ENVIRONMENTAL MANAGEMENT AND CONSTRUCTION PLAN

HUDSON TRANSMISSION FACILITY

EM&CP III: Submarine Cable Installation

Case 08-T-0034

Version updated
18 August 2011

Submitted by:

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1. INTRODUCTION

This Environmental Management and Construction Plan (EM&CP III) is submitted on behalf of Hudson Transmission Partners, LLC (HTP) for the work associated with submarine cable installation activities and upland cable delivery pulling and splicing of the Hudson Transmission Facility (or Project) pursuant to the New York State Public Service Commission (NYSPSC) Order Granting Certificate of Environmental Compatibility and Public Need (the Certificate) issued and effective 15 September 2010 (Case 08-T-0034) (Appendix B), the 401 Water Quality Certificate (Appendix B), and the United States Army Corps of Engineers permit NAN-2008-00732 issued and effective 06 December 2010 (Appendix C). This document presents the environmental practices and procedures that will be used in the cable installation and management of the Project during submarine cable installation and upland cable pulling, splicing and delivery activities.

1.1. FILING SEQUENCE

EM&CP III covers work related to cable installation in the Hudson River at the New York/New Jersey State Border to the landfall location in the Hudson River near West 52nd Street in Manhattan (Figure 1). HTP has filed separate Upland Construction (EM&CP I) and HDD construction EM&CPs (EM&CP II) which provide detailed information on upland trenching work (approved by NYSPSC on 12 May 2011) and HDD and cofferdam installation (approved by NYSPSC on 16 June 2011). The sequence of filings is driven by critical path construction scheduling and the need to complete submarine cable installation prior to 15 November when in-water work restrictions begin in order to maximize the protection of aquatic resources in the Hudson River.

1.2. GENERAL STATEMENT OF COMPLIANCE WITH CERTIFICATION CONDITIONS

In compliance with the applicable Certificate conditions of the 15 September 2010 Order, HTP submits this EM&CP III. This version of the EM&CP III filing updated on 18 August 2011 incorporates the responses to NYSPSC and NYSDEC comments (Appendix N). Table 1 provides an overview of each of the Certificate conditions and corresponding EM&CP reference. We note that several of the Certificate conditions require general compliance with applicable laws and regulations. We also note that several conditions are specifically applicable only to other

segments of the EM&CP, and are not addressed in this filing. These conditions are noted in Table 1.

1.3. DOCUMENT ORGANIZATION

The sections following provide a general description of the project, permit application status, cable installation, delivery, pulling and splicing plans and schedule, and a description of Project compliance with the Certificate conditions. The document sections (3. Public Health and Safety; 4. Submarine Cable Installation Plan; 5 -7. Upland Cable Delivery, Pulling and Splicing Plans; 8. Environmental Compliance and Restoration Plan) follow the general sequence of conditions as presented in the 15 September 2010 Order. Subsections are included as necessary to further describe the details related to specific permit conditions.

Table 1: Environmental Management & Construction Plan (EM&CP) compliance with the Certificate of Environmental Compatibility & Public Need (Case 08-T-0034) Issued & Effective September 15, 2010.			
Certificate Condition	**Description**	**EM&CP III Reference**	**Note**
General			
1-4	General compliance	1.2	
5-7	Laws and regulations	2.2	
Public Health and Safety			
8	Compliance with EMF standards		Addressed in EM&CP I
9	Construction noise mitigation		Addressed in EM&CP II
10	Construction deliveries		Addressed in EM&CP II
11	Chemical and waste storage		Addressed in EM&CP II
12	Fugitive dust and airborne debris		Addressed in EM&CP I
13	Contractor parking		Addressed in EM&CP II
14	Traffic consultations		Addressed in EM&CP II
15	Over-sized delivery permits		Addressed in EM&CP II
16	Compatibility with existing utilities	4.5	Addressed in EM&CP I
17	Coordination of construction and maintenance with adjacent facilities		Addressed in EM&CP I
18	Protection of underground facilities		Addressed in EM&CP I
19	Construction schedule		Addressed in EM&CP II
Environmental Management & Construction Plan			
20	Application of the §401 Water Quality Certification		Addressed in EM&CP II
21	Incorporation of final design plans, permit status and Interconnection Agreement into the EM&CP		Addressed in EM&CP II
22	Approved EM&CP prior to construction	7	
23	EM&CP submittals	7	
24	EM&CP filing notice	7	
25	Public notice of EM&CP filing	7	
26	Notice requirements	7	
27	Requirements for approved changes to the EM&CP	7	
28a	EM&CP to include: Details of work site dimensions, construction rights-of-ways, utility crossings etc.		Addressed in EM&CP II

Table 1 (cont.): Environmental Management & Construction Plan (EM&CP) compliance with the Certificate of Environmental Compatibility & Public Need (Case 08-T-0034) Issued & Effective September 15, 2010.

Certificate Condition	Description	EM&CP III Reference	Note
28b	Details of HDD		Addressed in EM&CP II
28c	Details of HDD borehole location		Addressed in EM&CP II
28d	Cable pulling plans	5.3	
28e	Designated parking areas and equipment storage & staging locations		Addressed in EM&CP II
28f	Erosion control plan		Addressed in EM&CP II
28g	Spoil control plan		Addressed in EM&CP II
28h	Hazardous material handling		Addressed in EM&CP II
28i	Traffic control and public safety		Addressed in EM&CP II
28j	Pedestrian & vehicle traffic control		Addressed in EM&CP II
28k	Street & sidewalk restoration		Addressed in EM&CP II
28l	Nighttime construction provisions		Addressed in EM&CP II
28m	Underwater construction and vessel spill containment	3.5	Addressed in EM&CP II
28n	Site restoration		Addressed in EM&CP II
28o	Construction schedule and coordination plans		Addressed in EM&CP II
28p	Dredging and dredged materials management plans		Addressed in EM&CP II
28q	EMF standards		Addressed in EM&CP I
28r	Details of the dielectric fluid storage tanks and vaults		Addressed in EM&CP I
28s	Spill prevention, release control and clean-up plan		Addressed in EM&CP II
28t	Cable fluid pressure monitoring plan	4.1	
28u	Sediment and benthic monitoring plans	6.1 and 6.2	
28v	Avoidance plan of underwater archeological resources	4.6	Addressed in EM&CP II
28w	Other mitigation	6.1	
28x	De-watering, run-off and drainage control plans		Addressed in EM&CP II
28y	Handling and disposal of HDD fluids and cuttings		Addressed in EM&CP II
28z	Backfill suitability		Addressed in EM&CP I and II
28aa	Water quality monitoring plan	6.3	
28bb	Compliance plan	6.4	

Table 1 (cont.): Environmental Management & Construction Plan (EM&CP) compliance with the Certificate of Environmental Compatibility & Public Need (Case 08-T-0034) Issued & Effective September 15, 2010.			
Certificate Condition	**Description**	**EM&CP III Reference**	**Note**
Notices and Public Complaints			
29	Public Toll-free or Local Number	7	
30	Notification to Local & Emergency Officials	7	
31-32	Notification to all construction contractors	7	
33	Notice to begin construction	7	
34	Weekly construction status reports	7	
35	In-service notification	7	
Right-of-Way, Construction, Maintenance and restoration			
36	Confinement of construction and maintenance to approved areas		Addressed in EM&CP II
37	Soil and erosion control plans as required in the Stormwater Pollution Prevention Plan of <1 acre		Addressed in EM&CP II
38	Public streets & rights-of-way		Addressed in EM&CP II
39	Notification of final restoration		Addressed in EM&CP II
40	Facility management plan		Addressed in EM&CP I
Installation, Suspended Sediment and Water quality Monitoring			
41-46	Installation, Suspended Sediment and Water quality Monitoring	6.3	
47	Pre- and post-installation sediment and benthic monitoring plans	6.1 and 6.2	
Environmental Supervision			
48a-d	DPS Field Representative and stop-work orders	6.4	
49	Independent inspector	6.4	
50	Audit inspections	6.4	
Cultural Resources			
51-53	Cultural resource requirements	4.6	
Transmission System Reliability			
54-73	Transmission system reliability		Addressed in EM&CP I
65a-b	Monthly construction progress reports	6.4	
Miscellaneous Conditions			
74	As-built drawings	N/A	
75	Street trees and landscaping restoration		Addressed in EM&CP I
76	Safety manuals for construction procedures	3	
77	Construction progress reports	6.4	

2. GENERAL DESCRIPTION

2.1. PROJECT OVERVIEW

HTP holds a Certificate of Environmental Compatibility and Public Need for the construction and operation of the New York State portion of a controllable 660 MW 345kV transmission line that will extend from Ridgefield New Jersey to New York City (Figure 1). Its principal physical features include:

- An interconnection with the regional Pennsylvania-Jersey-Maryland ("PJM") grid and a 230 kV underground cable 1,760 feet from the Bergen substation to a converter station where the alternating current will be converted first to direct current and back to alternating current at 345 kV for transmission to New York;

- A submarine power transmission cable that will extend for a distance of approximately 4 miles (3.3 miles in New York waters) buried below the Hudson River bottom, to a landfall point west of the pier line and north of Pier 92;

- An upland power transmission cable system, which includes an underground fluid vault and 345kV underground cable that will extend underground for a distance of approximately 0.2 miles on West 52nd Street and 12th Avenue to the entrance of Consolidated Edison's West 49th Street Substation where the transmission facility terminates.

2.2. PERMITS AND AUTHORIZATIONS

On 15 September 2010, the State of New York Public Service Commission issued an Order Granting Certificate of Environmental Compatibility and Public Need for the HTP Project (Case 08-T-0034). In addition to the Certificate, the HTP Project has or is in the process of receiving all other permits and authorizations necessary for construction and operation. The status of the major federal, state, and New York City municipal permits that are required for the HTP Project are listed in Table 2 (Certificate Condition 21). Copies of the major permits and approvals received to date were included in Appendix B of EM&CP I. Pursuant to Certificate Condition 64(e), an executed Interconnection Agreement (IA) between NYISO, Con Edison and HTP was provided to the NYSPSC on April 26, 2011 (Appendix D). Approval of this EM&CP III filing will allow HTP to proceed with submarine cable installation subject to notification and scheduling requirements included in the Certificate.

Table 2. Status of major permits for the Hudson Transmission Facility as of 7/11/2011.

Permit			Status
Federal Permits/Approvals			
	U.S. Army Corps of Engineers		
		Individual Permit (NAN-2008-00732)	Issued: 06-Dec-2010
New Jersey Permits/Approvals			
	Department of Environmental Protection		
		Waterfront Development (WFD 080001)/ Coastal Wetlands Permits:	Modified: 04-Nov-2009
		* Freshwater Wetlands General Permit #2	
		* Freshwater Wetlands Permit #14/ Acceptable Use Determination/Water Quality Certification	
New York Permits/Approvals			
	Public Service Commission		
		Certificate of Compatibility and Public Need (Case 08-T-0034):	Issued: 15-Sep-2010
		Water Quality Certification	Issued: 15-Sep-2010
		EM&CP: Upland Construction	Approved: 12-May-2011
		EM&CP: HDD Construction	Approved: 16-June-2011
		EM&CP: Submarine Cable Construction	Submitted: 22-July-2011
	Department of State		
		Coastal Zone Consistency Determination	6-June-2010
	Office of General Services		
		Cable Construction Easement	Interim Permit issued signed by OGS 12-Apr-2011
	New York State Department of Transportation		
		Highway Work Permit	Issued June 20, 2011
Local New York City Permits/Approvals			
	NYC Department of Transportation		
		Revocable Consent Agreement	Approved; issued by NYC Comptroller 5-5-11
	NYCDOT Office of Construction Mitigation and Coordination (OCMC)		
		Traffic Stipulations	Issued

3. PUBLIC HEALTH AND SAFETY

Activities associated with the submarine cable route in the Hudson River and upland cable delivery, pulling and splicing have been designed to protect the health and safety of the public and construction crews; and to comply with the requirements of the Certificate.

The sections below outline the procedures that are to be followed in order to maintain safe working conditions and to prevent safety hazards and interference with existing marine uses and traffic during the submarine cable installation and cable delivery, pulling and splicing.

3.1. NOTIFICATION OF IN-WATER CABLE INSTALLATION ACTIVITIES

Prior to submarine cable installation, in-water activities will be coordinated with the U.S. Coast Guard (USCG) Waterways Oversight Branch. HTP will provide the following information:

- The start and anticipated end dates for in water work
- The hours of the day the work will be performed
- The name and description of work vessels
- VHF radio channels the vessels will be monitoring
- Company point of contact

The above information will be provided to the U.S. Army Corps of Engineer (USACE) Harbor Supervision and Compliance Section and to the USCG Waterways Oversight Branch thirty days before the project commences. It will either be faxed or mailed to the following:

Department of the Army
New York District Corps of Engineers
26 Federal Plaza
NY, NY 10278
ATTN: CENAN-OP-RH
FAX (212) 264-4260

USCG Commander
FAX: (718) 354-4190

USCG Waterways Oversight Branch and USACE Harbor Supervision and Compliance Section will be notified within 24 hours of any change to the anticipated end date of construction. Local waterway users and commercial fishermen will also be notified of the project, using the "Local Notice to Mariners". Information to be provided in the local notice to mariners will be obtained from http://www.navcen.uscg.mil. The information will be faxed to (617) 223-8073.

In addition to notifications to NYPD and FDNY per Certificate Condition 30, two weeks before submarine cable installation, HTP will notify the following:

1. Sandy Hook Pilots Association
   201 Edgewater Street
   Staten Island, NY 10305
   Telephone: (718) 448-3900
   Fax: (718) 447-1582

2. New York Harbormaster
   P.O. Box 202
   Oakdale, New York 11769-0202
   admin@nysharbormasterbayconstableassoc.org

3.2. SAFETY PROCEDURES AND PROTOCOLS

HTP is committed to provide a safe working environment for the health, safety and welfare of personnel involved in the submarine cable installation. All personnel working on-board the cable laying vessel will have read and signed-off on the Cable Laying Vessel Giulio Verne Safety Manual (Appendix E) and the Emergency Contingency Plan C/V Giulio Verne (Appendix F).

Construction activities associated with cable delivery, pulling and splicing have been designed to protect the health and safety of the public and construction crews; and to comply with the requirements of the Certificate and DOT Standard Specifications (§107-05 Safety and Health Requirements) as well as OSHA Safety and Health Regulations for Construction (29 CFR 1926).

3.3. NOTIFICATIONS OF HAZARDOUS MATERIAL

The on-site storage of hazardous chemicals and waste is not anticipated during submarine cable installation and upland cable delivery, pulling and splicing activities. However, the following procedures will be followed, if necessary. The on site/ vessel Environmental Health and Safety Manager(s)/ Officer(s) will be responsible for contacting the U.S. Coast Guard, NYSDEC, NYCDEP or other agencies with regard to reportable spills or releases (see also Section 3.5). In the event of a hazardous substance release, the following spill release reporting procedure will be implemented:

- Notify the site/ vessel supervisor in charge
- Notify the owner's health and safety officer
- Contact the U.S. Coast Guard
- Contact local police department having jurisdiction in the area
- Contact local fire department having jurisdiction in the spill area
- Contact local emergency/ spill response officials having jurisdiction in the area

Any observation of spills, leaking fluids or improperly stored fluids may trigger the issuance of a "stop work" notice by the independent environmental inspector (see Section 6.0) until the situation is resolved. All applicable regulations governing the storage, transport, use, and disposal of fluids and all reporting requirements for spills will be enforced.

A list of all chemicals used or stored at the staging area and their appropriate Material Safety Data Sheet (MSDS) will be kept on site and on-board each vessel and at work site as necessary, and provided to USCG, local New York City Fire Department (FDNY) and local emergency management officials. All employees will be trained in the use, storage, handling, spill control, and first aid measures required for these chemicals in accordance with the Occupational Safety and Health Administration (OSHA) Construction Hazardous Communication Standard (HAZCOM) (29CFR1926.59).

The on-site/ vessel Environmental Health and Safety Manager(s)/ Officer(s) will ensure that any non-hazardous material encountered during any activity is properly handled. The on-site/ vessel Environmental Health and Safety Manager(s)/ Officer(s) will also ensure that any hazardous materials encountered are handled in accordance with the applicable regulations found in 6 NYCRR Parts 370-374 and NYSDOT Standard Specifications §107-10F (see also Section 3.4).

3.4. HAZARDOUS MATERIAL HANDLING AND WASTE DISPOSAL

Hazardous wastes are unlikely but any generated will be managed in accordance with the applicable regulations found in 6 NYCRR Parts 370-374 and 376. Hazardous wastes are those materials that are specifically "listed wastes" per 6 NYCRR Part 371 and/or those that display hazardous wastes characteristics for ignitability, corrosivity, reactivity and/or toxicity. Petroleum products and chemical substances (generally termed "hazardous materials") will be managed in such a manner as to minimize the potential for threats to human health and the environment.

The following waste handling and waste disposal procedure will be implemented:

- Hazardous waste materials such as oily rags used for equipment maintenance will be stored in appropriate 5 gallon to 55 gallon drums.
- Waste shall be properly packaged, with a written description and labeled as hazardous.
- Waste shall be inspected at least weekly while stored on site.
- Hazardous waste materials will be transported via permitted transporters, hazardous waste manifest and permitted TSDR facilities.
- The environmental health and safety officer will be notified of any new wastes that are generated.

3.5. SPILL PREVENTION, CONTROL AND COUNTERMEASURES PLAN

Submarine Cable Installation

It is not anticipated that there will be any over or underwater spills of hazardous materials during submarine cable installation activities. However, if during the course of construction activities a spill does occur work may be stopped (depending on size and location of spill) and HTP will notify the proper authorities (Section 3.3). The shipboard oil pollution emergency plan (Part II of Appendix F) will be provided to all staff working aboard ship. The plan will be implemented by the on-site/ vessel Environmental Health and Safety Officer.

The shipboard oil pollution emergency plan was written in accordance with the requirements of Regulation 26 of Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto. The purpose of the Plan is to provide guidance to the master and officers on board the ship with respect to the steps to be taken when a pollution incident has occurred or is likely to occur. The Plan contains all information and operational instructions required by the Guidelines issued by the International Maritime Organization (IMO). The Appendices contain names, telephone, and telex numbers of all contacts referenced in the plan, as well as other reference material.

Upland Cable Delivery, Pulling and Splicing

Vehicles and construction equipment will be observed daily to check that fluids (oil, hydraulic, lubricants, or brake fluid) are not leaking and that fuels and fluids are stored in proper, labeled containers. Equipment will have diapers and positive containment under the equipment to contain spills. All refueling operations will use positive containment under the fuel dispenser over to the tank being refilled. Any observation of spills, leaking fluids or improperly stored fluids may trigger the issuance of a “stop work” notice until the situation is resolved and the appropriate field measures implemented to avoid future spills.

All petroleum spills that occur within New York State must be reported to the **New York State Spill Hotline (1-800-457-7362)** within two hours of discovery, except spills which meet the following criteria:

1. The quantity is known to be less than 5 gallons; and
2. The spill is contained and under the control of the spiller; and
3. The spill has not and will not reach New York water or land; and
4. The spill is cleaned up within two hours of discovery.

A spill is considered to have not impacted land if it occurs on a paved surface such as asphalt or concrete. A spill in a dirt or gravel parking lot is considered to have impacted land and is reportable. More details on notification and reporting requirements can be found in Section 1.1 of the NYSDEC Spill Guidance Manual (Appendix G of EM&CP I).

3.6. MAINTENANCE AND PROTECTION OF TRAFFIC

Upland Cable Delivery, Pulling and Splicing

Oversize delivery routes and maintenance and protection of traffic plans will be submitted to DPS, NYSDOT and NYCDOT for review and approval in accordance with the NYCDOT revocable consent agreement and NYSDOT Highway Work Permit and in compliance with 17 NYCRR Part 131. No roadway closures or detours are anticipated for the cable reel deliveries to the Con Ed Substation at West 49th Street (see also Section 5.1).

Traffic shall be maintained over a reasonably smooth traveled way which will be marked by signs, guiding devices (i.e. signs and traffic cones), and other methods that will allow for safe travel and minimizes inconveniences to the public. All work will conform to DOT specifications as required in DOT Standard Specifications §619, Maintenance and Protection of Traffic.

Pursuant to Certificate Conditions 13, 14, 15, 28(i), 28(j), and 76, the Work Zone Traffic Control (WZTC) Plan which includes traffic control measures and public safety protections was submitted in EM&CP I and II.

4. SUBMARINE CABLE INSTALLATION

Construction and installation activities associated with submarine cable route in the Hudson River will occur in New York state waters for approximately three miles and will comply with the conditions of the Public Service Commission Order (Case 08-T-0034, issued 15 September 2010), and the United States Army Corps of Engineers permit (NAN-2008-00732, issued 06 December 2010). The route position list (RPL) and corresponding kilometer posts (KP) for the centerline of the submarine cable route is provided in Table 3. Drawings showing the approved submarine cable route can be found in Appendix A. The final corridor was selected as to minimize impacts to aquatic resources and to avoid archeological resources in the Hudson River.

4.1. CABLE INSTALLATION ACTIVITIES

HTP submarine cable route was designed to minimize potential interferences with navigation and aquatic resources. The submarine cable is composed of 3 armored copper-cored Self Contained Fluid Filled (SCFF) PPL insulated AC cables bundled together with 2 optical fiber cables. The cable is being buried at a minimum depth of 15 feet below the authorized channel depth within the federally maintained channel and at a minimum depth of 10 feet below the riverbed outside the channel.

The HVAC cable and the two (2) optical cables will be laid bundled together in one (1) single campaign by the C/V Giulio Verne, and the cables will be simultaneously laid and buried. For some short sections (i.e. HDD, crossing utilities) the cable will be laid and then buried or additional cable protection will be used during a separate operation.

In the event that the cable burial depth of at least ten (10) or fifteen (15) feet, as required, has not been achieved in an area, HTP will report the actual depth and propose a plan for achieving adequate cable protection at that given location. This plan will be submitted to the Department of Public Service (DPS), U.S. Army Corps of Engineers (USACE) and the New York State Department of Environmental Conservation (NYSDEC) for approval.

4.1.1. CABLE DELIVERY

The HVAC and fiber optic cables will be loaded on Prysmian's C/V Giulio Verne (Appendix G). One HVAC cable will be wound on the ship's rotating platform. The rotating platform has a capacity of 7000t and a bending diameter ranging from 6m (diameter of the inner cone of the platform) to 25m (diameter of the external wall of the platform).

The other two power cables will be wound in two smaller rotating platforms installed forward from the 7000t capacity platform. The two fiber optic cables will be coiled in two fixed tanks.

The C/V Giulio Verne will transit to the operations site in the Hudson River to conduct pre-installation activities and verify that cable laying and burying systems (i.e. echo sounder, hydro-acoustics, cable laying control equipment and dynamic vessel positioning) are operational.

4.1.2. PRE-LAY GRAPNEL RUN

A pre-lay grapnel run will be conducted along the submarine cable route as needed in order to ensure that there are no obstructions present for cable laying and burial. It will be conducted in areas identified with surface debris during the pre-construction marine route survey. This survey will be conducted to identify stray debris such as surface-lying lines/wires located within the cable installation corridor. The pre-lay grapnel run will be conducted by a suitably equipped vessel. If an alternate vessel is needed to conduct a pre-lay grapnel run, the U.S. Coast Guard and other agencies will be notified, as necessary. Additional grapnel runs, if needed, will be included in the weekly construction progress report.

The pre-lay grapnel run is designed as a single pass along the center line of the installation route and will penetrate the seabed at a depth of 0.6-1.3 ft (0.2-0.4 m) and a width of 0.3-0.6 ft (0.1-0.2 m). The grapnel will be towed behind the vessel along the seabed and the grapnel pull resistance will be monitored throughout the towing operation.

The grapnel run is not intended to remove existing utilities which are laid or buried within the cable installation corridor. In the case that a line or wire is caught by the grapnel and it is identified for removal, one of the following actions may occur: 1) the wire will be cut by the grapnel or 2) the wire will be dragged by the vessel away from the cable installation route. In either event the obstruction will be removed from the cable installation route. If a surface lying line/wire is cut during the pre-lay grapnel run, the owner(s), if they can be identified, will be notified.

4.1.3. PRE-INSTALLATION JET TRIALS

Prior to submarine cable installation, a pre-installation jet trial will be conducted along a 1,000 foot segment of the cable route in the representative sediment type (Figure 2). The location of the pre-installation jet trial was selected based on the results of the marine route survey conducted in

December 2010 which showed uniform sediment type (silt/clay) along the submarine cable route. The purpose of this trial is to simulate jet plowing operations and refine operating configurations in order to achieve required burial depths and minimize re-suspension of sediments. See section 6.3 for details on Water Quality/Total Suspended Sediment monitoring for pre-installation jet trials.

4.1.4. CABLE LAYING AND BURIAL

The submarine cables will be laid and buried simultaneously using a Hydroplow VI (Appendix H) or similar installation equipment. The Hydroplow VI fluidizes the seabed along the cable installation path to a predetermined depth.

The Hydroplow will be prepared for launching by connecting it to the tow wire, water hose and umbilical. When all the appropriate connections are secured the on-board crane will lift the Hydroplow from the deck of the C/V Giulio Verne and place it on the seabed. A team of divers will disconnect the crane from the hydroplow and will engage the cable bundle into the machine itself. The machine will then be ready to start cable burial activities.

Cable installation activities begin when towing tension is applied to the Hydroplow from the C/V Giulio Verne. At this time the water jets will be activated and the cable burial operation will commence. The cable laying vessel will move along the cable route as the cables are paid out and simultaneously buried. During cable laying and burial operations the C/V Giulio Verne will use dynamic positioning propulsion; no anchors will be required.

As the cable operations are underway, the five cables (3 HVAC and 2 fiber optic) will be bundled. The five cables will be conveyed into the wrapping machine which will tie the five cables into a bundle configuration. During this step, approximately 1 meter strips of polypropylene will be wound around the cables. Plastic straps will be also applied to the whole bundle every 20-30 m as a back up binding element. The cables will be bound before entering the over-board sheave. The cables are then fed into the hydroplow for laying and burial.

Cable laying activities will be constantly monitored and adjusted during cable laying operations in order to ensure the cable is being laid and buried properly. The cable laying machine operators will be in constant communication with the cable laying technicians in order to ensure that the cable rotating and delivery speed is in accordance with the cable laying linear speed. The following is a description of how each aspect of the cable installation operations will be verified

Cable ship movement along the route

Cables vessel movement along the route during installation will be monitored using a Differential Global Positioning System (DGPS), providing vessel position. Positioning data will be collected using WGS '84 Spheroid/Datum and recorded in the positioning computer. The positioning data will be processed through the navigation computer and the position along the route will be reckoned and the kilometer post (KP) will be sent in real-time to the cable laying control computers.

Length of the cable bundle laid

The length of each cable bundle being laid will be measured by a meter-counter wheel aboard the cable laying vessel. This datum will be sent to the laying control computers, which will compare it to the vessel movement along the route. The difference of these two lengths will be shown on the monitor of the control computer.

Water depth

Water depth will be measured by the vessel echo sounder which will be transmitted to the laying control computers.

Cable tension on-board

Cable tension on-board the cable laying vessel will be measured by a dynamometer system located on the laying sheave. The cable tension value will be sent in real-time to the laying control computers.

Outlet cable vertical angle

The vertical cable angle will be monitored by a camera and a "closed circuit" video network aboard the vessel.

Cable vessel speed along the route

Cable vessel speed will be calculated by the laying control computer which considers the vessel's movement along the route.

Hydraulic monitoring of the cable

The HVAC cables are fluid filled and a portable pumping station with fluid tanks will be arranged in order to keep the fluid pressure in the cable at normal values. The pumping stations

will be fitted inside the central cone of each turntable and connected to the cable head with suitable copper pipes.

Throughout the operation, technicians will monitor the fluid feeding system both on board and on shore. The hydraulic parameters will be monitored and compared to the values of the hydraulic plan prepared for the installation.

Hydroplow position on the sea bottom

The position of the Hydroplow on the sea bed will be determined by the vessel's hydro-acoustic positioning system. A transponder will be installed on the Hydroplow. At regular intervals a signal will be sent to the cable laying vessel's transducer. The time difference between the beacon's answer and its direction will be used to locate the Hydroplow in respect to the vessel. The hydro-acoustic signals will be processed by the navigation computer and the Hydroplow position along the route will be reckoned and recorded. This datum will be sent in real time to the laying control computers.

Burial depth

The cable burial depth will be measured by a system mounted on the Hydroplow and transmitted in real time to the vessel. These values will be sent to the laying control computers and recorded.

4.1.5. CABLE LANDFALL IN NEW YORK

The cable laying vessel, C/V Giulio Verne, will continue cable lay and burial operation up to the position where the final landing operation will start. As the cable vessel reaches the landing position, cable burial will be interrupted.

Before the landing operations begin, the distance from the vessel to the splice pit located at West 52nd Street will be measured and the cables will be cut and capped to the required length. Each cable will be floated separately, one cable at a time, and the following sequence of events will be conducted for each cable:

- The cable will be paid out from the ship, with floats attached.
- The floating cable will be moved in an "omega configuration" by service boats in water.
- With the cable end floating in the water, it will be pulled towards the landfall conduit. The cable head will be connected to the main pulling wire that will extend from a shore winch through the HDD conduit.

- The shore winch will pull the cable into the HDD conduit, while divers monitor the entry of the cable itself into the conduit. The divers will also remove the floats from the cable just before the cable reaches the HDD conduit. The cables will be suspended between the water surface and the conduit as the floats are removed and the cable is pulled.
- After the cables are landed, hydraulic piping will be attached to each cable end to keep the cables temporarily pressurized until spliced with the upland cables. These pipes from the fluid vault are the same pipes that will be used to be permanently connect to the joint for continuous pressurization.

When the landing operations are completed for all cables, the remaining unburied cable section between the cable laying vessel and landfall will be buried in post-lay mode by the HP6 Post Lay Cable Burial Machine (Appendix H) or similar.

4.2. CABLE INSTALLATION SCHEDULE

Activities associated with the submarine cable installation will run continuously until all the cable is laid and buried. The anticipated schedule for pre-installation (i.e. pre-lay grapnel run and jet trials) and cable laying activities is from September to 15 November 2011 (Table 4). Note that the dates given are approximate and are dependent on mobilization to the site and construction progress. The day to day installation schedule will be coordinated with other maritime activities and the USCG on a weekly basis at regularly scheduled project construction meetings to which DPS and DEC will be invited. Planned installation and construction sequencing is intended to maintain the safe movement of commercial and recreation traffic along the cable route.

4.3. IN WATER CONSTRUCTION WORK WINDOW

Cable laying and burial activities associated with the submarine cable route will be conducted in New York State waters during the fall of 2011 prior to 15 November. It is not anticipated that work will need to be conducted outside of the established work window between June 1 and November 15 in 2011 or 2012. However if there are unforeseen events (etc. severe weather), HTP will petition USACE, DEC, and DPS for modifications of the work window.

Due to the seasonal restrictions involved with in-water work and the speed at which the cable is laid and buried (approximately 3 meters of cable/min), cable installation activities are planned to continue 24 hours a day 7 days a week. However, there may be some down time due to weather,

vessel maintenance or other unforeseen events. If an unscheduled break in cable installation is required, HTP will notify the DPS, U.S.C.G. and other agencies as needed.

4.4. COORDINATION WITH OTHER MARITIME ACTIVITIES

Consultation with agencies regarding cable installation activities will be accomplished through meetings scheduled on an as-needed basis to properly coordinate with other maritime activities during the period of submarine cable installation. In addition, weekly status reports will indicate upcoming construction activities and locations scheduled for the next two weeks (Certificate Condition 34).

All agencies having jurisdiction within the construction corridor will be notified of any such meetings as needed, and all cable installation activities will be coordinated with agencies having jurisdiction along the cable route.

Not less than two weeks prior to cable installation, the U.S.C.G, Sandy Hook Pilots Association, NY Harbormaster, New York City Dockmaster, USACE, DPS, NYSDEC, NYCDOT, NYPD, FDNY, William Gas Pipeline-Transco and Cross Hudson Corporation will be notified of the approximate date work will begin (PSC Certificate Conditions 30 and USACE Special Conditions D and E).

4.5. PROTECTION OF UNDERWATER UTILITIES

The submarine cable route was investigated for known utility crossings and existing utility information was compiled from field surveys. The William Gas Pipeline-Transco (WPG-Transco) is the only utility crossing along the submarine cable route in New York State Waters. The HVAC and the fiber optic cables are engineered and will be installed to be fully compatible with the operation and maintenance of the pipeline. Based on the actual burial depth of the pipeline as determined by a jet probe survey of the crossing location, and in accordance with Special Condition F of the USACE Permit NAN-2008-00732 which specifically authorizes a vertical clearance of less than 15-feet if it does not adversely affect the pipeline, the mutually agreed upon crossing plan between HTP and Williams-Transco is to continue simultaneous lay and burial operations at a target burial depth so as to maintain a minimum 10-ft clearance (Appendix O).

4.6. UNDERWATER ARCHEOLOGICAL RESOURCES

Cultural resource assessments were conducted for the submarine cable route in New York to assist in compliance with Section 106 of the National Historic Preservation Act of 1996, as amended, and applicable to New York state laws. Per the letter dated July 23, 2010 (Appendix I), the following cultural resource report was submitted to New York State Office of Parks, Recreation and Historic Preservation (OPRHP) in January 2008.

- Submerged Cultural Resources Review of Geophysical Data for the Hudson Transmission Project New York County, New York and Bergen and Hudson counties New Jersey, dated October 2007 and prepared by Dolan Research, Inc.

The Area of Potential Effect (APE) within the direct plow zone was defined in the report as "the maximum area of disturbance at the seabed surface which will generally be less than 20 feet wide." The marine archeologist identified 17 potential cultural resource targets and in a letter dated February 11, 2008 OPRHP concurred that those targets should be avoided to the extent possible.

HTP has since designed the final cable route (Appendix A) to avoid impacts to the 17 submerged targets to the fullest extent possible and the plan to avoid or further assess potentially significant targets along the submarine cable route as set forth in the July 23, 2010 letter will be followed. Should a potential shipwreck or other archaeological site be identified during cable installation, any bottom-disturbing activities in the vicinity of the suspected resource will immediately cease. The location of the suspected resource will be recorded. NYSHPO, DPS and DEC will be notified immediately to discuss field options and potential route changes.

Table 3. Submarine Cable Route Position List

ID (Position Name / Event)	UTM Zone 18N, meters		WGS-84		Water Depth referred to MLLW (m)	Geodetic				
	Easting	Northing	Latitude	Longitude		Partial Distance (km)	KP (km) from NY SLJ	RKP (km) from NJ SLJ	Bearing (deg)	Turning Angle (deg)
NY SLJ	584800	4513469	40°46.069'N	073°59.713'W	-17.8	0.000	0.000	6.110	298.9	0.0
TP 1	584774	4513483	40°46.077'N	073°59.732'W	-14.0	0.030	0.030	6.081	311.1	12.2E
TP 2	584672	4513573	40°46.126'N	073°59.804'W	-8.8	0.136	0.166	5.944	304.9	6.2W
TP 3	584588	4513631	40°46.158'N	073°59.862'W	2.7	0.101	0.267	5.843	298.4	6.5W
10m WD - NY	584429	4513717	40°46.206'N	073°59.975'W	10.0	0.182	0.449	5.661	298.4	0.0
Entrance - Reach F	584356	4513757	40°46.227'N	074°00.026'W	12.2	1.000	0.531	5.579	298.4	0.0
Exit - Reach F \ Entrance - Reach D	584343	4513764	40°46.231'N	074°00.036'W	12.7	0.015	0.546	5.564	298.4	0.0
TP 4	584323	4513775	40°46.237'N	074°00.050'W	13.3	0.023	0.569	5.541	21.2	82.8E
Cofferdam Center NY	584328	4513790	40°46.245'N	074°00.046'W	13.4	0.016	0.585	5.525	21.2	0.0
TP 5	584372	4513902	40°46.306'N	074°00.014'W	13.7	0.120	0.706	5.404	29.7	6.9E
Exit - Reach D	584549	4514213	40°46.473'N	073°59.886'W	14.2	2.000	1.064	5.046	29.7	0.0E
TP 6	584575	4514258	40°46.497'N	073°59.867'W	14.1	0.052	1.116	4.994	30.9	1.3E
TP 7	584615	4514326	40°46.533'N	073°59.838'W	14.2	0.079	1.195	4.916	28.3	2.6W
Anchorage Area - Entrance	584974	4514991	40°46.891'N	073°59.577'W	13.6	0.756	1.950	4.160	28.3	0.0
TP 8	585136	4515292	40°47.052'N	073°59.459'W	14.3	0.342	2.292	3.818	43.3	14.9E
Pipeline Area South	585225	4515387	40°47.103'N	073°59.395'W	14.2	3.000	2.423	3.687	43.3	0.0
TRANSCO Pipeline	585327	4515495	40°47.161'N	073°59.322'W	14.7	0.148	2.571	3.539	43.3	0.0
Pipeline Area North	585433	4515607	40°47.221'N	073°59.246'W	12.6	0.155	2.726	3.384	43.3	0.0
TP 9	585476	4515654	40°47.246'N	073°59.214'W	12.3	0.063	2.789	3.321	28.2	15.0W
TP 10	585627	4515934	40°47.396'N	073°59.105'W	11.4	0.318	3.108	3.003	18.3	10.0W
TP 11	585667	4516056	40°47.462'N	073°59.076'W	11.9	4.000	3.236	2.874	35.6	17.3E
TP 12	585746	4516166	40°47.521'N	073°59.019'W	11.8	0.135	3.371	2.739	25.9	9.6W
TP 13	586477	4517668	40°48.328'N	073°58.486'W	17.1	1.672	5.043	1.067	347.7	16.0W
TP 14	586492	4517753	40°48.374'N	073°58.475'W	18.0	0.086	5.128	0.982	325.2	22.3W

TP 15	586475	4517829	40°48.415'N	073°58.486'W	17.5	0.078	5.207	0.904	302.7	22.5W
TP 16	586431	4517893	40°48.450'N	073°58.517'W	16.6	5.000	5.285	0.826	296.1	22.5W
TP 17	586365	4517935	40°48.473'N	073°58.564'W	15.8	0.078	5.363	0.747	294.6	8.0W
NY/NJ State Border	586281	4517974	40°48.494'N	073°58.623'W	12.7	0.093	5.455	0.655	296.3	1.6W
Entrance - Reach I	586182	4518022	40°48.521'N	073°58.693'W	10.1	0.110	5.565	0.545	296.3	0.0
Anchorage Area - Exit	586180	4518023	40°48.522'N	073°58.695'W	10.1	0.002	5.568	0.542	296.3	0.0
10m WD - NJ	586176	4518025	40°48.523'N	073°58.697'W	10.0	6.000	5.572	0.538	296.3	0.0
Exit - Reach I	585977	4518124	40°48.577'N	073°58.838'W	6.2	0.222	5.794	0.316	296.3	0.0
Cofferdam Center NJ	585957	4518133	40°48.583'N	073°58.852'W	5.2	0.022	5.816	0.294	296.3	0.0
NJ SLJ	585694	4518264	40°48.655'N	073°59.038'W	-10.0	0.294	6.110	0.000	296.1	0.0

Table 4. Tentative schedule for submarine cable activities and monitoring events (subject to construction progress).

Event	Tentative Dates	Comments
EMCP III Approval	**9-15-2011**	Includes approval of sediment and benthic monitoring and mitigation plans
Pre-Installation Activities		
Pre-Installation Sediment & Benthic Sampling	**Week of 9-18-2011**	Certificate Condition #47
Pre-lay Grapnel Run	**Week of 10-17-2011**	If necessary
Pre-installation Jet Plow Trials	**Week of 10-17-2011**	Section 4.0 of Certificate Appendix: Suspended Sediment/WQ Monitoring Plan
Jet Plow Trials Report to DEC & DPS	**10-21-2011**	Approximate date based on completion of the jet trials
Submarine Cable Installation Activities		
NY Landfall	**10-26 through 10-30-2011**	Approximate dates/subject to construction progress
Submarine Cable Laying & Burial	**10-30 through 11-09-2011**	Approximate dates/subject to construction progress
Final Landing in NJ	**11-09 through 11-13-2011**	Approximate dates/subject to construction progress
Daily Water Quality/TSS Field Monitoring Reports	**10-30 through 11-09-2011**	During jet plow embedment of the submarine cable
Post-Installation Activities		
Post-Installation Sediment Sampling	**Week of 11-14-2011**	Certificate Condition #47
Final Sediment Monitoring Report to DEC & DPS	**February 2012**	3 months following completion of the post-installation sediment survey
NY Upland Cable Pulling & Splicing Activities	**March 1, 2012 to May 1, 2012**	
Final Water Quality/TSS Monitoring Report to DEC & DPS	**May 2012**	6 months following completion of the submarine cable installation
Post-Installation Benthic Sampling	**September 2012**	Certificate Condition #47
Final Benthic Monitoring Report to DEC & DPS	**March 2013**	6 months following completion of the post-installation benthic survey

5. UPLAND CABLE DELIVERY, PULLING AND SPLICING

The following sections describe the activities associated with cable delivery, pulling and splicing. The sequence of events is outlined below:

1. Following the submarine cable installation, three (3) HVAC cable reels and one (1) fiber optic cable reel will be delivered to the Con Ed Substation when needed (Figure 3). No storage will be required.
2. The cable will be pulled from the Con Ed Substation to the transition pit at West 52nd Street. Each HVAC cable will be pulled individually as described in section 5.3.1.
3. After the HVAC cables are pulled, the fiber optic cable will be pulled.
4. Once all cables are pulled they will be spliced to the submarine cables. Note: when the submarine cables are pulled through the HDD into the transition pit, hydraulic piping will be attached to each cable end to keep the cables temporarily pressurized.
5. Each HVAC and fiber optic cable will be spliced. Splicing activities will take approximately four weeks to complete.
6. Upon completion of splicing activities, cables will be permanently pressurized by the fluid vault.
7. The transition pit will be backfilled and restored.

5.1. CABLE REEL DELIVERY AND TRANSPORTATION PLAN

Activities associated with cable reel delivery and transportation for the Project's upland cable installation will occur within the West 52nd Street and 12th Avenue rights-of-way, and Con Ed property (Figure 3). Concurrent with this EM&CP filing, HTP is applying for the oversize hauling, roadway and parkway permits necessary to transport and deliver the cable reels for installation.

Oversize delivery routes and maintenance and protection of traffic plans will be submitted to DPS, NYSDOT and NYCDOT for review and approval in accordance with the NYCDOT revocable consent agreement and NYSDOT Highway Work Permit and in compliance with 17 NYCRR Part 131 (See Section 3.6 Maintenance and Protection of Traffic). No roadway closures or detours are anticipated for the cable reel deliveries to the Con Ed Substation at West 49th Street. Each reel will be delivered using a 100,000-pound capacity reel trailer (Appendix J) with an over-sized width of approximately 13.5 feet.

HIGH VOLTAGE ALTERNATING CURRENT (HVAC) CABLE REELS

Appendix J contains the technical specifications for the upland and submarine cables, the cable reel and reel trailer. The cables associated with the HVAC cable installation route will be delivered on three reels to the Con Edison 49th Street Substation for the upland cable route. The diameter of the cable reel is approximately 13 feet and the cable length on each reel is approximately 1,400 feet. Each cable reel weighs 4,413 lbs empty and approximately 29,100 lbs fully loaded with cable (Appendix J).

FIBER OPTIC CABLE REELS

The cables associated with the fiber optic cable installation will be delivered on industry-standard wood reels, each reel approximately 7 feet in diameter and 7 feet wide. The fiber optic reel will be delivered to the Con Edison 49th Street Substation for the upland cable route.

5.2 UPLAND CABLE PULLING PLAN

The first phase of cable installation is cable pulling through pre-installed conduit duct banks. Activities associated with cable pulling for upland cable installation will occur within the West 52nd Street and 12th Avenue rights-of-way, and Con Ed property. Cable pulling activities will be conducted in accordance with the existing NYCDOT revocable consent agreement and NYSDOT Highway Work Permit.

Cable pulling operations will consist of one pulling-pit which is also the transition pit, cable pulling and backfill/ restoration of the transition pit. The transition pit excavation was described in EM&CP I which was approved on 12 May 2011. For pulling operations, the pulling eye will be positioned inside the transition pit and the excavation of a separate pulling pit is not required as the cables will be pulled one at a time.

HVAC cables will be pulled using a 20,000 lb pulling winch towed by a pick up truck or similar at the transition pit. Prior to cable pulling, a final swab will be passed through the conduit to remove any debris which may damage the cable sheath. This will be achieved by attaching the swab between the mule tape which has been left in the conduit and the pulling rope. The mule tape will then be extracted using an Arnco winch or similar, resulting in the installation of the

intermediate winch pull rope. Prior to the cable entering the conduit, Polywater J or a similar high-performance cable pulling lubricant will be continuously applied to the cable.

The cable pull-in speed will remain constant at a value close to 30 ft/min which will be recorded, along with pulling tension, every 100 feet. When the cable pulling eye reaches the transition pit, it will be inspected and secured. The cable will be cut as long as practical, secured, and capped. This length will then be jacket tested to 10 kV DC to ensure that the cable was not damaged during the pulling operations.

5.3 UPLAND CABLE SPLICING PLAN

The final phase of cable installation is cable splicing. Upon completion of cable pulling, the submarine and upland cable will be spliced together to form a continuous cable that joins the submarine cable and the Con Ed substation. Activities associated with cable splicing for the upland cable installation will occur within the project right-of-way.

Cable splicing activities will occur within the transition pit on W. 52nd Street. This location was selected based on acceptable cable pulling tensions. Each splice will take approximately a week, for a total of four weeks, as each HVAC and fiber optic cable will be spliced individually. The splicing crew will have either a splice trailer with a pick-up truck or a box van to hold their required tools and materials. Splicing crews will be working within the joining pit.

For the HVAC cable, splicing will be conducted in an enclosed temperature-controlled and lighted splice-house similar to an enclosed trench box. Due to the nature of the work, the splice-house is designed for extended periods of occupancy within the splice-pit excavation, including OSHA-required emergency entry and egress points and excavation-wall support and shoring. Splicing tools (press, peeling tools) and lights will be run off of a generator. The generator will be housed in a temporary sound box that will limit the noise at the site.

At the transition pit, the area around the pit has to be free of water and moisture. Based on the location of the transition pit and natural grading, a temporary asphalt diversion berm for rainwater may be installed and located to the east of the transition pit on West 52nd Street as shown on drawing 42 of 46 (EM&CP I approved 12 May 2011). If necessary, water diverted from the transition pit will be filtered through silt sacks of the type shown on Drawing 43 of 46 (EM&CP I approved 12 May 2011) prior to discharge into drainage structures. Water will not be diverted into culverts and/or environmentally sensitive areas.

Erosion control devices will be located down-slope of areas where runoff is likely to occur from surface or subsurface drainage. Erosion control devices will be installed immediately prior to initial disturbance of the soil and will be regularly inspected and maintained according to NYSDOT Standard Specifications §209-3.01. Maintenance and inspection will continue until after permanent stabilization measures are in place or the disturbed areas are restored. Pursuant to Certificate Condition 37, soil erosion and sediment control devices are detailed in the Soil Erosion and Sediment Control Plan (Sheets 40-43 of 46 of Appendix A of EM&CP I).

5.4 CABLE DELIVERY, PULLING AND SPLICING SCHEDULE

In order to minimize impacts associated with temporary road closures, cable deliveries are scheduled during nighttime hours when traffic volume is minimal. Final cable delivery times will be according to NYSDOT and NYCDOT approved hours for oversize hauling permits and temporary road closures. Oversize delivery routes and maintenance and protection of traffic plans, including roadway closures and detours as necessary, will be submitted to DPS, NYCDOT and NYSDOT for review and approval.

Cable reels are scheduled to arrive at the Con Edison 49th Street Substation storage area. Overland cable reel deliveries will not occur outside of the approved routes without prior notification and the necessary permits. Cable reel delivery is anticipated for February 2012. There will be three separate deliveries for each cable reel.

Cable pulling will be conducted beginning approximately in March 2012 (Table 4). The cable will be pulled in one continuous pull which will take approximately one day for each cable for a total of three days. The actual pulling schedule will be coordinated with the cable delivery schedule and with NYCDOT, NYSDOT, DPS and other involved agencies on a weekly basis at regularly scheduled project construction meetings.

The hours and days planned for cable pulling are based on normal day to day operations. In the event of unforeseen situations, additional hours may be required on a case by case basis. NYCDOT, NYSDOT, DPS and other involved agencies will be notified when/if these situations arise. Construction activities will not occur outside of planned work hours without prior notification and approval from the relevant agencies.

The actual splicing schedule will be coordinated with the cable pulling schedule and with NYCDOT, NYSDOT, DPS and other involved agencies on a weekly basis at regularly scheduled

project construction meetings. Planned work hours for cable splicing operations are twenty-four hours. Once a splicing operation begins, splicing crews must work until the splice is complete.

Following staging and cable pulling activities, empty cable reels will be removed via NYSDOT and NYCDOT approved overland routes and returned to cable reel staging area(s) and/or demolished for salvage as necessary.

6. ENVIRONMENTAL COMPLIANCE PLAN

Submarine cable installation and upland cable delivery, pulling and splicing will comply with federal and state regulatory and permit requirements. Submarine cable installation activities and the cable route have been designed to minimize disturbance and impacts to natural resources, aquatic communities and sensitive marine habitats.

Compliance with regulatory and permit requirements will be monitored by an Independent Environmental Inspector(s). Implementation of environmental management controls will also be noted by the on-site Environmental Health and Safety Manager(s) provided by HTP and/or the contractors/subcontractors. Both the Independent Inspector(s) and the Environmental Health and Safety manager(s) will be on site at the start-up of each field operation and during environmentally sensitive phases of installation.

Specific environmental monitoring plans designed to assess the environmental impacts of the submarine cable installation are described below.

6.1. PRE- AND POST-INSTALLATION BENTHIC MONITORING

A pre- and- post- installation benthic invertebrate monitoring plan was developed in coordination with DPS and NYSDEC (Appendix K) in accordance to Certificate Condition 47 (b) of the New York State Public Service Commission (NYSPSC) Order Granting Certificate of Environmental Compatibility and Public Need (the Certificate) issued and effective 15 September 2010 (Case 08-T-0034), the 401 Water Quality Certificate, and the United States Army Corps of Engineers permit (NAN-2008-00732).

Monitoring will characterize and compare pre- (i.e. existing) and post- installation abundance and distribution of macroinvertebrates occurring in the vicinity of the cable route. Pre-installation benthic sampling will be conducted prior to the pre-lay grapnel run described in section 4.1.2. Results of the pre- and post- installation benthic invertebrate survey will be summarized and reported within six (6) months following completion of the post-installation survey.

In addition, through coordination with DPS and NYSDEC, a mitigation plan was developed per Certificate Condition 47c to address potential impacts to benthic habitat (Appendix L). The mitigation plan includes criteria for determining if/when mitigation is necessary, method, and schedule for implementation of measures.

6.2. PRE- AND POST-INSTALLATION SEDIMENT MONITORING

A pre- and- post- installation sediment monitoring plan was developed in coordination with DPS and NYSDEC (Appendix M) in accordance to Certificate Condition 47 (a) of the New York State Public Service Commission (NYSPSC) Order Granting Certificate of Environmental Compatibility and Public Need (the Certificate) issued and effective 15 September 2010 (Case 08-T-0034), the 401 Water Quality Certificate, and the USACE permit (NAN-2008-00732).

Monitoring will characterize and compare pre- (i.e. existing) and post- installation contaminant concentrations within surficial sediments along the cable route. Pre-installation sediment sampling will be conducted prior to the pre-lay grapnel run described in section 4.1.2. Results of the pre- and post- installation sediment survey will be summarized and reported within three (3) months following completion of the post-installation survey.

6.3. SUSPENDED SEDIMENT AND WATER QUALITY MONITORING PROCEDURES

Suspended sediment and water quality monitoring will be conducted in accordance with the Section 401 New York Water Quality Certification and the approved Suspended Sediment/Water Quality Monitoring Plan for Jet Plow Embedment Operations (Appendix to the PSC Certificate) (Appendix B). Suspended sediment and water quality monitoring will be conducted during pre-installation jet plow trials prior to cable installation activities, and subsequent cable burial embedment operations. The suspended sediment and water quality surveys will characterize the effect of sediment disturbance on the overlying water column and provide information for operational refinements that could minimize the amount and extent of sediment suspension during cable laying activities in the Hudson River.

Monitoring will focus on defining the extent of the suspended sediment plume associated with the Hydroplow operations for the cable laying activities. This will be accomplished using a combination of calibrated acoustic and optical instruments, along with laboratory analysis of water samples as follows:

1. An Acoustic Doppler Current Profiler (ADCP) will provide nearly continuous profiles of acoustic backscattering intensity and coincident current speed and direction of the water column;
2. An Optical Back Scatter (OBS) sensor will provide periodic turbidity measurements;

3. A conductivity/temperature/depth (CTD) profiler will provide optical backscattering as well as water temperature and salinity;
4. The collection of water samples from various depths in the water column for analysis of Total Suspended Solids (TSS), which will also be used for calibration of optical (OBS) and acoustic (ADCP) instrumentation.

The ADCP and OBS (1 and 2 above) will be used in conjunction with the water samples for TSS (4 above) to afford wide spatial and temporal coverage of the anticipated suspended sediment plume in near real-time. Vertical profiling of temperature and salinity (3 above) will provide information on ambient conditions that may be contributing to plume dynamics. The ADCP/CTD/OBS instrumentation will also collect data concurrently with the required water sample collection for TSS and water quality constituent analysis so that comparisons of the real-time and grab water sample results can be made. Water samples collected during the pre-installation trials will be analyzed for TSS and water samples collected during jet plow cable installation will be analyzed for all constituents provided in Condition 10(A) of the 401 Water Quality Certification which includes TSS.

Results of the pre-installation trials and optical and acoustic TSS correlations will be summarized and the findings and recommendations for procedures to be implemented during cable burial and associated monitoring will be provided in a brief letter report for submission to the NYSDEC and NYSDPS as provided for in and consistent with the Suspended Sediment/Water Quality Monitoring Plan For Jet Plow Embedment Operations appended to the Water Quality Certificate included with the Commission's order granting the CEC&PN (Appendix B). In-water cable installation using the jet plow will commence following the review of the pre-installation letter report by NYSDPS and NYSDEC Staff. Once cable burial activities commence, daily reports will be filed that include the stations traversed, a catalogue of data collected, and the correlations of optical and acoustic back scatter with TSS that were used to guide the field monitoring.

A final report will be submitted to NYSDEC and NYSDPS. The final report will include the procedures, field and analytical testing data, findings, and limitations of the monitoring performed during all phases of the Plan. The final report will include the actual correlations between real-time optical and acoustic backscatter equipment and corresponding TSS measurements, comparisons of measurements with the standards provided in Condition 10(D) of the 401 Water Quality Certification, and QA/QC data for laboratory and field activities. The final report summarizing the results of the sediment/water quality monitoring program will be

submitted to the NYSDEC and NYSDPS within six (6) months of the completion of the cable installation.

6.4. PRE- AND POST-INSTALLATION HYDROGRAPHIC SURVEY

A pre- and post- installation hydrographic/side scan sonar survey along the cable route will be conducted (USACE special condition P). The post-installation hydrographic survey will be conducted approximately nine (9) to twelve (12) months following installation. The results of the survey will be submitted to USACE and National Marine Fisheries Service (NMFS).

6.5. ENVIRONMENTAL INDEPENDENT INSPECTORS

An approved list of independent inspectors and a statement of their qualifications was provided in Appendix F of EM&CP II. The Independent Inspector(s) is responsible for conducting field inspections of installation activities to confirm that the site remains in compliance with all applicable statutes, regulations and permit conditions, and the EM&CP. The Independent Inspector(s) and Environmental Health and Safety Manager(s) will be on site at the start-up of each field operation and at all times during environmentally sensitive phases of construction. An Inspection Report (IR) will be completed and filed by the Independent Inspector(s) to document the results of each site walk-down and to note and describe any areas of concern requiring corrective actions (Appendix N of EM&CP I).

6.5.1. CONFIRMATION OF INSPECTOR INDEPENDENCE

The Independent Inspector(s) will have stop-work capability if they determine the work is not in compliance with the environmental requirements, consider a situation to be an imminent environmental or safety hazard, and/or require more information before allowing an activity to proceed. Certification confirming the independence of the Inspector(s) from the Certificate Holder and certifying the authority of the Inspectors(s) to "stop work" in cases of noncompliance or imminent environmental or safety hazard will be provided.

The contractor and/or HTP Cable Installation Site Manager and/or Environmental Health and Safety Manager(s) will be notified immediately of any "stop-work" issuances throughout the course of the construction. Any stop-work issuance, the nature of the stop work issuance and means of resolution, and the involved staff will be documented on an incident report sheet. DPS staff will be notified within 24 hours of any stop-work issuance.

6.5.2. PROVISION FOR MULTIPLE INSPECTORS

Multiple Independent Inspector(s) will be provided if warranted in order to inspect more than one operation at a time. Inspector(s) will be assigned to a cable installation area and no inspector shall be assigned to more than two active installation areas at any one time. An inspector that is assigned to an in-water work area shall not be concurrently assigned to any additional active construction areas.

6.5.3. INSPECTION CHECKLIST

A checklist of equipment, activities and procedures to inspect for compliance including the specific items or locations to be inspected, the inspection to be employed (i.e. visual, auditory, testing by instrument) and acceptability criteria to be applied will be completed by the inspector for each daily inspection.

In the event that a spill or emergency response occurs at the project site, a Incident Data Sheet will be completed by the Environmental Health and Safety Manager with a copy provided to the Independent Inspector (Appendix N of EM&CP I).

6.5.4. CORRECTION PROCEDURES

An Incident Root Cause Analysis Form will be prepared following the completion of the Incident Report. Based on the information presented on this form, corrective actions will be identified to prevent the incident from recurring (Appendix N of EM&CP I).

Inspectors will record any corrective actions undertaken or to be done to prevent the incident from reoccurring or to indicate any maintenance required on the item inspected. Copies of all IRs with identified corrective actions will be provided to the DPS, HTP Construction Site Manager and/or on-site Environmental Health and Safety Manager(s). The Independent Inspector(s) is responsible for verifying that the corrective actions are undertaken and completed before formally closing out the IR form. Corrective actions implemented as part of the site walk-downs will be summarized in a Monthly Progress Report prepared by the Independent Inspector(s) which will be provided to the DPS, HTP Construction Site Manager and/or on-site Environmental Health and Safety Manager(s).

6.5.5. SCHEDULE FOR MONTHLY ENVIRONMENTAL AUDITS

In accordance with Certificate Condition 50, a compliance audit will be conducted at least once monthly by one of the QA/QC officers identified in Appendix F of EM&CP II. The audit will check that the independent inspections are occurring properly, required maintenance is complete, and all paperwork is properly prepared.

7. GENERAL REQUIREMENTS

Site preparation or construction with respect to any portion of the Transmission Facility (except for surveying, boring and such other related activities as are necessary to prepare final design plans) will not commence until the Commission has approved the EM&CP I, II, and III for the relevant portion of the HTP Project (Certificate Condition 22).

If there is the need to modify the approved EM&CP III, HTP will report any proposed changes to DPS Staff, DEC Staff, and the Independent Inspector. HTP will not execute any proposed change until it receives oral or written approval, except in emergency situations threatening personal injury, property damage or severe adverse environmental impact, or as specified in the EM&CP (Certificate Condition 27).

In accordance with Certificate Conditions 29 through 35, HTP has established a toll-free public phone number (1-877-466-7344) for receipt of questions during construction, published a public notice of the scheduled HDD and marine construction in the Chelsea Clinton News (Appendix G of EM&CP II), and has and will notify the appropriate parties at the start of construction and the final in-service date. A list of property owners and business located within 100 feet of the proposed construction have been served direct notice of EM&CP availability as per Certificate Condition 25 (Appendix O of EM&CP I). Construction contractors will be provided complete copies of the PSC Certificate, EM&CP, §401 Water Quality Certification, USACE Permit and 6 NYCRR Parts 700-703 prior to construction and all construction contractors are hereby notified that they may be held liable for fines, penalties and environmental damage and that the PSC may seek to recover penalties for violation of the Certificate (Certificate Conditions 31 and 32).