

**STATE OF VERMONT  
PUBLIC SERVICE BOARD**

Petition of Champlain VT, LLC d/b/a TDI New England )  
 for a Certificate of Public Good, pursuant to 30 V.S.A. §248, )  
 authorizing the installation and operation of a high voltage )  
 direct current (HVDC) underwater and underground electric )  
 transmission line with a capacity of 1,000 MW, a converter )  
 station, and other associated facilities, to be located in Lake )  
 Champlain and in the Counties of Grand Isle, Chittenden, )  
 Addison, Rutland, and Windsor, Vermont, and to be known )  
 as the New England Clean Power Link Project (“NECPL”) )

Docket No. \_\_\_\_\_

**PREFILED DIRECT TESTIMONY OF GALEN GUERRERO-MURPHY  
ON BEHALF OF CHAMPLAIN VT, LLC**

December 8, 2014

Summary: Mr. Guerrero-Murphy provides testimony and exhibits concerning 10 V.S.A. § 6086(a)(8) and (8)(A) -- Rare and Irreplaceable Natural Areas, Necessary Wildlife Habitat, and Rare, Threatened and Endangered Species.

<b>Exhibit Number</b>	<b>Name of Exhibit</b>
TDI-GGM-1	Resume
TDI-GGM-2	Survey Results Report: Rare, Threatened and Endangered Species, Necessary Wildlife Habitat, and Natural Communities (“SRR” Narrative)
TDI-GGM-3	Overland and Lake Evaluation Summary Tables (Attach. A to TDI-GGM-2) - Oversize, Vol. 5
TDI-GGM-4	RTE, Natural Community and Critical Wildlife Habitat Inventory Report (AE) (Attach. C to TDI-GGM-2)
TDI-GGM-5a	NECPL Project Survey Memorandum – Railroad and Ludlow Converter Site (G&BE) (Attach. D to TDI-GGM-2)
TDI-GGM-5b	NECPL Project Survey Memorandum – Temporary Off-ROW Work Areas (G&BE) (Attach. D to TDI-GGM-2)
TDI-GGM-6	Indiana Bat Habitat Assessment Report (AE) (Attach. E to TDI-GGM-2)
TDI-GGM-7	Non-Native Invasive Species Inventory Report (AE) (Attach. F to TDI-GGM-2)

1 **Q1. Please state your name, occupation, and business address.**

2 A1. Response: My name is Galen Guerrero-Murphy. I am a Senior Project  
3 Manager/Biologist with TRC Environmental Corporation ("TRC"), located at 650  
4 Suffolk Street, Suite 200, Lowell, Massachusetts 02482.

5  
6 **Q2. Please describe your education and employment background.**

7 A2. Response: I have a Bachelor of Science (BS) degree in Science and Technology in  
8 Society, with an emphasis in Biology and Organic Chemistry, Stanford University (2005),  
9 and a Master of Business Administration (MBA) degree, with an emphasis in  
10 Sustainability, from Marlboro College (2012). I have nine years of experience as an  
11 environmental consultant with TRC and one year of biological field survey experience  
12 prior to that. I have provided biological assessment and surveys, permitting, compliance  
13 oversight, and environmental project management on a diverse range of infrastructure,  
14 energy generation, transmission and utility projects throughout the United States. I have  
15 extensive experience managing and conducting environmental field survey programs for  
16 energy projects in Vermont, including wetland and stream delineations, natural  
17 community evaluations, habitat assessments, and rare, threatened and endangered species  
18 surveys, and I have managed the development and publication of numerous natural  
19 resource assessment reports to address environmental review criteria for energy projects  
20 in Vermont pursuant to 30 V.S.A. § 248.

21 My resume is attached as *Exhibit (Exh.) TDI-GGM-1*.

22

23

1   **Q3.   Do you hold any professional licenses or certifications?**

2   A3.   Response: Yes, I am a Certified Professional in Erosion and Sediment Control  
3        ("CPESC").

4  
5   **Q4.   Have you previously testified before the Vermont Public Service Board or in other**  
6   **judicial or administrative proceedings?**

7   A4.   Response: Yes. I provided written testimony before the Vermont Public Service Board  
8        on behalf of Vermont Electric Power Company for the Bennington Substation Project in  
9        Docket 7763, and I provided prefiled testimony on behalf of TransCanada Hydro  
10       Northeast Inc. for a new control center at TransCanada's Wilder Power Station in  
11       Docket 8093.

12  
13   **Q5.   What is the purpose of your testimony?**

14   A5.   Response: The purpose of my testimony is to introduce and briefly explain the findings  
15        and recommendations contained in the *NECPL Survey Results Report: Rare, Threatened and*  
16        *Endangered Species, Necessary Wildlife Habitat, and Natural Communities* ("Survey Results  
17        Report") and associated attachments (*Exhs. TDI-GGM-2 through TDI-GGM-7, and*  
18        *TDI-JAN-3*) and to address the impacts of the Project on Rare and Irreplaceable  
19        Natural Areas ("RINAs"), Necessary Wildlife Habitat and Endangered Species, pursuant  
20        to 30 V.S.A. § 248(b)(5) and 10 V.S.A. § 6086(a)(8) and (8)(A).

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23

1 **Q6. Have you relied on the work of any other experts concerning this Project?**

2 A6. Response: Yes. TRC has collaborated with VHB to complete overall natural resource  
3 evaluations for the Project, and Arrowwood Environmental, Gilman & Briggs  
4 Environmental, and HDR Engineering have performed field investigations related to  
5 rare, threatened and endangered (“RTE”) species, wildlife habitat and significant natural  
6 communities. The field investigations are summarized by TRC in the Survey Results  
7 Report included as *Exh. TDI-GGM-2* and summary tables included as *Exh. TDI-*  
8 *GGM-3*. Detailed survey reports and memorandums were prepared by the respective  
9 firms and are included as *Exhs. TDI-GGM-4 through TDI-GGM-7*.

10

11 **Q7. Have you provided project information to other experts in support of their section**  
12 **248 testimony and if so, what?**

13 A7. Response: Yes. The results of our natural resource investigations have been provided to  
14 Mr. Al Wironen, Professional Engineer (“PE”) of TRC Engineering, for his use in  
15 performing the Project’s engineering design. Additionally, I have provided a Stormwater  
16 Technical Memorandum for the Project that is referenced in the prefiled testimony of  
17 Mr. Jeffrey Nelson of VHB.

18

19 **10 V.S.A. § 6086(a)(8) – Rare and Irreplaceable Natural Areas**

20 **Q8. Have the impacts of the Project on potential rare and irreplaceable natural areas**  
21 **(“RINAs”) been evaluated? Please describe.**

22 A8. Response: Yes. To evaluate impacts of the Project on potential RINAs, Arrowwood  
23 Environmental and Gilman & Briggs Environmental conducted natural community

1 evaluations for the overland portion of the proposed Project (“Project study area”)  
2 during the 2014 growing season, including desktop and field investigations, as described  
3 in the Survey Results Report narrative, *Exh. TDI-GGM-2*, and associated attachments.  
4 This assessment was completed in accordance with the natural community assessment  
5 protocol (developed by TRC in collaboration with VHB, HDR, and Arrowwood  
6 Environmental) provided and discussed with the Vermont Fish and Wildlife Department  
7 (“VT FWD”) on April 24, 2014, and based on subsequent correspondences with the  
8 Fish and Wildlife Department. Specifically, Sections 3.3 and 5.3 of the Survey Results  
9 Report narrative, *Exh. TDI-GGM-2*, and Table A-3 in *Exh. TDI-GGM-3* summarize  
10 the results of the natural community investigations and impact assessments. Further  
11 details regarding the natural community investigations are provided in *Exhs. TDI-*  
12 *GGM-4 and TDI-GGM-5*.

13  
14 **Q9. Before further describing your project-specific investigations, what is a RINA?**

15 A9. Response: RINAs are not specifically defined by statute, but based on prior Act 250  
16 precedent, one generally evaluates whether the area in question is a “natural area,” and if  
17 so, whether the natural area is “rare and irreplaceable.” There are two basic guidelines for  
18 identifying natural areas; namely, whether an area contains an identifiable type of  
19 ecological community; and whether natural conditions predominate over human  
20 influences in the area. In evaluating whether a natural area is “rare and irreplaceable”,  
21 there are several examples of rare areas, which include: 1) natural community types which  
22 occur infrequently in Vermont (such as rich fens); 2) hosts rare plants; and 3) is a  
23 valuable educational and scientific resource. Significant natural communities can be

1 recommended for consideration or designation as RINA under Act 250 Criterion 8  
2 based on the natural community rarity and quality rankings. The significance of natural  
3 communities are evaluated based on the rarity of the natural community (based on  
4 number of known examples, total area occupied, and degree of threat) and quality (based  
5 on the community's size, current condition, and landscape context, which are specified  
6 for each natural community type). According to the Agency of Natural Resources  
7 *Guidelines for the Conservation and Protection of State-significant Natural Communities* (October  
8 2004), natural communities are considered "state-significant" (or "significant") in the  
9 following situations: rare (state rank S1 or S2) community types with quality rank of A, B,  
10 or C; uncommon (state rank S3) or widespread (state rank S4) natural community types  
11 with quality rank of A or B; and common (state rank S5) natural community types with  
12 quality rank of A. On a case-by-case basis in individual legal proceedings, significant  
13 natural communities (or assemblages of communities) may be considered RINA but  
14 RINA are not formally designated by the Agency of Natural Resources or VT FWD.

15  
16 **Q10. Let's turn to your specific evaluations in this case. Can you please describe the**  
17 **evaluation of natural communities which may be considered RINAs.**

18 A10. Response: The natural community evaluations included investigations of known  
19 occurrences of state-significant natural community "Element Occurrences" in the  
20 Project study area, which were identified in the Vermont Natural Heritage Inventory  
21 ("VT NHI") database. "Element Occurrence" is the term used in the NHI database to  
22 describe known or suspected occurrences of RTE and significant natural communities.  
23 Review and investigation of NHI-identified Element Occurrences is a first step in a

1 comprehensive natural resources assessment. The Element Occurrences in the Project  
2 study area that were identified in the NHI database are depicted in the Natural Resource  
3 Map series (see *Exh. TDI-JAN-3*) and summarized in Table A-3 in *Exh. TDI-GGM-3*.  
4 In addition to evaluating these identified Element Occurrences, physical surveys within  
5 the Project study area were conducted to identify any RTE species, and Necessary  
6 Wildlife Habitat or new potential state-significant natural communities.

7 None of the state-significant natural community Element Occurrences identified  
8 in the NHI database were actually observed in the Project study area during field surveys.  
9 However, nine potential state-significant natural communities that did not appear in the  
10 NHI database were identified in the Project study area during the natural community  
11 evaluations. This includes the following natural community types, state rarity and quality  
12 ranks (where available), and general locations:

- 13 • Dry Oak-Hickory Hophornbeam Forest, Rarity Rank S3, Quality Unranked,  
14 along Route 4 in Fair Haven and Castleton;
- 15 • Temperate Hemlock-Hardwood Forest, Rarity Rank S4, Quality Unranked,  
16 along Route 4 in Castleton;
- 17 • Temperate Hemlock Forest, Rarity Rank S4, Quality Unranked, along Route  
18 4 in Castleton;
- 19 • Mesic Maple-Ash-Hickory-Oak Forest, Rarity Rank S3, Quality Unranked,  
20 several occurrences along Route 4 in Castleton, Ira and West Rutland;
- 21 • Mesic Red Oak-Northern Hardwood Forest, Rarity Rank S4, Quality  
22 Unranked, along Route 4 in West Rutland; and

- 1 • Sugar Maple-Ostrich Fern Riverine Floodplain Forest, Rarity Rank S1,  
2 Quality Rank C, south of the Green Mountain Railroad Corp.(GMRC)  
3 railroad corridor in Shrewsbury

4 These natural communities are depicted on the NECPL Project Overland Component  
5 Natural Resource Map Series (see *Exh. TDI-JAN-3*).

6  
7 **Q11. Would any of the natural communities in the immediate vicinity of the Project be**  
8 **considered RINA?**

9 A11. Response: One occurrence of the S1-ranked Sugar Maple-Ostrich Fern Riverine  
10 Floodplain Forest natural community type was identified along the GMRC railroad  
11 corridor in Shrewsbury (see *Exh. TDI-GGM-5a*). This community type is considered  
12 very rare in Vermont and, therefore, is likely a significant natural community. Due to its  
13 rarity (“S1”) and quality (“C”), it may be considered a potential RINA. While the overall  
14 size and quality of this area have not been fully assessed as it lies primarily outside of the  
15 Project study area, it appears to be quite small based on visual examination and review of  
16 aerial mapping. A full assessment was not feasible nor warranted since the Project will  
17 avoid this natural community. This is the only natural community type identified in the  
18 Project study area that is rare or very rare (Rank S1 or S2) in Vermont.

19 Four occurrences of the S3-ranked Mesic Maple-Ash-Hickory-Oak Forest natural  
20 community type were identified along the edge of the cleared Route 4 corridor in  
21 Castleton, Ira and West Rutland that are likely significant natural communities. High  
22 quality examples of this community type are uncommon in Vermont but not rare. Given  
23 the condition, community type and size of these forests, they are likely significant. The



1 margins (i.e., the forested edge) of the communities are encountered in the Project study  
2 area adjacent to the existing cleared and maintained Route 4 corridor. A full assessment  
3 of these areas was not feasible nor warranted, as proposed project-related impacts are  
4 not unduly adverse as described in my subsequent testimony.

5 One occurrence of the S3-ranked Dry Oak-Hickory Hophornbeam Forest  
6 natural community type was identified along the edge of the cleared Route 4 corridor in  
7 Fair Haven and Castleton that may be considered a significant natural community. High  
8 quality examples of this community type are uncommon in Vermont but not rare. This  
9 may be a significant natural community, but its overall size and quality is undetermined  
10 as it lies primarily outside of the Project study area. A full assessment of this area was  
11 also not feasible nor warranted, as proposed project-related impacts are not unduly  
12 adverse as described in my subsequent testimony.

13 Additionally, three occurrences of widespread (Rank S4) natural community  
14 types were identified along Route 4 that may be considered significant natural  
15 communities. This includes a Temperate Hemlock-Hardwood Forest community in  
16 Castleton, a Temperate Hemlock Forest in Castleton, and a Mesic Red Oak-Northern  
17 Hardwood Forest in West Rutland. These communities are relatively common in the  
18 state, but excellent examples may be considered state-significant. These widespread  
19 natural community occurrences may represent significant natural communities. The  
20 overall size and quality of the communities were not assessed, as they are located  
21 primarily outside of the Project study area and a full assessment was not feasible nor  
22 warranted since proposed project-related impacts are not unduly adverse as described in  
23 my subsequent testimony.

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**Q12. What, if any, impacts will the Project have on potential RINAs?**

A12. Response: The Project avoids one of the potential significant natural communities identified above, and will result in limited temporary and permanent impacts to a small number of potential state-significant natural communities. As described further below, these limited impacts will not be unduly adverse. The extent of project-related temporary and permanent impacts to potential state-significant natural communities is presented in Section 5.3 of *Exh. TDI-GGM-2*.

As noted above, the proposed Project avoids the very rare (Rank S1) Sugar Maple-Ostrich Fern Riverine Floodplain Forest natural community in Shrewsbury. In this area, the proposed transmission cables and construction work areas are located on the other side (north) of the railroad tracks, whereas the natural community is located south of the railroad tracks adjacent to the Mill River. There will be no impacts to this community.

Along Route 4, all four occurrences of the likely significant Mesic Maple-Ash-Hickory-Oak Forest natural communities will incur limited temporary and permanent tree removal to accommodate the construction and operation of the Project. Limited tree removal will take place along the edge of the existing cleared and maintained Route 4 corridor within the VTrans right-of-way ("ROW"), thereby minimizing impacts to the forest interior and the overall communities. In total, approximately 0.25 acre of permanent tree removal will be required within these four natural community occurrences adjacent to Route 4, which represents a very small area relative to the total size of the natural communities. A conservative estimate based on partial natural

1 community mapping is that this represents less than 0.1 percent of these four natural  
2 community areas. Additionally, approximately 2.76 acres of temporary tree removal will  
3 be required within these four natural community occurrences adjacent to Route 4 to  
4 accommodate construction equipment access and work activities (which represents less  
5 than 1 percent of the total community areas). Areas of temporary tree removal and  
6 construction disturbance will be allowed to regenerate to pre-construction conditions  
7 following construction and restoration of the Project in accordance with the Project  
8 Erosion Prevention and Sediment Control (“EPSC”) Plan and post-construction  
9 monitoring and control of non-native invasive species will be completed in accordance  
10 with *Exh. TDI-JAN-12*. The proposed permanent and temporary project-related  
11 impacts adjacent to Route 4 will have a negligible effect and will not affect the quality of  
12 these natural community occurrences. As such, there will be no undue adverse effect on  
13 these natural communities.

14 Limited permanent and temporary tree removal will also be required in the  
15 potentially significant Dry Oak-Hickory-Hophornbeam Forest, Temperate Hemlock  
16 Forest, Temperate Hemlock-Hardwood Forest, and Mesic Red Oak-Northern  
17 Hardwood Forest occurrences along Route 4. Again, these communities are not rare but  
18 may be significant natural communities based on the quality of the occurrences. The  
19 overall size and quality of these communities is undetermined at this time, as they are  
20 located primarily outside of the Project study area, and a full assessment was not feasible  
21 nor warranted as the project-related impacts on the communities are minimal.  
22 Specifically, limited tree removal will be located along the edge of the existing cleared  
23 and maintained Route 4 corridor within the VTrans right-of-way (ROW) thereby

1 minimizing impacts to the forest interior and the overall communities. In total,  
2 approximately 0.54 acre of permanent tree removal will be required within these natural  
3 community occurrences adjacent to Route 4, which represents a very small area relative  
4 to the total size of the natural communities. A conservative estimate based on partial  
5 natural community mapping is that this represents less than 0.3 percent of the natural  
6 community areas. Additionally, approximately 2.61 acres of temporary tree removal will  
7 be required within these four natural community occurrences adjacent to Route 4 to  
8 accommodate construction equipment access and work activities (which represents less  
9 than 1 percent of the total community areas). Areas of temporary tree removal and  
10 construction disturbance will be allowed to regenerate to pre-construction conditions  
11 following construction and restoration of the Project in accordance with the Project  
12 EPSC Plan and post-construction monitoring and control of non-native invasive species  
13 will be completed in accordance with *Exh. TDI-JAN-12*. The proposed permanent and  
14 temporary project-related impacts situated adjacent to Route 4 will have a negligible  
15 effect and will not affect the quality of these natural community occurrences. As such,  
16 there will be no undue adverse effect on these natural communities.

17  
18 **Q13. Are there ways in which the Project has been designed to avoid these areas or**  
19 **minimize impacts to these communities? Please describe.**

20 A13. Response: Yes. The Project design criteria includes carefully considered protection of  
21 potential and likely significant natural communities. Mapping of identified potential and  
22 likely significant natural communities was provided to the engineering team following the

1 natural resource investigations in 2014. The design then sought to implement  
2 construction practices that would avoid and minimize impacts through the following:

- 3 • Avoidance or minimization of impacts to potential RINA by routing the Project  
4 away from or along the edge of potential and likely significant natural  
5 communities adjacent to existing cleared and maintained road corridors in all  
6 cases,
- 7 • Routing the Project closer to the active roadways so as to limit the need for tree  
8 removal;
- 9 • Implementation of stringent EPSC measures to protect natural communities  
10 during construction, such as those described in *Exh. TDI-JAN-7*;
- 11 • Implementation of prompt restoration and revegetation of potential and likely  
12 significant natural communities; and
- 13 • Development of a long-term vegetation management protocol and non-native  
14 invasive species (NNIS) monitoring and control plan for implementation within  
15 potential and likely significant natural communities that will be impacted by the  
16 Project (see *Exh. TDI-JAN-12*).

17  
18 **Q14. Will the Project result in an undue adverse effect on potential RINAs?**

19 A14. Response: No. As stated above, with implementation of the avoidance and  
20 minimization measures described in this testimony and in the associated exhibits, the  
21 Project will not have an undue, adverse effect upon potential significant natural  
22 communities or potential RINAs.

23

1        **10 V.S.A. § 6086(a)(8)(A) – Necessary Wildlife Habitat and Endangered Species**

2        **Q15. Have the potential impacts of the Project on necessary wildlife habitat and**  
3        **endangered species been evaluated? Please describe.**

4        A15. Response: Yes. To evaluate impacts of the Project on necessary wildlife habitat and  
5        endangered species, Arrowwood Environmental and Gilman & Briggs Environmental  
6        conducted necessary wildlife habitat assessments and RTE species surveys along the  
7        overland portion of the proposed Project during the 2014 growing season, including  
8        desktop and field investigations, as described in *Exh. TDI-GGM-2* and associated  
9        attachments. This assessment was completed in accordance with the necessary wildlife  
10       habitat assessment and RTE species survey protocol developed by TRC in collaboration  
11       with VHB, HDR and Arrowwood Environmental and provided and discussed with the  
12       VT FWD on April 24, 2014.

13                Additionally, based on follow-up consultation with Mr. Scott Darling of VT  
14       FWD, habitat assessments for the Indiana Bat (*Myotis sodalis*) were conducted to identify  
15       potential roosting trees for avoidance and/or further study, which is described in the  
16       *Indiana Bat Habitat Assessment Report* included as *Exh. TDI-GGM-6*. Mr. Darling  
17       recommended no further assessments for Northern Long-eared Bat (*Myotis septentrionalis*)  
18       or other state-listed bat species. Based on follow-up consultation with Mr. Doug  
19       Blodgett of the VT FWD, potential impacts to several known RTE animal species were  
20       clarified and protection measures were recommended, as described in Sections 3.2 and  
21       5.2 of the Survey Results Report narrative (*Exh. TDI-GGM-2*). Finally, based on  
22       follow-up consultation with Mr. Mark Ferguson of the VT FWD, surveys for sensitive  
23       mussel species in Lake Champlain were completed by HDR Engineering Inc.

1           Sections 3.1, 3.2, 5.1, and 5.2 of the Survey Results Report narrative (*Exh. TDI-*  
2           *GGM-2*), and Tables A-1, A-2, A-4 and A-5 in *Exh. TDI-GGM-3* summarize the  
3           results of the RTE species surveys, impact assessments, and protection measures  
4           proposed by TDI-NE. Sections 3.4 and 5.4 of the Survey Results Report (*Exh. TDI-*  
5           *GGM-2*) summarize the results of the necessary wildlife habitat assessment and impact  
6           assessment. Further details regarding the necessary wildlife habitat and RTE species  
7           investigations are provided in *Exhs. TDI-GGM-4 through -6*.

8  
9           **Q16. Please describe your assessment of potential impacts of the Project on rare,**  
10           **threatened, or endangered plant and animal species.**

11           A16. Response: To assess potential impacts to RTE plant and animal species, desktop and  
12           field investigations were completed during the 2014 growing season to identify suitable  
13           habitat or individual species of known Element Occurrences (included in the VT NHI  
14           database) documented within 0.25 mile of the Project study area and to conduct a visual  
15           survey of the overland segment for previously undocumented RTE species. As a result  
16           of these investigations, 53 species of uncommon (Rank S3) or rare (Rank S1, S2, S2S3,  
17           and SH) plants were identified in the Project study area. This includes 3 state  
18           endangered and 6 state threatened plant species. No federally threatened or endangered  
19           plant species were observed. Additionally, general habitat features for RTE animal  
20           species with Element Occurrences within 0.25 mile of the Project study were observed,  
21           but no specific features, such as snake hibernacula, were discovered. Finally, 116  
22           potential roosting trees for Indiana Bat were identified in the Project study area. These  
23           results are described in detail in the aforementioned Exhibits.

1           Element Occurrences included in the VT NHI database are depicted in relation  
2 to the proposed Project in *Exhs. TDI-JAN-3 and TDI-JMB-2b*. The actual observed  
3 RTE plant species populations and potential Indiana Bat roosting trees are also depicted  
4 on *Exh. TDI-JAN-3*.

5           Within the Project segment in Lake Champlain, surveys for RTE mussel species  
6 were completed as recommended by the VT FWD and summarized in the *New England*  
7 *Clean Power Link, Lake Champlain Freshwater Mussel Survey Report (August 2014)* included as  
8 *Exh. TDI-SM-4*. As described further in the prefiled testimony of Mr. Sean Murphy  
9 and summarized in *Exh. TDI-GGM-2*, no live RTE mussel species were observed, and  
10 no further RTE species assessments or RTE avoidance measures in Lake Champlain  
11 were recommended.

12           The Project design criteria includes careful considered protection of RTE  
13 species. Mapping of identified RTE species was provided to the engineering team  
14 following the natural resource investigations in 2014. The design then sought to  
15 implement construction practices that would avoid and minimize impacts through the  
16 following:

- 17           • Avoidance or minimization of impacts to RTE plant species by routing the  
18           Project away from RTE species populations or under RTE species  
19           populations with the proposed implementation of horizontal directional  
20           drills;
- 21           • Avoidance of potential Indiana Bat roosting trees;



- 1           • Development of general and species-specific protection measures as  
2           described in Sections 5.1 and 5.2 of the Survey Results Report narrative  
3           included as *Exh. TDI-GGM-2*, and  
4           • Development of a long-term vegetation management protocol and non-  
5           native invasive species (NNIS) monitoring and control plan for  
6           implementation within RTE species populations that will be impacted by the  
7           Project (see *Exh. TDI-JAN-12*).

8           The Project has been designed to avoid all but six rare plant species. All  
9           observed threatened or endangered plants will be avoided. The rare plant species where  
10          impacts are unavoidable by construction of the Project include the following:

- 11           • Short-stalked False Bindweed (*Calystegia silvatica* ssp. *fraterniflora*), Rank S2  
12           • Shore Sedge (*Carex lenticularis*), Rank S2S3  
13           • Long-leaved Bluets (*Houstonia longifolia*), Rank S2  
14           • Smaller Forget-me-not (*Myosotis laxa*), Rank S2  
15           • Smooth Blue Aster (*Symphyotrichum laeve* var. *laeve*), Rank S2S3  
16           • False Pennyroyal (*Trichostema brachiatum*), Rank S1

17          Impacts to these six rare plant species will be confined to areas along existing  
18          road corridors, primarily within actively mowed and maintained areas in the VTrans  
19          ROW. Species-specific protection measures, including construction, restoration and  
20          post-construction measures, have been proposed to ensure no undue, adverse impact to  
21          the six rare plants species occurs as a result of the Project. These protection measures  
22          are provided in Sections 5.1 of the Survey Results Report narrative included as *Exh.*

1        ***TDI-GGM-2*** The Agency of Natural Resources (“ANR”) will be consulted to finalize  
2 the protection measures prior to construction.

3                With regards to RTE animal species, no individual RTE animals were observed  
4 during surveys. To minimize potential direct and indirect impacts to RTE animal  
5 species, including potential habitat, protection measures have been proposed for the  
6 following species based on consultation with the VT FWD:

- 7                • Wood Turtle (*Glyptemys insculpta*), Rank S3, Special Concern
- 8                • Eastern Ribbonsnake (*Thamnophis sauritus sauritus*), Rank S2, Special Concern
- 9                • Eastern Ratsnake (*Pantherophis alleghaniensis*), Rank S2, State Threatened
- 10              • Timber Rattlesnake (*Crotalus horridus*), Rank S1, State Endangered
- 11              • Indiana Bat (*Myotis sodalis*), Rank S1, State and Federally Endangered

12              Protection measures are detailed in Section 5.2 of the Survey Results Report  
13 narrative included as ***Exh. TDI-GGM-2***. This includes avoidance of all potential  
14 Indiana Bat roosting trees and visual inspections for RTE reptile species that may  
15 become trapped in the open trench during construction. Additionally, avoidance of  
16 potential preferred habitat for RTE aquatic species (e.g., RTE mussels) in streams and  
17 rivers along the overland route will be achieved through the implementation of HDDs,  
18 which have been incorporated into the design as described in Table A-2 in ***Exh. TDI-***  
19 ***GGM-3***.

20              With regards to Northern Long-eared Bat, which is State Endangered and  
21 currently proposed for listing under the Federal Endangered Species Act, no further  
22 assessments were recommended by the VT DFW. Because this species may occur  
23 throughout the State of Vermont and its habitat requirements are not as specific as

1 Indiana Bat (i.e., it is more “generalist” in nature), it may occur in many possible habitats  
2 along the overland component of the proposed Project. It is expected that the proposed  
3 limited tree removal along existing road and rail ROWs and at the converter site will not  
4 imperil this species as it may utilize many alternative habitats in the vicinity of the  
5 Project.

6  
7 **Q17. Will the Project result in an undue, adverse effect on rare, threatened, or  
8 endangered species?**

9 A17. No. Based on the findings described in my testimony above and the associated exhibits,  
10 and the implementation of the described avoidance, minimization and protection  
11 measures, the Project will not result in an undue, adverse effect on rare, threatened, or  
12 endangered species.

13  
14 **Q18. Please describe your assessment of necessary wildlife habitat within the Project  
15 corridor.**

16 A18. Response: Necessary wildlife habitat is defined under Act 250 as “concentrated habitat  
17 which is identifiable and is demonstrated to be decisive to the survival of wildlife at any  
18 point in its life, including breeding and migratory periods.” Necessary wildlife habitat is  
19 most often considered as deer wintering areas (“DWA”) and black bear habitat (forage  
20 or travel).

21 Concurrent with the natural community evaluations and RTE species surveys in  
22 2014, Arrowwood Environmental and Gilman & Briggs Environmental completed  
23 evaluations of necessary wildlife habitat for deer and black bear along the overland

1 component of the proposed Project, as summarized in Section 3.4 of the Survey Results  
2 Report narrative, *Exh. TDI-GGM-2*. The evaluation of necessary wildlife habitat was  
3 completed in accordance with the assessment protocol developed by TRC in  
4 collaboration with VHB, HDR and Arrowwood Environmental and provided and  
5 discussed with the VT FWD on April 24, 2014. The methodology and results of the  
6 necessary wildlife habitat investigations, which included a combination of desktop  
7 investigations and field surveys, are described in further detail in *Exhs. TDI-GGM-4*  
8 (Section 1.0) and *TDI-GGM-5* and are briefly described below. Necessary wildlife  
9 habitat impact assessments are summarized in Section 5.4 of the Survey Results Report  
10 narrative (*Exh. TDI-GGM-2*). The Natural Resource Maps, included as *Exh. TDI-*  
11 *JAN-3*, depict the location of potential DWA, and the location of potential DWA and  
12 black bear habitat and potential impacts are described as follows.

13 To evaluate DWA, areas with coniferous and mixed conifer/hardwood forest  
14 communities within the Project study area were assessed for appropriate forest structure  
15 and evidence of utilization by over-wintering white-tailed deer. Five stands within the  
16 Project study area were identified as having both the appropriate trees species and  
17 adequate structure suitable for deer wintering habitat. This included one VT FWD-  
18 mapped DWA along Route 103 (other VT FWD-mapped DWA were determined to not  
19 have suitable trees species and/or structure for deer wintering in the Project study area).  
20 Potential DWA were identified in the following five locations:

- 21 • North of Old Lake Road, Benson, Approximate Milepost (MP) 100.3;
- 22 • East of Route 103, Wallingford, MP 137.7 and 138.2;
- 23 • South of Route 103, Mount Holly, MP 140.0;

- 1           • North of Route 103, Mount Holly, MP 140.2, 140.7 and 140.8; and
- 2           • North of Route 103, Mount Holly, MP 142.4, 142.9, and 143.4.

3           Within the five potential DWA, no indications of their use by deer as  
4           overwintering habitat were evident and, therefore, they are designated merely as  
5           “potential” DWA. The Project will avoid tree removal in all potential DWA with the  
6           exception of one limited area immediately adjacent to Route 103 from approximate MP  
7           140.7 to 140.9. In this area, a narrow (varies between approximately 10 to 30 feet wide)  
8           swath of trees adjacent to Route 103 will be removed. This will include approximately  
9           0.32 acre of temporary tree removal and 0.29 acre of permanent tree removal. No  
10          adverse impacts to this potential DWA will occur from this limited tree removal along an  
11          existing highway corridor.

12          With regards to black bear (*Ursus americanus*) habitat, necessary habitat that was  
13          assessed included travel corridors, spring feeding wetlands and areas with mast  
14          producing tree stands. Habitat in the study area is fragmented and disturbed due to  
15          traffic and human activities, so biologically critical black bear habitat is limited or non-  
16          existent. The Project intersects one potential black bear travel corridor on Route 103  
17          near the Mount Holly and Ludlow town line and bear crossing signs were observed  
18          during field investigations. This area has been designated “Bear Production Habitat” by  
19          the State of Vermont and relatively wild forestlands are located north and south of Route  
20          103 in this area. Biologically critical habitat does not occur in the Project study area, since  
21          the potential habitat is fragmented and disturbed due to traffic and human activities. The  
22          study area is likely limited in function as a travel corridor in this area wherein bears are

1 moving quickly between the large uninterrupted forest blocks north and south of the  
2 roadway/study area, where more appropriate biologically critical habitat exists.

3 The Project will be installed alongside Route 103 at the Mount Holly/Ludlow  
4 town border where the potential bear travel corridor is located (i.e., area where bear may  
5 potentially move across the road between forested habitat blocks north and south of the  
6 study area). Limited tree removal will be required along Route 103 in this area to install  
7 the cable within the VTrans ROW (generally, no more than a 20-foot-wide area of  
8 temporary tree removal along the existing, cleared Route 103 ROW, with permanent tree  
9 removal required in a much smaller area). This limited tree removal will not affect  
10 critical Bear Production Habitat. Additionally, the temporary construction activities will  
11 not significantly impede movement of black bear during construction (especially relative  
12 to pre-existing traffic in the area) nor will the Project have a permanent effect on the  
13 travel corridor.

14 Regarding general wildlife effects from noise, due to co-location with existing  
15 roads and railroad, it is expected that construction-related noise will not affect wildlife  
16 that may be utilizing nearby habitat.

17 With regards to the Lake Champlain portion of the proposed Project, the  
18 prefiled testimony of Mr. Sean Murphy addresses necessary wildlife habitat and  
19 concludes that there does not appear to be any necessary wildlife habitat along the  
20 Project route in Lake Champlain. I concur with this assessment.

21  
22

1 **Q19. Based upon your review, do you expect the Project to have an undue adverse**  
2 **impact on any wildlife population? Please explain.**

3 A19. Response: No. Based on the results of desktop and field investigations, consultation  
4 with the VT FWD, and implementation of avoidance and minimization measures as  
5 described in my testimony and associated Exhibits, I do not expect that the Project as  
6 proposed would have an undue adverse impact on wildlife populations.

7

8 **Q20. Will the Project destroy or imperil any necessary wildlife habitat or endangered**  
9 **species?**

10 A20. Response: No. Based on the findings described in my testimony and the associated  
11 Exhibits, and the implementation of the described avoidance, minimization and  
12 protection measures, the Project will not destroy or imperil necessary wildlife habitat or  
13 endangered species.

14

15 **Q21. Does this conclude your testimony at this time?**

16 A21. Response: Yes.

17