

NEW ENGLAND CLEAN POWER LINK

Grand Isle, Rutland, and Windsor Counties, Vermont

Prepared for **Champlain VT, LLC d/b/a TDI New England**

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1.0 Introduction and Project Description

On behalf of Champlain VT, LLC d/b/a TDI New England ("TDI-NE") VHB, with support from TRC Environmental Corp. ("TRC"), has prepared this document to outline the proposed protocols, goals, and objectives for vegetation management during construction and long-term operation of the overland component of the New England Clean Power Link ("Project"). This document outlines an overall Vegetation Management Plan ("VMP"), a Non-Native Invasive Species ("NNIS") Monitoring and Control Plan, and a vegetation management protocol with regard to natural resource areas of special concern such as areas around known occurrences of rare species. Additional resource protection measures and Best Management Practices ("BMP"s) for construction- phase vegetation management activities will be outlined in the Erosion Prevention and Sediment Control Plan ("EPSC Plan"), which will be prepared as part of the application for a Vermont Construction Stormwater Discharge Permit.

The Project is a high voltage direct current ("HVDC") electric transmission line that will provide electricity generated by renewable energy sources in Canada to the New England electric grid. The line will run from the Canadian border at Alburgh, Vermont to Ludlow, Vermont along underwater and underground routes.

The transmission line will be comprised of two approximately 5 inch diameter cables – one positively charged and the other negatively charged – and will be of solid-state manufacture containing no fluids or gases. The nominal operating voltage of the line will be approximately 300 to 320 kilovolts ("kV"), and the system will be capable of delivering 1,000 megawatts ("MW") of electricity.

The overland portion of the transmission line, approximately 56 miles in length, generally will be buried approximately four feet underground within existing public (state and town) road rights-of-way (ROWs).¹ The cables will be installed within a railroad ROW for approximately 3.5 miles in the town of Shrewsbury and Wallingford. Very short sections of the route at the Lake Champlain entry and



¹ 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.



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.

In Ludlow, the HVDC line will terminate at a converter station that will convert the electrical power from direct current ("DC") to alternating current ("AC"). An underground AC transmission line will then run to the existing 345 kV Coolidge Substation in Cavendish, Vermont located approximately 0.3 mile to the south, which is owned and operated by the Vermont Electric Power Company ("VELCO").

Along the overland route, the transmission cables will be installed underground by utilizing a combination of open trench excavation, horizontal directional drilling ("HDD"), and jack-and-bore construction. Along town roads (Alburgh, Benson and Ludlow), the cables will be installed in the existing roadways. No tree removal is expected on these town roads, although limited trimming of overhead branches may occur. Along roads managed by the Vermont Agency of Transportation ("VTrans") and railroads owned by VTrans, but managed by Vermont Railway System, the cables will be installed within regularly managed areas known as "Clear Zones" to the extent possible.

The general sequence for installing the underground transmission cables along the overland ROWs will be as follows: (i) survey work and flagging (including resource area flagging), initial clearing/mowing operations (if necessary) and installation of erosion prevention and sediment control ("EPSC") measures; (ii) trench excavation and soil stockpiling; (iii) cable installation; (iv) backfilling; and (v) final stabilization/restoration and revegetation). Once construction is complete, 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.

The construction and long-term operation of the Project is regulated or reviewed by authorities pursuant to a number of State and Federal regulatory programs that regulate impacts to natural resources, including:

- Presidential Permit and NEPA (Executive Order (EO) 10485 of 1953)
- Federal Clean Water Act Section 10 and Section 404 Permit
- Vermont Section 401 Water Quality Certification
- Vermont Certificate of Public Good (Section 248 and Section 231)
- Vermont Stream Alteration Permit



- Vermont Wetland Permit
- Vermont Construction Stormwater Discharge Permit
- Vermont Operational Stormwater Permit
- Vermont Lake Encroachment Permit
- VTrans 1111 Permit
- Vermont Endangered & Threatened Species Takings Permit (potential)

2.0 General Management and Techniques

Both a Permanent Project Corridor and a temporary construction area will be developed for the overland route. The Permanent Project Corridor, typically a 12 foot wide area centered over the buried cables², will extend the full overland route. The temporary construction area will be positioned adjacent to the Permanent Project Corridor in some areas to provide additional workspace during construction activities. The approximate width of the temporary construction area will vary depending on topography, environmental and land use constraints, and constructability considerations. Overall, temporary clearing widths will generally not exceed 50 feet (combined Permanent Project Corridor and temporary construction area), except in some limited instances for HDD setup areas. Areas crossed by HDD or Jack and Bore typically will not require clearing for a temporary construction area nor a cleared Permanent Project Corridor, although vegetation removal may be required at HDD setup and pull-back locations on either end of the drill and in areas where the HDD is less than 15 feet deep. Finally, vegetation clearing and management at the converter site is also discussed below.

Vegetation management of construction areas will cease following final stabilization and site restoration and revegetation. Vegetation management will be ongoing along the Permanent Project Corridor.

Vegetation management activities during the operational phase of the Project will be customized in areas within the road and railroad ROW Clear Zones and in areas with special consideration resources.



² The Permanent Project Corridor will be centered on the cable trench or, in limited restricted areas, extend only so far as the edge of the existing road/rail ROWs.



General Construction Activity

Many of the construction methods (i.e., "typical" Construction Method Details) proposed for the overland route (see Exhibit TDI-AW-3) do not require tree clearing or trimming since these methods will be followed where the Project is located along roadway and railway ROWs. In general, construction methods 3A, 3B, 3C, 4A, 4B, 4C, 4D, 5A, 5B, 5C, and 5D will require clearing/trimming.³ These methods are proposed to be applied for approximately 33 miles of the total 57 mile overland route. The width of the temporary construction area will be approximately 20 feet to 50 feet depending on existing constraints and the width of the existing VTrans and railroad ROWs.

Based on current route design, it is conservatively assumed that approximately 34 acres will be cleared for the temporary construction areas and 12 acres will be cleared for the Permanent Project Corridor. Additionally, approximately 10 acres will be cleared for the new converter station in Ludlow.

Pre-construction Clearing/Trimming

Pre-construction vegetation clearing will be carried out using a combination of methods, such as mechanical clearing machines (non-selective), hand-cutting, mowing, and mechanical whole-tree felling (selective). Vegetation will be cut at ground level. The existing root systems will generally remain intact in all areas other than the immediate 4-foot-wide trench area, except where grubbing or grading is required to support construction activities within the temporary construction areas.

Brush and tree limbs will be chipped and spread in approved upland locations or transported away from the construction site to an approved disposal site. Wood chips which are spread will be at depths no more than approximately three to five inches thick. Timber will be removed from the construction site for salvage or to approved locations depicted on EPSC Plans.

Temporary Construction Areas

Prior to construction, the temporary construction areas will be cleared where applicable according to the pre-construction ground-clearing specifications (identified above) and per approved plans. Where HDD is employed and installation depths are generally greater than approximately 15 feet, no vegetation clearing is expected to be necessary and is subject to cable manufacturer's confirmation. Post-construction, the temporary construction areas will be allowed to regenerate to pre-existing



³ Refer to Construction Method Details – Champlain-Ludlow HVDC, Sheets CM-1 through CM-4.



conditions and will not be maintained during the operation of the Project. Applicable restoration and revegetation measures for the temporary ROW are specified in the Project EPSC Plan.

Temporary Workspaces

Temporary staging areas to support construction activities will be developed in various locations along the overland route. These staging areas will be located near roads and in areas that require minimal vegetation alteration (flat fields, for example) and avoid sensitive environmental resources to the extent possible. If additional workspace is needed away from roadways, previously cleared but undeveloped areas will be utilized where feasible to minimize impacts. Four temporary staging areas have been identified in Alburgh, Ludlow and Benson and additional staging areas will be identified prior to construction. Post-construction, the temporary workspaces will be allowed to regenerate to pre-existing conditions and will not be maintained during the operation of the Project. Restoration and revegetation measures for the temporary workspaces are specified in the Project EPSC Plan.

Permanent Project Corridor

Prior to construction, the Permanent Project Corridor will be cleared where necessary according to the pre-construction ground-clearing specifications (identified above). Where HDD is employed, no soil disturbance or vegetation clearing will occur except where the HDD is less than 15 feet deep (generally extending approximately 60 feet from the edge of HDD setup areas in the direction of the HDD installation). Post- construction, the Permanent Project Corridor will be permanently stabilized in accordance with the EPSC Plan.

As described below in Section 3.0, a large portion of the Permanent Project Corridor is proposed to be located within actively maintained road and railway ROWs (Clear Zones). Existing vegetation management practices established by those other entities will take precedence over TDI-NE vegetation management requirements described here unless such practices by others are discontinued or insufficient so as to prevent a hazard to the operation of the Project.

To the extent not addressed through these existing management practices, a 12-foot-wide Permanent Project Corridor (centered on the underground transmission cables) will be managed as needed during the life of the Project through a combination of mowing, brush-hogging, and selective clearing to limit vegetation to shallow-rooted growth since deep roots could potentially impact the cable operation. This will require vegetation management at a frequency that prevents the establishment of large trees



within the Permanent Project Corridor. Operational phase vegetation management of the Permanent Project Corridor may be completed with mechanized equipment (e.g., brush hog, mower), herbicide use, hand equipment, or a combination of methods. It is expected that the Permanent Project Corridor will be managed primarily through mechanical means. No herbicide use is proposed beyond that which may be deemed necessary for non-native invasive species (“NNIS”) management and in connection with the Ludlow Converter Station, as described in this document.

Where HDD is employed and installation depths are generally greater than 15 feet, vegetation will not be maintained during the operation phase since the cables are installed at a greater depth from the surface.

Ludlow Converter Station

The Ludlow Converter Station will be developed at the terminus of the cable route in Ludlow, VT and approximately 10 acres will be permanently cleared and grubbed at the site, including the associated workspaces and grading areas. The approximate 10 acre footprint includes a cleared area around the proposed converter station yard that will be kept free of large trees. However, small shrubs and trees will be planted and maintained as part of a post-construction landscaping plan. Throughout the operation phase of the Project, the crushed stone-surfaced converter station yard will be kept clear of vegetation. The yard will be built with an open-graded stone topping, which will eliminate nuisance weed and plant growth. Herbicide treatment may be periodically utilized to control vegetation growth if necessary within the stone-surfaced yard and would be applied according to state regulations.

3.0 Management within the Existing VTrans ROW and Railroad ROW

Efforts have been made to site the Project within areas of existing town road ROW, VTrans ROW and Vermont Rail System ROW that are already actively maintained to be free of deep-rooted vegetation, referred to in this plan as Clear Zones. For the operational phase of the Project, the Permanent Project Corridor needs to maintain these same cleared, open conditions. Because the operational phase vegetation management of the Permanent Project Corridor may duplicate the efforts of towns, VTrans, and the railroad operator, the post- construction vegetation management practices described in this VMP shall not apply to existing Clear Zones except when they may be required to support the safe



operation of the Project (e.g., in the event vegetation management completed by others does not sufficiently prevent deep-rooted vegetation from establishing in the Permanent Project Corridor or where additional management is needed to protect sensitive resources).

As such, TDI-NE expects that it will conduct vegetation management activities throughout the operational life of the Project only for areas of the Permanent Project Corridor which do not overlap with pre-existing Clear Zones.

4.0 Management for Special Consideration Resources

The following resources along the Project route have been identified as requiring special consideration during the construction and long-term operation of the Project. Measures to avoid and mitigate impacts to these resources are defined and described in the Section 248 petition materials, specifically the Report of Survey Results and Plan for Impact Avoidance and Minimization: Rare, Threatened, and Endangered Species, Necessary Wildlife Habitat, and Natural Communities, and associated environmental permits required for the Project. Where avoidance of rare plants was not possible, the Survey Results Report: Rare, Threatened, and Endangered Species, Necessary Wildlife Habitat, and Natural Communities include descriptions of best management practices (“BMPs”) and site specific protocols where necessary for safeguarding rare plant habitats during construction. These sensitive areas and the vegetation management specifications for each will also be included on the EPSC Plan. Standard protocol includes limiting clearing methods to hand cutting, identifying resource buffer areas in the field and on EPSC Plans, and demarcation of buffer areas in the field prior to construction.

Rare, Threatened, and Endangered Plant Species and State Significant Natural Communities

Regular consultation with Vermont Agency of Natural Resources (“ANR”) Fish and Wildlife Department (“VT FWD”) and Project representatives with regard to rare, threatened, and endangered (“RTE”) species and significant natural communities that may be impacted by the Project has occurred throughout Project planning. In April of 2014, the Rare, Threatened, and Endangered Species, Necessary Wildlife Habitat, and Natural Community Survey Program (“Survey Program”) for the Project was submitted to VT FWD for review and approval. According to the methods and protocols defined in



the Survey Program, the RTE, significant natural communities, and necessary wildlife habitat surveys were completed between May and September of 2014.

No state-endangered or state-threatened species that were identified during field surveys will be impacted by the construction or long-term operation of the Project based on the current location and design. No federally-endangered or federally-threatened species were encountered during the surveys.

RTE Animal Habitat

Potential roosting trees (summer habitat) for the state and federally endangered Indiana bat (*Myotis sodalis*) were identified during RTE surveys and will be avoided by construction and operation of the Project. A total of 116 potential summer roosting trees were identified during the survey. Each of these trees will be demarcated in the field using brightly colored survey flagging prior to Project construction. Per recommendation of VT FWD (Scott Darling), additional surveys for potential roosting habitat for the recent April 2, 2015 federal threatened listing of the northern long-eared bat (*Myotis septentrionalis*), which is also state endangered, were not necessary for this Project, as the specific roosting habitat preferences of this species are poorly understood and can potentially include a wide variety of site and roost tree characteristics.

RTE Plants

The overland route is expected to traverse areas containing state rare plant species. These areas will be avoided to the extent possible. Where avoidance of rare plants is not feasible, a plan outlining the mitigation of impacts to each species and population has been developed in consultation with ANR pertaining primarily to construction and post-construction monitoring. These protocols are included in Section 5.1 of the Report of Survey Results and Plan for Impact Avoidance and Minimization: Rare, Threatened, and Endangered Species, Necessary Wildlife Habitat, and Natural Communities (VHB, 2015) and are summarized briefly below.

Prior to any site preparation or other preconstruction activities, a qualified botanist will re-delineate and demarcate known rare plant populations within or adjacent to the final Project alignment and all construction work areas.



During the construction phase, demarcation of the RTE plant population boundaries will be completed prior to construction activities, but the locations of RTE populations will not be permanently identified with any on site monument. The in-field demarcation will be used for construction phase vegetation management impact avoidance, and operational phase vegetation management will rely upon plans (i.e., maps) depicting the location of RTE populations, any previous survey GPS data, and the Permanent Project Corridor to avoid unnecessary impacts.

Where construction activity occurs within immediate vicinity of RTE plant populations, seeding with conservation mix will not occur and instead the construction area will be lightly mulched with certified weed-free hay.

If Project design changes would result in impacts to any state protected species, then the Project would be required to get a Vermont Endangered & Threatened Species Takings Permit, and additional mitigation measures may be necessary. Possible additional mitigation measures are outlined in Section 5.1 of the Report of Survey Results and Plan for Impact Avoidance and Minimization: Rare, Threatened, and Endangered Species, Necessary Wildlife Habitat, and Natural Communities (VHB, 2015).

During the operational phase management of the Permanent Project Corridor, six state-rare herbaceous plant species may be impacted at 20 locations identified within areas of proposed Project construction activities. Most RTE plant populations identified during inventory surveys are either within the existing Clear Zones or within areas that will be avoided by the Project, and so many of the known RTE plant occurrences will not require ongoing vegetation management by TDI-NE. Should Project design changes occur that would result in the addition of impacts to identified RTE locations, activities in these areas shall be conducted to avoid individual RTE plants to the extent feasible, such as by limiting management activities (e.g., mowing, brush hogging, or selective clearing) to the plant dormancy period or other strategies identified through consultation with VT FWD. All 20 known populations of rare plants will be monitored annually for 5 consecutive years following Project construction. If any of these populations is observed to decline by 20 percent or greater due to Project related activities (those not resulting from ROW or other maintenance conducted by other entities), then remedial actions will be taken to address the decline. The specific remedial actions would



be determined in consultation with VT FWD. Annual monitoring for the presence and extent of any NNIS plant populations within the vicinity of RTE plant populations will occur for a period of three years following construction, details of which are described in Section 5 of this report. As noted in Section 2, herbicides will not be used as a management strategy except for potential use for NNIS control and at the Ludlow Converter site, where RTE plants are absent. No RTE plant impacts from herbicide application will occur from TDI-NE vegetation management activities. Also, soil disturbance will be minimized during all operational phase vegetation management through the use of low ground-pressure equipment or by conducting management during dry or frozen conditions.

TDI-NE will re-delineate and update, as necessary, the 20 RTE species populations within the Permanent Project Corridor that are not superseded by other ongoing management regimes and are proposed to be impacted by the Project. The delineation cycle will be at least every eight years and will occur throughout the entire life of the Project. Results from each delineation will be submitted to VT FWD by December 31 of each survey year. In addition to monitoring every eight years, the impacted RTE plant populations will be monitored each year for the first five years following construction. Annual reports of the post-construction monitoring will be submitted to ANR by December 31 of each of the five years. Details of the monitoring and reporting requirements for RTE plants is included in section 5.1 of the Report of Survey Results and Plan for Impact Avoidance and Minimization: Rare, Threatened, and Endangered Species, Necessary Wildlife Habitat, and Natural Communities (VHB, 2015).

Operational phase vegetation management practices discussed here will not be applicable within the actively managed Clear Zones that are maintained by others (e.g., VTTrans), unless TDI-NE is required to complete vegetation management in these areas as discussed in Section 3.0. Known rare plant populations within the Clear Zones will be observed during the course of regular monitoring activities (once annually for the first five years following construction and then once every eight years for the rest of the life of the Project), with qualitative observations recorded and submitted in the regular report to VT FWD. Impacts to known rare plants identified during field surveys within Clear Zones could occur as the result of other landowner or entity activities, such as disturbance from mowing or herbicide use; these activities would not be accountable to TDI-NE, however as an act of good faith the sites will be observed on a regular basis



Natural Communities

Limited tree removal along the edges of larger forested blocks along the Route 4 corridor will impact eight potentially significant uncommon (rank S3) and widespread (rank S4) forested natural communities. Although potentially significant, the degree of impact will be very small in relative scale and will occur along an existing disturbed edge along the road; none of potentially significant communities will be fragmented or measurably affected by the Project. Throughout construction and operation of the Project, TDI-NE will minimize cutting to the greatest extent practicable, and the communities will be clearly marked in the field prior to any clearing or construction and depicted in the EPSC Plans. The Permanent Project Corridor will avoid these communities in most instances, but where it overlaps these, the area will be managed for shallow-rooted vegetation through mowing, brush hogging, or selective clearing, as described in Section 2.0. Approximately 0.79 acres of potential and likely significant natural communities will be traversed by the Permanent Project Corridor and subject to operation phase vegetation management. These areas are along Route 4 adjacent to the Clear Zone, and ongoing vegetation management will not result in undue adverse effects. Approximately 4.73 acres of potential and likely significant natural communities will be subject to temporary tree removal within temporary construction areas. Post-construction restoration of temporary construction areas in these communities will be completed in accordance with the EPSC Plan and will allow for regeneration of the forested communities.⁴

Necessary Wildlife Habitat

An assessment of biologically critical black bear habitat along the Project determined that impacts would be non-existent or very limited due to existing habitat fragmentation, traffic, and human activities along the Project route. Five areas along the overland route were identified as having suitable habitat characteristics for Deer Wintering Areas (“DWA”) that might attract white-tailed deer. However, there were no observations of these areas being used by deer as overwintering habitat. Approximately 0.3 acres of potential DWA will be cleared for the Permanent Project Corridor that will be subject to operational phase vegetation management, and approximately 0.3 acres of potential DWA will be cleared temporarily in the temporary construction area. This will be located within a single potential DWA stand adjacent to and along Route 103 near milepost 140.8. Potential DWAs identified occur in



⁴ Areas will receive additional protection through monitoring under the NNIS plan (below).



fragmented, mixed land use areas where existing human disturbances such as vehicular traffic and residential activities are commonplace, so noise and temporary vibrations from construction and ongoing vegetation management in the vicinity are not expected to create additional affects deer during winter months, should construction work or operation phase vegetation management be required during this time period. Detailed descriptions of the bear habitat and DWA assessment and avoidance and minimization measures are included in the Report of Survey Results and Plan for Impact Avoidance and Minimization: Rare, Threatened, and Endangered Species, Necessary Wildlife Habitat, and Natural Communities (VHB, 2015).

Wetlands and Class II Wetland Buffers

Clearing in wetlands and their buffers along the overland route has been avoided to the extent possible. In those areas which avoidance of all clearing impacts is not feasible, BMPs (as defined in the EPSC Plan) will be employed during construction to protect wetland resources. Unavoidable wetland clearing will be completed either during dry conditions, when the ground is frozen, or with the use of construction mats to minimize the disturbance to wetland biota. Wetland or wetland buffer areas that are cleared temporarily for construction (i.e., within the temporary construction area) will be restored in accordance with the EPSC Plan. Additionally, TDI-NE will conduct all wetland and buffer impacts under collateral environmental permit authorizations from state (Vermont Department of Environmental Conservation, or "DEC") and federal (U. S. Army Corps of Engineers, or "USACE") agencies prior to construction. Vermont Wetland Program and Section 404 permits will include specific details applicable to each regarding the area, location, and specifications of permitted activities.

Wetland and buffer zone areas that require ongoing maintenance along the Permanent Project Corridor will be managed for shallow-rooted vegetation as described in Section 2.0. If conducted during dry or frozen conditions, normal mechanical means may be utilized (e.g., brush hog). If vegetation management needs to occur outside of dry or frozen ground conditions, hand cutting methods shall be used (i.e., no mechanized entry).

These operational phase vegetation management practices will not be applicable within the actively managed Clear Zones that are maintained by others (e.g., VTrans), unless TDI-NE is required to complete vegetation management in these areas as discussed in Section 3.0.



Streams and Riparian Buffers

The overland cable route avoids stream crossings and associated work within riparian buffers and floodplains to the extent feasible. Many of the streams within or adjacent to the Project were observed to have historically been altered, including numerous culverts that accommodate construction and maintenance of roadways and the railroad. The EPSC Plan will outline standard BMPs for working in and near streams and designed riparian buffers, and these will be implemented for all stream crossings to ensure minimal impacts to banks and water quality. Additionally, collateral environmental permits including a Vermont Floodplain and River Corridor Permit and a Stream Alteration Permit will be acquired prior to construction.

In riparian buffers requiring open trench excavation, vegetation debris shall be cut sufficiently or removed so as not to interfere with animal crossings. Any cut stumps near the stream shall remain in the ground for soil stabilization unless they are located directly over the trench or will interfere with the integrity of the transmission line. All temporary construction areas will be restored and revegetated in accordance with the EPSC Plan. For operational phase vegetation management, only those streams crossed with open trench excavation (and where HDD installation is less than approximately 15 feet deep, subject to manufacturer confirmation) will require a 12 foot Permanent Project Corridor maintained free of deep rooted vegetation as described above. Work in all other riparian buffer areas will only be temporary and limited to the construction phase of the Project.

Riparian buffers that require ongoing maintenance along the Permanent Project Corridor will be managed for shallow-rooted vegetation as described in Section 2.0.

These operational phase vegetation management practices will not be applicable within the actively managed Clear Zones that are maintained by others (e.g., VTrans), unless TDI-NE is required to complete vegetation management in these areas as discussed in Section 3.0.

Shorelines

Potential impacts to shorelines would be limited to areas where the Project transitions between the Lake Champlain route and the overland routes in Alburgh and Benson, VT, where the route crosses Lake Bomoseen, and where it crosses or parallels seven named rivers as follows: Hubbardton River, Castleton River, Clarendon River, Otter Creek, Cold River, Mill River, and Black River.



Impacts at these locations will be entirely avoided by utilizing HDD to install the cables. Temporary work spaces required to support the HDD equipment in the vicinity of (but not in) shorelines will be sited to employ previously-cleared and impacted sites, so no new tree clearing is anticipated on shorelines during construction or operation of the Project, except in instances where HDD installation is less than 15 feet deep. In these limited areas, the Permanent Project Corridor will be managed for shallow-rooted vegetation as described in Section 2.0.

These operation phase vegetation management practices will not be applicable within the actively managed Clear Zones that are maintained by others (e.g., VTrans), unless TDI-NE is required to complete vegetation management in these areas as discussed in Section 3.0.

Conserved Lands/Organic Farms/Other Special Use Agricultural Lands

If applicable, TDI-NE will adhere to any applicable pre-existing management restrictions regarding operational management for conserved lands (e.g., areas under conservation easement or other conservation restrictions) and special agricultural areas, including organic farm operations, so long as such restrictions do not interfere with the integrity of the cable. Prior to clearing and construction, TDI-NE will coordinate with applicable conservation organizations and landowners to verify the schedule, location, and type of activity to occur within conserved areas and special agricultural areas and will develop site-specific vegetation management protocols as necessary. At this time, TDI-NE is not aware of any such conserved lands or special agricultural areas as the cable will be constructed and operated within existing road and railroad ROWs and lands owned or leased by TDI-NE that are not conserved.

5.0 Non-Native Invasive Species Management, Monitoring, and Control Plan

For the purpose of this plan, NNIS are designated noxious weeds (Class A and B) in the Vermont Agency of Agriculture, Food and Markets Quarantine #3 – Noxious Weeds, Amended Rule (2012). Per input from the VT FWD Botanist, additional target NNIS species for monitoring and control include the European alder (*Alnus glutinosa*), wild chervil (*Anthriscus sylvestris*), and narrow leaved bitter cress (*Cardamine impatiens*). This NNIS Monitoring and Control Plan (“NNIS Plan”) was developed to minimize the transport of invasive seeds and fragments into or out of the Project area and increase the



opportunity for native vegetation to establish after soil disturbance associated with the Project. Due to the proximity of this project to roads, railroads, and perennial streams (dispersal vectors), the likelihood of preventing further invasive species dispersal is low. However, TDI-NE will implement targeted measures to minimize the spread of existing populations, and protect sensitive resources along the overland route, as described in the following sections.

NNIS Inventory

A field based inventory of NNIS populations was completed along the Project route in August and September 2014. The field survey efforts produced a baseline estimate of the locations and densities of NNIS. A summary of the NNIS identified during this survey is in the Non-Native Invasive Species Inventory Report dated August 30, 2014, by Arrowwood Environmental, and NECPL Project Survey Memorandum dated October 22, 2014, by Gilman & Briggs Environmental (for the Railroad route and Ludlow converter site). GPS data was obtained as described in the aforementioned documents.

Training

TDI-NE will ensure that all contractors and onsite personnel receive training regarding the conditions set forth in the NNIS Plan. In addition, they will be informed of the locations and extent of the known NNIS species populations and the general identification principles of known and target NNIS species.

Equipment

All construction equipment will be cleaned such that it is free of observable soil and vegetation prior to entering the Project area, in order to minimize the spread of invasive species by reducing the transportation and introduction of seeds and plant material. If the equipment utilized on the Project site is suspected to have encountered pre-existing NNIS populations within the Project area, the equipment will be cleaned such that it is free of excess soil and vegetation prior to leaving the Project area. Additionally, construction mats will be cleaned prior to relocating them from an area with pre-existing NNIS populations.

Stabilization

Topsoil and seed mix for temporary or permanent stabilization will be free of noxious weeds (per the 2006, amended 2008, Vermont Standards and Specifications for Erosion Prevention and Sediment Control).



Soil Transport

Onsite topsoil salvaged from an area where pre-existing NNIS populations have been documented shall be re-utilized in the same locations and will not be transported to other areas of the site to the extent practicable. Otherwise, the topsoil should be buried under a 24 inch or greater layer of weed-free soil or select backfill material to inhibit the potential NNIS seed and root stock from germination or reestablishment.

Post-construction Monitoring and Control

Efforts shall be made to minimize the spread of invasive plants as a result of construction activities into areas with documented natural resources of special consideration. Where these areas will have unavoidable soil disturbances, the likelihood of colonization and spread of invasive plants increases. TDI-NE shall conduct annual post-construction monitoring and control of new NNIS populations that colonize certain target areas for a period of no more than three years following construction of the Project. For the overland Project route, the following areas where earth disturbance takes place as a consequence of construction will be subject to post-construction NNIS control and monitoring and is subject to areas where TDI-NE will retain permanent land control:

- Class II Wetlands and Buffers
- Riparian Buffers of Perennial Streams
- Significant Natural Communities
- RTE Species Populations and 25 foot buffers
- Shorelines and 100 foot buffers
- Conserved Lands (as applicable per specific requirement)

NNIS monitoring and control in these areas shall target species and populations which germinate outside the existing documented populations. TDI-NE will not assume responsibility for post-construction monitoring, control or management of areas along the Project route that have pre-existing, documented invasive infestations or for areas that overlap with the VTrans or Vermont Rail System Clear Zone (it may be assumed that NNIS management will be precluded by routine mowing by VTrans and Vermont Rail System in these areas).



Monitoring and control shall take place annually during the growing season for a period of three years beginning the first full growing season following construction completion. Should annual monitoring determine that no new NNIS populations are present, or there is no risk posed to economic or resource value impacts from NNIS occurrences within the monitoring areas during the first two consecutive growing seasons of the three year period, further monitoring and control obligations will cease. As the NNIS monitoring and control areas are located in the vicinity of active road and railway ROWs, NNIS establishment that occurs in the years following a two year monitoring period that results in no observation of new NNIS cannot be reasonably attributed to the Project.

Monitoring and control activities will not continue beyond Year 3. Annual reports of NNIS inventory measures and the results of field investigations will be submitted to VT FWD as described in Section 6 below. The possibility of the termination of NNIS monitoring within the first three years and control requirements will be evaluated by VT FWD upon review of each annual report.

If feasible, NNIS control will be completed with manual control methods, to include hand pulling and uprooting with tools. NNIS will be disposed by burning, burial, exposure, or in a manner of good practice to avoid spreading of seeds, soil and plant material.⁵ If manual control methods are not feasible, are ineffective, or are proving to be ecologically detrimental, TDI-NE may consider utilizing herbicide within targeted areas and in accordance with state and federal regulation and landowner requirements. The chemical selected for treatment will be suitable for the surrounding environment and protection of any adjacent sensitive resources. As described above, herbicides will not be used within any adjacent or nearby proximity to known RTE plant populations.

Should it be determined that a particular area has been dominated by population(s) of NNIS that are beyond the extent or control of Project activities, this information will be reported in the annual report and no control activities will be undertaken. Input from the VT FWD Botanist has noted that effective management of NNIS plant populations is not limited to property boundaries. If an existing NNIS population is present on adjacent lands to the Project, control of those populations only within the lands controlled by TDI-NE would not result in comprehensive control or eradication of the NNIS population and recolonization would be likely. Therefore if, during annual monitoring activities, a



⁵ Species-specific methods of disposal for NNIS may be conducted in accordance with the University of New Hampshire Cooperative Extension "Methods for Disposing Non-native Invasive Species" (Ed. Karen Bennett, 2010)



NNIS population is observed to occur within and extend beyond lands controlled by TDI-NE and the spread appears to be due to Project activities, then TDI-NE will make an effort to contact the appropriate landowner or entity to discuss extending TDI-NE monitoring and control area onto the subject private lands. Useful information for determining the proper BMP for NNIS control is located at website: <http://www.vtinvasives.org/plants/prevention-and-management/forestry-best-management-practices>, which should be consulted prior to determining proper control BMPs.

6.0 Reporting

For management activities described in the Vegetative Management Plan, no reporting by TDI-NE shall be prepared. For the activities conducted as part of the NNIS Plan, TDI-NE will submit reports annually (by January 31st) to the ANR Fish and Wildlife Department, Natural Heritage Inventory program. Reports should include monitoring results and recommendations and a summary of NNIS controls that were applied. The reporting will be concise and contain a brief presentation of: 1) background, 2) monitoring methods, 3) results (to include both monitoring and control action summary), and 4) recommendations summary (to include both future monitoring and threats/controls). Supporting documentation to be prepared and included with the reporting will include a summary table of new NNIS occurrences, NNIS occurrence maps, and photograph documentation.

7.0 Administration

The implementation of this Vegetation Management Plan will be conducted by TDI-NE or its contractor. Any record keeping required as proof of special permit conditions by regulatory agencies will be the responsibility of TDI-NE or its contractor. Additionally, TDI-NE will be responsible for contractor and public safety training and for the notification of VTrans and adjacent landowners (where warranted) prior to management activities. ANR will be responsible for providing regulatory review of the annual NNIS monitoring reports and confirming the termination of a required monitoring period, as applicable.



8.0 Summary

This Vegetation Management Plan has been prepared in order to define vegetation management requirements, goals/objectives, and NNIS monitoring/control protocols to be implemented during the construction and long-term operation of the terrestrial portion of the Project, including:

- Required vegetation management in the Permanent Project Corridor and temporary construction workspaces
- The natural resources which intersect the Project corridor
- The programs which regulate impacts to such resources
- NNIS monitoring/controls and protocols

Additional information regarding the presence, extent, and relationship of existing NNIS populations to other sensitive natural resources associated with the Project is included in the Report of Survey Results and Plan for Impact Avoidance and Minimization: Rare, Threatened, and Endangered Species, Necessary Wildlife Habitat, and Natural Communities (VHB, 2015).

9.0 References

Champlain, VT, LLC d/b/a TDI New England. Report of Survey Results and Plan for Impact Avoidance and Minimization: Rare, Threatened, and Endangered Species, Necessary Wildlife Habitat, and Natural Communities - New England Clean Power Link. Prepared by VHB, revised July 27, 2015.

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