIBILITY PROTECTIVE FENCING (E.G., SNOW FENCE OR PLASTIC FENCE) WILL BE ERECTED ALONG THE SITE BOUNDARIES OUTSIDE OF THE WORKSPACE WITHIN THE ROW IN ORDER TO PREVENT VEHICLES FROM TRAVELING THROUGH THOSE SITE AREAS DURING CONSTRUCTION. THE PROTECTIVE FENCE WILL BE POSTED WITH "NO TRESPASSING" SIGNS, SO THAT THE SITES CAN BE AVOIDED BY ALL CONSTRUCTION RELATED ACTIVITIES. THE FENCING WILL BE REMOVED UPON COMPLETION OF THE PROJECT. THE INSTALLATION AND REMOVAL OF FENCING WILL BE MONITORED BY THE PROJECT ARCHAEOLOGIST.

BMP PICTURES





APPENDIX 5
CERTIFICATION FORM FOR INVASIVE SPECIES CONTROL

Certain permit conditions, therefore a Condition of Contracts for the Prime Contractor, any Subcontractors, and any equipment or mat vendors for ***National Grid Projects*** shall be required to Certify their equipment[7] {each piece of equipment used on site} as 'clean'[8].

_____ (*name of firm*) hereby Certifies that

_____ (*make, model, and/or type*)

_____ (*equipment ID tag or #)* meets the following

1. before entry on to the job site, has been sufficiently cleaned to remove all accumulated mud, debris, plant fragments, and detritus that could harbor seeds, roots, or plant fragments of so-called invasive plant species; and

2. that the above piece of equipment has neither been off-loaded nor operated in the interval between cleaning and delivery to the jobsite.

3. that equipment deployed in areas of invasive species (as identified in project plans) shall be cleaned prior to redeployment.

_____ (*signed*) _____ (*dated*)

_____ (*printed name*) _____ (*title*)

_____ (*Firm*)

The signed original of this form {one for each piece of equipment (or lot[9] of mats)} is to be given to the NG Construction Supervisor assigned to the project.

---

7 Equipment may include, but is not limited to bulldozers, excavators, backhoes, bucket trucks (tracked or wheeled), pulling equipment, concrete trucks, compressors, drilling equipment, and mats (composite, wood, or other materials).

8 With regard to invasive species, the definition of clean means free of accumulated mud, debris, plant fragments, and detritus that could harbor seeds, roots, or plant fragments of so-called invasive plant species.

9 Lot of mats is the number of mats that may be transported by one forwarder/truck at a time.

APPENDIX 6
SNOW DISPOSAL GUIDELINES

Finding a place to dispose of collected snow poses a challenge. While we are all aware of the threats to public safety caused by snow, collected snow that is contaminated with road salt, sand, litter, and automotive pollutants such as oil also threatens public health and the environment.

As snow melts, road salt, sand, litter, and other pollutants are transported into surface water or through the soil where they may eventually reach the groundwater. Road salt and other pollutants can contaminate water supplies and are toxic to aquatic life at certain levels. Sand washed into water bodies can create sand bars or fill in wetlands and ponds, impacting aquatic life, causing flooding, and affecting our use of these resources.

There are several steps that should be taken to minimize the impacts of snow disposal on public health and the environment.

- **DO NOT** dump snow into any water body, including rivers, the ocean, reservoirs, ponds, or wetlands. In fact, a buffer of at least 50 feet between any snow disposal area and any the high-water mark of any surface water should be kept. A silt fence or equivalent barrier should be securely placed between the snow storage area and the high-water mark. In addition to water quality impacts and flooding, snow disposed in surface waters can cause navigational hazards when it freezes into ice blocks.
- **DO NOT** dump snow within a wellhead protection area (e.g., a Zone II), in a high or medium-yield aquifer, or within 75 feet of a private well, where road salt may contaminate water supplies**. Ask an Environmental Department representative for guidance in determining if a proposed disposal area is located within one of these sensitive areas.**
- Avoid disposing of snow on top of storm drain catch basins or in storm water drainage swales or ditches. Snow combined with sand and debris may block a storm drainage system, causing localized flooding. A high volume of sand, sediment, and litter released from melting snow also may be quickly transported through the system into surface water.
- All debris in a snow storage area should be cleared from the site and properly disposed of no later than May 15 of each year the area is used for snow storage.

Under extraordinary conditions, when all land-based snow disposal options are exhausted, disposal of snow that is not obviously contaminated with road salt, sand, and other pollutants may be allowed near (within 50 feet) or even in certain water bodies under certain conditions.

In these dire situations, **notify the Environmental Department** so that the local Conservation Commission and the appropriate MassDEP Regional Service Center (in MA), RI DEM Office of Water Resources – RIPDES

Program (in RI), NH Department of Environmental Services – NHDES (in NH) and VT Department of Environmental Conservation - VT DEC (in VT) can be contacted before disposing of snow in a water body.

In emergency situations and after consulting an Environmental Department representative the following guidance should be followed:

- Dispose of snow in open water with adequate flow and mixing to prevent ice dams from forming.
- Do not dispose of snow in saltmarshes, vegetated wetlands, certified vernal pools, shellfish beds, mudflats, drinking water reservoirs and their tributaries, wellhead protection areas, or other environmentally sensitive areas.
- Do not dispose of snow where trucks may cause shoreline or stream bank damage or erosion.

APPENDIX G

NHESP Operation and Maintenance Plan

MASSWILDLIFE

DIVISION OF
FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6300 | f: (508) 389-7890
MASS.GOV/MASSWILDLIFE

MEMORANDUM

To: **National Grid Operations and Maintenance Consultants, including contractors and subcontractors, and any other agents who will be using data provided by NHESP pursuant to the Data Release Agreement with National Grid**

From: **MA Natural Heritage & Endangered Species Program (MA NHESP)**

Date: **April 6, 2022**

Re: **Massachusetts Natural Heritage Database Records**

NHESP File #: 22-40898

Under M.G.L. c. 66, s. 17D of the state public records law, site-specific state-listed species information contained in the NHESP database are exempt from public disclosure, and may only be released at the discretion of the NHESP pursuant to the recipient's agreement to keep the data confidential. NHESP has agreed to release site-specific rare species information to National Grid pursuant to a Data Release Agreement, which obligates National Grid to ensure that that all of its contractors, consultants or other agents will protect the NHESP data as required by the Data Release Agreement. By signing this Memorandum, the authorized representative of the National Grid contractor, consultant or agent identified below agrees as follows:

1. Only personnel who are directly involved in the above National Grid Operations and Maintenance Plan (OMP) will have access to the NHESP data.
2. All such personnel using the above NHESP data have received and reviewed a copy of the Data Release Agreement between NHESP and National Grid and have agreed to comply with it. Conditions that are particularly pertinent to the activities of the identified National Grid contractor, consultant or agent are summarized below.
3. These NHESP data shall only be used for development and implementation of avoidance and mitigation procedures to protect state-listed species during National Grid OMP activities in the year assigned.
4. These NHESP data shall not be disseminated in ny manner or form to any person or entity that is not directly involved with the National Grid OMP in the year assigned without the prior written consent of NHESP.
5. External reports or other external materials or products developed using these data shall not reference any of the site-specific state-listed species data provided pursuant to this Data Release Agreement without the prior written consent of NHESP.
6. If employees, contractors, or other individuals associated with the 2022 OMP of National Grid become aware of activities which may impact state-listed species in the course of vegetation management activities, please contact or direct others to contact MA NHESP's Environmental Review staff at (508-389-6361), and follow-up in writing if directed to do so by NHESP.

7. Observations of state-listed species will require the observer to submit an NHESP Species Observation Form, including photographs, characters used for identification, observer contact information, locus map and signature. Additionally, results for surveys which failed to find state-listed species should be reported to the NHESP and should include a map and description of the area that was surveyed. These reports may be submitted online through our online submittal system MassWildlife's Heritage Hub.

Thank you for helping monitor, manage, and protect Massachusetts' rare species.

Signed:_____ Date:_____

Print Name:_____

Company Name:_____

Please return to:
Corey Schutzman
Lead Environmental Scientist
Environmental Licensing and Permitting- New England
National Grid
40 Sylvan Road
Waltham, MA 02451

Send copy to:
Environmental Review Dept.
MA NHESP 22-40898
Division of Fisheries and Wildlife
1 Rabbit Hill Road
Westborough, MA 01581

MASSWILDLIFE

DIVISION OF
FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6300 | f: (508) 389-7890
MASS.GOV/MASSWILDLIFE

April 25, 2022

Corey Schutzman
Environmental Licensing and Permitting- New England
National Grid
40 Sylvan Road
Waltham, MA 02451

RE: Applicant: National Grid
Project Description: Guidelines for Operation and Maintenance Plan 2022
NHESP File No.: 22-40898

Dear Ms. Daly:

Routine operation and maintenance activities are exempt from review pursuant to the Massachusetts Endangered Species Act Regulations (MESA) (321 CMR 10.00), which are administered by the Natural Heritage and Endangered Species Program of the Division of Fisheries and Wildlife (Division). The exemption is conditional based on the Division's annual review and approval of an Operation and Maintenance Plan (OMP) (321 CMR 10.14 (11)). We have evaluated your 2022 Operation and Maintenance Plan for National Grid and its associated shapefiles. Below, we provide best management practices to avoid and minimize harm to state-listed species (e.g. rare plants) and their habitats associated with OMP activities scheduled to occur within Priority Habitat. These areas are identified and labeled in a shapefile that the Division is providing as an attachment herein. The best management practices listed below shall be incorporated into the OMP and followed by crews in the field unless otherwise approved by the Division in advance. Provided that the best management practices contained herein, and in the 2022 OMP shapefile are adhered to, the OMP for 2022 shall meet the requirement for exemption from review under 321 CMR 10.18 through 10.23 and is hereby approved.

General Best Management Practices

The following general best management practices (BMPs) shall be incorporated into the OMP and implemented within all mapped Priority Habitat of state-listed species, as indicated in the enclosed shapefile:

1. **Resource Areas:** No cutting, filling, or stockpiling of materials shall occur within wetland Resource Areas or Certified Vernal Pools, even if the wetlands are seasonally dry. If these activities are deemed necessary and no practicable alternative exists, then the Division shall be contacted to discuss special provisions that may be required to protect state-listed species and their habitats. Please note that in general, the use of swamp mats in wetlands is approved unless otherwise indicated by the Division.

2. **Native shrubs:** Areas dominated by low-growing native shrub species (e.g., lowbush blueberry, huckleberry, sheep laurel, New Jersey tea, sweet-fern, scrub oak) shall be encouraged rather than

eliminated. If excavation within these areas is necessary, the areas should be restored to similar native shrub habitat once work is completed.

3. **Water quality:** Water quality within wetlands in Priority Habitat shall be protected by following the strictest BMPs. Water levels of ponds, wetlands, vernal pools, beaver impoundments, and other Resource Areas within Priority Habitat shall not be altered without prior consultation with Division.

4. **State-listed Species Observations**: Any state-listed species encountered by National Grid or its subcontractors shall be reported to the Division through the Vernal Pool and Rare Species (VPRS) online reporting system.

    a. State-listed species observations (i.e. turtles) should be photographed and the following relevant information included: date, location (i.e. nearest pole number and Line). The Division strongly encourages quarterly qualitative reporting (i.e. via email) with photos and locations of species observed by crews or contactors.
    b. National Grid shall compile all observations and submit an annual report to the Division.
    c. In addition, observations of state-listed plant species must also be reported through the Division's online reporting system. https://www.mass.gov/how-to/report-rare-species-vernal-pool-observations

5. **Data Sensitive Species**: A subset of species protected under the MESA have been determined by the Division to be "Data Sensitive Species" (denoted in the "Data_Sens" column of the shapefile). These species are highly susceptible to collection and are therefore of high concern to the Division. Information about these species (including presence/absence) cannot be released to anyone else (especially including release to third parties or published) unless such release is agreed to in writing by the Division (See Massachusetts Public Records law: M.G.L. chapter 66 section 17D).

Species-specific Best Management Practices

In addition to the general BMPs provided above, extra care must be taken to avoid and minimize impacts to state-listed species by implementing the species-specific BMPs below, including but not limited to avoiding OMP activities during the sensitive dates provided in the shapefile table.

6. **State-listed Turtles**: Turtles are long-lived and the loss of even a single adult turtle can negatively impact the persistence of a local population. Extra care must be taken to avoid direct impacts to state-listed turtles by following the BMPs summarized below and provided in the "Guide_1" and "Guide_2"columns of the shapefile table.

    a. Sensitive Dates: State-listed turtles are generally active from 1 April – 31 October (the "turtle active season"). In general, OMP activities conducted between 1 November and 31 March will pose minimal or no risk to state-listed turtles. Guide 1 must be implemented for any OMP work during the state-listed turtle "Sens_date" period.

    b. "Guide_1" - Avoid direct harm to turtles: During the turtle active season (see "Sens-dates") every effort should be made to conduct visual inspections of the work area for

turtles by trained personnel prior to the commencement of work. If turtles are encountered, they should be removed from the work zone and reported to the Division (see #4). If operation and maintenance activities are to occur between 1 April and 31 October, extra care should be used when using heavy machinery or traveling in vehicles through these mapped areas. Any silt fencing used in these areas should be removed as soon as site stabilization has occurred, as such fencing can be a barrier to turtle movements. If required, excavation should be completed within one day and/or open trenches should be backfilled daily to prevent turtles from becoming trapped.

c. "Guide_2" - Avoid wetland work: This management recommendation applies only to mapped habitats for the Blanding's Turtle, Bog Turtle and Northern Red-bellied Cooter at any time of year. OMP activities within these wetlands should be minimized to the greatest extent practicable. However, if work must occur in wetland areas, any work should be reported to the Division in the attached Wetland Work Form within 1 month of the commencement of proposed work. ***Please note that any necessary work within wetlands mapped as habitat for the Bog Turtle or Northern Red-bellied Cooter must be reviewed on an individual basis by the Division.***

7. **State-listed Plants:** In general, *vegetation management activities* conducted between 1 November and 15 April, excluding the broadcast application of herbicides, will pose minimal or no risk to state-listed plants and can proceed. Vegetation management activities occurring between 16 May and 31 October may harm state-listed plants and BMPs must be implemented to avoid said harm. Extra care must be taken to avoid direct impacts to state-listed plants by following the BMPs summarized below and provided in the "Guide_1" and "Guide_2"columns of the shapefile table.

   a. Sensitive Dates - Operation and maintenance activities (e.g., structure replacement, counterpoise installation), regardless of when the activity occurs, may cause harm to state-listed plants. Therefore, no sensitive dates are included for plants in the "Sens_dates" column of the shapefile table.

   b. "Guide_1" - Delineate population and avoid: Surveys must be conducted by a qualified botanist who will be required to identify the extent and condition of state-listed plant populations , flag these populations for work crews, and file a report with the Division prior to commencement of operation and maintenance activities in these areas. Work crews are required to avoid these areas. All observed state-listed plants shall be reported to the Division (see #4).

   c. "Guide_1" or "Guide_2" - Avoid wetland work: This practice applies only to mapped habitats for wetland plants. If work must occur in these wetland areas, strict BMPs shall be implemented to avoid harm to state-listed species and their habitats (e.g. using swamp mats). Any work occurring within these wetland areas should be reported to the Division in the included Wetland Work Form within 1 month of the commencement of proposed work. Please note that any excavation proposed in these areas **requires consultation with the Division** for additional guidance prior to the commencement of work.

8. **State-listed Moths and Butterflies (Lepidoptera)**: Many state-listed Lepidoptera are host specific, with caterpillars feeding exclusively on one or two plant species. Extra care should be taken to avoid direct impacts to state-listed Lepidoptera by following the BMPs summarized below and provided in the "Guide_1" and "Guide_2"columns of the shapefile table.

    a. "Host_plant": This field contains the identity (common name and scientific name) of specific host plants associated with rare Lepidoptera species, if this information is available.

    b. "Guide_1" - Avoid host plant to greatest extent possible: Certain host plants for state-listed species are easily identified in the field with minimal training and can be avoided by operation and maintenance activities. The known host plants for these state-listed species are included in the shapefile.

    c. "Guide_1" - Utilize appropriate erosion control measures: Haybales, silt fencing, etc. should be utilized when excavations or other activities resulting in soil disturbance will occur near wetland habitats.

    d. "Guide_2": Minimize loss of native vegetation: The host plants of many state-listed moth and butterfly species are fairly common plant species, and efforts should be taken to avoid excessively clearing or otherwise removing native vegetation. This will protect many host plant species from direct harm and from competition from non-native invasive plants which may thrive in disturbed areas

    e. "Guide_2" - Avoid wetland work: This practice applies only to areas mapped as habitat for Lepidoptera with wetland host plant species. If work must occur in these wetland areas, strict BMPs shall be implemented to avoid harm to state-listed species and their habitats (e.g. using swamp mats). Any work occurring within these mapped areas should be reported to the Division in the included Wetland Work Form within 1 month of the commencement of the proposed work. Please note that any excavation proposed in these areas shall require consultation with the Division for additional guidance prior to the commencement of work.

9. **State-listed Beetle species**: The Division should be contacted for further guidance (see "Guide_1") for OMP work in areas mapped for state-listed beetles.

    a. "Guide_1" - Consult with Division: Prior to any OMP activities proposed within habitat for state-listed beetles, the Division must be contacted for further guidance.

10. **State-listed Bird species**: Birds are very sensitive to visual and auditory disturbances during the breeding season. Extra care should be taken to avoid disturbing breeding birds by following the BMPs summarized below and provided in the "Guide_1" and "Guide_2"columns of the shapefile table.

    a. "Sens_Dates": Varies by species. **Refer to shapefile table for species-specific breeding periods.** Typically, sensitive dates begin in April/May and conclude in August/September.

b. "Guide_1" - Avoid work in marsh, lake, and pond habitats during sensitive dates: **Marsh birds** and wetland bird species establish territories in the spring, nest in spring and summer, and fledge their young by late summer/early fall. They are highly sensitive to disturbance throughout this time period.

c. "Guide_1": Avoid work during breeding season: Refer to "Sens_date" column in shapefile. Birds can be fairly timid creatures that are very sensitive to disturbance throughout this time period.

d. "Guide_2" - Minimize audio and visual disturbance to wetland: **Marsh birds** are fairly timid creatures that establish territories in the spring, nest in spring and summer, and fledge their young by late summer/early fall. They are very sensitive to disturbance including loud equipment, sudden movements or activities, etc.

11. **State-listed Amphibians**: These species breed in vernal pools and or suitable wetland areas but spend the majority of their lives in forested upland habitats. Extra care should be taken to avoid direct impacts to wetland breeding and upland forest habitats by following the BMPs summarized below and provided in the "Guide_1" column of the shapefile table.

    a. "Sens_Dates": Varies by species. **Refer to shapefile table for species-specific vernal pool and wetland breeding periods.**

    b. "Guide_1" - Avoid impacts to wetlands: This practice applies to areas mapped as habitat for state-listed amphibian species. However, if work must occur in wetland areas mapped for these species, strict BMPS shall be implemented to avoid harm to state-listed species and their habitats (e.g. using swamp mats).

12. **State-listed Aquatic Species** (i.e. fish, mussels, dragonflies, damselflies, snails, etc.)**:** These species are particularly sensitive to alterations to water quality of their aquatic habitats, which can include, but are not limited to changes in temperature, sediment delivery, and pollutant concentrations in the water body. Additionally, dragonflies and damselflies, which are aquatic as larvae, need vegetated foraging habitat in close proximity of their aquatic larval homes. Extra care should be taken to avoid direct impacts to wetland breeding and abutting upland habitats by following the BMPs summarized below and provided in the "Guide_1" and "Guide_2" columns of the shapefile table.

    a. "Guide_1" - Utilize appropriate erosion control measures: Haybales, silt fencing, etc. should be utilized when excavations or other activities resulting in soil disturbance will occur near wetland habitats.

    b. "Guide_2" - Minimize loss of native vegetation: This will allow dragonflies and damselflies to forage as adults in close proximity to their breeding sites. Additionally, retaining native vegetation near wetland habitats provides better erosion control and helps protect water quality.

13. **State-listed Snake Species**: Crew members should be aware that any snakes observed during vegetation management activities may be state-listed and protected pursuant to MESA. Direct

harm to or capture of state-listed snakes without a permit from the Division is considered an unauthorized Take and may be punishable by fines or imprisonment (321 CMR 10.06).

a. "Guide_1" - Consult with Division: Prior to any OMP activities proposed within habitat for state-listed snakes, the Division must be contacted for further guidance.

14. **State-listed Bat Species**: The Division should be contacted for further guidance (see "Guide_1") for OMP work in areas mapped for state-listed bats.

a. "Guide_1" - Consult with Division: Prior to any OMP activities proposed within habitat for state-listed bats, the Division must be contacted for further guidance.

As a condition of this OMP, the Division shall be provided in writing the names and phone numbers of designated contacts who will know where and when all work in mapped Priority Habitat will be occurring. Division personnel may visit OMP sites to assess compliance with the BMPs provided herein. **Additionally, within one (1) year from the date of this Division approval letter, a written summary (and/or shapefile) of activities that occurred within Priority Habitat, including locations, dates, a description of work, and BMPs implemented to protect state-listed species, shall be submitted to the Division.**

National Grid shall notify the Division at least 72 hours in advance of performing any OMP activities not shown in the current OMP. The Division will review said new OMP activities and provide guidance regarding any procedures or conditions necessary to protect state-listed species and their habitats. Pursuant to 321 CMR 10.15, emergency maintenance and repair activities within Priority Habitat may be conducted without prior Division notification. However, the Division must be notified of such emergency activities pursuant to 321 CMR 10.15 and mitigation may be required for any damage done to state-listed species habitats. Whenever possible, we recommend that the Division be notified in advance of emergency management activities so that we can provide immediate guidance about state-listed species associated with the work area and recommended BMPs. An emergency work form is also provided via email attachment, which will assist you in providing the Division with necessary information for emergency work performed within Priority Habitat.

Provided that the best management practices contained herein and in the 2022 OMP shapefile are adhered to, the OMP for 2022 meets the requirement for exemption from review under 321 CMR 10.18 through 10.23 and is hereby approved. **This approval of the 2022 National Grid OMP is valid for one (1) year from the date of issuance of this letter**. We appreciate the measures that National Grid is taking to manage and protect state-listed rare species and their habitats, and we look forward to working with you to further streamline the regulatory review process. If you have any questions or suggestions, please contact Lauren Glorioso, Endangered Species Review Biologist, at (508) 389-6361 (lauren.glorioso@mass.gov) or David Paulson, Senior Endangered Species Review Biologist, at (508) 389-6366 (david.paulson@mass.gov).

Sincerely,

Everose Schlüter, Ph.D.
Assistant Director

APPENDIX H

Environmental Justice Reference List

A1/B2 ACR EJ Reference List

Statewide Environmental Justice Community Based Organizations (received 2/24/2023)

Statewide Environmental Justice Community Based Organizations					
First Name	**Last Name**	**Title**	**Phone**	**Email**	**Affiliation**
Julia	Blatt	Executive Director	(617) 714-4272	juliablatt@massriversalliance.org	Mass Rivers Alliance
Elvis	Mendez	Associate Director	508-505-6748	elvis@n2nma.org	Neighbor to Neighbor
Ben	Hellerstein	MA State Director	617-747-4368	ben@environmentmassachusetts.org	Environment Massachusetts
Claire	B.W. Muller	Movement Building Director	508 308-9261	claire@uumassaction.org	Unitarian Universalist Mass Action Network
Cindy	Luppi	New England Director	617-338-8131 x208	cluppi@cleanwater.org	Clean Water Action
Deb	Pasternak	Director, MA Chapter	617-423-5775	deb.pasternak@sierraclub.org	Sierra Club MA
Heather	Clish	Director of Conservation & Recreation Policy	(617) 523-0655	hclish@outdoors.org	Appalachian Mountain Club
Heidi	Ricci	Director of Policy	Not Provided	hricci@massaudubon.org	Mass Audubon

Kelly	Boling	MA & RI State Director	(617) 367-6200	kelly.boling@tpl.org	The Trust for Public Land
Kerry	Bowie	Board President	Not Provided	kerry@msaadapartners.com	Browning the GreenSpace
Nancy	Goodman	Vice President for Policy	Not Provided	ngoodman@environmentalleague.org	Environmental League of MA
Rob	Moir	Executive Director	Not Provided	rob@oceanriver.org	Ocean River Institute
Robb	Johnson	Executive Director	(978) 443-2233	robb@massland.org	Mass Land Trust Coalition
Staci	Rubin	Senior Attorney	617 350-0990	srubin@clf.org	Conservation Law Foundation
Sylvia	Broude	Executive Director	617 292-4821	sylvia@communityactionworks.org	Community Action Works

Indigenous Organizations					
First Name	**Last Name**	**Title**	**Phone**	**Email**	**Affiliation**
Alma	Gordon	President	Not Provided	tribalcouncil@chappaquiddickwampanoag.org	Chappaquiddick Tribe of the Wampanoag Nation
Cheryll	Toney Holley	Chair	774-317-9138	crwritings@aol.com	Nipmuc Nation (Hassanamisco Nipmucs)
John	Peters, Jr.	Executive Director	617-573-1292	john.peters@mass.gov	Massachusetts Commission on Indian Affairs (MCIA)
Kenneth	White	Council Chairman	508-347-7829	acw1213@verizon.net	Chaubunagungamaug Nipmuck Indian Council
Melissa	Ferretti	Chair	(508) 304-5023	melissa@herringpondtribe.org	Herring Pond Wampanoag Tribe
Patricia	D. Rocker	Council Chair	Not Provided	rockerpatriciad@verizon.net	Chappaquiddick Tribe of the Wampanoag Nation, Whale Clan
Raquel	Halsey	Executive Director	(617) 232-0343	rhalsey@naicob.org	North American Indian Center of Boston
Cora	Pierce	Not Provided	Not Provided	Coradot@yahoo.com	Pocassett Wampanoag Tribe
Elizabth	Soloman	Not Provided	Not Provided	Solomon.Elizabeth@gmail.com	Massachusetts Tribe at Ponkapoag

Federally Recognized Tribes					
First	**Last**	**Title**	**Phone**	**Email**	**Affiliation**
Bettina	Washington	Tribal Historic Preservation Officer	508-560-9014	thpo@wampanoagtribe-nsn.gov	Wampanoag Tribe of Gay Head (Aquinnah)
Stockbridge-Munsee Tribe		**Historic Preservation Manager**	**413-884-6048**	**THPO@Mohican-nsn.gov**	**Stockbridge-Munsee Tribe**
Brian	Weeden	Chair	774-413-0520	Brian.Weeden@mwtribe-nsn.gov	Mashpee Wampanoag Tribe

First Name	Last Name	Title	Service Area	Phone Number	Email	Affiliation
Ryan	Odonnell	Water Quality Monitoring Coordinator	Agawam, Amherst, Athol, Charlemont,Chicopee, Easthampton, Gardner, Greenfield, Hadley, Heath, Hubbardston, Ludlow, Monroe, Northhampton, Orange, Palmer, Rowe, Royalston, Southwick, Springfield, Sunderland, Ware, Wendell, West Springfield, Westfield,	Not provided	rodonnell@ctriver.org	Connecticut River Conservancy

APPENDIX I

Annotated Secretary's Certificate and Comment Letters

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Bethany A. Card
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181
http://www.mass.gov/envir

October 31, 2022

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
EXPANDED ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME	: A1/B2 Asset Condition Refurbishment (ACR) Project
PROJECT MUNICIPALITY	: Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling
PROJECT WATERSHED	: Nashua, Connecticut River, and Millers River
EEA NUMBER	: 16607
PROJECT PROPONENT	: New England Power Company (NEP)
DATE NOTICED IN MONITOR	: September 23, 2022

Pursuant to the Massachusetts Environmental Policy Act (MEPA; M.G.L. c. 30, ss. 61-62L) and Section 11.06 of the MEPA Regulations (301 CMR 11.00), I have reviewed the Expanded Environmental Notification Form (EENF) and hereby determine that this project **requires** the preparation of a Draft Environmental Impact Report (DEIR). The EENF identifies baseline environmental conditions and potential environmental impacts but contains an inadequate alternatives analysis and a limited description of mitigation measures. In particular, the DEIR should explore alternatives to reduce the extent of tree clearing so as to avoid or minimize impacts to environmental resources. The DEIR should discuss whether a Wetlands Variance or Article 97 legislation is needed, and if so, include a full description of how the project will comply with applicable requirements. The Proponent should offer meaningful mitigation measures to offset the environmental impacts in project areas where impacts to wetlands and undisturbed forests cannot be avoided or minimized. As an adequate alternatives analysis is a central component of the MEPA review process, the request to file a Single EIR is denied.

CS-1
CS-2
CS-3
CS-4

Project Description

As described in the EENF, the project is part of a larger refurbishment effort that continues north of the Massachusetts border and terminates at the Vernon Substation located in Vernon, Vermont. The A1/B2 Line ("mainline") is approximately 61.12 miles long, including 54 miles of Right-of-Way (ROW) within Massachusetts. In addition to the mainline, work will be conducted on three tap lines: the Athol Taps 1 and 2, Crystal Lake Tap, and East Westminster Tap. The project consists of refurbishment of the mainline and all three tap lines. Work will be conducted in the Towns of Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling. The refurbishment project includes replacement of 711 structures and installation of six new structures (vertical jumper switches). The 711 structures to be removed and replaced at adjacent locations include 406 poles to be directly embedded in the ground and 305 structures to be placed on concrete caisson foundations. Additional work includes construction of new and improvement of existing access roads, reconductoring of both circuits with 795 ACSS (Aluminum Conductor Steel Supported) conductor, installation of two Optical Ground Wires (OPGWs),[1] and relocation of the centerline (for a 5.2 mile section). Tree removal will be done to obtain a minimum horizontal clearance of 30-feet[2] (38-feet assuming a stationary position) from the conductor to the edge of ROW/easement under all horizontal clearance weather conditions. The EENF states the existing maintained ROW on the mainline, the Crystal Lake Tap Line and the Athol Tap Line is roughly 85-ft, 75-ft, and 100-ft, respectively. To provide the necessary clearances for the replacement and new structures, the mainline and Crystal Lake Tap ROWs will be cleared to 100-ft, and the Athol Tap ROW will be cleared to 125-ft. Following the completion of construction. The East Westminster Tap Line is located within the mainline ROW and would be part of the mainline vegetation clearing.

As part of the project and based on the results of a 2050 ISO-NE transmission study,[3] the Proponent proposes to upgrade the existing 69 kV line to support 115 kV capacity (lines will be larger in capacity and size which will allow more electricity to flow during times of high usage); however, the Proponent will continue to operate the new line at 69 kV until additional capacity is needed. The EENF states that the upgrade is based on forecasts for future renewable energy connections and customer needs which will require the system to operate at the higher voltage at some point in the future. Due to outage constraints associated with the A1/B2 lines, the project will need to utilize live line construction techniques (meaning that construction activities are conducted while the overhead lines are energized). The EENF states that this requires the replacement structures and engineered steel structures to be installed at a height above the existing structures to ensure worker and equipment safety. The replacement and new structure height for the mainline and tap lines is approximately 93-ft above ground (110-ft for direct embed structures), which is approximately twice as tall as the existing mainline and tap line structures standing at 51-ft and 45-ft, respectively.

Project Corridor

As described in the EENF, the project activities will be located within the Towns of Warwick, Royalston, Athol, Winchendon, Gardner, Westminster, Fitchburg, Leominster, and Sterling. The project

[1] The current shield wire located at the top of the structures (for lightening protection) will be replaced with two OPGWs to provide grounding and support high-speed relay and system communication.
[2] 30 ft assumes some movement of the conductor away from the conductor and toward the edge of the ROW.
[3] Independent System Operator – New England ("ISO-NE") 2050 Transmission Study: *https://www.iso-ne.com/static-assets/documents/2022/03/a4_2050_transmission_study_preliminary_n_1_and_n_1_1_thermal_results_presentation.pdf*

ROW is generally oriented northwest-to-southeast from Warwick to Sterling, MA. The existing mainline consists of two 69 kV overhead electric transmission lines ("wires") that are supported primarily on lattice towers ("structures"). The existing 69 kV tap lines consist of the existing Athol Taps 1 and 2 in Athol and Royalston, the existing Crystal Lake Tap in Gardener, and the existing East Westminster Tap in Westminster. Tap lines are comprised of wood pole structures. As noted above, the mainline is generally located within a 100-ft easement; however, in Sterling and Leominster, the mainline is co-located with the I135S/J136S Lines and the ROW is wider in these locations to accommodate required clearances. The East Westminster Tap is a two structure tap line located within the mainline ROW. Along the Athol Tap, lines are generally within a 125-ft easement/ROW and the Crystal Lake Tap Line is generally within a 100-ft wide easement/ROW.

Conditions within the project area include moderately level terrain, as well as steeply sloping river terraces and cliffs. Upland portions of the ROW consist of shrubby and herbaceous vegetation communities. Where undeveloped, the edge of the ROW consists of forested upland and wetland. Land use adjacent to the project ROW includes agricultural, recreational, as well as commercial and residential development. The ROW crosses multiple reservoirs, rivers, ponds, as well as numerous streams and wetland systems. The EENF states that there are approximately 40 Certified Vernal Pools (CVPs) located within a half-mile of the ROW in Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, and Sterling. There are no CVPs mapped within the ROW; however, the Proponent identifies at least one potential vernal pool where temporary construction mats are proposed.

The project corridor crosses Outstanding Resource Waters (ORWs) including Notown Reservoir, Fall Brook Reservoir, Goodfellow Pond, Simonds Pond, Distributing Reservoir, Morse Reservoir (all in Leominster) and Parleys Brook Reservoir (in Gardner). The ROW contains Bordering Vegetated Wetlands (BVW), Isolated Vegetated Wetlands (IVW), Inland Bank, Land Under Water (LUW), Bordering Land Subject to Flooding (BLSF), Riverfront Area (RFA), and associated buffer zones. The project corridor includes mapped areas that are inundated during a 100-year storm as mapped on the Federal Emergency Management Act (FEMA) Flood Insurance Rate Maps (FIRMs); however, the map legend color is not easily distinguishable on the plans included in the EENF. The EENF identifies areas of Priority Habitat and Rare Species as determined by the 15th Edition of the Massachusetts Natural Heritage Atlas including nine species present in Warwick, Royalston, Winchendon, Athol, Fitchburg, and Leominster. The site contains several historic and archaeological sites previously recorded in the Massachusetts Historical Commission's (MHC) Inventory of Historic and Archaeological Assets of the Commonwealth.

CS-5

The project site is located within five Environmental Justice (EJ) populations in four municipalities[4] characterized by Income, Minority, and Minority and Income and within one mile of 13 EJ populations in five municipalities[5] also characterized by Income, Minority, and Minority and Income. The site is located within five miles of 65 EJ populations, within eight municipalities, characterized by Income, Minority, Minority and Income, and Minority, Income, and English Isolation. As described below, the EENF identified the "Designated Geographic Area" (DGA) for the project as one mile around EJ populations, included a review of potential impacts and benefits to the EJ populations within this DGA, and described public involvement efforts undertaken to date.

[4] Athol, Gardner, Leominster, and Fitchburg.
[5] Athol, Gardner, Fitchburg, Leominster, and Lancaster.

Environmental Impacts and Mitigation

According to the EENF potential environmental impacts associated with the project include the alteration of ±216 acres of land consisting of 164 acres of permanent impacts associated with tree clearing and 52 acres associated with new/improved access. Potential impacts to wetland resource areas are listed in the table below.

Wetland Resource Area	Temporary Construction Mat sf/acre	Permanent Wetland Impacts sf/acre	Total Impact sf/acre
BVW	2,200,651 / 51	661,928 /15	2,868,580 / 66
IVW	73,181/1.7	11,8400 /0.3	85,021/ 2
BLSF[6]	13,939 /0.3	375,578/ 8.6	389,517 / 9
RFA[7]	513,137 / 12	2,101,678 / 48	2,614,816 / 60
LUW	32,206/0.74	158 sf	32,364/ 0.74
Bank[8]	67,954 linear feet (lf)	26,572 lf	94,526 lf

Temporary impacts are associated with construction mats for access roads, work pads and pull pad envelopes, and mowing associated with the current Vegetation Management Plan (VMP). Permanent impacts are associated with fill for structure foundations (2 within LUW), cut and fill for access roads, work envelopes, pull pads, retaining walls,[9] stabilization material for access roads, and tree removal. The EENF does not identify acres of impact in priority habitat of state-listed rare species. Greenhouse Gas (GHG) emissions and other air pollutants are associated with the clearing of trees and loss of carbon sequestration.

CS-6

Measures to avoid, minimize, and mitigate project impacts include use of existing access roads to avoid new land disturbance, where feasible; use of temporary construction mats where crossing wetlands or water courses is unavoidable; spanning of streams to avoid impacts to bank; replacing structures outside of BVW where feasible; use of erosion and sedimentation controls and other best management practices (BMPs) during construction; restoration of any disturbed areas to existing grades to allow for revegetation with compatible species; and restoration of temporarily impacted wetland resources to pre-construction conditions. Tree stumps will be left in place except at work envelopes and structure locations, and within access roads. The EENF does not describe tree clearing methods that might be used to minimize site disturbance such as clearing by hand in sensitive areas or use of feller bunchers (as recommended in comments from the Massachusetts Department of Environmental Protection (MassDEP)). Compensatory flood storage and wetland replication are proposed to mitigate for permanent fill in BVW and BLSF. The EENF indicates that significant archaeological resources will be avoided if safe/practicable alternatives are available and the Proponent will conduct investigations for archaeological resources in accordance with a Massachusetts State Archaeologist's permitted plan prior to any site preparation or excavation. The EENF states that a compensatory mitigation plan will be

CS-7

[6] Impacts are the result of 56,521 sf of access road and 237,402 sf of cut associated with work envelopes, pull pads and access proposed in BLSF; however, areas will be over-excavated and not result in fill.
[7] Note that impacts located within the limits of Riverfront Area overlap with impacts to BLSF, BVW, and the 100-ft Buffer Zone. Therefore, the total impacts to the project site are not equal to the sum of alterations.
[8] Construction mats will span the Bank of rivers and streams; however, the totals reflect the potential for alteration.
[9] Permanent retaining walls will be gabion basket, large block gravity, mechanically stabilized earth, sheet pile. Construction mats may be used but would only be temporary.

developed in consultation with MassDEP and the nine local conservation commissions to mitigate for permanent wetland conversion and to form the conditions for a 401 Water Quality Certification (WQC) to be issued by MassDEP. A more comprehensive discussion of mitigation, including for the extensive tree clearing proposed by the project, should be provided in the DEIR.

CS-8

Jurisdiction and Permitting

The project is undergoing MEPA review and is subject to a mandatory EIR pursuant to 301 CMR 11.03(1)(a)1. and 301 CMR 11.03(3)(a)1.a. & b. of the MEPA regulations because it requires Agency Actions and will result in the alteration of 50 or more acres of land, one or more acres of BVW, and ten or more acres of any other wetland, respectively. Additionally, the project exceeds the Environmental Notification Form (ENF) thresholds at 301 CMR 11.03(3)(b)(1)b., 301 CMR 11.03(3)(b)(1)f., 301 CMR 11.03(2)(b)2. for alteration of 500 or more linear feet of bank along a fish run or inland bank, alteration of on half or more acres of any other wetlands, and greater than two acres of disturbance of designated priority habitat, respectively. In addition to exceeding mandatory EIR thresholds, the project requires the preparation of an EIR under 301 CMR 11.06(7)(b) of the MEPA regulations because it is located within one mile of one or more EJ populations. The project requires a WQC from MassDEP and review by the Natural Heritage Endangered Species Program (NHESP) and potentially a Conservation Management Permit (CMP). The project will require a Construction Access Permit (CAP) from DCR and an Access Permit from the Massachusetts Department of Transportation (MassDOT). The project will file a Petition for Approval to Construct Transmission Lines with the Energy Facilities Siting Board (EFSB) pursuant to G.L. c. 164, §69J and with the Department of Public Utilities (DPU) pursuant to G.L. c. 164 requesting exemptions from municipal Zoning Ordinances (Petition for Determination of Public Necessity and Convenience). The project is subject to review under the May 2010 MEPA GHG Emissions Policy and Protocol (GHG Policy). Comments from the MassDEP Waterways Program indicate additional information is required to determine if Chapter 91 (c. 91) authorization may be required.

The project requires Orders of Conditions from the Athol, Fitchburg, Gardner, Leominster, Royalston, Sterling, Warwick, and Winchendon Conservation Commissions (or in the case of an appeal, a Superseding Order of Conditions from MassDEP); a Section 404 General Permit from the U.S. Army Corps of Engineers (USACE); a National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) from the U.S. Environmental Protection Agency (EPA); Section 7 clearance renewal from the U.S. Fish and Wildlife Service; and review by MHC acting as the State Historic Preservation Officer (SHPO) pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800).

The project is not receiving Financial Assistance from the Commonwealth. Therefore, MEPA jurisdiction is limited to those aspects of the project that are within the subject matter of any required or potentially required Agency Actions and that may cause Damage to the Environment, as defined in the MEPA regulations.

Request for Single EIR

The MEPA regulations at 301 CMR 11.06(8) indicate that a Single EIR may be allowed provided I find that the EENF:

a) describes and analyzes all aspects of the project and all feasible alternatives, regardless of

any jurisdictional or other limitation that may apply to the Scope;

b) provides a detailed baseline in relation to which potential environmental impacts and mitigation measures can be assessed; and,

c) demonstrates that the planning and design of the project use all feasible means to avoid potential environmental impacts.

For any Project for which an EIR is required in accordance with 301 CMR 11.06(7)(b), I must also find that the EENF:

d) describes and analyzes all aspects of the Project that may affect Environmental Justice Populations located in whole or in part within the Designated Geographic Area around the Project; describes measures taken to provide meaningful opportunities for public involvement by Environmental Justice Populations prior to filing the expanded ENF, including any changes made to the Project to address concerns raised by or on behalf of Environmental Justice Populations; and provides a detailed baseline in relation to any existing unfair or inequitable Environmental Burden and related public health consequences impacting Environmental Justice Populations in accordance with 301 CMR 11.07(6)(n)1.

Consistent with this request, the EENF was subject to an extended comment period under 301 CMR 11.05(8).

Review of the EENF

The EENF provides a description of existing and proposed conditions; preliminary project plans; a limited analysis of alternatives; assessment of impacts; a review of construction methods; and a discussion of the project's compliance with the MEPA Greenhouse Gas (GHG) Policy. It also included a description of measures taken to enhance public involvement by EJ populations and a baseline assessment of any existing unfair or inequitable Environmental Burden and related public health consequences impacting EJ Populations in accordance with 301 CMR 11.07(6)(n)1. Consistent with the MEPA Interim Protocol on Climate Change Adaptation and Resiliency, the EENF contained an output report from the Climate Resilience Design Standards Tool prepared by the Resilient Massachusetts Action Team (RMAT) (the "MA Resilience Design Tool"),[10] together with information on climate resilience strategies to be undertaken by the project. The EENF included a copy of National Grid's Vegetation Management Plan for 2019-23 and a Wildlife Habitat Analysis.

Alternatives Analysis

The EENF describes the need for the project, stating that the mainline was originally constructed in 1909 and that the original lattice structures remain. The lines were reconductored in the 1920s and were reinsulated in 2004. Structures and wires are in need of replacement due to asset condition and aging infrastructure. In addition, the access conditions vary considerably throughout the ROW. The EENF indicates that existing access is present in some areas, but in others, the historic access route requires significant repair and does not meet New England Power's standard to safely support specialized equipment. The Proponent states that the primary objective is to complete required system improvements to address poor asset condition, mitigate potential risks of electrical failure, and to provide long-term reliable delivery of electrical service and maintenance of the lines. The EENF

[10] https://resilientma.org/rmat_home/designstandards/

describes the criteria for evaluating alternatives including:

- Meets the identified project need and reliability;
- Addresses the various regulatory and permitting objectives;
- Minimizes environmental impacts;
- Provides a cost-effective solution to customers.

The EENF includes analysis of a No Build Alternative, a Critical Asset Repair Alternative, and a 69 kV Rebuild Alternative. The No Build Alternative establishes a baseline against which the project can be evaluated but is not a feasible option because deteriorating structures would pose a safety risk to personnel, would affect the reliability of electrical service to customers, and would not provide the high speed communication line between substations that is needed. For these reasons, the No Build Alternative was dismissed.

The EENF describes the Critical Asset Repair Alternative which would address only asset related issues that are deemed "critical" to repair, and would not address the entirety of asset condition concerns. This alternative would not improve the reliability of the existing communications between substations served by the circuits, and would result in inefficiencies in revisiting the same ROW to conduct additional work within a short time span. For these reasons, this alternative was dismissed.

The 69 kV Rebuild Alternative would rebuild the structures along the mainline and tap lines to meet 69kV standards as described further below. As noted above, the Proponent proposes to upgrade the carrying capacity of the lines to 115 kV to meet the future needs of customers and renewable energy production, while making needed repairs to the line. Rebuilding the line to meet 69 kV standards would decrease the height of the new structures required, but only by approximately 5.5 ft. The horizontal clearance requirements for the slightly shorter structures would be the same as for the structures to meet the 115 kV requirements; therefore, tree removal would not be reduced. Refurbishing the lines at 69 kV would not reduce environmental impacts and would not provide the benefit of operating the Lines at 115 kV in the future; therefore, this alternative was dismissed.

The EENF describes the replacement structure design as double-circuit davit arms for the mainline, and single-circuit davit arms for the tap lines. The EENF included the table below describing the alternative structures, alternative davit arm length, and installation methods considered for the mainline and tap lines.

Table 5: 115 kV Structure Design Alternative Evaluated and Reasons for Elimination

	Alternative	Reasons for Elimination
Mainline	Two single circuit structures	Two single circuit structures were eliminated as the design for the mainline as it would have required an increase in work footprint, additional concrete caisson foundations, and doubled the number of steel poles required.
	7-ft Davit Arm	A 7-ft davit arm was evaluated and rejected for use along the mainline structures. This is due to the findings of the ice jumping study, which identified that a 10-ft middle davit arm is required to maintain adequate clearance during ice-shedding.
	Direct embed all structures	Direct embed structures were evaluated for all locations along the mainline. However, due to wide range of soil conditions on the ROW, the direct embed method will not be feasible at all locations. Where possible, structures will be direct embedded 10% of their height plus 6-ft. Where soil conditions do not support direct embed structures, concrete caissons will be utilized.
	Light Duty Steel Poles	Due to the proximity of the proposed A1 structure to the existing B2 line, the diameter of light duty poles would not maintain safe clearance distance.
Athol Tap	Delta davit arm configuration structures	The Athol Tap #2 Line was first proposed as delta configuration structures since the line is being rebuilt in place and will allow this type. This scope was changed to a vertical configuration to match the structures on the Athol #1 Tap. Reliability of inward facing circuits are believed to be better than delta by limiting risk of tree contact. 2 single circuit H-frames would require 150-ft of ROW width vs the proposed 125-ft total.
		Vertical: both circuits will be the same height, better visually, would require taller structures and caisson foundations. Delta: Structures are shorter, but less visually pleasing. If skipping structures, direct embed foundations may be similar in cost to caisson foundations.
Athol and Crystal Lake Tap Lines	Double circuit structures	Because of reliability concerns associated with having both tap lines on the same structure, it was preferred to install single circuit structures.

Each of the alternatives was excluded due to increased footprint, ice jump condition,[11] soil conditions, and safe clearance distance. For the tap lines, alternative structure types were evaluated and excluded due to outage constrains, reliability concerns, and risk of tree contact.

CS-9 The EENF does not describe alternatives related to location of new access roads (where needed) or reduced or varying tree clearing widths, or a scenario that would avoid or reduce clearing within

[11] The maximum jump height of a transmission line after ice-shedding. Ice-shedding from conductors can cause significant vertical vibration of the transmission line.

sensitive environmental resource areas. The EENF indicates that the new structures will be over 30 ft higher than the existing structures (new structures 93 to 100 ft above ground). It does not discuss how the required clearing width was established related to site topography such that transmission lines would be located higher than the existing trees.[12] The EENF indicates that the Preferred Alternative will best address the identified purpose and need for the project and will improve transmission system reliability. As stated in the Scope, the DEIR should evaluate "Reduced Build" alternatives that avoid or minimize environmental impacts. Comments from MassDEP state that the DEIR should provide a serious evaluation of reasonable alternatives to the proposed activity (including alternatives to reduce the full extent of the proposed cutting), an evaluation of the extent to which adverse impacts are minimized, and documentation that full mitigation is provided for unavoidable impacts. Based on this demonstration, a Variance to the WPA regulations may be required pursuant to 310 CMR 10.05(10). The Proponent should respond to the MassDEP comment letter incorporated by reference herein and the Scope below.

CS-10
CS-11
CS-12

Environmental Justice

The EENF indicates that the DGA for the project is one mile; as noted above, the project site/ROW is located within five EJ populations, characterized by Income, Minority, and Minority and Income, and within one mile of 13 additional EJ populations characterized by Income, Minority and Minority and Income. The site is located within five miles of 65 EJ populations characterized by Minority, Income, and Minority and Income, and Minority, Income, and English Isolation. Within the census tracts containing the above EJ populations within the DGA, the following languages are identified as those spoken by 5% of more of residents who also identify as not speaking English very well: Spanish or Spanish Creole.

Effective January 1, 2022, all new projects in the DGA (as defined in 301 CMR 11.02, as amended) around EJ populations are subject to new requirements imposed by Chapter 8 of the Acts of 2021: *An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy* (the "Climate Roadmap Map") and amended MEPA regulations at 301 CMR 11.00.[13] Two related MEPA protocols – the MEPA Public Involvement Protocol for Environmental Justice Populations (the "MEPA EJ Public Involvement Protocol") and MEPA Interim Protocol for Analysis of project Impacts on Environmental Justice Populations (the "MEPA Interim Protocol for Analysis of EJ Impacts") – are also in effect for new projects filed on or after January 1, 2022.[14] Under the new regulations and protocols, all projects located in a DGA around one or more EJ populations must take steps to enhance public involvement opportunities for EJ populations and must submit analysis of impacts to such EJ populations in the form of an EIR.

The EENF describes public involvement activities conducted prior to filing, including advance notification of the project circulated to a list of community-based organizations (CBOs) and tribes/indigenous organizations (the "EJ Reference List") provided by the MEPA Office in consultation with the EEA EJ Director. The EENF indicates that no additional CBOs, tribes/indigenous organizations, or other EJ community members were identified during the outreach program that would require continued notices during the course of MEPA review. Circulated information included the EJ

[12] The Proponent provided additional information after the close of the comment period (October 25, 2022) related to guidance on tree clearing widths. A summary of the guidance should be included in the DEIR.
[13] MEPA regulations have been amended to implement Sections 55-60 of the Climate Roadmap Act and took effect on December 24, 2021. More information is available at https://www.mass.gov/service-details/information-about-upcoming-regulatory-updates.
[14] Available at https://www.mass.gov/service-details/eea-policies-and-guidance.

Screening Form, including a copy translated into Spanish, and information on ways to request additional information or a community meeting including language interpretation. The EJ screening form included a link to a public project website (http://www.newenglanda1b2.com/) which is available in English and Spanish and provides an interactive mapper and contact information. A copy of the EENF and supporting documentation, as well as the MEPA remote consultation meeting notice, were distributed to the EJ Reference List. The Proponent also held a virtual public meeting on July 11, 2022 prior to filing the EENF; information pertaining to this meeting was advertised in the *Athol Daily News, Sentinel & Enterprise (Fitchburg and Leominster), Gardner Magazine and The Gardner News, Winchendon Recorder, Worcester Telegram & Gazette, and the Greenfield Recorder*, and was also provided to the EJ Reference list via email and to the abutters of the A1/B2 Lines via mail. Interpretation services were provided at the public meeting upon request but no requests were received. Supplemental information submitted by the Proponent indicates that there were less than ten attendees at the public meeting.[15] Two additional virtual presentations were provided to the public on October 14, 2021 and February 17, 2022, and less than ten individuals participated in each of these events. The DEIR should provide plans for future outreach, including to EJ populations, during the remainder of the MEPA review process. The
CS-13 Proponent should conduct further public engagement activities prior to filing the DEIR as outlined in the Scope.

The EENF contains a baseline assessment of existing unfair or inequitable Environmental Burden and related public health consequences impacting EJ populations in accordance with 301 CMR 11.07(6)(n)1 and the MEPA Interim Protocol for Analysis of EJ Impacts. The EENF indicates that "vulnerable health EJ criteria" for municipalities located within one mile of the project area were identified using the Massachusetts Department of Public Health (DPH) EJ Tool; this term is defined in the DPH EJ Tool to include any one of four environmentally related health indicators that are measured to be 110% above statewide rates based on a five-year rolling average.[16] Within the project's DGA, the Proponent indicates that the communities of Gardner, Athol, Fitchburg, Leominster, and Lancaster meet at least one of the four "vulnerable heath EJ criteria"; however, the EENF does not identify which communities and census tracts exceed 110% of the statewide rate for each criteria: Heart Attack Rate,
CS-14 Pediatric Asthma Rate (available at the community level), Low Birth Weight, and Blood Lead Prevalence (available at the census tract level). The DEIR should provide additional analysis of impacts on EJ populations consistent with the MEPA Interim Protocol including fully analyzing the data available in the DPH tool at the municipal and census tract level.

The EENF also includes a review of the mapping layers available in the DPH EJ Tool to identify sources of potential pollution existing within the identified EJ population. The information is summarized in the table below.

[15] Email from BSC Group, October 25, 2022.
[16] See https://matracking.ehs.state.ma.us/Environmental-Data/ej-vulnerable-health/environmental-justice.html. Four vulnerable health EJ criteria are tracked in the DPH EJ Viewer.

Table 23: Other Potential Sources of Pollution within EJ Boundaries (1 - Mile)

Municipality	EJ Census Tracts	Air Operating Permits	Large quantity generators	Large quantity toxic user	M.G.L. c. 21E Sites	"Tier II" toxics use reporting facilities	MassDEP sites with AULs	MassDEP groundwater discharge permits	Wastewater treatment plants	MassDEP public water suppliers	Underground storage tanks	EPA facilities	Energy generation and supply	Total
ATHOL	7031, Block Group 1 and 2	0	0	0	0	2	4	0	1	0	3	2	0	12
	7032, Block Group 3	0	0	0	1	0	0	0	0	0	1	0	0	2
	7033, Block Group 1	0	0	0	1	3	1	0	0	0	4	0	0	9
GARDNER	7075, Block Group 1	0	0	0	0	4	0	0	1	1	1	0	1	8
	7075, Block Group 2	0	1	0	0	1	0	0	0	0	1	1	1	5
	7075, Block Group 3	0	1	0	0	0	1	0	0	0	2	0	0	4
FITCHBURG	7103, Block Group 2	2	2	4	4	7	3	0	1	0	6	2	1	32
LEOMINSTER	7092.02, Block Group 2	0	0	0	0	0	0	0	0	0	1	0	0	1
LANCASTER	7131, Block Group 4	0	0	0	1	0	0	0	1	1	3	1	0	7

CS-15 Based on the baseline assessment of existing burdens, the EENF does not conclude whether or not there is an existing "unfair or inequitable" burden; however, it asserts that the project will not result in disproportionate adverse effects on the EJ populations. In particular, the EENF asserts that the project will benefit surrounding communities by increasing reliability of the overall transmission line through refurbishment of the existing structures and wires on more robust structures. Higher strength conductor will be installed which is better suited to withstand storm events and is less prone to experiencing line outages, and the new overhead lines will be larger which will allow more electricity to flow during times of high usage, such as extreme heat events, which are anticipated to increase in frequency due to climate change. The EENF asserts that approximately 10% of the project's overall impacts within the ROW and access roads will occur within EJ populations with 90% of the project work occurring in non-EJ populations. The EENF further identifies that 24 acres (15% of project total) of tree removal will occur within EJ populations. An examination of the proposed conditions in all EJ neighborhoods reveals that in one section of the ROW, approximately 0.31 miles long parallel to Park Street in Gardner, proposed tree removal intermittently extends to the existing tree line on the east side of some properties. Where this occurs, the EENF notes that shade to these properties in the morning will be reduced, though not fully eliminated, and portions of the property near the ROW may experience a minor short-term increase CS-16 in temperature; although it is not clear that the impact would be short-term if trees are not allowed to regrow and the area will be maintained through the Proponent's VMP. The EENF also indicates that none of the concrete caisson foundations, some of which are located within the 100-yr flood zone, are located within EJ populations and only temporary impacts (mats) will impact the 100-yr flood zone in EJ neighborhoods. The EENF asserts that the project will minimize construction-phase impacts to air quality, water quality, and noise through the use of BMPs. The Proponent commits to using ultra-low sulfur diesel fuel, emission control devices, and limits on idling of construction vehicles.

As discussed in the Climate Change section below, the project has a high exposure and risk rating based on the project's location for extreme precipitation (riverine flooding) and extreme heat. The

project plans to engage in large-scale tree removal along the entirety of the mainline and tap lines. Implications for GHG emissions and heat island effects should continue to be analyzed as set forth in the Climate Change Scope below. To the extent tree clearing will affect adjacent EJ populations with heightened vulnerabilities as shown by the DPH EJ Tool or EPA EJ Screen, specific mitigation should be considered.

CS-17

The EENF also describes potential impacts to open space and notes project work within the Gardner Municipal Golf Course and Leominster State Forest; both properties are within EJ populations. Comments from DCR indicate concerns for recreational impacts to the access point in Warwick State Forest that is proposed to be co-located with the Metacomet Monadnock Trail and requests additional specific protection and restoration measures to be taken for sensitive natural and cultural resources on public conservation lands. These issues should be discussed in the DEIR.

CS-18

Land Alteration

The EENF indicates that the land area within the project ROW is approximately 844.4 acres. Land uses were evaluated within the ROW and for a 300-ft buffer on either side of the ROW and consist primarily of "Exempt Property"[17] (46 percent of ROW and 43 percent of buffer) and residential (28 percent of ROW and 32 percent of buffer). The mainline crosses four DCR properties including Leominster State Forest in Leominster and Fitchburg; Royalston State Forest in Royalston; Otter River State Forest in Royalston and Winchendon; and Warwick State Forest in Warwick. These properties account for 78.54 acres of land within the project area. The EENF also lists federal, municipal, and land trust properties adjacent to the ROW in each municipality but does not identify the acreage impacted by the project. According to the EENF, the majority of new land alteration will occur as the result of the construction of new access roads and the modification of previously existing access roads and required tree removals to obtain required clearances to the edge of the ROW. As noted above, approximately 216 acres of permanent impacts are proposed and will result from the construction of access roads, work pads/envelopes and pull pads, and vegetation removal/tree clearing.

CS-19

Access Roads

The EENF describes the need for significant improvement of historic access roads to meet the access requirements for the project (to accommodate construction materials and equipment). These roads are categorized as either Standard Road Type 1-2 or Designed Road Type 3-5. The construction of access roads will include import, placement, and compaction of gravel to create a new road to access structures for construction. The EENF describes Standard Roads Type 1-2 to include upland areas where the terrain is relatively level and will not require significant cut/fill to construct. Designed Road Type 3-5 are proposed where the existing terrain is steeper and will, in turn, require additional cut/fill to construct. The EENF notes that designed roads include stormwater BMPs to control runoff and mitigate erosion of the constructed roads and/or adjacent slopes. The EENF states swales, stone check dams, water bars, or other similar measures will be installed as necessary based on the access road design. The EENF states new access roads were sited within the existing ROW easement to the extent feasible; however, due to existing site constraints (e.g., steep slopes, rocky outcrops, proximity to wetland resource areas), some access routes are sited beyond the existing easement boundaries. The Proponent proposes to maintain all new access roads (including those which extend beyond the existing easement)

[17] Exempt Property are properties that qualify from exemption from taxation under various provisions of the law and include public land and facilities, hospitals, schools, churches and cultural institutions, M.G.L. c. 59, §5.

once they are constructed, meaning that it will need to obtain additional easements from landowners. Land alteration associated with new/improved access (assuming a 12-ft wide travel lane) is approximately 52 acres total for the project.

Work Pads/Envelopes and Pull Pads

The EENF describes work envelopes that will be placed at all structures where work is proposed. In upland areas, stone work pads will be constructed and have been designed to be approximately 157 ft by 80 to 100 ft depending on the width of the ROW and the extent of grading required to create a level work area and provide adequate space for work adjacent to a live/electrified line. In wetlands and agricultural fields, construction matting will be utilized to create the work area. While the majority of work envelopes are within the existing ROW, there are ten work envelopes in Westminster, seven in Leominster, five in Sterling, and three in Athol that are partially or completely off the ROW. Construction of work and pull pads, and in some cases access road improvements, will require the use of retaining walls. The EENF notes that retaining walls will be selected during construction based on geotechnical and site constraints and may be constructed of gabion baskets, large block, mechanically stabilized earth (MSE), or construction mats (temporary). Comments from MassDEP state that the area and extent of impacts of any proposed retaining wall within a resource area, or within the buffer zone of a resource area, should be identified, and should avoid, minimize and mitigate impacts to the maximum extent practicable.

CS-20

Vegetation Removal/Tree Clearing

The EENF states that a horizontal distance of 30 ft must be maintained from the conductor to the edge of the ROW under all weather conditions (38 ft assumed when conductor is in a stationary position). As noted above, the existing maintained ROW on the mainline, Crystal Lake Tap Line and Athol Tap Line is roughly 85 ft, 75 ft, and 100 ft, respectively. To provide the necessary clearances for the replacement and construction of new structures, the mainline and Crystal Lake Tap ROWs will be cleared to 100-ft and the Athol Tap ROW will be cleared to 125-ft. It is anticipated that approximately 105 acres on ROW and 18 acres off ROW will be cleared to meet the required horizontal clearances. The EENF states that all vegetation removal on DCR property will remain within the ROW and all off-ROW clearing will be coordinated with private landowners. Following the completion of construction, maintenance activities will be consistent with the Five-Year Vegetation Management Plan (2019-23), which was included in the EENF (subject to renewal by the Massachusetts Department of Agricultural Resources (MDAR) pursuant to 333 CMR 11.00).[18] A summary of tree removal impacts in the ROW and off-ROW is included below.

[18] The Proponent's VMP takes into account not only 333 CMR 11.00 and Chapter 132B, but all applicable state and federal regulations that mandate the management of utility rights-of-way including but not limited to: all pertinent clauses in Chapter 85 of the Acts of 2000; MESA; MGL c. 131 A and 321 CMR 10.00; 310 CMR 10.00 and 310 CMR 22.00; 310 CMR 40.0000; applicable Federal Energy Regulatory Commission standards including NERC Standard FAC-003-1, Commissioner Order 693, FAC-003-2 (effective July 1, 2014), and all applicable Federal Occupational Safety and Health Act, Department of Transportation and Department of Environmental Protection regulations.

Tree Removal Location	Approximate Acres on ROW	Approximate Acres Off ROW
Project Wide in MA	109	55
Wetlands	14	2
Riverfront Area[21]	14	3
Open Space	50	9
State Article 97 Land (DCR Property)	18	1
Municipal Article 97 Lands	10	2
Private Article 97 Lands	2	< 0.25
Federal Property	2	3
Land Trust Property	3	< 2
DFW/WMA	14	1

CS-21 Comments from MassDEP indicate concern for the increase in the peak runoff rate and land destabilization associated with tree clearing. The DEIR should provide greater detail regarding proposed mitigation to prevent erosion and stabilize soils in these areas. Further analysis of land alteration impacts, including GHG and EJ implications, should be conducted as indicated in the Scope. Appropriate mitigation should be provided, including in accordance with WQC permitting.

Rare Species

According to the EENF and the *Massachusetts Natural Heritage Atlas* (15th Edition), portions of the project area are mapped as *Priority* and *Estimated Habitat* for state-listed species, including nine state-listed species (two reptiles, one amphibian, two invertebrates, three birds, and one plant), along portions of the project route in Warwick, Royalston, Winchendon, Athol, Fitchburg and Leominster. Specific species are not identified in the EENF at NHESP's request. These species and their habitats are protected pursuant to the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (MESA; 321 CMR 10.00). The EENF does not detail the acres of designated Priority Habitat of state-listed rare species to be altered as a result of the project. The DEIR should identify both
CS-22 temporary and permanent impacts to Priority Habitat and the corresponding municipality in which habitat is located. The Proponent proposes to implement the necessary actions to avoid, minimize, and mitigate project-related impacts to comply with the MESA permit issued for the project and notes that if, after consultation with NHESP, it is determined that a Take will occur, a Conservation Management Plan (CMP) will be prepared.

The Proponent has submitted a preliminary memo to NHESP and indicates that consultation with NHESP is required to determine if the project can be permitted using the "Checklist" option or if a CMP will be required. Comments from NHESP state that it may be possible to design the project in order to avoid a Take, and indicates the Proponent is actively consulting with the Division to address rare species concerns. NHESP anticipates being able to resolve any outstanding concerns during the MESA review
CS-23 process. Additional information should be provided in the DEIR in accordance with comments from NHESP and the Scope.

Wetlands / Water Resources

Water resources, including wetlands and streams, were delineated within the project area in Spring of 2020, Summer of 2021, and Spring of 2022. According to the EENF, the project is proposed to result in significant unavoidable impacts to BVW, IVW, Bank, BLSF, RFA, Bank, and associated buffer zones of resource areas. The EENF reviews the performance standards for each wetland resource area and describes the potential impacts from access roads, construction areas, and vegetation management. Impacts associated with each activity are detailed below:

- BVW (sf): Total - 2,868,580 (concrete caissons – 1,896; tree clearing – 666,032; mats – 2,200,651)
- BLSF (sf): Total - 95,593 (concrete caissons - 632; tree clearing - 81,022, mats – 13,939; work envelopes, pull pads and access – 293,924 (no loss in flood storage will occur from work envelopes, pull pads and access))
- RFA (sf): Total 2,614,816 (concrete caissons – 3,479; grading and retaining walls – 1,177,862; new or established access roads - 171,544; tree removals – 748,796; mats – 513,137)
- Inland Bank (sf): Total – 94,526 (tree removals – 26,572; mats - 67,954)
- LUW (sf): Total - 32,364 (concrete caissons – 158(Crystal Lake Tap Line); Mats - 32,206)
- Isolated Wetland (sf): Total – 85,021 (mats - 73,181; caisson foundations – 79; trees - 11,761)

The project will also impact ORWs including 15 streams that have been designated by the Massachusetts Division of Fisheries and Wildlife (DFW) as significant cold-water resources. As noted above, no CVPs are located within the ROW but one potential vernal pool is identified where temporary construction mats are proposed. As noted above, work is proposed in seven additional ORWs two of which are Public Water Supplies. The nine Town Conservation Commissions will review the project for its consistency with the Limited Project provisions of the Wetlands Protections Act (WPA), the Wetland Regulations (310 CMR 10.00), and associated performance standards. Comments from MassDEP indicate the project may qualify to be permitted as a Limited Project pursuant to 310 CMR 10.53(3)(d) provided that no such project may be permitted which will have any adverse effect on Rare Species habitat, as identified by procedures established under 310 CMR 10.59 (unless a variance is issued). The Proponent should document why the project qualifies for Limited Project status as requested by MassDEP and outlined in the Scope.

CS-24

MassDEP will review the project for its consistency with the 401 WQC regulations (314 CMR 9.00). The EENF states the project requires a WQC due to the anticipated "Take" determination from NHESP under MESA and will require a Water Quality Variance due to the placement of temporary construction matting within wetlands that are located within 400-ft of the ordinary high water mark (OHWM) of a Class A Surface Water. Comments from MassDEP note that the WPA and associated regulations do not have a designation of "temporary impacts" to resource areas. The activities proposed in the EENF meet the definition of "Alter" contained in 310 CMR 10.04. The WQC regulations, 314 CMR 9.00 specifically include "temporary" activities as being subject to the regulations (310 CMR 9.02); however, MassDEP states temporal impacts to resource areas can be mitigated through "in-situ" replication and/or restoration, as well as via off-site considerations. The EENF states that a compensatory mitigation plan will be developed in consultation with MassDEP and the nine local conservation commissions to mitigate for permanent wetland conversion and to form the conditions for a 401 Water Quality Certification (WQC) to be issued by MassDEP. Mitigation measures described in the EENF include use of construction mats to minimize compression of soils, rutting and vegetation

CS-25

disturbance; habitat enhancement in wetland resource areas affected by tree removal; mitigation for permanent flood storage loss due to structure installation and grading; and use of erosion and sedimentation controls. Additional information regarding mitigation for permanent wetland impacts should be provided in the DEIR.

CS-26

Chapter 91

The EENF includes discussion of c. 91 jurisdiction which includes non-tidal rivers or streams "on which public funds have been expended for stream clearance, channel improvement, or any form of flood control or prevention work… except for any portion of any such river or stream which is not normally navigable during any season, by any vessel including canoe, kayak, raft, or rowboat…" per 310 CMR 9.04(1)(e). All "structures" in these rivers and streams are subject to waterways licensing under 310 CMR 9.05(i). A "structure" is defined as "any man-made object which is intended to remain in place . . . over . . . waterways." pursuant to 310 CMR 9.02. Thus, MassDEP requires a c. 91 license for electric transmission crossings over rivers and streams even where there is no physical structure in the stream or river. The EENF states that based on field reviews, there are 66 occurrences of tree removal intersecting intermittent streams and 100 occurrences of tree removal intersecting perennial streams. There are 47 occurrences where work envelopes/pull pad envelopes intersect intermittent streams and 26 occurrences where these activities intersect with perennial streams. The EENF states that all of the jurisdictional crossings listed above are expressly exempt from c. 91 if they are covered by a final wetland OOC and meet the following related tests: they are constructed and maintained in accordance with the National Electric Safety Code (NESC) and do not reduce the space available for navigation per (310 CMR 9.05(3)(g)).

Comments from MassDEP Waterways Program state that the exemption is limited to "placement in a non-tidal river or stream subject to jurisdiction under 310 CMR 9.04(1)(e) of fill or structures for which a final Order of Conditions has been issued under, and which does not reduce the space available for navigation; such fill or structures *are limited to overhead wires*, conduits, or cables to be attached to an existing bridge, without substantial alteration thereof, or constructed and maintained in accordance with the NESC." The EENF describes work that will occur within waterways in addition to the overhead wires, such as construction mats, work pads and pull pad envelopes, and fill for two new/or replacement structure foundations. Comments from MassDEP Waterways recommend that the DEIR include details on the scope of work within each waterway in c. 91 jurisdiction, in order for the to provide feedback on any c. 91 authorization that may be required. This information should be provided in the DEIR.

CS-27

Article 97

The EENF provides a summary of estimated tree removal on DCR property/Article 97 land and shows that approximately 18 acres will be impacted on the ROW and approximately one acre will be impacted off ROW. The EENF states that tree removal and construction activities will remain within the Proponent's easements on Article 97 land; thus, no change in land use is proposed. The Proponent notes that as the project design advances, modifications, such as adding additional retaining walls, may be necessary to stay within the confines of the easement. Comments from DCR, however, indicate the use and improvement of five woods roads outside of the ROW to enable access through DCR forest land to the ROW for project activities; four of the paths are in Warwick State Forest and one is in Royalston State Forest. Proposed changes to the access corridors include tree clearing and widening of the corridors, which will result in permanent impacts and potentially increase total off-ROW impacts on DCR land. Comments from DCR indicates that the proposed changes and the need to access DCR

CS-28

property in the future for ongoing maintenance appear to require permanent easements, triggering Article 97 of the Amendments to the Massachusetts Constitution and that additional information from the Proponent is required. DCR notes that if the improved woods roads are to be used for ongoing maintenance on the ROW, that change in use of DCR property would also trigger Article 97.

CS-28

Climate Change

The EENF describes the project as an important component in addressing climate change, noting that expansion of renewable energy will require upgraded infrastructure to deliver that energy. The replacement lines will have higher kV ratings that will support higher volumes of currently active and forecasted renewable energy resources in the region. The Proponent states that the replacement of the lines will have the benefit of allowing significantly more renewable energy resources to connect into the system if and when the lines are operated at 115kV. The EENF states the project will also result in a more climate-ready and resilient transmission system that can withstand more extreme weather events; address existing system capacity shortages, and increased demand.

Adaptation and Resiliency

Effective October 1, 2021, all MEPA projects are required to submit an output report from the MA Resilience Design Tool to assess the climate risks of the project. Based on the output reports attached to the EENF, the project has a high exposure rating based on the project's location for extreme precipitation (riverine flooding) and extreme heat, and moderate exposure rating for extreme precipitation (urban flooding). Based on the 50-year useful life identified and the self-assessed criticality of the project asset (various segments of the line), the Tool recommends a planning horizon of 2070 and a return period associated with a 50-year (2% chance) storm event when designing the project (a "utilities" asset) for the extreme precipitation parameter. The EENF states that floodplain design standards will be followed during construction, and states that the project is designed to account for more frequent extreme weather events including extreme heat. However, the EENF does not assess how the proposed clearing or other design elements, such as the height of structures or foundations, would affect resiliency as measured by future storm scenarios. The design incorporates materials (including steel structures and state of the art conductors) that have long useful lives and respond well to corrosive environments. The project is also equipped to respond to increases in temperature. The new transmission line conductors are designed to operate at higher maximum operating temperatures, at a higher carrying capacity, and under fluctuations in air temperature.

CS-29

GHG Emissions from Land Alteration

The project is subject to the MEPA GHG Policy because it exceeds thresholds for a mandatory EIR. This project will permanently alter 216 acres as a result of tree clearing and new/improved access. In accordance with the GHG Policy, projects that alter over 50 acres of land are generally required to analyze the carbon associated with land and soil disturbance during the construction period and loss of carbon sequestration. The purpose of this analysis is to develop an estimate, not an exact accounting of GHG emissions associated with land alteration, including removal of trees and release of sequestered carbon in soil. The DEIR should provide an analysis consistent with the Scope included in this Certificate.

CS-30

The EENF indicates that the Proponent is evaluating potential approaches to analyze GHG implications, including field analysis, available datasets and research, and emissions mitigation

evaluation. The EENF describes one potential analysis which would include two steps:

1. Estimate the existing carbon stocks using height adjusted land cover values with LiDAR: Estimation of above ground (trees) and below ground (roots) biomass applies average biomass carbon values for each land cover, as classified in the 2016 1-m High Resolution Land Cover layer. The biomass carbon values are derived from the best available datasets for New England land covers. To account for stand age and density, available LiDAR data would be used to calculate forest height and adjust against the average height of forest trees in the data sets used to assign biomass carbon values. Deviation from the average will be used as a factor to increase or decrease the value assigned to that portion of the land cover. To verify the GHG values, five (5) sample sites will be chosen to be evaluated in the field to confirm assumptions.
2. Carbon Flux Analysis: Comparison between the existing and proposed land cover would be conducted by calculating the differential between existing carbon values and estimated carbon values taking into account soil type and proposed land cover. The flux would include sequestration rates and growth between the time of construction and the MEPA proposed time horizon of 2050

CS-31 While the use of LiDAR data appears beneficial to characterize the age and height of trees along the project corridor, this approach does not appear to consider difference in forest and tree types that may be present in the entirety of the 216 acres of land alteration estimated for the project. In addition, it is unclear what "best available datasets" the Proponent intends to use to assume carbon stocks, and whether such datasets would take into account variations in tree types. The Proponent should revise its approach to carbon analysis to consider such variations, and should use data from the U.S. Forestry Service, as further specified in the Scope. The Proponent is directed to consult with the MEPA Office prior to finalizing the methodology for conducting this analysis.

Transportation

According to the EENF, construction activities will intersect with the state jurisdictional highway layout at multiple locations, including Route 202 in Winchendon, Route 2 in Westminster, Fitchburg, and Leominster, Central Street in Leominster, Depot Road in Westminster, and State Road in Westminster. Project-related construction in these locations will require an access permit issued by the appropriate MassDOT District (either District 2 or 3). Comments from MassDOT indicate that permits
CS-32 will be required for temporary construction access, overhead wire crossings of the above listed state routes, and new access roadways proposed within the state highway right-of-way. The EENF describes the type of equipment that will be used to install the new structures and overhead lines and to remove
CS-33 existing structures. The EENF did not quantify the extent of truck traffic that may be required and did not identify equipment that will be used to remove trees as a result of the project.

Historic and Archaeological Resources

The project is subject to review under Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800) and M.G.L. c. 9, ss. 26-27C (950 CMR 71). A cultural resources due diligence review and archaeological sensitivity assessment was conducted for the project. The sensitivity assessment was completed on January 6, 2021 and formed the basis for developing a field testing plan related to the structure replacement locations. A project consultant developed a research proposal based on the background research and sensitivity assessment, which was submitted to the MHC in April 2021. The Proponent conducted fieldwork and testing which recovered cultural material at four sites in

Massachusetts. The EENF indicates that none of the sites in Massachusetts are considered significant and no further survey was recommended. Additional testing was completed in 2022 for proposed new and/or re-established access roads. This additional field testing was sent in a research proposal to MHC on March 28, 2022. MHC modified their permit (#4001) to include the access road testing on April 8, 2022. The Proponent will submit the archaeological locational survey technical report to the MHC in October 2022. The EENF indicates that should any archaeological site examinations be recommended; an additional research proposal will be submitted to the MHC at that time.

The EENF states that if the project is found to have an adverse effect to a significant historic property or archaeological site, the Proponent will consult with MHC and other parties, as appropriate, to determine the feasible measures to avoid, minimize or mitigate the adverse effect. Comments from DCR request coordination with the Staff Archaeologist related to potential archaeological resources on DCR property. Comments from the Franklin Regional Council of Governments (FRCOG) recommends the Proponent consider documenting portions of the historical mainline[19] as the Vernon Dam, which became operational in 1909, was the first power plant in the northeastern U.S. to transmit power across state lines to manufacturing centers in Gardner and Fitchburg, MA (in 1920).

CS-34

CS-35

Hazardous Materials

Comments from MassDEP note the EENF indicates one RTN (1-12349-Pratts Junction Substation, Sterling) which had a historical release of mineral oil dielectric fluid (MODF) within the confines of the substation; however, comments indicate no subsurface work is proposed in this area which limits potential impacts. Additional comments from MassDEP state the proposed project encompasses a large geographic area with several identified sites regulated under the Massachusetts Contingency Plan (MCP) (with identified release tracking numbers (RTNs)). Sites include those that are "open" and closed; some with Response Action Outcomes (RAOs) and/or Permanent Solutions (with or without conditions), and sites with an Activity and Use Limitation (AUL). The Proponent is advised to retain a Licensed Site Professional (LSP) as outlined in the Scope.

CS-36

Construction Period

During the construction-phase of the project there may be intermittent and localized increases in noise, dust and emissions from construction vehicles and related equipment. The EENF included an appendix outlining the Proponents transmission line maintenance and construction procedures and the EENF listed BMPs related to air quality, water quality, noise, and traffic. The EENF also indicates that the project will be overseen by an Environmental Monitor, a qualified environmental professional designated by NEP who can capably monitor on-site construction conditions in relation to permit and regulatory requirements. The Proponent will submit a Stormwater Pollution Prevention Plan (SWPPP) for the project in compliance with the EPA's NPDES program under the Stormwater CGP.

All construction activities should be managed in accordance with applicable MassDEP regulations regarding Air Pollution Control (310 CMR 7.01, 7.09-7.10), and Solid Waste Facilities (310 CMR 16.00 and 310 CMR 19.00, including the waste ban provision at 310 CMR 19.017 and the handling of clean wood associated with tree removal. The EENF states the Proponent will incorporate anti-idling measures in accordance with the Air Quality regulations (310 CMR 7.11) including no unnecessary idling. On- and off-road vehicles and engines used during construction will minimize

[19] See https://www.hydroreview.com/world-regions/hydro-hall-of-fame/#gref

emissions by using vehicles adhering to the more stringent EPA Tier 4 emissions standards or will be retrofitted with USEPA verified emission control devices. The Proponent requires that construction equipment use ultra-low sulfur diesel fuel. If oil and/or hazardous materials are found during construction, the Proponent should notify MassDEP in accordance with the MCP (310 CMR 40.00). All construction activities should be undertaken in compliance with the conditions of all State and local permits.

Conclusion

As noted, the EENF identifies baseline environmental conditions and potential environmental impacts, but contains an inadequate alternatives analysis and a limited description of mitigation measures. Comments from MassDEP indicate a Variance to the WPA regulations may be required pursuant to 310 CMR 10.05(10) if full mitigation is not provided for unavoidable impacts, and a Variance to the 401 WQC will be required pursuant 314 CMR 9.08 since the project will result in a discharge of dredged or fill material in wetlands or waters of the Commonwealth within 400 feet of a Class A surface water (314 CMR 9.06(4)).Comments from DCR indicate that additional information is
CS-37 required to determine whether proposed changes to DCR property will require permanent easements triggering Article 97, ensuring no net loss of protected lands. Based on review of the EENF and consultation with Agencies, I hereby require the Proponent to submit a DEIR that provides further analysis of alternatives which avoid impacts to sensitive resources and describes a robust package of
CS-38 mitigation for project impacts. A carbon analysis of tree clearing activities should also be provided. The Proponent should submit a DEIR that provides updated project information and analyses as specified in the Scope below.

SCOPE

General

CS-39 The DEIR should follow Section 11.07 of the MEPA regulations for outline and content, as
CS-40 modified by this Scope. Recommendations provided in this Certificate may result in a modified design that would further avoid, minimize, and/or mitigate Damage to the Environment. The DEIR should identify measures the Proponent will include to further reduce the impacts of the project since the filing
CS-41 of the EENF, or, if certain measures are infeasible, the DEIR should discuss why these measures will not be adopted.

Project Description and Permitting

CS-42 The DEIR should describe the project and identify any changes to the project since the filing of the EENF. It should include updated site plans for existing and post-development conditions. Conceptual plans should be legible and provided at a reasonable scale. The current plans contain multiple overlapping layers making it difficult to identify resource areas and assess impacts. Plans
CS-43 should clearly identify: all major project components (structures, transmission lines, access roads, etc.); public areas; wetland resource areas; priority habitat; impervious areas; ownership of parcels including easements; and stormwater and utility infrastructure. The DEIR should identify potential infrastructure located within in the ROW including those identified in comments by the Town of Leominster. The revised maps should show the height of the transmission lines in each map section. The DEIR should
CS-44 indicate alternative easements that were considered and any additional permanent and temporary

CS-44 easements that will be required to create access to the ROW.

CS-45 The DEIR should provide a brief description and analysis of all applicable statutory and regulatory standards and requirements and describe how the project will meet those standards. It should include a list of required Agency Permits, Financial Assistance, or other state or local approvals and provide an update on the status of each.

Alternatives Analysis

CS-46 The EENF does not explore alternatives to clearing trees within a uniform width to the edge of the ROW (100 ft on the mainline and Crystal Lake Tap and 125 ft on the Athol Tap). The Preferred Alternatives proposes significant impacts to wetland resource areas, including BVW, and to sensitive resources such as potential vernal pools.

CS-47 The DEIR should include an expanded alternatives analysis that provides full justification for dismissing the Rebuild Alternative and evaluates alternatives that consider reduced or varying tree clearing widths, alternative access routes, and work area scenarios that avoid and minimizes environmental impacts and tree clearing within sensitive resource areas such as potential vernal pools, ORWs, wetlands, and rare species habitat. The DEIR should document proposed conditions for these alternatives, quantify environmental impacts and provide a conceptual plan. It should compare the environmental impacts with the Preferred Alternatives, in particular, with respect to land alteration, wetland resource areas, potential vernal pools, ORWs, rare species habitat, archaeological resources, CS-48 GHG emissions impacts and climate resiliency. Impacts should be reported in total and broken out for each community. The DEIR should justify why, within the new area proposed to be cleared, it is likely that much of the non-target vegetation will also be cut or in some way impacted. The DEIR should describe how more vegetation could be preserved in more sensitive areas. The DEIR should consider CS-49 and describe opportunities to vary the width of the clearing particularly in areas where the topography is low, and transmission wires are high.

CS-50 The DEIR should provide additional justification for the proposed new maintained ROW of 100 and 125 feet given the elevation of the new structures (93-110 ft above ground) in relation to the CS-51 adjacent forested areas. This should include the identification of tall growing trees or other vegetation within the ROW that pose a risk of vegetation-related outages, to the extent this information is available. CS-52 The DEIR should also indicate whether there are any alternatives that could proceed without a Wetlands Variance or Article 97 land disposition.

Environmental Justice/Public Health

CS-53 The DEIR should provide an update on efforts to conduct outreach and promote public involvement of nearby communities, including EJ populations to meaningfully engage those located within the DGA in decision-making for the project. It should contain a full description of measures the CS-54 Proponent intends to undertake to promote public involvement by such EJ populations during the remainder of the MEPA review process including a discussion of any of the best practices listed in the MEPA EJ Public Involvement Protocol that will be employed. The DEIR should detail how public CS-55 involvement efforts will continue throughout subsequent permitting and through the construction period for the project. It should describe any outreach that will be conducted as part of local review processes, including the procedures for providing abutter notice and opportunities for public input into project CS-56 design and timing. The DEIR, or a summary thereof, should be distributed to the EJ Reference List, and

CS-57 an updated list should be obtained from the MEPA Office to ensure that outdated contacts are removed and new ones added.

CS-58 The DEIR should provide an updated baseline assessment of any existing unfair or inequitable Environmental Burden and related public health consequences impacting EJ Populations in accordance with 301 CMR 11.07(6)(n)1 and the MEPA Interim Protocol for Analysis of EJ Impacts. The DEIR CS-59 should fully analyze the data available in the DPH tool at the municipal and census tract level to characterize existing unfair or inequitable Environmental Burdens. The DEIR should also survey the air-related environmental indicators identified in EPA EJ Screen to determine whether any of the identified EJ populations within the DGA are subject to elevated environmental burdens measured at 80th CS-60 percentile of statewide average or higher. For any EJ population corresponding to that metric, the DEIR should describe in detail the proximity of the project site to those neighborhoods and discuss the specific activities, including the extent of forest clearing and construction activity, that will take place near those neighborhoods. Based on the additional analyses required by the Scope included in this Certificate, the DEIR should provide an updated assessment of whether the project's impacts may result in CS-61 disproportionate adverse effects, or increase the risks of climate change, on the identified EJ population, particularly in light of the GHG emissions, air pollutants, and heat island effects that may be associated with large-scale forest clearing activities. The DEIR should consider any loss of open space or CS-62 recreational opportunities that may affect EJ populations lacking access to such resources. The DEIR should discuss what mitigation will be provided for any properties located directly adjacent to tree CS-63 clearing activities, in light of the loss in shading and other impacts that may be anticipated.

As discussed below, the DEIR should contain a GHG analysis for the significant loss and CS-64 conversion of forested land to a scrub-shrub habitat and a discussion of mitigation measures to reduce the GHG emissions of the project. The DEIR should analyze land alteration associated with the project including implications for potential stormwater flooding and heat effects in surrounding neighborhoods. CS-65 Analysis of the stormwater should specifically assess whether flooding risks may be exacerbated for nearby EJ populations, including under future climate conditions, and whether existing conditions would be worsened or improved by the project. The DEIR should also analyze other short-term and long-term environmental or public health impacts of the project, including construction period activities. If any CS-66 disproportionate adverse effects or increased risks of climate change are identified, the DEIR must include a discussion of proposed mitigation and include such measures in draft Section 61 findings.

Rare Species

CS-67 The DEIR should provide an update on potential impacts to state-listed rare species habitat, CS-68 including the acreage of priority habitat with the ROW and amount impacted by the project. The DEIR should include proposed measures to avoid, minimize and mitigate those impacts. As noted above, comments from NHESP indicate it may be possible to avoid a Take, and the Proponent should work to avoid and minimize impacts to state-listed species by consulting with NHESP to address the following:

- Evaluating reductions to permanent habitat loss associated with gravel work pads and access roads within the ROW;
- Conducting botanical surveys suitable habitat in accordance with an approved botanical survey protocol;
- Providing calculations of temporary and permanent impacts to state-listed species habitat;
- Evaluating reductions to permanent habitat loss associated with gravel work pads and access roads within the ROW; and

- Developing robust rare-species protection plan(s) focusing on time-of-year restrictions for active and breeding seasons, daily sweeps of the work area during any active season work, and if necessary, radio telemetry and tracking of state-listed turtles.

Comments from NHESP state that the Division anticipates being able to resolve any outstanding concerns related to state-listed species during the MESA review process. The DEIR should provide a summary of the outcome of continued consultation with NHESP and mitigation to be provided. CS-69

Wetland Resource Areas

MassDEP comments recommend that the Proponent consider waiting to file Notices of Intent (NOIs) with the Conservation Commissions until the conclusion of MEPA review to ensure sufficient opportunities for public involvement and to avoid any potential conflict with the final Certificate, Orders of Conditions, or the WQC. Should the Proponent file a NOI prior to the conclusion of MEPA review, MassDEP recommends the Proponent request that the local Conservation Commissions defer a decision on the filing and keep the meeting open until the Secretary has issued the final Certificate, and MassDEP has issued the WQC, to ensure consistency with any requirements in the Certificate and conditions of the WQC. According to MassDEP comments, the project may be eligible for review under the Limited Project provisions pursuant to 310 CMR 10.53(3)(d) at the discretion of the local Conservation Commission and to the extent practicable, work must comply with the General Performance Standards. CS-70 As indicated above, the Proponent should document why the project qualifies for Limited Project status given the magnitude of the alteration and the significance of the project site to the interests of the WPA; the proponent should provide a serious evaluation of reasonable alternatives to the proposed activity (including alternatives to reduce the full extent of the proposed cutting), an evaluation of the extent to which adverse impacts are minimized, and documentation that full mitigation is provided for unavoidable impacts. Based on this demonstration, a Variance to the WPA regulations may be required pursuant to 310 CMR 10.05(10). CS-71

The DEIR should provide an update on the impact analysis for each resource area and demonstrate how the project will comply with performance standards outlined in the WPA as the project has the potential to result in significant changes to the hydrology of the affected resource areas and downstream reaches. CS-72 The DEIR should clearly indicate whether a Wetlands Variance will be needed for the project, and if so, discuss how the project will meet the requirements for the Variance. CS-73 The DEIR should consider impacts associated with surface and subsurface hydrology, wildlife habitat, and describe compliance with BMPs for stormwater management and sedimentation and erosion control. CS-74 The DEIR should ensure that estimates for impacts to wetland resource areas are conservative and account for all temporary impacts. CS-75 The DEIR should describe tree clearing details, potential TOY restrictions, specific locations of proposed construction mats, and implementation sequencing. CS-76 The EENF indicates that at stream crossings, construction matting will span the stream channel to the extent feasible to avoid impacts to the stream bank and bed. The includes conservative estimates for temporary stream-crossings; however, the DEIR should describe to what extent the construction matting would necessitate alteration of Bank or LUW. The DEIR should also note whether any temporary or permanent stream crossings are proposed as requested in comments from MassDEP. CS-77 If any crossings are proposed, the DEIR should include an alternatives analysis to ensure that the crossing will be designed to facilitate aquatic organism and wildlife passage, and not increase flood levels of the resource area. Any stream crossing should meet the criteria listed in 310 CMR 9.06(2)(b). As noted above, potential vernal pools should be analyzed to determine whether they are eligible to be certified (including the one potential CS-78

CS-78 vernal pool to be impacted) and the results presented in the DEIR.

The DEIR is required to provide sufficient information to adequately describe cumulative impacts to "Waters of the Commonwealth" (BVW, IVW and LUW) pursuant to 314 CMR 9.00 and identify efforts to avoid, minimize, and mitigate impacts. The EENF indicates that compensatory mitigation is not expected to be required for impacts to most resources impacted by the project. MassDEP comments provide clarification that mitigation for impacts is a requirement of the 401 WQC regulations. The DEIR should propose appropriate mitigation measures in consultation with MassDEP to demonstrate consistency with the WQC regulations. The DEIR should discuss mitigation in the form CS-79 of off-site preservation of forested land or wetlands, and culvert and stream enhancements. Temporary impacts to resource areas are subject to the WPA regulations (310 CMR 9.02) and can be mitigated through "in-situ" replication and/or restoration, as well as via off-site considerations. The MassDEP comment letter states that the Proponent provides no mitigation for land alteration or wetland impacts beyond measures required by regulations associated with the WPA and related stormwater requirements. In light of the variety of indirect impacts that may flow from tree clearing, including stormwater runoff, CS-80 GHG emissions and heat island effects for neighboring residences, the Proponent should offer additional meaningful mitigation measures to offset the environmental impacts in project areas where impacts to wetlands and undisturbed forests cannot be avoided or minimized. The DEIR should address the comments from the Franklin Regional Council of Governments (FRCOG) regarding wetland impacts, CS-81 proposed mitigation (including pollinator habitat conservation), and invasive species management.

The DEIR should include an analysis of Stormwater Management as outlined in comments from MassDEP. Comments note that removal of trees increases the peak runoff rate, triggering compliance with 310 CMR 10.05(6)(k)2. and 314 CMR 9.06(6)(a)2. 10.05(6)(k)2. which apply to alterations in resource areas regardless of if the project qualifies as a limited project. In addition to traditional CS-82 stormwater management as mitigation, MassDEP recommends the Proponent evaluate replacement of trees to reduce the peak runoff rate. Any trees replaced would need to be within the same sub-watershed to be considered as peak rate mitigation. A discussion should be included about canopy area lost due to the project and estimate the time period likely to recover the same or larger tree canopy. The recharge and TSS treatment standards apply when impervious area is being created or redeveloped. The DEIR CS-83 should include a discussion as to whether the proposed caissons or access roads will create new impervious area. Special requirements apply to Critical Areas, such as ORWs (310 CMR 10.05(6)(k)6. and 314 CMR 9.06(6)(a)6.). In addition, the DEIR should demonstrate that compensatory flood storage provided for permanent fill in BLSF has an unrestricted hydraulic connection to same waterway or water body displaced by the project as stated in 310 CMR 10.57(4)(a)1. The compensatory flood storage analyzed in the DEIR must be proposed near where the fill is proposed so as to provide an unrestricted CS-84 connection to the same waterway. In addition, the Proponent must demonstrate that seasonal high groundwater is at or below the elevation which the compensatory flood storage will be provided. The DEIR should analyze alternatives to provide the compensatory flood storage and provide a cut-and-fill table for each alternative analyzed.

Chapter 91

As requested above, the DEIR should include details on the scope of work within each waterway CS-85 in c. 91 jurisdiction in order for the MassDEP Waterways Program to provide feedback on any c. 91 authorization that may be required.

Article 97

As noted previously, the project includes improvements to five woods roads outside of the ROW to enable access through DCR forest land to the ROW. The Proponent indicates that it may have existing
CS-86 rights to access the ROW through DCR property; however, as indicated in comments from DCR, additional information is needed to determine if new permanent easements are required which would require disposition of state-owned land protected by Article 97 of the Amendments to the Massachusetts Constitution. A disposition of a property interest over this land requires approval by a 2/3rds vote of the legislature, and compliance with the Division of Capital Asset Management and Maintenance's (DCAMM) disposition process as well as the Executive Office of Energy and Environmental Affairs (EEA) Article 97 Land Disposition Policy (the Disposition Policy). The Article 97 Policy was established to ensure No Net Loss of public conservation lands under the ownership and control of the Commonwealth. It provides for transfer of ownership or interests in Article 97 Land only under exceptional circumstances. The Policy establishes six criteria for determining when "exceptional circumstances" exist such that a disposition of Article 97 land may be appropriate. These include:

- The Proponent of the disposition must conduct an analysis of alternatives, commensurate with the type and size of the proposed disposition, that achieve the purpose of the disposition without the use of Article 97 land, such as the use of other land available within the appropriate market area;
- The disposition of the subject parcel and its proposed use may not destroy or threaten a unique or significant resource (e.g., significant habitat, rare or unusual terrain, or areas of significant public recreation);
- Real estate of equal or greater value, and of significantly greater resource value is granted to the disposing agency;
- The minimum necessary area of Article 97 should be included in the disposition and the existing resources continue to be protected to the maximum extent possible;
- The disposition serves an Article 97 purpose or another public purpose without detracting from the mission, plans, policies and mandates of EEA and its appropriate department or division; and
- The disposition is not contrary to the express wishes of the person(s) who donated or sold the parcel or interests to the Commonwealth.

The DEIR must identify impacts (temporary and permanent) to Article 97 Land and proposed measures to avoid, minimize and mitigate impacts. The alternatives analysis and proposed mitigation in the DEIR should address compliance with the EEA Article 97 Policy. As noted above, work activities on DCR property outside of existing easements associated with the ROW, or requiring access across DCR property, will require a CAP. As requested in comments, the Proponent should coordinate with DCR's Senior Ecologist and Staff Archaeologist related to wetlands, rare species habitat, and potential archaeological resources, including the amount of proposed tree clearing within the state forest sections
CS-87 of the ROW, and along access routes identified by the Proponent. Comments from DCR express concerns about recreational impacts at the access point in Warwick State Forest that is proposed to be co-located with the Metacomet Monadnock Trail for approximately 2,300 feet and impacts that may result in increased Off-Highway Vehicle (OHV) access to the state forests, potentially causing degradation of natural and cultural resources. DCR requests coordination with the Proponent to develop and implement strategies to deter this unauthorized trail use. The DEIR should provide an update on these consultations.

Climate Change

Adaptation and Resiliency

CS-88 While the EENF describes the general resiliency benefits of the project achieved by updating aging infrastructure to current design standards, it does not specifically address the design recommendations from the MA Resilience Design Tool. The DEIR should include a narrative explaining
CS-89 whether proposed tree clearing and infrastructure improvements will make the project assets more resilient to risks associated with riverine flooding from a 50-year (2%) storm event estimated as of 2070.
CS-90 The DEIR should discuss the extent to which existing electrical lines are exposed to riverine flooding, and what measures the Proponent is taking to improve asset resiliency over a longer-term horizon. In particular, the DEIR should discuss whether new foundations are being elevated above any defined base
CS-91 flood elevations or other similar water/flood elevation measure to ensure that the structures are resilient to future flooding risks. Where impervious area is created and stormwater management is required, the DEIR should address the recommendations from the MA Resilience Design Tool, including whether the
CS-92 stormwater management designs will be resilient to future climate conditions such as the 25-year or 50-year storm as of 2070. The Tool now provides 24-hour rainfall volumes for various storm scenarios, which can be consulted as a resource. The DEIR should further describe mitigation in areas of tree
CS-93 clearing and access road creation where there are steep slopes and severe erosion potential including temporary and permanent stabilization methods.

Land Alteration

The DEIR should provide a quantitative carbon analysis of tree clearing activities that should consider both the one-time direct emissions from tree cutting as well as loss of potential carbon sequestration over a certain time period (e.g., 30 or 40 years). To the extent tree cover is replaced with scrub-shrub habitat, the net loss in carbon sequestration potential may be estimated. As discussed above, the Proponent has proposed to use LiDAR data, confirmed with select sampling, to estimate the age and height of trees to be cleared and to assign carbon values to those trees based on "best available datasets." The Proponent should make use of the EVALIDator tool from the U.S. Forestry Service,[20] which provides estimates of carbon stocks (including above ground and below ground biomass) specific to Massachusetts forests and considers variations among forest types based on region. To the extent the
CS-94 Proponent desires to use an alternative dataset, it should provide a justification for why such alternative data are appropriate and indicate whether the dataset considers variations in forest types that may be present over the entire 216 acres proposed for clearing. Any sampling methodology used to verify LiDAR results should similarly consider forest type variations to ensure that representative samples are collected. As the EVALIDator tool does not provide an estimate of annual carbon sequestration rates (carbon flux over time), the Proponent may rely on other sources of data, including the EPA GHG Emissions Calculator, for this value and estimate annual rates over a 30 year time period from the date of construction. The DEIR should describe the methodology and data used to develop the analysis, identify associated impacts on GHG emissions, and identify measures to avoid, minimize and mitigate impacts. The DEIR should account for carbon sequestration from any trees that are removed and not replaced/converted to scrub shrub. The Proponent is directed to consult with the MEPA Office on the development of this analysis, and, in particular, sampling methodology, prior to filing the DEIR.

[20] https://www.fia.fs.fed.us/tools-data/

CS-95 Given the extent of tree clearing proposed, I expect the DEIR to identify mitigation measures commensurate with the project's impacts on the project corridor's capacity to sequester and store carbon. Potential mitigation measures may include funding programs that add or maintain biomass for sequestration purposes (such as tree planting, carbon credits, forest conservation or commitments to implement forest restoration practices) and preserving/protecting forested land through a Conservation Restriction or other means. At a minimum, the Proponent should clearly explain its plan for disposition of the trees cleared through the project, including the process for identifying potential markets for reuse of wood and a process for tracking and reporting. The Proponent should commit to reuse of cleared trees for long-lived wood products to the greatest extent practicable and should indicate how the ultimate disposition of the trees will be tracked and documented. Potential mitigation for carbon emissions due to land alteration might include donation of harvested wood to benefit an affordable housing project; tree planting in EJ populations near the project area (recommendation of 50 trees/acre with a commitment to water and replace for two years); and donation of harvested wood (cut and split to a wood bank) in Massachusetts.

Transportation

CS-96 The Proponent should work with MassDOT to address the details of the permitting process and any traffic and construction management plans that may be required for temporary work within the state highway layout. The DEIR should describe the location of roadways under MassDOT jurisdiction. The DEIR should confirm that the Proponent will implement a traffic management plan consistent with MassDOT requirements. It should describe the outcome of any consultation with MassDOT. The DEIR should describe the extent of truck traffic that will result from refurbishment and tree clearing activities, including the number of truck trips required.

Historic and Archaeological Resources

CS-97 The EENF indicates that the Proponent will submit the archaeological locational survey technical report to MHC in October of 2022. MHC has indicated that comments will be provided following review of that report. The DEIR should provide an update on coordination with MHC.

Mitigation and Section 61 Findings

CS-98 The EENF included draft Section 61 Findings and proposed mitigation measures. The DEIR chapter should include an updated comprehensive list of all commitments made by the Proponent to avoid, minimize and mitigate the impacts of the project, and should include a separate section outlining mitigation commitments relative to EJ populations. The DEIR should contain clear commitments to implement these mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation. The list of

CS-99 commitments should be provided in a tabular format organized by subject matter (traffic, water/wastewater, GHG, EJ, etc.) and identify the Agency Action or Permit associated with each category of impact. Draft Section 61 Findings should be separately included for each Agency Action to be taken on the project.

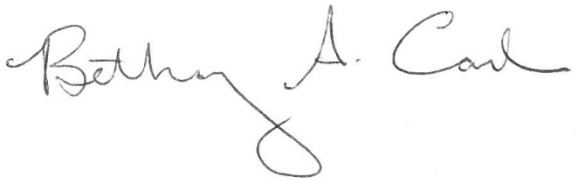
Responses to Comments

CS-100 The DEIR should contain a copy of this Certificate and a copy of each comment letter received. It should include a comprehensive response to comments on the EENF that specifically address each

CS-100 issue raised in the comment letter; references to a chapter or sections of the DEIR alone are not adequate and should only be used, with reference to specific page numbers, to support a direct response. This directive is not intended to, and shall not be construed to, enlarge the Scope of the DEIR beyond what has been expressly identified in this certificate.

Circulation

CS-101 In accordance with 301 CMR 11.16, the Proponent should circulate the DEIR to each Person or Agency who commented on the EENF, each Agency from which the project will seek Permits, Land Transfers or Financial Assistance, and to any other Agency or Person identified in the Scope. Pursuant to 301 CMR 11.16(5), the Proponent may circulate copies of the DEIR to commenters in a digital format (e.g., CD-ROM, USB drive) or post to an online website. However, the Proponent should make available a reasonable number of hard copies to accommodate those without convenient access to a computer to be distributed upon request on a first come, first served basis. The Proponent should send correspondence accompanying the digital copy or identifying the web address of the online version of the DEIR indicating that hard copies are available upon request, noting relevant comment deadlines, and appropriate addresses for submission of comments. If submitted in hard copy, the DEIR submitted to the MEPA office should include a digital copy of the complete document. A copy of the DEIR should be made available for review in the Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling.



October 31, 2022
Date

Bethany A. Card

Comments received:

09/27/2022 Town of Leominster, DPW
10/24/2022 Massachusetts Department of Conservation and Recreation (DCR)
10/24/2022 Franklin Regional Council of Governments (FRCOG)
10/25/2022 Massachusetts Department of Environmental Protection (MassDEP) Waterways Program
10/26/2022 MassDEP, Western & Central Regional Offices (WERO & CERO)
10/26/2022 Massachusetts Division of Fisheries and Wildlife (DFW) Natural Heritage and Endangered Species Program (NHESP)

BAC/JAH/jah

Jennifer.Hughes@mass.gov

View Comment

Comment Details

EEA #/MEPA ID	First Name	Address Line 1	Organization
16607	John	109 Graham Street	LEOMINSTER Dept Of Public Works
Comments Submit Date	**Last Name**	**Address Line 2**	**Affiliation Description**
9-27-2022	Roseberry	--	Municipality
Certificate Action Date	**Phone**	**State**	**Status**
10-24-2022	--	MASSACHUSETTS	Opened
Reviewer	**Email**	**Zip Code**	
Jennifer Hughes, (617)455-7063, Jennifer.Hughes@mass.gov	jroseberry@dpw.leominster-ma.gov	01453	

Comment Title or Subject

Topic: Leominster DPW Comments

Comments

Segoe UI | 10 pt | Paragraph

LPW-1 Page xi - Water Resources: The "NO" box is checked for ORW. Most of the Leominster portion of this project is located in the City's Water Supply Watershed.

LPW-2 Many parcels in the watershed are now encumbered with a Conservation Restriction which is held by the DCR. W.N.R.D. book 10309-252

LPW-3 LE-W28 is shown as a wetland but is actually a detention basin serving Samoset Drive. There are also drainage pipes in the vicinity of Proposed structure 577 and the associated Pull Pad.

LPW-4 There are sewer and water mains in the vicinity of Proposed structure 587.

LPW-5 There is a water diversion pipe in the vicinity of Existing structures 619 & 620.

LPW-6 Ground disturbance should be minimized when existing structure is removed. It is at the base of the No-Town dam. Not only is it a High Hazard Dam but it's also the dam to the City's largest drinking water source.

Attachments

Update Status

Status

Accepted

SUBMIT

Share Comment

SHARE WITH A REGISTERED USER

BACK TO SEARCH RESULTS

Franklin Regional Council of Governments

October 24, 2022

Attn: MEPA Office, Jennifer Hughes
Bethany A. Card, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge St, Suite 900
Boston, MA 0211

Submitted by email to: Jennifer.Hughes@mass.gov

Re: **EEA 16607**
Expanded Environmental Notification Form (EENF) for the A1/B2 Asset Condition Refurbishment Project (Warwick and towns outside of Franklin County)

Dear Ms. Card,

The Franklin Regional Council of Governments (FRCOG) hereby submits comments on the Expanded Environmental Notification Form (EENF) for EEA Project 16607. FRCOG is a regional service organization serving the 26 towns of Franklin County. We advocate on behalf of our communities and the county at the federal, state and regional levels. Our Planning Department serves as the Regional Planning Agency for the 26 communities in Franklin County. We provide planning technical assistance to our member towns for projects related to climate change resiliency, natural resource protection and land use. This proposed project will go through the town of Warwick in Franklin County.

New England Power Company d/b/a National Grid ("NEP") is proposing this refurbishment project within an existing electric transmission right-of-way (ROW) containing the existing 69 kV A1 and B2 Lines, also referred to as "the mainline" and three intersecting tap lines that are outside of Franklin County. The A1/B2 mainline extends from the Massachusetts border in Warwick through Royalston, Winchendon, Gardner, Westminster, Fitchburg, and Leominster to the Pratts Junction #255 Substation in Sterling. The Project is part of a larger refurbishment effort that continues through NH and terminates at the Vernon #12 Switchyard located in Vernon, Vermont.

The Project's stated purpose is to complete required system improvements that will address poor asset condition, mitigate potential risks of electrical failure, and to provide long-term reliable delivery of electrical service and maintenance of the lines. The A1/B2 Lines were originally constructed in 1909 and the original lattice structures remain. The Lines were re-conductored in the 1920s and were reinsulated in 2004. Structures and wires are in need of replacement and access routes are in need of repair. In addition, a transmission study conducted by the Independent System Operator – New England (ISO-NE) predicted that these lines will need to be upgraded to 115 kV in order to support renewable energy and customer needs of the next few decades. Therefore, NEP proposes to construct the lines with 115 kV capacity, but operate the lines at 69 kV until the additional capacity is needed.

12 Olive Street, Suite 2, Greenfield, MA 01301-3318 · 413-774-3167 · www.frcog.org

The Project includes various refurbishment activities and replacement of 711 tower structures that will entail removing the existing structure (height is 39-45 ft.) and installing a new 90-ft. structure in an adjacent location. Of the 711 replacements, NEP anticipates 305 will need to be built on concrete caisson foundations and 406 poles will be directly embedded into the ground and will not require caisson foundations. The Project also involves clearing vegetation to a consistent total width of 100 ft. on the mainline and 125 ft. on the tap line. According to Section 3.3.2 of the EENF narrative, the existing maintained width on the mainline is 85 ft. National Grid's Vegetation Management Plan for 2019-2023 was included as Appendix D to the EENF.

The Project exceeds review thresholds set forth by the MEPA regulations requiring an ENF and a mandatory Environmental Impact Report (EIR). The proponent has requested that MEPA allow the preparation of a Single EIR in accordance with 301 CMR 11.06(8). The project involves impacts to 66 acres of bordering vegetated wetlands and 60 acres of Riverfront. The project overlaps with estimated or priority habitat for three bird species, three "herptile" species, two insect species and one plant species listed by the Natural Heritage and Endangered Species Program (NHESP), but the species names have been withheld at the request of NHESP. Table 9 in section 3.3.2 indicates that 105 acres of trees will be removed within the ROW and 58 acres of trees will be removed outside of the ROW to meet "required horizontal distances."[1]

MEPA Alternatives

Under MEPA regulations 301 CMR 11, a proponent may file an Expanded Environmental Notification Form (ENF), which includes "extensive and detailed information describing and analyzing the Project and its alternatives." Section 301 CMR 11.07(6)f gives guidelines for the discussion of project alternatives in the Environmental Impact Report (EIR) phase. The EENF described several project alternatives. It would also be helpful during the EIR stage to evaluate sub-project alternatives that would look at reduced impacts to particularly sensitive resources. Sensitive locations to be avoided could include priority habitat for state-listed species, all wetland areas, Riverfront Areas, Coldwater Fisheries habitat, vernal pools, historical and culturally sensitive locations, wellhead protection areas, areas near private wells, national scenic trails, or combinations of any of these features.

F-1

Understanding project impacts

F-2 We request that more of the impacts be summarized by town in the EIR, so that it's clear what the impacts are

F-3 in each community. It would also be useful to know the forested acreage proposed to be cut in each town.

F-4 Appendix A Figure 2 maps shows proposed tree removal outside of the ROW in many areas, and it appears that the tree removal is not necessarily a consistent width as described in the narrative. FRCOG was unable to attend the MEPA virtual site visit. Perhaps this could be made more clear in the EIR.

F-5 Appendix A Figure 3 shows structure details of the proposed tower configurations. These diagrams are helpful, but it would also be helpful to include a diagram that justifies the vegetation management needs based on the height of the proposed towers (or lines) and the width of the proposed vegetation management.

[1] These numbers differed in the narrative.

31

F-6 FRCOG requests that the proponent include information in an EIR about information about long-term vegetation management or construction impacts in the area of public drinking water or private wells.

F-7 The ROW crosses and comes in close contact with the New England Trail, a national scenic trail, in Warwick.[2] The narrative in the EENF generally mentions trails, but we could not find a specific mention of this trail. We request the EIR include a description of the potential impacts on the trail, and whether or not trail access will be affected during and after construction.

Opportunities to expand pollinator habitat

The FRCOG recently completed a regional pollinator plan with funding from an EEA Planning Assistance Grant. FRCOG's regional pollinator plan describes utility rights of way (ROWs) as areas that cover a variety of landscapes and sometimes contain greater plant diversity than adjacent lands, which might make them excellent pollinator forage and nesting habitat. Where utility corridors cross open wetlands, the pollinator habitat value could be even greater. ROWs create a linear open space that is generally free of major disturbances and protected from future development. While these conditions could create highly valuable connected corridors of high-quality habitat, the use of herbicides to manage vegetation in these areas can negate their value as habitat. The report documents can be found here: https://frcog.org/program-services/natural-resources-planning/

F-8 The FRCOG requests that NEP consult the Regional Pollinator Plan and other documents such as EPRI's "Overview of Power Companies and Pollinators" published in 2018, and EPRI's "Conservation Actions for Electric Power Companies to Support Monarch Butterflies" published in 2019. These ideas should be incorporated into project planning. There are a number of state-listed butterfly, moth, bee, and bird species that could benefit from planning this project to encourage pollinator habitat. Notwithstanding the project impacts, this project also represents an opportunity that should not be lost.

Historical and culturally sensitive locations

Section 6.0 in the EENF states that NEP contracted SWCA Environmental Consultants ("SWCA") to conduct cultural resource due diligence on the Project. SWCA staff conducted background research and a physical inspection of the Project area. Based on the results of the cultural resources due diligence, SWCA recommended conducting an archaeological sensitivity assessment along the A1/B2 Lines to define areas of high archaeological sensitivity that might be impacted. Just over one thousand test pits were dug in Massachusetts, and though 142 pieces of cultural material were recovered in MA, none were considered significant and no further analysis is recommended.

FRCOG is aware that the Vernon Dam, which became operational in 1909, was the first power plant in the northeastern U.S. to transmit power across state lines to manufacturing centers in Gardner and Fitchburg, MA (in 1920)[3]. The transmission of power generated miles away became the basis for our grid system in operation today. This particular power line therefore marks a significant moment in time for electrical infrastructure

F-9 history in the region. As the power line towers being replaced were installed in 1909, FRCOG recommends that

[2] See map online at https://newenglandtrail.org/interactive-map/, and choose imagery as the base of the map to see the power line.

[3] See https://www.hydroreview.com/world-regions/hydro-hall-of-fame/#gref

F-9 consideration be given to documenting the towers, or allow for some kind of preservation of a representative small number of the towers.

F-10 Stone walls are shown on some of the map sheets in Appendix A, Figure 2. It is not clear if any methods are proposed to avoid, minimize, or mitigate impacts to stone walls.

Thank you for the opportunity to comment on this EENF. I can be reached at KMacPhee@frcog.org or 413-774-3167 x. 130.

Sincerely,

Kimberly N. MacPhee

Kimberly Noake MacPhee, P.G., CFM
Land Use & Natural Resources Program Manager
Climate Resiliency Specialist

33

Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Jamey Tesler, Secretary & CEO

massDOT
Massachusetts Department of Transportation

October 24, 2022

Bethany A. Card, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114-2150

RE: Fitchburg et al – A1/B2 Asset Condition Refurbishment Project
(EEA #16607)

ATTN: MEPA Unit
Jennifer Hughes

Dear Secretary Card:

On behalf of the Massachusetts Department of Transportation, I am submitting comments regarding the Environmental Notification Form filed for the proposed A1/B2 asset condition refurbishment project starting in Warwick and running through Winchendon, Leominster, Sterling, Royalston, Gardner, Fitchburg, Athol, and Westminster as prepared by the Office of Transportation Planning. If you have any questions regarding these comments, please contact J. Lionel Lucien, P.E., Manager of the Public/Private Development Unit, at (857) 368-8862.

Sincerely,

David Mohler

David J. Mohler
Executive Director
Office of Transportation Planning

DJM/jll

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
www.mass.gov/massdot

cc: Jonathan Gulliver, Administrator, Highway Division
Carrie Lavallee, P.E., Chief Engineer, Highway Division
James Danila, P.E., State Traffic Engineer
Patricia Leavenworth, P.E., District 2 Highway Director
Barry Lorion, P.E., District 3 Highway Director
Franklin Regional Council of Governments (FRCOG)
Montachusett Regional Planning Commission (MRPC)

MEMORANDUM

TO: David J. Mohler, Executive Director
Office of Transportation Planning

FROM: J. Lionel Lucien, P.E., Manager
Public/Private Development Unit

DATE: October 24, 2022

RE: Fitchburg et al – A1/B2 Asset Condition Refurbishment Project
(EEA #16607)

The Public/Private Development Unit (PPDU) has reviewed the Environmental Notification Form (ENF) for the A1/B2 Asset Condition Refurbishment Project (the "Project") entering Massachusetts in Warwick and running through Winchendon, Leominster, Sterling, Royalston, Gardner, Fitchburg, Athol, and Westminster submitted by the BSC Group, Inc. on behalf of New England Power Company (the "Proponent"). The Project entails the refurbishment of existing overhead electrical utility lines, including replacing existing infrastructure, trimming vegetation, and in some cases providing new access drives to maintain the power lines. The overhead lines to be refurbished in this Project run from the Massachusetts state boundary in Warwick to the Pratts Junction #225 Substation in Sterling.

The Project surpasses MEPA thresholds for review of an Environmental Notification Form (ENF) and an Environmental Impact Report (EIR) due to impacts on wetlands per 301 CMR 11.03(3) and land per 301 CMR 11.03(1). The Project additionally requires an ENF due to impacts on priority habitat per 301 CMR 11.03(2). The Project also requires an Environmental Impact Report (EIR) per 301 CMR 11.06(7)(b) as the utility route intersects several Designated Geographic Areas surrounding Environmental Justice (EJ) Populations.

The Project route will intersect with the state jurisdictional highway layout at multiple locations, including Route 202 in Winchendon, Route 2 in Westminster, Fitchburg, and Leominster, Central Street in Leominster, Depot Road in Westminster, and State Road in Westminster. Project-related construction in these locations will require an access permit issued by the appropriate MassDOT District (either District 2 or 3). Further MassDOT permits will be required for temporary construction access, overhead wire crossings of the above-listed state routes, and new access roadways proposed within the state highway right-of-way.

Once completed, the Project is anticipated to result in fewer than one vehicle trip per day. Based on the limited trip generation and limited expansion of the proposed electrical infrastructure, MassDOT does not anticipate that the transportation impacts resulting from Project development would significantly impact the transportation system and recommends no further review for environmental impacts. The Proponent should coordinate with MassDOT

MassDOT-1

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
www.mass.gov/massdot

MassDOT-1 Districts 2 and 3 to minimize traffic disruption during Project construction and prevent impacts on state jurisdictional roadways. If you have any questions regarding these comments, please contact *Curtis.B.Wiemann@dot.state.ma.us*.

MASSWILDLIFE

DIVISION OF
FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6300 | f: (508) 389-7890
MASS.GOV/MASSWILDLIFE

October 24, 2022

Secretary Bethany Card
Executive Office of Energy and Environmental Affairs
Attention: MEPA Office
Jennifer Hughes, EEA No. 16607
100 Cambridge St.
Boston, Massachusetts 02114

Project Name:	*A1/B2 Asset Condition Refurbishment (ACR) Project*
Proponent:	*New England Power Company*
Location:	*Existing Right-of-way in Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling*
Project Description:	*Structure Replacements and access roadway installation and upgrades on existing Right-of-way*
Document Reviewed:	*Expanded Environmental Notification Form*
EEA File Number:	*16607*
NHESP Tracking No.:	*22-41082*

Dear Secretary Card:

The Natural Heritage & Endangered Species Program of the Massachusetts Division of Fisheries & Wildlife (the Division) has reviewed the *Expanded Environmental Notification Form* (ENF) for the "A1/B2 Asset Condition Refurbishment (ACR) Project" (the "Project") and would like to offer the following comments regarding state-listed species and their habitats.

According to the information provided in the ENF and the *Massachusetts Natural Heritage Atlas* (15th Edition), portions of the Project site are mapped as *Priority* and *Estimated Habitat* for multiple state-listed species, including Wood Turtle (*Terrapene carolina*; Special Concern), American Bittern (*Botaurus lentiginosus,* Endangered) and Sand Violet (*Viola adunca*, Special Concern). These species and their habitats are protected pursuant to the Massachusetts Endangered Species Act (MGL c.131A) and its implementing regulations (MESA; 321 CMR 10.00). Fact Sheets for state-listed species can be found on our website, www.mass.gov/nhesp.

The Proponent has engaged the Division in pre-filing consultations to discuss proposed impacts associated with the Project, and has been actively working with the Division to avoid and minimize permanent and temporary impacts to state-listed species and their habitats. A MESA filing has not yet been submitted, and at this time it is unclear whether the project will result in a Take (321 CMR 10.18 (2)(b)) of state-listed species. Projects resulting in a Take of state-listed species may only be permitted if they meet the performance standards for a Conservation and Management Permit (CMP; 321 CMR 10.23).

DFW-1 The Division recommends that the Proponent continue to work proactively with the Division to avoid and minimize impacts to state-listed species. These include, but may not be limited to: (1) evaluating reductions to permanent habitat loss associated with gravel work pads and access roads within the ROW; (2) conducting botanical surveys suitable habitat in accordance with an approved botanical survey protocol; (3) providing calculations of temporary and permanent impacts to state-listed species habitat; (4) evaluating reductions to permanent habitat loss associated with gravel work pads and access roads within the ROW; and (5) developing robust rare-species protection plan(s) focusing on time-of-year restrictions for active and breeding seasons, daily sweeps of the work area during any active season work, and if necessary, radio telemetry and tracking of state-listed turtles. The Division notes that it may be possible to design the Project in order to avoid a Take, and the Division anticipates being able to resolve any outstanding concerns related to state-listed species during the MESA review process. We look forward to continued coordination with the Proponent to ensure that the Project addresses all issues related to state-listed species.

DFW-2 The Division will not render a final decision until the MEPA review process and associated public and agency comment period is completed, and until all required MESA filing materials are submitted to the Division. As our MESA review is ongoing, no alteration to the soil, surface, or vegetation and no work associated with the Project shall occur until the Division has made a final determination. If you have any questions or need additional information, please contact Lauren Glorioso, Endangered Species Review Biologist, at lauren.glorioso@state.ma.us or 508-389-6361. We appreciate the opportunity to comment on the Project.

Sincerely,

Everose Schlüter

Everose Schlüter, Ph.D.
Assistant Director

cc: Mike Tyrell, National Grid
Heidi Graff, VHB
MassDEP Central Regional Office
Town of Warwick Board of Selectmen
Town of Warwick Planning Board
Town of Warwick Conservation Commission
Town of Royalston Board of Selectmen
Town of Royalston Planning Board
Town of Royalston Conservation Commission
Town of Winchendon Board of Selectmen

Town of Winchendon Planning Board
Town of Winchendon Conservation Commission
Town of Gardner Board of Selectmen
Town of Gardner Planning Board
Town of Gardner Conservation Commission
Town of Westminster Board of Selectmen
Town of Westminster Planning Board
Town of Westminster Conservation Commission
Town of Fitchburg Board of Selectmen
Town of Fitchburg Planning Board
Town of Fitchburg Conservation Commission
Town of Leominster Board of Selectmen
Town of Leominster Planning Board
Town of Leominster Conservation Commission
Town of Athol Board of Selectmen
Town of Athol Planning Board
Town of Athol Conservation Commission
Town of Sterling Board of Selectmen
Town of Sterling Planning Board
Town of Sterling Conservation Commission

dcr
Massachusetts

October 24, 2022

Secretary Bethany A. Card
Executive Office of Energy and Environmental Affairs
Attn: Jennifer Hughes, MEPA Office
100 Cambridge Street, Suite 900
Boston, Massachusetts 02114

Re: EEA#16607 A1/B2 Asset Condition Refurbishment Project EENF

Dear Secretary Card:

The Department of Conservation and Recreation ("DCR" or "the Department") is pleased to submit the following comments in response to the Expanded Environmental Notification Form ("EENF") filed by New England Power Company ("NEP" or the "Proponent") for the proposed A1/B2 Asset Condition Refurbishment Project (the "Project") from Sterling to Warwick.

NEP's mainline right-of-way ("ROW") is of variable width, and the Project proposes tree clearing to 100 feet throughout. Additional tree clearing related to new or improved access roads is also proposed. NEP proposes to replace structures and wires within the ROW to address poor asset conditions. A fiber optic ground wire will be installed between substations. The ROW passes through Leominster State Forest, Otter River State Forest, Royalston State Forest, and Warwick State Forest. The ROW intersects with the Metacomet Monadnock Trail, one of the state's long distance hiking trails, in Warwick State Forest.

Article 97

The proposed Project includes the use and "improvement" of five woods roads outside of the ROW to enable access through DCR forest land to the NEP ROW for Project activities: four of the paths are in Warwick State Forest and one is in Royalston State Forest. Proposed changes to the access corridors include tree clearing and widening of the corridors, which will result in permanent impacts to the state forests. To the extent the Proponent believes it may have rights to access their ROW from DCR property, a determination which DCR does not have sufficient information to make at this time, it appears that the Proponent's proposed changes to DCR property will require permanent easements, triggering Article 97 of the Amendments to the Massachusetts Constitution. DCR also notes that if the improved woods road are to be used for ongoing maintenance on the NEP ROW, that change in use of DCR property would also trigger Article 97. DCR-1

Transfers of interests in state conservation property must meet the requirements set forth in the Executive Office of Energy and Environmental Affairs ("EEA") Article 97 Land Disposition Policy (the "Policy"). The Policy has the stated goal of ensuring no net loss of lands protected under Article 97 in the ownership and control of the Commonwealth and its political subdivisions, and states as a general premise that EEA and its agencies shall not sell, transfer, or otherwise dispose of any right or interest in Article 97 lands. Transfer of ownership or interests therein only may occur under exceptional circumstances, as defined in

the Policy, including the determination that no feasible alternative is available, and a minimum amount of land or an interest therein is being disposed for the proposed use. Such a transfer also requires legislative authorization by the General Court through a two-thirds supermajority roll-call vote. DCR is coordinating with the Proponent to determine whether additional easement rights that would trigger an Article 97 disposition request will be needed. Work activities on DCR property outside of existing easements associated with the NEP ROW, or requiring access across DCR property, will require a Construction and Access Permit ("CAP").

DCR-2

Natural, Cultural and Recreational Resources

DCR-3 DCR requests coordination with DCR's Senior Ecologist and Staff Archaeologist related to wetlands, rare species habitat, and potential archaeological resources, including the amount of proposed tree clearing within the state forest sections of the ROW, and along access routes identified by the Proponent. The Senior Ecologist

DCR-4 will review the flagged work limits and work with the Proponent to identify mitigation for the loss/conversion of forest habitat. The Staff Archaeologist will coordinate with the Proponent and their cultural resource

DCR-5 consultant to develop and implement measures to avoid, minimize, or mitigate adverse effects to significant historic and archaeological resources within DCR property. We look forward to reviewing specific protection and restoration measures to be taken for sensitive natural and cultural resources on public conservation lands. Environmental permits for work activities on DCR land must be signed by the Department as 'Owner' following review by DCR staff members and prior to submission to regulatory agencies.

DCR-6 DCR is concerned about recreational impacts of the access point in Warwick State Forest that is proposed to be co-located with the Metacomet Monadnock Trail for approximately 2,300 feet. DCR is also concerned that the Project may result in increased Off Highway Vehicle access to the state forests, potentially causing degradation of natural and cultural resources. The Department requests coordination with NEP to develop and implement strategies to deter this unauthorized trail use.

Thank you for the opportunity to comment on the EENF. If you have any questions regarding these comments, or to request additional information or coordination with DCR, please contact andy.backman@mass.gov.

Sincerely,

Douglas Rice

Douglas J. Rice,
Commissioner

cc: Nancy Putnam, Jonathan Patton, Sean Grant, Dwayne Ericson, Priscilla Geigis, Patrice Kish, Tom LaRosa

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Bethany A. Card
Secretary

Martin Suuberg
Commissioner

Memorandum

To: Bethany A. Card, Secretary, EOEEA

Through: Jennifer Hughes, MEPA

From: MassDEP Waterways Regulation Program

cc: Daniel Padien, MassDEP/Boston Waterways Regulation Program

Re: Comments from the Chapter 91 Waterways Regulation Program: EEA #16607 Environmental Notification Form (ENF), A1/B2 Asset Condition Refurbishment Project, Warwick, Royalston, Winchendon, Gardner, Westminster, Fitchburg, Leominster, Athol, and Sterling

Date: October 25, 2022

The Department of Environmental Protection Waterways Regulation Program (the "Department") has reviewed the above referenced filing submitted by BSC Group on behalf of the New England Power Company (the "Proponent") for refurbishment activities and system improvements along approximately 54 circuit miles along the A1/B2 Lines ("the Project").

Chapter 91 Comments

As noted in the ENF, certain scopes of work that meet the standard at 310 CMR 9.05(3)(g)(1) are exempt from licensing under Chapter 91. However, that exemption is limited to "*placement in a non-tidal river or stream subject to jurisdiction under 310 CMR 9.04(1)(e) of fill or structures for which a final Order of Conditions has been issued under M.G.L. c. 131, § 40 and 310 CMR 10.00: Wetlands Protection, and which does not reduce the space available for navigation; such fill or structures are limited to* ***overhead wires****, conduits, or cables to be attached to an existing bridge, without substantial alteration thereof, or constructed and maintained in accordance with the National Electrical Safety Code*". The ENF describes work that will occur within waterways in addition to the overhead wires, such as construction mats, work pads and pull pad envelopes, and fill for two new/or replacement structure foundations. It is recommended that the EIR include details on the scope of work within each waterway in Chapter 91 jurisdiction, in order for the Department to provide feedback on any Chapter 91 authorization that may be required.

DEP-1

If there are any questions regarding the Department's comments, please contact DEP.Waterways@mass.gov or at (617) 292-5929.

This information is available in alternate format. Contact Glynis Bugg at 617-348-4040.
TTY# MassRelay Service 1-800-439-2370
MassDEP Website: www.mass.gov/dep

Printed on Recycled Paper

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
Western Regional Office • 436 Dwight Street, Springfield MA 01103 • 413-784-1100

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Bethany A. Card
Secretary

Martin Suuberg
Commissioner

October 26, 2022

Bethany A. Card, Secretary
Executive Office of Energy & Environmental Affairs
Massachusetts Environmental Policy Act Office
Jennifer Hughes, EEA No. 16607
100 Cambridge Street, 9th Floor
Boston, MA 02114-2524

Re: New England Power Company A1/B2 Asset Condition Refurbishment Project EENF – Athol, Royalston, Sterling, Warwick, Winchendon, Gardner, Westminster, Fitchburg, Leominster

Dear Secretary Card,

The Massachusetts Department of Environmental Protection (MassDEP) (Western Regional Office, Central Regional Office, and Boston Office) appreciates the opportunity to comment on the Expanded Environmental Notification Form (EENF) submitted for the proposed A1/B2 Asset Condition Refurbishment Project in Athol, Royalston, Sterling, Warwick, Winchendon, Gardner, Westminster, Fitchburg, and Leominster (EEA #16607).

The applicable MassDEP regulatory and permitting considerations regarding wetlands, surface waters, air pollution, solid waste, hazardous waste and waste site cleanup are discussed.

I. Project Description

The Proponent, New England Power Company (NEP), is proposing electric grid system improvements and refurbishment activities over 54 circuit miles along the A1/B2 lines in the NEP Rights-of-Way (ROW) in Warwick, Royalston, Athol, Winchendon, Gardner, Westminster, Fitchburg and Leominster. The circuit includes several tap lines: Athol Taps 1 & 2, the Gardner Tap (Crystal Lake Tap) and the East Westminster Tap. The NEP ROW intersects with Massachusetts Department of Conservation and Recreation properties and trails in several locations. Several off-ROW access routes will be utilized. The project

includes upgrades to 733 structures, the installation of six new structures and will include reconductoring, improvements to current access roads, establishment of new access roads, tree cutting, vegetation management and the installation of concrete caisson foundations where necessary. The 711 structures to be removed and replaced at adjacent locations include 406 poles to be directly embedded in the ground and 305 structures to be on concrete caisson foundations. For some structure replacements, temporary structures will be installed in the existing ROW while permanent replacement structures are constructed. Six new embedded vertical jumper switch structures will be installed along the main and tap lines. Current structure heights are between 45 to 50 feet in height. New and replacement structures for the mainline and tap lines will be approximately 90 feet high. Optical Primary Ground Wires will be installed for grounding of lightning strikes and to increase/enhance telecommunications along the lines. The existing 69 kilovolt (kV) lines will be upgraded to 115 kV capacity to serve anticipated future needs. Construction is projected to begin in 2025.

The project passes through areas of Priority Habitat, some of which may result in a "take"; the Proponent is consulting with Natural Heritage Endangered Species Program (NHESP) on the project. Outstanding Resource Waters are crossed by the project and there are 41 certified vernal pools in various locations along the ROW.

Environmental Justice populations are identified within one and five-mile radii of the project site including in the municipalities of Athol, Clinton, Fitchburg, Gardner, Lancaster, Leominster, Orange and Winchendon. The categories are mainly Income, Minority, Minority and Income, and one block group in Leominster listed as Minority, Income and English Isolation. The Proponent posits the project will have neither short-term nor long-term environmental or public health impacts effecting Environmental Justice Populations.

Environmental Impacts associated with this project include:

- Total site acreage – 1,047 Acres
- New acres of land altered – 216
- Square feet (SF) of Bordering Vegetated Wetlands: 2,868,580 concrete caissons – 1,896 SF, tree clearing – 666,032 SF, Mats – 2,200,651 SF
- Square feet of new other wetland alteration –
    - Square feet of Bordering Land Subject to Flooding: 95,593 concrete caissons 632 SF, tree clearing- 81,022 SF, Mats – 13,939 SF, work envelopes, pull pads and access – 293,924 SF (no loss in flood storage will occur from work envelopes, pull pads and access)
    - Square feet of Riverfront Area– 2,614,816 concrete caissons – 3,479 SF, grading and retaining walls – 1,177,862, new or established access roads - 171,544 SF, tree removals – 748,796 SF, Mats – 513,137
    - Bank – 94,526 SF tree removals – 26,572 SF, Mats 67,954 SF
    - Square feet of Land Under Water – 32,364 concrete caissons – 158 SF (Crystal Lake Tap Line), Mats 32,206 SF

- Square feet of Isolated Wetland: 85,021 Mats – 73,181 SF - 11,840 SF Permanent impacts (79 SF caisson foundations), 11,761 SF forested wetland conversion to PSS

II. Required Mass DEP Permits and/or Applicable Regulations

Wetlands and Waterways
310 CMR 10.000
Water Quality Certificate
314 CMR 9.00
Surface Water Standards
314 CMR 4.00
Air Pollution
310 CMR 7.00
Solid Waste
310 CMR 16.00
Hazardous Waste
310 CMR 30.00
Bureau of Waste Site Cleanup
310 CMR 40.000

III. Permit Discussion

Bureau of Water Resources

Wetlands Protection Act

As described in the EENF, the project proposes to alter the following regulated wetland resource areas: Bordering Vegetated Wetland, Bordering Land Subject to Flooding, Riverfront Area. The proposed stream-crossings have the potential to alter Inland Bank and Land Under Waterbodies and Waterways. During the WPA permitting process, the Proponent will need to demonstrate how the project will protect the interests of the Act. DEP-2

This project is subject to the Wetlands Protection Act (WPA) and the associated regulations. In the event a municipal Order of Conditions is appealed to MassDEP, MassDEP cannot issue a Superseding Order of Conditions (or a Water Quality Certificate) until after the Project has received a final Certificate from the Secretary. Therefore, to ensure full opportunities for public involvement and to avoid any potential conflict with the final Certificate from the Secretary or the Water Quality Certificate (WQC), MassDEP recommends that no such filing occur until after the project has received a final Certificate from the Secretary. Should the Proponent choose to file Notices of Intent prior to the issuance of a final Certificate from the Secretary, MassDEP recommends that Proponent request that the local conservation commissions defer a decision and keep the meeting open until such time as a final Certificate from the Secretary has been issued, as well as the WQC. DEP-3 DEP-4

Limited Project Status

DEP-5 The project may be eligible for review under the Limited Project provisions contained at 310 CMR 10.53(3)(d). As for all Limited Projects, allowance under these provisions is at the discretion of the local Commission and to the extent practicable, work must comply with the General Performance Standards.

DEP-6 The proposed project has the potential to result in significant changes to the hydrology of the affected resource areas and downstream reaches. Therefore, the WPA permit applications for this project should consider both surface and subsurface hydrology, wildlife habitat, and comply with Best Management Practices for stormwater management and sedimentation and erosion control. Subsequent WPA permitting documents should include tree work details, time-of-year restrictions, specific locations of proposed construction mats, and implementation sequencing; as well as identifying appropriate mitigation for impacts to resource areas.

401 Water Quality Certification

The Proponent indicates the project will require a 401 Water Quality Certification (WQC). The MassDEP Wetlands program administers the WQC program on behalf of the US Army Corps of Engineers. Under regulation, 314 CMR 9.00, the Proponent is required to provide sufficient information to adequately describe cumulative impacts to "Waters of the Commonwealth" (isolated and bordering vegetated wetlands and land under water).

DEP-7 During the WQC permitting process the Proponent will be required to document efforts to avoid, minimize, and mitigate impacts as required by regulation. Mitigation for any unavoidable impacts is a requirement of the regulations. Appropriate mitigation measures will be determined as part of the WQC application process. MassDEP staff are available for consultation.

DEP-8 In accordance with the MEPA process, some Resource Areas and Waters of the Commonwealth impacts are listed as "temporary" in the EENF; the Proponent should be aware that the WPA and associated regulations do not have a designation of "temporary impacts" to resource areas. The activities proposed in the EENF meet the definition of "Alter" contained in 310 CMR 10.04. The WQC regulations, 314 CMR 9.00 specifically include "temporary" activities as being subject to the regulations (310 CMR 9.02). However, temporal impacts to resource areas can be mitigated through "in-situ" replication and/or restoration, as well as via off-site considerations.

DEP-9 The Proponent indicates that the project is subject to the requirements of the National Pollutant Discharge Elimination System regulations to prepare a Stormwater Pollution Prevention Plan (SWPPP). MassDEP recommends that the Proponent ensure that the SWPPP includes clear, concise, and enforceable provisions specific to the management and protection of the wetland resource areas and their buffer zones within the project site.

The Project Proponent indicates that several types of retaining walls may be constructed. These walls are proposed to protect existing structures and/or features, as well as adjacent

wetland resource areas. The Proponent indicates that the specific retaining wall type will be chosen *during construction*, based on local geotechnical conditions and other site constraints. MassDEP wishes to clarify that the area and extent of impacts of any proposed retaining wall within a resource area, or within the buffer zone of a resource area, should be identified, all impacts disclosed and should avoid, minimize and mitigate impacts to the greatest extent practicable. Although some elements of the wall design may wait for identification during construction, the construction cannot exceed the impacts proposed in the Order of Conditions for the project.

DEP-10

Outstanding Resource Waters

In the Water Resources Section of the EENF Form, the Proponent checked the box indicating that no ORWs are present on or within a ½ mile of the project site; however, the Proponent then lists relevant ORW and the narrative sections describe work in ORWs. It appears this box was checked in error. MassDEP recommends the Proponent review and ensure that the correct box is checked.

DEP-11

The Proponent has identified one potential vernal pool where temporary construction mats are proposed. Because the estimated project commencement date is 2025, MassDEP recommends that the Proponent assess the area in question prior to any WPA or WQC filing (i.e., during Spring of 2023) to determine if the area in question meets the criteria for classification as a certified vernal pool.

DEP-12

Bureau of Water Resources-Boston Office

Wetlands

The proposed activities will substantially change and/or enlarge an existing service, and therefore the activity does not qualify as exempt from the WPA as maintenance pursuant to 310 Code of Massachusetts Regulations (CMR) 10.02(a)2.

DEP-13

The project may qualify to be permitted as a limited project pursuant to 310 CMR 10.53(3)(d) provided that no such project may be permitted which will have any adverse effect on specified habitat sites of Rare Species, as identified by procedures established under 310 CMR 10.59 (unless a variance is issued). Additionally, the proponent should document why the project qualifies for limited project status per 310 CMR 10.53(3) given the magnitude of the alteration and the significance of the project site to the interests of the Wetlands Protection Act; and the proponent should provide a serious evaluation of reasonable alternatives to the proposed activity (including alternatives to reduce the full extent of the proposed cutting), an evaluation of the extent to which adverse impacts are minimized, and documentation that full mitigation is provided for unavoidable impacts. Based on this demonstration, a Variance to the WPA regulations may be required pursuant to 310 CMR 10.05(10).

DEP-13

DEP-14 Based on the information provided in the EENF, a WQC application for Major Fill/Excavation (BRP WW 10) will be required since the Project is proposed to result in the loss of more than 5000 square feet cumulatively of ordering vegetated wetland (BVW) and land under water (LUW) (314 CMR 9.04(1)) and since there will be a discharge of dredge or fill material to Outstanding Resource Waters including Goodfellow Pond, Simonds Pond, Notown Reservoir, Distributing Reservoir, Morse Reservoir, Fall Brook Reservoir, and Perley Brook Reservoir. Furthermore, a Variance to the 401 WQC will be required pursuant 314 CMR 9.08 since the project will result in a discharge of dredged or fill material in wetlands or waters of the Commonwealth within 400 feet of a Class A surface water (314 CMR 9.06(4)).

DEP-15 The Applicant must demonstrate that all efforts have been made to avoid adverse impacts to BVW. When avoidance is not possible, demonstration must be made that the impacts have been minimized and that unavoidable impacts have been mitigated. The Draft Environmental Impact Report must identify all temporary and permanent roads and/or routes in relation to resource areas that will be utilized for mechanized equipment to be engaged in tree clearing and on-going vegetation management. The proposed route bed should be identified (e.g., swamp mats to be placed at-grade, gravel roads, etc.). The Environmental Impact Reports should analyze alternatives to avoid and minimize adverse impacts to BVW and propose alternatives to mitigate for resource area alteration.

DEP-16 Erosion and sediment control is required during the tree clearing and land destabilization phase pursuant to 310 CMR 10.05(6)(b) and Stormwater Management Standard 8 (310 CMR 10.05(6)(k)8. and 314 CMR 9.06(6)(a)8.). As such, a plan must be submitted with the Notice of Intent and WQC application to control construction related impacts including erosion, sedimentation, and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan (CP/PP Plan)). The CP/PP should include measures to reduce potential impacts to resource areas from areas used to store swamp mats and felled trees. Use of feller-bunchers during clearing, trimming, and removal operations should be analyzed as one alternative to reduce erosion and sediment control impacts to resource areas. Working from swamp mats should also be considered. However, any temporary impacts caused to resource area from swamp mats must be proposed to be fully mitigated. The proponent should note that the requirements at 310 CMR 10.05(6)(b), 10.05(6)(k)8., and 314 CMR 9.06(6)(a)8. to provide erosion and sediment controls apply even if the project qualifies as a limited project. The Environmental Impact Reports should include a conceptual level Erosion and Sediment control plan for comment. Note that any land disturbance greater than 1-acre

DEP-16 requires coverage under the U.S. Environmental Protection Agency's Construction General Permit (CGP). The Stormwater Pollution Prevention Plan (SWPPP) required by the CGP may serve as the CP/PP Plan, if it includes measures required to be in the CP/PP Plan in addition to the measures specifically required by the EPA Construction General Permit. The CP/PP Plan or SWPPP will need to be approved in the Final Order of Conditions and WQC prior to the commencement of any tree clearing and disturbance within resource areas.

DEP-17 If a project is within Estimated Habitat indicated on the most recent habitat map of State-Listed Rare Species published by the Natural Heritage and Endangered Species Program (NHESP), the applicant must demonstrate no short- or long-term adverse effects of habitat of local species in accordance with 310 CMR 10.59. The Environmental Impact Reports should overlay the proposed scope of work atop the Estimated Habitat maps. Where tree clearing and disturbance is proposed within Estimated Habitat of Rare Species, the Environmental Impact Reports should analyze alternatives to avoid adverse impacts.

DEP-18 The project activities including on-going vegetation management through numerous areas of Habitat of Potential Regional or Statewide Importance (MassDEP Important Habitat Maps can be found at: https://umasscaps.org/data_maps/massdep-maps.html); therefore, the applicant must submit a Detailed Habitat Evaluation and demonstrate no adverse impacts in accordance with 310 CMR 10.60 and MassDEP's *Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands* at: https://www.mass.gov/doc/massachusetts-wildlife-habitat-protection-guidance-for-inland-wetlands/download.

DEP-19 Although a Detailed Evaluation is required for permitting, the Environmental Impact Reports should include an alternatives analysis to avoid adverse impacts that may be caused by on-going vegetation management. This shall include an analysis of Potential Vernal Pools and NHESP Certified Vernal Pools in each Resource Area and identify those that are presumed significant in accordance with the *Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands*. Certified Vernal Pools are classified as Outstanding Resource Waters of the Commonwealth. Potential Vernal Pools should be analyzed by the proponent to determine whether they are eligible to be certified and present the results of this analysis in the Environmental Impact Reports.

DEP-20 Based on the EENF, the project will result in permanent fill in Bordering Land Subject to Flooding (BLSF) due to 632 square feet of concrete caissons. Compensatory flood storage must be provided for any fill in BLSF. Compensatory flood storage is a volume not previously used for flood storage and shall be incrementally equal to the theoretical volume of flood water at each elevation, on a foot-by-foot basis. The Applicant must demonstrate that seasonal high groundwater is at or below the elevation which the compensatory flood storage will be provided. The Environmental Impact Reports should analyze alternatives to provide the compensatory flood storage and provide a cut-and-fill table for each alternative analyzed.

DEP-20 The Applicant shall demonstrate that the proposed compensatory flood storage has an unrestricted hydraulic connection to same waterway or water body displaced by the Project as stated in 310 CMR 10.57(4)(a)(1). The compensatory flood storage analyzed in the Environmental Impact Reports must be proposed near where the fill is proposed so as to provide an unrestricted connection to the same waterway.

The Draft Environmental Impact Report must include an analysis about Stormwater Management. Removal of trees increases the peak runoff rate, triggering compliance with

DEP-21 310 CMR 10.05(6)(k)2. and 314 CMR 9.06(6)(a)2. 10.05(6)(k)2. applies to alterations in resource areas regardless of if the project qualifies as a limited project. Alternatives must be analyzed in the Draft Environmental Impact Report to reduce the peak runoff rate from the proposed alterations, including tree clearing. Tree clearing increases the peak runoff rate. Besides traditional methods to provide mitigation such as detention basins, replacement of trees should be analyzed as an alternative to reduce the peak runoff rate. Any trees replaced would need to be within the same sub-watershed to be considered as peak rate mitigation. A discussion should be included about canopy area lost due to the project and estimate the time period likely to recover the same or larger tree canopy. The recharge and TSS treatment standards apply when impervious area is being created or redeveloped. Towards those requirements, a discussion should be included in the Draft Environmental Impact Report about whether the proposed caissons or access roads will create new impervious area. Special requirements apply to Critical Areas, such as Outstanding Resource Waters (310 CMR 10.05(6)(k)6. and 314 CMR 9.06(6)(a)6.).

DEP-22 The Draft Environmental Impact Report should note whether any temporary or permanent stream crossings are proposed. If any crossings are proposed, the Draft Environmental Impact Report should include an alternatives analysis to ensure that the crossing will be designed to facilitate aquatic organism and wildlife passage, and not increase flood levels of the resource area. Any stream crossing should meet the criteria listed in 310 CMR 9.06(2)(b).

Bureau of Water Resources-Central Regional Office (CERO)

Alternatives Analysis

DEP-23 The Alternatives Analysis provided by the Proponent does not discuss whether the Rebuild Alternative can be accomplished with fewer impacts to the environment. MassDEP requests that the Proponent consider additional alternatives of the Rebuild Alternative that further reduce impacts to wetlands, forests, and water resources.

Wetlands

DEP-24 Section 4.4.1 of the EENF lists fifteen streams that have been designated by the Massachusetts Division of Fisheries and Wildlife as cold-water fishery resources. The Proponent should provide additional measures to avoid and minimize impacts to these streams both during construction and in the long-term maintenance of the A1/B2 Transmission line and associated easement. In addition, cold-water fishery resources are designated as Critical Areas in the Massachusetts Stormwater Handbook. The Proponent must account for the presence of these streams in the stormwater analyses of the project.

Bureau of Air and Waste

Air Quality

Construction Activities

DEP-25 Construction activity must conform to current Air Pollution Control Regulations. The Proponent should implement measures to alleviate dust, noise, and odor nuisance conditions that may occur. Such measures must comply with the MassDEP's Bureau of Air and Waste (BAW) Regulations 310 CMR 7.01, 7.09, and 7.10.

Construction Equipment

DEP-26 All non-road engines shall be operated using only ultra-low sulfur diesel (ULSD) with a sulfur content of no greater than 15 ppm pursuant to 40 CFR 80.510.

Solid Waste

DEP-27 The Proponent shall properly manage and dispose of all solid waste generated by this proposed project pursuant to 310 CMR 16.00 and 310 CMR 19.000, including the regulations at 310 CMR 19.017 (waste ban).

Hazardous Waste

DEP-28 Any hazardous wastes generated must be properly managed in accordance with 310 CMR 30.0000. If any hazardous waste, including waste oil, is generated at any of the sites, the Proponent must ensure that such generation is properly registered with MassDEP and managed in accordance with 310 CMR 30.0000.

Asbestos

DEP-29 Proponent shall ensure that all material is handled in accordance with all applicable state and federal regulations regarding asbestos handling, including testing prior to handling.

Bureau of Waste Site Cleanup

DEP-30 The proposed project encompasses a large geographic area. There are several identified sites regulated under the Massachusetts Contingency Plan (MCP) with identified release tracking numbers (RTNs). Sites include those that are "open" and closed; some with Response Action Outcomes and/or Permanent Solutions (with or without conditions) and sites with an Activity and Use Limitation (AUL). The Proponent is advised to retain a Licensed Site Professional to review MassDEP's oil and/or hazardous material disposal sites list and associated files periodically throughout the duration of the project to determine the current status of existing sites and if there are any newly listed contaminated sites within or adjacent proposed activities. The MCP details procedures to follow for the parties conducting work in these areas. In particular, in accordance with 310 CMR 40.1070 (2), activities conducted near sites with an AUL must be consistent with the obligations and conditions specified within the AUL.

In addition, a spills contingency plan addressing prevention and management of potential releases of oil and/or hazardous materials from pre- and post-construction should be presented to workers at the site and enforced. The plan should include but not be limited to, refueling of machinery, storage of fuels, and potential releases. MassDEP wishes to emphasize the importance of this specifically in proximity to Cold Water Fisheries and ORW.

BWSC CERO identified one RTN (2-12349-Pratts Junction Substation, Sterling), which is the one identified in the filing. This site had historical releases of mineral oil dielectric fluid (MODF) within the confines of the substation, reported to MassDEP in 1998. MODF-impacted soil was excavated, and an A-3 Response Action Outcome was filed in 2002. There are two Activity and Use Limitation areas within the electric substation. The Proponent stated that no subsurface work will be conducted in the Pratts Junction Substation for the Project. Therefore, there is limited potential impact to the Project from site conditions.

IV. Other Comments/Guidance

Greenhouse Gas (GHG) Emissions

DEP-31 The Proponent indicates that GHG emissions from the project will be below the applicable reporting threshold and that during the construction phase of the project, short-term localized air quality effects will be minimal. GHG impacts should be submitted in the Draft and Final EIR. MassDEP recommends distinguishing both short term (construction) and any long-term impacts from the proposed work.

Draft Section 61 Findings

DEP-32 The Proponent provides no mitigation for land alteration or wetland impacts beyond measures required by regulations associated with the Massachusetts Wetlands Protection Act and related stormwater requirements. MassDEP requests that the Proponent offer additional meaningful mitigation measures to offset the environmental impacts in project areas where impacts to wetlands and undisturbed forests cannot be avoided or minimized.

MassDEP staff are available for discussions as the project progresses. If you have any questions regarding this comment letter, please do not hesitate to contact Kathleen Fournier at (413) 755-2267.

Sincerely,

Catherine V. Skiba, P.G. for
Michael Gorski
Regional Director

cc: MEPA File