Appendix 3-B: Justification for Centerline and Allowed Deviation Zone Excursions

CONTAINS REDACTED INFORMATION IN CASE 10-T-0139

Champlain Hudson Power Express

Case 10-T-0139

Segment 18B EM&CP

Justification for Centerline and Allowed Deviation Zone Excursions

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[redacted]

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1 Scope and Purpose

Champlain Hudson Power Express (CHPE)'s Article VII Certificate established an Approved Facility Route, as depicted on Appendix B to the Joint Proposal, as well as an Allowed Deviation Zone (ADZ) defined in Certificate Condition (CC) 156.

For Lake Champlain, the ADZ is available once water depths reach 20 feet, at which depth the Certificate, as written, allows movement of the cables away from the Approved Facility Route in any direction, so long as that movement does not bring the Facility within certain designated zones outlined in CC 156. However, deviations from the Approved Facility Route either (1) in waters less than 20 feet in depth or (2) which bring the Facility within certain designated zones enumerated in CC 156, must be further explained and justified in the Environmental Management and Construction Plan (EM&CP) consistent with the requirements of CC 157 in order for the Public Service Commission (PSC) to approve them as part of the EM&CP process.

As set forth in CC 156(b), for the HVDC Transmission System installed in Lake Champlain, the Allowed Deviation Zone is anywhere within the body of water where the water depth exceeds twenty (20) feet at mean low water[1], subject to the following exceptions relevant to Lake Champlain[2]:

- (2) If a deviation of over one hundred and fifty (150) feet from the centerline as currently approved by the PSC causes the HVDC transmission system to come within one hundred sixty feet (160) feet of "Lake Champlain Maritime Museum ("LCMM")/CHPE Marine Route Survey Cultural Resources" identified in Appendix B to the Joint Proposal, an analysis that demonstrates that there are no reasonable and feasible alternatives must be provided in the relevant EM&CP as well as the written consent of the New York State Historic Preservation Office.

- (4) Proposed facility re-location must not result in significant increase in adverse effects to co-located infrastructure (CI) or other infrastructure.

[1] It is important to note that CC 156(b) cites mean low water as the datum for both Lake Champlain and the Hudson River. As Lake Champlain is not tidal, NOAA's Lake Champlain Low Lake Level datum would be the appropriate datum for application of CC 156(b) to Lake Champlain instead of the cited mean low water. NOAA's Lake Champlain Low Lake Level equates to +93.0 feet NGVD29 and +92.5 feet NAVD88.

[2] This condition also contains two exceptions not relevant in Lake Champlain: (1) If the HVDC centerline as currently approved by the PSC enters into the Exclusion Zones (NYSDEC) shown on Appendix B of the Joint Proposal of Settlement, an analysis that demonstrates that there are no reasonable and feasible alternatives must be provided in the relevant EM&CP as well as the written consent of the NYSDEC; and (3) If a deviation of over one hundred and fifty (150) feet from the centerline as currently approved by the PSC causes the HVDC transmission system to be located or relocated within any Significant Coastal Fish and Wildlife Habitat identified in the NYS Coastal Management Program, an analysis that demonstrates that there are no reasonable and feasible alternatives must be provided in the relevant EM&CP as well as the written consent of the NYSDEC. In addition, the New York State Department of State a written statement from NYSDOS stating that the deviation would not result in coastal effects that differ significantly from the coastal effects reviewed by NYSDOS in Certificate Holders' original federal Coastal Consistency Certification.
There are no Exclusion Zones or Significant Coastal Fish and Wildlife Habitat present in Lake Champlain.

Per CC 157, deviations from the location of the HVDC transmission system are allowed for appropriate environmental or engineering reasons as part of EM&CP approval so long as an explanation of the proposed deviations with supporting documentation is provided in the EM&CP.

In Lake Champlain, adjustments to the Approved Facility Route centerline are necessary to install the submarine cable, some of which fall outside of the approved ADZ. This document describes such changes in the Lake Champlain route and offers the appropriate environmental or engineering reasons and/or further analysis required in CCs 156 and 157 to enable PSC approval of these excursions from the approved ADZ. CHPE is presenting these deviations with appropriate engineering and environmental reasons (such as avoidance of impacts to identified sensitive resources, design/construction constraints, avoidance of collocated infrastructure and aids to navigation conflicts, and the like) provided herein.

2 Deviations from the Approved Facility Route in Waters Shallower than 20 feet (CC 156(b))

As described in Section 1, the ADZ within Lake Champlain includes anywhere where the water depth exceeds twenty (20) feet at mean low water[3], subject to certain exceptions as set forth in CC 156(b). This section describes sections of the cable route in Lake Champlain where the water depth does not exceed twenty (20) feet below Low Lake Level. This includes locations where the centerline as approved by the PSC was less than 20 feet deep at the time of the Certification, but the routing has been shifted to avoid engineering and/or environmental obstacle or, in some cases, to move to deeper waters than were permitted. Generally, these departures from the approved centerline are justified by appropriate environmental and engineering reasons (as identified in more detail by location), do not create a conflict with the Certificate, and do not change the overall character or location of the Facility. In most places where the current route is shallower than 20 feet, few or no options exist for re-routing in deeper waters as detailed below. Additionally, in many places where shallow water is identified, the current route does not significantly deviate from the Allowed Facility Route approved by the PSC. For these reasons, approval of these changes is warranted under CC 156(b).

During routing design, consideration has also been made as to the route line proximity to navigational aids per the request of the U.S. Coast Guard. Avoidance of these navigational aids (in accordance with the separation parameters defined for each) has been made as far as possible whilst maintaining accordance with installation parameters and depth and permitting requirements.

Table 2-1 below provides an overview of all locations within Lake Champlain where the water depth does not exceed twenty (20) feet below Low Lake Level.

The following pages provide a figure and description of each route section where the centerline enters water shallower than 20 feet. Figure 2-1 below provides the legend for these figures. As shown in Figure 2-1, the water depth is shown by a red and green color; the red parts of the route indicate that the water depth is less than 20 feet.

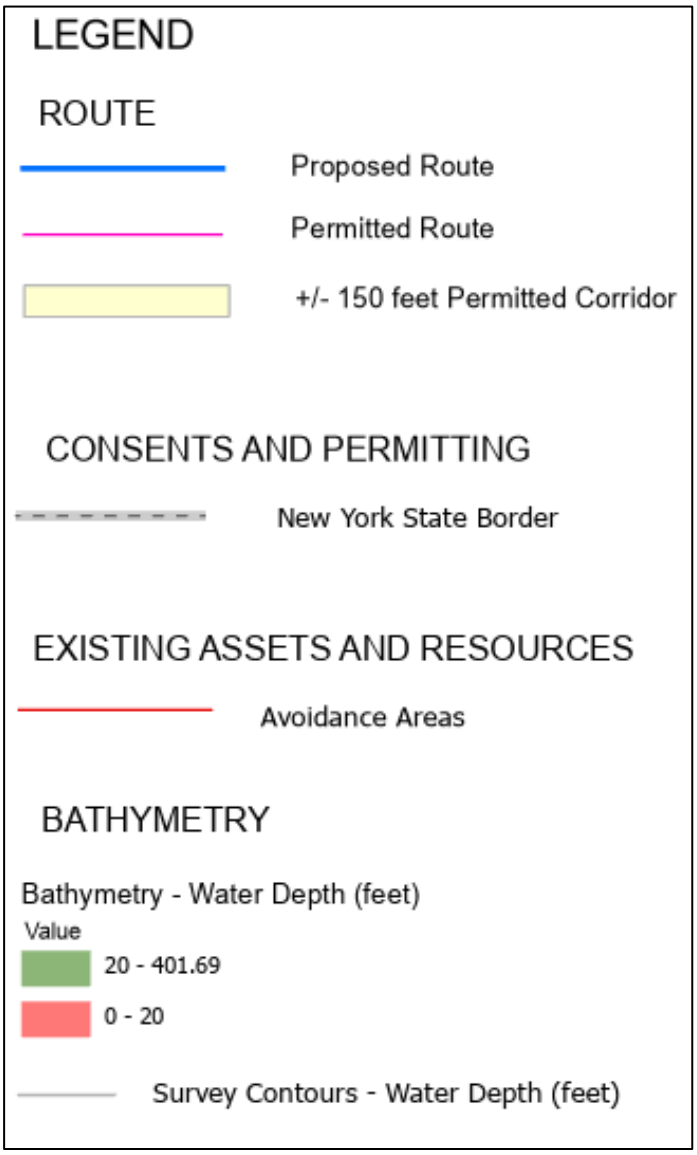
[3] It is important to note that CC 156(b) cites mean low water as the datum for both Lake Champlain and the Hudson River. As Lake Champlain is not tidal, NOAA's Lake Champlain Low Lake Level datum would be the appropriate datum for application of CC 156(b) to Lake Champlain instead of the cited mean low water. NOAA's Lake Champlain Low Lake Level equates to +93.0 feet NGVD29 and +92.5 feet NAVD88.

Table 2-1: Route Sections in <20 feet water depth (CC 156)

ID	Location	MP-start	MP-end	Length (Miles)	Within ADZ	Reason for Excursion from ADZ		Justification in EM&CP Required	Written Consent Required
					Water Depth >20 FT	Engineering	Environmental		
LC#D1	US/CAN Border to Rouses Point	0	0.65	0.65	No	•	•	Yes	No
LC#D2	Rouses Point – Point au Fer	1.21	5.44	4.23	No	•	•	Yes	No
LC#D3	Point au Fer – Reynolds Point	7.14	7.41	0.27	No	•		Yes	No
LC#D4	Orchard Point	73.73	73.81	0.08	No	•		Yes	No
		74.1	74.2	0.1	No	•		Yes	No
LC#D5	Murdocks Point – Hickock Point	76.8	79.0	2.2	No	•		Yes	No
LC#D6	Crown Point	79.7	80.9	1.2	No	•	•	Yes	No
LC#D7	Miller Marsh	81	81.4	0.4	No	•	•	Yes	No
LC#D8	Five Mile Point	81.8	83.6	1.8	No	•	•	Yes	No
LC#D9	Kerby Point	83.7	86.8	3.1	No	•	•	Yes	No
LC#D10	Larabees Point	87.1	87.3	0.2	No	•	•	Yes	No

ID	Location	MP-start	MP-end	Length (Miles)	Within ADZ	Reason for Excursion from ADZ		Justification in EM&CP Required	Written Consent Required
					Water Depth >20 FT	Engineering	Environmental		
LC#D11	Larabees Point - Gourlie Point	87.4	91.9	4.5	No	•	•	Yes	No
LC#D12	Gourlie point – Putnam Station	92	96.8	4.8	No	•	•	Yes	No

Figure 2-1 Legend / Symbology



ID:	LC#D1		
Location	MP Start	MP End	Length (Miles)
Lake Champlain	0.000	0.650	0.600

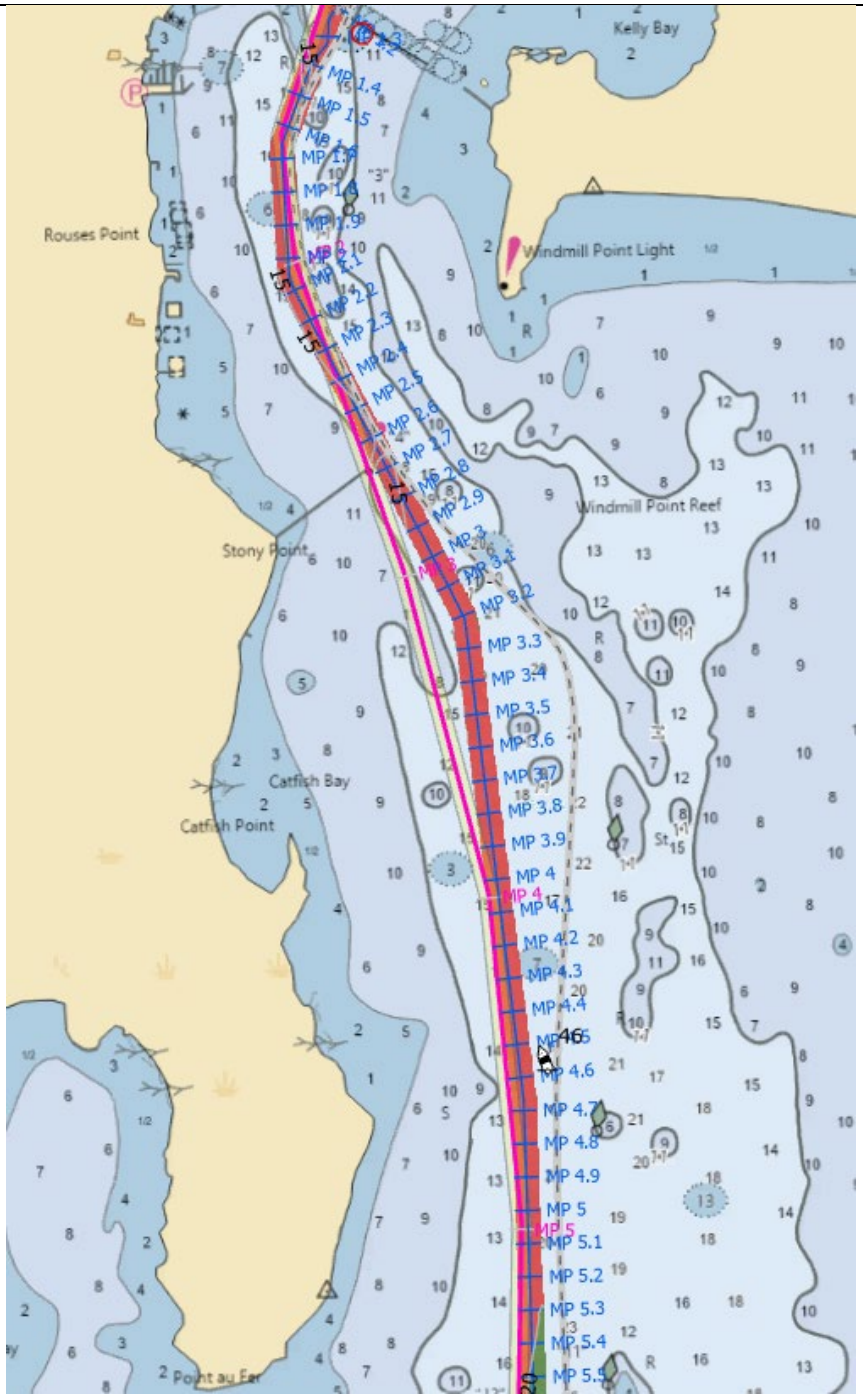
Image: US/CAN Border to Rouses Point Train Trestle Remains

Description:

Starting location from Canadian border. No reasonable option to re-route into water deeper than 20' as no deeper water is available at this location based on available data and bathymetry surveys conducted for the CHPE project. Routing is also constrained by the New York - Vermont border. Re-routing from the originally permitted route at this location has been planned to avoid cultural resources and to be clear of the US Rte. 2 bridge and disused bridge at Rouses Point. These engineering and environmental constraints justify this deviation.

Figure 2-2 LC#D1 @ US/CAN Border to Rouses Point Train Trestle Remains

ID:	LC#D2		
Location	MP Start	MP End	Length (Miles)
Lake Champlain	1.21	5.44	4.23
Image: Rouses Point – Point au Fer			



Description:

No water deeper than 20' is available in this part of the route inside of the New York border. Deviation from the originally permitted route has been planned to avoid cultural resources and to stay in the deepest water available, which constitute the appropriate environmental and engineering reasons for deviating from the approved centerline.

Figure 2-3 LC#D2 @ Rouses Point – Point au Fer

ID:	LC#D3		
Location	MP Start	MP End	Length (Miles)
Lake Champlain	7.14	7.41	0.0
Image: Point au Fer – Reynolds Point			

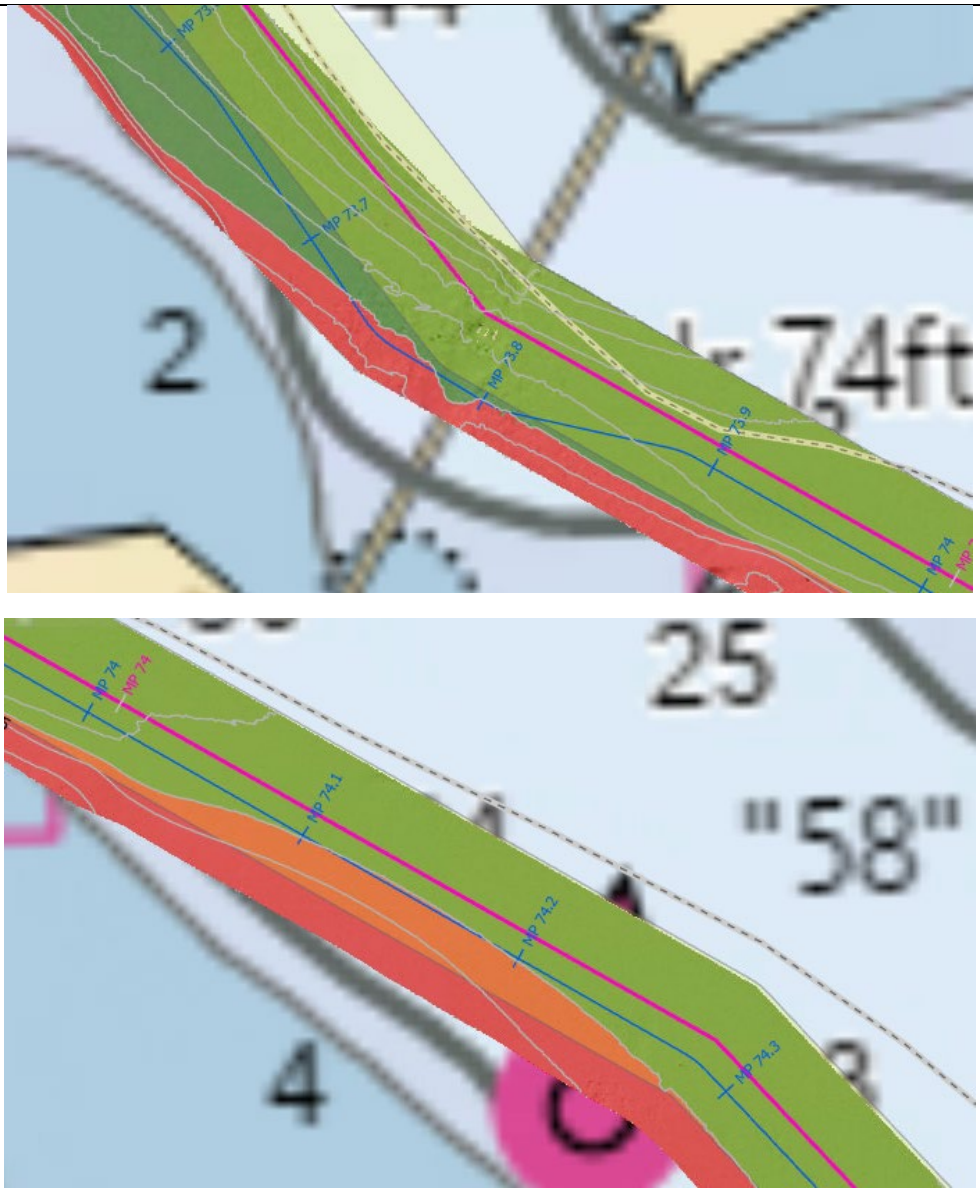
Description:

Small deviation into shallower water to avoid steep side slope to the east / southeast of the permitted route. Also, the geophysical survey shows till, which is hard to plow through. These engineering limitations justify this deviation.

Figure 2-4 LC#D3 @ Point au Fer – Reynolds Point

ID:	LC#D4		
Location	MP Start	MP End	Length (Miles)
Lake Champlain	73.73	73.81	0.08
	74.1	74.2	0.100

Image: Orchard Point



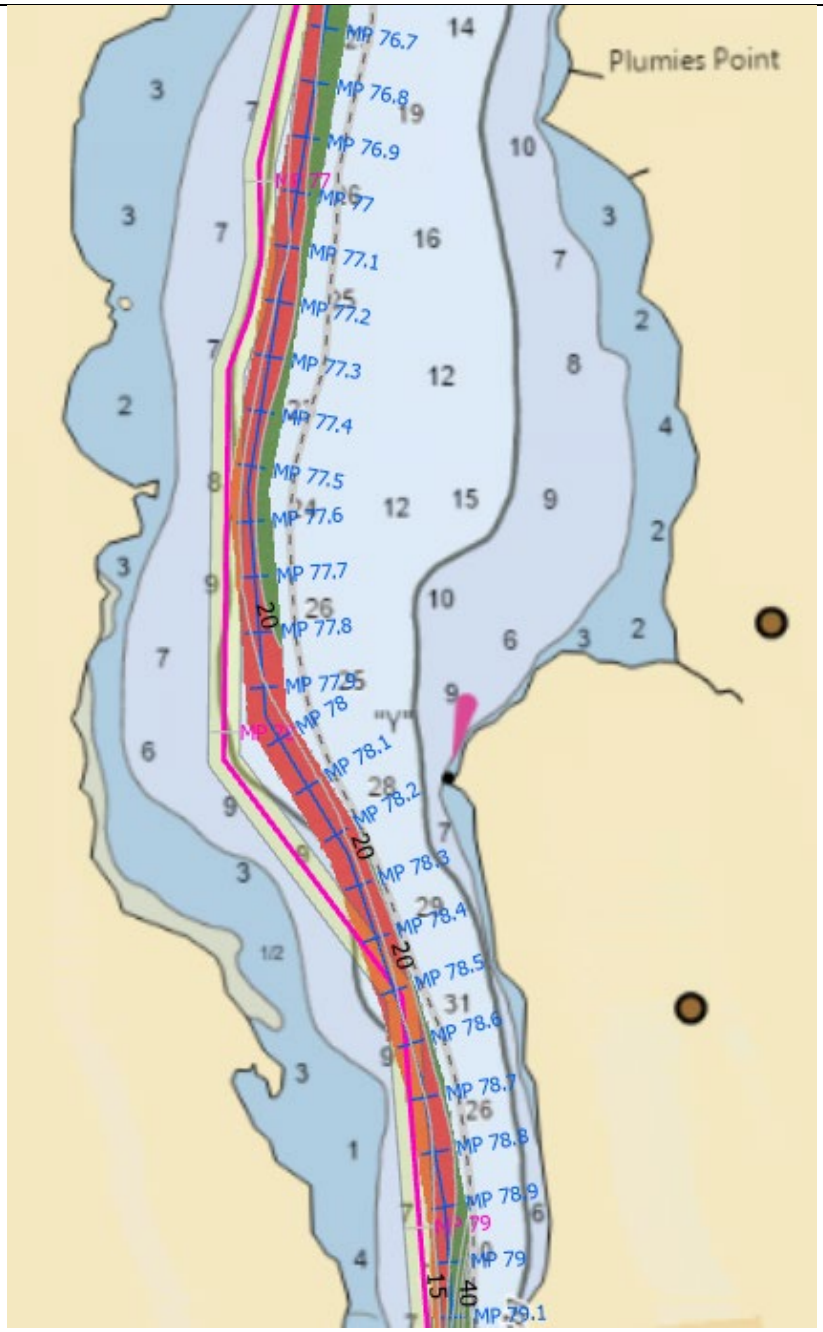
Description:

Small, localized deviations due to alignment needing to pass under the Lake Champlain bridge at MP 73.8. Note that at approximately MP 73.8 there is a splice planned.

Rerouting into deeper water at these locations would impact the ability to safely install under the bridge and may have caused an intrusion within 160 feet of a cultural resource. This deviation is justified by the engineering reasons provided.

Figure 2-5 LC#D4 @ Orchard Point

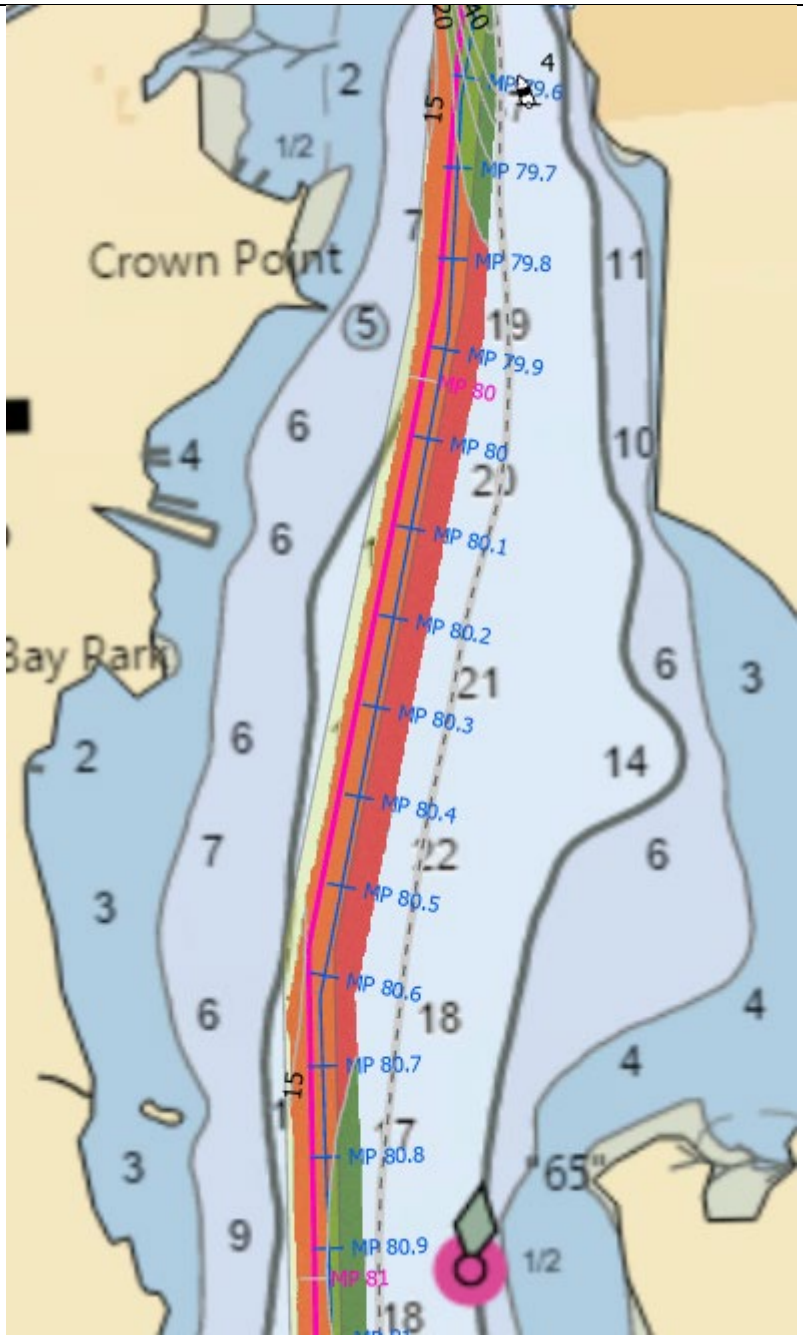
ID:	LC#D5		
Location	MP Start	MP End	Length (Miles)
Lake Champlain	76.8	79.0	2.2
Image: Murdocks Point – Hickock Point			



Description:
Routing in this location is in deeper water than the originally permitted route, although still in waters that are less than 20 feet deep. The limiting factor is the need to maintain a suitable distance from the New York - Vermont border to ensure the cables are not installed in Vermont, which is not allowed.

Figure 2-6 LC#D5 @ Murdocks Point – Hickock Point

ID:	LC#D6		
Location	MP Start	MP End	Length (Miles)
Lake Champlain	79.7	80.9	1.2
Image: Crown Point			



Description:
Routing is located in the deepest available water on the New York side of the State border. No deeper water for alternative routing available.

Figure 2-7 LC#D6 @ Crown Point

ID:	LC#D7		
Location	MP Start	MP End	Length (Miles)
Lake Champlain	81.0	81.4	0.4

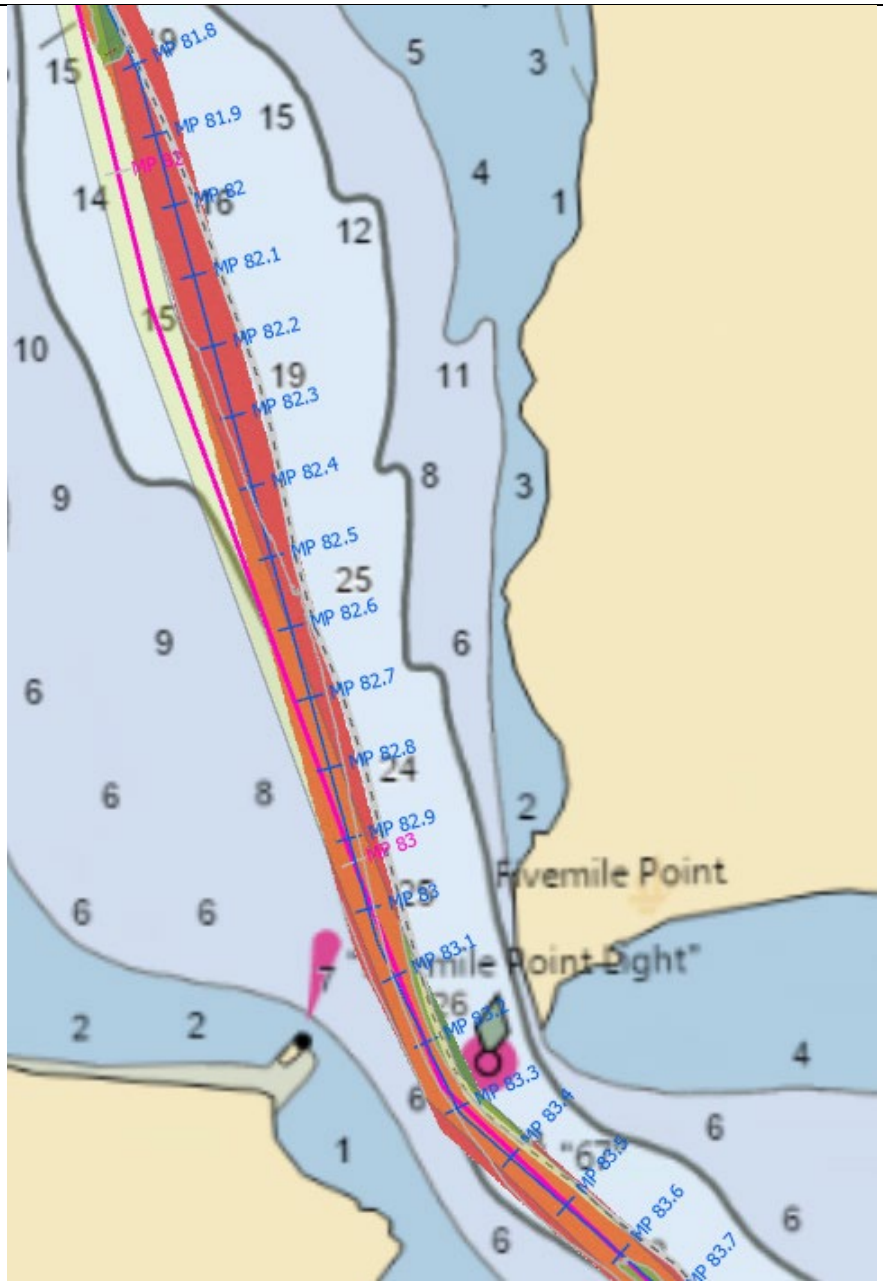
Image: Miller Marsh

Description:

Routing is located in the deepest available water on the New York side of the State border. No deeper water for alternative routing available.

Figure 2-8 LC#D7 @ Miller Marsh

ID:	LC#D8		
Location	MP Start	MP End	Length (Miles)
Lake Champlain	81.8	83.6	1.8
Image: Five Mile Point			

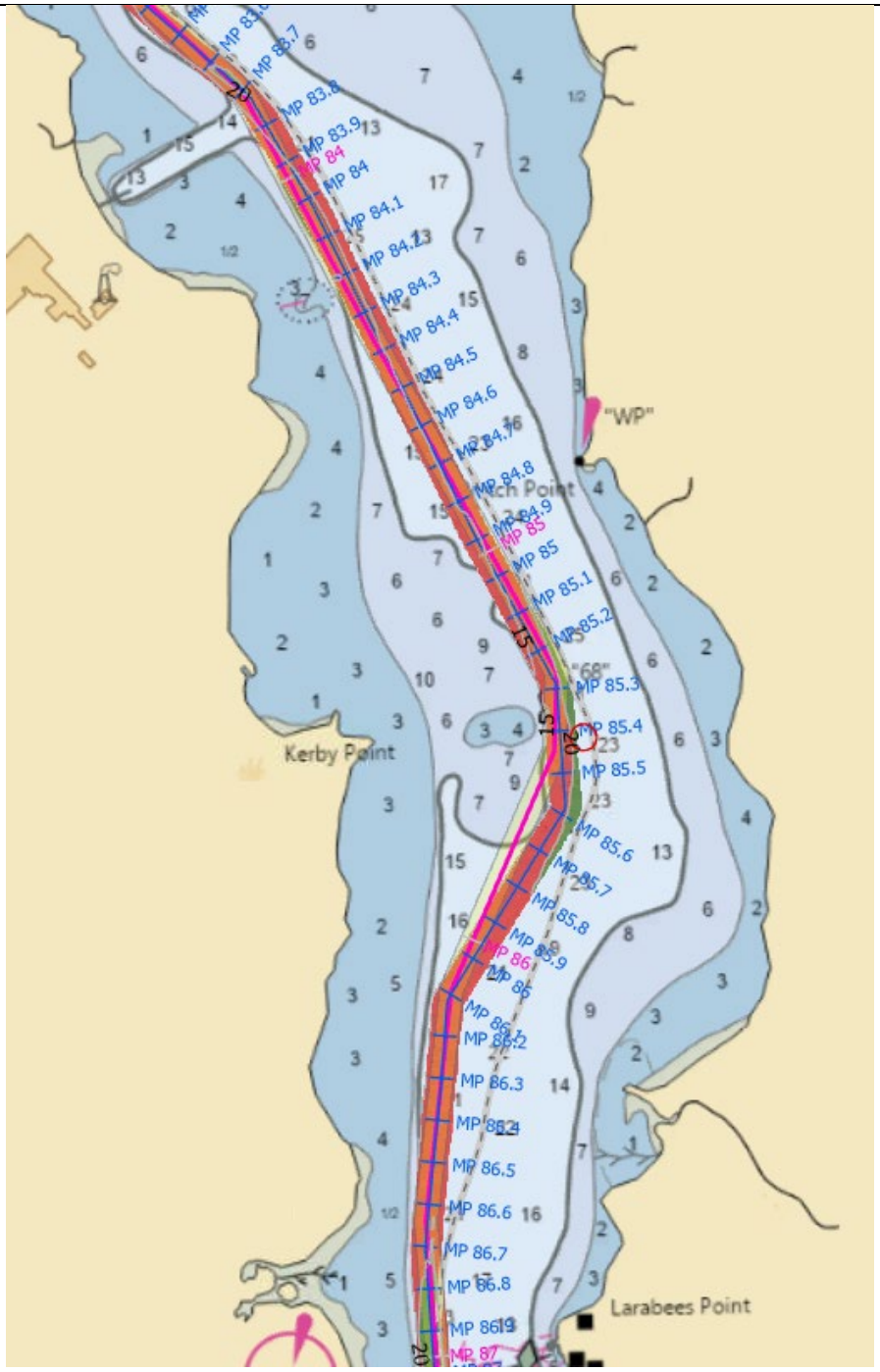


Description:
Routing is located in the deepest available water on the New York side of the State border. No deeper water for alternative routing available.

Figure 2-9 LC#D8 @ Five Mile Point

ID:	LC#D9		
Location	MP Start	MP End	Length (Miles)
Lake Champlain	83.7	86.8	3.1

Image: Kerby Point

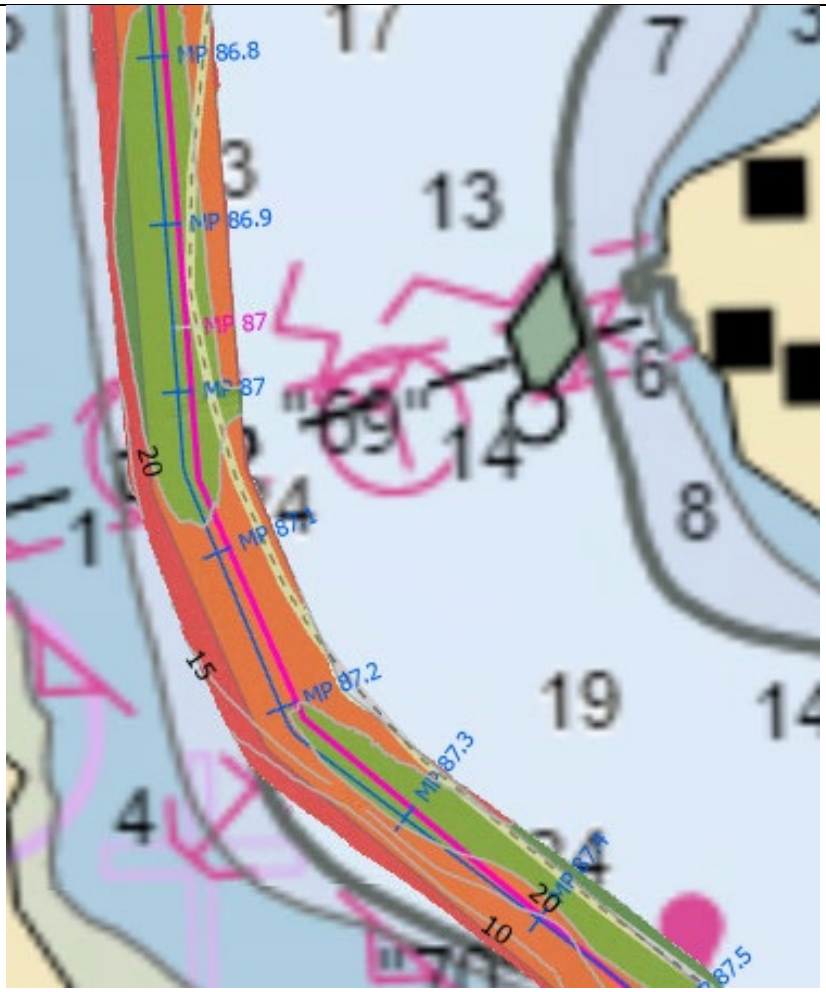


Description:

Routing is located in the deepest water available on the New York side of the State border, while allowing for avoidance of cultural resources. Routing at MP 85.6 is to avoid the shallows to the West with the route being brought back onto the originally permitted route as soon as possible thereafter. Both engineering and environmental reasons justify this deviation.

Figure 2-10 LC#D9 @ Kerby Point

ID:	LC#D10		
Location	MP Start	MP End	Length (Miles)
Lake Champlain	87.1	87.3	0.2
Image: Larabees Point			

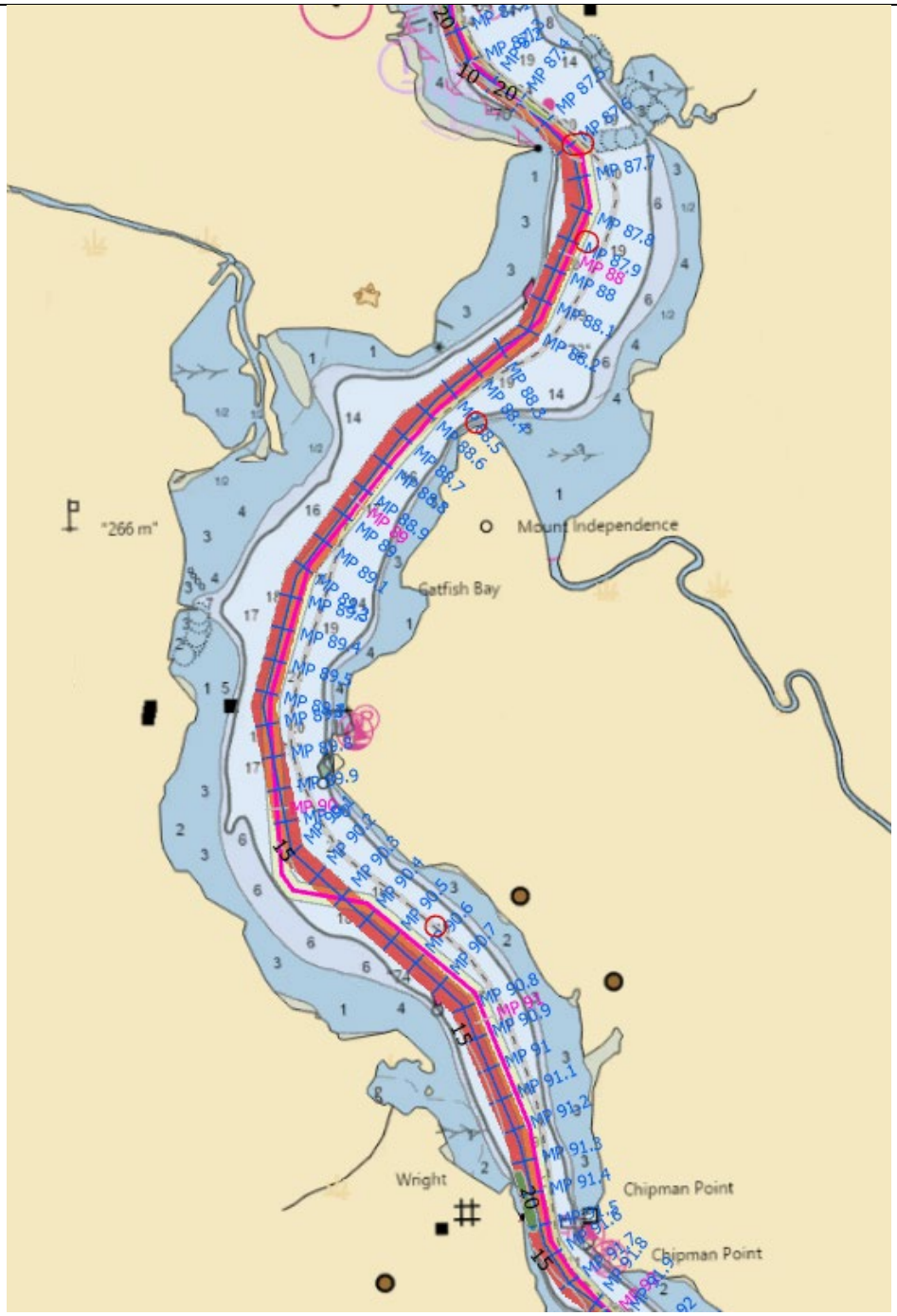


Description:
Routing is located in the deepest available water on the New York side of the State border. No deeper water is available for alternative routing.

Figure 2-11 LC#D10 @ Larabees Point

ID:	LC#D11		
Location	MP Start	MP End	Length (Miles)
Lake Champlain	87.4	91.9	4.50

Image: Larabees Point - Gourlie Point



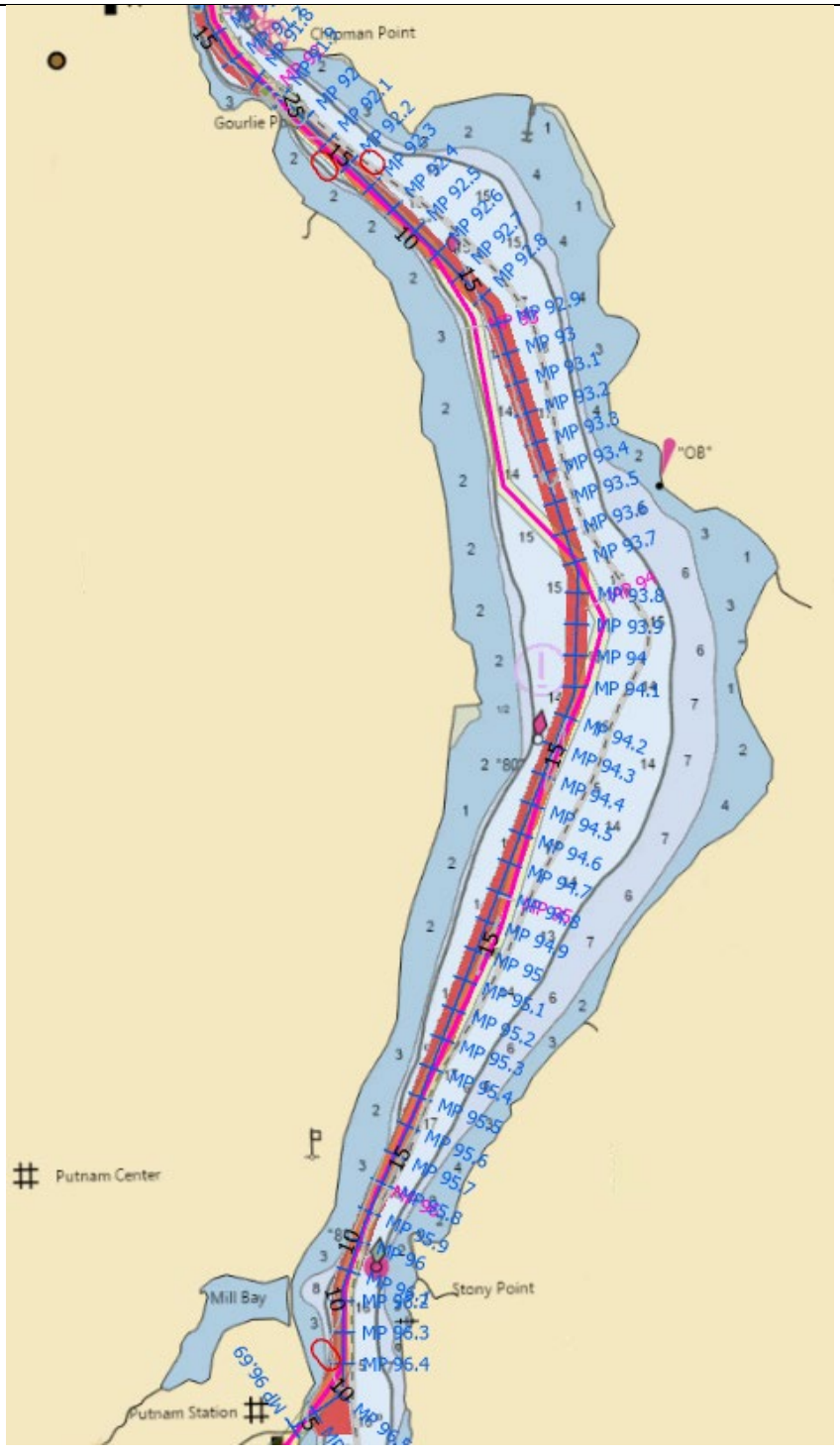
Description:

Routing is kept in the deepest water available with small rerouting to avoid multiple cultural resource targets. Routing is kept as close to the originally permitted route as possible whilst maintaining separation from the State line to the east. Both engineering and environmental reasons justify this deviation.

Figure 2-12 LC#D11 @ Larabees Point - Gourlie Point

ID:	LC#D12		
Location	MP Start	MP End	Length (Miles)
Lake Champlain	92.0	96.8	4.80

Image: Gourlie point – Putnam Station



Description:

Route stays to the deepest water available whilst keeping on the New York side of the state line. There are no alternatives which would allow for a reroute into deeper water.

Figure 2-13 LC#D12 @ Gourlie Point – Putnam Station

3 Deviations from the Approved Facility Route >150 feet Proximate to Cultural Resources (CC 156(b)(2))

As described in Section 1 above, adjustments to the Approved Facility Route in Lake Champlain are necessary to achieve safe and effective installation of the submarine cable. This section describes deviations of over one hundred and fifty (150) feet from the centerline as currently approved by the PSC which may cause the HVDC transmission system to come within one hundred and sixty feet (160) feet of Cultural Resources (CC 156(b)(2)). These departures from the approved centerline are justified by appropriate environmental and engineering reasons (as identified in more detail by location), do not create a conflict with the Certificate, do not change the overall character or location of the Facility, and do not result in a significant increase in adverse effects to CI or other infrastructure. For these reasons, approval of these changes is warranted under CC 156(b).

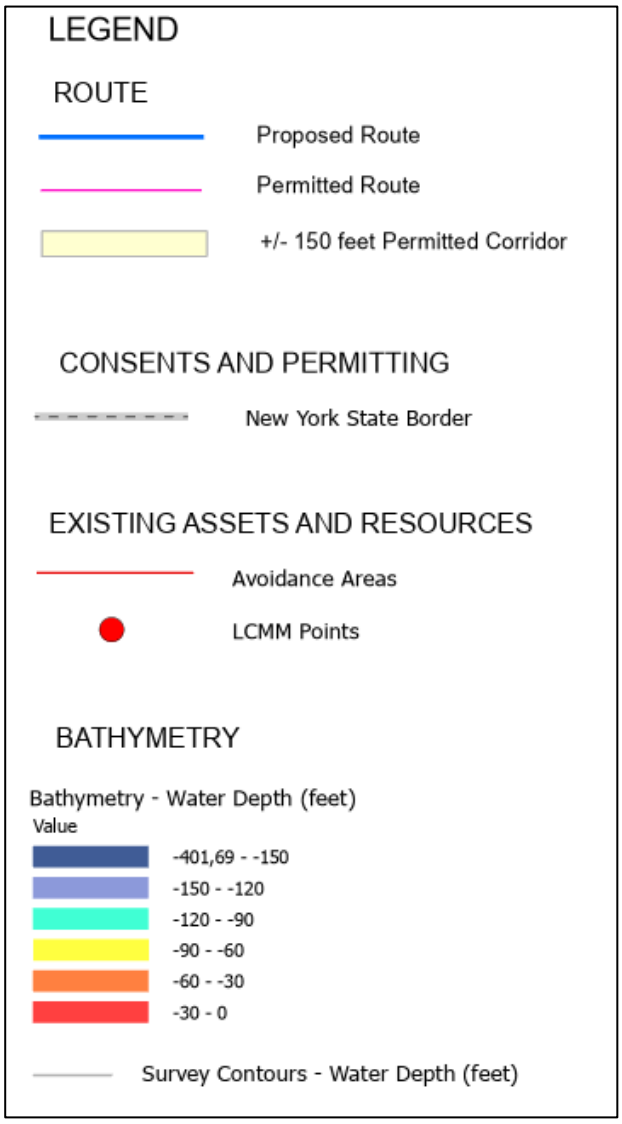
Table 3-1 below provides an overview of the area within Lake Champlain where deviations of over one hundred and fifty (150) feet in the centerline are within one hundred and sixty feet (160) feet of Cultural Resources.

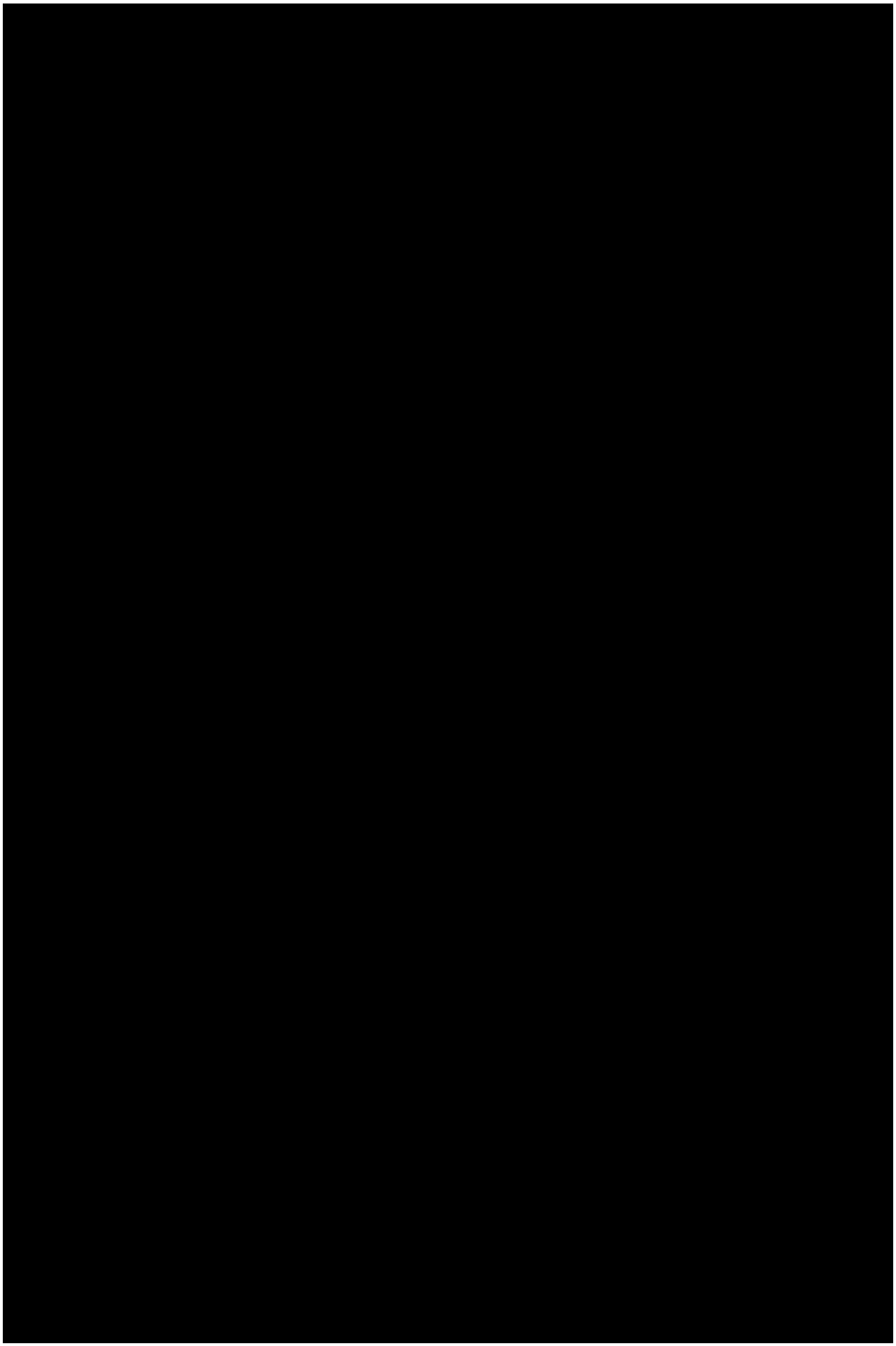
The following pages provide a figure and description for this area, and Figure 3-1 below provides the legend for the figure.

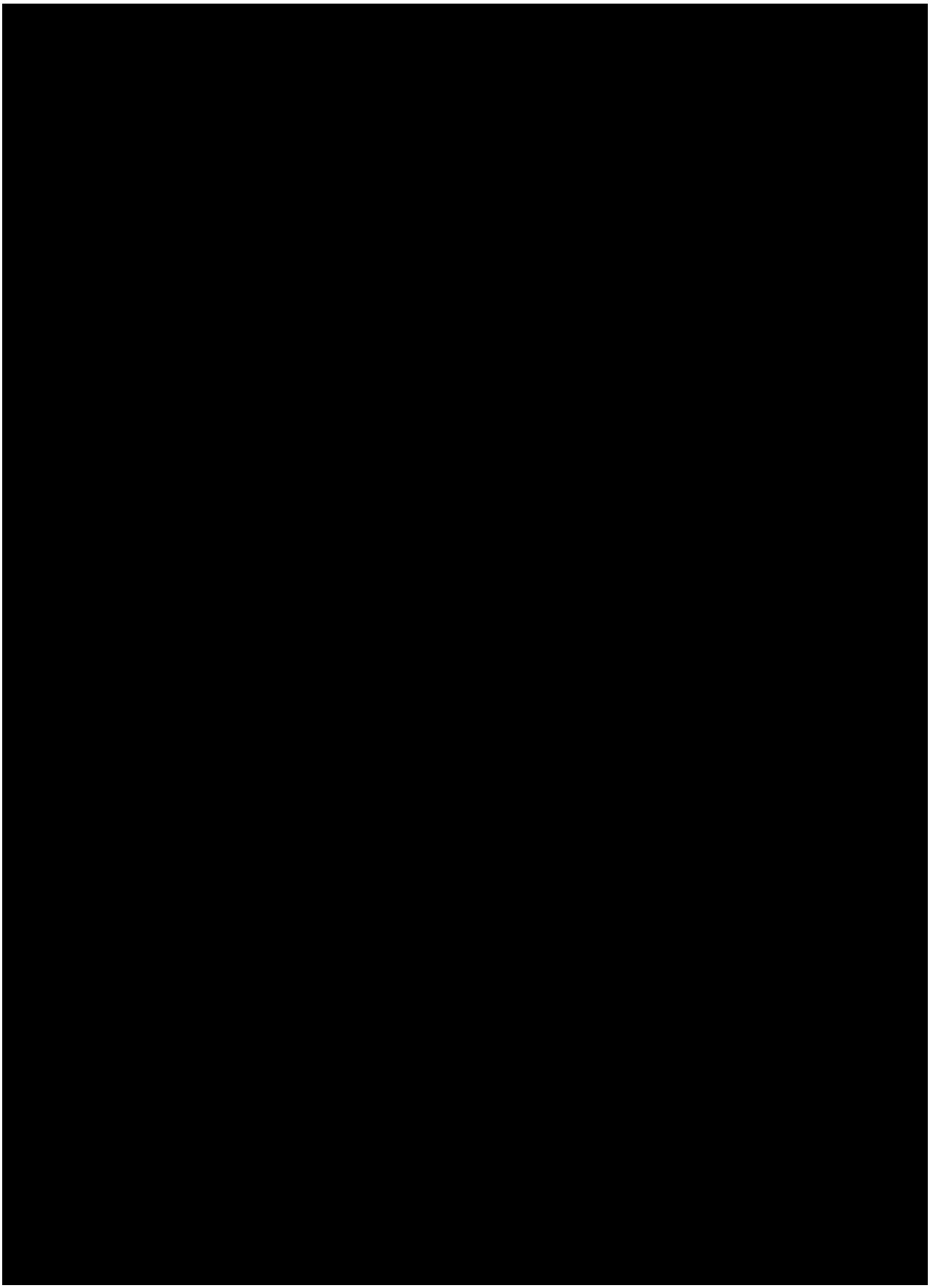
Table 3-1: Deviations of >150 feet Proximate to Cultural Resources (CC 156(b)(2))

ID	Location	MP-start	MP-end	Length (Miles)	Deviation >150 FT from Approved Centerline	Reason for Deviation		Within ADZ	Limited ADZ				Justification in EM&CP Required	Written Consent Required
						Engineering	Environmental	Water Depth >20 FT	Within Exclusion Zone	<160 FT from Cultural Resource	Within SCFWH	Adverse CI Effects		
[redacted]					Yes	•	•	No	No	Yes	No	No	Yes	Yes (SHPO)

Figure 3-1 Legend / Symbology







List of References

Ref.	Distributor	Document Title	Document Number
[01]	NKT	CHPE-Route_Lake Champlain1-17_RPL_Rev08IFR – Drawing	1AA0551885
[02]	NKT	CHPE-Route_Hudson18-33_RPL_Rev08IFR – Drawing	1AA0551885
[03]	NKT	Route Position List_A – CHPE-RPL-Rev09.1	1AA0595332

Table of Modifications

Rev.	Date	Prepared by	Description
A	2023-03-28	Pieter van der Linde	First issue of document
B	2023-10-13 - 2023-10-18	Sean Murphy, Tierney Latham, Mark Brain	For inclusion with EM&CP
C	2024-01-19	Pieter van der Linde	Updated figures for route revision 9.1
D	2024-01-25	Tierney Latham, Mark Brain, Pieter van der Linde, Sean Murphy, Laura Darling, Josh Bagnato	For inclusion with EM&CP