



**NEW ENGLAND CLEAN POWER LINK  
ELECTRIC TRANSMISSION PROJECT**

**45 DAY NOTICE LETTER  
ISSUED PURSUANT TO 30 V.S.A. § 248**

**OCTOBER 17, 2014**



TO: Town and Regional Planning Commissions and Town Selectboards Entitled to Notice Pursuant to Public Service Board Rule 5.402(C) (See Attachment A)

CC: Other Interested Entities (See Attachment A)

RE: Proposed New England Clean Power Link Project  
45-Day Notice of Section 248 Petition to be filed with VT Public Service Board

DATE: October 17, 2014

Dear Planning Commissioners and Selectboard Members,

Champlain VT, LLC, d/b/a TDI-New England (TDI-NE) is pleased to submit this pre-application 45 Day Notice concerning the proposed New England Clean Power Link project (NECPL or Project). NECPL is a proposed HVDC electric transmission line that will run from the Canadian border at Alburgh, Vermont to Ludlow, Vermont along underwater and underground routes. NECPL will transmit up to 1,000 megawatts (MW) of electricity that will be generated by renewable energy sources in Canada, and will be delivered to Vermont and the New England electric grid.<sup>1</sup> NECPL will provide a number of significant benefits -- lower electricity costs in the region, reduced air emissions, creation of Vermont jobs and new tax revenues in Vermont, and diversifying the fuel supply in New England -- all while respecting Vermont's natural beauty by installing the line underground and underwater.

This 45 day notice, as required under 30 V.S.A. § 248(f) and Vermont Public Service Board (PSB) Rule 5.402(A), is being sent to the municipal and regional planning commissions and municipal legislative bodies in the municipalities in which the NECPL will be located. In addition, courtesy copies are being sent to other interested entities, as listed in *Attachment A – List of 45 Day Notice Recipients*. Included with this letter are the following attachments:

- A -- List of 45 Day Notice Recipients
- B -- Project Location Map and Route Maps
- C -- Project Construction Typicals
- D -- Preliminary Aesthetics Assessment
- E -- Summary of Environmental Studies and Permits

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<sup>1</sup> The New England electric grid is operated by Independent System Operator-New England (ISO-New England).

## **I. Project Overview**

The NECPL will consist of the construction, operation, and maintenance of a high-voltage direct current (HVDC) electric power transmission system in Vermont that will have both aquatic (underwater) and overland (underground) segments. *See Attachment B -- Location Map and Route Maps.* The proposed underwater portions of the transmission line, approximately 98 miles in length, will be buried to a target depth of 3-4 feet in the bed of Lake Champlain except at water depths of greater than 150 feet where the cables will be placed on the bottom. The overland portions of the transmission line, approximately 56 miles in length, will be buried approximately four feet underground within existing public (State and town) rights-of-way (ROWs).<sup>2</sup> Very short sections of the route at the Lake Champlain entry and exit points, as well as at the converter site in Ludlow, will be located on private land that is owned or controlled by TDI-NE.

The transmission line will connect to the transmission system in the Province of Québec, Canada and transmit electric power to a proposed converter station in the Town of Ludlow, Vermont.<sup>3</sup> The Ludlow converter station will convert the electrical power from direct current (DC) to alternating current (AC) and then connect to the 345 kV Coolidge Substation in Cavendish, Vermont that is owned and operated by the Vermont Electric Power Company (VELCO).

The transmission line will be a HVDC design, comprised of two cables – one positively charged and the other negatively charged – and will be solid dielectric and thus contain no fluids or gases. Figures depicting typical cross sections for the aquatic and overland cables are provided in Attachment C. The nominal operating voltage of the line will be approximately 300 to 320 kV, and will be capable of delivering 1,000 megawatts (MW) of electricity.

## **II. Project Description and Construction Plans**

Routing maps for the Project are provided in Attachment B.

### Transmission line: Pre-Lake Route

From the U.S.-Canada border the transmission line will be installed underground within a town road in Alburgh for approximately 0.5 miles, and then underground through TDI-NE-owned land where it will enter Lake Champlain.

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<sup>2</sup> The only potential areas where underground burial may not occur is at two stream/river crossings in Ludlow where the cables may be placed in conduit and attached to a bridge or culvert headwall.

<sup>3</sup> Note that the interconnection to the Quebec transmission system and other development activities within Canada are not part of this Vermont application.

### Transmission line: Lake Route

The transmission line will enter Lake Champlain using a construction technique known as horizontal directional drill (HDD) to minimize impacts to the Lake and shoreline.<sup>4</sup> The line will be installed beneath the lake bed on the Vermont side of Lake Champlain for a distance of approximately 98 miles, to the Town of Benson. In locations where the water depth is greater than 150 feet, the transmission line will be placed on top of the lake bed.

The cable will be buried in the lake bottom using either a water-jet plow or a shear plow. The water-jetting process uses jets of pressurized lake water to “fluidize” the sediments to create a trench. The water-jet plow is fitted with hydraulic pressure nozzles that create a downward and backward flow within the trench, allowing the transmission cables to settle into the trench under its own weight before the sediments settle back into the trench.

In the southern portion of Lake Champlain, where sediment stiffness is low and the waterway is narrow, a shear plow installation will be used. For this installation technique, the plow is tethered to a surface support vessel, which tows the plow along the lakebed. A diagram depicting these processes is provided in Attachment C.

Burial depths within the lake bed may vary in response to site-specific factors such as the presence of existing infrastructure or bedrock. Where the transmission cables would cross existing utility infrastructure such as a pipeline or another cable, they will be laid over the existing utility and protective coverings such as articulated concrete mats will be installed over the cable crossing. Coordination with utility owners will occur and standard utility crossing procedures will be employed to prevent damage to pre-existing utilities. Where bedrock is near the surface and burial is not practicable, protective coverings such as concrete mats will be installed to protect the cables. A representative schematic of such protection measures is provided in Attachment C.

### Transmission line – Land route

From the Lake Champlain exit point in Benson, the transmission line will be buried in public road rights-of-way or private property controlled by TDI-NE for approximately 56 miles, as follows:

- TDI-NE land to Benson town roads east to VT Route 22A (4.4 miles)
- VT Route 22A south to US Route 4 in Fair Haven (~8.1 miles)
- US Route 4 east to US Route 7 in Rutland (~17.2 miles)
- US Route 7 south to VT Route 103 in North Clarendon (~2.6 miles)
- VT Route 103 south/southeast to VT Route 100 in Ludlow (~17.8 miles)

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<sup>4</sup> HDD is a directional boring, trenchless method of installing underground utilities in a shallow arc along a prescribed path by using a surface-launched drilling rig, with minimal impact on the surrounding area.

- VT Route 100 north to Ludlow town roads (~0.8 miles)
- Ludlow town roads to the proposed converter station (~4.8 miles)
- Converter station to VELCO Coolidge substation (~ 0.3 miles)

As with the transmission line segment in Alburgh, the cables will be located below ground along existing public road ROWs from Benson to the converter station in Ludlow.<sup>5</sup> Manhole covers placed at ground level may be required in locations where the cable is placed in a duct system or where access to cables splices is needed.

Typically the two cables will be laid side-by-side (approx. 12 to 36 inches apart) in a trench approximately 4 to 5 feet deep. Subsequent to laying the cables in the open trench, the trenches will be backfilled with native materials, if appropriate, or low thermal resistivity material, such as well-graded sand to fine gravel, stone dust, or crushed stone. A protective cover will be placed directly above the low thermal resistive backfill material and marker tape placed above the cover. A typical overland trench cross section is shown in Attachment C. In certain areas that present particular engineering or environmental challenges, HDD will be utilized in lieu of trenching.

The general sequence for installing the underground transmission cables along the road ROWs will be as follows: (i) survey work, initial clearing/mowing operations (if necessary) and installation of erosion prevention and sediment control (EPSC) measures; (ii) trench excavation; (iii) cable installation; (iv) backfilling; and (v) restoration and revegetation.

Standard excavation equipment will be used to dig the trench (e.g., excavators, backhoes, loaders, etc.). Typical cable segment lengths range from 0.1 to 0.5 miles and each will be attached together in a jointing pit. Any excavated soils will be temporarily stockpiled adjacent to the worksite or transported off site if onsite storage is not possible. Where soil is stockpiled on site, it will be temporarily stabilized with EPSC measures. The width of the temporary construction areas will be approximately 20 feet to 50 feet or more depending on existing constraints and the width of the right of way.

Once construction is complete along the overland route, an approximately 12-foot-wide area along the transmission line route will be kept clear of deep-rooted trees for the life of the Project.

#### Temporary storage areas and work areas

Temporary staging areas to support overland installation activities will be located in proximity to the roads in areas that require minimal alterations (i.e., flat fields). Additional workspace may also be required at HDD staging areas. If additional workspace outside the road ROW is required, previously disturbed areas or undeveloped areas will be utilized where feasible in

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<sup>5</sup> For a limited section of the route TDI-NE is evaluating the use of a railroad ROW in lieu of VT Route 103. See Attachment B – Route maps.

order to minimize impacts. Landowner consent will be obtained prior to any excursions on private property. All temporary storage areas or workspaces areas will be re-graded and re-vegetated as required upon completion of their use.

### Converter Station

The converter station in Ludlow will convert the DC electrical power to AC. It will be a voltage source converter with a “compact type” design.<sup>6</sup> The total post-construction site area (i.e., building and associated areas and equipment) will be approximately 4 to 5 acres. The total amount of land to be cleared for construction may be somewhat larger due to required grading. The station’s converter building will have a footprint of approximately 165 feet by 325 feet (1.2 acres) and a height of approximately 50 feet. The entire station will be surrounded by a fence.

The converter station will be designed to minimize visual impacts to the local environment and surroundings. The indoor design of the converter station will limit the need for exterior switchyards and will reduce audible sound. It is anticipated that transformers, cooling equipment, and power line carrier filters will be the major equipment installed outside of the building. The converter station will be powered by electricity taken directly from the proposed NECPL Project transmission line. A representation of a typical converter station is provided in Attachment C.

From the converter station, a 345 kV (AC) transmission line will be installed underground within a duct bank for approximately 0.3 miles to connect the converter station with the VELCO Coolidge Substation along the Cavendish/Ludlow border.

### **III. Transport of Equipment and Materials**

#### Lake Route

For the in-water portion of the Project, transport of the transmission cables will occur via a supply barge or the vessel used to lay the cables. Other equipment, materials, and supplies will be transported to the work site by resupply barges. The land-based support facility for supplying transmission cable will likely be located at an existing port with heavy lift facilities, such as the Port of Albany, New York. From the Port of Albany, vessels will transit the New York State canal system to access Lake Champlain. A small (approximately 60,000 square feet) temporary storage area on land might also be required to support installation of the cables in Lake Champlain. If this storage area is needed, it is anticipated that an existing commercial marine facility within Vermont or New York with docking and storage space can be utilized.

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<sup>6</sup> For further information on voltage source converter technology, see [http://www05.abb.com/global/scot/scot221.nsf/veritydisplay/65a1b7673f405632c1256fda003b4d44/\\$file/vsc%20transmission%20technologies.pdf](http://www05.abb.com/global/scot/scot221.nsf/veritydisplay/65a1b7673f405632c1256fda003b4d44/$file/vsc%20transmission%20technologies.pdf).

The vessels and barges installing the cables will result in a short term increase in vessel traffic on Lake Champlain. Approximately ½ to 3 miles of transmission cables will be installed per day in the Lake. Water-dependent activities -- boating, angling, water sports or commercial sightseeing -- will be able to continue on the lake during installation activities, by transiting around the localized work site or using a different area of Lake Champlain. All transmission cable installation activities will be scheduled to avoid or minimize impacts, and will be closely coordinated with commercial ferry operators, the U.S. Army Corps of Engineers, the U.S. Coast Guard, harbor masters, local lake organizations, marinas, and other local, state, and Federal agencies as necessary. An Aquatic Safety and Communications Plan will be provided to the Coast Guard.

#### Land Route and Converter Station

While some of the roads along the route are primarily used for thru-traffic, other roads have residences adjoining the ROW. Installation of the transmission line and the presence of construction work areas and equipment will result in temporary disturbances to surrounding land uses during the construction period, including lane closures and other traffic management measures. At any given location, the active construction zone will last for approximately four days.

The construction schedule will be developed to minimize inconvenience to the travelling public and surrounding residences to the extent practicable. TDI-NE will provide timely information to affected residents regarding construction activities and coordinate with the Vermont Agency of Transportation (VTTrans) and local officials. Impacts will be minimized by installing construction signs and use of barriers in accordance with applicable State of Vermont highway regulations and design standards. Restoration of the roadway ROW, driveways, and landscaped areas will be designed in consultation with VTTrans, municipal officials, and adjacent landowners.

Construction at the converter station is anticipated to be on-going for approximately 18 months. Construction worker vehicles and material deliveries will access the site through local roads. The number of construction-related vehicles in the immediate area at any one location is anticipated to be greater than currently experienced, but deliveries will be coordinated with municipal officials to minimize impacts on traffic flow and the surrounding community.

TDI-NE anticipates that all construction equipment and materials, and all converter station equipment, can be transported to the project locations on local and state roads without requiring special road modifications. Oversized and/or over-dimension loads are anticipated for certain loads such as transformers, building materials, and some cable reels.

#### **IV. Benefits of the Project**

NECPL, in transmitting hydropower or other renewable energy from Canada, will provide a number of discrete benefits to Vermont and New England:

### Economic

- Reduces electricity costs in Vermont and the New England region by importing cost-competitive hydropower
- Creates hundreds of jobs during the construction period (2+ years)
- Creates hundreds of jobs during the operation period (40 years) due to operating requirements and jobs created due to lower energy prices
- Generates millions of dollars per year in property tax, sales tax, and income tax revenue to Vermont and host towns for the life of the project (estimated 40 years)
- Generates lease payments to the State of Vermont for use of the rights-of-way
- Creates a Vermont benefit fund to assist with projects that are important to Vermonters
- NECPL will be privately-financed

### Environmental

- Supports the goals of the New England states to import low-cost, renewable energy
- Reduces greenhouse gas emissions by replacing electricity generated by fossil fuels
- Establishes a Public Benefits Plan and Fund that will support Lake Champlain cleanup efforts, in-state renewable energy programs, and other statewide initiatives
- Does not require overhead transmission lines

### Electric System

- Enhances the region's fuel diversity by bringing hydroelectric power to New England
- Strengthens and diversifies the Vermont electric grid; fills the transmission space that will become available due to the impending retirement of Vermont Yankee and other New England plants
- Buried infrastructure will protect the line from natural disasters



- Utilizes smart grid technology and will have "Black Start" capability that can quickly restart the electric grid in case of a blackout

## **V. Preliminary Assessment of Aesthetic Impacts**

TDI-NE has retained Michael Buscher of T. J. Boyle Associates to assess the potential visual impacts of the Project based upon Section 248(b)(5) and Public Service Board precedent applying the so-called *Quechee Test*. See *Attachment D*. In short, the assessment found:

- The underground and underwater cables will not be visible after installation.
- There will be minimal above-ground infrastructure associated with the transmission cables, limited to at-grade manhole covers, and the attachment of the cables to a bridge or culvert headwall at two river/stream crossings.
- Cleared areas associated with construction, while altered from their present condition, will be re-seeded and re-vegetated after construction. There will be a permanent cleared area over the cables of approximately 12 feet. Temporary construction activities and ROW clearing are not expected to cause undue adverse aesthetic impacts.
- The converter station will be minimally visible from off-site locations due to intervening vegetation, topography, and a setback over 300 feet from the closest public road. Given the selection of a well-screened site and use of supplemental landscaping if needed, there will not be undue adverse visual impacts under the *Quechee Test*.

TDI-NE's Section 248 Petition will include a formal assessment from its expert consultants regarding the Project's aesthetic impact and any proposed mitigation measures.

## **VI. Preliminary Assessment of Other Project Impacts**

TDI-NE has assembled an experienced team of environmental, engineering, and energy consultants to assist in the design of the Project. The team has worked closely with the Vermont Agency of Natural Resources and the VTTrans to determine what background information is necessary in order to design the project so as to avoid and/or minimize impacts to sensitive environmental resources. Based on their assessment of the existing conditions as well as the proposed construction and operation technologies, the Project has been designed so that it will not cause undue adverse impacts to environmental resources or public health and safety. Preliminary assessments of site conditions relative to Project plans indicate that:

- Within the Project footprint, no outstanding resource waters, or critical wildlife habitat are known to exist or have been discovered during project-related studies.

- The final layout will be designed to avoid and/or minimize impacts to wetlands and streams to the extent practical. TDI-NE will obtain state and federal permits for the placement of the trenching of electrical lines into regulated wetlands or their buffers.
- Construction of the Project is not anticipated to adversely affect any federal or state listed threatened or endangered species, rare species, or significant natural communities.
- Limited conversion of forested habitat and forested wetlands is anticipated due to the need to prevent deep-rooted plants from growing over the transmission cables.
- The Project will have only temporary, non-significant impacts on surrounding land uses and on water-based uses of Lake Champlain during construction.
- The Project will comply with water quality standards within Lake Champlain during construction and operation. Increases in turbidity due to disturbance of the lake bed during cable installation will be localized and short-term.
- A construction phase stormwater discharge permit will be required for the overland portion of project; an operational phase stormwater discharge permit will be required only for the converter site in Ludlow.
- The Project is expected to reduce greenhouse gas emissions by displacing other energy sources in the region that rely on fossil fuels.
- The NECPL is not expected to have an adverse effect on historic architectural resources. While archaeological investigations are ongoing, construction will be designed to avoid, minimize, and/or mitigate impacts to any significant sites that are identified.
- The Project will require no new municipal services and will not pose undue burdens on municipal fire, police, or water/sewer services as the converter station equipment is similar to that at the existing Coolidge Substation. The Project will not impact the ability of municipalities to provide municipal or educational services.

## **VII. Assessment of Alternatives**

TDI-NE evaluated various alternatives in relation to the NECPL's overall purpose, with respect to environmental impacts, engineering constraints, costs, and other considerations. Several distinct components were evaluated:

Interconnection to an Existing VELCO substation. As part of its initial system screening studies, TDI-NE considered three existing substations as their point of interconnect into the New England

grid. The study concluded that the New Haven 345-kV Substation and West Rutland 345 kV Substation were not practical due to insufficient capacity on the existing transmission lines. In contrast, the 345 kV Coolidge Substation is expected to have adequate capacity to accept the NECPL's input.

Transmission Line Route. TDI-NE considered a number of factors in developing potential routing alternatives:

- Located entirely within the State of Vermont or New England;
- Built and operated safely;
- Minimize environmental impacts along the route;
- Minimize impact on the communities along the route (e.g., incompatible land uses; extent and duration of impacts on residents and businesses);
- Minimize challenges to construction that could jeopardize the project (e.g., unreasonably difficult construction; extraordinary technical effort to overcome site conditions); and
- Not be unreasonably expensive.

TDI-NE identified a number of routing alternatives which would connect the power source in Canada with the proposed converter station site and ultimately VELCO's Coolidge Substation. TDI-NE's preferred route represents the combination of alternatives that were determined to represent the lowest natural resource impacts when the Project's proposed design and installation methods are considered as well as known risks associated with the utilization of existing corridors.

Converter Station Site. TDI-NE evaluated sites for the potential converter station based on the following criteria:

- Sufficient land available for the facility and associated buffers (approximately 10 acres);
- Close proximity to the existing substation to minimize environmental impacts, disruption to surrounding land uses, and costs associated with connection to the converter station;
- Consistency with, and potential impacts on, land uses in proximity to the facility;
- Potential environmental impacts associated with construction of the converter station.

The proposed converter station location offered numerous advantages including proximity to the Coolidge Substation, sufficient acreage to accommodate aesthetic design considerations, visual screening by existing vegetation, distance from residential structures, and the presence of only one small wetland on the site in a location that would not affect the siting of the converter station.

## **VIII. Public Outreach Activities**

Since announcing the Project in late October, 2013, TDI-NE has made a concerted effort to initiate outreach with interested and potentially impacted stakeholders -- local landowners, town leaders, local businesses, state elected officials, state and federal agencies, Vermont utilities, nonprofit organizations, trade associations, regional commissions, and Vermont citizens. TDI-NE has engaged with hundreds of people in Vermont and New England at more than one hundred meetings or briefings over the past year. All selectboards along the overland segment have been briefed on the Project, six open house informational meetings were held along the overland segment, a Lake Symposium which provided details on the lake segment was held in Burlington, and numerous individual meetings have been held with interested people along the proposed route.

## **IX. Section 248 Schedule**

TDI-NE intends to file a Section 248 Petition and supporting materials with the PSB soon after the 45-day notice period expires, on or after December 5, 2014. Once the Section 248 Petition is filed, TDI-NE expects to request the Board to schedule any hearings and other necessary steps in the proceedings in time to render a decision within one year. This schedule will allow the Project to be constructed and operational by 2019.

## **X. Rights of The Planning Commissions to Comment on Project Plans**

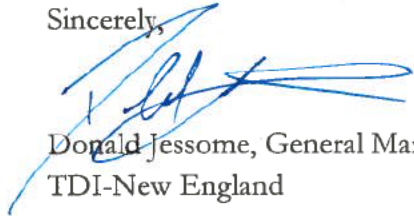
Under state statute — Section 248(f) of Title 30 — the town and regional planning commissions “shall make recommendations, if any, to the Public Service Board and to the petitioner at least 7 days prior to filing of the petition with the Public Service Board.” In addition, the planning commissions are entitled to provide revised recommendations “within 45 days of the date on which petitioner has filed a petition with the Board if the petition contains new or more detailed information that was not previously included in the petitioner’s filing with the municipal and regional planning commissions pursuant to Section 248(f).” See Board Rule 5.402(A)(2).

For additional information regarding this process, including your planning commission’s right to participate in the Board proceeding, please refer to the *Citizens’ Guide to the Vermont Public Service Board’s Section 248 Process*, which can be found by navigating to <http://psb.vermont.gov/statutesrulesandguidelines/guidelines> and clicking on the Guide’s link under the heading, *Participation in a Section 248 Proceeding*.”

Thank you for your attention to this matter. We look forward to progressing through the Section 248 process and welcome you input and suggestions to make this a successful project. If you have any questions, wish to discuss the Project, or would like TDI-NE to make a presentation to your commission, please do not hesitate to contact Josh Bagnato at [Josh.Bagnato@chvtllc.com](mailto:Josh.Bagnato@chvtllc.com) or

(802) 885-3890. In addition, we have posted this 45 day notice letter and all attachments on the NECPL website at <http://necplink.com/regulatory-documents.php>.

Sincerely,



Donald Jessome, General Manager  
TDI-New England

Enclosures:

Attachment A – List of 45 Day Notice Recipients

Attachment B – Project Location Map and Route Maps

Attachment C – Construction Typicals

Attachment D -- Preliminary Aesthetics Assessment

Attachment E – Summary of Environmental Studies and Permits

**ATTACHMENT A**  
**LIST OF 45 DAY NOTICE RECIPIENTS**

**NEW ENGLAND CLEAN POWER LINK PROJECT -- 45 DAY NOTICE LETTER**

**ATTACHMENT A -- LIST OF NOTICE RECIPIENTS**

**By Certified Mail – Return Receipt Requested**

Alburgh Selectboard  
Alburgh Planning Commission  
1 North Main Street  
Alburgh, Vermont 05440

Mount Holly Selectboard  
Mount Holly Planning Commission  
P.O. Box 248  
Mount Holly, Vermont 05758

Benson Selectboard  
Benson Planning Commission  
P.O. Box 163  
Benson, Vermont 05731

Town of Rutland Selectboard  
Town of Rutland Planning Commission  
P.O. Box 225  
Center Rutland, Vermont 05736

Castleton Selectboard  
Castleton Planning Commission  
P.O. Box 727  
Castleton, Vermont 05735

Shrewsbury Selectboard  
Shrewsbury Planning Commission  
9823 Cold River Road  
Shrewsbury, Vermont 05738

Cavendish Selectboard  
Cavendish Planning Commission  
P.O. Box 126  
Cavendish, Vermont 05142-0126

Wallingford Selectboard  
Wallingford Planning Commission  
75 School Street  
Wallingford, Vermont 05773

Clarendon Selectboard  
Clarendon Planning Commission  
P.O. Box 30  
Clarendon, Vermont 05759

West Haven Selectboard  
West Haven Planning Commission  
2919 Main Road  
West Haven, Vermont 05743

Fair Haven Selectboard  
Fair Haven Planning Commission  
3 North Park Place  
Fair Haven, Vermont 05743

West Rutland Selectboard  
West Rutland Planning Commission  
35 Marble Street  
West Rutland, Vermont 05777

Ira Selectboard  
Ira Planning Commission  
53 West Road  
Ira, Vermont 05777

Northwest Regional Planning Commission  
75 Fairfield Street  
Saint Albans, Vermont 05478

Ludlow Selectboard  
Ludlow Planning Commission  
P.O. Box 359  
Ludlow, Vermont 05149

Rutland County Regional Planning Commission  
P.O. Box 965  
Rutland, Vermont 05702

Southern Windsor County Regional Planning  
Commission  
P.O. Box 320  
Ascutney, Vermont 05030

**Lakeshore Towns and Regions -- *By First Class Mail***

Addison Selectboard  
Addison Planning Commission  
65 VT Route 17W  
Addison, Vermont 05491

Bridport Selectboard  
Bridport Planning Commission  
82 Crown Point Road  
Bridport, Vermont 05734

Burlington City Council  
Burlington Dept. of Planning and Zoning  
149 Church Street  
Burlington, Vermont 05401

Charlotte Selectboard  
Charlotte Planning Commission  
P.O. Box 119  
Charlotte, Vermont 05445

Colchester Selectboard  
Colchester Planning Commission  
P.O. Box 55  
Colchester, Vermont 05446

Ferrisburgh Selectboard  
Ferrisburgh Planning Commission  
P.O. Box 6  
Ferrisburgh, Vermont 05456

Grand Isle Selectboard  
Grand Isle Planning Commission  
P.O. Box 49  
Grand Isle, Vermont 05458

Isle La Motte Selectboard  
Isle La Motte Planning Commission  
P.O. Box 250  
Isle La Motte, Vermont 05463

North Hero Selectboard  
North Hero Planning Commission  
P.O. Box 38  
North Hero, Vermont 05474

Orwell Selectboard  
Orwell Planning Commission  
P.O. Box 32  
Orwell, Vermont 05760

Panton Selectboard  
Panton Planning Commission  
3176 Jersey Street  
Panton, Vermont 05491

Shelburne Selectboard  
Shelburne Planning Commission  
P.O. Box 88  
Shelburne, Vermont 05482

Shoreham Selectboard  
Shoreham Planning Commission  
297 Main Street  
Shoreham, Vermont 05770

South Burlington City Council  
South Burlington Dept. of Planning and Zoning  
575 Dorset Street  
South Burlington, Vermont 05403

South Hero Selectboard  
South Hero Planning Commission  
P.O. Box 175  
South Hero, Vermont 05486-0175

Addison County Regional Planning Commission  
14 Seminary Street  
Middlebury, Vermont 05753

Chittenden County Regional Planning  
Commission  
110 West Canal Street, Suite 202  
Winooski, Vermont 05404



**Courtesy Copies - *By First Class Mail***

Susan M. Hudson, Clerk  
Vermont Public Service Board  
112 State Street, Drawer 20  
Montpelier, Vermont 05620

Commissioner Christopher Recchia  
Vermont Department of Public Service  
112 State Street, Drawer 20  
Montpelier, Vermont 05620

Secretary Deborah Markowitz  
Vermont Agency of Natural Resources  
1 National Life Drive, Davis 2  
Montpelier, Vermont 05620

Secretary Brian Searles  
Vermont Agency of Transportation  
1 National Life Drive  
Montpelier, Vermont 05663-5001

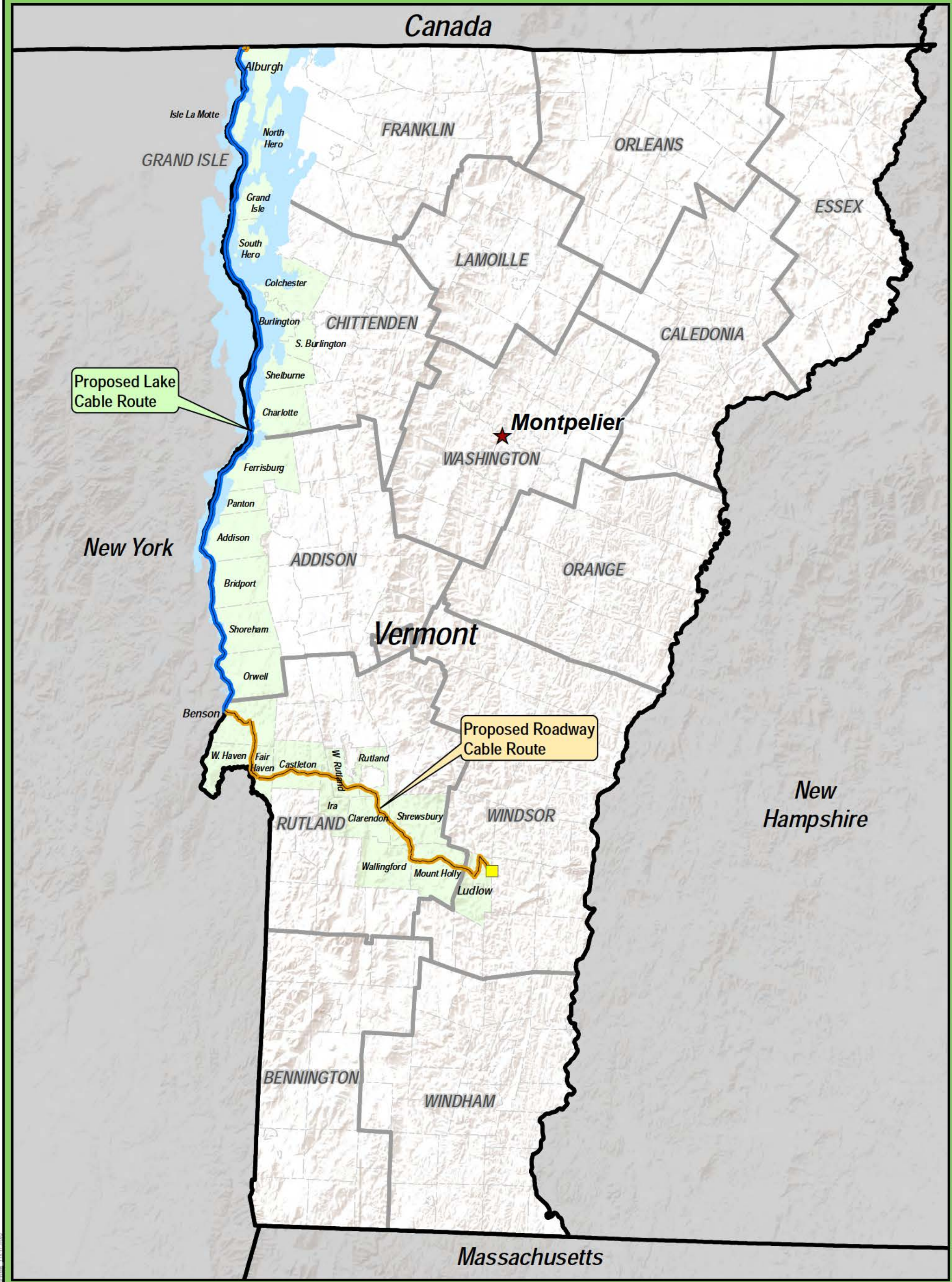
Laura Trieschmann, State Historic Preservation  
Officer  
Vermont Division for Historic Preservation  
1 National Life Drive  
Davis Building, 6<sup>th</sup> Floor  
Montpelier, Vermont 05620-0501

Thomas Dunn, President  
VELCO  
Rutland Headquarters  
366 Pinnacle Ridge Road  
Rutland, Vermont 05701

Michael S. Adams, Senior Project Manager  
U.S. Army Corps of Engineers  
New England District  
11 Lincoln Street, Room 210  
Essex Junction, Vermont 05452

Brian Mills, Senior Planning Advisor  
Office of Electricity Delivery and Energy  
Reliability (OE-20)  
U.S. Department of Energy  
1000 Independence Ave. SW  
Washington, DC 20585

**ATTACHMENT B**  
**LOCATION AND ROUTING MAPS**



Proposed Lake Cable Route

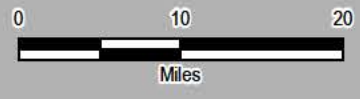
Proposed Roadway Cable Route



**Legend**

- Proposed Ludlow Converter Site
- Proposed Roadway Cable Route
- Proposed Lake Cable Route

Sources: ESRI, HDR, VHB, TRC, TDI New England



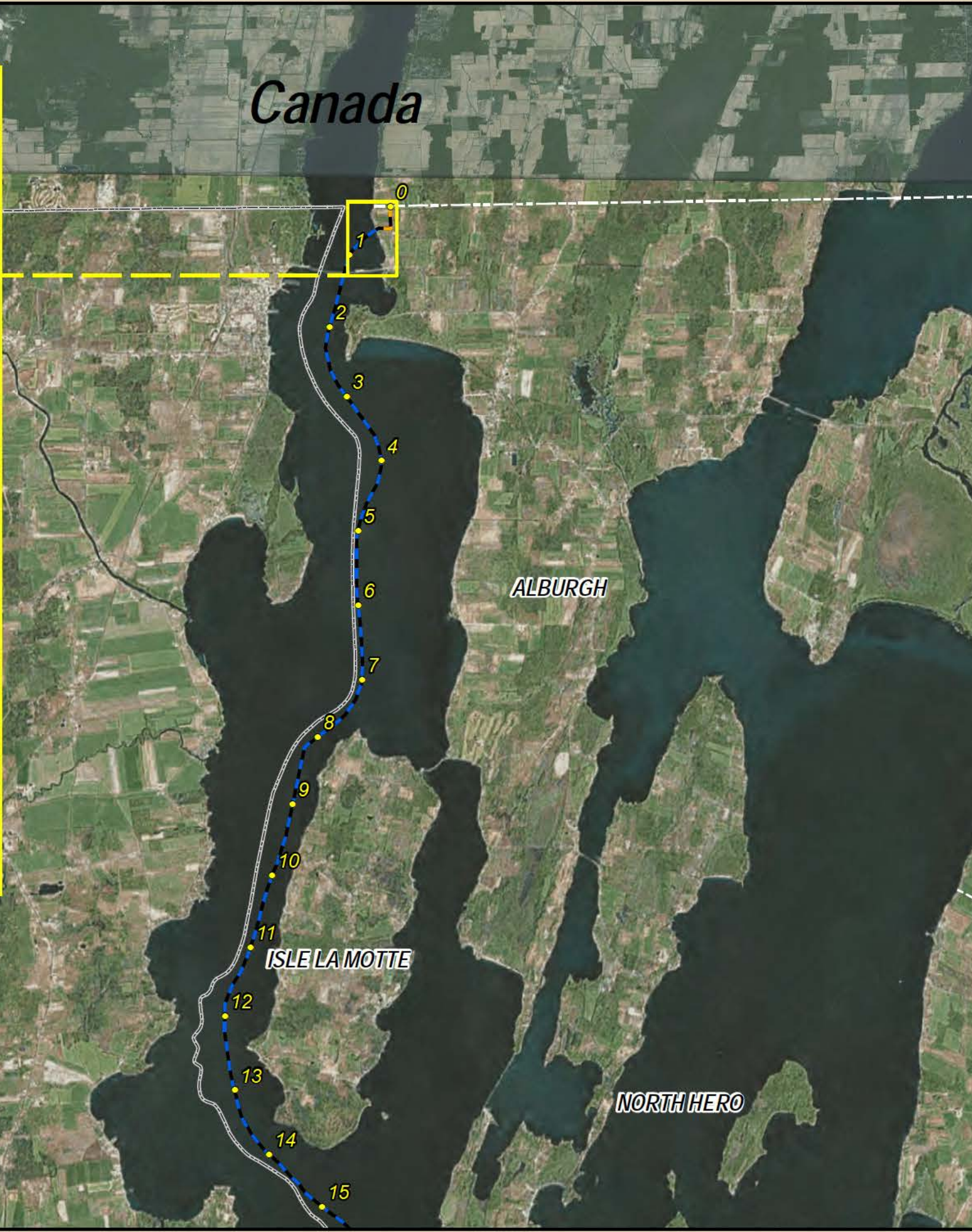
**TDI New England**  
A Blackstone Portfolio Company

**New England Clean Power Link**

**Proposed Cable Route**

Created: 10/15/2014 14 Gabriel Drive  
Augusta, ME 04330

V:\PROJECTS\AUGUST2014\NE Clean Power\Notes\_248\_Overview\_11x17.mxd



**Legend**

- Mile Marker
- Proposed Lake Cable Route\*
- Proposed Terrestrial Cable Route\*
- - - Approximate NY State Boundary
- Approximate Town Boundary
- Streams
- Wetlands

0 1 2  
Miles

\* The thickness of the lines on this map are graphic representations and do not represent the actual dimensions of the proposed project features.

Created: 10/15/2014  
Data Sources: ESRI, TVCGI, TDI New England, TRC, VHB

**TDI New England**  
A Blackstone Portfolio Company

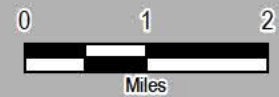
**New England  
Clean Power Link  
Proposed Route**

V:\PROJECTS\ALGUSTADT\INE Clean Power\Notes\248 Lake Cable Route\_11x17.mxd



**Legend**

- Mile Marker
- Proposed Lake Cable Route\*
- Proposed Terrestrial Cable Route\*
- Approximate NY State Boundary
- Approximate Town Boundary
- Streams
- Wetlands



\* The thickness of the lines on this map are graphic representations and do not represent the actual dimensions of the proposed project features.

Created: 10/15/2014

Data Sources: ESRI, TVCGI, TDI New England, TRC, VHB



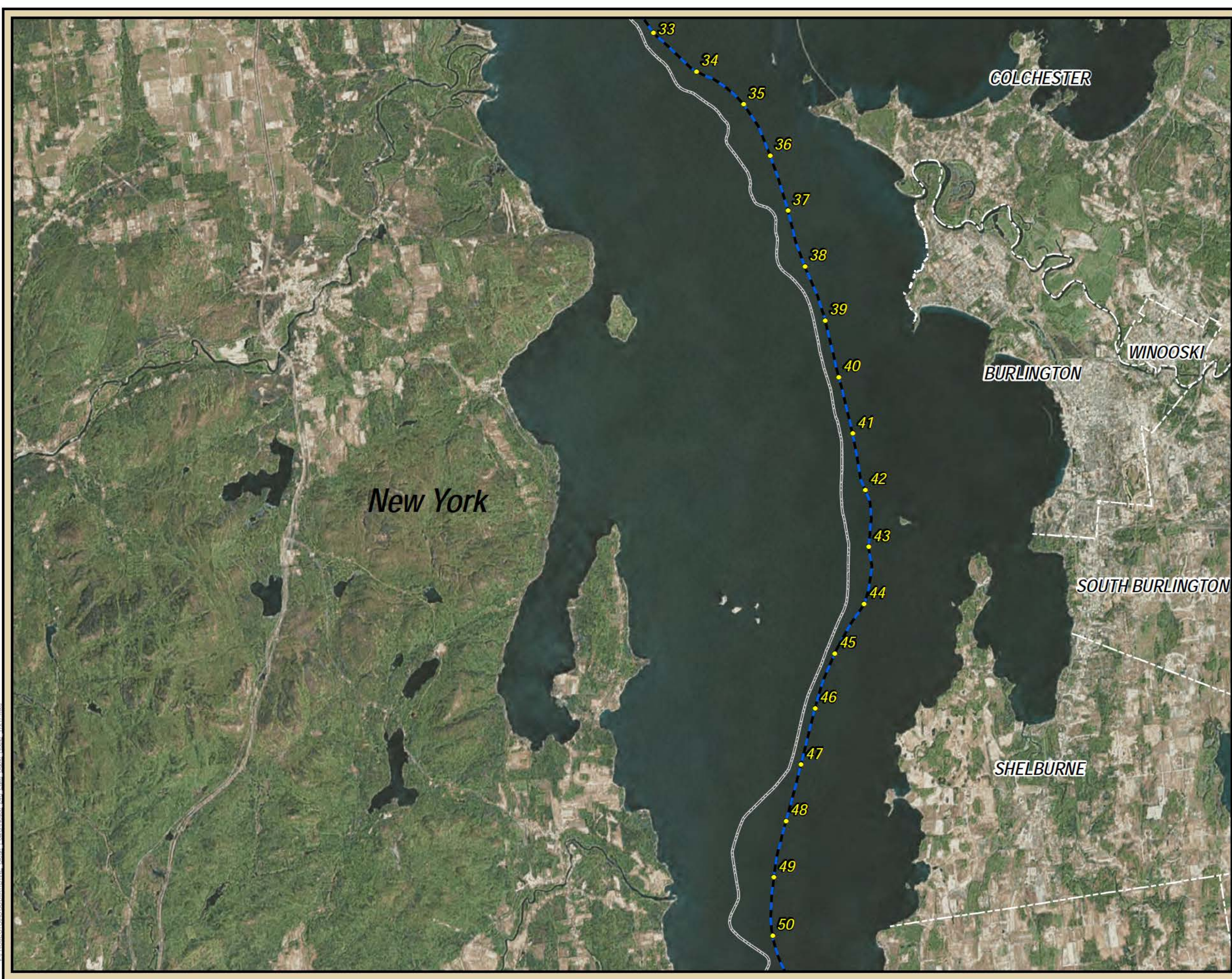
**New England  
Clean Power Link  
Proposed Route**

2 of 23



14 Gabriel Drive  
Augusta, ME 04330

V:\PROJECTS\AUGUSTADRAWING Clean Power\Notes\248 Lake Cable Route\_11x17.mxd



**Legend**

- Mile Marker
- Proposed Lake Cable Route\*
- Proposed Terrestrial Cable Route\*
- Approximate NY State Boundary
- Approximate Town Boundary
- Streams
- Wetlands

0 1 2  
Miles

↑  
N

\* The thickness of the lines on this map are graphic representations and do not represent the actual dimensions of the proposed project features.

Created: 10/15/2014  
Data Sources: ESRI, TVCGI, TDI New England, TRC, VHB

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**New England  
Clean Power Link  
Proposed Route**

V:\PROJECTS\AUGUSTADRAWING Clean Power\Notes\248 Lake Cable Route\_11x17.mxd



**Legend**

- Mile Marker
- — — — — Proposed Lake Cable Route\*
- — — — — Proposed Terrestrial Cable Route\*
- Approximate NY State Boundary
- Approximate Town Boundary
- Streams
- Wetlands

0 1 2  
Miles

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Created: 10/15/2014  
Data Sources: ESRI, TVCGI, TDI New England, TRC, VHB

**TDI New England**  
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**New England  
Clean Power Link  
Proposed Route**

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**Legend**

- Mile Marker
- — — Proposed Lake Cable Route\*
- — — Proposed Terrestrial Cable Route\*
- Approximate NY State Boundary
- Approximate Town Boundary
- Streams
- Wetlands

0 1 2  
Miles

↑  
N

\* The thickness of the lines on this map are graphic representations and do not represent the actual dimensions of the proposed project features.

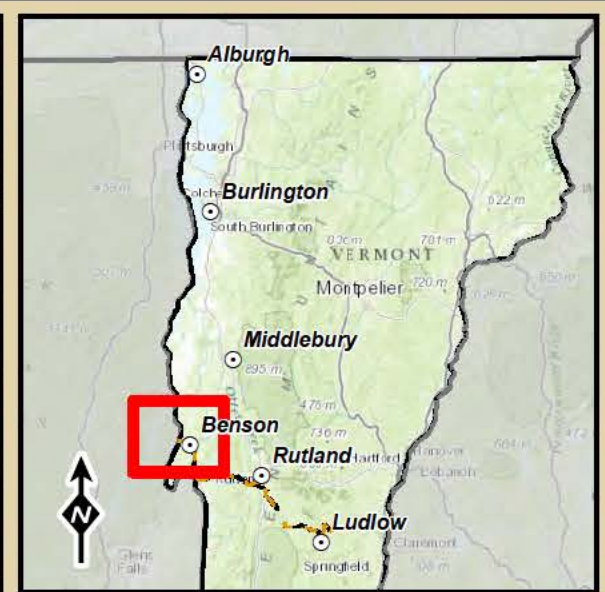
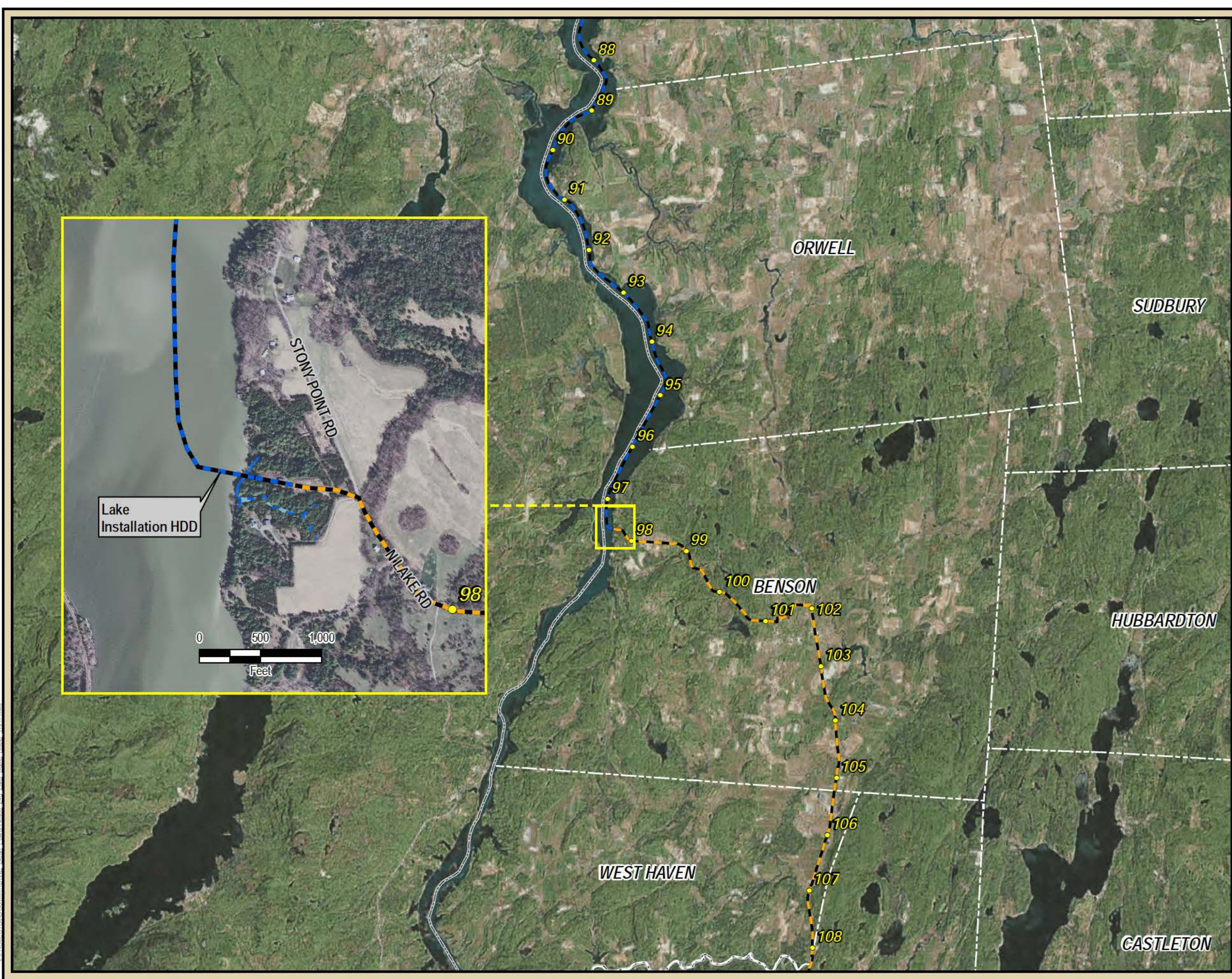
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Data Sources: ESRI, TVCGI, TDI New England, TRC, VHB

**TDI New England**  
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**New England  
Clean Power Link  
Proposed Route**

V:\PROJECTS\AUGUSTADRAWING Clean Power\Notes\248 Lake Cable Route\_11x17.mxd





**Legend**

- Mile Marker
- Proposed Lake Cable Route\*
- Proposed Terrestrial Cable Route\*
- Approximate NY State Boundary
- Approximate Town Boundary
- Streams
- Wetlands

0 1 2  
Miles

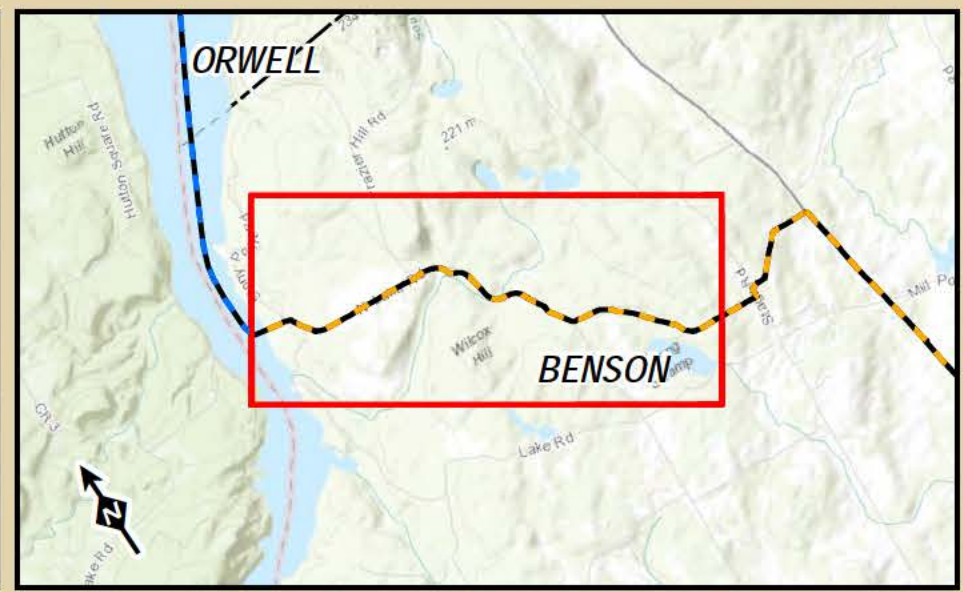
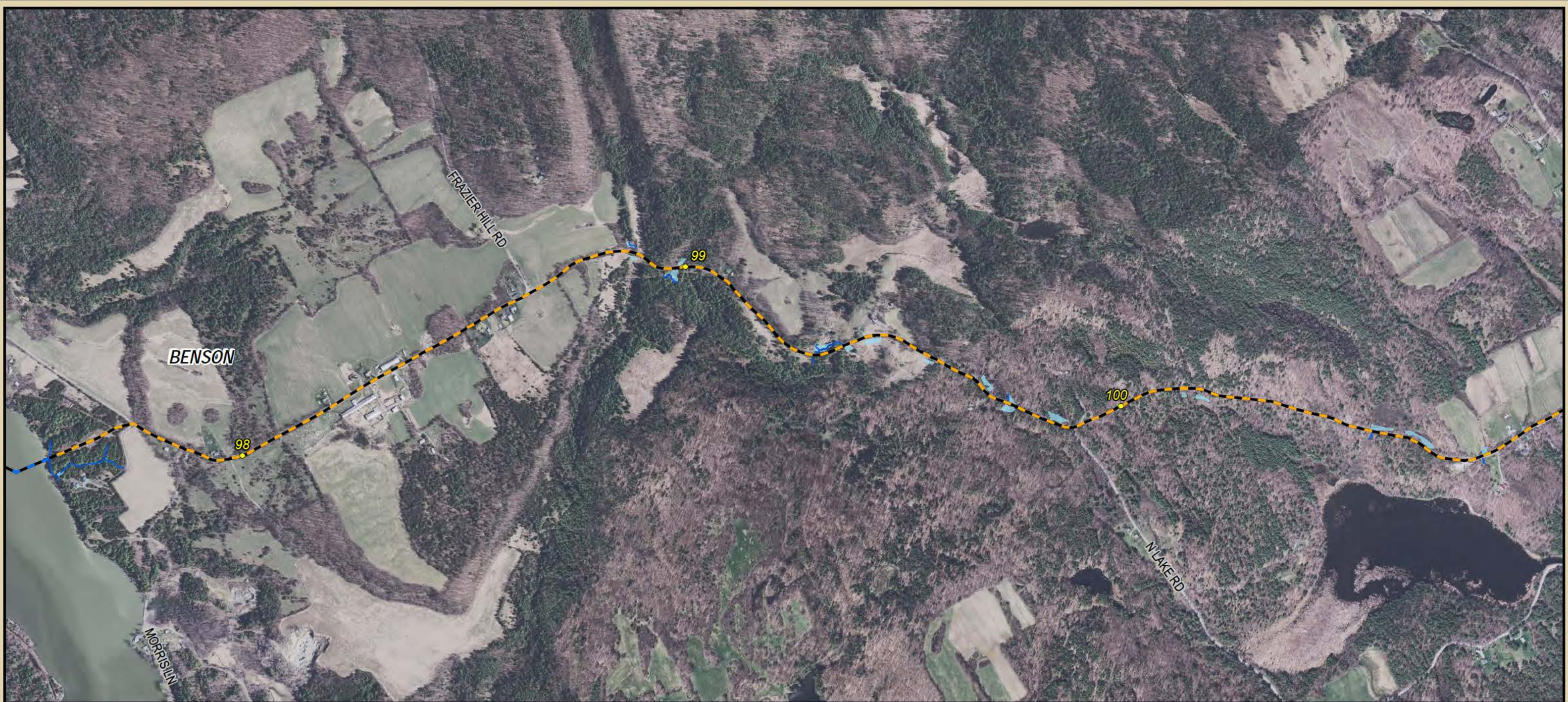
\* The thickness of the lines on this map are graphic representations and do not represent the actual dimensions of the proposed project features.

Created: 10/15/2014  
Data Sources: ESRI, TVCGI, TDI New England, TRC, VHB

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**New England  
Clean Power Link  
Proposed Route**

V:\PROJECTS\GUSTAVADINE Clean Power\Notes\248 Lake Cable Route\_11x17.mxd



**Legend**

- Mile Marker
- Proposed Lake Cable Route \*
- Proposed Terrestrial Cable Route \*
- Approximate Town Boundary
- Streams
- Wetlands

\* The thickness of the lines on this map are graphic representations and do not represent the actual dimensions of the proposed project features.

Created: 10/16/2014

Data Sources: ESRI, VCGI, TDI New England, TRC, VHB

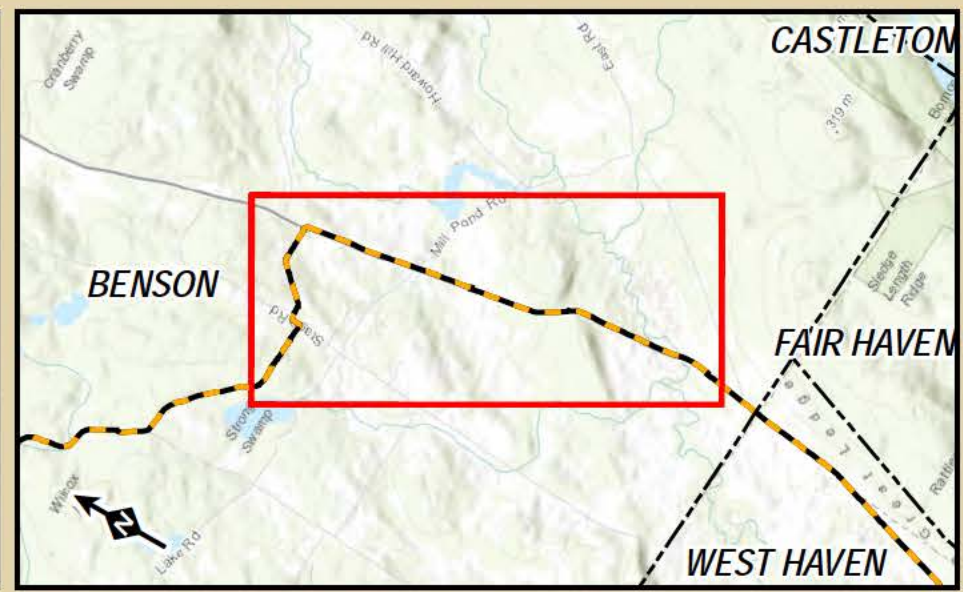
**TDI New England**  
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**New England  
Clean Power Link  
Proposed Route**

**7 of 23**

14 Gabriel Drive  
Augusta, ME 04330

V:\PROJECTS\AUGUSTADLINE\_Clean\_Power\Notice\_248\_Terrestrial\_Cable\_Route\_111417.mxd



**Legend**

- Mile Marker
- Proposed Lake Cable Route \*
- Proposed Terrestrial Cable Route \*
- Approximate Town Boundary
- Streams
- Wetlands

\* The thickness of the lines on this map are graphic representations and do not represent the actual dimensions of the proposed project features.

Created: 10/16/2014

Data Sources: ESRI, VCGI, TDI New England, TRC, VHB

**TDI New England**  
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**New England  
 Clean Power Link  
 Proposed Route**

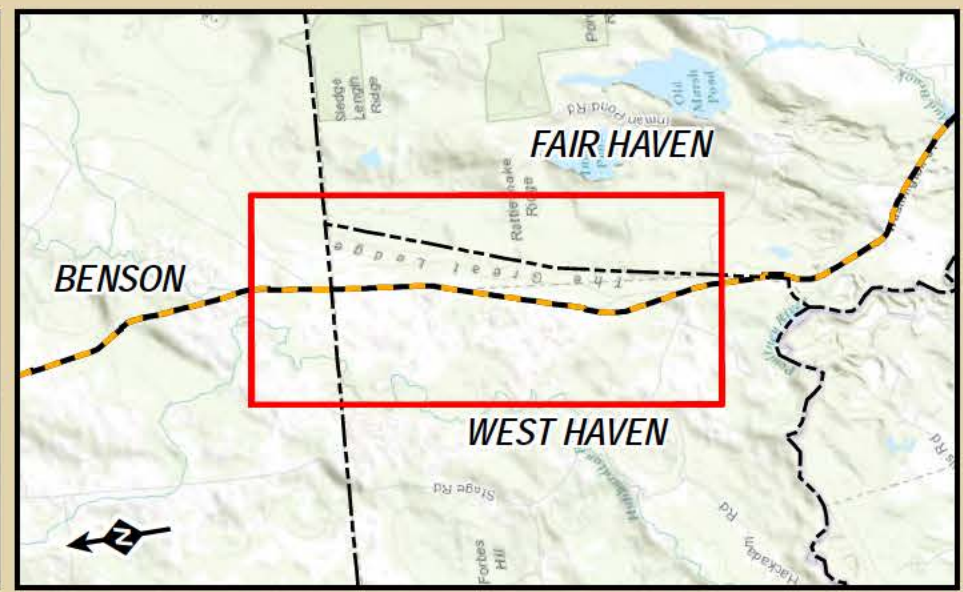
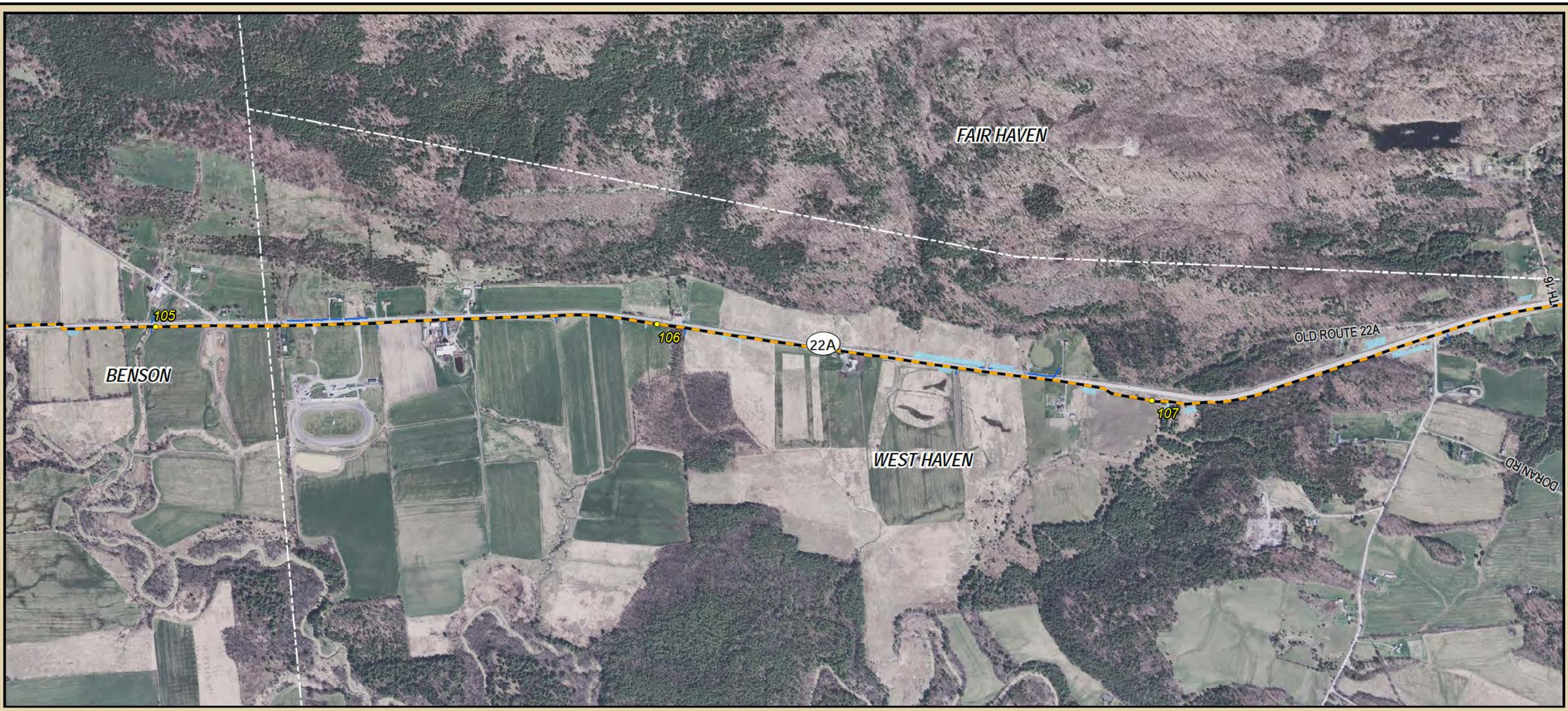
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14 Gabriel Drive  
Augusta, ME 04330

V:\PROJECTS\AUGUSTADLINE\_Clean\_Power\Notice\_248\_Terrestrial\_Cable\_Route\_11\117.mxd



**Legend**

- Mile Marker
- Proposed Lake Cable Route \*
- - - Proposed Terrestrial Cable Route \*
- - - Approximate Town Boundary
- Streams
- Wetlands

0 1,000 2,000  
Feet

\* The thickness of the lines on this map are graphic representations and do not represent the actual dimensions of the proposed project features.

Created: 10/16/2014  
Data Sources: ESRI, VCGI, TDI New England, TRC, VHB

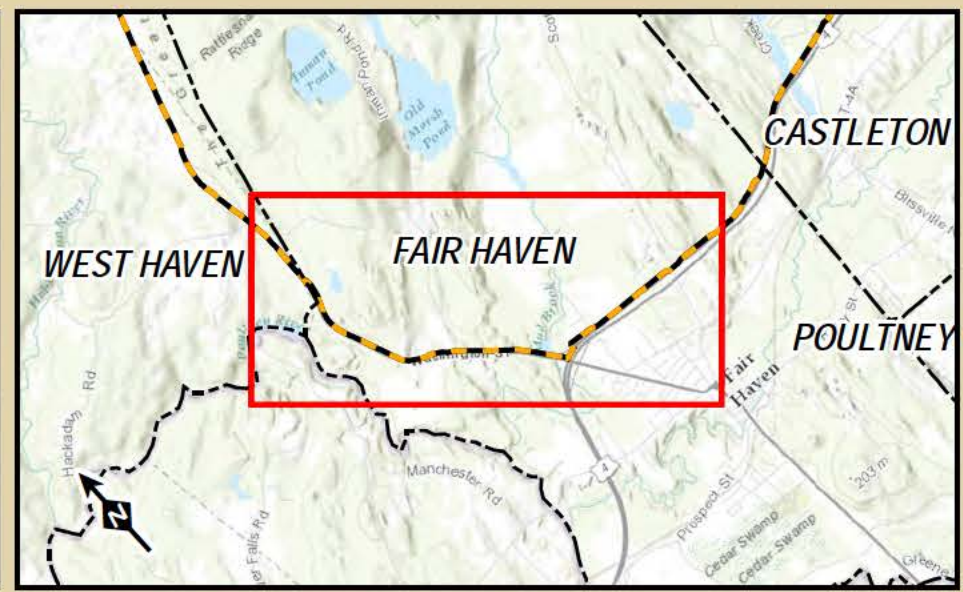
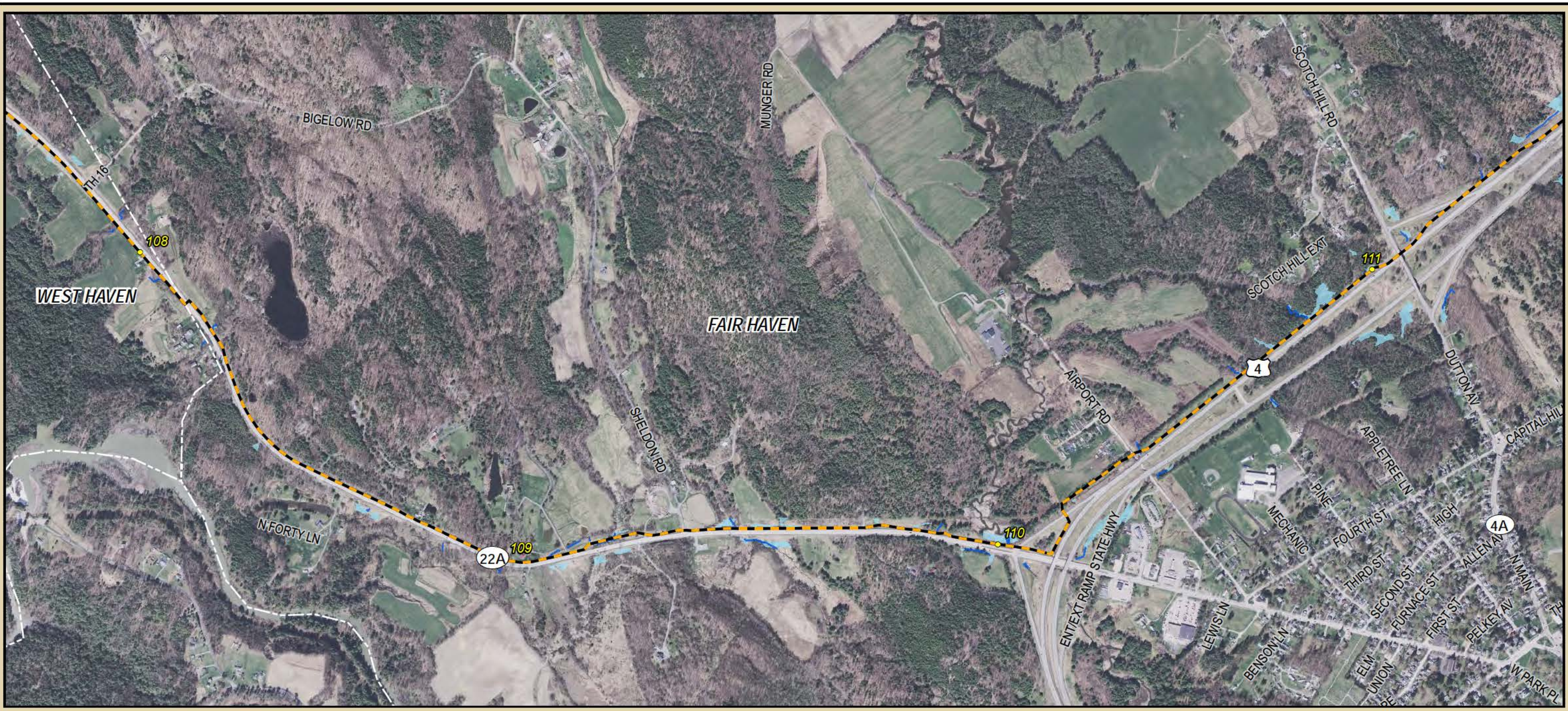
**TDI New England**  
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**New England Clean Power Link  
Proposed Route**

**9 of 23**

**TRC** 14 Gabriel Drive  
Augusta, ME 04330

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**Legend**

- Mile Marker
- Proposed Lake Cable Route \*
- Proposed Terrestrial Cable Route \*
- Approximate Town Boundary
- Streams
- Wetlands

\* The thickness of the lines on this map are graphic representations and do not represent the actual dimensions of the proposed project features.

Created: 10/16/2014

Data Sources: ESRI, VCGI, TDI New England, TRC, VHB

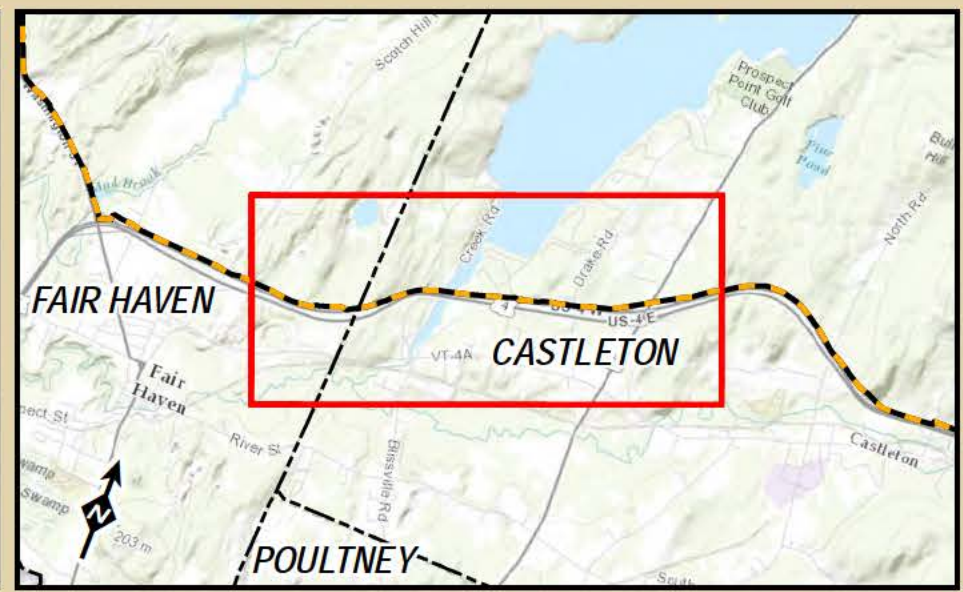
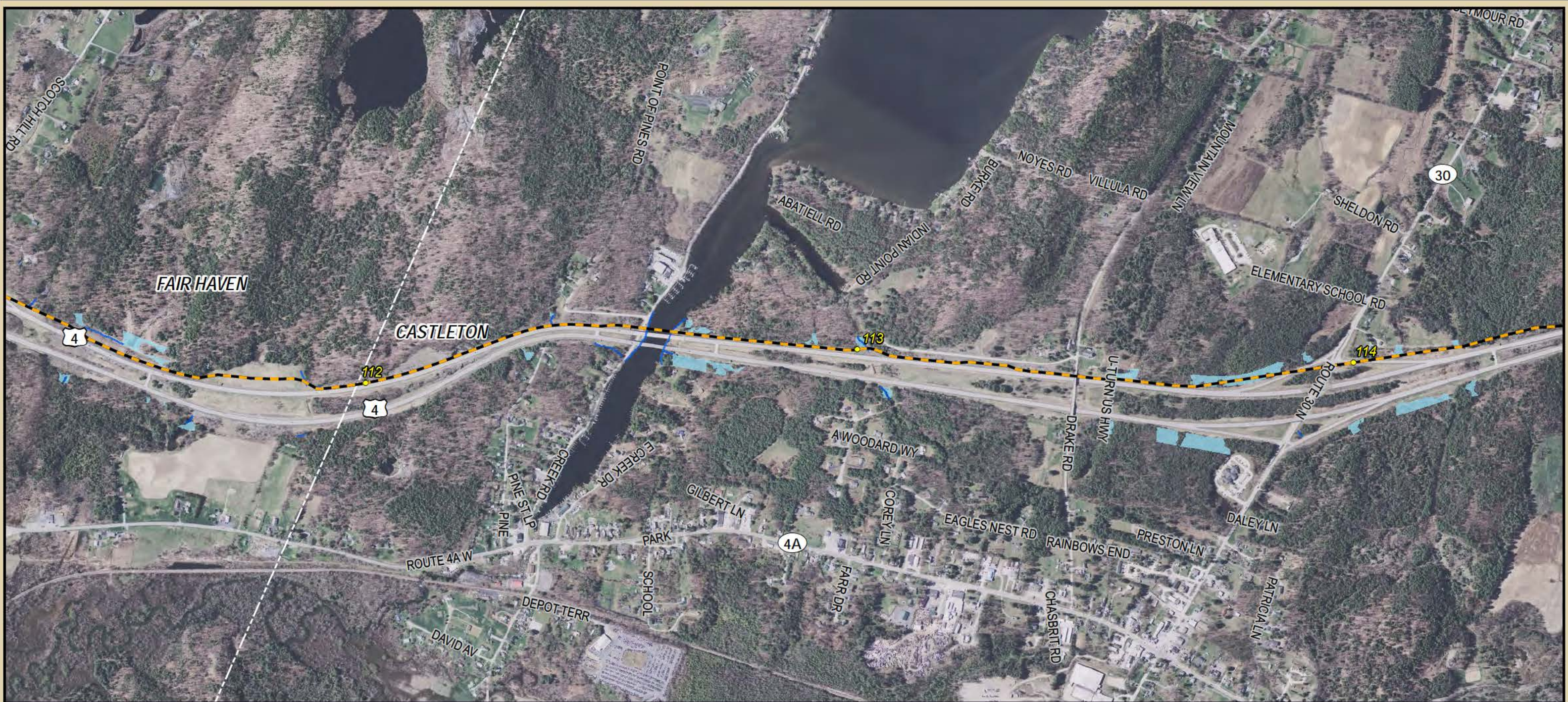
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**New England  
Clean Power Link  
Proposed Route**

**10 of 23**

14 Gabriel Drive  
Augusta, ME 04330

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**Legend**

- Mile Marker
- Proposed Lake Cable Route \*
- Proposed Terrestrial Cable Route \*
- Approximate Town Boundary
- Streams
- Wetlands

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Created: 10/16/2014  
Data Sources: ESRI, VCGI, TDI New England, TRC, VHB

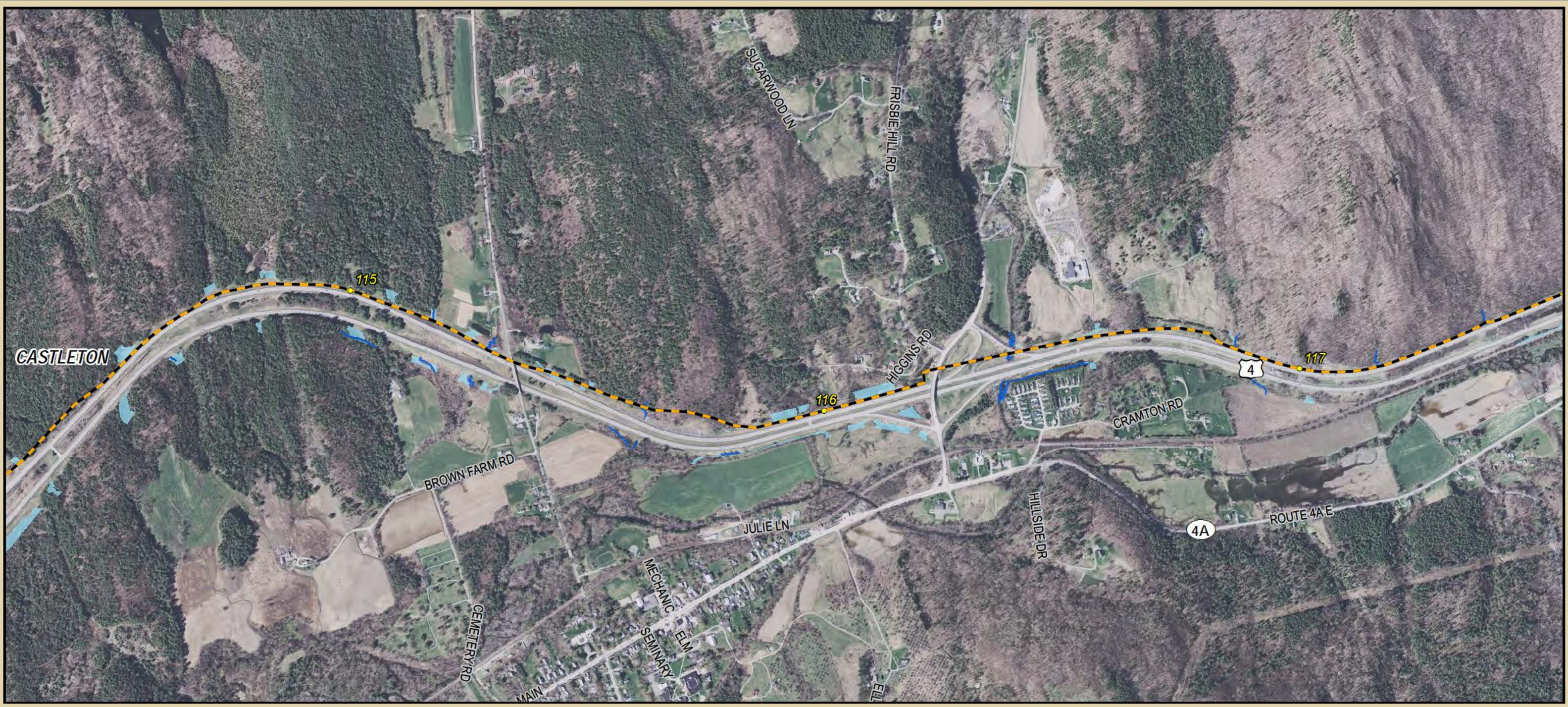
**TDI New England**  
A Blackstone Portfolio Company

**New England  
Clean Power Link  
Proposed Route**

**11 of 23**



14 Gabriel Drive  
Augusta, ME 04330

V:\PROJECTS\AUGUSTADIVINE\_Clean\_Power\Notice\_248\_Terrestrial\_Cable\_Route\_111417.mxd



**Legend**


- Mile Marker
- — — Proposed Lake Cable Route \*
- — — Proposed Terrestrial Cable Route \*
- Approximate Town Boundary
- Streams
- Wetlands

  
  
 0      1,000      2,000  
 Feet

\* The thickness of the lines on this map are graphic representations and do not represent the actual dimensions of the proposed project features.

Created: 10/16/2014


Data Sources: ESRI, VCGI, TDI New England, TRC, VHB



**TDI New England**  
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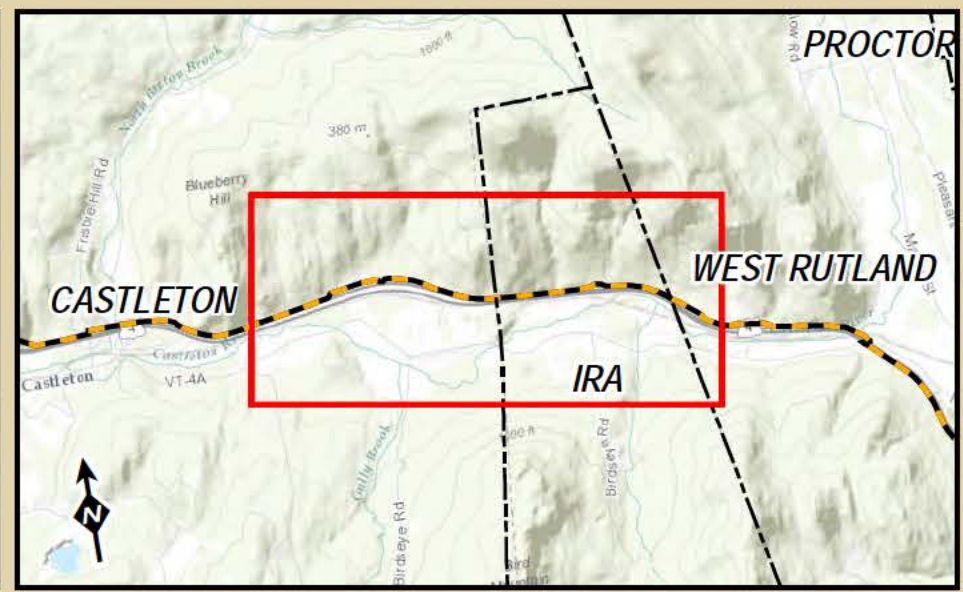
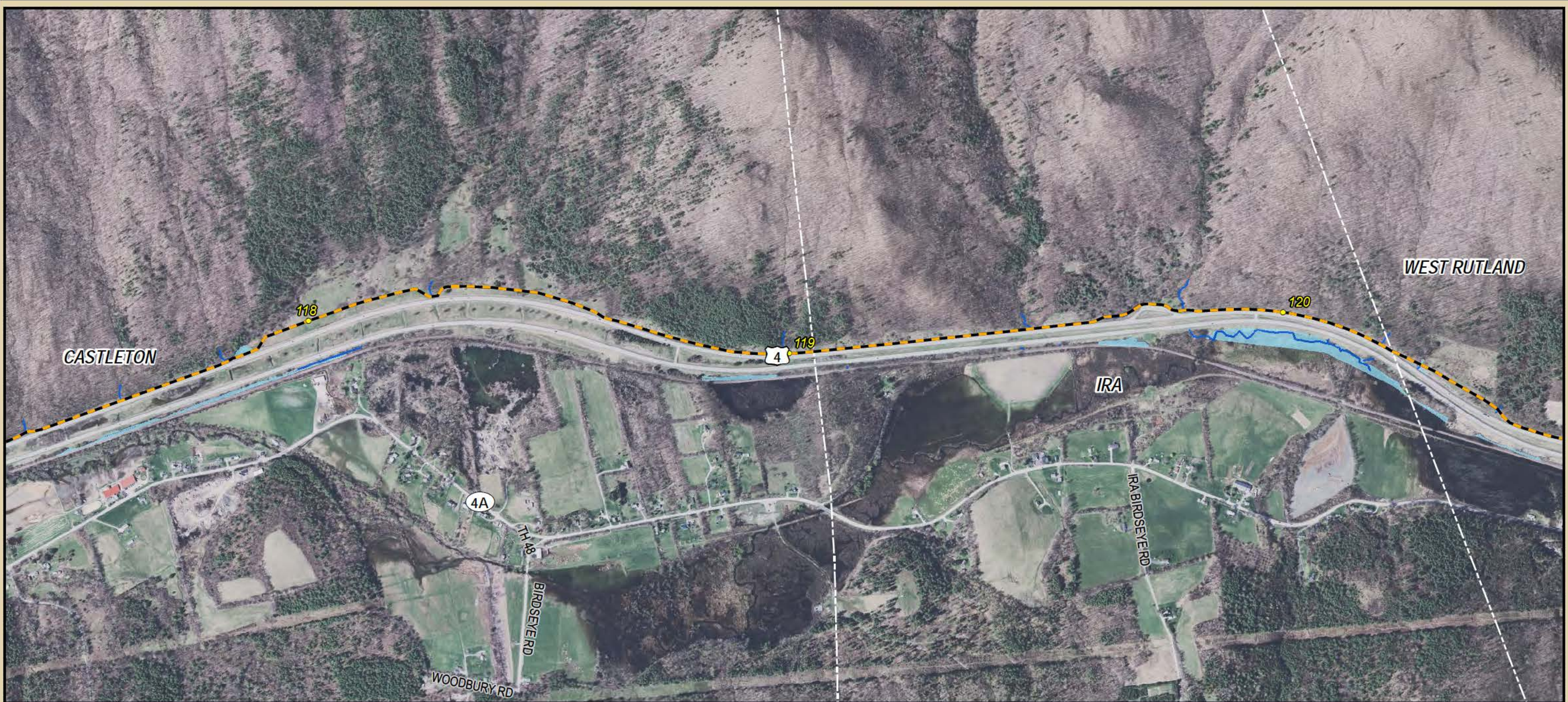
**New England  
Clean Power Link  
Proposed Route**

**12 of 23**



14 Gabriel Drive  
Augusta, ME 04330

V:\PROJECTS\AUGUSTADLINE\_Clean\_Power\Notice\_248\_Terrestrial\_Cable\_Route\_11M17.mxd



**Legend**

- Mile Marker
- Proposed Lake Cable Route \*
- - - Proposed Terrestrial Cable Route \*
- - - Approximate Town Boundary
- Streams
- Wetlands

0 1,000 2,000  
Feet

\* The thickness of the lines on this map are graphic representations and do not represent the actual dimensions of the proposed project features.

Created: 10/16/2014  
Data Sources: ESRI, VCGI, TDI New England, TRC, VHB

**TDI New England**  
A Blackstone Portfolio Company

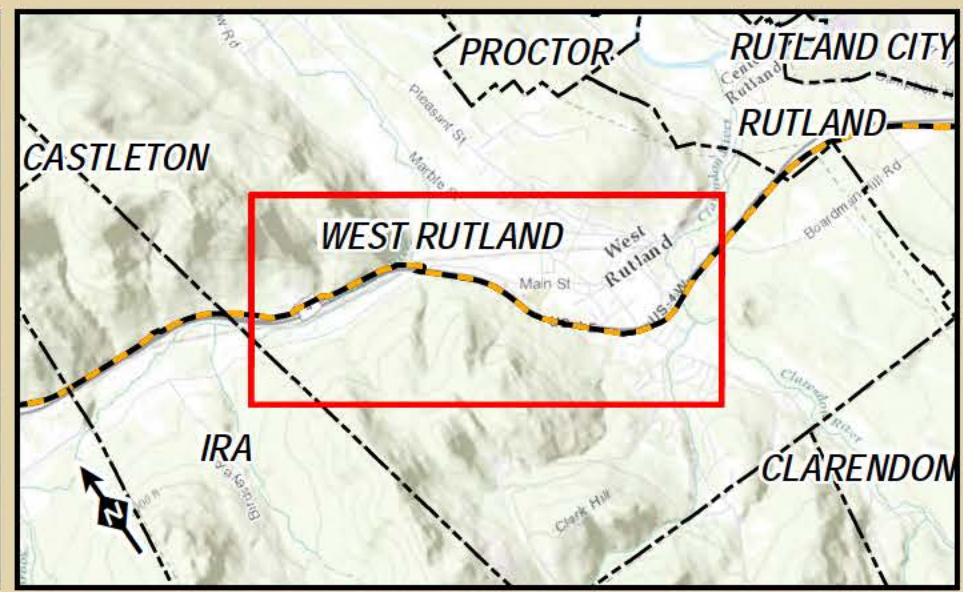
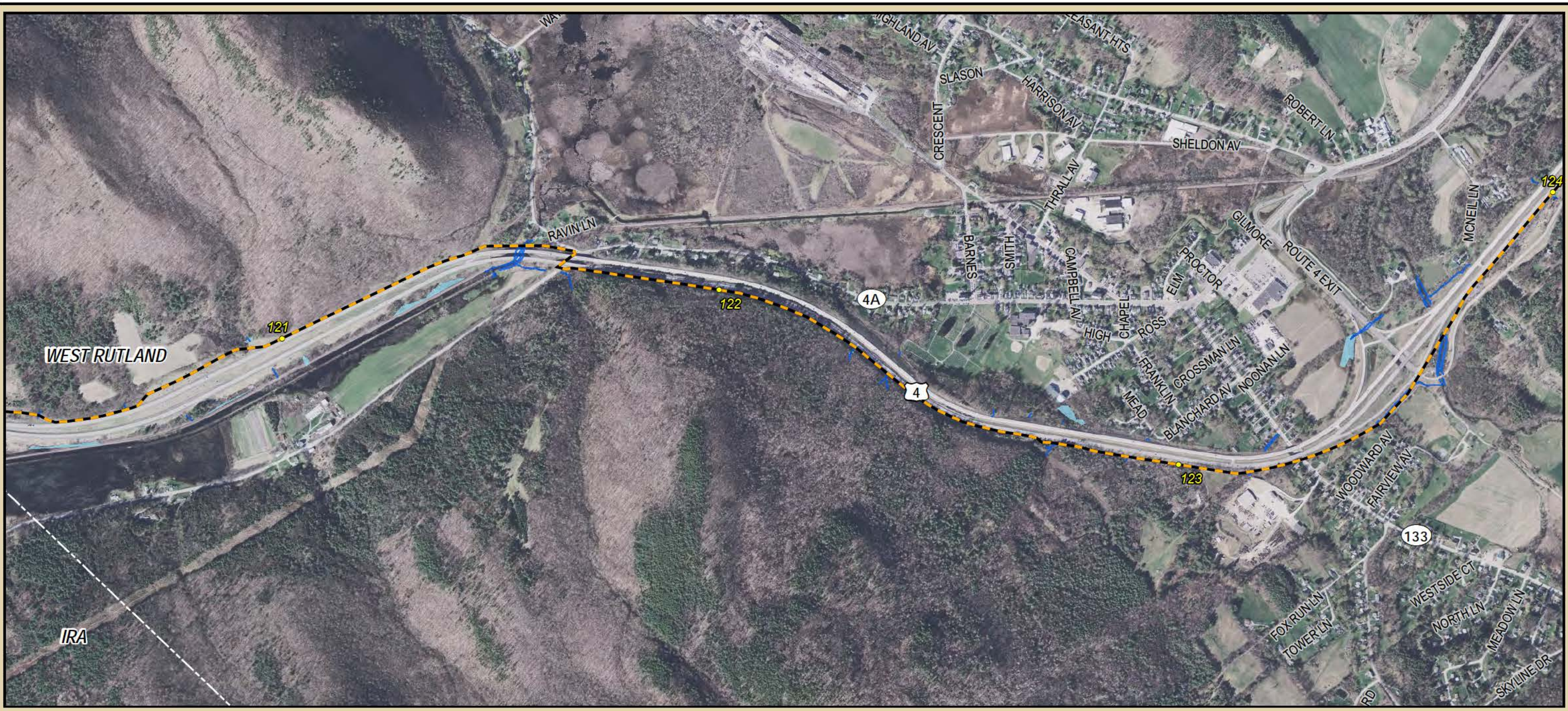
**New England Clean Power Link  
Proposed Route**

**13 of 23**

**TRC** 14 Gabriel Drive  
Augusta, ME 04330

V:\PROJECTS\AUGUSTADLINE\_Clean\_Power\Notice\_248\_Terrestrial\_Cable\_Route\_111417.mxd





**Legend**

- Mile Marker
- Proposed Lake Cable Route \*
- Proposed Terrestrial Cable Route \*
- - - Approximate Town Boundary
- Streams
- Wetlands

0 1,000 2,000  
Feet

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Created: 10/16/2014  
Data Sources: ESRI, VCGI, TDI New England, TRC, VHB

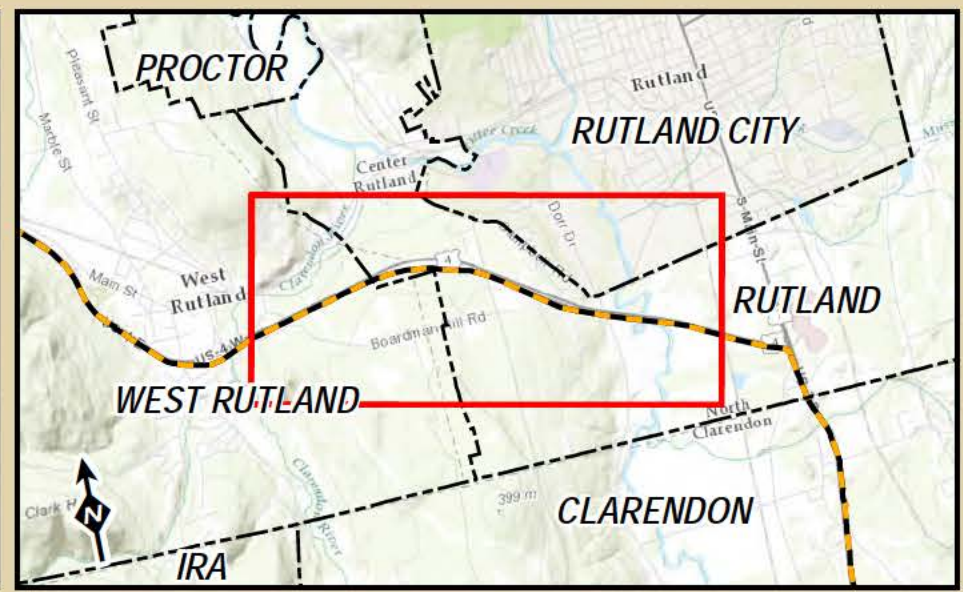
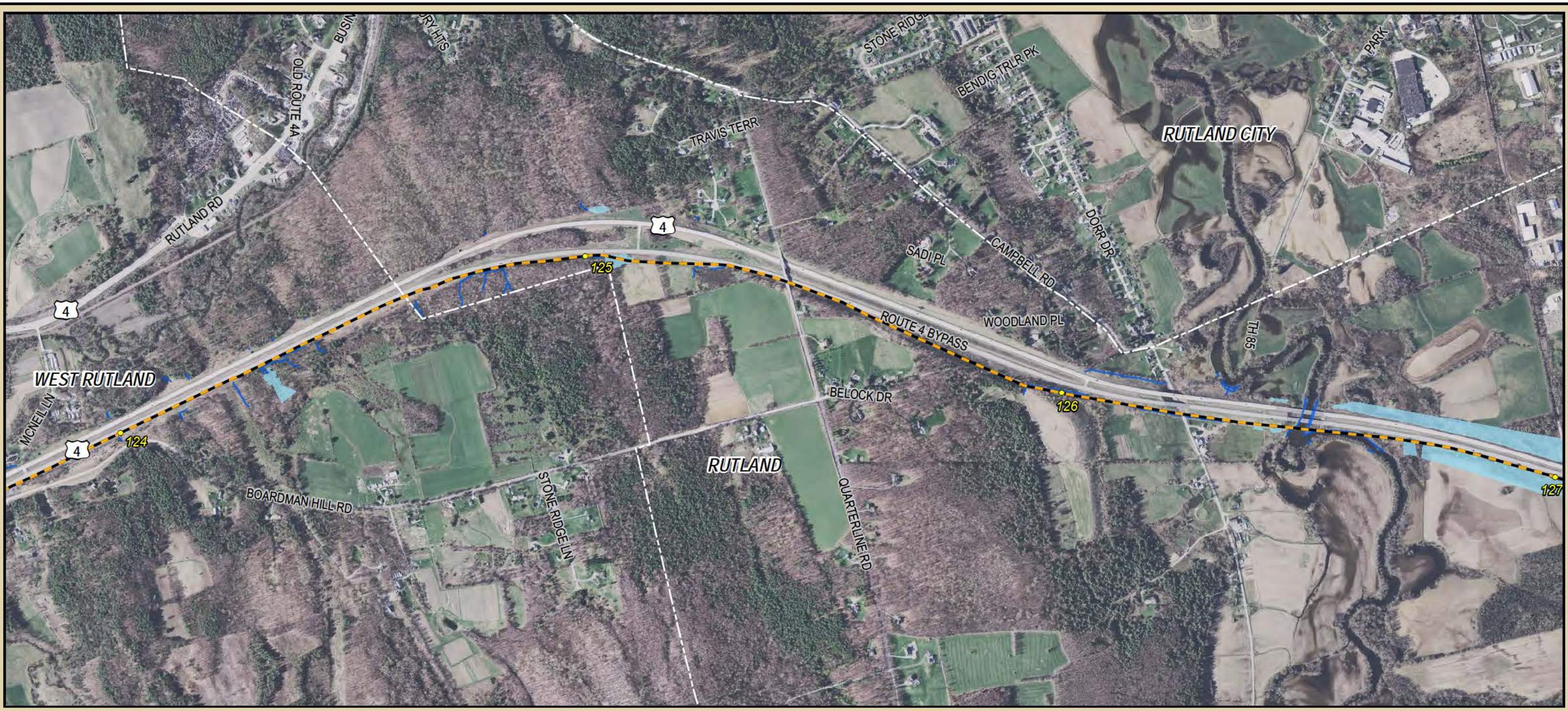
**TDI New England**  
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**New England Clean Power Link  
Proposed Route**

**14 of 23**

**TRC** 14 Gabriel Drive  
Augusta, ME 04330

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**Legend**

- Mile Marker
- Proposed Lake Cable Route \*
- - - Proposed Terrestrial Cable Route \*
- - - Approximate Town Boundary
- Streams
- Wetlands

0 1,000 2,000  
Feet

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Created: 10/16/2014  
Data Sources: ESRI, VCGI, TDI New England, TRC, VHB

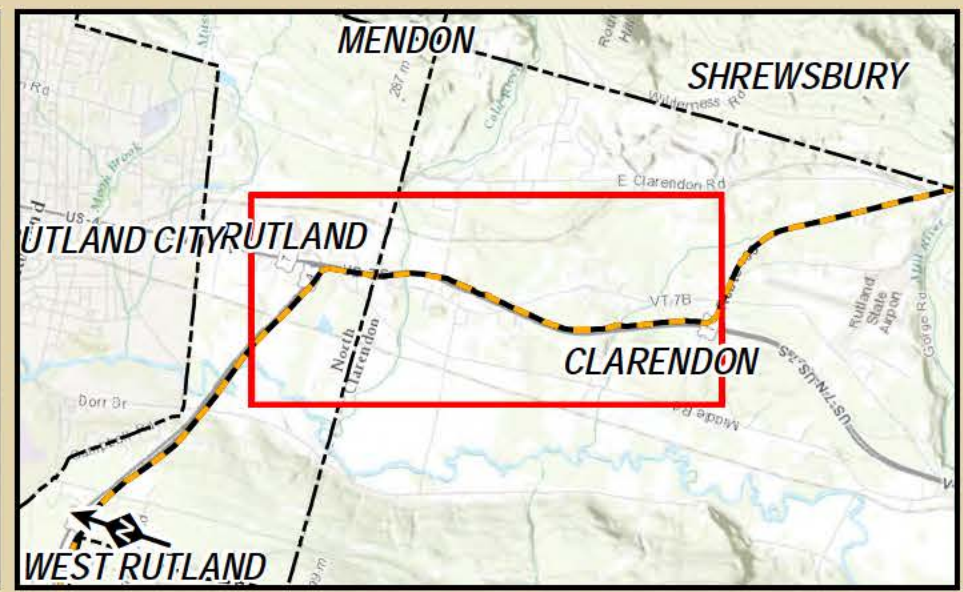
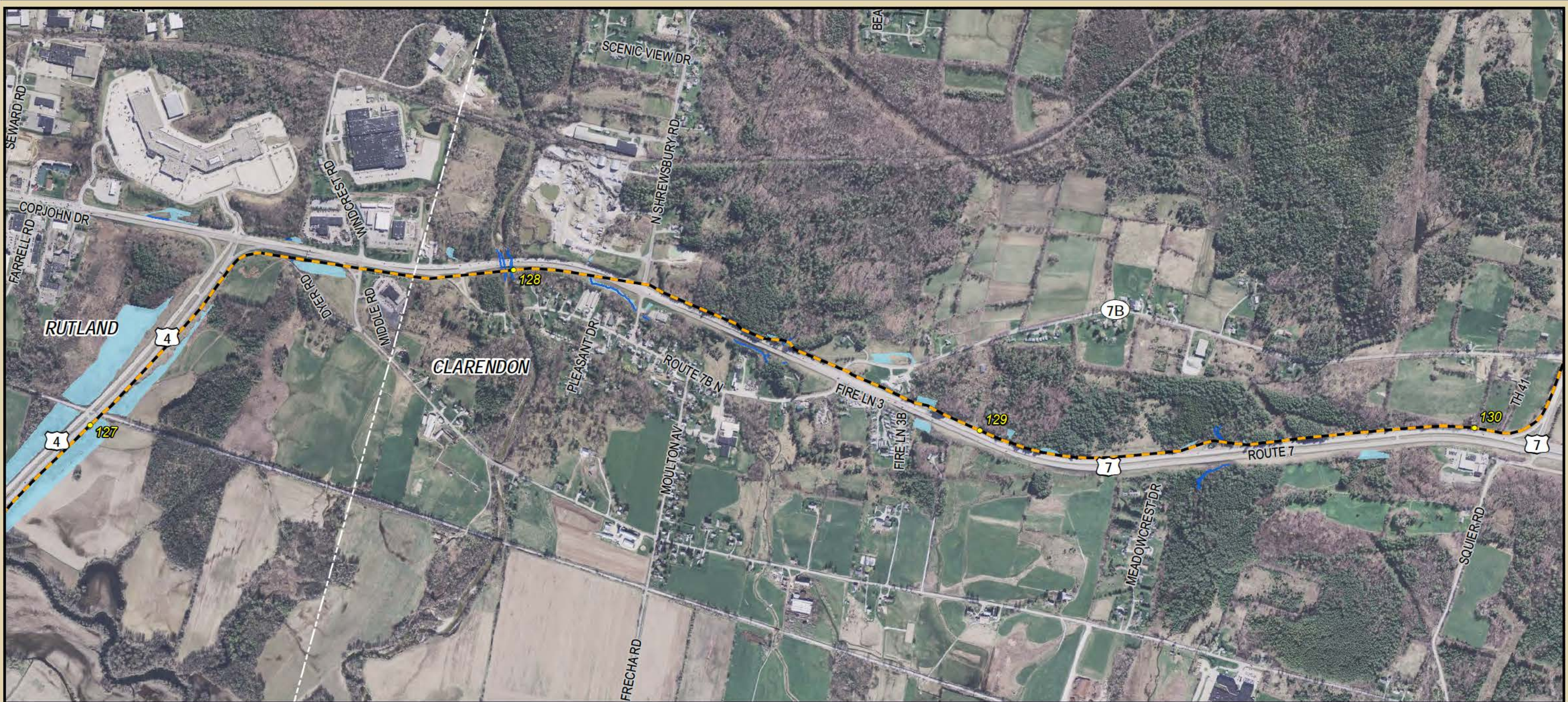
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A Blackstone Portfolio Company

**New England Clean Power Link  
Proposed Route**

**15 of 23**

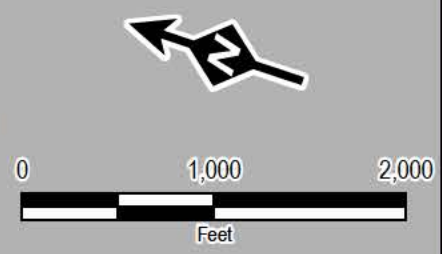
**TRC** 14 Gabriel Drive  
Augusta, ME 04330

V:\PROJECTS\AUGUSTADLINE\_Clean\_Power\Notice\_248\_Terrestrial\_Cable\_Route\_111417.mxd



**Legend**

- Mile Marker
- Proposed Lake Cable Route \*
- Proposed Terrestrial Cable Route \*
- Approximate Town Boundary
- Streams
- Wetlands



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Created: 10/16/2014

Data Sources: ESRI, VCGI, TDI New England, TRC, VHB

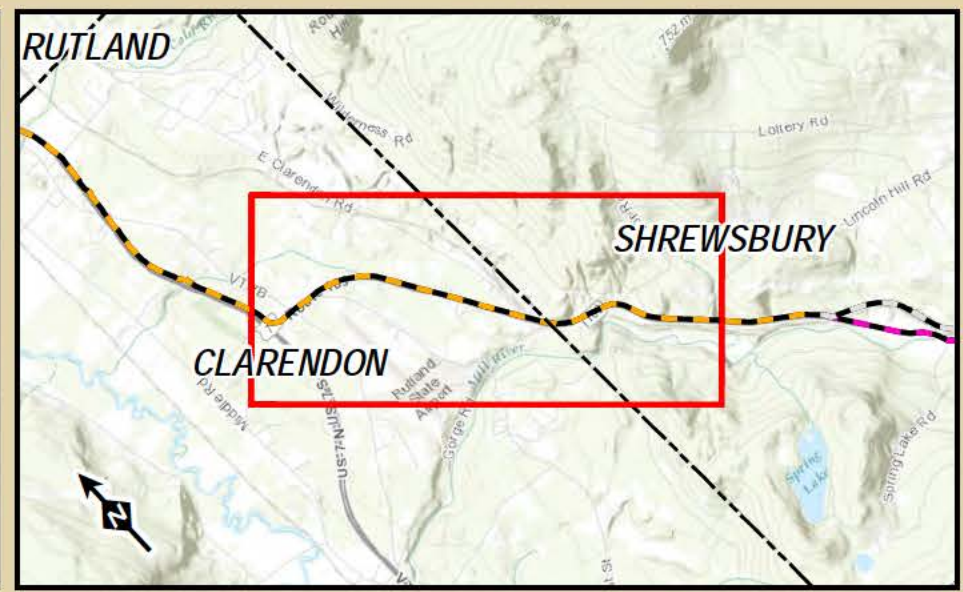
**TDI New England**  
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**New England  
 Clean Power Link  
 Proposed Route**

**16 of 23**

**TRC** 14 Gabriel Drive  
 Augusta, ME 04330

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**Legend**

- Mile Marker
- Proposed Lake Cable Route \*
- Proposed Terrestrial Cable Route \*
- Approximate Town Boundary
- Streams
- Wetlands

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Created: 10/16/2014

Data Sources: ESRI, VCGI, TDI New England, TRC, VHB

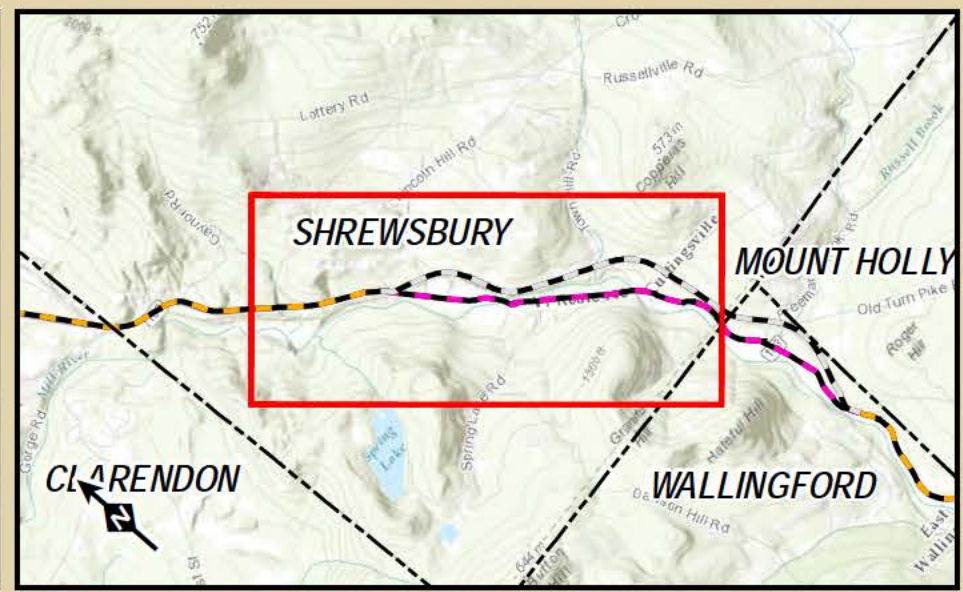
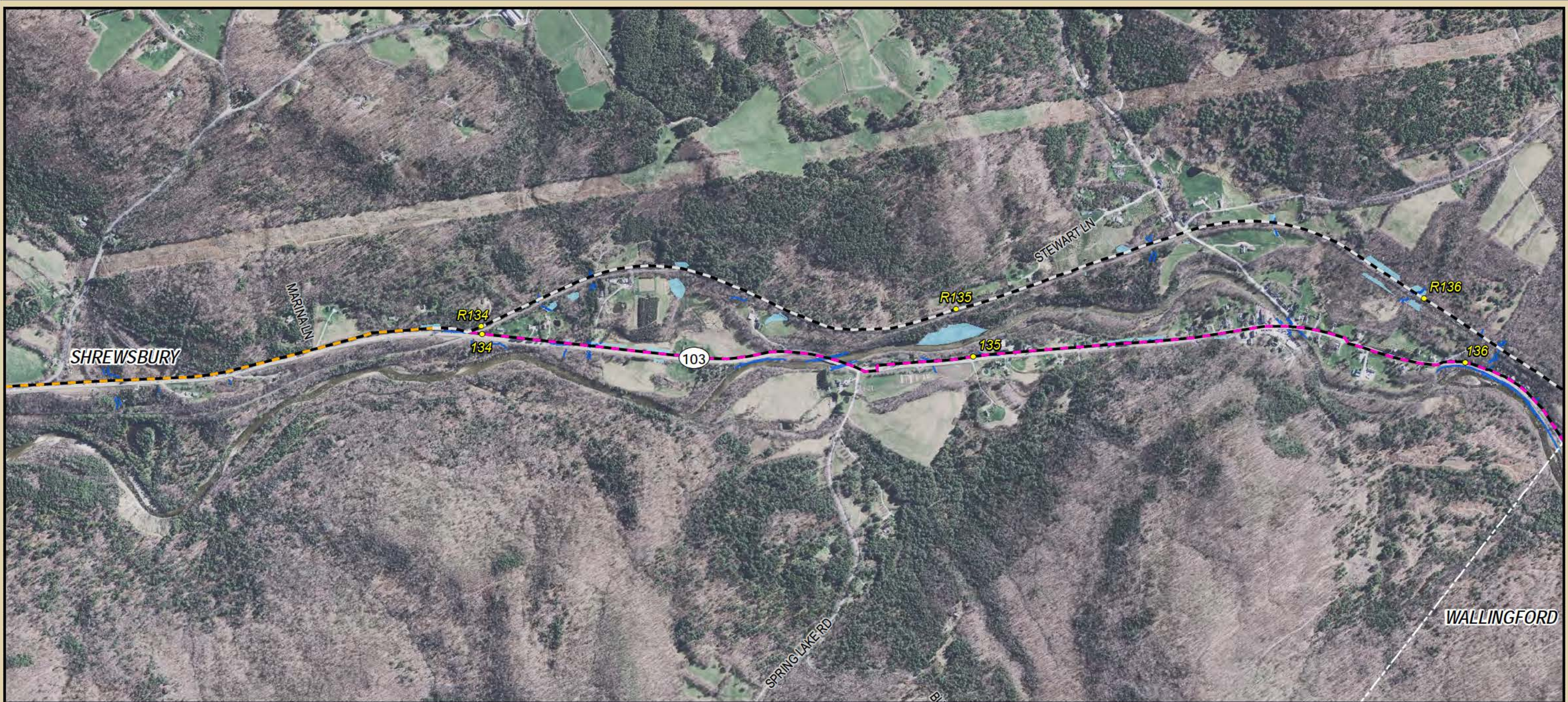
**TDI New England**  
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**New England  
Clean Power Link  
Proposed Route**

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14 Gabriel Drive  
Augusta, ME 04330

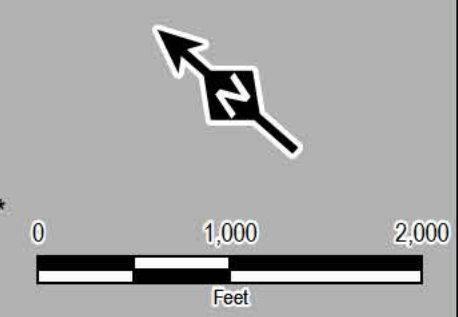
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**Legend**

- Mile Marker
- Proposed Lake Cable Route \*
- - - Proposed Terrestrial Cable Route \*
- - - RR Option \*
- - - Road Option \*
- - - Approximate Town Boundary
- Streams
- Wetlands

Created: 10/16/2014  
Data Sources: ESRI, VCGI, TDI New England, TRC, VHB



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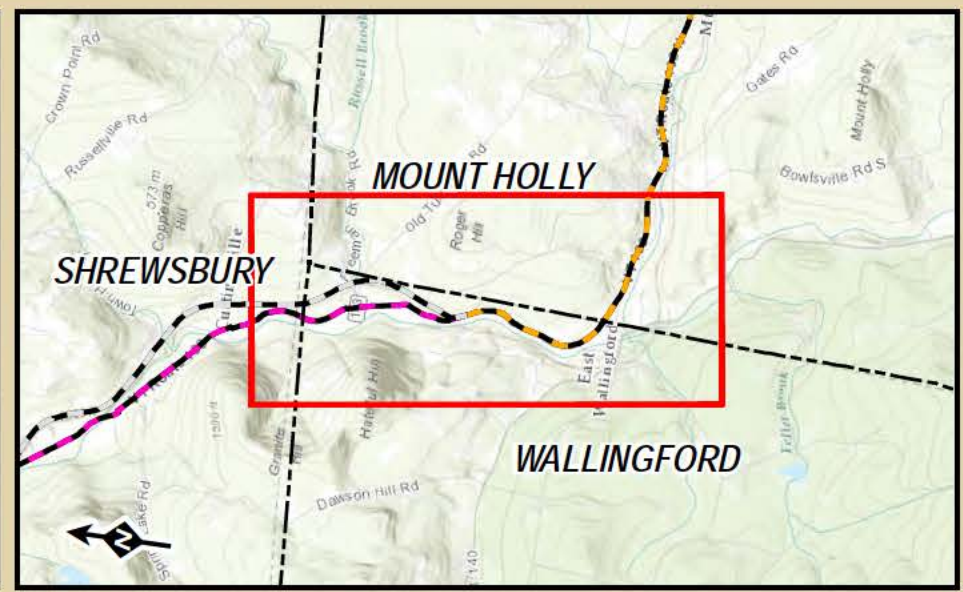
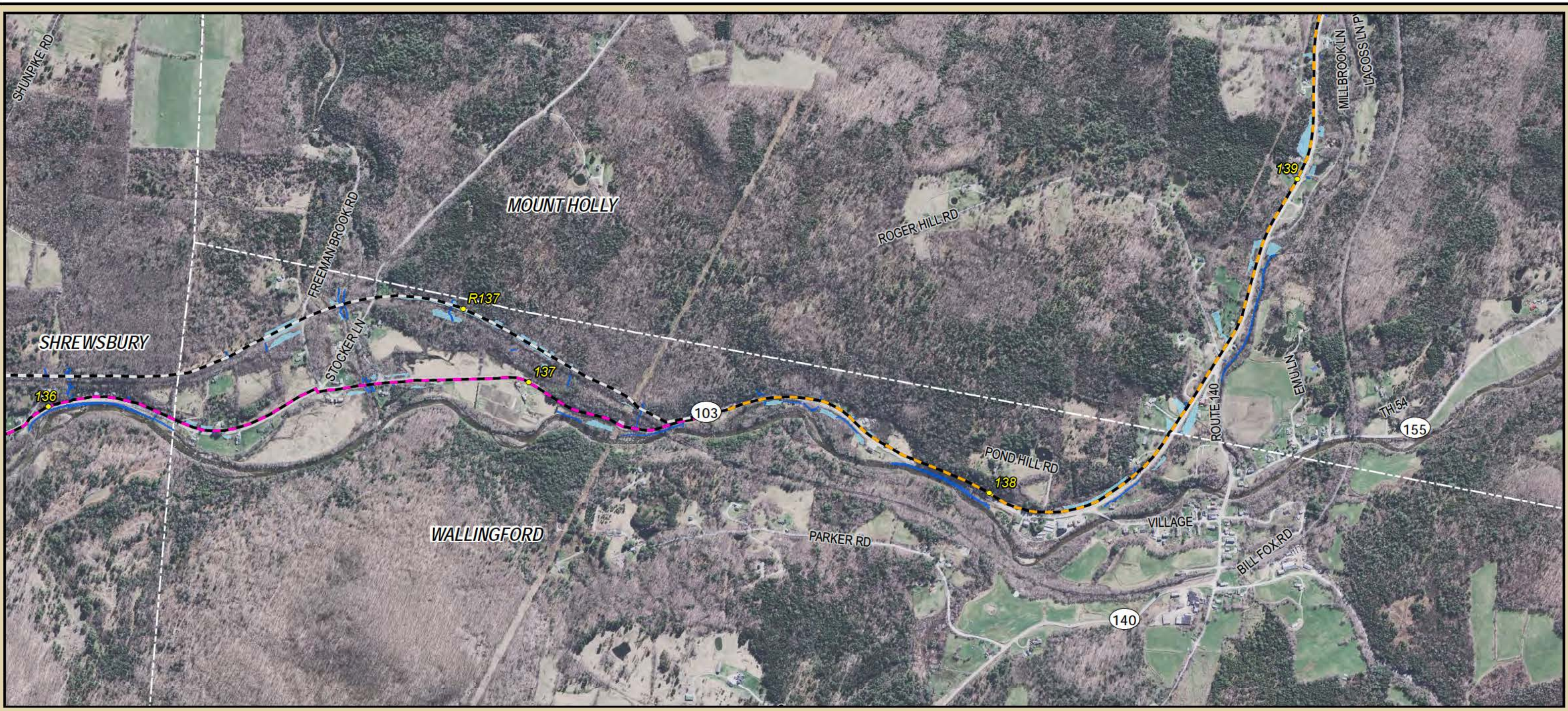
**TDI New England**  
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**New England Clean Power Link  
Proposed Route**

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**TRC** 14 Gabriel Drive  
Augusta, ME 04330

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**Legend**

- Mile Marker
- Proposed Lake Cable Route \*
- Proposed Terrestrial Cable Route \*
- RR Option \*
- Road Option \*
- Approximate Town Boundary
- Streams
- Wetlands


  
  
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Created: 10/16/2014  
 Data Sources: ESRI, VCGI, TDI New England, TRC, VHB

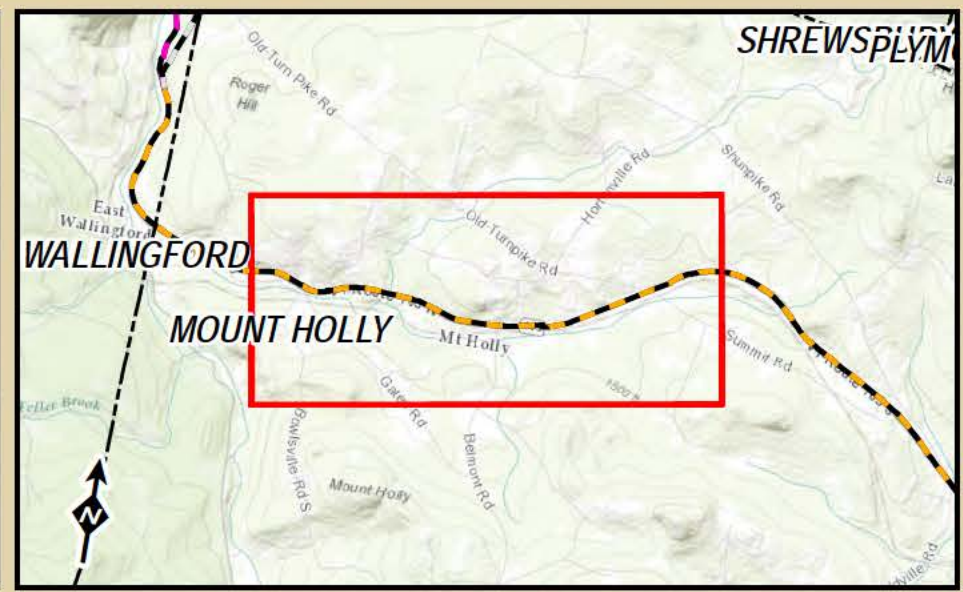
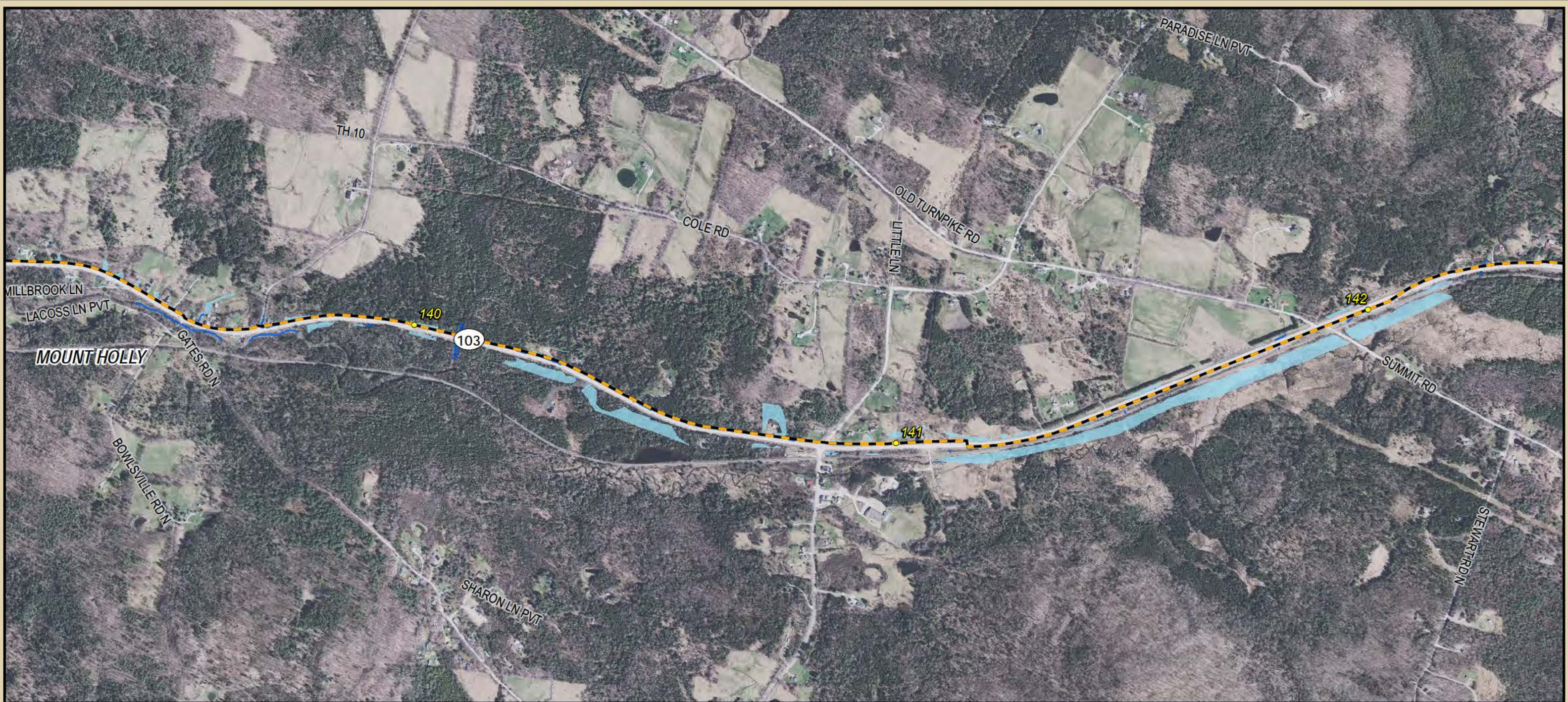
  
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**New England  
Clean Power Link  
Proposed Route**

**19 of 23**

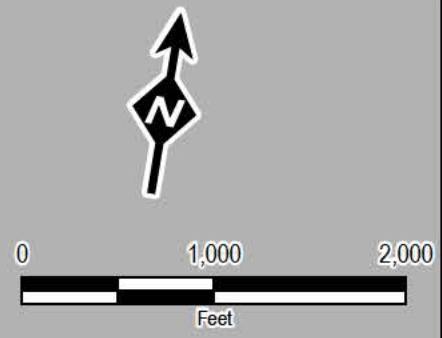

14 Gabriel Drive  
Augusta, ME 04330

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**Legend**

- Mile Marker
- Proposed Lake Cable Route \*
- - - Proposed Terrestrial Cable Route \*
- - - Approximate Town Boundary
- Streams
- Wetlands



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Created: 10/16/2014

Data Sources: ESRI, VCGI, TDI New England, TRC, VHB

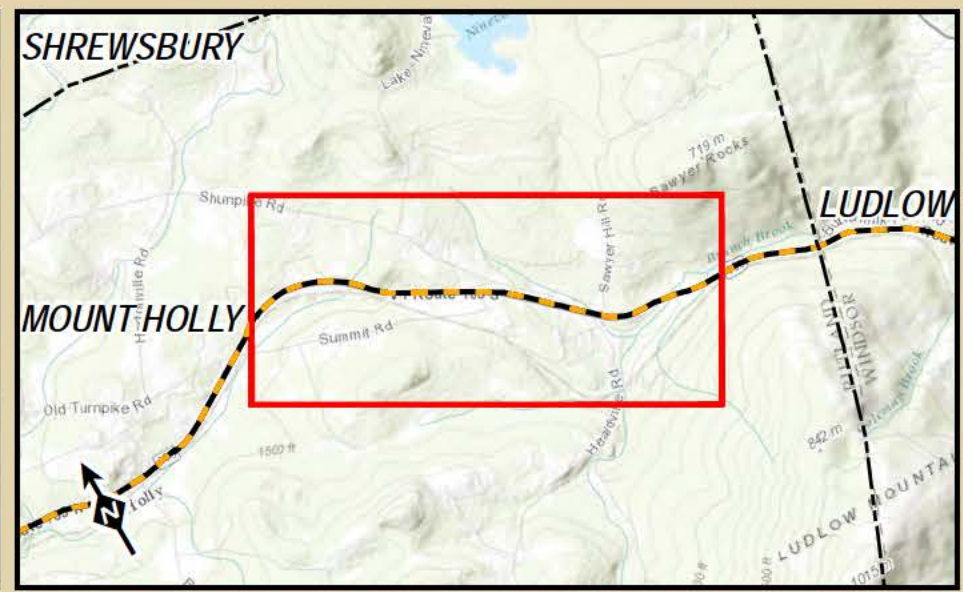
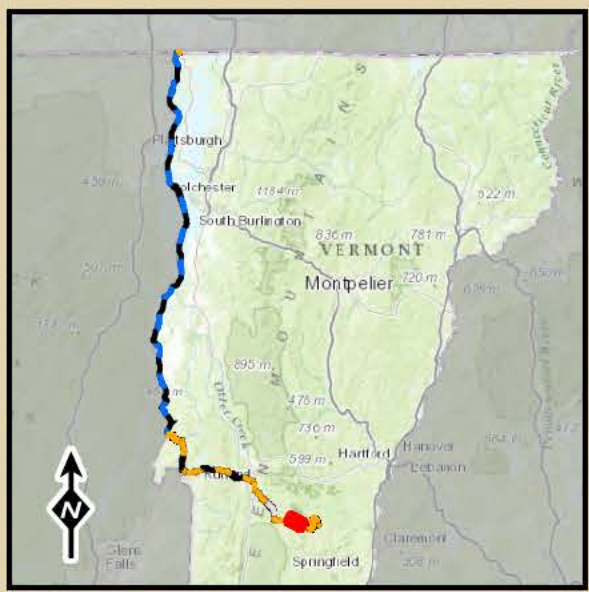


**New England  
Clean Power Link  
Proposed Route**

**20 of 23**



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**Legend**

- Mile Marker
- Proposed Lake Cable Route \*
- Proposed Terrestrial Cable Route \*
- Approximate Town Boundary
- Streams
- Wetlands

\* The thickness of the lines on this map are graphic representations and do not represent the actual dimensions of the proposed project features.

Created: 10/16/2014

Data Sources: ESRI, VCGI, TDI New England, TRC, VHB

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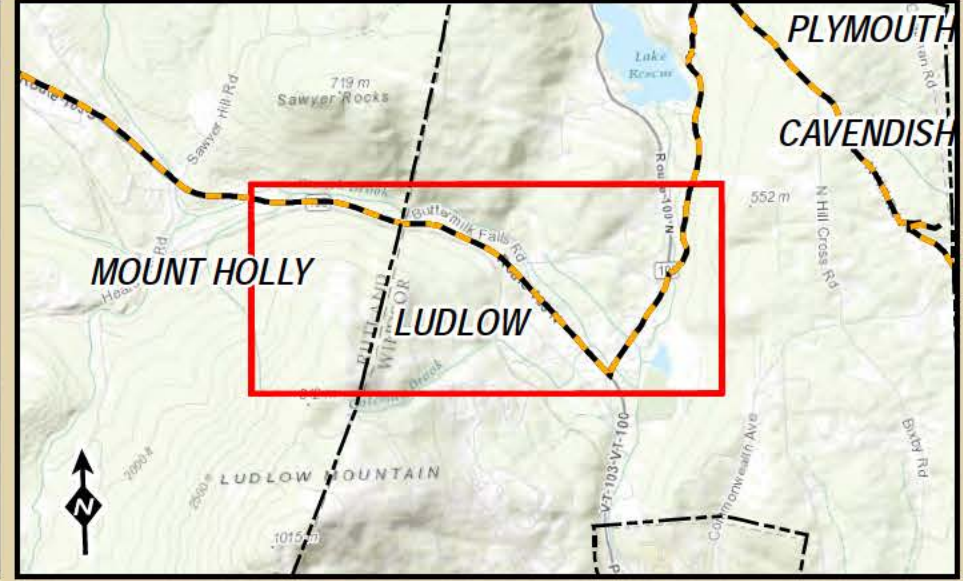
**New England  
Clean Power Link  
Proposed Route**

**21 of 23**

14 Gabriel Drive  
Augusta, ME 04330


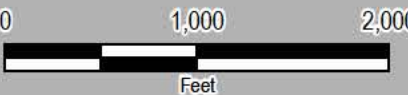
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**Legend**


- Mile Marker
- Proposed Lake Cable Route \*
- Proposed Terrestrial Cable Route \*
- Approximate Town Boundary
- Streams
- Wetlands

\* The thickness of the lines on this map are graphic representations and do not represent the actual dimensions of the proposed project features.

Created: 10/16/2014


Data Sources: ESRI, VCGI, TDI New England, TRC, VHB



**TDI New England**  
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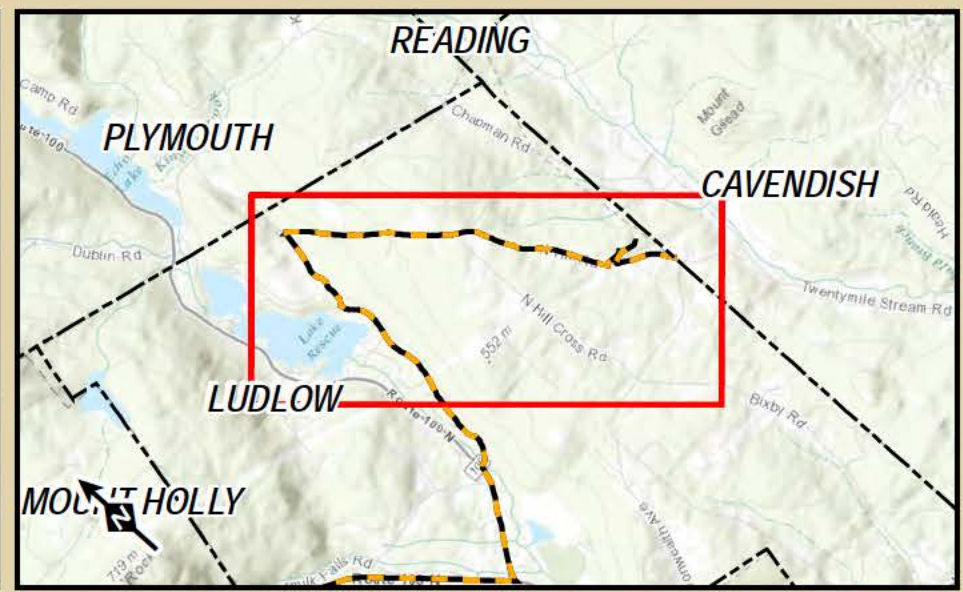
**New England  
Clean Power Link  
Proposed Route**

**22 of 23**



14 Gabriel Drive  
Augusta, ME 04330

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**Legend**

- Mile Marker
- Proposed Lake Cable Route \*
- Proposed Terrestrial Cable Route \*
- Approximate Town Boundary
- Streams
- Wetlands

\* The thickness of the lines on this map are graphic representations and do not represent the actual dimensions of the proposed project features.

Created: 10/16/2014

Data Sources: ESRI, VCGI, TDI New England, TRC, VHB

**TDI New England**  
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**New England  
Clean Power Link  
Proposed Route**

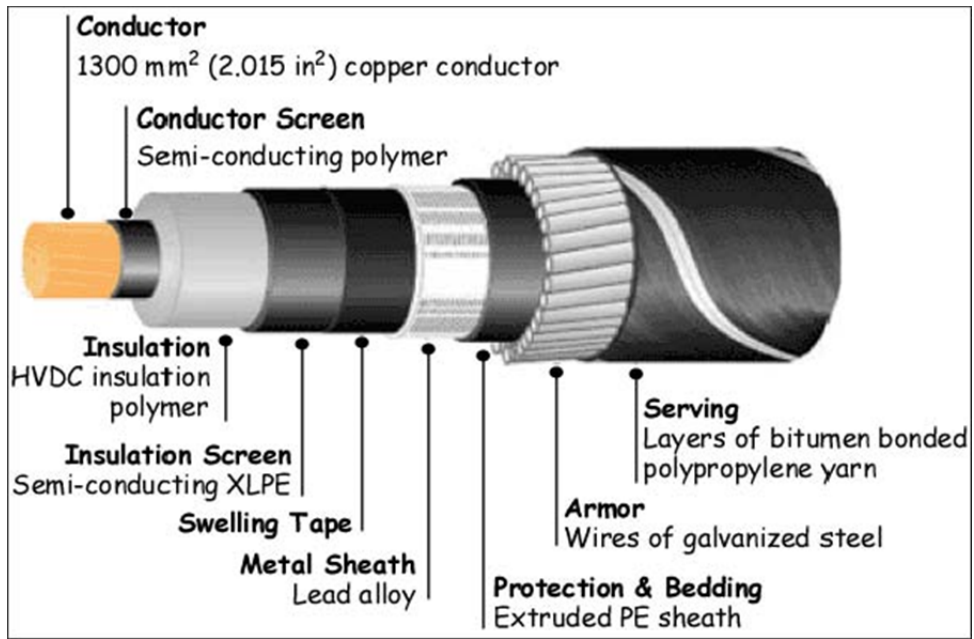
**23 of 23**

14 Gabriel Drive  
Augusta, ME 04330

V:\PROJECTS\AUGUSTADLINE\_Clean\_Power\Notice\_248\_Terrestrial\_Cable\_Route\_111417.mxd

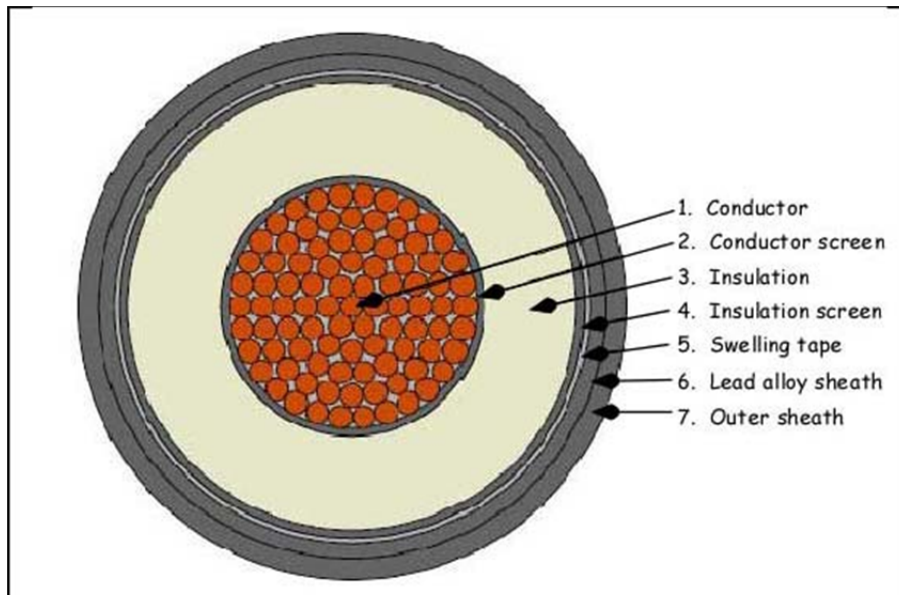
**ATTACHMENT C**  
**PROJECT CONSTRUCTION TYPICALS**

### ILLUSTRATIVE CROSS-SECTION OF HVDC CABLE (AQUATIC)

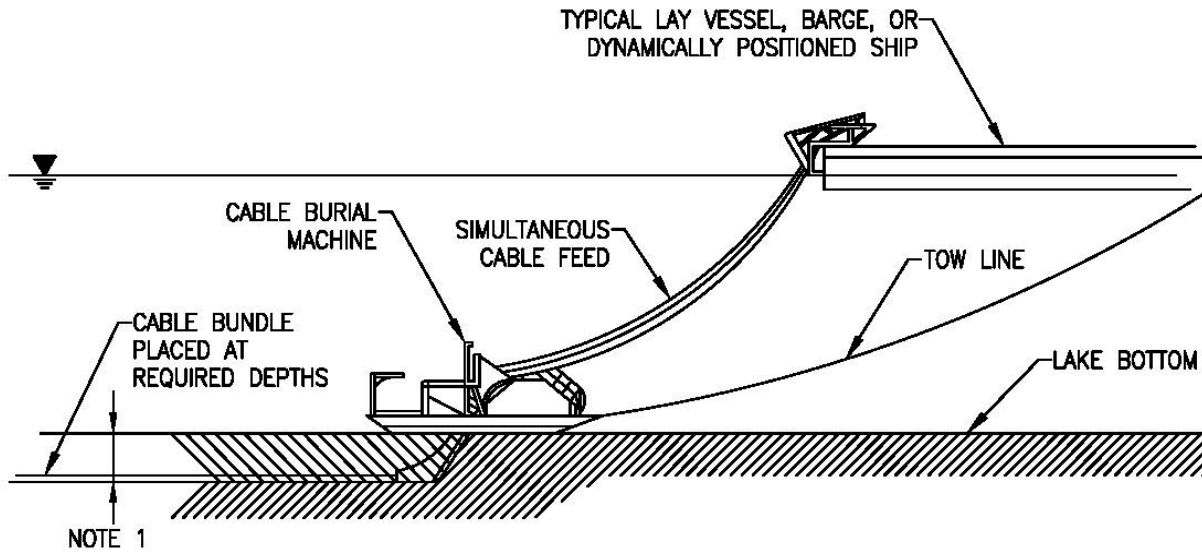


Source: Cross-Sound Cable Company 2012

### ILLUSTRATIVE CROSS-SECTION OF HVDC CABLE (TERRESTRIAL)



## TYPICAL AQUATIC TRANSMISSION CABLE INSTALLATION PROCESS



NOTES:

1. BURIAL DEPTH SHALL BE APPROXIMATELY 4 FEET ON LAKE BOTTOM.
2. CABLE LAY MACHINE IS TYPICAL OF EQUIPMENT THAT MAY BE EMPLOYED.

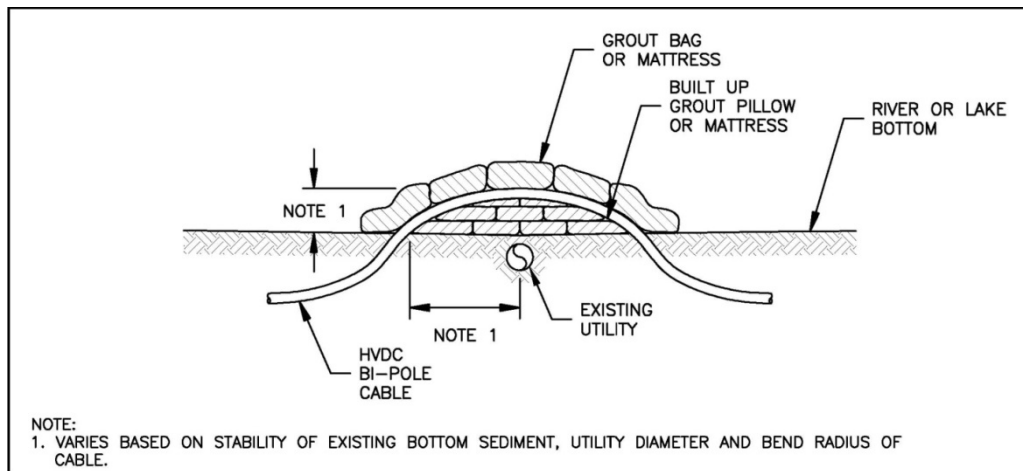


Example of a Jet Plow

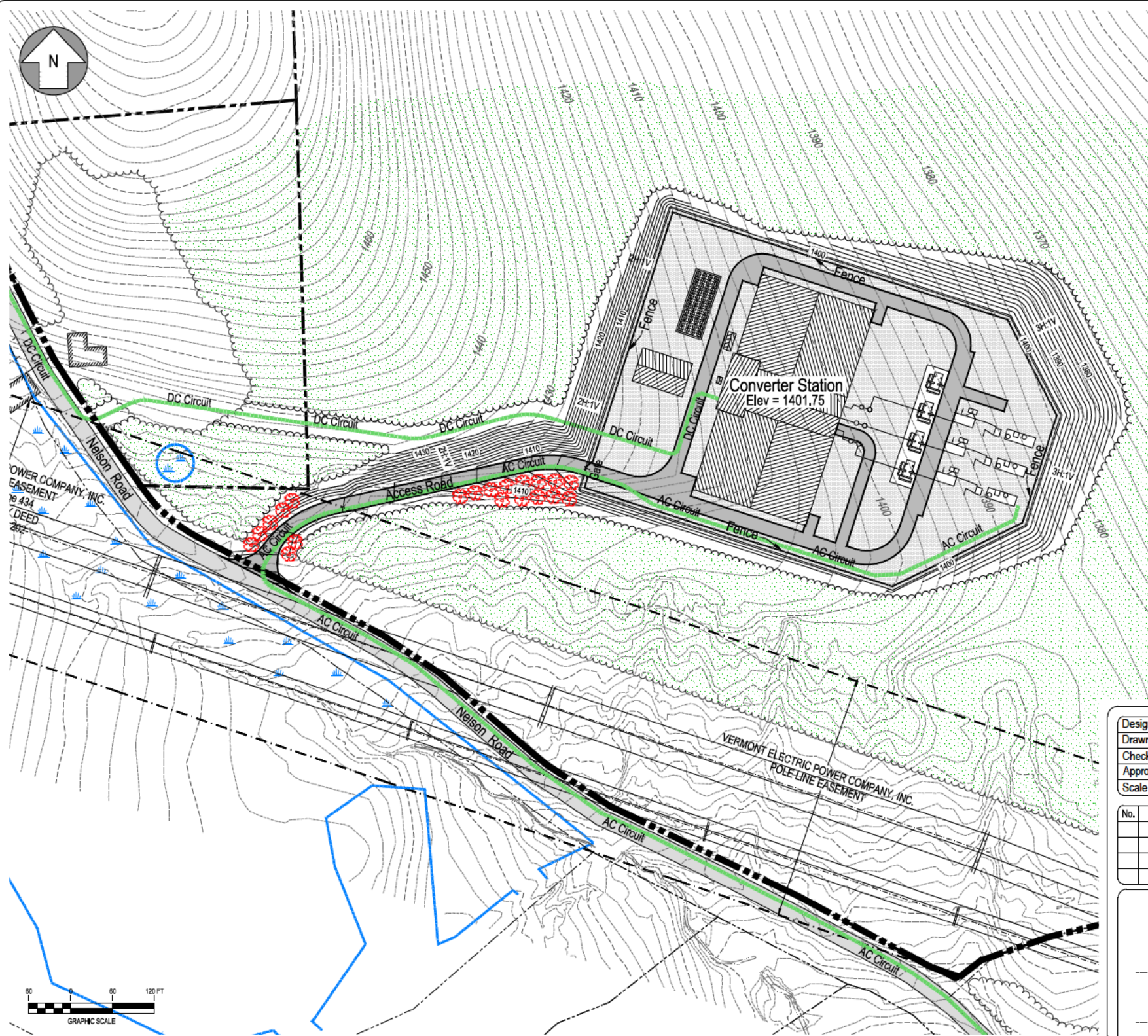


Example of a Shear Plow

## REPRESENTATIVE SCHEMATIC OF A PROTECTION MEASURE FOR AQUATIC TRANSMISSION CABLES



Example of a Concrete Mattress



**Notes**

All existing site data shown is approximate for conceptual purposes only and is unverified.

**Legend**

- |  |                                      |  |          |
|--|--------------------------------------|--|----------|
|  | Existing                             |  | Proposed |
|  | Property / ROW Line                  |  | Proposed |
|  | VELCO ROW Line                       |  | Proposed |
|  | 2' Contour                           |  | Proposed |
|  | Treeline                             |  | Proposed |
|  | Gravel Roadway                       |  | Proposed |
|  | Paved Roadway                        |  | Proposed |
|  | Welland                              |  | Proposed |
|  | Building                             |  | Proposed |
|  | Overhead Transmission Line           |  | Proposed |
|  | Underground Transmission Line        |  | Proposed |
|  | Fence                                |  | Proposed |
|  | Supplemental Landscape Tree Planting |  | Proposed |

Revised 10/14/2014

Designed	
Drawn	KAV
Checked	AMW
Approved	
Scale	AS NOTED

No.	Revision	Date	By	Ck	PE	PE #

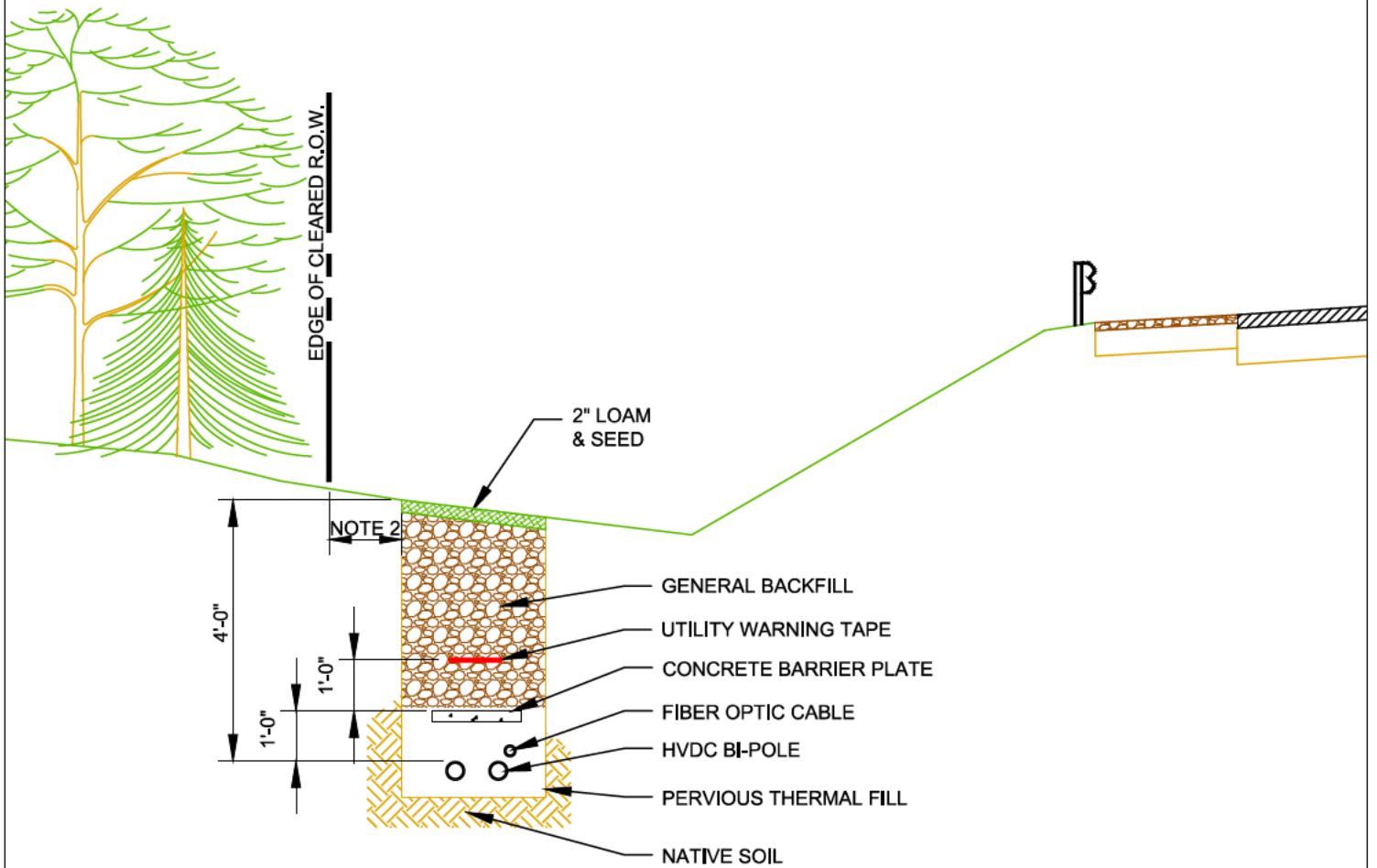


**New England Clean Power Project**  
Champlain Vermont Power Express Inc.

Stowell Layout  
**Converter Station**  
Ludlow, Vt

Prepared by: Date: 10/14/14

## TYPICAL ROADWAY TRENCH SECTION IN TURF AREA

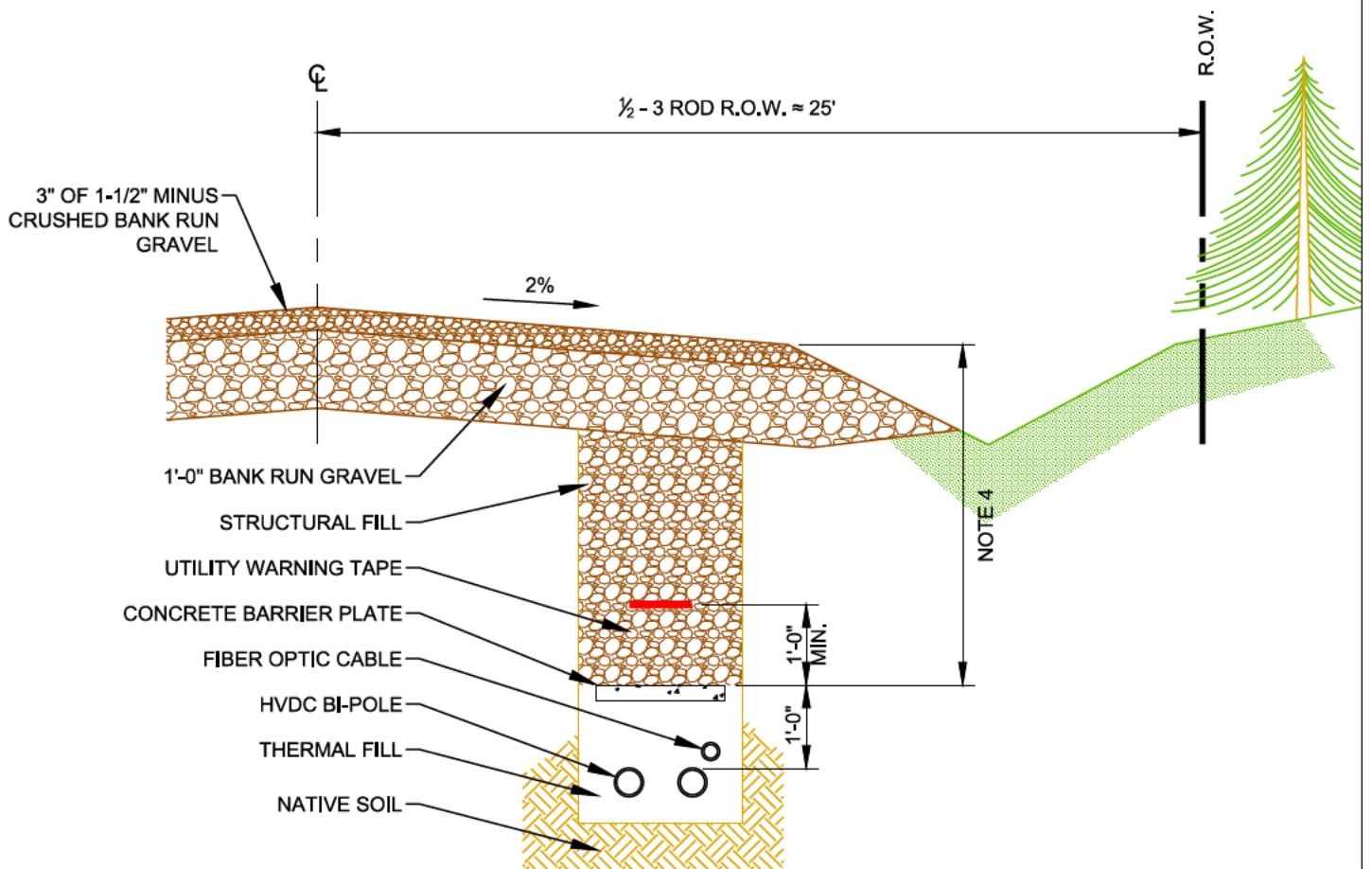


### NOTES:

1. DIMENSIONS AND DETAILS ARE CONCEPT ONLY AND SUBJECT TO MODIFICATION TO MEET MUNICIPAL, STATE AND FEDERAL REQUIREMENTS.
2. CABLE TO BE LOCATED AT EDGE OF CLEARED R.O.W. WITH SUFFICIENT SPACE TO ERECT REQUIRED SAFETY AND ENVIRONMENTAL CONTROLS, UNLESS OTHERWISE APPROVED BY VTRANS.
3. PROVIDE EROSION, SEDIMENTATION AND INVASIVE SPECIES CONTROL IN ACCORDANCE WITH ESTABLISHED BMP MEASURES AND ISSUED PERMITS.
4. TREE REMOVAL AND TRIMMING SHALL BE LIMITED TO VTRANS R.O.W. AND THE MINIMUM NECESSARY FOR PERFORMANCE OF THE WORK.
5. PROVIDE THERMAL FILL AS SPECIFIED.
6. TRENCH GENERAL BACKFILL SHALL BE NATIVE SOIL COMPACTED TO MATCH IN-SITU SOIL DENSITY UNLESS OTHERWISE SPECIFIED.
7. AT COMPLETION OF THE WORK, RESTORE CONSTRUCTION SITE TO MATCH SURROUNDING TURFED SURFACES.



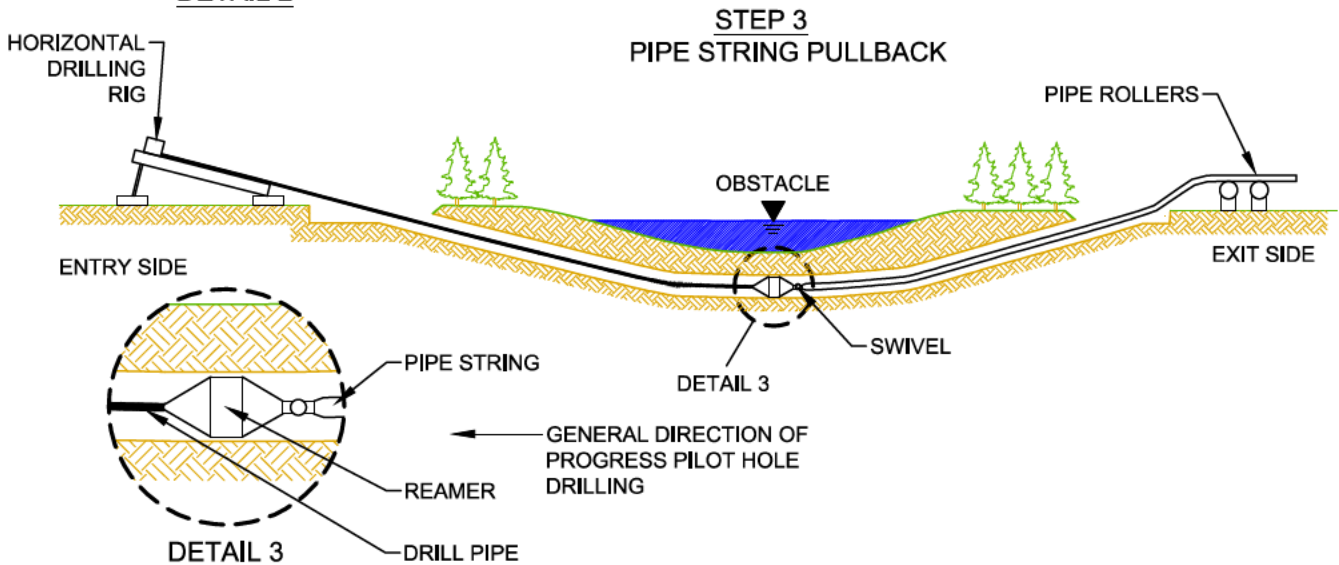
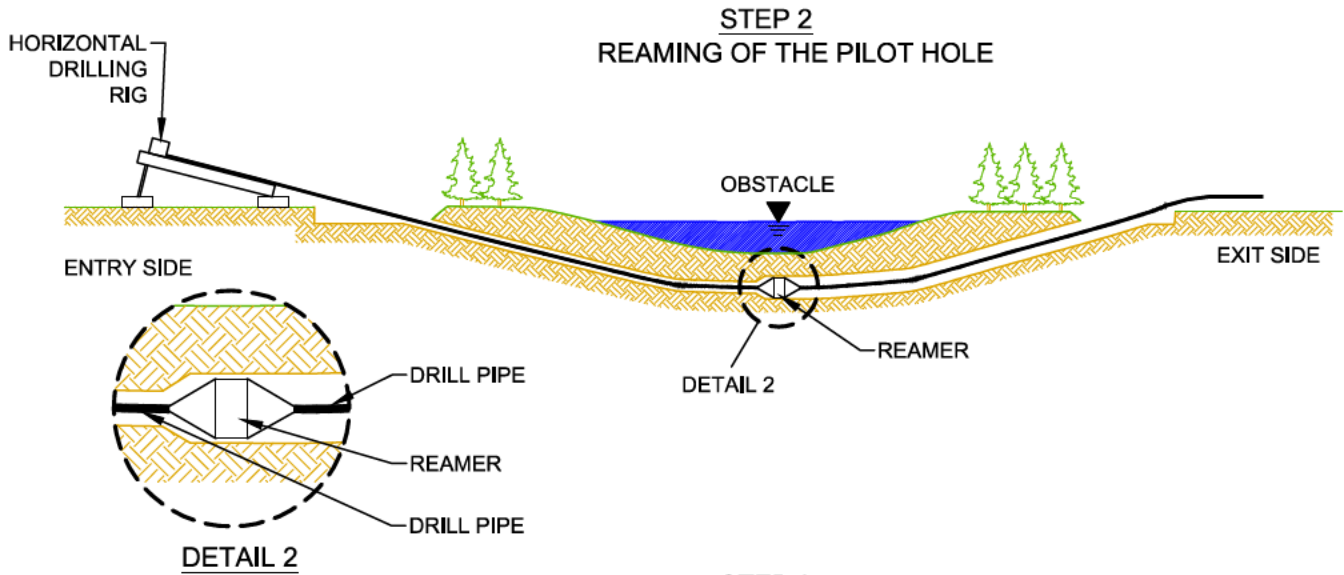
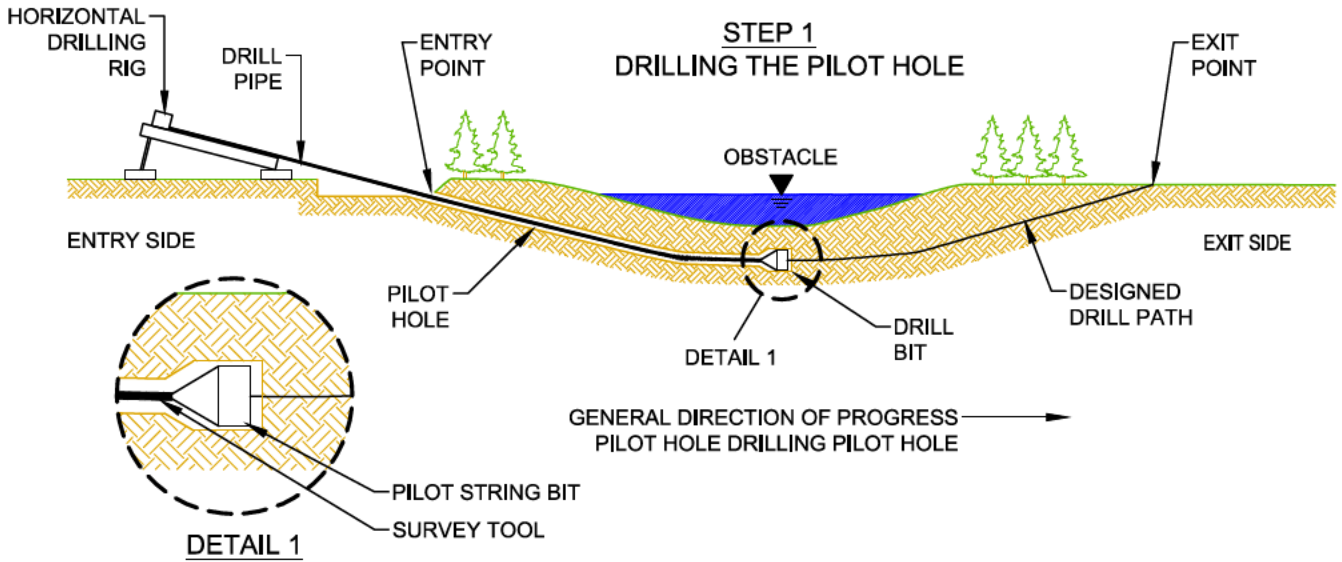
## TYPICAL MUNICIPAL GRAVEL ROADWAY SECTION



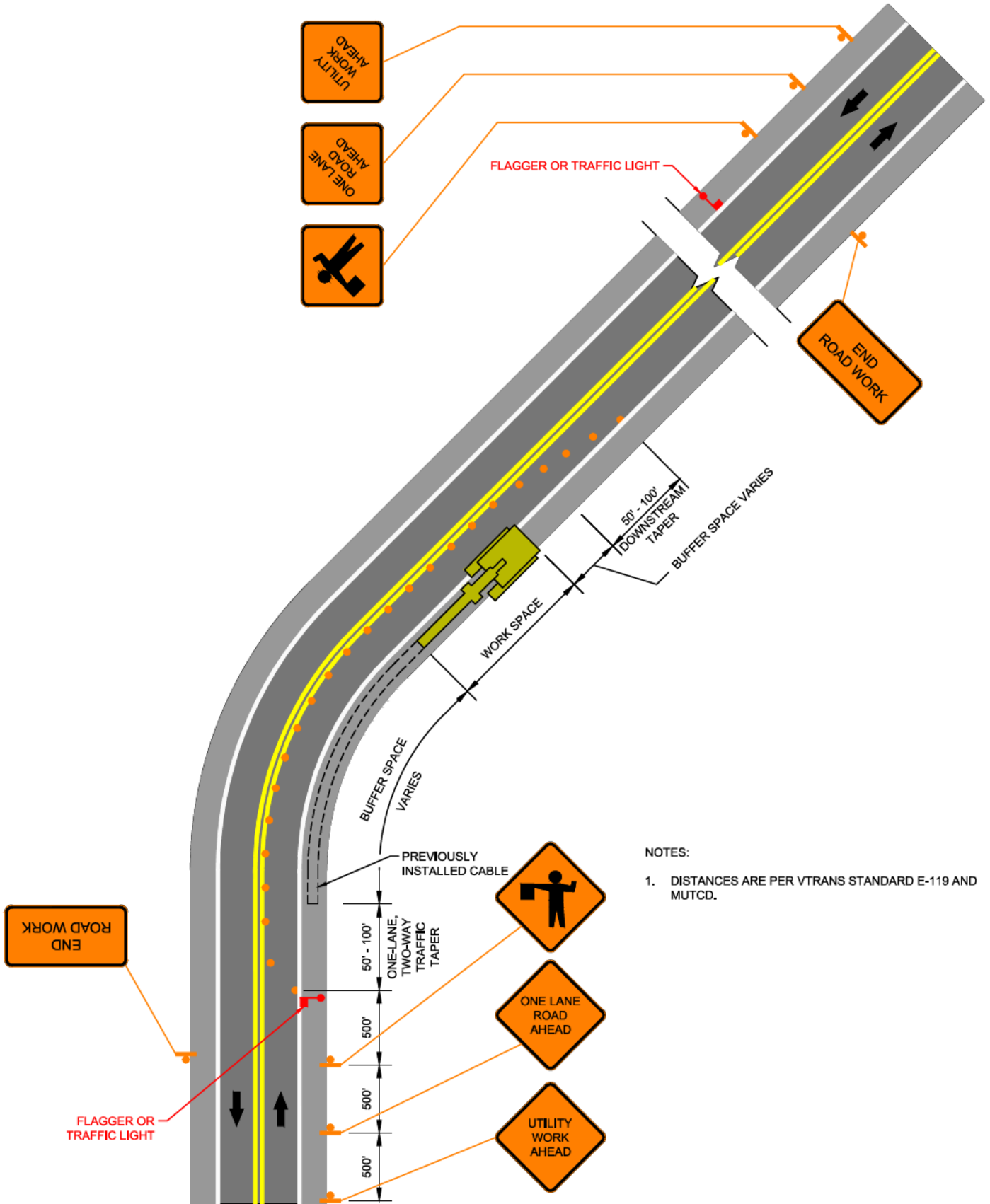
### NOTES:

1. DIMENSIONS AND DETAILS ARE CONCEPT ONLY AND SUBJECT TO MODIFICATION TO MEET MUNICIPAL, STATE AND FEDERAL REQUIREMENTS.
2. ROADWAY WIDTH VARIES.
3. ROADWAY GRAVEL SHALL MEET THE MINIMUM STANDARDS OF APPLICABLE MUNICIPAL ROAD & BRIDGE STANDARDS.
4. TRENCH DEPTH 3'-0" TO CONCRETE BARRIER, 4'-0" TO TOP OF DC CABLE. OVERALL TRENCH DEPTH VARIES BASED ON THERMAL SOIL PROPERTIES.
5. STRUCTURAL FILL SHALL BE PER VERMONT AOT SPECIFICATION EXCEPT THERMAL RESISTIVITY SHALL BE 100°C-cm/WATT OR LESS UNLESS OTHERWISE SPECIFIED.
6. TRENCH BACKFILL SHALL BE THERMAL FILL AS REQUIRED TO MEET CALCULATED THERMAL CONDUCTIVITY REQUIREMENTS OF THE DESIGN.
7. UTILITY WARNING TAPE SHALL BE PLACED NOT LESS THAN 1'-0" ABOVE THE CONCRETE BARRIER PLATE.

# TYPICAL HDD WORK SEQUENCE

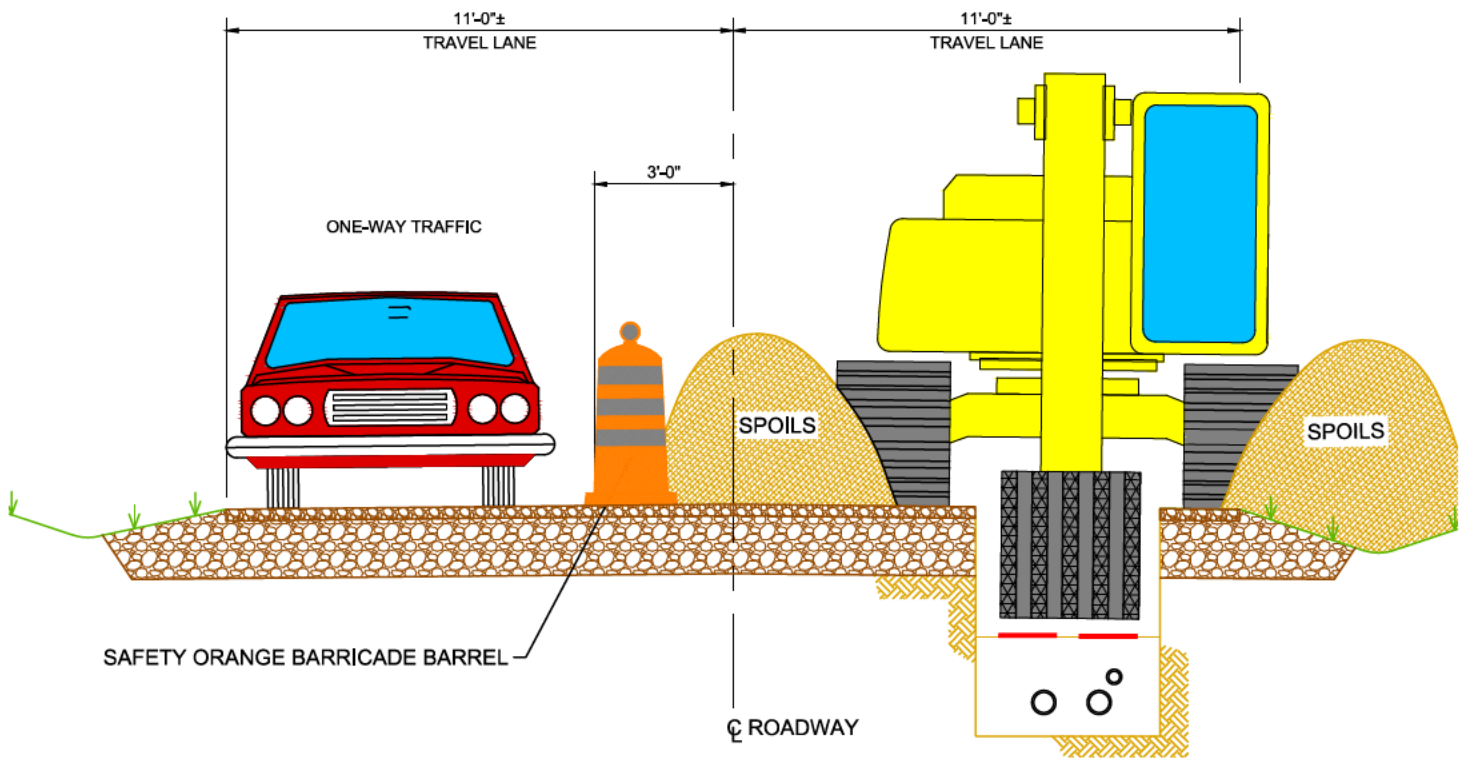


# TRAFFIC CONTROL WITH LANE CLOSURE



NOTES:  
 1. DISTANCES ARE PER VTRANS STANDARD E-119 AND MUTCD.

## GRAVEL ROAD LANE CLOSURE



### NOTES:

1. ONE-WAY TRAFFIC CONTROLLED BY FLAGGERS, UNIFORMED POLICE OR TRAFFIC LIGHTS AS REQUIRED PER VTRANS/AASHTO CRITERIA.
2. LANE CLOSURE MAY EXTEND INTO SEVERAL DAYS INCLUDING OVERNIGHT PERIODS.
3. TRAFFIC CONTROL ZONES AND DEVICES SHALL BE IN ACCORDANCE WITH FHWA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

**ATTACHMENT D**  
**PRELIMINARY AESTHETICS ASSESSMENT**

**New England Clean Power Link Project  
Preliminary Aesthetics Assessment for 45 Day Notice Letter  
October 16, 2014**

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T. J. Boyle Associates, LLC (TJB), a landscape architecture and planning firm specializing in visual resource planning, has been retained by TDI New England (TDI-NE) to conduct a visual analysis to evaluate potential impacts due to the New England Clean Power Link Project, a proposed high-voltage transmission line project from Alburgh, Vermont to Ludlow, Vermont (referred to as the “NECPL” or “Project”). TJB has reviewed conceptual design plans, conducted site visits, and completed a preliminary visual analysis of proposed Project upgrades. The following memo reviews the findings of the preliminary analysis.

The Vermont Public Service Board utilizes the so-called Quechee Lakes standard (set forth in the decision Quechee Lakes Corporation, #3EW0411-EB and #3O439-EB (1986)), to guide its consideration of visual and other aesthetic impacts from a project that is applying for a section 248 certificate of public good. Under the Quechee Lakes standard, it must first be determined whether a project will have an “adverse” impact on aesthetics and scenic and natural beauty. A project has an “adverse” impact if it is out of character with its surroundings. Specific factors that are considered in this evaluation include the nature of the project surroundings, the compatibility of the project design with those surroundings, the suitability of the project colors and materials with the immediate environment, the visibility of the project, and the impact of the project on open space.

If based upon these factors the project would have an “adverse” effect, the next step in the two-part test is to determine whether the adverse effect of the project is “undue.” The adverse effect is considered undue when any one of the following factors is affirmatively answered: (1) Does the project violate a clear, written community standard intended to preserve the aesthetics or scenic beauty of the area? (2) Have the applicants failed to take generally available mitigating steps which a reasonable person would take to improve the harmony of the project with its surroundings? (3) Does the project offend the sensibilities of the average person? Is it offensive or shocking because it is out of character with its surroundings or significantly diminishes the scenic qualities of the area? For transmission upgrades, the PSB’s aesthetic analysis, however, does not end with the results of the Quechee test. In addition, the PSB’s aesthetic assessment is “significantly informed by overall societal benefits of the project.” PSB Docket No. 6860, Order of 1/28/05 (footnotes omitted).

The NECPL will consist of two main components: a 154 mile HVDC transmission line that will run from Alburgh to Ludlow, Vermont; and a proposed converter station in Ludlow that will connect to Vermont Electric Power Company’s (“VELCO”) Coolidge Substation via a short AC transmission line. Unlike other high voltage transmission line projects within Vermont, the transmission cables for the entire NECPL will be installed underground or underwater. Approximately 98 miles will be buried under Lake Champlain and 56 miles will be buried within existing public right-of-ways.

Manhole covers will be required at limited locations to access underground vaults along the transmission line. This includes where the line transitions between burial under land and water in Alburgh and Benson, Vermont, and possibly one or two other locations where the cables will be installed within pre-constructed underground utility ducts. The top of the manholes will be level with the existing grade. At two stream/river crossings, cables may be attached to the side of bridge/culvert structures within steel

pipings. It is not anticipated that the manholes or bridge attachments would be readily noticeable features within the landscape.

Other than the permanent project infrastructure noted above, construction of the Project will also require removal of vegetation along the route right-of-way, and maintenance of a 12-foot permanently cleared area on top of the cables. Planning and design of the Project will limit tree removal since the Project is primarily proposed along existing road right of ways within already cleared land.

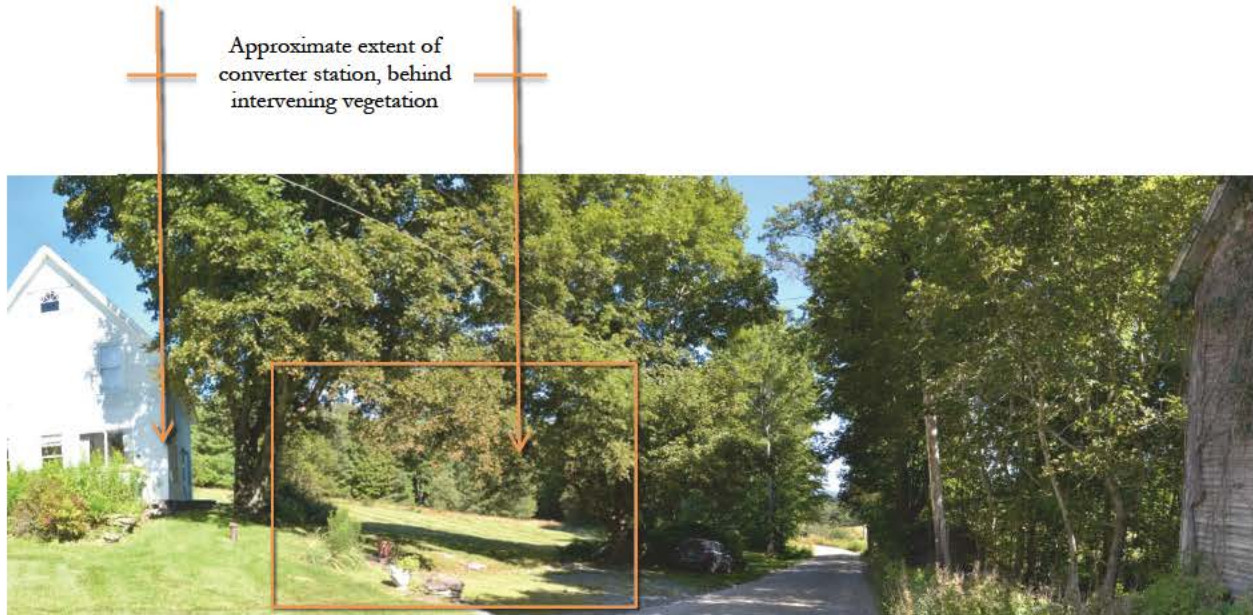
The proposed converter station will have the greatest potential for public visibility. This facility is proposed within the Town of Ludlow, off of Nelson Road. T. J. Boyle Associates were part of a multi-discipline team, engaged early in the process to site and provide design input for the converter station. The following pages include several figures which provide an overview of the proposed converter station. Figure 1, shows the preliminary layout overlaid on aerial photos. Figure 2 includes photos taken from viewpoints A and B on Nelson Road during field investigation. Figure 3 includes two line of sight cross sections which help illustrate how surrounding vegetation will screen views to the converter station from Nelson Road. The location of the viewpoints and cross sections are identified on Figure 1. The proposed location and preliminary design significantly minimizes the aesthetic impacts of the facility. The converter station will be setback over 300 feet from Nelson Road, the closest public road, and will maintain a substantial vegetative buffer around the entire facility. After construction, a minimum of 200 feet of forest cover will be retained between the edge of clearing for the converter station and existing edge of clearing along Nelson Road. It is anticipated that landscape mitigation plantings will be proposed to further screen and soften the limited views that may be created by the facility.

Based upon the above, T. J. Boyle Associates anticipates minimal visibility of Project infrastructure for the NECPL. As design plans are refined, a specific assessment of vegetation removal along the transmission line will be conducted. The design and siting of the converter station will successfully avoid most public views of the facility. Our preliminary findings indicate that the Project will not result in Undue Adverse impacts to the aesthetics and scenic and natural beauty within the areas which the Project will be located. A detailed aesthetic analysis and report will be included with the petition for a CPG.

New England Clean Power Link  
Figure 1: Aerial Context Map



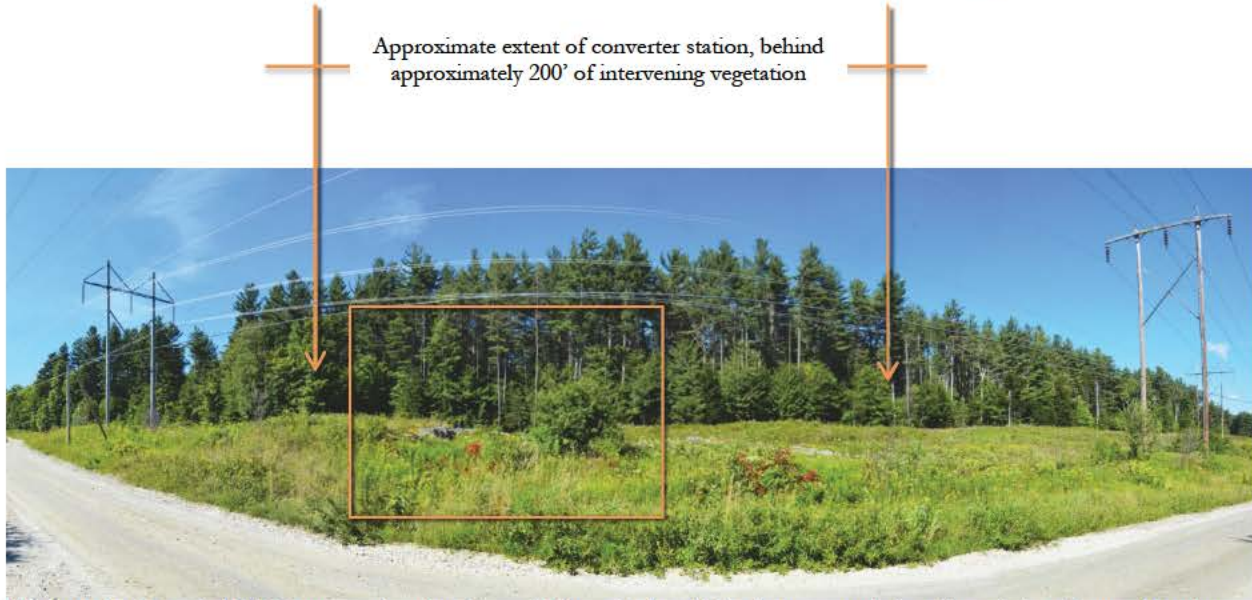




**Viewpoint A:** +/- 125° Panoramic view from Nelson Rd, west of the Project, panning east to south. The orange rectangle at the center of the photo represents the image below, which is captured with a 50mm normal lens, equivalent to the human 'field of view'. This panorama was digitally lightened.



**Viewpoint B:** View looking east from Nelson Road, directly towards the proposed Project, as represented by the orange rectangle in the panoramic view above. Vegetation at the back of the open lawn will screen views of the converter station, although a small corridor will be cleared for the DC line to connect with the facility.

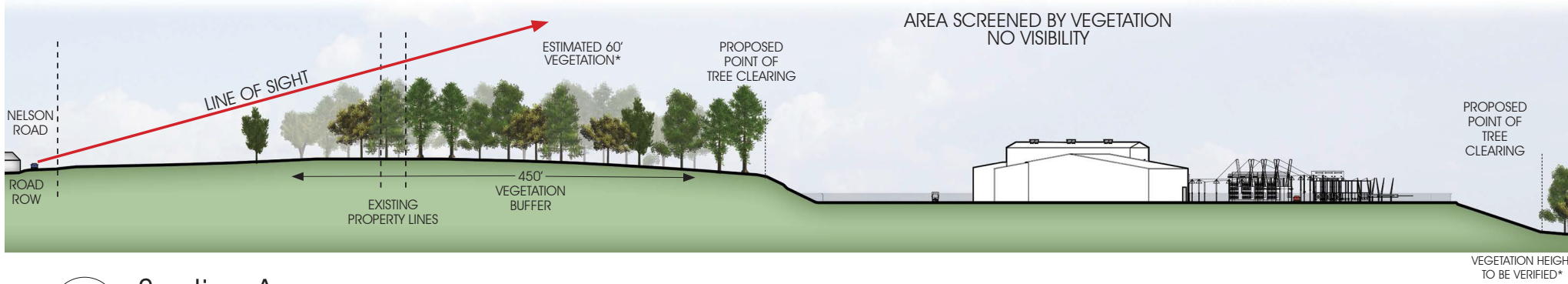


**Viewpoint B:** +/- 125° Panoramic view from Nelson Rd, within the transmission line right of way. Panning northwest to southeast. This view faces northeast toward the project. The orange rectangle at the center of the photo represents the image below, which is captured with a 50mm normal lens, equivalent to the human 'field of view'.



**Viewpoint B:** View looking northeast to the project, while on Nelson Road. Over 200 feet of existing forest cover will be retained prior from the visible edge of forest in this image to the start of clearing for the proposed converter station.

Figure 3: Line of Sight Sections



Section A

\*TOPOGRAPHIC DATA IS PRELIMINARY AND BASED ON 20' CONTOURS



Section B

\*TOPOGRAPHIC DATA IS PRELIMINARY AND BASED ON 20' CONTOURS

**ATTACHMENT E**  
**LIST OF ENVIRONMENTAL STUDIES AND PERMITS**

## New England Clean Power Link – 45 Day Notice Letter

### Attachment E – List of Environmental Studies and Permits

<b>Survey/Study</b>	<b>Purpose</b>	<b>Status</b>
Sound Assessment	Assess potential noise impacts from Project	Draft analysis complete
Archaeological Surveys	Assess potentially sensitive areas on land and in the Lake	Complete
Bat Habitat Surveys	Identify potential bat habitat	Complete
Cultural Resource Surveys	Inventory historic resources	Complete
Magnetic Modeling	Assess potential magnetic impacts in the Lake and on land	Draft analysis complete
RTE Mussel Survey	Assess presence of rare, threatened, or endangered (RTE) mussels in the Lake	Complete
RTE Plant Surveys	Inventory RTE plants	Complete
Sediment characterization	Assess sediment profile of lake route	Complete
Stream Mapping	Inventory all rivers/streams	Complete
Thermal Modeling	Assess potential thermal impacts in the Lake	Draft analysis complete
Topographical Mapping	Develop detailed topographic data	Complete
Underground Utility Surveys	Inventory all existing buried utilities	Ongoing
Vernal Pool Surveys	Inventory all vernal pools	Complete
Visual Assessment	Assess potential visual impacts from Project	Draft analysis complete
Water Quality Modeling	Assess potential water quality impacts during construction in the Lake	Draft analysis complete
Wetland Surveys	Inventory regulated wetlands	Complete (Except off ROW areas)
Wildlife Habitat Surveys	Identify critical wildlife habitat	Complete

### Major Permits Anticipated for NECPL Project

<b>PERMIT</b>	<b>RESPONSIBLE AGENCY</b>	<b>EXPECTED SUBMITTAL DATE</b>
Certificate of Public Good (Section 248)	Vermont Public Service Board	December, 2014
Lake Encroachment Permit	VT Agency of Natural Resources	February, 2015
401 Water Quality Certificate	VT Agency of Natural Resources	April, 2015
Stream Alteration Permit	VT Agency of Natural Resources	April, 2015
Wetland Permit	VT Agency of Natural Resources	April, 2015
Operational Stormwater Permit	VT Agency of Natural Resources	April, 2015
Construction Stormwater Permit	VT Agency of Natural Resources	May, 2015
Right of Way Permit (Section 1111)	VT Agency of Transportation and certain Towns	Submitted May, 2014
Section 404/Section 10 Permits	U.S. Army Corps of Engineers	October, 2014
Presidential Permit and NEPA	U.S. Department of Energy	Submitted May, 2014