TO: Town and Regional Planning Commissions and Town Select Boards Entitled to Notice Pursuant to Vermont Public Service Board Rule 5.402(C) and 30 V.S.A. § 248(f)

CC: Other Interested Parties (See Attachment A)

RE: The Vermont Green Line Project

DATE: June 3, 2016

Vermont Green Line Devco, LLC (VGLD)[1] is pleased to submit this pre-filing notice regarding the Vermont segment of the Vermont Green Line (VGL or the Project), a high-voltage direct-current (HVDC) electric transmission line delivering 400 megawatts (MW) of renewable energy from the New York Power Authority's (NYPA) Plattsburgh Substation in Beekmantown, New York, to New England's transmission grid via the Vermont Electric Power Company's (VELCO) New Haven Substation located in in New Haven, Vermont. VGLD will file a petition for a Section 248 Certificate of Public Good (CPG) to install the VGL with the Vermont Public Service Board on or about August 18, 2016.

VGLD is distributing this notice to the municipal and regional planning commissions and municipal legislative bodies affected by the Project. VGLD is also providing a courtesy notification to other interested parties listed on Attachment A. The following attachments are included with this notice:

A- List of Pre-Filing Notice Recipients
B- Project Location Map and Route Maps
C- Vermont Converter Station Layout
D- Overview of Construction Plans
E- Converter Station Photo Simulation
F- Alternatives Analysis

Project Overview

The Project involves the installation, operation, and maintenance of an underwater and underground HVDC transmission line, a new converter station, and a short underground high-voltage alternating-current (HVAC) transmission line to connect the Project to the ISO New England power grid via the VELCO New Haven Substation. The HVDC transmission line will leave New York and enter Vermont under Lake Champlain near the Town of Grand Isle, Vermont and will run underwater for approximately

[1] VGLD is a development company formed for Anbaric Transmission and National Grid as part of their Green Infrastructure Alliance to deliver wind and hydroelectric energy to the New England market. More information about the Alliance is available at: http://greenlineinfrastructurealliance.com/alliance/.

32.5 miles to the shore of Kingsland Bay State Park (Underwater Cable Route). At Kingsland Bay State Park, the line will make landfall using horizontal directional drilling and will continue underground largely beneath or adjacent to public roadways for approximately 13.1 miles from Ferrisburgh to New Haven (HVDC Land Cable Route). In New Haven, the line will connect to a new converter station located on private property southeast of the junction of Route 7 and Route 17. The converter station will convert power delivered by the transmission line from direct current to alternating current. From there, an approximately 1,000-foot underground HVAC cable will be installed to deliver power from the converter station to the VELCO New Haven Substation where it will interconnect with the regional grid (HVAC Land Cable Route). The transmission line will consist of two solid dielectric-type cables for electric transmission that do not contain insulating oils or fluids and one fiber optic cable for the purposes of transmitting data to control and monitor the line.

Underwater Cable Route

VGLD has proposed the Underwater Cable Route based on in-water surveys to avoid sensitive benthic communities, cultural resources (e.g., ship wrecks), and significant geological and geotechnical features, such as large rock outcrops, that could interfere with construction and operation of the Project. The route avoids or mitigates potential economic, environmental, and social impacts on Lake Champlain.

HVDC Land Cable Route

VGLD has sited and designed the HVDC Land Cable Route primarily along existing public road rights-of-way (ROWs) to avoid or mitigate potential impacts to protected and sensitive resources. The HVDC Land Cable Route will traverse Kingsland Bay State Park and continue through Ferrisburgh and Waltham, terminating at the converter station site in New Haven (a distance of approximately 13.1 miles).

VGLD plans to install the HVDC underground cable approximately 3 to 5 feet below grade depending on location, using underground joint bays located approximately every 0.5-mile, where discrete segments of cable can be spliced together and buried. An underground joint bay will also be installed adjacent to the horizontal directional drilling land entry point to facilitate splicing of the underwater-to-land cable transition.

Vermont Converter Station

The Vermont converter station will be located on approximately 6 acres within a larger parcel abutting the VELCO New Haven Substation property. VGLD selected a location for the converter station close to the VELCO New Haven Substation to minimize potential land-use impacts, and designed the converter station to be efficient, reliable, and to mitigate aesthetic and sound impacts. The converter station location is shown on Sheet 31 of Attachment B.

The converter station includes three buildings and an equipment yard, all depicted in the layout provided as Attachment C. The converter building is the largest and will be approximately 235 feet by 200 feet, with the building's highest point at 55 feet above ground level (AGL). The other two buildings within the converter station fenceline are the administration building (approximately 105 feet by 45 feet) and the storage building (approximately 150 feet by 70 feet), both of which will have a height of approximately 26 feet AGL. The equipment yard, which measures approximately 380 feet by 240 feet, will accommodate the AC cable termination structures and filter equipment, switches, circuit breakers, and additional control and protection equipment.

Access to the converter station will be by way of a new paved access road to be installed off of Route 17. Entrance to the site will be secured at all times. The converter station is capable of being remotely operated and requires minimal maintenance. VGLD will install lighting meeting Dark Sky requirements

at the converter station for use at times when personnel are on site for inspections, maintenance, and repairs.

HVAC Land Cable Route

The HVAC Land Cable Route is a direct path heading southeast from the converter station to the VELCO New Haven Substation. The Project team will coordinate installation with VELCO. Horizontal directional drilling will be used to install the cable in a manner that avoid impacts to a forested area and isolated wetlands between the two facilities. The Project team will continue consulting with the Agency of Natural Resources to ensure that installation of the cable will not cause undue adverse impacts to the isolated wetlands on the site.

Materials Transport

The in-lake portion of the Project will require transport of materials via terrestrial and waterway routes. Equipment and materials transported via waterway routes will transit through ports in either New York or New Jersey for further transport through the Champlain canal system to Lake Champlain. VGLD will coordinate with the U.S. Coast Guard, the U.S. Army Corps of Engineers, and local harbor and marina masters to mitigate potential impacts to marine traffic and public use of the lake resulting from waterway deliveries.

VGLD will transport other equipment and materials to Vermont by truck, including several modular barge sections, transformers, cable drums, and installation equipment. With limited exceptions, deliveries will be scheduled at times that pose the least disruption to local communities and traffic. VGLD may schedule some deliveries during off hours to help mitigate possible traffic impacts. The Project team will coordinate the scheduling of such deliveries with local and state officials.

The Project will obtain any necessary transportation-related permits for delivery of equipment and materials associated with both the terrestrial and underwater segments of the Project.

Construction

VGLD has sited the transmission line and converter station and planned construction sequencing and construction methodologies in a manner that limits potential impacts to protected environmental, cultural and other sensitive resources and public investments while still achieving Project goals and providing benefits for the region. The implementation of water quality monitoring during in-lake activities, as well as stormwater and erosion control best management practices defined through a stormwater pollution prevention plan will minimize potential impacts to Lake Champlain, groundwater, and other water bodies to the maximum extent practicable. Construction mitigation measures, such as jet plow and direct lay cable installation methodologies in Lake Champlain, horizontal directional drilling for the landfall at Kingsland Bay State Park and under streams, wetlands, and infrastructure crossings, and traffic management will further reduce temporary construction impacts. VGLD will coordinate with the U.S. Coast Guard, the U.S. Army Corps of Engineers, and local harbor and marina masters to ensure that activities associated with underwater cable installation and horizontal directional drilling at the landfall in Ferrisburgh will not unduly interfere with public use of the lake or marine traffic. An overview of the Project's construction plan is provided in Attachment D.

Preliminary Aesthetic Impact Assessment

The Project is designed to minimize aesthetic impacts to the communities in which it is located. VGLD will install the cable underwater and underground, and has designed the most visible component of the Project, the converter station, to fit into the agricultural surroundings of the area in which it is located.

Please see the photo simulation of the converter station that is provided with Attachment E. In consultation with the Town of New Haven, VGLD will install and maintain landscaping to screen and soften views of the converter station from public vantage points and adjoining lands where necessary and feasible. VGLD will submit a complete aesthetics analysis of the Project, based on the *Quechee* analysis as applied by the Public Service Board, when it files its petition later this summer.

Sound

Sound from construction activities will be typical of large construction projects and will be temporary. During operation, the Project has voluntarily committed to meeting the World Health Organization (WHO) guidelines for nighttime community noise (2009 Night Noise Guideline for Europe) at any existing residence of 40 dBA broadband and 35 dBA for tonal sounds as defined by the American Standards Institute (ANSI). The restrictive WHO guidelines were specifically developed as a health-based limit to prevent harmful effects of nighttime noise — principally sleep disturbance — to the public. By meeting these restrictive limits, the Project will not cause undue adverse sound impacts.

Preliminary Assessments of Other Potential Project Impacts

VGLD has undertaken preliminary assessments to determine what potential impacts may result from installation and operation of the Project and to identify appropriate impact mitigation strategies. Through these preliminary assessments, VGLD has concluded that the Project will not result in any undue adverse impacts to Lake Champlain, in-lake or terrestrial transportation, water and air quality, rare or endangered plant or animal species, necessary wildlife habitat, cultural or historical resources, wetlands, shorelines, or streams. Lastly, any electromagnetic frequency (EMF) impacts associated with the operation of the Project will be minimal, with the HVDC Cable producing less than ~0.1 percent of the recognized standard for healthy human exposure to static magnetic fields. At this level EMF from the Project will not result in undue adverse impacts to public health or in-lake GPS navigation. The petition with the Public Service Board will include all technical assessments that are necessary for the Project to satisfy the Section 248(b) criteria. VGLD will secure all other state and federal permits necessary to construct the Project prior to commencing construction.

Alternatives Analysis

Alternatives to the Project and proposed route are discussed in Attachment F. The alternatives analysis provided in Attachment F includes an evaluation of alternative technologies, alternative interconnection substation locations, alternative converter station locations, and alternative transmission line land and underwater routes. The evaluation describes the comparative merits and detriments of each alternative and explains why the Project is the preferred alternative.

Project Benefits

By transmitting renewable energy to New England, the Project will provide important benefits to the region. With over 4,200 MW of the region's generating capacity recently retired or soon-to-be retired and an additional 6,000 MW 'at risk' of closing,[2] VGL-delivered power will provide a clean, cost-effective source of new capacity to the region. By diversifying the region's energy supply, the Project will contribute to the long-term stability of energy markets and security of supply.

[2] http://www.iso-ne.com/about/regional-electricity-outlook/grid-in-transition-opportunities-and-challenges/power-plant-retirements, accessed May 26, 2016.

The Project also provides substantial direct and indirect economic benefits to Vermont and its residents, such as jobs and associated economic activity during construction, state and local tax revenues, permit fees, and long-term lease payments for use of state highway rights of way, among others. The Town of New Haven, as host of the Project's converter station, is expected to receive over $70 million in direct financial benefits over the Project's anticipated 40-year life, including funds for needed infrastructure improvements for first responders. The Towns of Ferrisburgh and Waltham will directly benefit from the Project by, at a minimum, receiving additional tax revenues from the portion of the HVDC transmission line that is located within their borders. A full analysis of the Project's economic benefits to Vermont will be included with the Section 248 petition that is filed with the Public Service Board.

Public Outreach

For some time, the VGL Project team has been engaging with key state and local stakeholders to discuss the Project, including municipal officials in Ferrisburgh, Waltham, and New Haven, the Addison County Regional Planning Commission, local residents and business owners, community groups, abutting property owners, and the media. As a result of this outreach process, VGLD has improved the Project plans and refined them to better address stakeholder input and local concerns. Most recently, on May 24th, 2016, residents of New Haven responded to a week-long, town-wide survey almost two-to-one (252-128) in favor of hosting the Vermont converter station in New Haven and in support of an agreement the New Haven Select Board made with VGLD. The Project team will continue to work with local, state, and regional stakeholders throughout the Vermont Public Service Board Section 248 process to ensure the Project provides benefits to Vermont while minimizing impacts to the environment.

Local and Regional Planning Commissions' Rights to Comment on Plans

State law gives municipal and regional planning commissions the right to make recommendations about the Project to the Vermont Public Service Board at least 7 days before a Section 248 petition is filed. If significant changes to the Project plans are made during the pre-filing notice period and included in the petition filed with the Board, state law also allows the affected municipal and regional planning commissions to file revised recommendations with the Board within 45 days. Please refer to 30 V.S.A. § 248(f) and Public Service Board Rule 5.402(A) for further information on these rights. Additional information about the Section 248 process, including the right to participate as a party in the Public Service Board proceeding on the Project, is available in the "Guide to the Vermont Public Service Board's Section 248 process" that is posted on the Board's website at http://psb.vermont.gov/ under the link "For Consumers and the Public."[3] Recommendations made to the Board under Section 248(f), or the lack of such recommendations, do not preclude municipal and regional planning commissions from participating as parties and presenting evidence during technical hearings.

We greatly appreciate your attention to this matter and the time taken to consider it. VGLD looks forward to continuing the Section 248 process with input and recommendations from stakeholders to ensure that the Project fully meets the potential it holds for stakeholders in Vermont and New England. Please note that the CPG petition, as well as other pertinent information about the Project will be posted on the

[3] Please note that although state law requires that this letter include information about the Board's Citizens Guide, the Guide is currently out of date and does not reflect recent legislative initiatives aimed at improving local participation in Section 248 proceedings. The Project is not responsible for the content in the Citizens Guide and therefore reliance on the information included in it is at the user's own risk.

Project website at www.vermontgreenline.com. Please do not hesitate to contact us at (781) 683-0711 for further information or with any questions you may have about the Project.

Sincerely,

Edward N. Krapels
Manager Representative

Enclosures:

A- List of 45-Day Notice Recipients
B- Project Location Map and Route Maps
C- Vermont Converter Station Layout
D- Overview of Construction Plans
E- Converter Station Photo Simulation
F- Alternatives Analysis

ATTACHMENT A – LIST OF PRE-FILING NOTICE RECIPIENTS

Northwest Regional Planning Commission
75 Fairfield Street
St. Albans, VT 05478

Chittenden County Regional Planning Commission
110 West Canal Street, Suite 202
Winooski, VT 05404-2109

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

Grand Isle Selectboard
9 Hyde Road, P.O. Box 49
Grand Isle, VT 05458

Grand Isle Planning Commission
9 Hyde Road, P.O. Box 49
Grand Isle, VT 05458

South Hero Selectboard
333 U.S. Route 2, P.O. Box 175
South Hero, VT 05486

South Hero Planning Commission
333 U.S. Route 2, P.O. Box 175
South Hero, VT 05486

Ferrisburgh Selectboard
3279 Route 7
Ferrisburgh, VT 05456

Ferrisburgh Planning Commission
3279 Route 7
Ferrisburgh, VT 05456

Waltham Selectboard
P.O. Box 175
Vergennes, VT 05491

Waltham Planning Commission
P.O. Box 175
Vergennes, VT 05491

New Haven Selectboard
78 North Street
New Haven, VT 05472

New Haven Planning Commission
78 North Street
New Haven, VT 05472

Courtesy Copies

Judith C. Whitney, Clerk
Vermont Public Service Board
112 State Street
Montpelier, VT 05620-2701

Deborah Markowitz, Secretary
Vermont Agency of Natural Resources
1 National Life Drive, Davis 2
Montpelier, VT 05620-3901

Christopher J. Cole, Secretary
Vermont Agency of Transportation
1 National Life Drive
Montpelier, VT 05633-5001

Christopher Recchia, Commissioner
Vermont Department of Public Service
112 State Street, Third Floor
Montpelier, VT 05620-2601

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

Sandy Levine
Conservation Law Foundation Vermont
15 East State Street, Ste 4
Montpelier, VT 05602

Lake Champlain International
531 Main Street
Colchester, VT 05446

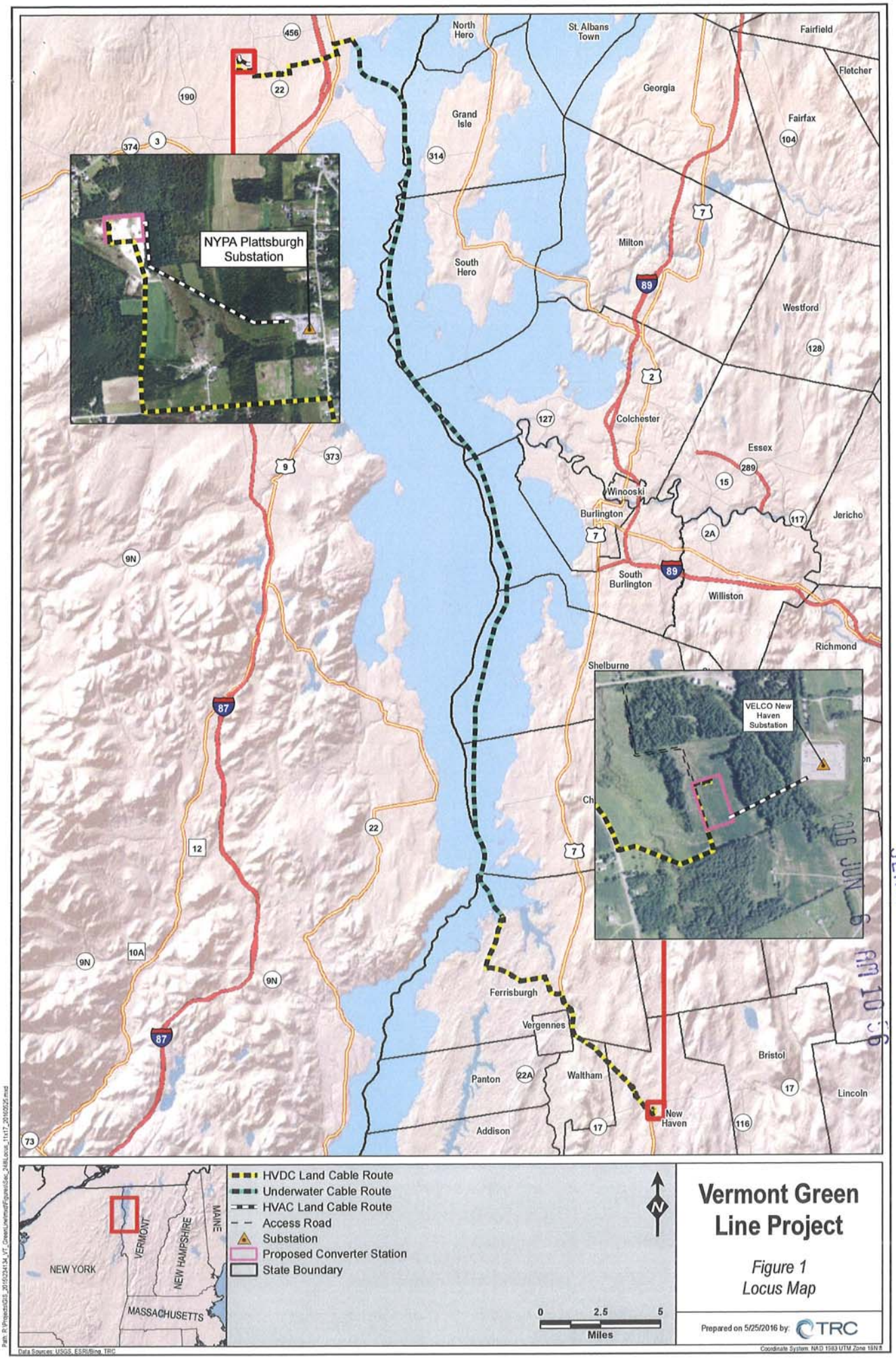
Lake Champlain Maritime Museum
4472 Basin Harbor Road
Vergennes, VT 05491

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

VERMONT PUBLIC
SERVICE BOARD

2016 JUN 6 AM 10 56

ATTACHMENT B - PROJECT LOCATION MAP AND ROUTE MAPS



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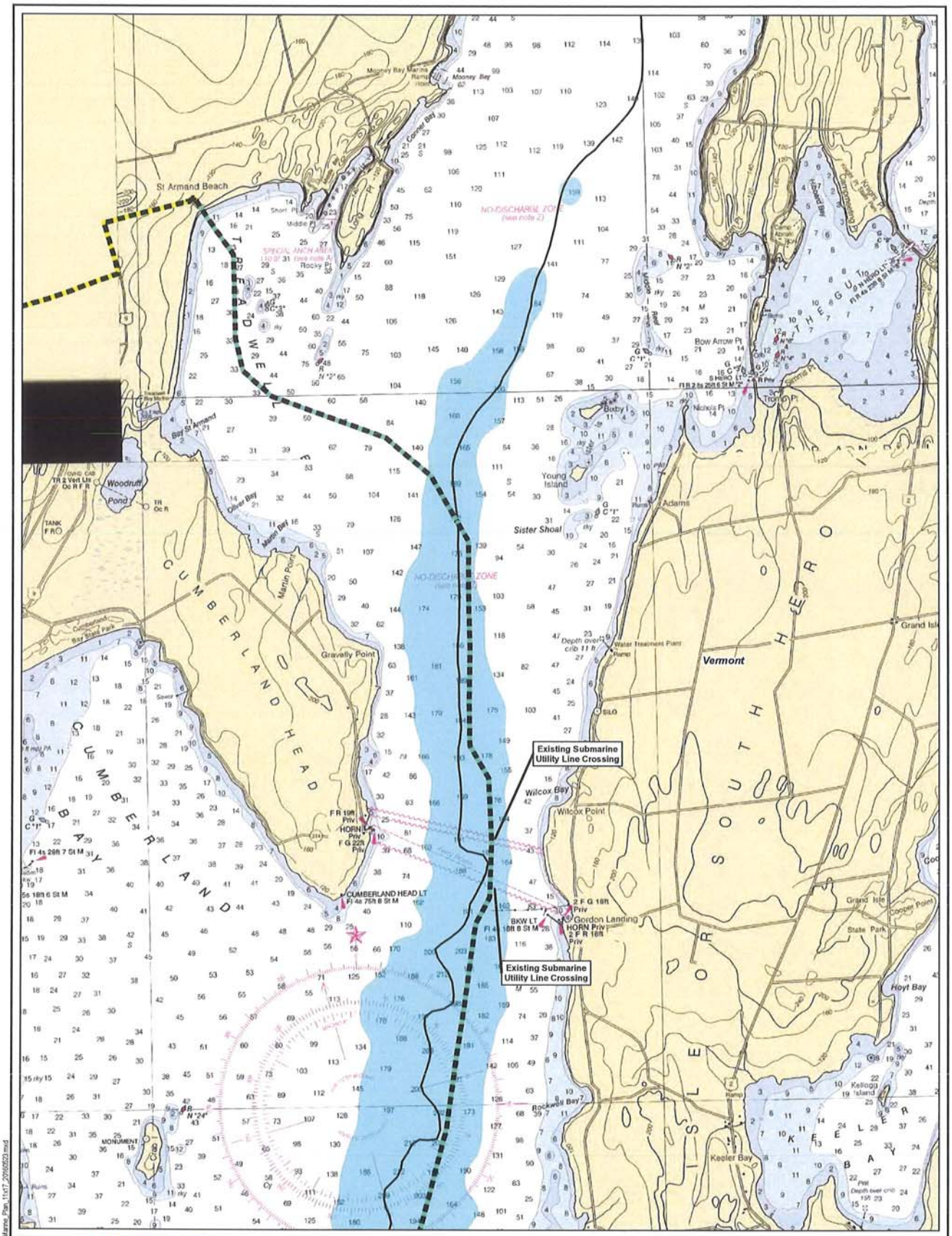
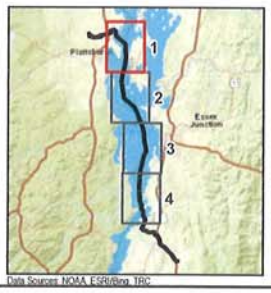
2016 JUN 6 AM 10:56





Data Sources: NOAA, ESRI/Bing, TRC

IIVDC Land Cable Route

Underwater Cable Route

Deep Water (> 150-foot Depth)

State Boundary

Base Map: NOAA Seamless Raster Nautical Chart Web Service

0 0.5 1 Miles

Vermont Green Line

Proposed Land & Underwater Cable Route

Sheet 1 of 31

Prepared on 5/23/2016 by: TRC

Coordinate System: NAD 1983 UTM Zone 18N ft

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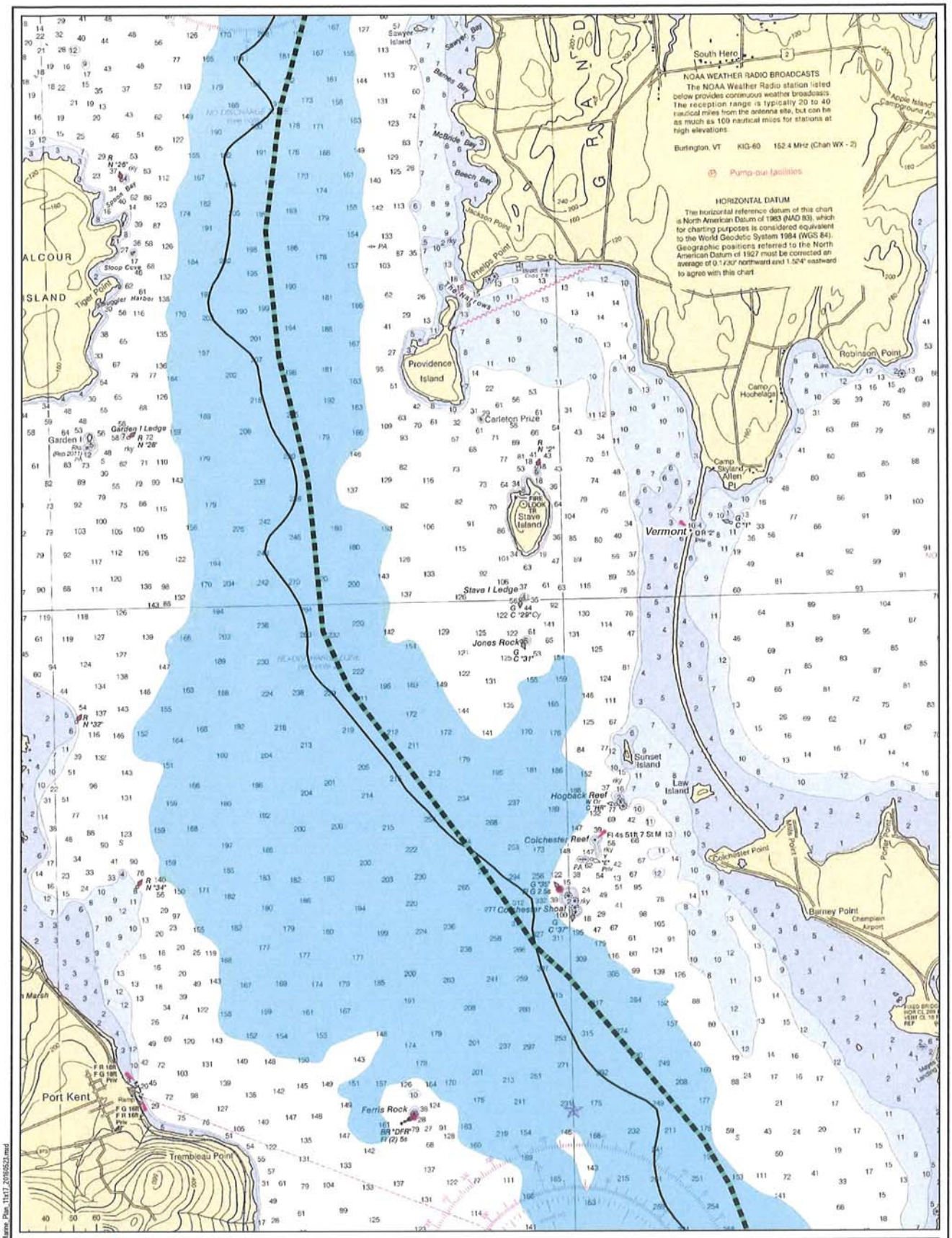

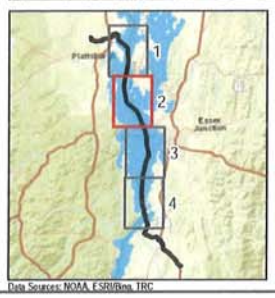

Underwater Cable Route

Deep Water (> 150-foot Depth)

State Boundary

Base Map: NOAA Seamless Raster Nautical Chart Web Service

0 0.5 1 Miles

Vermont Green Line

Proposed Land & Underwater Cable Route

Sheet 2 of 31

Prepared on 5/23/2016 by: TRC

Data Sources: NOAA, ESRI/Bing, TRC

Coordinate System: NAD 1983 UTM Zone 18N ft

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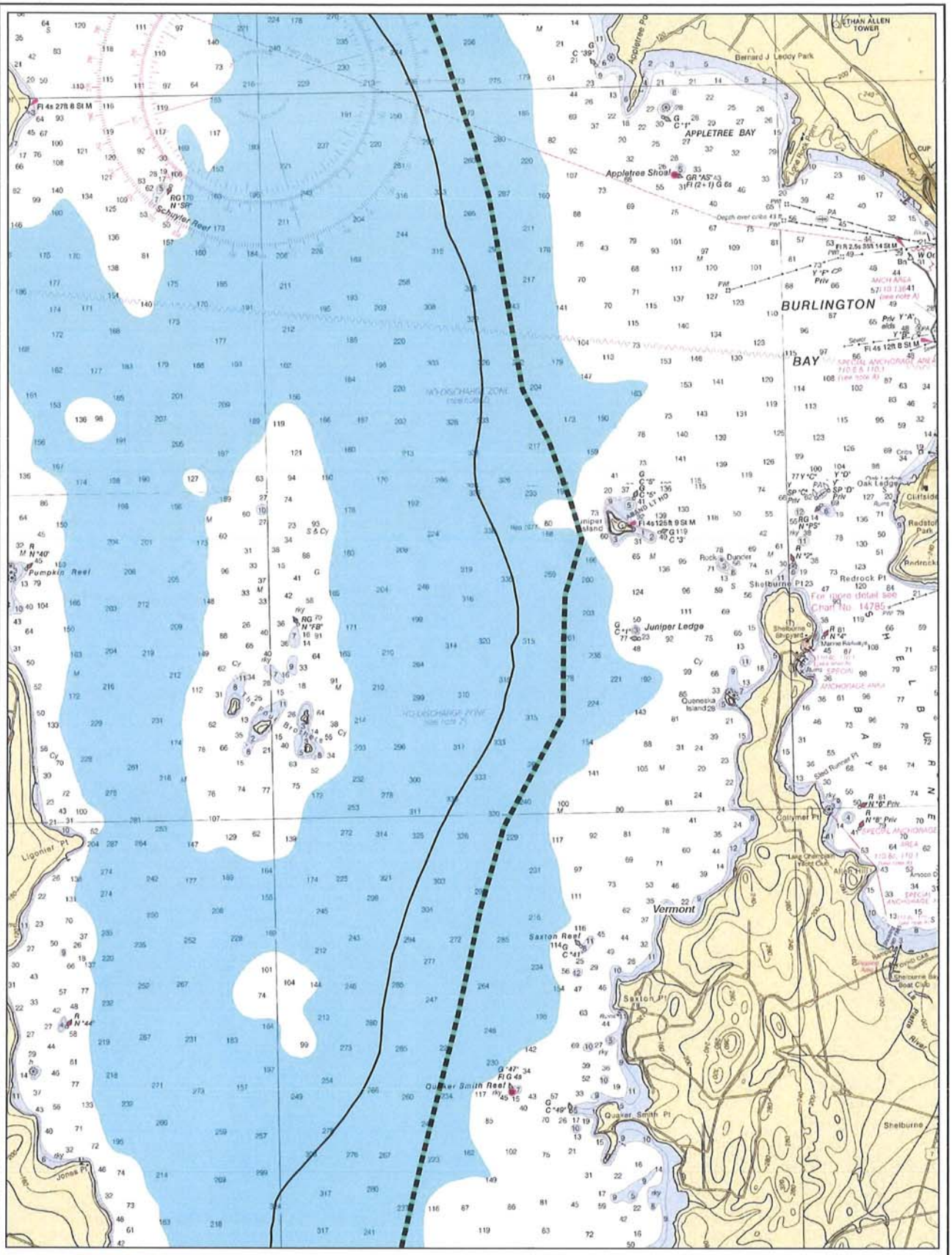

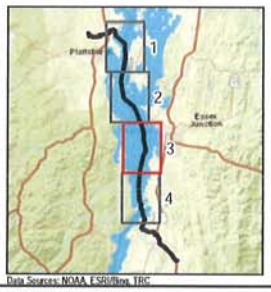

Underwater Cable Route

Deep Water (> 150-foot Depth)

State Boundary

Base Map: NOAA Seamless Raster Nautical Chart Web Service

0 0.5 1 Miles

Vermont Green Line

Proposed Land & Underwater Cable Route

Sheet 3 of 31

Prepared on 5/23/2016 by: TRC

Data Sources: NOAA, ESRI/Bing, TRC

Coordinate System: NAD 1983 UTM Zone 18N ft

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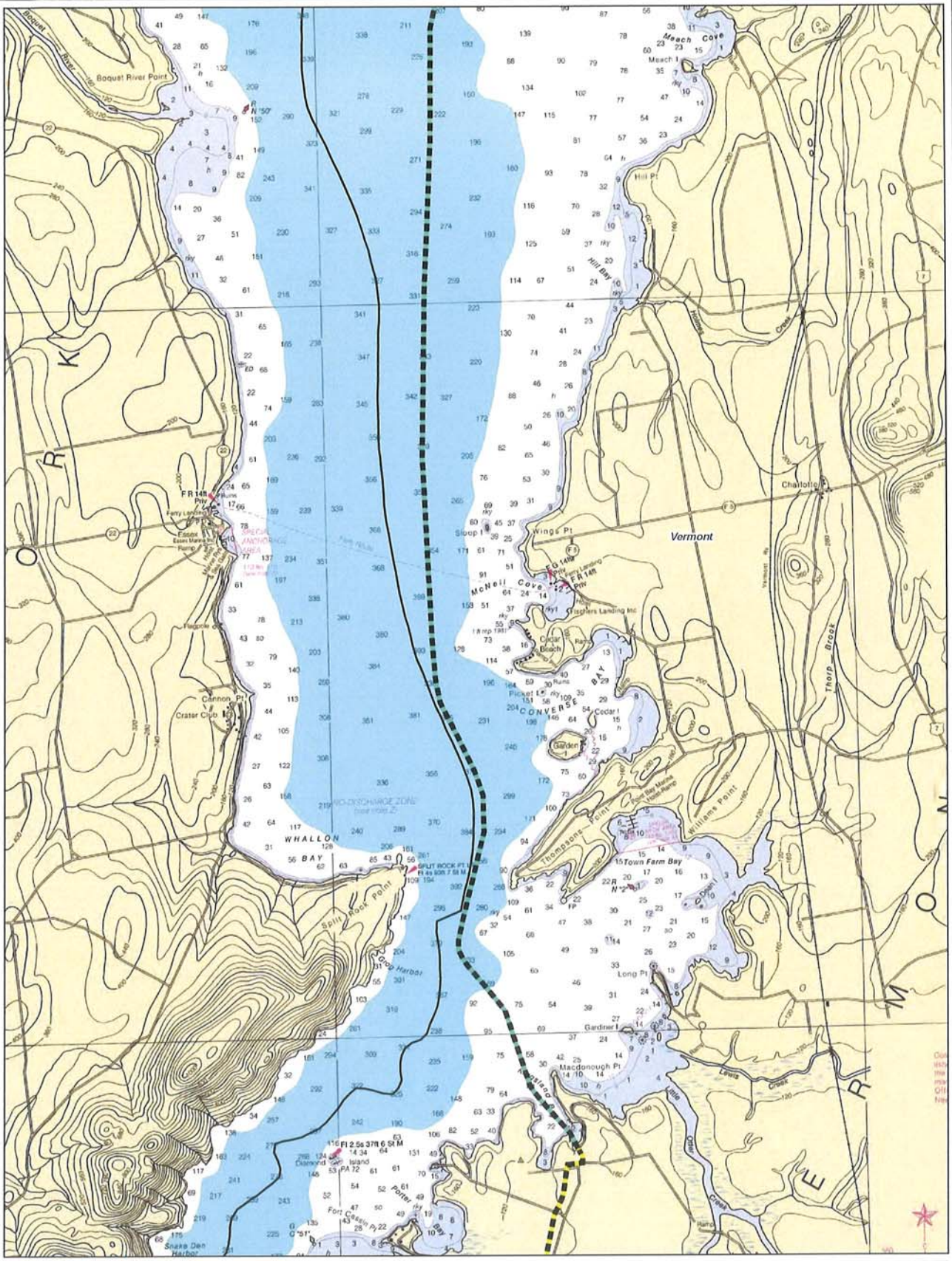

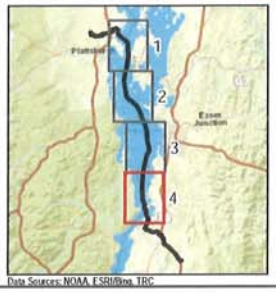

HVDC Land Cable Route

Underwater Cable Route

Deep Water (> 150-foot Depth)

State Boundary

Base Map: NOAA Seamless Raster Nautical Chart Web Service

0 0.5 1 Miles

Vermont Green Line

Proposed Land & Underwater Cable Route

Sheet 4 of 31

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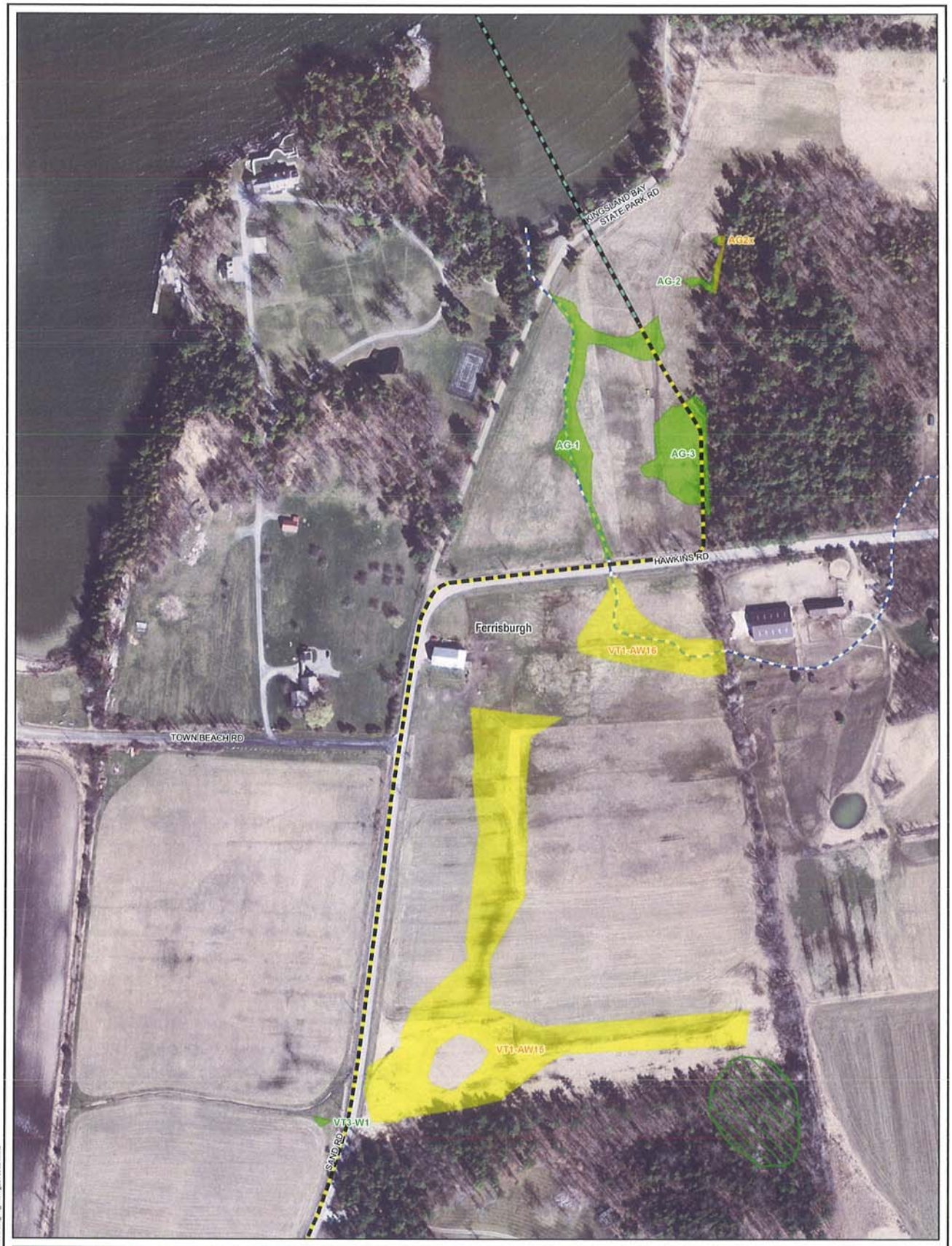

- HVDC Land Cable Route
- Underwater Cable Route
- Delineated Wetland
- Approximate Wetland
- VHD Stream
- VSWI Wetland
- Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 5 of 31

Prepared on 5/24/2016 by: TRC

Data Sources: VCGI, USGS, ESRI/Bing, TRC

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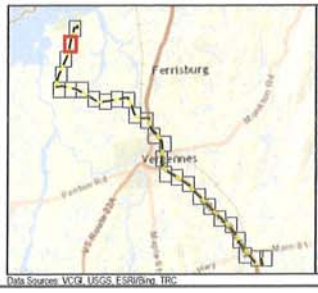

HVDC Land Cable Route
Delineated Stream
Approximate Stream
Approximate Wetland
VHD Stream
VSWI Wetland
Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 6 of 31

Prepared on 5/24/2016 by: TRC

Coordinate System: NAD 1983 UTM Zone 18N

Data Sources: VCGI, USGS, ESRI/Bing, TRC

HVDC Land Cable Route
Delineated Wetland
Approximate Wetland
VHD Stream
VSWI Wetland
Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 7 of 31

Prepared on 5/24/2016 by: TRC

Data Sources: VCGI, USGS, ESRI/Bing, TRC

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HVDC Land Cable Route
VHD Stream
ANR River Corridor
VSWI Wetland
Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 8 of 31

Prepared on 5/24/2016 by: TRC

Data Sources: VCGI, USGS, ESRI/Bing, TRC

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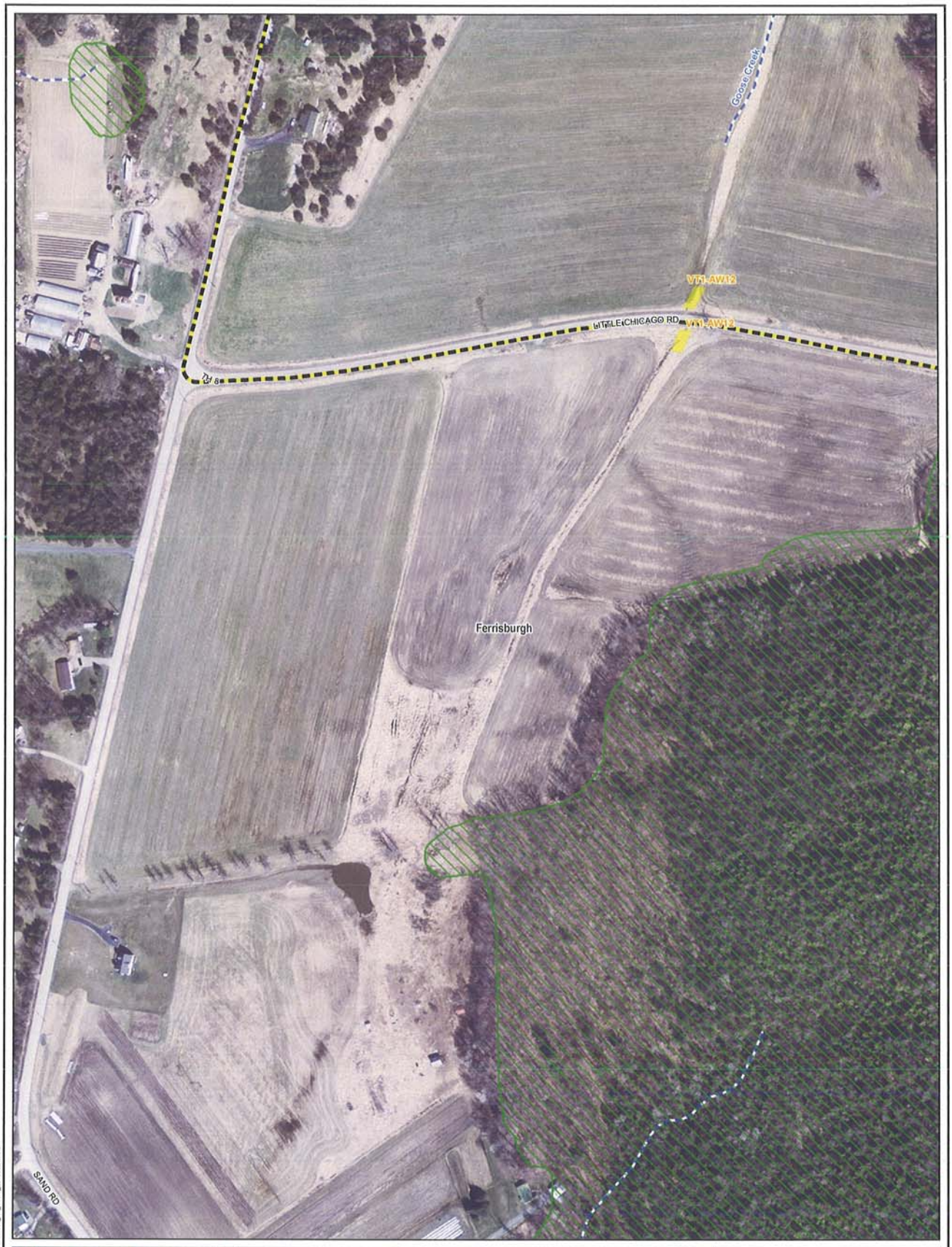

- HVDC Land Cable Route
- Approximate Wetland
- VHD Stream
- VSWI Wetland
- Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 9 of 31

Prepared on 5/24/2016 by: TRC

Data Sources: VCGI, USGS, ESRI/Bing, TRC

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HVDC Land Cable Route
Delineated Wetland
Approximate Wetland
VHD Stream
ANR River Corridor
VSWI Wetland
Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 10 of 31

Prepared on 5/24/2016 by: TRC

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HVDC Land Cable Route
Delineated Wetland
Approximate Wetland
VHD Stream
ANR River Corridor
VSWI Wetland
Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 11 of 31

Prepared on 5/24/2016 by: TRC

Data Sources: VCGI, USGS, ESRI/Bing, TRC

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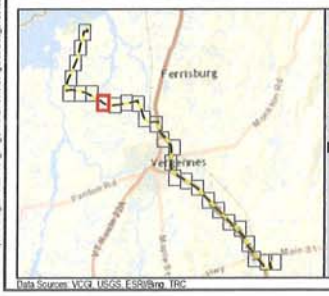

HVDC Land Cable Route
Delineated Wetland
Approximate Wetland
VHD Stream
Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 12 of 31

Prepared on 5/24/2016 by: TRC

Data Sources: VCGI, USGS, ESRI/Bing, TRC

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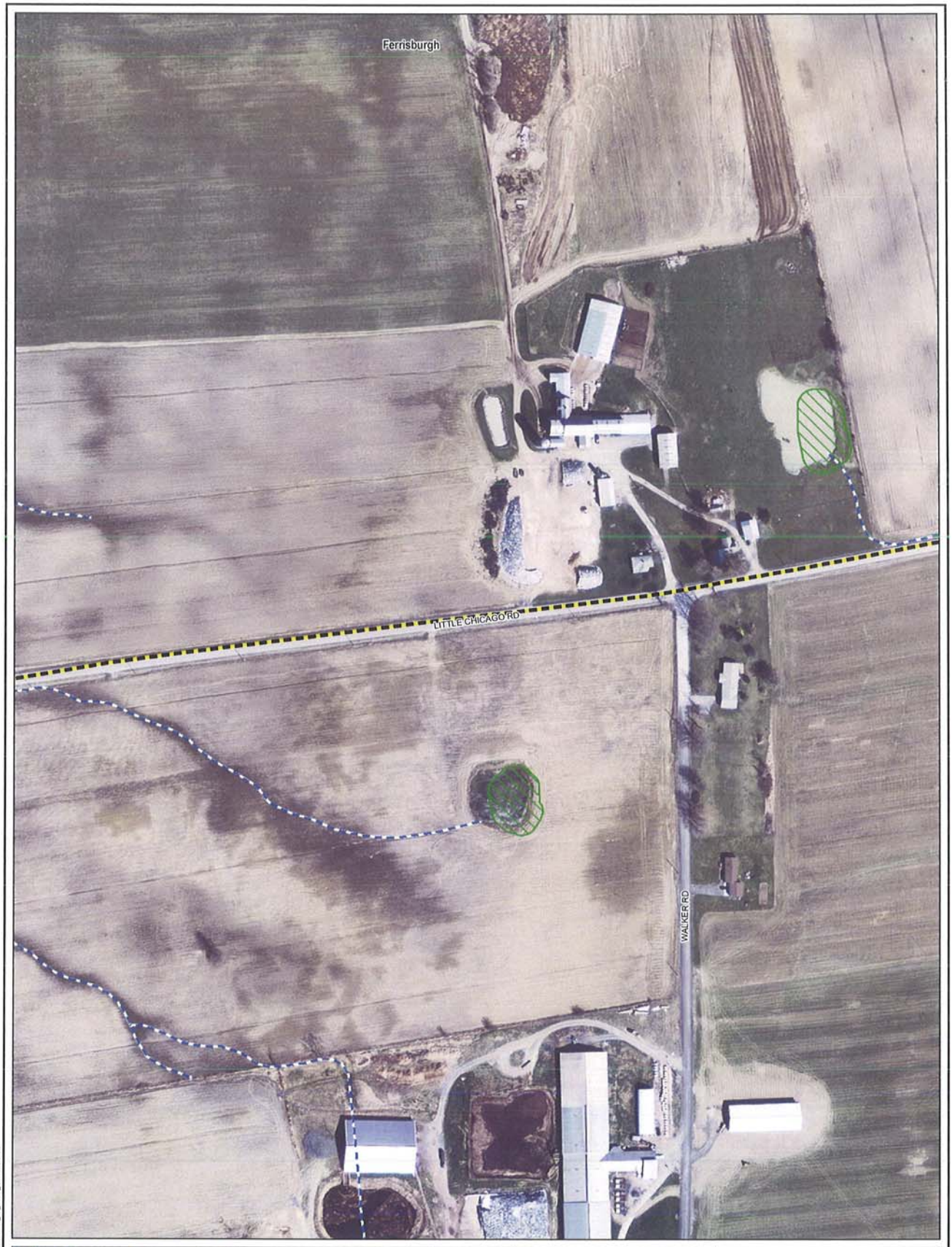


HVDC Land Cable Route
VHD Stream
VSWI Wetland
Municipal Boundary

N

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 13 of 31

Prepared on 5/24/2016 by: TRC

Data Sources: VCGI, USGS, ESRI/Bing, TRC

Coordinate System: NAD 1983 UTM Zone 18N ft

Path: R:\Projects\GIS_2015\254134_VT_GreenLine\mxd\Figures\Sec_24\Resources_VT_11x17_20160524.mxd

- HVDC Land Cable Route
- Delineated Wetland
- Approximate Wetland
- VHD Stream
- VSWI Wetland
- Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 14 of 31

Prepared on 5/24/2016 by: TRC

Data Sources: VCGI, USGS, ESRI/Bing, TRC

Path: R:\Projects\GIS_2015\234134_VT_GreenLine\mxd\Figures\Sec_24\Resources_VT_11x17_20160524.mxd

Coordinate System: NAD 1983 UTM Zone 18N

- HVDC Land Cable Route
- Delineated Wetland
- Approximate Wetland
- VHD Stream
- VSWI Wetland
- Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

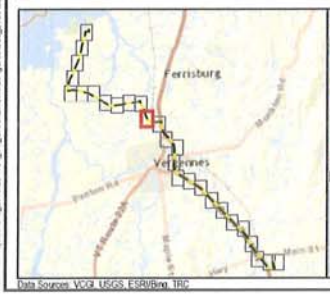
Sheet 15 of 31

Prepared on 5/24/2016 by: TRC

Data Sources: VCGI, USGS, ESRI/Bing, TRC

Coordinate System: NAD 1983 UTM Zone 18N

Path: R:\Projects\GIS_2015\234134_VT_GreenLine\mxd\Figures\Sec_24\Resources_VT_11x17_20160524.mxd



HVDC Land Cable Route
Delineated Wetland
Approximate Wetland
VHD Stream
VSWI Wetland
Municipal Boundary

N

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 16 of 31

Prepared on 5/24/2016 by: TRC

Coordinate System: NAD 1983 UTM Zone 18N R

Data Sources: VCGI, USGS, ESRI/Bing, TRC

Path: R:\Projects\GIS_2015\234134_VT_GreenLine\mxd\Figures\Sec_24\8Resources_VT_11x17_20160524.mxd

- HVDC Land Cable Route
- Delineated Wetland
- Approximate Wetland
- VHD Stream
- VSWI Wetland
- Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 17 of 31

Prepared on 5/24/2016 by: TRC

Data Sources: VCGI, USGS, ESRI/Bing, TRC

Coordinate System: NAD 1983 UTM Zone 18N

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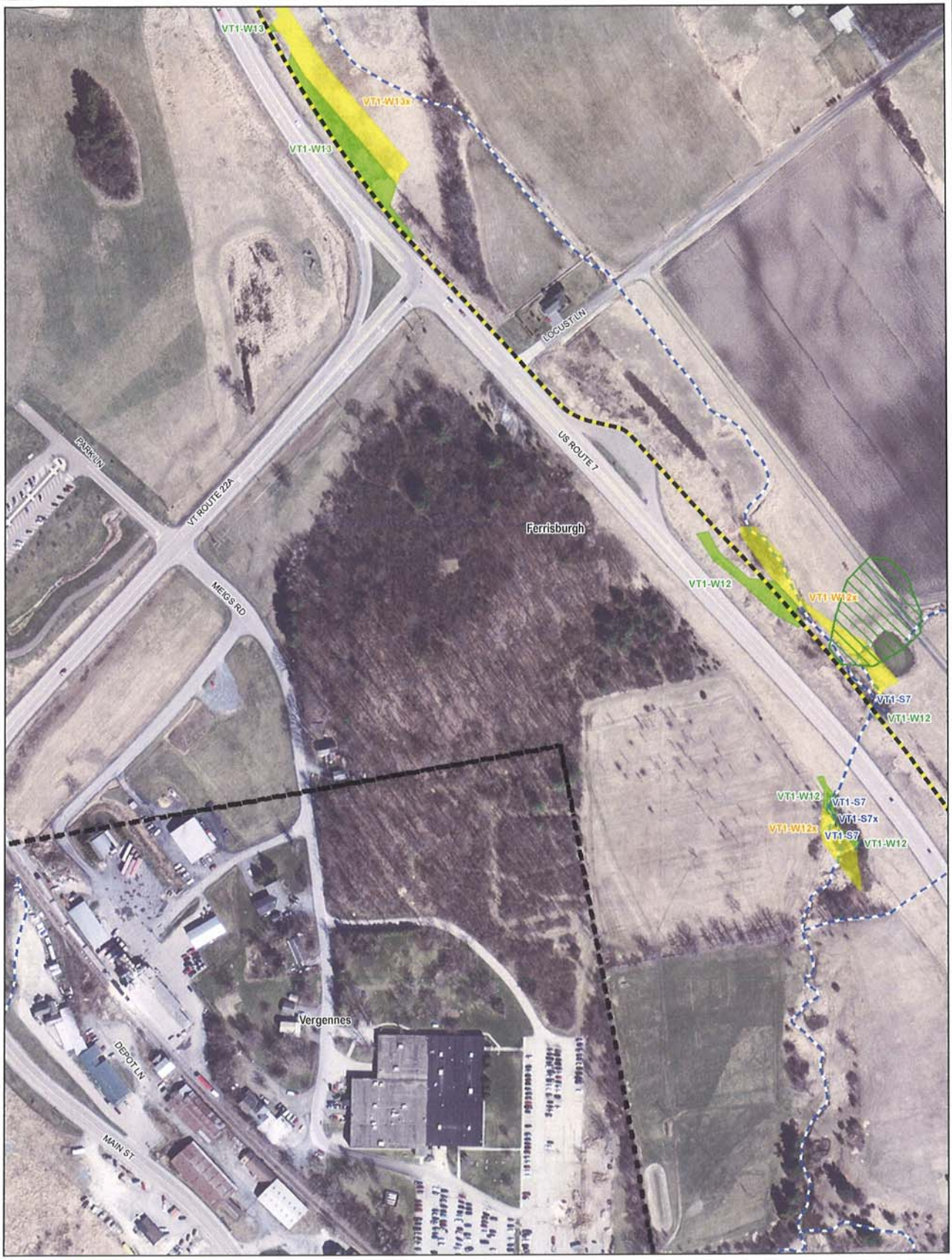

Data Sources: VCGI, USGS, ESRI/Bing, TRC

- HVDC Land Cable Route
- Delineated Stream
- Approximate Stream
- Delineated Wetland
- Approximate Wetland
- VHD Stream
- VSWI Wetland
- Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 18 of 31

Prepared on 5/24/2016 by: TRC

Coordinate System: NAD 1983 UTM Zone 18N

Path: R:\Projects\GIS_2015\224134_VT_GreenLine\mxd\Figures\Sec_24\Resources_VT_11x17_20160524.mxd

HVDC Land Cable Route
Delineated Wetland
Approximate Wetland
VHD Stream
VSWI Wetland
Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 19 of 31

Prepared on 5/24/2016 by: TRC

Data Sources: VCGI, USGS, ESRI/Bing, TRC

Coordinate System: NAD 1983 UTM Zone 18N

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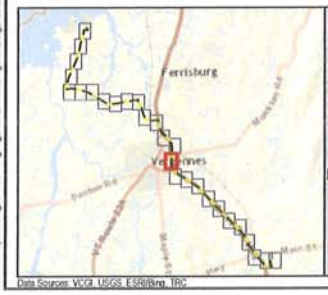


HVDC Land Cable Route
Delineated Wetland
Approximate Wetland
VHD Stream
VSWI Wetland
Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

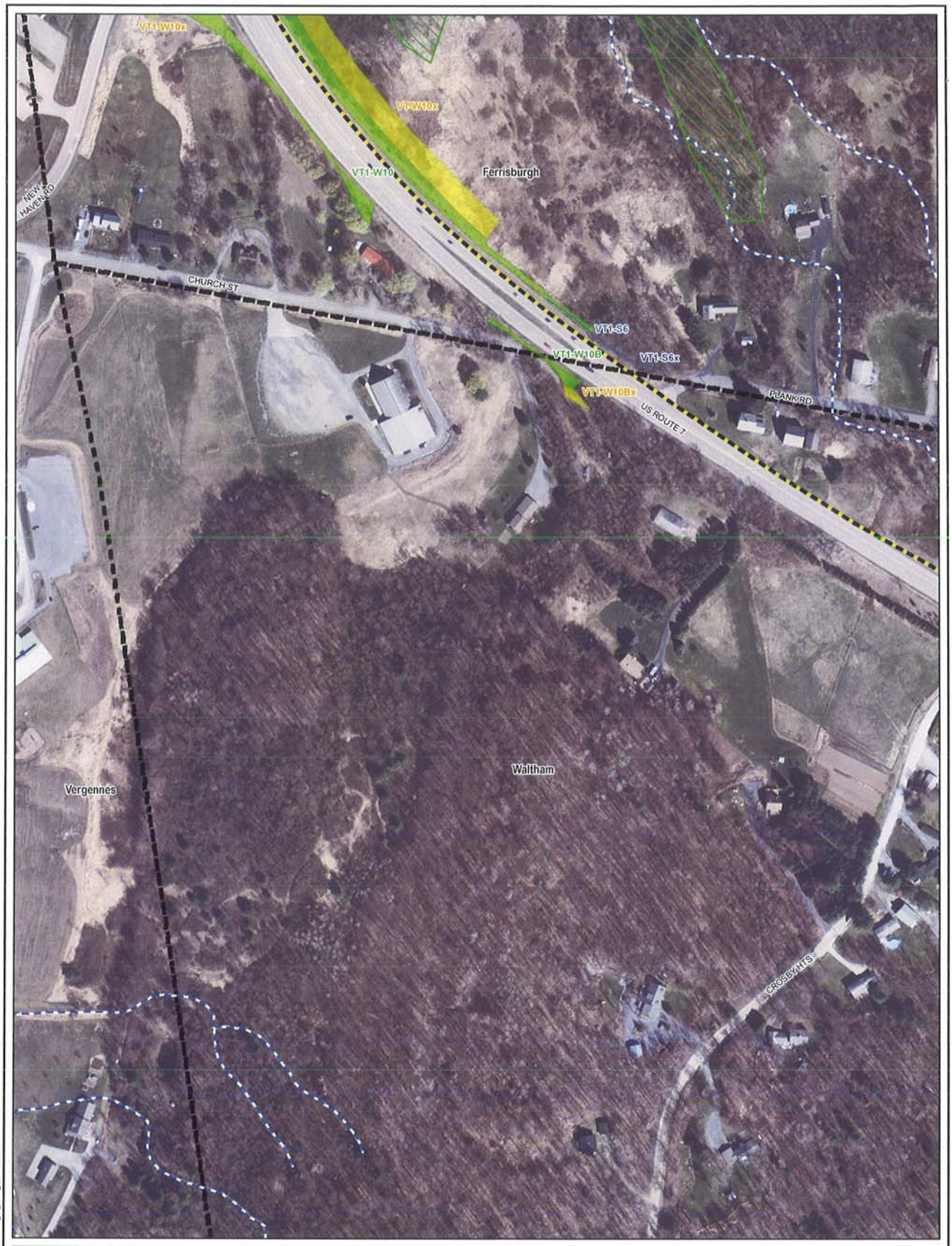
Proposed Land & Underwater Cable Route

Sheet 20 of 31

Prepared on 5/24/2016 by: TRC

Coordinate System: NAD 1983 UTM Zone 18N

Data Sources: VCGI, USGS, ESRI/Bing, TRC



- HVDC Land Cable Route
- Delineated Stream
- Approximate Stream
- Delineated Wetland
- Approximate Wetland
- VHD Stream
- VSWI Wetland
- Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 21 of 31

Prepared on 5/24/2016 by: TRC

Data Sources: VCGI, USGS, ESRI/Bing, TRC

Coordinate System: NAD 1983 UTM Zone 18N

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HVDC Land Cable Route
Delineated Stream
Approximate Stream
Delineated Wetland
Approximate Wetland
VHD Stream
VSWI Wetland
Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 22 of 31

Prepared on 5/24/2016 by: TRC

Data Sources: VCGI, USGS, ESRI/Bing, TRC

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HVDC Land Cable Route
Approximate Stream
Delineated Wetland
Approximate Wetland
VHD Stream
Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 23 of 31

Prepared on 5/24/2016 by: TRC

Data Sources: VCGI, USGS, ESRI/Bing, TRC

Coordinate System: NAD 1983 UTM Zone 18N

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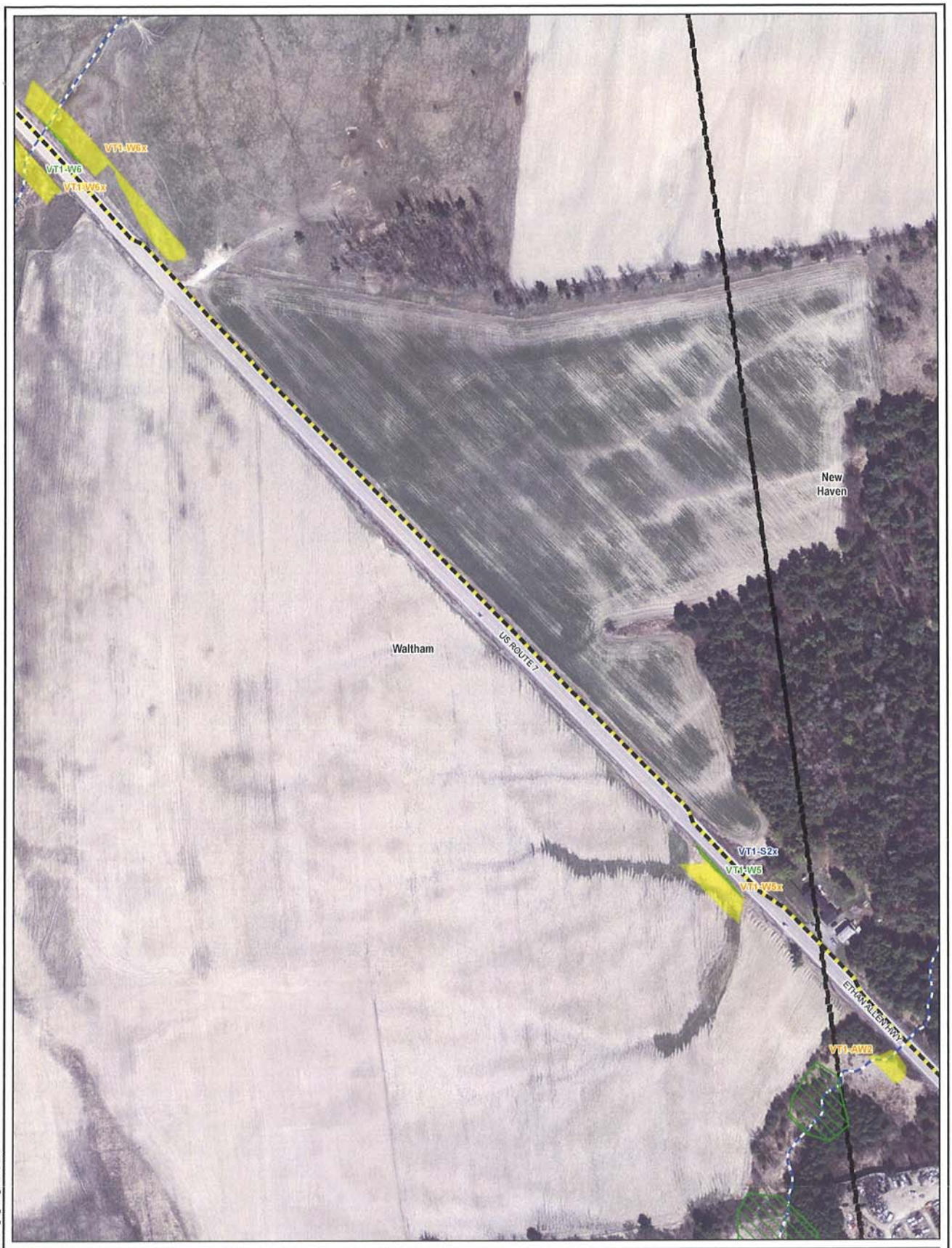

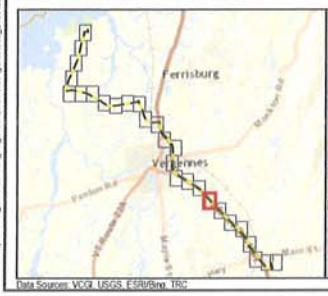

HVDC Land Cable Route
Approximate Stream
Delineated Wetland
Approximate Wetland
VHD Stream
VSWI Wetland
Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 24 of 31

Prepared on 5/24/2016 by: TRC

Coordinate System: NAD 1983 UTM Zone 18N

Data Sources: VCGI, USGS, ESRI/Bing, TRC

Path: R:\Projects\GIS_2015\24134_VT_GreenLine\mxd\Figures\Sec_24\Resources_VT_11x17_20160524.mxd

HVDC Land Cable Route
Approximate Stream
Delineated Wetland
Approximate Wetland
VHD Stream
VSWI Wetland
Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 25 of 31

Prepared on 5/24/2016 by: TRC

Data Sources: VCGI, USGS, ESRI/Bing, TRC

Coordinate System: NAD 1983 UTM Zone 18N

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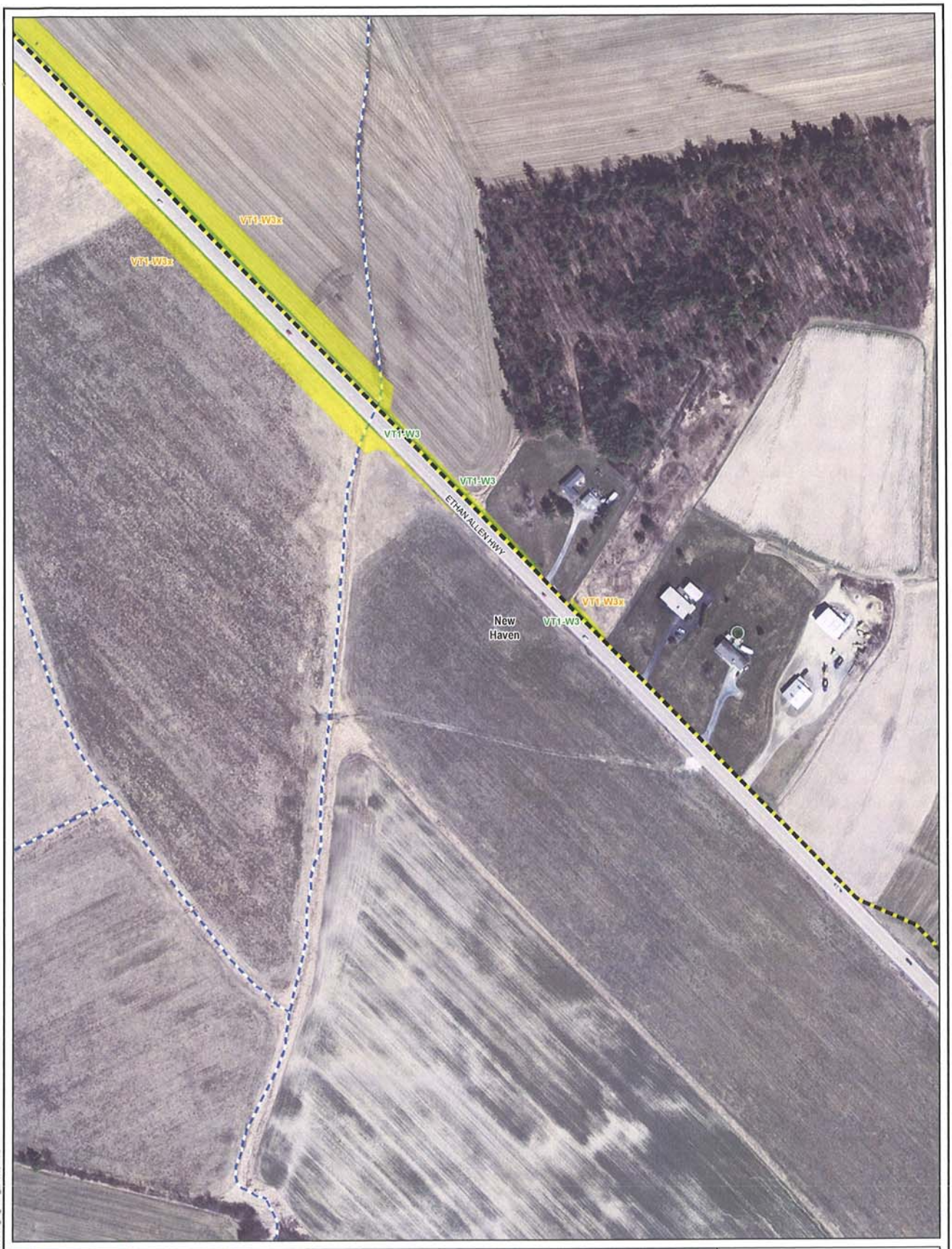

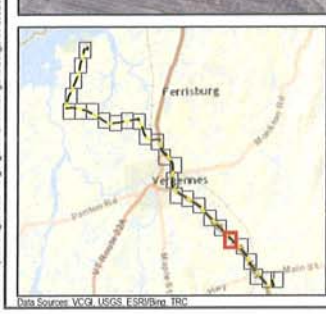

HVDC Land Cable Route
Delineated Wetland
Approximate Wetland
VHD Stream
Municipal Boundary

N

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 26 of 31

Prepared on 5/24/2016 by: TRC

Coordinate System: NAD 1983 UTM Zone 18N

Data Sources: VCGI, USGS, ESRI/Bing, TRC

- HVDC Land Cable Route
- Delineated Wetland
- Approximate Wetland
- VHD Stream
- ANR River Corridor
- VSWI Wetland
- Municipal Boundary

N

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 27 of 31

Prepared on 5/24/2016 by: TRC

Data Sources: VCGI, USGS, ESRI/Bing, TRC

Coordinate System: NAD 1983 UTM Zone 18N

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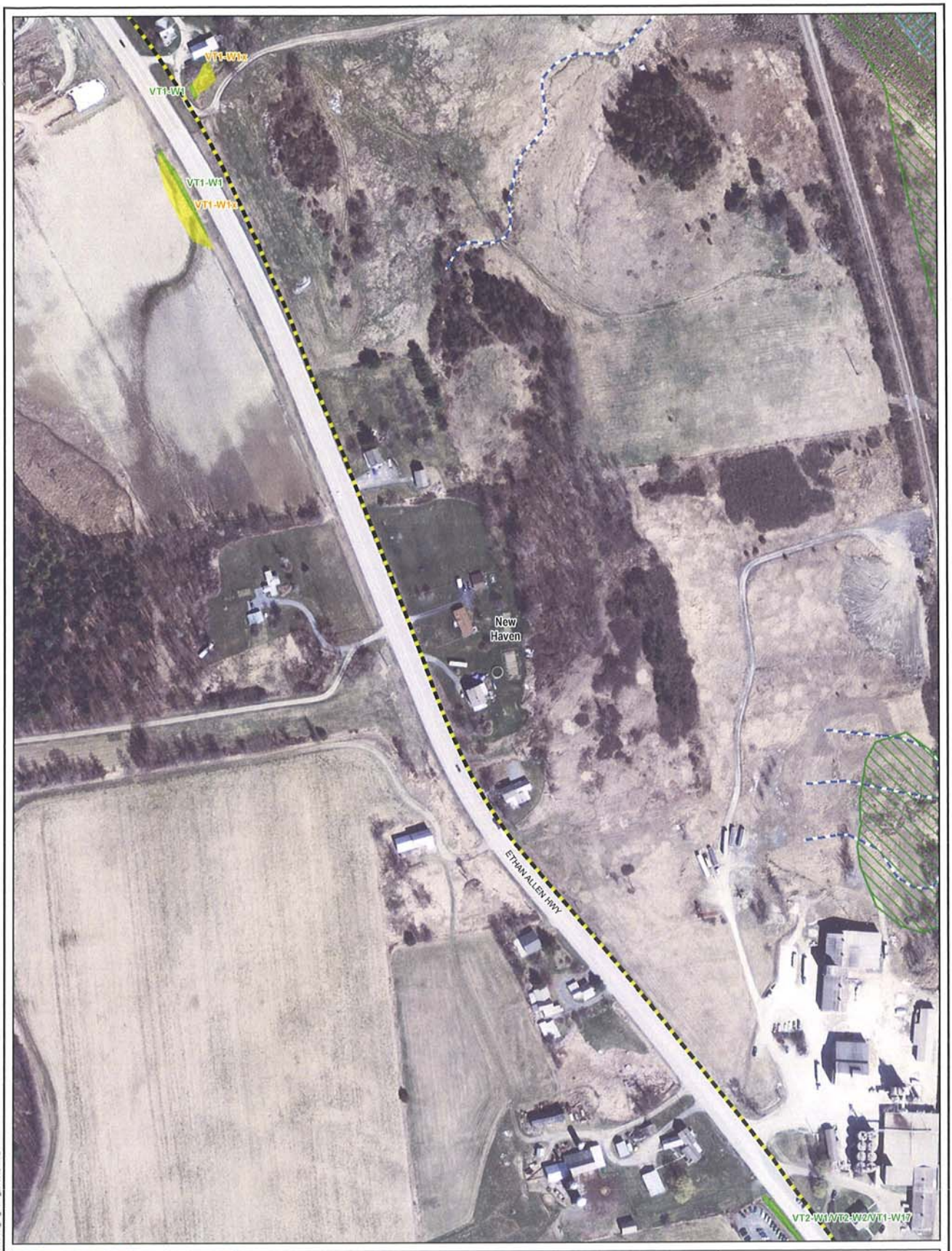

- HVDC Land Cable Route
- Delineated Wetland
- Approximate Wetland
- VHD Stream
- ANR River Corridor
- VSWI Wetland
- Municipal Boundary

N

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 28 of 31

Prepared on 5/24/2016 by: TRC

Coordinate System: NAD 1983 UTM Zone 18N

Data Sources: VCGI, USGS, ESRI/Bing, TRC

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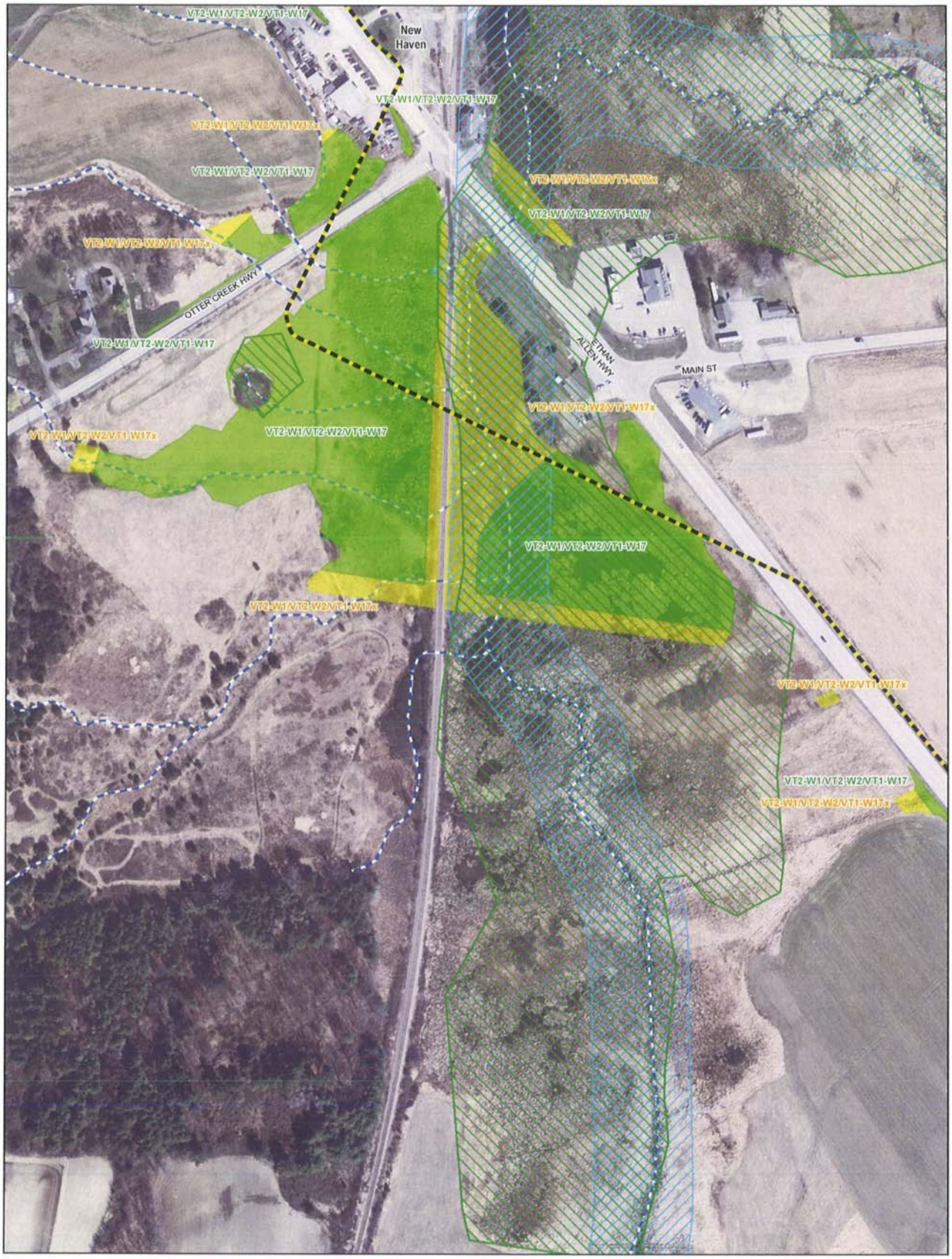


- HVDC Land Cable Route
- Delineated Wetland
- Approximate Wetland
- VHD Stream
- ANR River Corridor
- VSWI Wetland
- Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

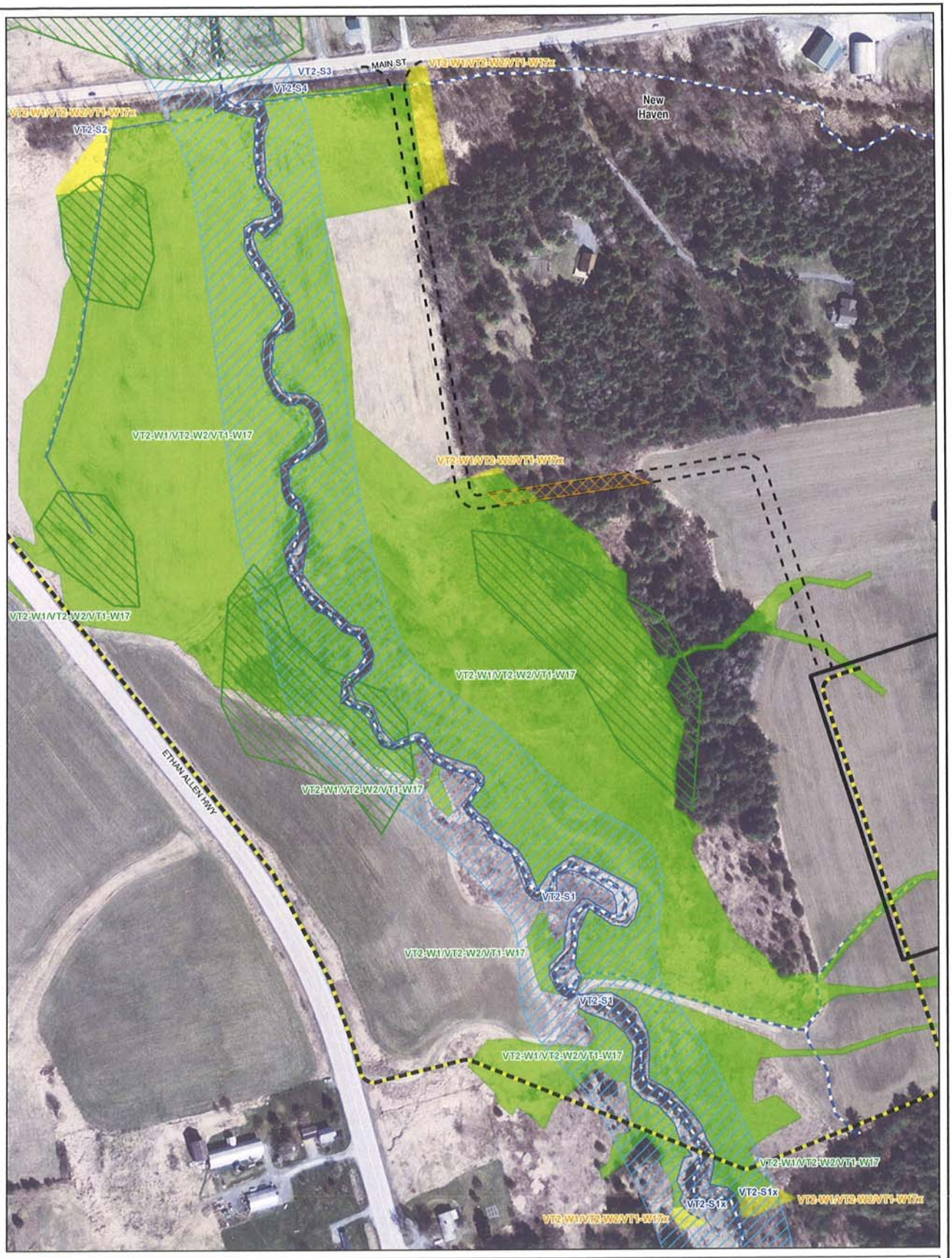
Sheet 29 of 31

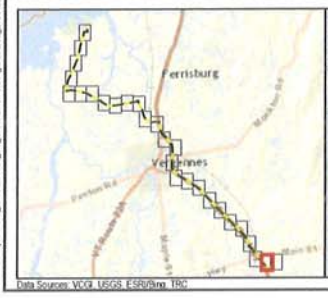
Prepared on 5/24/2016 by: TRC

Data Sources: VCGI, USGS, ESRI/Bing, TRC

Coordinate System: NAD 1983 UTM Zone 18N

Path: R:\Projects\GIS_2015\234134_VT_GreenLine\mxd\Figures\Sec_2\NR\resources_VT_11x17_20160524.mxd





Data Sources: VCGI, USGS, ESRI/Bing, TRC

- HVDC Land Cable Route
- Access Road
- Converter Site Boundary
- Delineated Stream
- Approximate Stream
- Delineated Wetland
- Approximate Wetland
- VHD Stream
- ANR River Corridor
- VSWI Wetland
- Approximate Area of Vegetation Clearing
- Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 30 of 31

Prepared on 5/24/2016 by: TRC

Coordinate System: NAD 1983 UTM Zone 18N

Path: R:\Projects\GIS_2015\234134_VT_GreenLine\mxd\Figures\Sec_24\Resources_VT_11x17_20160524.mxd

HVDC Land Cable Route
HVAC Land Cable Route
Access Road
Converter Site Boundary
Delineated Stream
Approximate Stream
Delineated Wetland
Approximate Wetland
VHD Stream
ANR River Corridor
VSWI Wetland
Municipal Boundary

0 200 400
Feet

Vermont Green Line Project

Proposed Land & Underwater Cable Route

Sheet 31 of 31

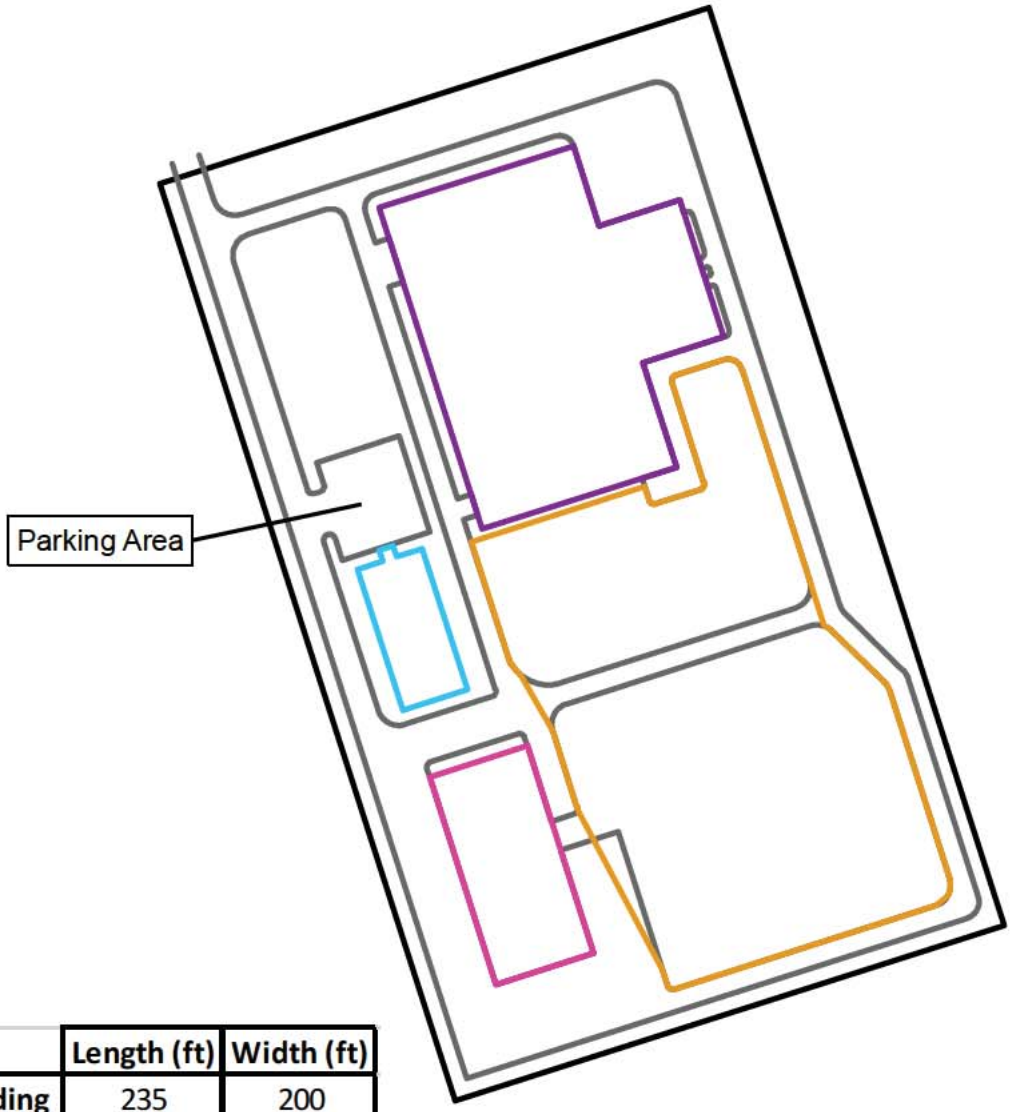
Prepared on 5/24/2016 by: TRC

Data Sources: VCGI, USGS, ESRI/Bing, TRC

Coordinate System: NAD 1983 UTM Zone 18N

Path: R:\Projects\GIS_20152341\34_VT_GreenLine\mxd\Figures\Sec_24\Resources_VT_11x17_20160524.mxd

ATTACHMENT C - VERMONT CONVERTER STATION LAYOUT



	Length (ft)	Width (ft)
Converter Building	235	200
Equipment Yard	380	240
Admin Building	105	45
Storage Building	150	70

Lengths and widths are approximate.

- Equipment Yard
- Converter Building
- Administration Building
- Storage Building
- Site Boundary (approx. 6.1 ac.)
- Limit of Pavement

0 100 200 Feet

Vermont Green Line Project

Site Plan
New Haven Converter Station
Town of New Haven, VT

Prepared on 5/26/2016 by: TRC

Path: R:\Projects\GIS_2015\234134_VT_GreenLine\mxd\Figures\New Haven Converter Station\VGL New Haven ConverterStation 85x11_basic.mxd

ATTACHMENT D – OVERVIEW OF CONSTRUCTION PLANS

CONSTRUCTION PHASES

Construction will be performed in four major phases.

The first phase, site mobilization and preparation, will consist of construction surveying, installation of erosion controls and temporary construction fence, preliminary site grading for the converter station, preparation of temporary construction laydown areas, installation of access roads, establishment of temporary jobsite offices, and tree/vegetation removal.

The second phase of the construction process will be centered on excavation and foundation construction for the converter station. This will include major site excavations required for foundations, drainage systems, conduits, and all other major subsurface activities. The equipment and building foundations will be completed and backfilled.

The third phase of construction consists of building and equipment installation. It includes the installation of wire, cables, piping, support structures, perimeter fencing, and all other required equipment.

The fourth and final phase of the construction process is focused on site restoration and demobilization. This work will include the final paving of roads and driveways along the HVDC Land Cable route, restoration of temporary construction laydown areas, vegetation plantings, and the removal of construction debris, construction equipment, and any other temporary facilities used during construction.

CONDUIT INSTALLATION

VGLD will install the underground cable system through a total of three conduits. Two conduits with a nominal diameter of eight inches each will be used for the transmission cables, and the third, with a nominal diameter of two inches, will be used for the fiber optic cable.

To install the conduits (a process that happens prior to cable installation), VGLD will use a combination of different construction methods, including the following:

- Conventional cut-and-cover installation with concrete encasement
- Horizontal directional drill installation
- Jack-and-Bore installation

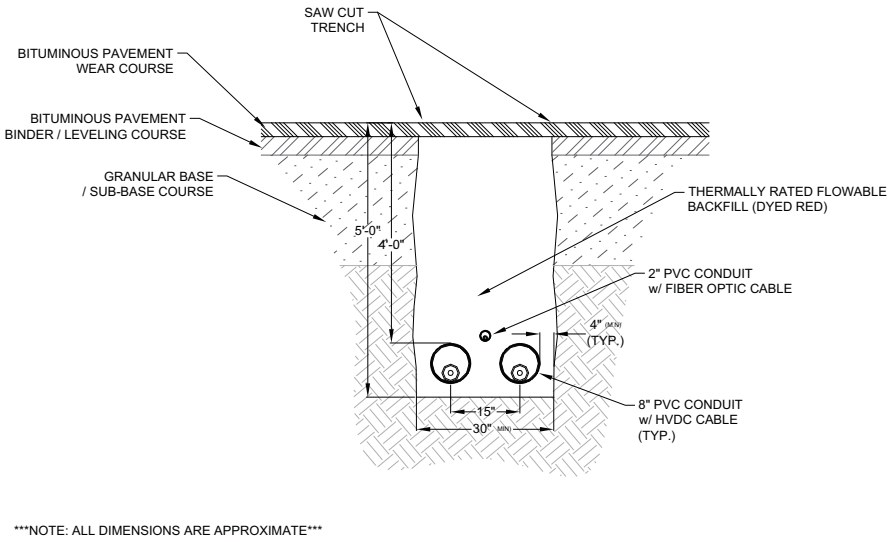
These methods are described in more detail below. The proposed conduit installation method utilized for a given location will depend on several factors, including: applicable requirements from rail or roadway authorities, potential effects to wetlands or other sensitive environmental areas, and possible impacts to the local community.

Conventional Cut-and-Cover

VGLD will install a majority of the conduit for the land cable system using the conventional cut-and-cover method. This method is typically used for the installation of water, sewer, gas, and other utility

underground infrastructure. VGLD will limit any traffic disruptions during construction to the maximum practicable extent and will manage any necessary disruptions using best practices.

VGLD will install the majority of the HVDC Land Cable Route following existing public roads and, except for sections along Route 7, the conduits will be placed within the paved travel lane. The trench required for the in-pavement cable system will be approximately five feet deep and thirty inches wide. The conduits will be installed and then backfilled with fill materials. A typical cross section view of the land cable in-pavement installation is shown below.



Typical In-Pavement Cable Installation

Some sections of the HVDC Land Cable Route are outside of the paved roadway. In those areas, the trench will be approximately five feet deep and thirty-inches wide. The conduit and use of fill materials will be the same as the in-pavement installation.

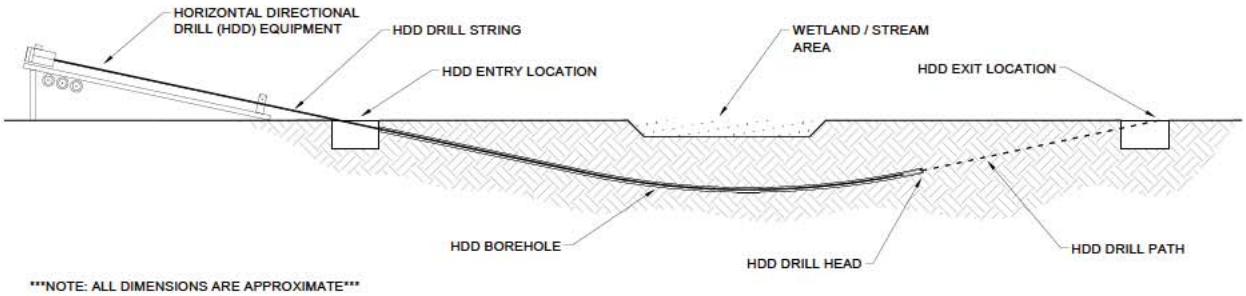
Horizontal Directional Drilling (HDD)

VGLD will use horizontal directional drilling or "HDD" at the landfall location in Kingsland Bay State Park as well as at locations where the Project crosses certain sensitive resource area (e.g. streams and wetlands) and critical transportation infrastructure (e.g. railroads and highways).

At the crossing locations where HDD will be used, a drilling rig will be placed directly in front of the entry location and will push the drill into the soil. The distance between the HDD entry and exit locations will be affected by several factors including: size of pipe to be installed, geological conditions at the HDD location, clearances required between the drill path and other existing infrastructure, and elevation changes between the entry and exit locations. These same factors also affect the depth of the conduit installation along the drill path.

The dimensions of the HDD entry location will be approximately ten feet long, fifteen feet wide and ten feet deep. The dimensions for the exit location will be approximately ten feet long, ten feet wide and

ten feet deep. The drilling will create a borehole that extends from the entry location under the resource or infrastructure being crossed, to the exit location.



HDD Drilling Operation

Each high voltage cable will require its own conduit due to thermal requirements and therefore the process described above will be performed twice at each proposed HDD location for the HVDC cable system and three times for the HVAC cable system. The smaller conduit for the fiber optic cable will be installed simultaneously with one of the larger conduits.

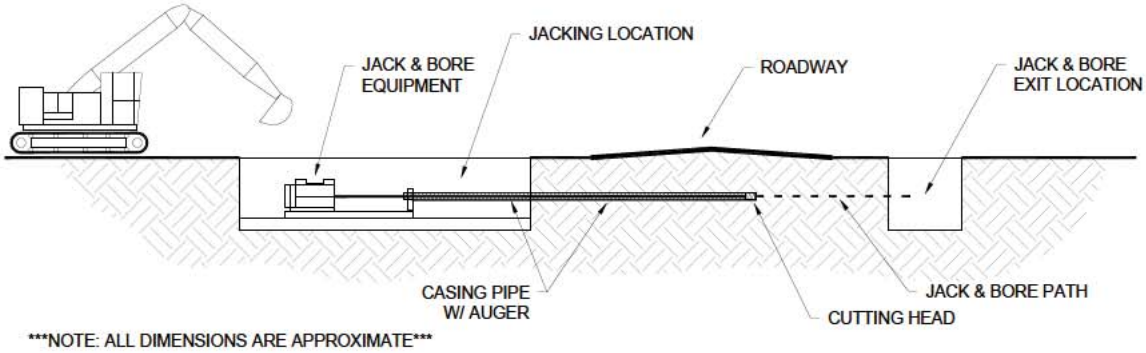
The land-to-water HDD method is very similar to the methods described above, except that the exit location will be underwater. The underwater exit requires the installation and use of a temporary gravity cell (described below) to minimize water quality impacts during excavation down to the target conduit-burial depth of 4 feet below the lakebed.

The gravity cell is a four-sided steel box, with approximate dimensions of thirty-feet by ten-feet by ten-feet, that will be placed over the drill head exit point. Due to the lakebed sediment conditions, it is expected that the gravity cell will settle into the unconsolidated sediment. The gravity cell will hold back the soft sediments and prevent them from collapsing into the hole during HDD installation operations.

Jack and Bore

In locations where the HVDC land cable system must cross a short distance under critical transportation infrastructure, such as railroads or highways, VGLD may use the Jack and Bore method to install the conduits. The Jack and Bore method uses an auger and cutting head inside in a "casing pipe" to bore a hole underground. Although the Jack and Bore method is less complicated than HDD, it is used only where soil and subsurface conditions are appropriate for this method. The depth of the bore path is

determined by the soil conditions at the installation location and the clearance required from any existing infrastructure.



Jack and Bore Operation

Prior to the start of the Jack and Bore operation, an area that is approximately forty feet long by thirty-five feet wide and ten feet deep will be excavated for the equipment needed for the process. This area is called the "jacking pit." The Jack and Bore equipment pushes the casing pipe with the auger and cutting head simultaneously into the soil, advancing slowly as the cutting head drills into the soil. An auger string carries the cuttings back through the casing pipe to the jacking pit where the cuttings are removed by an excavator.

Once the casing pipe installation is completed, the cutting head and auger sections are removed and the pipe is cleaned. Conduit for the cable system is then installed within the casing pipe.

Each high voltage cable will require its own casing pipe with HDPE conduit, due to thermal requirements. Therefore, the process described above will be performed twice at each proposed HDD location for the HVDC land cable system. A smaller conduit for the fiber optic cable will be inserted into one of the high voltage cable casing pipes.

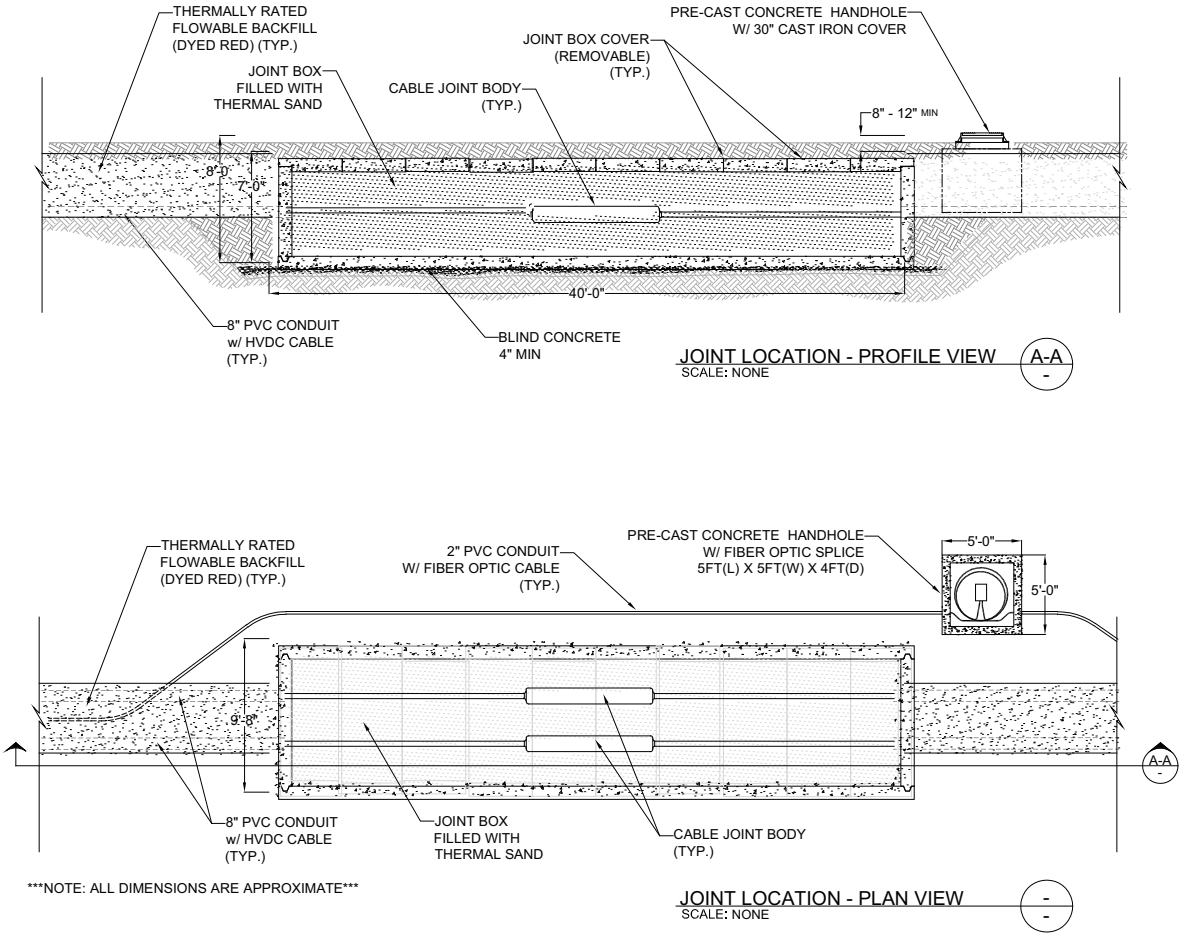
CABLE INSTALLATION

Land Cable Installation

After VGLD installs the conduit systems, the HVDC and HVAC land cable systems will be installed through them. The maximum cable segment length is expected to be between 2,500 feet and 3,000 feet. Each cable segment will require a field splice joint to connect to the other cable segments. Each joint location will be located outside the paved area of existing roads and will include a joint bay enclosure to protect the cable joints from mechanical damage. A temporary jointing shelter will be placed over the entire joint bay to provide a clean, climate controlled environment for the jointing process.

After a given joint is completed, the temporary shelter will be removed and the joint box filled with a suitable fine grained sand that will encase the joint bodies. Concrete covers will then be placed on the joint box to provide additional mechanical protection for the joint bodies. The final eight to twelve inches above the joint bay will be backfilled with native soils and loam, and the entire disturbed area will

be re-seeded to inhibit erosion. Upon completion, no above ground structures will remain at the joint location.



Joint Location Typical Plan & Profile

Each high voltage power cable joint location will also have a fiber optic splice. The fiber optic splices will be kept separate from the power cable joints for maintenance considerations. The splicing process for the fiber optic cable will be the same as for communications-grade fiber optic cable. The splicing will take place in a van or trailer with a clean, climate controlled environment.

Underwater Cable Installation

Prior to installing the underwater cable, a pre-lay “grapnel run” will be performed along the entire route. A grapnel is an anchor with hooks (“flukes”) that will clear debris such as nets, ropes, wires, etc., to allow cable laying and burial activity to be done with minimal hindrance, operational risk, or threat to the cables during installation. The grapnel will be towed from a vessel equipped with a full navigation system. The grapnel will be hoisted back to the vessel at regular intervals and when tension monitoring indicates possible debris collection on the grapnel. Any recovered items will be collected and disposed of in accordance with proper standards and practices.

VGLD will perform cable installation using a Dynamically Positioned ("DP") cable laying barge. The laying barge will be equipped with redundant navigation systems and propulsion systems, along with numerous lay monitoring and control systems.

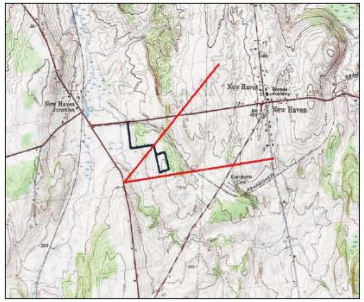
The underwater cable installation will begin at the Point Au Roche State Park landfall. The laying barge will lay out the cables and simultaneously attach temporary floats to them so they can be positioned at the mouth of the previously installed conduits (i.e. at the HDD exit location). A pulling rope will be attached to each of the cable ends so it can be pulled through the conduit onto the land. One of the high voltage cables will also include the underwater fiber optic cable. As the cable is slowly pulled into the conduit, the temporary floats will be removed, allowing the cable to be submerged and enter the conduit. Small marine support vessels and divers will assist the entire operation.

The cables will be buried to a target depth of four feet below the existing lakebed in locations where water depths are less than 150 feet. This will be accomplished by simultaneous lay and bury operations using a specially designed jet plow. The jet plow blade is equipped with nozzles that fluidize the lakebed sediments in situ, allowing the cables to be buried as the plow is towed forward. The use of simultaneous lay and bury installation minimizes the disturbance to the lakebed.

Where the water depth is greater than 150 feet, the cable bundle will be laid on the surface of the lakebed. The same cable laying barge used for jet plow operations will be used for surface-laying operations. VGLD will fully document and provide vertical and horizontal as-built locations for the HVDC cable system to the U.S. Coast Guard for inclusion on navigational charts.

ATTACHMENT E

VIEWPOINT LOCATION MAP



PROPOSED CONDITIONS

TECHNICAL INFORMATION

Viewpoint Coordinates in	1462793.9 E
Vermont State Plane feet	589830.3 N
Viewpoint Location	Route 7
Viewer Elevation	348 ft msl
Distance to Project	0.3 miles
Camera Model	Canon 5D Full Frame
Lens Setting	50 mm
Date/Time	7.23.15/1:40 pm

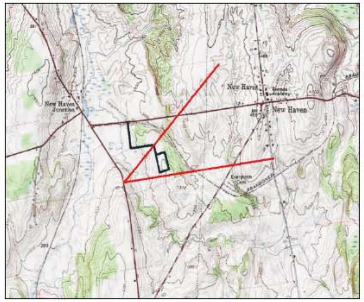
VERMONT GREEN LINE
PROPOSED NEW HAVEN, VERMONT
CONVERTER STATION

VP2: ROUTE 7 ETHAN ALLEN HIGHWAY – EXISTING CONDITIONS

TRC

ATTACHMENT E

VIEWPOINT LOCATION MAP



EXISTING CONDITIONS

TECHNICAL INFORMATION

Viewpoint Coordinates in	1462793.9 E
Vermont State Plane feet	589830.3 N
Viewpoint Location	Route 7
Viewer Elevation	348 ft msl
Distance to Project	0.3 miles
Camera Model	Canon 5D Full Frame
Lens Setting	50 mm
Date/Time	7.23.15/1:40 pm

VERMONT GREEN LINE
PROPOSED NEW HAVEN, VERMONT
CONVERTER STATION

VP2: ROUTE 7 ETHAN ALLEN HIGHWAY – PROPOSED CONDITIONS

TRC

ATTACHMENT F - ALTERNATIVES ANALYSIS

The Vermont Green Line Project is a 400 MW high voltage direct current (HVDC) electric transmission line being developed by Vermont Green Line Devco, LLC (VGLD) to deliver renewable energy from the New York Power Authority's Plattsburgh Substation in Beekmantown, New York to the New England grid via the Vermont Electric Power Company's New Haven Substation in New Haven, Vermont. The Project is more fully described in the accompanying 45-Day Notice Letter. This Attachment F provides a summary of alternatives to the Vermont Green Line Project as described in the 45-Day Notice Letter, and explains the parameters used in selecting the proposed route from New York to Vermont.

Proposed Route

During the preliminary design and route selection phases of Project development, VGLD's goal was to avoid and minimize impacts to protect environmental, cultural, and other sensitive resources to the greatest extent practicable, while ensuring constructability, economic, and other project feasibility criteria. Therefore, the HVDC Land Cable Route has been sited primarily along existing public roadway right-of-way (ROW) and preliminarily designed to avoid and minimize impacts to protected and sensitive resources. This preliminary design has resulted in a preferred, proposed HVDC Land Cable Route that will have limited temporary impacts during construction and no significant permanent impacts.

The HVDC Underwater Cable Route has been sited based on in-water surveys to avoid sensitive benthic communities, cultural resources (e.g., ship wrecks), and geological/geotechnical features, such as large rock outcrops, that could interfere with construction and operation of the Project. The route minimizes economic, environmental, and social impacts on Lake Champlain.

VGLD sited the New Haven Converter Station within a larger parcel to minimize impacts to sensitive resources, and to be in close proximity to existing electrical infrastructure for interconnection.

Energy Conservation Alternative

Energy conservation (i.e., the "energy efficiency alternative") is not an option that addresses the goals or the purpose and need of the Project, which is to provide for a new source of renewable electricity for the New England electricity market. Although energy conservation measures are serving an increasing role in reducing future energy demand in several New England states, including Vermont, all New England states have mandated requirements for additional renewable generated electricity pursuant to their renewable energy goals. Accordingly, this project meets the demand for delivery of new renewable generated electricity that conservation cannot address.

Alternative Interconnection Substation Locations

VGLD believes that the best solution for delivering a new robust source of renewable energy to New England is to develop an interconnection between the existing 345kV high voltage lines extending south from New Haven, Vermont to the existing 230kV high voltage transmission lines extending northwest from Plattsburgh/Beekmantown, New York (See Figure 1). The existing New York Power Authority ("NYPA") Plattsburgh substation and Vermont Electric Power Company's ("VELCO") New Haven substation were selected as the two interconnection points, as they were the closest points between the New York and Vermont high voltage systems and thus allowed for the necessary transmission of renewable energy with the least disturbance to the environment, and at the lowest possible cost to ratepayers. Substation

options further south were not selected, because to route transmission further south in New York and Vermont would significantly add to both the impact and the cost of the Project, the latter rendering it unfeasible as a 400 MW project.

In order to deliver 400 MW of new renewable energy into the New England region from upstate New York wind resources and hydro facilities in Quebec, the Project must interconnect into the Independent System Operator - New England (ISO-NE) 345kV high voltage transmission system.[1] VELCO's New Haven Substation is the northwestern-most high voltage interconnection point in the entire New England region and thereby provides the minimum distance for the proposed HVDC Cable System. Minimizing the length of the HVDC Cable System helps to minimize the Project's overall impact.

The next closest 345 kV substations (and thus the next closest possible interconnection points) in Vermont are in West Rutland, which is approximately 33.9 miles further south than New Haven; and Coolidge, which is 24.5 miles further south than West Rutland (see Figure 2). The New Haven Substation was selected as the preferred interconnection location because it meets the voltage requirements for the Project and requires the shortest HVDC Land Cable route to connect to NYPA's Plattsburgh, New York high voltage transmission substation. Similarly, the Plattsburgh, NY substation represents the northeastern-most high voltage substation and provides access to the wind and hydro resources that the Project seeks to deliver to New England.

Based on evaluation of the multiple interconnection location alternatives and the corresponding transmission line routes, it was determined that the optimal substation location for the Vermont interconnection of the Project was at or close to the existing VELCO New Haven substation.

Alternative Transmission Design Capacity

The 400 MW design capacity is proposed, based on preliminary systems studies, as an amount that both the Vermont and New York transmission systems can handle without causing major cost prohibitive upgrades to either electric transmission system. In essence, this capacity captures the greatest economies of scale without triggering major upgrades to either the ISO-NE or the New York Independent System Operator ("NYISO") grids.

Use of Predominantly Land Based Alternative Routes

The concept of crossing directly from New York to Vermont straight across Lake Champlain and following a predominantly land-based route in order to minimize the impact to Lake Champlain was considered; however, a specific route was not identified. The conceptual evaluation of this option indicated that the route be required to cross densely populated areas (e.g. Burlington), large areas of wetlands, agricultural lands, areas of threatened and endangered species habitat, and over 40 miles of roadways. The potential impacts to the public and natural communities, as well as the high cost associated with this option, resulted in the Project team focusing on a route that maximized the length of the Project in Lake Champlain.

[1] Preliminary studies determined that the upgrade requirements to interconnect the Project to VELCO's 115kV Essex Substation were cost prohibitive.

Direct Current versus Alternating Current and Overhead versus Buried Alternatives

An AC cable alternative with a comparable capacity to the proposed HVDC cable would require a higher operating voltage, larger conductor size, and a minimum of three cables compared to the two cables required for the HVDC system. The proposed HVDC system also provides the additional benefit of precise controllability of active power transfer between the New England and New York energy markets. Therefore, the use of DC is favorable to effectively transmit electricity for the Project.

Underground installation of the HVDC and HVAC Cables is preferred, since overhead lines would require significantly wider ROW and thus substantially more impacts to wetlands, areas where threatened and endangered species may be located, cultural resources and other environmental resources. The wider ROW for an overhead line would also result in higher costs to obtain the greater amount of land rights needed, and would result in visual impacts to adjacent properties. For these reasons, an overhead alternative was ruled out.

Siting of Converter Station

The goal in siting the Vermont Converter Station was to locate the facility as close as possible to the existing VELCO New Haven Substation in order to minimize the length of the interconnecting HVAC line. Additionally, it was a priority for VGDL to identify a parcel that would enable the Project to minimize potential impacts to farmland, wetlands, and visual resources. Both of these goals were achieved.

The proposed site of the Vermont Converter Station is an undeveloped parcel, adjacent to the existing VELCO substation, with existing vegetation that will help screen the facility. The proximity of the proposed Converter Station parcel to the New Haven Substation is such that any reasonable alternative location would require additional transmission line length (either HVDC Cable, HVAC Cable, or both), which would likely result in greater impacts and higher costs.

Other locations in New Haven, Middlebury, and Ferrisburgh were identified as potential alternative sites for the Vermont Converter Station, however, for the reasons articulated in the preceding paragraph, siting the Vermont Converter Station on land adjacent to the VELCO New Haven Substation is the optimum location for the Project.

Alternative HVDC Land Cable Routes

Four alternative HVDC land cable routes were considered to connect the underwater HVDC cable with the proposed converter station in New Haven (See Figure 2). The criteria for selecting the best available route included minimizing the length of the route, which would consequently reduce cost and minimize impacts to wetlands, farmland, forests, cultural resources, and other environmental resources. The preferred route in Vermont, which is the HVDC route depicted in Figure 2, satisfies these requirements as it would be located almost entirely in roadways and thus would minimize impacts to the referenced resources. VGLD determined that the remaining Vermont route alternatives were inferior for a variety of reasons related to construction feasibility, minimization of impacts to residential areas and environmental considerations. An overview of each alternative is provided below.

The length of each alternative route is provided in Table 1. Please see Figure 2 (attached) for the common point of measurement for each alternative.

Table 1. Length of Alternatives (in miles)			
Alternative Name	**Length In-Lake**	**Length On-Land**	**Total Length**
Preferred Route	17.7	13.2	30.9
Alternative A	29.5	13.7	43.2
Alternative B	17.8	12.9	30.7
Alternative C	26.5	16.3	42.8
Alternative D	5.6	28.0	33.6

Alternative Route A

Alternative Route A makes landfall at Potash Bay in West Addison. From Potash Bay, Alternative Route A crosses Lake Street and runs east on Goodrich Corner Road to the intersection with Jersey Street. Alternative Route A then turns south on Jersey Street to the intersection with Rockydale Road (Route 17). From this point, Alternative Route A runs along Route 17 through Addison until it reaches New Haven junction at the intersection with Route 7. Alternative Route A includes three significant river crossings: two branches of Dead Creek and a single crossing of Otter Creek.

Alternative Route A was evaluated because it follows one of two major state highways (Route 17) in the area for the majority of the route. State highways were targeted for routing as they typically have wider rights-of-way and available work space for construction. Additionally, the density of private properties along state highways are generally less than smaller county and town-owned roads, which helps minimize the amount of disturbance to residential properties.

Alternative Route A was ruled out as there are a number of constraints along Route 17 that limit the viability of this route. Route 17 includes areas of ledge that make construction of the buried cable system challenging. Existing distribution poles on both sides and less unobstructed land along the roadway also make siting and installation more difficult. Furthermore, Alternative Route A crosses highly sensitive natural communities associated with Dead Creek and Otter Creek. Given these construction and environmental considerations, Alternative A was ruled out.

Alternative Route B

Alternative Route B makes landfall at Town Farm Bay in Charlotte. From the landfall at Town Farm Bay, Alternative Route B runs south and east along Bay View Road and Long Point Road. At the intersection of Long Point Road and Greenbush Road, Alternative Route B runs south on Greenbush Road until its intersection with Route 7. From this point, Alternative Route B follows Route 7 south to the intersection

with Tuppers Crossing, where it joins up with the Preferred Route. This route includes two significant stream crossings: Lewis Creek in Ferrisburgh and Little Otter Creek just south of Ferrisburgh center.

Similar to Alternative Route A, this alternative was evaluated because it primarily utilizes state highways, which offer certain advantages. However, the crossing of Little Otter Creek involves routing the HVDC across a deep ravine, which presents significant construction challenges and was therefore ruled out.

Alternative Route C

Alternative Route C makes landfall at Arnold Bay in Panton. From the landfall, Alternative Route C runs east along Adams Ferry Road to the intersection with Jersey Street. Alternative Route C then crosses Jersey Street and runs east on Panton Road to the intersection with Slang Road. From Slang Road, the route runs south to the intersection with W Road, where it then turns east until the intersection with Route 22A. Alternative Route C runs north on Route 22A for a short distance to the intersection with E Road. The route then runs east on E Road, which becomes Otter Creek Road to the intersection with Route 17. From Route 17, Alternative Route C is coincident with Alternative Route A. This route includes several waterbody crossings, the most significant of which is a large crossing of Holcomb Slang Creek.

Alternative Route C was evaluated as a similar but more direct routing version of Alternative A that utilizes a state highway (Route 17) for a large portion of the route. In addition, much of the secondary roadways are unpaved along this route, which provides the opportunity to lay the cables directly in the roadway. However, Alternative C was ruled out for the same challenges associated with Route 17 that were described for Alternative A.

Alternative Route D

Alternative Route D makes landfall at Shelburne Bay, which is located much further north than the first three alternatives. From the landfall, Alternative Route D runs east through a utility ROW until it reaches Spear Street. The route runs south on Spear Street to the intersection of Barstow Road. Alternative Route D runs east on Barstow Road, which becomes Cheese Factory Road until it reaches Hinesburg Road (Route 116). From this point, the route follows Route 116 south to the town of Hinesburg. In Hinesburg, Alternative Route D turns west on Charlotte Road to the intersection of Baldwin Road. The route follows Baldwin Road south, Rotax Road west, Pond Road south and Monkton Road south to Barnumtown. In Barnumtown, Alternate Route D turns south on Old Stage Road, which becomes North Street and follows North Street into New Haven. Once in New Haven, Alternate Route D turns west until it reaches the site of the proposed converter station.

Alternative Route D utilizes a combination of local and state roadways and would require numerous stream and wetland crossings. It was considered as an alternative that would minimize the length of the underwater cable route. However the land cable route length would be significantly longer than the other alternatives considered, and the increased disturbance to residential areas and the potential for greater temporary impacts to wetlands and waterbodies associated with the more extensive land cable route led to this alternative being ruled out.

Alternative HVDC Underwater Cable Routes

The Preferred Route for the HVDC underwater cable was developed with consideration for avoiding sensitive underwater environmental and cultural resources, while at the same time considering constructability issues (e.g., steep slopes and or surface bedrock). During in-water surveys, a number of

isolated route alternatives were evaluated and dismissed because conditions were unsuitable for installation.

Conclusion

The proposed location of the Project minimizes impacts on the environment, achieves the purpose and need of the Project, and minimizes cost. The VELCO New Haven, Vermont Substation and NYPA Plattsburgh, New York Substation are the closest points between Vermont and New York high voltage systems and thus allow for the transmission of renewable energy to the ISO-NE electricity market, while doing so at the lowest possible cost to ratepayers. The Energy Conservation Alternative does not address the unique purpose and need of the Vermont Green Line Project. A careful approach has been taken to evaluate alternative routes between the New Haven Substation and the Vermont-New York border in Lake Champlain, and the decision to locate the HVDC Land Cable Route within existing road ROW will minimize impacts to wetlands, farmland, visual resources, land use, and other resources.

Figure 1

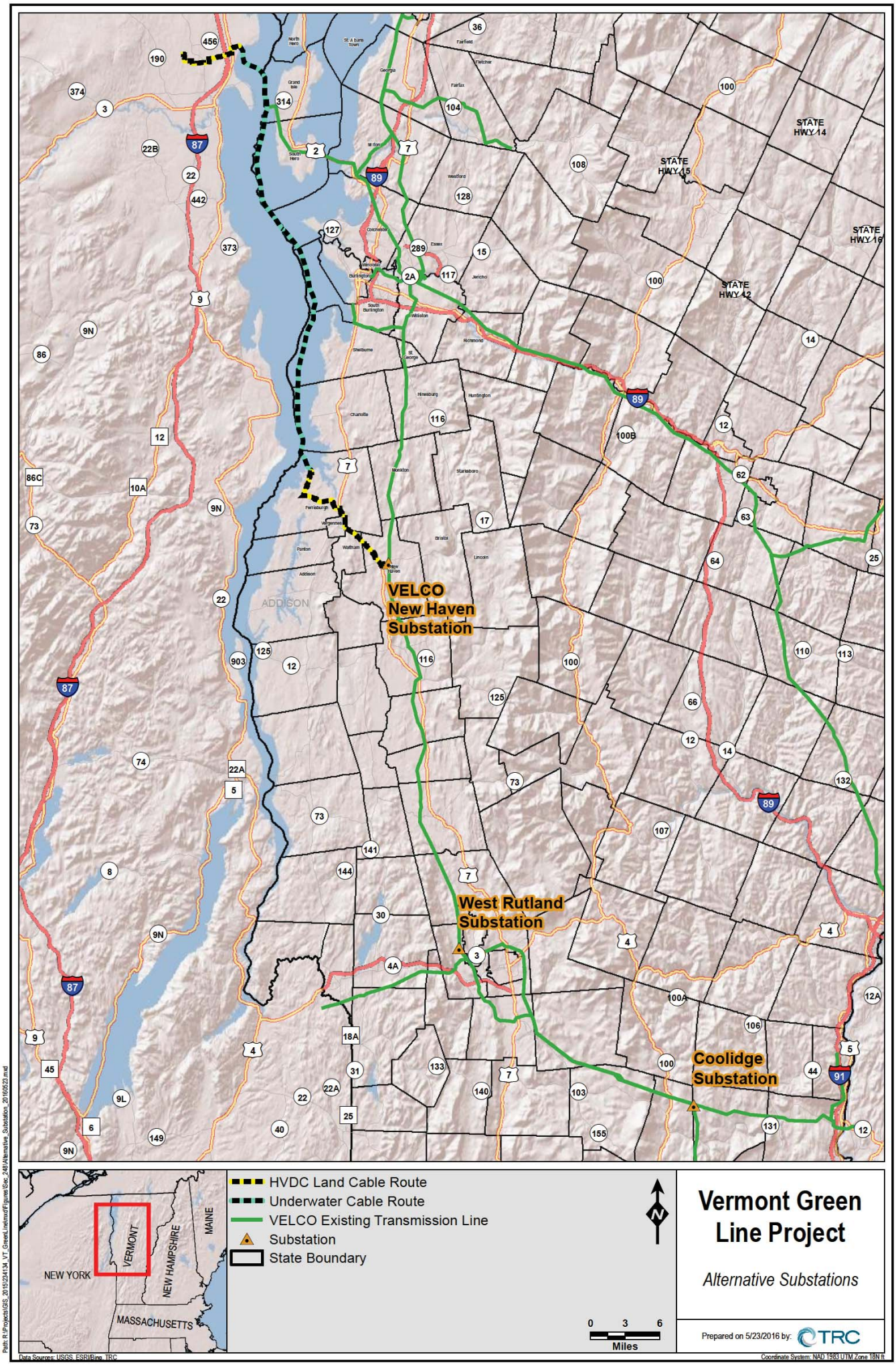
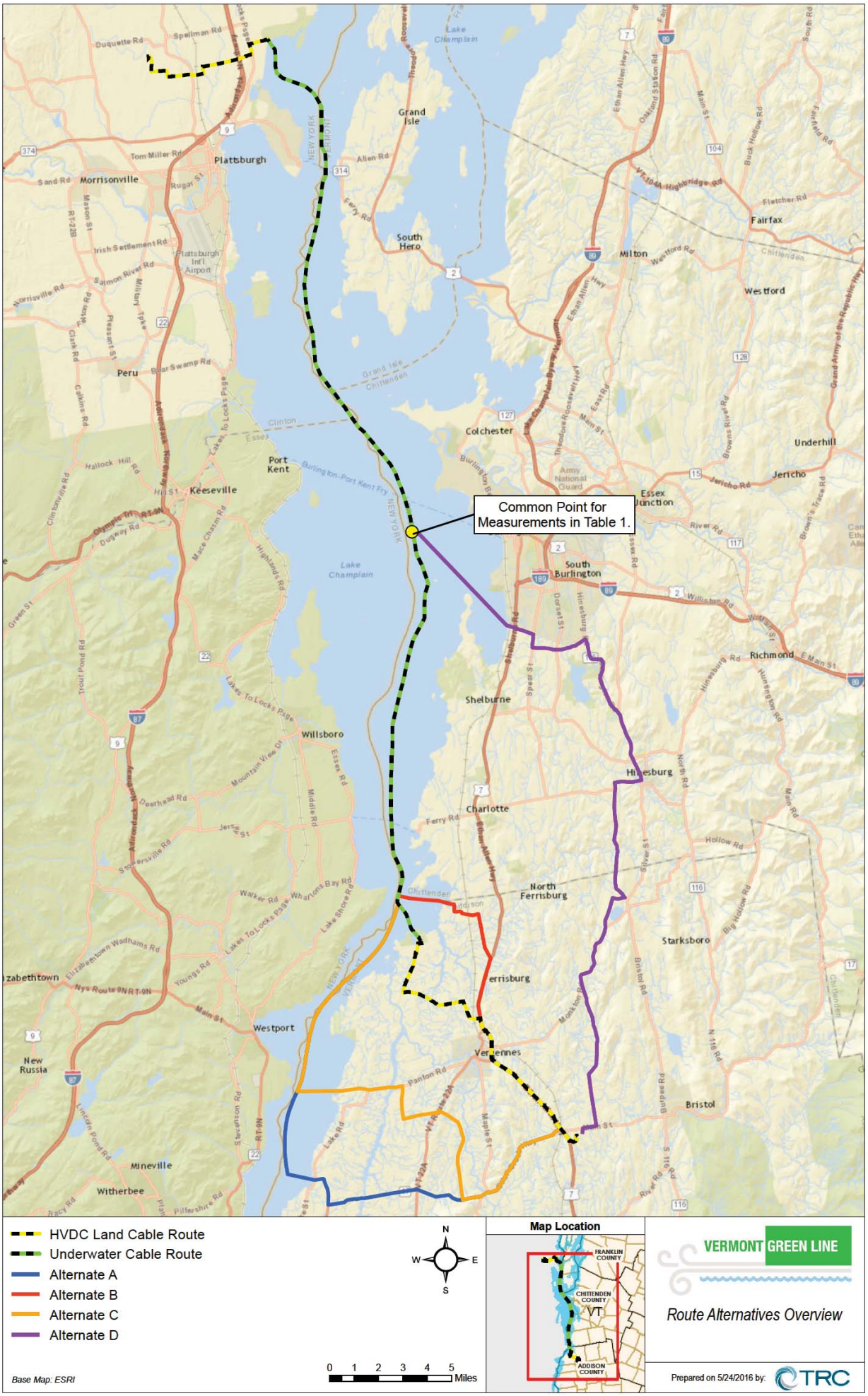

VELCO
New Haven
Substation
West Rutland
Substation
Coolidge
Substation
STATE HWY 14
STATE HWY 15
STATE HWY 16
STATE HWY 12
ADDISON
NEW YORK
VERMONT
NEW HAMPSHIRE
MAINE
MASSACHUSETTS
HVDC Land Cable Route
Underwater Cable Route
VELCO Existing Transmission Line
Substation
State Boundary
0 3 6
Miles
Vermont Green Line Project
Alternative Substations
Prepared on 5/23/2016 by:
TRC
Path: R:\Projects\GIS_2015\234134_VT_GreenLine\mxd\Figures\Sec_2481\Alternative_Substation_20160523.mxd
Data Sources: USGS, ESRI\Bing, TRC
Coordinate System: NAD 1983 UTM Zone 18N ft

Figure 2


Common Point for Measurements in Table 1.
Plattsburgh
Morrisonville
Grand Isle
South Hero
Milton
Fairfax
Westford
Colchester
Underhill
Jericho
Essex Junction
South Burlington
Richmond
Shelburne
Hinesburg
Charlotte
North Ferrisburg
Starksboro
Bristol
Vergennes
Ferrisburg
Westport
Willsboro
Port Kent
Keeseville
Peru
Mineville
Witherbee
New Russia
Lake Champlain
HVDC Land Cable Route
Underwater Cable Route
Alternate A
Alternate B
Alternate C
Alternate D
N
W
E
S
0 1 2 3 4 5 Miles
Base Map: ESRI
Map Location
FRANKLIN COUNTY
CHITTENDEN COUNTY
VT
ADDISON COUNTY
VERMONT GREEN LINE
Route Alternatives Overview
Prepared on 5/24/2016 by:
TRC