

January 25, 2017

Mr. Rene Pelletier, PG
Assistant Director, Water Division
NH Department of Environmental Services
PO Box 95
29 Hazen Drive
Concord, NH 03302-2964

Re: Joint Application of Northern Pass Transmission, LLC and Public Service Company of New Hampshire d/b/a Eversource Energy: Further Response to NHDES Progress Report

Dear Mr. Pelletier:

On behalf of Northern Pass Transmission LLC, we respectfully submit the enclosed additional information requested by the Department of Environmental Services in your May 16, 2016 Progress Report to the NH Site Evaluation Committee ("SEC"), and provide further responses to some of our prior responses, as you have requested. Today's submittal includes the following:

- The additional documentation and analysis related to geotechnical subsurface data from Transition Stations 1 and 5, the Deerfield Substation, and the Franklin Converter Terminal;
- Information related to plant and wildlife species Best Management Practices, as well as comments on draft permit conditions from the Wetlands, Watershed Management, and Alteration of Terrain (AOT) Bureaus and Shoreland Program; and
- Letters to the Concord Conservation Commission and to John Petrofsky addressing issues they raised with DES after our July 18th submittal of responses to earlier comment letters.

In addition, several revised plan sheets are provided for minor modifications that are not directly related to specific comments in the May 16, 2016 Progress Report. Specifically, wetland plan sheets 610, 611 and 616 (and corresponding AOT plan sheets 309 and 312) reflect small shifts in work pads and access routes that reduce impacts to two listed plant species, as requested by the NH Natural Heritage Bureau (NHNHB). We will be providing NHNHB with plans showing the reduced impacts. Also provided are several additional wetland and AOT plan sheets with minor design changes resulting from refined engineering design efforts. In addition, minor modifications to Transition Station 1 have reduced wetland impacts, but slightly increased upland impacts in the protected shoreland. We are also attaching several modified plan sheets for Transition Station 4, the Franklin Converter Terminal, and Scobie Pond Substation reflecting any design adjustments resulting from the subsurface geotechnical data analysis at those locations. The changes to wetland impact resulting from the design modifications are noted in the attached table. As you can see, the design modifications have resulted in a reduction of temporary wetland impacts of 76,000 square feet and a reduction in permanent wetland impacts of 732 square feet.

We also are submitting 4 note sheets that address (1) General/Erosion and Sediment Control, (2) Construction Monitoring, (3) Plant Protection and Restoration, (4) Operational BMPs, (5) Wetland Restoration, (6) Standing Water Construction, and (7) Wildlife Resources BMPs.

A letter requesting a small modification to Shoreland Permit Application 2015-02850 for the Connecticut River in Pittsburg is also included in this submittal. This relates to the redesign of the stormwater treatment system at Transition Station 1.

As you had previously requested, we are enclosing four electronic copies of the response and the referenced attachments on a flash drive and four paper copies as well.

Thank you and your colleagues again for your review and consideration of these materials. If you have questions or comments, please do not hesitate to contact me directly at (603) 637-1150 or at lcarbonneau@normandeau.com.

Sincerely,



Lee E. Carbonneau
As agent for Northern Pass Transmission, LLC.
Senior Principal Scientist
Normandeau Associates, Inc.

Enclosures

Cc: Clark Freise, Assistant Commissioner, NHDES (w/o enclosures)
Collis Adams, NHDES (w/o enclosures)
Craig Rennie, NHDES
Ridge Mauck, NHDES
Gregg Comstock, NHDES
David Keddell, USACE (electronic copy only)
Mark Kern, USEPA
Pamela G. Monroe, SEC Administrator
Kevin F. McCune, Eversource (w/o enclosures)

Summary of Impact Changes from Plan Revisions

Resource	Original Temporary Impact (sq ft)	Original Permanent Impact (sq ft)	Revised Temporary Impact (sq ft)	Revised Permanent Impact (sq ft)	Difference Temporary (sq ft)	Difference Permanent (sq ft)
CK19S	37	0	31	0	(6)	0
CK20	7,545	50	1,093	0	(6,452)	(50)
CK28	359	0	0	0	(359)	0
CK29	2,941	0	148	0	(2,793)	0
CK30	4,203	0	1,899	0	(2,304)	0
DF62	0	0	359	0	359	0
DF63	2,709	0	1,955	0	(754)	0
DF94	2,069	0	0	0	(2,069)	0
DU167	7,358	38	4,341	0	(3,017)	(38)
DU168S	340	0	14	0	(326)	0
DU36	13,613	0	6,861	0	(6,752)	0
DX123	857	0	0	0	(857)	0
DX124	3,851	13	2,516	0	(1,335)	(13)
DX126	0	0	33	0	33	0
DX241	5,354	17	689	0	(4,665)	(17)
DX242S	44	0	0	0	(44)	0
DX244	162	0	161	0	(1)	0
DX250	4,449	25	112	0	(4,337)	(25)
DX251	9,627	50	1,666	0	(7,961)	(50)
DX252	2,092	0	2,088	0	(4)	0
DX254	11,785	46	2,507	0	(9,278)	(46)
DX255S	242	4	10	0	(232)	(4)
DX260	580	0	558	0	(22)	0
DX261	1,425	34	185	0	(1,240)	(34)
DX262S	181	0	29	0	(152)	0
DX91	1,537	0	1,496	0	(41)	0
DX93aS	52	0	0	0	(52)	0
DX93S	45	0	31	0	(14)	0
DX94S	611	0	61	0	(550)	0
DX96S	46	0	41	0	(5)	0
DX97	2,021	0	0	0	(2,021)	0
LO2	0	1,349	0	1,405	0	56
LO3	0	0	0	2	0	2
M147	47,215	88	40,393	50	(6,822)	(38)
NU30	11,156	13	2,464	0	(8,692)	(13)
PB10	14,167	46,398	14,167	45,936	0	(462)
PB27	1,827	0	0	0	(1,827)	0
S37	1,385	0	0	0	(1,385)	0
DX243S	84	0	85	0	1	0
WF/LC79	13,784	6	13,751	6	(33)	0
Total					(76,009)	(732)

**ADDITIONAL INFORMATION IN RESPONSE TO
NH DEPARTMENT OF ENVIRONMENTAL SERVICES
ADDITIONAL DATA REQUESTS**

January 25, 2017

A. WETLANDS BUREAU

2. Per Rule Env-Wt 302.04(a)(2) the applicant is required to demonstrate by plan and example that the proposed alternative is the one with the least impact to wetlands or surface waters. It is not clear how the proposed 32 mile new ROW in Coös County avoids surrounding wetlands on a landscape scale when the wetland impact plans only represent wetlands located within the ROW. DES finds that the proposed 32 mile ROW in Coös County is not an alternative with the least impact to wetlands or surface waters.

Additional Information: *In response to your recent request for clarification of our original response to question #2, we have clarified the narrative and the supporting maps of the northern route alternatives. The revised narrative follows, and the maps are attached.*

The initial boundaries of the Northern Pass Project area were established based on the need to (i) locate a transmission line crossing at the border between Québec and New Hampshire and (ii) connect into the AC system grid at a location that allows for the delivery of 1,200 MW (currently 1,090 MW). In its initial consideration of routing options, Northern Pass sought to minimize environmental impacts by, among other things, maximizing the use of existing ROW, avoiding conservation areas and identifying the shortest route feasible. The original routing effort was conducted by the Applicant through GIS analysis of publicly available social and natural resource data. Based on this effort, a preferred northern route and three alternatives were identified in the October 2010 Presidential Permit Application (PPA), although the international border crossing location in Pittsburg was not yet identified. A PPA Addendum was submitted in February of 2011 which included the border crossing location and the preferred route, the northern portion of which is shown on Maps 1-4 (labelled 2010 Preferred Route).

In response to public feedback voiced during March 2011 public scoping meetings about the visibility of the Project and its potential impact on private landowners, Northern Pass substantially reconfigured the North Segment to move the proposed route to a less populated area. Complete underground construction was not considered a practicable option (as described in the response to NHDES Data Request Question 1), so a concerted effort was made to locate the line in less populated areas where visual impacts would be of less concern.

A landscape-level analysis of sensitive natural resources along approximately 38 alternative route segments proposed by the NP team was conducted, and these segments are shown in Maps 1-4 (labeled March 2011 Alternative Routes, and labeled A through MM). The routes

were evaluated based on their intersection with conservation lands, rivers and streams, lakes and ponds, NWI wetlands, hydric soils, and Tier 1 and 2 Ranked Wildlife Habitat from WAP maps. This analysis revealed that 21 segments were located in conservation lands in Odell and Stratford. See Table 1 and Map 4. Creating new ROW within conservation lands was not considered a good option, so alternatives to these segments were given higher priority.

The Project then began investigating the availability of land to purchase or lease. Property acquisition efforts commenced for the segments with the fewest natural resource and visual impacts that did not cross conservation land, and the route was revised based on the successful acquisition of property rights. Land in Dixville, Dummer and Millsfield owned by the Bayroot Company and managed by Wagner Forest Management was available for lease, with certain restrictions and limitations, which negated the need to select segments crossing conservation land to the west. Several of the segments in Dixville were determined to be too visible from Route 26, Dixville Notch State Park and the Balsams resort, so the route was shifted even further north and east behind the high ridges, with a proposed crossing of Route 26 much further south. There was also an effort to use more of the existing Coos Loop ROW (Maps 4 and 5, labeled Coos Loop).

Normandeau provided “hot-spot” mapping and GIS modeling within 3 miles of the entire proposed Project route in 2012 to identify locations with the greatest sensitivity and permitting concerns. The model included the natural features mentioned above, along with: ridgetops/mountaintops, where headwater streams, fragile soils, wildlife corridors and unique habitats are present and ROW maintenance issues may be greater; calcareous soils and excessively drained soils where rare plants may be more abundant; known threatened and endangered species/habitat locations (plants, lynx, marten, snakes, turtles, etc.); known deer yards; archeologically sensitive areas; streams and rivers with added regulations (SWQPAs, ORWs, Class A, Designated). Where possible, reconnaissance level field investigations were undertaken across the northern route parcels to better define environmental and other sensitive natural resources within each parcel. This information along with consideration of existing infrastructure (e.g. roads, camps, Granite Reliable Wind), potential visual impacts, and Wagner’s overall forest planning and land management goals and objectives, was included in the ultimate route determinations on the properties acquired or leased for the project. Shifts were made in a few route locations to minimize resource impacts. The hot-spot mapping was eventually also used to evaluate off-ROW access road selections.

To avoid crossing over or under conservation land in Stewartstown where conservation lands are present diagonally across a point where four parcels meet along the 2012 Proposed Route, the Project considered two alternative underground routes in Clarksville and Stewartstown along road ROWs. These routes have the north and south ends in common, so the divergent portions of these two routes (Option 2, the Blue Route; and Option 3, the Green Route, Figure 5), were evaluated for natural resource issues.

Table 1. March 2011 Alternatives Analyzed in Coos County.

NAI Segment	Segment Length (FT)	Conservation Lands Traversed (FT)		Rivers and Streams Crossed	Lakes and Ponds Traversed (FT)	NWI Traversed (FT)	Hydric Soils Traversed (FT)	Intersection of NWI & Hydric Soils Traversed (FT)	WAP Tiers 1 and 2** Traversed (FT)	Notes	Primary Issues
		2013	2016*								
A	11030	165	165	3	0	516	122	75	151	Crosses Washburn Family Forest at narrowest point; wet floodplain at western end	Washburn Family Forest
AA	18858	18858	18858	0	0	0	135		21955	AI in NSSF, Parallels Nash Stream and NS Bog, mostly in WAP1 poor choice	Nash Stream State Forest
B	55292	0	0	7	0	0	1311		11207	avoids most sensitive resources; crosses WAPState1 along 3 unnamed streams and 1 farm field, and wetlands adjacent to CT Lakes Headwaters	No Substantial issues
BB	31720	0	0	2	0	238	245		26211		Parallels Phillips Brook in the valley
C	42590	3383	15129	7	7526	2644	3269	1232	4382	crosses 4 named streams, two county conservation lands, and 2 WAP State 1 fields, floodplain wetlands and 3 ponds	County Conservation Lands
CC	45777	35760	35764	9	0	232	1195		24651	Mostly in NSSF, Crosses Nash Stream, Jimmy Cole Brook, Rowells Brook and 2 tribs, Robert, another trib, and Phillips Brook with large wetland, small WAP1 and 2 mostly along streams	Nash Stream State Forest
D	4684	0	686	1	0	0			0	1 stream crossing	Placey - SPNHF Easement
DD	27079	0	0	0	0	0			7478		No substantial issues, close to Pond Brook in one location

NAI Segment	Segment Length (FT)	Conservation Lands Traversed (FT)		Rivers and Streams Crossed	Lakes and Ponds Traversed (FT)	NWI Traversed (FT)	Hydric Soils Traversed (FT)	Intersection of NWI & Hydric Soils Traversed (FT)	WAP Tiers 1 and 2** Traversed (FT)	Notes	Primary Issues
		2013	2016*								
E	22416	5716	7478	3	1464	392			16087	Coleman State Park, E.Branch Mohawk River and Sugar Hill brook with wetlands; and WAPstate1 in park and out of park,	Coleman State Park and Tillotson SPNHF Easement
EE	11029	0	0	0	0	0			3139		No substantial issues
F	25762	0	7621	3	0	0			9167	crosses E. Branch Mohawk and crosses/parallels Sugar Hill Brook, and a trib with wetlands, also WAPstate1	Tillotson - SPNHF Conservation Easement
FF	7480	0	0	0	0	0			3426		No substantial issues
G	26519	0	0	3	0	0			49130	all within WAPstate1 - crosses Dixie Brook and another stream	Tier 1 and ridge/visibility impacts
GG	6479	0	0	0	0	0			0	No obvious resource impacts	No obvious issues
H	12323	0	0	3	0	9	468		23465	All within WAPstate1 - crosses Cascade Brook and another stream, and some wetlands in valley	Significant visual & High Elevation impacts - Balsam Resort
HH	9090	0	0	0	0	0	517		1842	Small overlap with wetlands and WAP1	No substantial issues; Existing ROW
I	24494	0	3502	3	0	0			48469	crosses Cascade Brook and another stream and parallels Cascade just below Dixville Notch	Tillotson - SPNHF Conservation Easement
II***	66895	24617	24627	10	0	2367	1171	515	14748	Mostly in NSSF, crosses Phillips Brook and large wetland,	Compare to CC/KK; Existing ROW - less impact to conservation lands, streams, Tier 1 habitat; greater wetlands impacts

NAI Segment	Segment Length (FT)	Conservation Lands Traversed (FT)		Rivers and Streams Crossed	Lakes and Ponds Traversed (FT)	NWI Traversed (FT)	Hydric Soils Traversed (FT)	Intersection of NWI & Hydric Soils Traversed (FT)	WAP Tiers 1 and 2** Traversed (FT)	Notes	Primary Issues
		2013	2016*								
J	44832	0	0	6	0	0			24785	crosses North Inlet and 4 other streams, avoids interior WAPState1 and wetlands, parallels Phillips Brook	Parallels part of Phillips Brook in the valley
JJ	79092	24265	24209	17	4762	1177	2429	272	38379	<half in NSSF, crosses n end of NS Bog, and Johnson, Silver, Sugarloaf, Bog (twice), Colombia, Pike, and 9 other brooks, Upper Ammonoosuc, some wetlands and WAP1. NOT GREAT	Nash Stream State Forest
K	8532	0	0	0	0	0			16725		Significant visual & High Elevation impacts - Balsams Resort
KK	14356	5531	5497	3	0	0	597		9391	Half in NSSF, crosses Potter and another brook, parallels potter and impacts some wetlands and mostly in WAP1	Nash Stream State Forest
L	9412	0	0	2	0	0			7276	half in WAPState1, crosses Wells Brook	Tier 1 Habitat impacts
LL	2637	2637	2637	1	0	0			2151	All in NSSF, crosses trib with WAP1	Nash Stream State Forest
M	16110	0	0	4	1289	416			13395	Mostly in WAP State1, crosses Phillips Brook and 3 others with wetlands	Wetland and Tier 1 Impacts
MM	5075	5075	5075	1	0	0			1372	All in NSSF, crosses trib to Nash with WAP1 and parallels Nash Stream	Nash Stream State Forest
N	14743	5170	5313	3	0	192			10676	half in NSSF - Crosses Nelson and Phillips Brook, with All in NSSF; wetlands, and WAPState1, and one other stream	Nash Stream State Forest
O	5258	5258	5258	0	0	0			26		Nash Stream State Forest

NAI Segment	Segment Length (FT)	Conservation Lands Traversed (FT)		Rivers and Streams Crossed	Lakes and Ponds Traversed (FT)	NWI Traversed (FT)	Hydric Soils Traversed (FT)	Intersection of NWI & Hydric Soils Traversed (FT)	WAP Tiers 1 and 2** Traversed (FT)	Notes	Primary Issues
		2013	2016*								
P	4526	4526	4526	0	2915	969	1165	969	7409	All in NSSF, Parallels Nash Stream trib through WAP1 and wetland/pond complex	Nash Stream State Forest
Q	24208	24208	24208	4	0	0			21362	Parallels and crosses Nash Stream and Trib, and crosses 3 other streams, including Waterhole Brook, mostly through WAP1	Nash Stream State Forest
R	11821	11821	11821	0	0	0			11734	All in NSSF - Parallels Nash Stream trib through WAP1	Nash Stream State Forest
S	21210	21210	21210	5	0	1448	1452	1146	33054	All in NSSF, Parallels Nash stream mostly in WAP1 along All in NSSF, wetlands, and crosses 3 other tribs - BAD CHOICE	Nash Stream State Forest
T	21498	21498	21498	6	0	398			12155	All in NSSF, crosses 5 tribs with WAP1	Nash Stream State Forest
V	13298	13298	13298	3	0	144			13391	All in NSSF, Parallels Nash stream a little further away than S, crosses Slide and Long Mt brooks and Nash Stream, all in state forest and most in WAP1	Nash Stream State Forest
W	34716	22134	21732	3	1706	248	1517	248	26188		Nash Stream State Forest
X	8840	0	0	0	0	0			836		No substantial issues
Y	5776	0	0	2	0	0			3640		Mostly Tier 1 wildlife habitat
Z	29061	0	0	2	0	553	2795	353	23974		Compare to DD: greater resource impacts

* Conservation data from 2014 was used to correct some omissions in the 2013 conservation land crossing analysis in 2016.

** WAP Tier 1 - Highest Ranked Habitat in NH, WAP Tier 2 - Highest Ranked Habitat in Biological Region

*** Segment II Traverses the White Mountain National Forest for Approximately 6205 Feet

Option 2, the Blue Route, is shorter than the Green Route, and intersects fewer wetlands and streams, but more WAP Highest Ranked Habitat in State, primarily grassland, with potential habitat for northern harrier. Both alternatives pass along grassland reserve land (Conserved by NRCS). Generally, work within the road bed and shoulder would not have permanent impacts to natural resources adjacent to the road, although some temporary impacts may be possible. Both routes cross Pond Brook, Bishop Brook, and Haynes Brook, and the Green Route also crosses Cedar Brook twice. The Green Route also has a small cross-country portion that crosses a wetland. Both routes cross several other un-named streams. The Blue Route also follows less travelled roads, diminishing the impact to the travelling public. The decision was made to proceed with Option 2, the Blue Route.

Field work within the 2013 proposed project ROW revealed two sensitive areas in Dixville that were worthy of further avoidance efforts. A potentially exemplary Northern Hardwood Seepage Forest (later found to be Exemplary by NHHB) was observed along the eastern slope of Sugar Hill near Nathan Pond. Botanical surveys were conducted to determine the extent and see if avoidance would be possible by shifting the ROW. Shifting the route to the north would have a much greater impact on wetlands, a stream and riparian area, and shifting to the south would put the line on top of the ridge, increasing visibility issues and impacting more of the natural community, so the route was not shifted. However, in another location the ROW was shifted to avoid a moose concentration area at a sensitive rocky ridge. Temporary access roads and structure locations were also shifted to minimize resource impacts within the ROW.

The resulting northern section of the Project route is located slightly further east than the original 2010 route, maximizes use of existing ROW (the Coos Loop), traverses a far less populated portion of northern New Hampshire, and relies in large part on property that an affiliate of Northern Pass has acquired in fee or by way of lease or easement for Project purposes from willing property owners. Approximately 7.5 miles of this route are located underground within existing road ROW, while the overhead portion is generally situated along the mid-slope landscape position, avoiding to the extent possible the sensitive high elevation areas (which are also potentially more visible) as well as the valleys where streams, wetlands, riparian corridors, archeological resources and highest ranked habitats are most abundant. These mid-slope landscape positions are generally comparable with respect to wetlands attributes throughout this region, and a large proportion is within commercial forest land. This portion of the Project route involves 155 fewer landowner parcels than would have been required for the section of the original 2010 route above the Lost Nation Substation.

The result of the entire Project routing effort is that the selected route eliminates potential visual impacts in the White Mountain National Forest, Franconia Notch area, and along the Appalachian Trail by undergrounding an additional 52 miles of transmission lines in public roadways and eliminating more than 400 structures. With this change, Northern Pass will now have a total of 60 miles of underground construction, making it the largest installation of underground DC cable in North America. More than 80 percent of the project will be located along existing transmission corridors or underground in public roadways.

3. It appears that the new section of ROW in Coös County comes within close proximity to several areas of the Granite Reliable Wind Farm. Cumulative impacts to wetland complexes and stream systems need to be further addressed and evaluated as required under Rule Env-Wt 302.04(a)(16) and (17).

Additional Information: *In response to your subsequent request for additional information on this issue, we provide the attached map of the Granite Reliable Power (GRP) project facilities and the proposed Northern Pass ROW and the watersheds in which they are collocated. The impact area associated with each project is quantified by watershed in the table provided in the previous response to RFI Question #3. The figure shows the spatial relationship between the two projects, supporting our analysis of the cumulative impacts. The wetland/stream impact footprints of each project are not shown on this figure for two reasons: 1) we did not have access to a digital version of the GRP plans, and did not believe it would be appropriate (or accurate) for us to digitize the impact areas from the plans that were available; and 2) the scale of any figure that can show both projects on a plan sheet is too small to show the small permanent wetland impacts associated with the proposed Northern Pass structures.*

5. Question 10 of the wetland application states that the project will enhance public access for all-terrain vehicle (ATV) trails. Describe the areas where this project will enhance public ATV access, and address whether these new trails impact additional wetlands and surface waters.

Additional Information:

Having clarified NHDES expectations during our December 13 2016 phone conversation and December 16, 2016 meeting, we added this note to the wetland permitting plans and also to the draft permit conditions:

Appropriate barriers and signage shall be placed at locations along the new ROW where it intersects with roads to discourage unauthorized ATV activity in jurisdictional areas. Such preventive steps will not be required for existing authorized trails and for any trails that may be permitted in the future.

7. There appears to be a change in use on some forestry access roads, as well as some ATV and snow machine trails, that will require additional permitting. See Rule Env-Wt 303.04(g)(1), which states “access shall not be used for subdivision, development, or other land conversion to non-forestry uses...”. Please include in the wetland application any additional wetland impact areas where this change in use occurs. In addition, existing stream crossings may need to be upgraded to meet the stream crossing standards of Chapter Env-Wt 900.

Additional Information: *We provided a color copy of the off-ROW access road and culvert locations from the Phase I culvert assessment report to you via US mail as requested, and have attached it again here.*

With respect to the stream crossing permit plans submitted on 12/15/16, DES inquired about the rationale for specifying twin culvert designs at locations CZ-1, MP-2 and MP-6. VHB prepared a memorandum showing that the twin culvert design was necessary due to the limited distance between the stream beds and the top of the roadway. The VHB memo is attached.

9. DES review of the wetland impact plans found that portions of the project did not appear to fully avoid and minimize wetland impacts within the ROW. Please address each of the following plan specific questions:

- a) On plan sheet 006, temporary impact within wetland PB27 could be avoided by relocating the access road to the southeast, and wetland PB26 avoided by moving the road northwest.

Additional Information: *Please refer to revised Wetland Permit Plan Sheet 6 and corresponding Alteration of Terrain Permit Plan Sheet 3. In our original response to NHDES on July 28, 2016 we indicated that impacts to wetland PB26 could not be avoided due to steep terrain immediately adjacent to the wetland and which would require grading or land contouring to accommodate a temporary access road resulting in greater disturbance in this location. Additional review supports this initial determination, and we are proposing no change in this location. With respect to the access road initially positioned within wetland PB27, we have confirmed that the access road can be shifted to the southeast, entirely outside of the wetland, thereby avoiding temporary wetland impacts of 1,827 square feet.*

- b) Plan sheet 007, wetland PB23 could be avoided by moving the road east.

Additional Information: *Additional review by the project team confirms our initial assessment indicated in our response to NHDES on July 28, 2016. No changes are proposed in this location.*

- c) Plan sheet 008, it appears that Transfer Station 1 could be relocated further east to minimize impacts.

Additional Information: *Additional review by the project team confirms our initial assessment indicated in our response to NHDES on July 28, 2016. No changes are proposed in this location.*

- d) Sheet 011, the access road could cross wetland CK30 further south, and wetlands CK29 and CK28 could be completely avoided.

Additional Information: *Please refer to revised Wetland Permit Plan Sheet 11 and corresponding Alteration of Terrain Permit Plan Sheet 6. We have confirmed that the access road can be shifted as suggested thereby reducing the amount of impacts to wetland CK30 and wetland CK29 and completely avoid impacts to wetland CK28. Temporary impacts to wetland CK30 have been reduced from 4,203 square feet to 1,899 square feet. Temporary impacts to wetland CK29 have reduced from 2,941 square feet to*

148 square feet. Regarding wetland CK28, temporary impacts of 359 square feet have been eliminated by shifting the access road.

- e) Sheet 012, tower DC-29 could be relocated outside of wetland CK20 (either east or west).

Additional Information: Please refer to revised Wetland Permit Plan Sheet 12 and corresponding Alteration of Terrain Permit Plan Sheet 6. As requested, we have confirmed that structure DC-29 can be shifted to the west approximately 100 feet thereby reducing wetland impacts. Because of this shift, permanent impact of 50 square feet to wetland CK20 has been avoided. In addition, temporary impacts to wetland CK20 have been reduced from 7,545 square feet to 1,093 square feet and temporary impact to ephemeral stream CK19S have been reduced from 37 square feet to 31 square feet.

- f) Sheet 047, shift access road southwest to avoid wetland S37.

Additional Information: Please refer to revised Wetland Permit Plan Sheet 47 and corresponding Alteration of Terrain Permit Plan Sheet 24. We have confirmed that the access road can be shifted to the southwest, as suggested, entirely outside of wetland S37, thereby avoiding a temporary wetland impact of 1,385 square feet.

- g) Sheet 055 and 056, towers DC-138 and DC-139 could be relocated east or west to avoid impacts to wetland S2 and S1.

Additional Information: Additional review by the project team confirms our initial assessment indicated in our response to NHDES on July 28, 2016. No changes are proposed in this location.

- h) Sheet 057, towers DC-142 and DC-143 could be shifted west to avoid wetlands DX261 and DX254, respectively.

Additional Information: Please refer to revised Wetland Permit Plan Sheets 57, 58 and 59, and corresponding Alteration of Terrain Permit Plan Sheets 29 and 30. We have confirmed that each of the following structures can be shifted with no, or minimal, increase in height as shown in this table:

Structure Number	Design Action Taken	Change in Structure Height
DC-142	Moved structure 70 feet to the west of Wetland DX261	None
DC-143	Moved structure 250 feet to west of Wetland DX254	Raise 5 feet
DC-144	Moved structure 185 feet to east of Wetland DX251	Raise 10 feet
DC-145	Moved structure 170 feet to east of Wetland DX250	None
DC-146	No change in location	Raise 10 feet

DC-147	Moved structure 200 feet to east of Wetland DX241	None
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As shown in the table below, the shifts in structure locations noted in the table above result in a decrease in temporary and permanent wetland and stream impacts:

Wetland ID	Original Temporary Impact (sq ft)	Original Permanent Impact (sq ft)	Revised Temporary Impact (sq ft)	Revised Permanent Impact (sq ft)	Change in Temporary Impact (sq ft)	Change in Permanent Impact (sq ft)
DX241	5,354	17	689	0	(4,665)	(17)
DX242S	44	0	0	0	(44)	0
DX244	162	0	161	0	(1)	0
DX250	4,449	25	112	0	(4,337)	(25)
DX251	9,627	50	1,666	0	(7,961)	(50)
DX252	2,092	0	2,088	0	(4)	0
DX254	11,785	46	2,507	0	(9,278)	(46)
DX255S	242	4	10	0	(232)	(4)
DX260	580	0	558	0	(22)	0
DX261	1,425	34	185	0	(1,240)	(34)
DX262S	181	0	29	0	(152)	0
Totals	35,941	176	8,005	0	(27,936)	(176)

- i) Sheet 058, towers DC-144 and DC-145 could be moved east outside of wetlands DX251 and DX250.

Additional Information: See response to (h) above.

- j) Sheet 059, tower DC-147 could be shifted east to avoid DX241.

Additional Information: See response to (h) above.

- k) Sheet 074, tower DC-184 could be moved northwest to avoid wetland DX124, and the access road could be moved southwest to avoid wetland DX123.

Additional Information: Please refer to revised Wetland Permit Plan Sheet 74 and corresponding Alteration of Terrain Permit Plan Sheet 37. We have confirmed that Structure DC-184 could be moved northwest 35 feet with a minimal increase in height of 5 feet. This shift avoids permanent impacts of 13 square feet to wetland DX124 and reduces temporary impacts in wetland DX124 from 3,851 square feet to 2,516 square feet. Unavoidably, the structure shift would require a small temporary impact of 33 square feet to wetland DX126 to accommodate the work pad. By shifting the access road to the southwest, temporary impacts of 857 square feet are completely avoided in wetland DX123.

- l) Sheet 078, access road could be moved southwest to avoid wetland DX97.

Additional Information: Please refer to revised Wetland Permit Plan Sheet 78 and Sheet 79 and corresponding Alteration of Terrain Permit Plan Sheet 40. We have confirmed that the access road can be shifted as suggested, to the southwest, to avoid impacts of 2,021 square feet to wetland DX79. Although not specifically requested by NHDES, shifting the road also reduces temporary impacts to ephemeral stream DX96S from 46 square feet to 41 square feet and reduces temporary impacts to intermittent stream DX94S from 611 square feet to 61 square feet. Further southeast, realignment of the access road also reduces temporary impacts to perennial stream DX93S from 45 square feet to 31 square feet and avoids impacts of 52 square feet to perennial stream DX93aS. Temporary impacts to wetland DX91 are also reduced from 1,537 square feet to 1,496 square feet due to shifting the access road.

- m) Sheet 083, move access road east to avoid wetland DX33 and DX32.

Additional Information: Additional review by the project team confirms our initial assessment indicated in our response to NHDES on July 28, 2016. No changes are proposed in these locations.

- n) Sheet 091, move road east to avoid wetland M195.

Additional Information: Additional review by the project team confirms our initial assessment indicated in our response to NHDES on July 28, 2016. No changes are proposed in this location.

- o) Sheet 101, tower DC-258 could be moved northwest to further avoid wetland M147.

Additional Information: Please refer to revised Wetland Permit Plan Sheet 101 and Sheet 102 and corresponding Alteration of Terrain Permit Plan Sheet 51. We have confirmed that structure DC-258 can be shifted 125 feet to the northwest of wetland M147 with a minimal increase in structure height of 5 feet. This shift avoids a permanent impact of 38 square feet and reducing temporary impact from 6,999 square feet to 1,702 square feet. In addition, the access road across wetland M147 was shifted slightly resulting in a further reduction of temporary impacts of 1,555 square feet.

- p) Sheet 121, tower DC-306, could be shifted southwest to further avoid wetland DU167

Additional Information: Please refer to revised Wetland Permit Plan Sheet 121 and corresponding Alteration of Terrain Permit Plan Sheet 62. We have confirmed that structure DC-306 can be shifted 100 feet, without raising the structure height, to the southwest of wetland DU167 thereby avoiding a permanent impact of 38 square feet and reducing temporary impact from 7,358 square feet to 4,341 square feet. In addition, temporary impacts to stream DU168S have been reduced from 340 square feet to 14 square feet.

- q) Sheet 139, the north portion of the access road may not be needed between towers DC-351 and DC-352, as other access points exist. This will reduce impacts to wetland DU36.

Additional Information: Please refer to revised Wetland Permit Plan Sheet 139 and Sheet 140 and corresponding Alteration of Terrain Permit Plan Sheet 71. We have confirmed that the off-ROW access road can be used to access structure DC-352, thereby eliminating the need for a temporary access road between structures DC-351 and DC-352. This change results in a reduction of temporary impacts to wetland DU36 from 13,613 square feet to 6,861 square feet.

- r) For long stretches of wetland crossings that occur over several thousand linear feet, (e.g. sheets 169 and 170 for wetland SK37, and sheets 231, 232, 233 and 234 for wetland WF59) could different pole technology be employed to allow for longer spans between towers that would further avoid the overall wetland impact?

Additional Information: Additional review by the project team confirms our initial assessment indicated in our response to NHDES on July 28, 2016. No changes are proposed in these locations.

- s) Plan sheet 191, tower DC-485 could be moved north to avoid wetland NU30.

Additional Information: Please refer to revised Wetland Permit Plan Sheet 191 and Sheet 192 and corresponding Alteration of Terrain Permit Plan Sheets 97 and 98. We have confirmed that structure DC-485 can be shifted 180 feet to the north of wetland NU30, with a minimal increase in structure height of 5 feet. This shift avoids a permanent impact of 13 square feet and reduces temporary impact from 11,852 square feet to 3,159 square feet. The shift in location of structure DC-485 requires raising the height of DC-486 by 5 feet, however, no shift in location is required.

- t) Sheet 262, it appears that there is an existing access road through wetland WF24 that could be used. Why wasn't this considered over the proposed road location?

Additional Information: Additional review by the project team confirms our initial assessment indicated in our response to NHDES on July 28, 2016. No changes are proposed in this location.

- u) Sheet 537, there is an existing road east of the proposed access road that could be used to avoid new impacts to wetland F37.

Additional Information: Additional review by the project team confirms our initial assessment indicated in our response to NHDES on July 28, 2016. No changes are proposed in this location.

- v) Sheet 689, why wouldn't the existing road be used on the west edge of vernal pool DF94 to minimize impacts?

Additional Information: Please refer to revised Wetland Permit Plan Sheet 689 and corresponding Alteration of Terrain Permit Plan Sheet 349. We have reviewed the requested change. The access road that presently cuts through the wetland and vernal pool is unsuitable and in poor condition for access to perform the necessary AC support structure work. In addition, the existing access road is located between two existing wooden transmission structures. To avoid the wetland and vernal pool, and for safety reasons, the location of the access road will be shifted to the west approximately 75 feet thereby completely avoiding temporary impacts of 2,069 square feet to wetland DF94 and vernal pool DFVP57, which is contained within the wetland.

10. Review of the Deerfield Substation plans finds that most of the proposed wetland impacts are for two stormwater ponds; 9,037 square feet and 19,196 square feet respectively. Impacts to naturally-occurring wetlands for stormwater treatment and attenuation are typically not allowed. It appears that the substation could be shifted further southwest to avoid these wetland areas. Also, the stormwater ponds could be reconfigured to further reduce impacts.

Additional Information: In the DT-1 area, 4,996 square feet of the 19,196 square feet of wetland impacts is due to the access road which connects the existing station to the proposed expansion and is not stormwater facility related. It is not practicable to relocate the access road in a less impacting manner while providing direct and simple access.

The remaining 13,200 square feet of wetland impacts in this area are stormwater basin related. For that, detention basin DT-2 was changed to an infiltration basin, known as IF-1, based on the results of the recent subsurface investigation. In the IF-1 area, only 1,077 square feet of the 9,037 square feet of wetland impacts is directly caused by stormwater features (sediment forebay and sand filter SF-1). The stormwater features were designed and located as to minimize the wetland impacts to the extent practicable. The remaining 7,960 square feet is from earth fill and grading associated with the station. The station location and positioning on the site was reviewed to minimize wetland and other sensitive natural resources to the extent practicable; which the current proposal depicts. We were not able to shift the station location south/southwest to decrease wetland impacts due to several limiting existing conditions located in that area. They consist of a steep earth slope, other delineated wetlands, and a FEMA Flood Zone 'A'. Shifting the station south/southwest impacts these other features which creates more impacts than the currently proposed configuration.

Both DT-1 and IF-1 are designed to detain and attenuate stormwater flows in accordance with the NHDES Stormwater Manual, and their size has been minimized to the extent allowable?. The station and stormwater facilities configuration has been designed to minimize wetland impacts to the extent practicable per Env-Wt 302.03(a), and as a result, the station design will remain as currently proposed.

11. The plans for Transition Station #5 propose filling 16,378 square feet of wetland for the yard and a stormwater pond. Similar to the above comment, impacts to naturally-occurring wetlands for stormwater treatment and attenuation are typically not allowed. Given the amount of wetland impacts and the steep slopes in the area, alternative sites should be considered that further avoid wetland impacts.

Additional Information: *As requested by DES, we have confirmed our design for Transition Station #5 based on the new subsurface data that we collected. Based on this information, we confirm that our design is the least impacting given the constraints described in our July 12, 2016 response to DES. Our revised site package to the Alteration of Terrain Bureau addresses comments raised by AoT and the Watershed Management Bureau and is enclosed with this submittal.*

12. The plans for Transition Station #1 propose 46,132 square feet of wetland and stream impacts for large cuts and fills, as well as a stormwater pond. These impacts are significant and could be avoided by shifting the station further east to reduce or eliminate many of these impacts. Relocating the station should be considered in the overall design to meet Rule Env-Wt 302.03.

Additional Information: *As explained in our prior response on July 12, 2016, we reviewed the design of Transition Station #1 based on the new subsurface data we collected. A reduction of 531 SF in wetland impacts was achieved at Transition Station #1 through general design advancement and fine tuning of the site grading associated with the station and access road. Please refer to the attached Wetland Permit Plan Sheet 8 (and corresponding AoT Plan Sheet 4), which have been modified accordingly. There is a small increase in upland shoreland impacts in this general location, and we are submitting a letter request to NHDES Shoreland department to revise the shoreland application for this location. The Shoreland Permit Sheet is also attached.*

13. Provide detailed restoration/planting plans for temporary wetland, stream and vernal pool impact areas that will be adhered to by the selected contractors. Stream banks and wetland restoration areas shall include live stakes and container plantings as well as seed mixes, where applicable.

Additional Information: *The restoration notes and planting table that were submitted to you for preliminary review in July were also submitted NH Natural Heritage Bureau (NHNHB) for review. These notes and table, which now incorporate comments from the NHNHB have been added to the plan set. The new note sheets with this information are attached (Sheets 2 and 3). NHB requested modifications to the seed mixes, and we are still reviewing suitable alternatives. We will provide the revised, NHB-approved native seed mixes to NHDES prior to construction.*

15. Provide further detail how equipment will access structures that are located in open water and deep water habitats. The plans show access roads through open water areas in several locations where timber matting would be ineffective. Please address alternative access methods for these locations where applicable.

Additional Information: *The planned approach for working in locations with standing water was included in our submittal of July 12, 2016. The notes have now been added to wetland permitting plan set note sheet 3, which is attached.*

19. Three high-quality vernal pools are proposed to be temporarily impacted by the project. Can these temporary impact areas be avoided by making minor plan changes?

Additional Information: *To follow up on our July 12, 2016 response to this question, we have attached new versions of Wetland Permit Plan Sheets 224 and 658 (and AoT Permit Plan Sheets 114 and 333) showing shifts in access paths and work pads that reduce impacts to two of these high quality vernal pools. An access path was shifted to avoid the 2.5 sf impact to Vernal Pool WVP79 in Whitefield, and a structure and work pad was relocated in to reduce impacts to DFVP1 in Deerfield. As previously stated, avoiding or reducing impacts to BHVP2 was not possible given its location in the ROW.*

26. Given the large scale of the project, construction monitoring plans should be developed and included with the application to clarify these requirements to the selected contractors. Please include the following construction timing restrictions on the plans to minimize potential impacts to wildlife species, or as recommended by New Hampshire Fish & Game Department (NHFG):

- a) Avoid summer clearing from May through August in high elevation areas above 2,700 feet in elevation,
- b) When working near identified Deer Wintering Areas (DWA) or Moose Concentration Areas (MCA), avoid work when deep or crusted snow exists – typically January and February.
- c) No work shall be done within ¼ mile any active raptor nests from March 1st to July 31st.
- d) Avoid significant mast habitat whenever possible.
- e) If an area is found to be inhabited by denning Canada lynx, then avoid all work from May through mid-July.
- f) In areas where Northern long-eared bats or small-footed bats are detected, no cutting shall occur from May 1st to September 30th.
- g) The applicant's consultant shall search for Northern black racer habitat and turtle nesting habitat prior to construction in each area to help avoid accidental crushing.

Additional Information: *Best Management Practices, timing restrictions, and other measures that Northern Pass has committed to for avoiding and minimizing impacts to wildlife and rare plants during construction, operation, and maintenance of the Project have been added to the plan set and are attached (Sheets 2 and 4). The BMPs have also been provided to NH Fish and Game Department and the NH Natural Heritage Bureau for review and comment. The plan sheets will be revised and resubmitted if necessary in response to comments from these agency experts.*

B. WATERSHED MANAGEMENT BUREAU

3. With regards to the Pollutant Loading Analyses (PLAs):

- f) The sand filters proposed for Transition Stations 4 and 5 and the Deerfield Substation Expansion have underdrains. Therefore, in accordance with the NH Stormwater Manual (Vol 1), the BMP removal efficiencies in the PLAs should be 51% for TSS, 33% for TP and 10% for TN . Please revise and resubmit.

Additional Information: *The sand filters for Transition Stations 4 and 5 were addressed in our response dated December 15, 2016. For Deerfield, the sand filter is proposed in series with an Infiltration Basin. Per Appendix E of the New Hampshire Stormwater Manual, when BMPs are placed in series, the BMP with the highest removal efficiency shall be the efficiency used in the model for computing annual loadings. Therefore, for Deerfield, removal efficiencies for the Infiltration Basin (90% for TSS, 68% for TP and 60% for TN) were used. The removal efficiencies for the sand filter at Transition Station 5 have been revised to 51% for TSS, 33% for TP and 10% for TN. The revised PLAs for Transition Station 5 and the Deerfield Substation are enclosed.*

- g) Please revise the PLAs in response to the comments above and resubmit for approval.

Additional Information: *The revised PLAs for Transition Stations 1 and 5, Franklin Converter Station and Deerfield Substation are enclosed.*

C. ALTERATION OF TERRAIN BUREAU

1. For each of the Stormwater Management Study areas (Franklin Converter Station, Substations, Transition Stations) provide the following:

- d) Delineation of pre- and post-development subcatchments on color-coded hydrologic soil group (HSG) plans.

Additional Information: *Separate color figures have been prepared for each pre- and post- development watershed map that depict the color coded hydrologic soil group delineations and total area of each group in table format. The revised watershed maps for Transition Stations 1 and 5, Franklin Converter Station and Deerfield Substation are enclosed as Appendix A of the Stormwater Management Studies.*

- e) Computations of the total area of each hydrologic soil group used in the pre- and post-development hydrologic models.

Additional Information: *These computations were added to the revised watershed plans described in our response to Comment 1d above.*

- f) Infiltration Feasibility Reports for each site where infiltration is a component of the stormwater management.

Additional Information: *Infiltration Feasibility Reports for Franklin Converter Station and Deerfield Substation are enclosed as Appendix H of their respective Stormwater Management Studies.*

- h) The estimated seasonal high water table in areas where significant earth cuts or stormwater ponds are proposed.

Additional Information: *The estimated seasonal high water table (ESHWT) elevations at Transition Stations 1, 5, Franklin Converter Station and Deerfield Substation are discussed within the geotechnical engineering reports which are included as Appendix H of the enclosed Stormwater Management Studies.*

- i) Sediment forebays used to satisfy requirements for pretreatment of stormwater runoff must have a minimum depth of 2 feet. In addition, on sites where multiple forebays are proposed it must be demonstrated that each forebay meets the sizing requirement based upon the specific contributing area.

Additional Information: *At Transition Station 1 and Deerfield, the forebays were revised to provide a minimum depth of 2 feet. At Transition Station 5, the forebay within the detention basin was removed and replaced with a riprap apron. Pretreatment for the detention basin is not required but is provided by the upstream deep sump catch basin. At Franklin, the forebays were revised to provide a minimum depth of 2 feet. In addition, forebay sizing calculation sheets are included within Appendix D of the Stormwater Management Study to document sizing requirements for each of the multiple forebays.*

3. For the Franklin Converter Station:

- a) The gravel pad (Station Yard) portion of post-development subcatchment 2A should be modeled as a separate subcatchment.

Additional Information: *The hydrologic model has been revised to separate out the gravel pad portion of post-development subcatchment 2A as 2A2. The remaining portion of subcatchment 2A is now referenced as 2A1. The Pondpack model, watershed plans and narrative references have been updated accordingly within the enclosed Stormwater Management Study.*

5. For Transition Station #1:

- c) Provide subsurface information and/or a hydrologic budget to demonstrate that a permanent pool elevation of 1158.61 will be maintained in the proposed wet pond.

Additional Information: *The estimated seasonal high water table (ESHWT) at Transition Station 1 is discussed within the geotechnical engineering report enclosed as Appendix H of the Stormwater Management Study. Within the proposed basin, soil conditions at both borings (INF 101 and INF 102) were described as wet or moist throughout the entire subsurface profile (surface elevation of 1163.7 down to 1149.7), with the highest groundwater level (at the time of drilling) observed at elevation 1157.2. The proposed basin bottom elevation of 1155.61 is located within the observed soil layer described as silty gravel with sand (GM), dark yellowish brown, wet, dense to very dense, fine to coarse grained gravel, fine grained sand.*

- d) The proposed treatment swale needs to be designed with a maximum channel width of 8 feet, and be bermed or otherwise separated from the adjacent roadside.

Additional Information: *The proposed treatment swale was revised to have a maximum channel width of 8 feet and the swale length was increased to 109 feet to meet the NHDES required minimum hydraulic residence time. The proposed treatment swale was sized using the NHDES worksheet included in Appendix D of the Stormwater Management Study and meets requirements for length, width, side slopes, hydraulic residence time, water depth and peak elevations. Upon further review of both the proposed and existing topography, separating the proposed treatment swale from the roadside ditch and installing an additional culvert would significantly increase the disturbance area of the project and decrease the amount of impervious area that could be treated on-site. The treatment swale and its associated BMP removal efficiencies are not considered or accounted for within the pollutant loading analysis worksheets for this Station.*