

**BIOLOGICAL ASSESSMENT**  
**MILLENNIUM PIPELINE PROJECT**

**Docket No. CP98-150-000**

**Federal Energy Regulatory Commission  
Office of Energy Projects  
888 First Street, NE  
Washington, DC 20426**

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FOR THE MILLENNIUM GAS PIPELINE  
December 8, 1999

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## ACRONYMS AND ABBREVIATIONS

Algonquin	Algonquin Gas Transmission Company
BA	Biological Assessment
ConEd	Consolidated Edison Corporation
COE	U.S. Army Corps of Engineers
Columbia	Columbia Gas Transmission Corporation
Commission	Federal Energy Regulatory Commission
DEIS	draft environmental impact statement
dth	decatherms
ECS	Environmental Construction Standards
EFH	Essential Fish Habitat
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FWS	U.S. Fish and Wildlife Service
Millennium	Millennium Pipeline Company, L.P.
mg/l	milligrams per liter
MP	milepost
NMFS	National Marine Fisheries Service
NYNHP	New York Natural Heritage Program
NYSDEC	New York State Department of Environmental Conservation
NYSDOS	New York State Department of State
Plan	Upland Erosion Control, Revegetation, and Maintenance Plan
Procedures	Wetland and Waterbody Construction and Mitigation Procedures
St. Clair	St. Clair Pipelines Ltd.
TNC	The Nature Conservancy
TransCanada	TransCanada Pipelines Ltd.
TSS	total suspended solids
U.S.	United States
WES	Waterways Experiment Station
WMA	Wildlife Management Area

## 1.0 INTRODUCTION

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In Docket No. CP98-150-000, Millennium Pipeline Company, L.P. (Millennium) proposes to construct about 417.3 miles of new natural gas pipeline and appurtenant facilities to transport natural gas from the United States (U.S.)/Canadian border in Lake Erie to an interconnection with Consolidated Edison Corporation (ConEd) in Mount Vernon, New York. In a related docket (Docket No. CP98-151-000), Columbia Gas Transmission Corporation (Columbia) proposes to abandon or convey to Millennium its Line A-5 pipeline and associated facilities including certain pipeline laterals that extend from Columbia's Line A-5 to customers in New York and Pennsylvania.

Section 7 of the Endangered Species Act of 1973, as amended (ESA), requires Federal agencies to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of a federally listed endangered or threatened species, or result in the destruction or adverse modification of the designated critical habitat of a federally listed or proposed species. Under section 7, the Federal Energy Regulatory Commission (FERC or Commission) is required to consult with the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) to determine whether any federally listed or proposed endangered or threatened species, or their designated critical habitats occur in the vicinity of a proposed project that is subject to FERC jurisdiction.

In the event that a federally listed or proposed endangered or threatened species or its designated critical habitat occurs in the vicinity of a "major construction activity," the FERC must prepare a biological assessment (BA) to determine whether the proposed action would affect that species. If the BA determines that the proposed action would affect a federally listed or proposed species, then the FERC must enter into formal consultation and obtain a Biological Opinion from the FWS or NMFS before taking final agency action.

To fulfill its responsibilities under section 7 of the ESA, the FERC, through informal consultation with the FWS and NMFS and state agencies, initially determined that six federally listed or proposed species may occur in the vicinity of the proposed Millennium Pipeline (see Draft Environmental Impact Statement [DEIS] for the Millennium Pipeline Project issued April 1999). The species are listed in Table 1-1. One of these species (the federally endangered peregrine falcon) was delisted on August 25, 1999. Although the species is still listed by the state, it is not included in this BA. Another species (the federally endangered bald eagle) was proposed for delisting on July 4, 1999, but has not been delisted yet. Since it has been documented along the proposed route and is a state-listed species, it is included in this BA. The BA also addresses two freshwater mussel species (the federally endangered clubshell and Northern riffleshell) that were recently identified by the FWS (April 2000) as potentially occurring in the project area.

On May 9, 2000, Millennium amended its December 22, 1997 application to incorporate a route modification in Westchester County. The route modification was identified to address concerns of the Public Service Commission of the State of New York and ConEd about the originally proposed route along the ConEd powerline right-of-way. The FERC staff rejected the amended application without prejudice, pending submittal of additional detailed information on the route modification, including completion of consultation with the FWS and NMFS. Millennium refiled its amendment on June 28, 2000. No additional species were identified.

This BA examines the potential impact of construction and operation of the Millennium Pipeline Project on seven federally listed species. Table 1-1 lists the seven species and includes their state status. Detailed information concerning the location of the federally listed species was obtained based on

consultation with Federal and state natural resource management agencies, field surveys performed by Millennium, and a Supplemental BA prepared by Millennium and filed with the FERC (see appendix A for informal communications).

TABLE 1-1  
 Federally-Listed Species That Potentially Occur in the Vicinity of the  
 Millennium Pipeline Project

Common Name	Scientific Name	Status <sup>a/</sup>	Locations Where Species May Occur
<u>Fish</u>			
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	F-E, NY-E	Hudson River, Rockland and Westchester Counties
<u>Mollusks</u>			
Dwarf wedge mussel	<i>Alismodonta heterodon</i>	F-E, NY-E	Neversink River, Orange County
Clubshell	<i>Pleurobema clava</i>	F-E	Cassadaga and Conewango Rivers or their tributaries, Cattaraugus County
Northern riffleshell	<i>Epioblasma torulosa rangiana</i>	F-E	Cassadaga and Conewango Rivers or their tributaries, Cattaraugus County
<u>Birds</u>			
Bald eagle	<i>Haliaeetus leucocephalus</i>	F-T, NY-E	Chautauqua, Cattaraugus, Delaware, Sullivan, Orange, Rockland, and Westchester Counties
<u>Reptiles</u>			
Bog turtle	<i>Clemmys muhlenbergii</i>	F-T, NY-E	Sullivan, Orange, Rockland, and Westchester Counties
<u>Plants</u>			
Northern wild monkshood	<i>Aconitum noveboracense</i>	F-T, NY-T	Delaware, Sullivan, and Orange Counties

<sup>a/</sup> F = Federal Endangered (E) or Threatened (T) Species  
 NY = New York Endangered (E) or Threatened (T) Species

## **2.0 PROJECT DESCRIPTION**

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### **2.1 PURPOSE**

Millennium does not presently own any pipeline facilities but proposes to construct pipeline facilities and acquire others from Columbia. The purpose of the Millennium Pipeline Project would be to transport up to 700,000 decatherms (dth) per day and provide firm natural gas transportation service for nine shippers beginning on November 1, 2001. The pipeline would be operated at a maximum allowable operating pressure of 1440 pounds per square inch. In addition, Millennium would transport 14,000 dth per day for customers presently served from Columbia's existing Line A-5 pipeline that would be abandoned.

Millennium states that the proposed pipeline system would:

be the most economic and efficient means to transport U.S. and Canadian gas to growth markets in the eastern U.S., including Pennsylvania, New York, and New Jersey;

provide a greater diversity of supply for existing customers and a new source of supply for unserved markets; and

expand competition for emerging markets, including local distribution companies.

The Millennium Pipeline Project would connect with new Canadian facilities that would be constructed from the Dawn Compressor Station near Sarina, Ontario to the shores of Lake Erie near Patrick Point, Ontario (about 15.5 miles southwest of Port Stanley), and across Lake Erie to the interconnection with the Millennium pipeline at the Canada/U.S. border in Lake Erie.

The Canadian facilities would be constructed by St. Clair Pipelines Ltd. (St. Clair) and TransCanada Pipelines Ltd. (TransCanada) and would have an initial capacity of 700 million cubic feet per day. St. Clair would construct and operate about 46.0 miles of 36-inch-diameter pipeline extending from the Dawn Compressor Station to Patrick Point and the interconnection with TransCanada (the Millennium West Pipeline). TransCanada would construct the 93.3-mile-long Lake Erie crossing that would extend from the landfall at Patrick Point, Ontario to landfall near Ripley, New York (the Lake Erie Crossing Pipeline). In Lake Erie, about 60.4 miles of the new 36-inch-diameter pipeline would be in Canadian waters and 32.9 miles would be in Pennsylvania and New York state waters of the U.S. The St. Clair and TransCanada projects are collectively referred to as the Canadian Millennium Pipeline Project.

Ultimately, the Commission will determine the need for this project and whether it should issue Millennium a certificate of public convenience and necessity under section 7 of the Natural Gas Act. The Commission will take into account all aspects of the proposal including the customers, cost, financing, rates, engineering, economic risk, and environmental impact when weighing these factors to make that decision.

### **2.2 PROPOSED FACILITIES**

Millennium proposes to construct and operate a new pipeline system of 36- and 24-inch-diameter pipeline extending from an interconnection with TransCanada in Lake Erie at the U.S./Canadian border to landfall near Ripley in Chautauqua County, New York, and then extending across southern New York to an interconnection with ConEd near the Westchester/Bronx County line in Mount Vernon, New York.

Among other purposes, the new pipeline system would replace Columbia's aging Line A-5 mainline and would include:

Construction and operation of:

373.5 miles of 36-inch-diameter mainline;

43.8 miles of 24-inch-diameter mainline;

3 measurement and regulating stations, and 1 regulator station; and

associated pipelines facilities, including mainline and block valves, pig launchers and receivers, remote blowdown valves, and remote cathodic protection rectifier beds.

Acquisition from Columbia of:

6.7 miles of 24-inch-diameter pipeline in Rockland County that would be used for the new mainline system between mileposts (MPs) 376.4 and 383.3; and

20.1 miles of laterals and 28 metering and regulation stations in New York and Pennsylvania, and one compressor station in Pennsylvania.

In its related application, Columbia proposes to abandon or convey to Millennium its Line A-5 pipeline and certain associated pipeline facilities that provide service from Line A-5. Specifically, Columbia would:

abandon in place about 129.8 miles of 10- to 12-inch-diameter pipeline between Steuben and Delaware Counties, New York (Line A-5);

abandon and remove 92.2 miles of 8- to 24-inch-diameter pipeline between Delaware and Rockland Counties, New York (Line A-5);

abandon and convey to Millennium 6.7 miles of 24-inch-diameter pipeline in Rockland County, New York (Line 10338); and

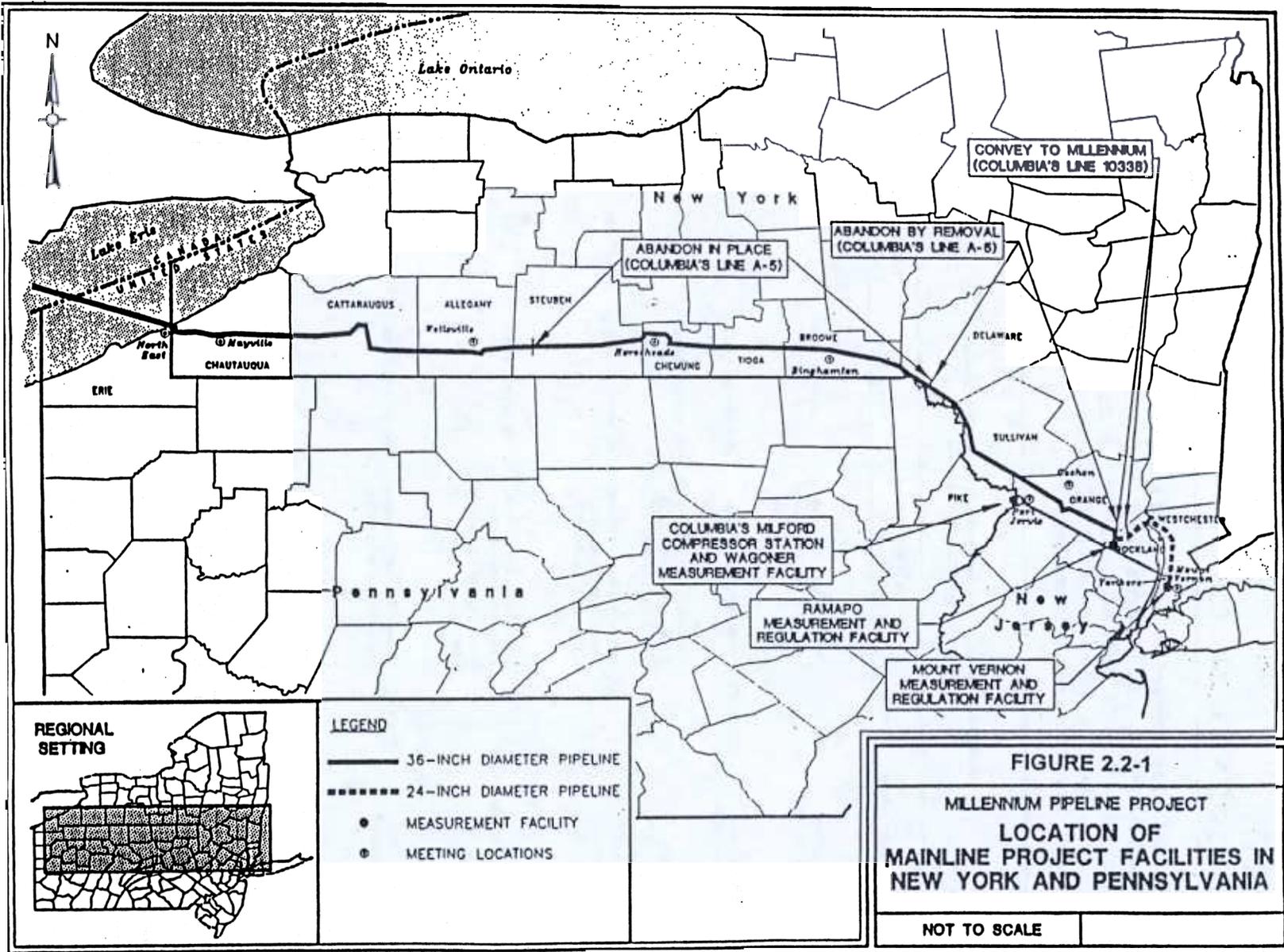
abandon and convey to Millennium 14.3 miles of 4- to 14-inch-diameter pipeline and 27 measuring stations in New York, and 5.8 miles of 8- to 14-inch-diameter pipeline and 1 compressor station and 1 measuring station in Pennsylvania that extend from Columbia's Line A-5 to customers in New York and Pennsylvania.

Columbia would also install overpressure protection equipment at those meter and regulating stations that would be conveyed to Millennium.

In areas where Line A-5 would be abandoned in place, Columbia proposes to retain rights to the pipeline and right-of-way. Columbia states that it has received several offers to acquire all or portions of the pipeline to be abandoned and that the pipeline may be used in the future to provide natural gas service, if appropriate and in the public interest. However, Columbia has provided no details on the proposal since it would not use or transfer the pipeline as part of this application. Actual use of this pipeline, if

reactivated in the future, would be subject to the appropriate federal and state environmental review at the time when the proposal is finalized. Those facilities that would be abandoned in place or conveyed by Columbia to Millennium (including the 6.7-mile-long Line 10338 in Rockland County) would require only minimal ground disturbance to clean and seal the pipeline and would be within the same areas disturbed for construction of the Millennium pipeline. Installation of the overpressure protection equipment at Columbia's metering and regulating stations would take place entirely within these existing facilities.

Millennium would operate the mainline and laterals acquired from Columbia as part of the Millennium Pipeline Project. Figure 2.2-1 shows the general location of the Millennium Pipeline Project.



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**FIGURE 2.2-1**  
**MILLENNIUM PIPELINE PROJECT**  
**LOCATION OF**  
**MAINLINE PROJECT FACILITIES IN**  
**NEW YORK AND PENNSYLVANIA**

NOT TO SCALE

### 3.0 ASSESSMENT OF IMPACTS

The FERC initially identified six federally listed endangered or threatened species that could potentially occur in the vicinity of the Millennium Pipeline Project facilities. One species, the peregrine falcon was delisted on August 25, 1999, and is not included in this BA. The FWS identified two additional species in April 2000. Table 3-1 provides the FERC's determination of the project's effect on the seven federally listed endangered or threatened species.

Common/Scientific Name	Status <u>a/</u>	Locations Where Species May Occur	Project Effect	Additional Survey Required
<u>Fish</u>				
Shortnose sturgeon <i>Acipenser brevirostrum</i>	F-E, NY-E	Hudson River, Rockland and Westchester Counties	No adverse effect	No
<u>Mollusks</u>				
Dwarf wedge mussel <i>Alismadonta heterodon</i>	F-E, NY-E	Neversink River, Orange County	No adverse effect <u>b/</u>	No <u>c/</u>
Clubshell <i>Pleurobema clava</i>	F-E	Cassadaga and Conewango Rivers or their tributaries, Cattaraugus County	No adverse effect <u>d/</u>	Yes
Northern riffleshell <i>Epioblasma torulosa rangiana</i>	F-E	Cassadaga and Conewango Rivers or their tributaries, Cattaraugus County	No adverse effect <u>d/</u>	Yes
<u>Birds</u>				
Bald eagle <i>Haliaeetus leucocephalus</i>	F-T, NY-E	Chautauqua, Cattaraugus, Delaware, Sullivan, Orange, Rockland, and Westchester Counties	No adverse effect	No
<u>Reptiles</u>				
Bog turtle <i>Clemmys muhlenbergii</i>	F-T, NY-E	Sullivan, Orange, Rockland, and Westchester Counties	No adverse effect	No
<u>Plants</u>				
Northern wild monkshood <i>Aconitum noveboracense</i>	F-T, NY-T	Delaware, Sullivan, and Orange Counties	No effect	No
<u>a/</u> F = Federal Endangered (E) or Threatened (T) Species NY = New York Endangered (E) or Threatened (T) Species <u>b/</u> Occurs in waterbody that would be bored. <u>c/</u> Survey required, if bore is unsuccessful. <u>d/</u> Surveys required to determine if species is present.				

Millennium proposes to implement the construction, restoration, and maintenance procedures identified in its Environment Construction Standards (ECS), which incorporate the FERC's Upland Erosion

Control, Revegetation, and Maintenance Plan (Plan) and Wetland and Waterbody Construction and Mitigation Procedures (Procedures) (see the FERC Internet website [[www.ferc.fed.us/gas/environment/guidelines.htm](http://www.ferc.fed.us/gas/environment/guidelines.htm)]). Our <sup>1/</sup> Plan and Procedures were developed in response to concerns raised by Federal, state, and local agencies regarding the potential impact of construction of natural gas pipeline projects in general. The Plan was developed to provide procedures to minimize erosion and sedimentation; the Procedures were developed to provide a minimum level of protection for surface waters and wetlands that would be affected by proposed projects. These waters include any stream or river with perceptible flow at the time of crossing and other permanent waterbodies, such as ponds, lakes, and reservoirs. Implementation of Millennium's ECS, and our Plan and Procedures will minimize project impacts on several federally listed endangered or threatened species that possibly occur in the vicinity of the proposed project.

### 3.1 Shortnose Sturgeon

#### Background

The shortnose sturgeon was listed as a federally endangered species on March 11, 1967. It is a diadromous species that occurs only along the east coast of North America in tributary rivers to the Atlantic Ocean and is known to occur in the Hudson River between the George Washington Bridge in Manhattan and the Federal Lock and Dam in Troy, New York. The Hudson River provides spawning, seasonal foraging, and overwintering habitat for this species and Haverstraw Bay (the location of the proposed crossing) provides seasonal foraging and overwintering habitat (NMFS, 1997). Habitat alteration, associated with pollution and dam construction in rivers flowing to the Atlantic Ocean, is the primary reason for the endangered status of this species. Other threats include incidental taking by commercial fishermen, and channel dredging and disposal of materials. The shortnose sturgeon is also a state-listed endangered species in New York.

The shortnose sturgeon is a migratory fish with a complex life history. It is a benthic predator that feeds on macroinvertebrates during the summer months and prefers the oligohaline region of rivers, which contains the biologically productive saltwater/freshwater interface (Haley, et al., 1996). The shortnose sturgeon inhabits estuaries and large coastal rivers, and moves upstream and downstream with the seasons. There have been inconsistent descriptions of shortnose sturgeon migratory behavior due to the varying habitat distributions used during the species' four life stages. The four life stages of the shortnose sturgeon are larval, juvenile, non-spawning adult, and spawning adult.

Research from other rivers indicates that an individual adult may spawn once every three years, indicating that for any given year, the majority of the adults in the river are not spawning (Bain et al., 1995). From late fall until early April, the pre-spawning adults have been well documented to overwinter in a torpid state in the deep channel habitats of the Hudson River near Sturgeon Point (about river mile 86) and Kingston, New York (river mile 94) (Bain, 1997). In mid-April the spawning fish move upstream to the spawning grounds between Coxsackie, New York (river mile 120) and the Troy Dam at Troy, New York (river mile 153). Spawning occurs from mid-April to late May. Afterwards, the adults disperse downriver into the summer range between river miles 24 and 76, including the proposed crossing at river mile 35. From late spring until early fall, the adult fish are distributed in this summer range for feeding in the deep channel habitats of the freshwater and brackish parts of the estuary.

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<sup>1/</sup> "We", "us", and "our" refer to the environmental staff of the Office of Energy Projects, part of the Commission staff.

Spawning reportedly occurs primarily over gravel or cobble in areas of relatively fast water. Fertilized eggs adhere to the substrate. Hatching generally occurs within 7 to 10 days depending on water temperature. Larvae generally seek cover within the substrate. About 10 days following hatching, the larvae have developed mouths, eyes, and precursors to adult fins. During this time period, the larvae have begun to disperse downstream in the Hudson River. They occur primarily in fast, deep waters and have been associated with the spawning areas between Hudson River miles 120 and 153. Since the proposed crossing would be in the vicinity of river mile 35, construction activities would not directly affect spawning areas or larvae.

Less research has been performed for the juveniles and non-spawning adults of the shortnose sturgeon, and consequently, this portion of the population has been underestimated in past studies. The juvenile shortnose sturgeon prefer to remain above the saltwater/freshwater interface, but by late fall and early winter, most older juveniles occupy the same broad region of the Hudson River near Haverstraw Bay that the non-spawning adults inhabit (NMFS, 1998b).

The non-spawning adults summer in the same range as the spawning adults. As water temperature drops in late fall, the fish move to one of two wintering areas. Dovel et al. (1992) concluded that most adults overwinter near Kingston; however, subsequent river monitoring in late fall indicates that the non-spawning adults overwinter in the seasonally brackish waters near Haverstraw Bay (river miles 34 to 39) (Bain, 1997). In the spring, these fish migrate upstream and remain in the tidal portion of the river, primarily downstream of Kingston. The population of shortnose sturgeon likely to inhabit portions of Haverstraw Bay during the winter would be non-spawning adults and older juveniles.

#### **Field Survey Methodology and Results**

No field surveys for the shortnose sturgeon have been performed by Millennium. However, monitoring data collected for electric utilities suggest that populations have been increasing in the Hudson River. To verify these findings, several studies have been conducted (Dovel et al., 1992 and Bain et al., 1995). These studies indicate that Hudson River populations of the shortnose sturgeon may have increased by more than 400 percent from the 1970s to the present (Dovel estimated 13,000 fish in the 1970s and Bain estimates a present [1995] population of about 55,000).

#### **Summary of Impacts**

Potential indirect impacts on the shortnose sturgeon could result from destruction of benthic feeding areas, displacing the fish from the area, disrupting spawning migrations, and resuspending contaminant-laden sediment (NMFS, 1998b). Direct impacts to the shortnose sturgeon could include mortality from entrapment with construction equipment. A detailed discussion of the various construction impacts is provided below.

The crossing of the Hudson River and Haverstraw Bay (between MPs 387.9 and 390.1) would require some type of open-cut, mechanical dredging construction technique because the crossing is too wide (10,900 feet, 2.1 miles) for the pipe to be installed by horizontal directional drilling. At the time of publication of the DEIS in April 1999, Millennium proposed a conventional bottom-pull dredge method for the Hudson River crossing. Millennium estimated that the dredging and pipe laying processes would require 2 months, that backfilling would take 1 month, and that the river crossing would require a total of 3 months to complete. The visible plume, with an estimated total suspended solids (TSS) concentration of at least 70 milligrams per liter (mg/l), would cover about 38 acres during excavation and 77 acres during backfilling on any given day. Millennium estimated that about 1,627.8 acres (or about 23 percent of the

bay) would be affected by construction using the bottom-pull dredge method.<sup>2/</sup> At that time, Millennium also proposed a construction window of November 1 through January 31 when the segment of the sturgeon's population overwintering in Haverstraw Bay is relatively inactive based on conversation with the NMFS (NMFS, 1998a). The intent was to avoid or minimize impact on the species. However, the NMFS indicated that the sturgeon may be more vulnerable during this period because the fish are relatively sluggish, and would be less able to move out of the area immediately impacted by construction (NMFS, 1999).

In its October 21, 1999 filing, Millennium proposed an open-cut lay-barge dredge method that would limit the amount of open trench to about 1,300 feet at any one time. This method would involve excavating a trench section about 1,300 feet in length, temporarily storing the excavated material in barges, continuously welding and laying the pipe on a moving lay-barge, and backfilling the trench using bottom-dump barges as soon as the pipe is laid. Once begun, the process would continue sequentially with trenching, pipe make-up, and backfilling activities moving concurrently across the river. Millennium proposes to use a closed bucket for all dredging operations, and would use a 6-cubic-yard closed bucket in the shallow shore water and a 22-cubic-yard closed bucket for dredging in deeper water to minimize sedimentation. Construction would take about 3 months.

Millennium's modeling of construction impacts was performed using models presently used by the U.S. Army Corps of Engineers (COE) to evaluate the effects of dredging. The modeling of the lay-barge dredge construction method estimated the extent of the visible plume and the thickness of sediment deposition that would result from the dredging and backfilling of the Hudson River/Haverstraw Bay. The model results were broken down into four components: 1) dredging in shallow water using a 6-cubic-yard closed bucket, 2) backfilling in shallow water using a 6-cubic-yard closed bucket, 3) dredging in deep water using a 22-cubic-yard closed bucket, and 4) backfilling in deep water using a bottom dump barge. Millennium anticipates that it would take about 2 weeks to complete work in each 1,300-foot segment.

The modeling predicted a visible plume ( $> 30$  mg/l) ranging between 60 and 90 feet wide by between 35 and 460 feet long during dredging and a plume ranging between 90 and 500 feet wide by between 170 and 400 feet long during backfill. The total area affected by operation on any given day would range between 0.06 acre and 5.23 acres depending on the operation (e.g., components 1 through 3). Periodic impacts involving about 9.18 acres would occur for approximately 30 minutes twice a day during backfill of the deep water component (e.g., component 4). See table 3.1-1 for a summary of the results.

The total area impacted by construction of the crossing was calculated by multiplying the length of the visible plume by the trench length for each area (1,000 feet for Component 2 and 9,900 feet for Component 3) and then summing the results of the calculations. This resulted in a total projected impact of 4,724,000 square feet (108.5 acres) although the plume generated on consecutive days would overlap and the same area would be affected on successive days. Haverstraw Bay is estimated to be an average of about 2.6 miles wide (13,940 feet) by 4.2 miles long (22,000 feet) for a total of about 7,040 acres. Proposed construction would affect a maximum of 1.5 percent of the bay over the duration of construction. TSS were predicted not to exceed 1,000 mg/l above ambient conditions within 30 feet of trenching (see table 3.1-1).

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<sup>2/</sup> Haverstraw Bay is estimated to be an average of about 2.6 miles wide (13,940 feet) by 4.2 miles long (22,000 feet) for a total of about 7,040 acres.

Factor	1-Dredging in Shallow Water	2-Backfill in Shallow Water	3-Dredging in Deep Water	4-Backfill Deep Water
Length of each component <u>a/</u>	1,000 ft	1,000 ft	9,900 ft	9,900 ft
Estimated steady-state visible plume width (normal to flow) by length (in the the direction of flow)	60 x 35 ft	90 x 170 ft	90 x 460 ft	500 x 400 ft <u>b/</u>
Estimated visible plume <u>c/</u>	2,100 ft <sup>2</sup> 0.05 ac	15,300 ft <sup>2</sup> 0.35 ac	41,400 ft <sup>2</sup> 0.95 ac	200,000 ft <sup>2</sup> <u>d/</u> 4.59 ac
Days to complete construction	16 days	19 days	36 days	52 days
Average production rate per day	65 ft	53 ft	275 ft	2 dumps
Total area affected on any given day <u>e/</u>	2,700 ft <sup>2</sup> 0.06 ac	16,100 ft <sup>2</sup> 0.37 ac	227,700 ft <sup>2</sup> 5.23 ac	400,000 ft <sup>2</sup> 9.18 ac
Thickness of redeposited sediment	0.18 ft	0.11 ft	0.02 ft	0.25 ft <u>f/</u>

a/ Modeling based on 10,900 feet (2.06 miles) of in-water construction.  
b/ Duration estimated at 30 minutes or less.  
c/ Plumes for Components 1 through 3 assume the dredge operates over a 50-foot length of trench before moving forward and the plume dimension (normal to flow) was increased by this width to account for the moving source. The estimates do not include an interaction between the plumes since they should be sufficiently far apart.  
d/ Per barge dump.  
e/ Includes all areas covered by a visible turbidity plume for any length of time.  
f/ Within 150 feet of the trench.

We requested that the COE evaluate the modeling and turbidity estimates generated by Millennium. The COE forwarded the materials to their Waterways Experiment Station (WES), the organization that developed the models used by Millennium, for technical review. The WES concluded that the techniques used and the data employed represent the current state-of-the-practice for turbidity predictions from dredging operations such as those proposed for construction of the pipeline crossing. Further, the assumptions and data used in the predictions were reasonable and conservative. The WES ran its own simulations using the same models and found very good agreement with Millennium's results. Millennium's turbidity predictions were actually somewhat higher for three of the four construction components (dredging in shallow water, backfilling in shallow water, and dredging in deep water). The WES predictions of the plume size for the fourth component, backfilling in deep water, were the same as Millennium's predictions. However, WES predicted that the plume might be visible for 1 to 2 hours following backfill from a barge instead of the 30 minutes predicted by Millennium. Finally, the WES reviewed the predicted loss of material and the depth of burial/sedimentation outside the construction trench and found that Millennium's predicted loss and burial overestimated the expected impact. We believe that Millennium's modeling efforts and subsequent predictions of the turbidity plume are appropriately conservative for a sensitive habitat such as Haverstraw Bay.

As part of its October 1999 filing, Millennium stated that, based on its consultations with responsible Federal and state agencies, it believed that a construction window between July 1 and September 30 would best minimize fisheries impacts while at the same time meeting the November 1 in-service date. However, Millennium also stated that it would construct the crossing during any 3-month window established by Federal

and state agencies. The New York State Department of Environmental Conservation (NYSDEC) in its Section 401 Water Quality Certificate (issued on December 8, 1999) specified a May 1 to July 31 construction window based on recent data collected in the Hudson River and its belief that this window would best minimize impact on all fisheries, including the shortnose sturgeon (see appendix B).

Millennium has developed a dredging operations monitoring plan that would be used to assure that impacts are minimized to the greatest extent possible. The NYSDEC in its Section 401 Water Quality Certificate identified additional conditions to ensure that fisheries would be protected (see appendix B, Section 401 Water Quality Certificate, Condition No. 7).

### Alternatives Considered

We identified two potential alternative crossing locations for the Hudson River. One would be about 3.3 miles upriver from the proposed crossing in Haverstraw Bay, at the existing crossing of two Algonquin Gas Transmission Company (Algonquin) pipelines (see figure 3.1-1). We identified two different routes to approach the upriver alternate crossing (Hudson River Alternatives 1 and 2; see figure 3.1-1). The second alternative crossing location would be about 11.3 miles downriver, in the vicinity of the Tappan Zee Bridge. We also evaluated a system alternative that could potentially use existing pipeline systems from Algonquin and Iroquois Gas Transmission System, L.P. (Iroquois), along with Iroquois' proposed Eastchester Project (CP00-232-000) to transport gas to an interconnection with Con Edison's facilities in Eastchester (the Algonquin/Iroquois System Alternative).

A discussion of alternative construction techniques and timing that we evaluated for crossing the Hudson River is provided in our Essential Fish Habitat (EFH) Assessment (issued simultaneously with the BA in January 2001). Our analysis of Hudson River construction techniques is relevant to seven species of fish with designated EFH (compared to only two ESA-listed species - the bald eagle and shortnose sturgeon). The time of year that construction would occur is the most important factor in determining potential impacts to the shortnose sturgeon (and bald eagle) in Haverstraw Bay. Since an evaluation of alternative construction techniques would be redundant in this BA, please refer to section 5.2 of our EFH Assessment for a more detailed discussion.

The NMFS indicated that the upriver crossing location would be outside of Haverstraw Bay and it would greatly reduce potential impact on the shortnose sturgeon (NMFS, 1999). The upriver location would also avoid the most productive areas of the recently-designated EFH in Haverstraw Bay for seven species, including red hake, Winter flounder, windowpane, bluefish, Atlantic butter fish, fluke, and Atlantic herring (for further information, see FERC's January 2001 EFH Assessment). The New York State Department of State (NYS DOS) indicated that the upriver location would be outside the state-designated Significant Coastal Fish and Wildlife Habitat of Haverstraw Bay and would be more likely to be consistent with the New York coastal zone management plan.

While either of the alternate Hudson River crossing locations may be feasible in at least an engineering sense, they would both have numerous construction disadvantages, and be at least equal in impacts to the natural and human environment in comparison to construction across Haverstraw Bay. The alternative routes would each have significant impacts to the extensive development and land uses in the area, and overall, we can find no alternative that minimizes the impacts to the natural and human environment to any greater extent than the proposed route across the Hudson River. For this reason, we believe the proposed must be evaluated on its own merit under the ESA.

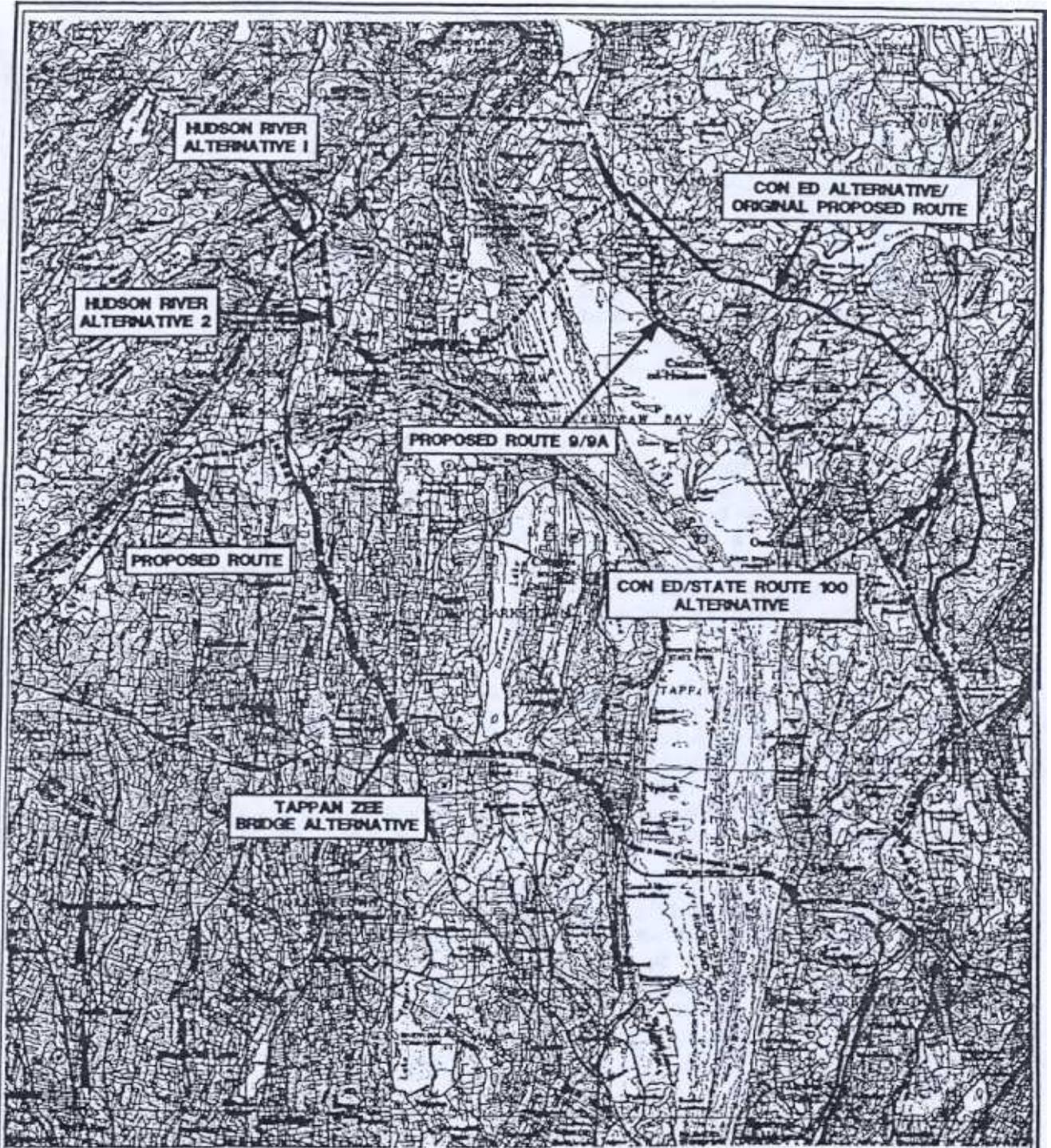


FIGURE 3.1-1

**HUDSON RIVER  
ALTERNATIVES**

SCALE AS SHOWN

## Determination of Effect

The FERC staff have determined that pipeline construction across Haverstraw Bay may result in both indirect and direct impacts on the shortnose sturgeon, including a "take" as defined under section 9 of the ESA. Millennium had proposed to construct the Hudson River crossing between July 1 and September 30, but would construct the crossing during any 3-month period approved by Federal and state agencies. During this period, most adult shortnose sturgeon have completed their upstream migration and adults and juveniles are returning to or passing through Haverstraw Bay.

During an interagency meeting on November 30, 1999, the NMFS and NYSDOS recommended a construction window of October, November, and December based on several issues. The issues included concerns for endangered and threatened species and their habitats; as well as EFH for species managed by NMFS under the Magnuson Stevens Fishery Conservation and Management Act; and also for a fish and wildlife habitat description prepared by the NYSDEC in the late 1980s, that relates to areas that are protected by the Coastal Zone Management Act. In its Water Quality Certificate issued December 8, 1999, the NYSDEC identified a construction window of May 1 to July 31. The NYSDEC window was based on NYSDEC's ongoing research on the Hudson River, and takes into account an increased understanding of the needs and requirements of the fishes in the river. We note that the NYSDEC's recommendation would protect a number of important species of interest to NYSDEC, but only one of these (bluefish juveniles) is a species with federally designated EFH within Haverstraw Bay. On March 10, 2000, the NMFS commented further that a fall working window (between September 1 and November 15) is preferred, although it could not support any construction window for new work (NMFS, 2000). In July of 2000, NYSDEC revised their evaluation of the timing of construction across Haverstraw Bay, and agreed to a 10 week period from September 1 to November 15.

We believe that it is important to minimize impact on aquatic biota and agree with NYSDEC that it is critical to protect the overwintering uses of Haverstraw Bay. However, based on our analysis in our EFH Assessment, we believe that an autumn construction window would be the least disruptive to EFH species without causing unacceptable impacts on the shortnose sturgeon, and/or other species of concern to the NYSDEC. Therefore, we believe a crossing between August 1 and October 31 would minimize the impact to the reproductive success EFH species and would be concluded before the coldest part of winter in December, January and February during which the shortnose sturgeon could be adversely affected.

If the Commission issues a Certificate to construct across Haverstraw Bay and Millennium receives all other necessary permits and approvals, then NMFS could issue an Incidental Take Statement for the shortnose sturgeon. The Incidental Take Statement would provide reasonable and prudent measures that the NMFS considers necessary or appropriate to minimize the take of shortnose sturgeon along with the terms and conditions that must be complied with to implement the reasonable and prudent measures. With implementation of the appropriate compensation measures, we believe there would be no long-term or cumulative effects on this species.

### 3.2 Dwarf Wedge Mussel

#### Background

The dwarf wedge mussel is a small freshwater mussel inhabiting large streams and rivers that drain into the Atlantic Ocean and is known to occur in at least 20 streams and rivers along the Atlantic coast from New Hampshire to North Carolina (Strayer, et al., 1996). However, the surviving populations in many of these locations are small. In New York, the dwarf wedge mussel occurs in the Neversink River in Orange County. The dwarf wedge mussel was listed as a federally endangered species on March 14, 1990. The primary threats

to this mussel are associated with loss of suitable habitat from dam construction, water pollution, and sedimentation (Lowe, et al. 1990). The dwarf wedge mussel is also listed as a state-endangered species in New York.

The dwarf wedge mussel inhabits large streams and rivers, and appears to prefer moderate current speeds (approximately 0.2 to 0.5 feet per second) and possibly locations in which current is spatially uniform (Strayer and Ralley, 1993). The dwarf wedge mussel is found in association with substrate that includes patches of fine sediments, although the species is apparently relatively intolerant of silt deposition. There is also data that indicates that the dwarf wedge mussel occurs primarily in softer waters containing lower concentrations of calcium (Strayer, 1993).

The dwarf wedge mussel is sexually dimorphic; individuals are either male or female, as opposed to some mussel species in which all individuals are hermaphroditic. The age of sexual maturity for the dwarf wedge mussel is not reported in the literature. However, the dwarf wedge mussel has an unusually short life span for a mussel with a maximum reported age for the species of about 10 years (Michaelson and Neves, 1995). Thus, it is likely that the species becomes sexually mature rather early. Although there is conflicting information in the literature concerning the specifics of the reproductive cycle, it is generally believed that males release gametes into the water column and these gametes are taken up by the females. The resulting fertilized cells are called glochidia which are retained by the female within a marsupium while they develop. Gravid females (containing glochidia) have been reported from early June to late August (Clarke, 1981) or from February to August (Johnson, 1970). Regardless of the actual time period, dwarf wedge mussels appear to brood the glochidia for a long period before releasing mature glochidia to the water column.

Once released to the water column, mature glochidia must attach to a host fish to continue development. The host fish species for the dwarf wedge mussel include mottled sculpin, johnny darter, and tessellated darter (Michaelson and Neves, 1995). The length of the association of the glochidia with fish has not been specifically identified, although this period typically lasts for several weeks for other mussel species. Following this period, the individual enters the veliger stage, where the mussel reenters the water column and settles to the substrate. The veliger begins to secrete a shell and develops into a juvenile mussel.

As with other mussel species, the dwarf wedge mussel feeds by filtering large quantities of water. Food particles are filtered out of the water and digested. Specific food of the dwarf wedge mussel is not reported. However, it is likely to consist of algae and small zooplankters that inhabit the water column.

### **Field Survey Methodology and Results**

The proposed crossing of the Neversink River is in the downstream portion of the reported extent of the dwarf wedge mussel habitat. The species is assumed to occur at the crossing location, since it has been found upstream and downstream of the crossing. The Nature Conservancy (TNC) confirmed that the largest population of the dwarf wedge mussel in the state occurs at the proposed crossing location (TNC, 1998). Therefore, Millennium did not conduct surveys at the proposed crossing location.

### **Summary of Impacts**

If the Neversink River were open cut or if an equipment bridge were installed across the river, potential impacts on the dwarf wedge mussel could include both direct (displacement or loss of individuals) and indirect impacts (disruption or loss of habitat). Other indirect impacts could also occur as a result of sedimentation from construction disturbances.

## Alternatives Considered

Although we looked at one variation 1,640 feet south as well as one north of the proposed crossing, we concluded that overall the environmental impact would be increased on residential and commercial properties, and on forested areas east of the Neversink River where new right-of-way clearing would be required. The dwarf wedge mussel may occur throughout this area, from the State Route 209 bridge to below the Neversink Road bridge, and a variation may just transfer impact from one location to another. In addition, any route variation would need to incorporate the existing Huguenot Meter Station, where the Millennium pipeline would make deliveries.

Millennium conducted preliminary investigations of a directional drill of the Neversink River and concluded that a directional drill at the proposed crossing location would be infeasible, primarily because of cost and topographic considerations. Millennium presently proposes to construct the Neversink River using a conventional bore (e.g., dry construction technique) and would not install an equipment bridge across the river. A conventional bore would require excavating pits on both sides of the river at the depth of the pipeline and boring a hole large enough for the diameter of the pipe or casing, if required (e.g. at least 36 inches in diameter). The depth of the pits depends on topography and the depth required to cross under the river, but is typically at least 10 feet deep. A boring machine would be lowered into the bore pit and a casing advanced through the soil with an auger that removes soil from within the casing. Spoil would be removed from the bore pit, and excess spoil typically would be hauled off site for disposal. Once the casing is in place, the pipe would be placed through the casing. No drilling mud would be used unless needed to help move the pipeline through the casing. If additional pipe sections are required, they are usually welded to the first section of pipe in the bore pit before being pushed through the bore hole. When the pipe is in place, the casing would be removed, the pipe welded to the adjacent pipe sections, and the pits filled in and restored.

With a successful bore of the Neversink River and no equipment bridge potential project impacts on the dwarf wedge mussel would be avoided entirely. If the bored crossing of the Neversink River at this location fails, Millennium proposes to move the crossing 10 feet and re-bore the crossing and would continue attempts until the bore is successfully completed.

The FWS commented that if an accidental disturbance to the streambed occurred during the bored crossing of the Neversink River, then all construction must stop immediately and formal consultation be initiated with the FWS and other agencies. Further, if the conventional bore technique fails entirely, an alternative location would need to be determined in consultation with the FERC, FWS, NYSDEC, and TNC. The FWS stated that no physical disturbance of the streambed at the proposed crossing would be acceptable and that the FWS would require Millennium to either attempt a directional drill there or move to an alternative crossing location. The FWS indicated that an open cut at the proposed crossing would be an unacceptable contingency plan and would require initiating formal consultation under the ESA. No take would be permitted (FWS, 1999). The FWS further commented that a diagram be provided of the proposed crossing that would include a description of the depth under the river bottom, size of bore and receiving pits, use of drilling muds, and monitoring for riverbed disturbance from vibration and turbidity (FWS, 2000a).

Millennium has prepared a site-specific crossing plan identifying the general location of the bore pits (at least 10 feet from the bank edge), the spoil pile areas, and the depth below the riverbed (at least 5 feet between the top of the pipe and the riverbed in soils and 3 feet in rock). The NYSDEC, in its Water Quality Certificate, has also included a recommendation that a rare, threatened, and endangered species management plan be prepared for the Neversink River for review and approval by the NYSDEC before construction (see appendix B, Condition No. 3.E.).

In addition, the FWS suggested that the crossing be monitored by a third-party inspector (with stop work authority) for riverbed disturbance, turbidity from bed disturbance, drilling mud release, or dewatering activities. In its Water Quality Certificate, the NYSDEC has required that Millennium employ an independent third-party inspector that would report directly to the NYSDEC. The FERC would also establish a construction monitoring program in which FERC inspectors would be responsible for inspecting the project to ensure that it is being constructed in compliance with the environmental conditions of the FERC certificate issued for the project.

### **Determination of Effect**

The FERC staff has determined that, with completion of a successful conventional bore of the Neversink River, adverse impact on the dwarf wedge mussel would be avoided and there would no effect on this species.

However, we are recommending that no construction take place between MP 339.9 (intersection of Peenpack Trail and Martin Road) and MP 341.7 (Shinhollow Road) until the bore of the Neversink River is successfully completed. In the event that a bore cannot be completed at the proposed crossing location, we have recommended that Millennium develop a contingency plan before construction in consultation with the FWS, NYSDEC, TNC, and FERC. At a minimum, this plan must: 1) identify an alternative crossing location, and/or alternative route and construction methods (if required); 2) include an analysis of the environmental impacts and proposed compensation associated with construction of the contingency plan (i.e., definition of the impact area or construction work areas); and 3) include a survey of the entire construction work area by a qualified biologist to identify dwarf wedge mussels before construction. All survey work must use FWS-approved methodologies, and must be completed before the start of any construction activities in the project segment between MPs 339.9 and 341.7. The NYSDEC also included specific conditions for the crossing of the Neversink River in its Section 401 Water Quality Certificate (see appendix B, Condition No. 3.E.1).

With a successful conventional bore of the Neversink River, no installation of an equipment bridge across the river, and no disturbance to the streambed caused by the removal of the existing pipeline, adverse impact on the dwarf wedge mussel would be avoided. If the bore fails, the implementation of the recommended contingency plan would be required. We will recommend a condition to the Certificate that if the bore fails, construction would be delayed until an acceptable contingency plan is developed that would avoid any adverse effects on this species and its continued existence. We believe that the proposed action and our recommended condition to the Certificate would not adversely affect or jeopardize the continued existence of this species.

### **3.3 Clubshell and Northern Riffleshell**

#### **Background**

##### Clubshell

The clubshell was listed as endangered on June 18, 1992. This freshwater mussel inhabits loose, clean sand and gravel typically to a depth of 2 to 4 inches in small rivers and streams. Although it was historically widespread in the Ohio River basin and tributaries of western Lake Erie, the species has been extirpated in Alabama, Illinois, and Tennessee, and no longer occurs in a number of streams in its former range. Currently, this species is known to occur in 12 streams in Kentucky, Pennsylvania, Indiana, Ohio, Michigan, West Virginia, and may be present in New York. In 1994, Strayer observed six old shells in Cassadaga Creek and noted that the species may be found elsewhere in Cassadaga and Conewango Creeks or their tributaries (Strayer, 1995). The FWS identified this species as potentially occurring within the project impact area in its letter to the COE on April 28, 2000 (FWS, 2000b). The reasons for the decline of the clubshell are varied but include both

natural and man-induced disturbances. Principal factors include impoundments, loss of riparian vegetation, channelization, water pollution, natural predation, and the invasion of the exotic zebra mussel.

While food habits and reproductive biology of the clubshell are poorly understood, it is generally assumed that they parallel those of other freshwater mussels. In general, mussels feed by filtering planktonic organisms out of the water, and burrowing forms are known to feed on organic detritus found in the substrate. Clubshells are sedentary after the larvae metamorphosis stage, making them exceedingly vulnerable to predators and environmental degradation, particularly where the aggregation of fine sediments over routinely loose and well-aerated substrates can compromise the species ability to breathe.

Reproduction for the clubshell requires a stable and consistent habitat with a healthy population of fish hosts to complete larval development. Males discharge sperm into the water and females downstream siphon in the sperm which fertilizes eggs stored in a gill pouch until the larvae hatch. When larvae are discharged into the water, they attach and form cysts on the gills or fins of a fish host. There is no information that suggests clubshell larvae target a specific species of fish. When the larvae's metamorphosis is complete, they fall back into the streambed as juvenile mussels.

#### Northern Riffleshell

The Northern riffleshell was listed as a federally endangered species on January 22, 1993. The Northern riffleshell is a freshwater mussel that inhabits an assortment of different stream communities but seems partial to substrates of firmly packed sand and/or gravel. The species is known to have occurred historically in the tributaries of the Ohio River, western Lake Erie, and the St. Clair and Detroit Rivers. Currently, it has been found only in short reaches of six streams in Kentucky, Michigan, Ohio, and Pennsylvania. Northern riffleshells are known to occur with clubshells. The reasons for the decline of this species can be attributed to a number of factors including channelization, impoundments, loss of riparian cover, water pollution, and invasion of the exotic zebra mussel in the lower Great Lakes region in the mid 1980's. Zebra mussels attach themselves to the shells of the Northern riffleshells and compete for space and available resources.

The Northern riffleshell depends on substrates that are relatively free of fine sediments since its siphon must remain exposed at the surface of the substrate to intake water and food. Like other bivalves, the Northern riffleshell uses calcium carbonate in the production of its shell which may explain the preference of some species in this subphylum for hard-water environments. The modification of substrate composition from deposition associated with dams and other impoundments is a leading cause of habitat loss for this species.

One of the adaptations of bivalves to a sedentary, filter-feeding life-style includes the loss of the head and radula. Cilia covering the gills filter suspended food from the water, create a current which helps transport food to the mouth, and sort filtered particles. Small particles are carried directly to the mouth, while larger particles are moved to the edges of the palps and gills. This rejected material is expelled from the body. Undigested wastes are moved through the anus and depend on the current of the water to function properly. When conditions of elevated fine sediment load persist, the internal digestive tract of mussels can become clogged as the system works to expel excess materials. Smothering from siltation may eliminate the mussel's ability to breathe, feed, and reproduce.

Similar to the clubshell, successful reproduction requires a stable and consistent environment with a healthy population of host fish for larvae development. Sperm discharged from the male makes its way to a pouch on the side of the female which holds the eggs. The zygote is then released into the current and finds its way to the operculum or fin of a host fish where it remains until undergoing metamorphosis into a juvenile mussel with a shell of its own. Northern riffleshells have the potential to live for up to 50 years.

## **Field Survey Methodology and Results**

These species were not identified as potentially occurring within the project area until May 2000. The Millennium pipeline would cross Cassadaga Creek (MP 59.9) and seven of its tributaries between MPs 58.4 and 60.6, and five tributaries of Conewango Creek, including State Drainage Ditch, between MPs 72.9 and 74.3 (see table 3.3-1). Four of these waterbodies are categorized as intermittent and unsuitable for fish propagation and survival (MPs 59.2, 59.3, 72.9 and 73.0). Only two of these streams that could potentially support either the clubshell or Northern riffleshell would be crossed using an open cut construction technique (Cassadaga Creek, MP 59.9 and State Drainage Ditch, MP 72.9). Millennium conducted surveys of these two streams for these two mussel species in August 2000, using qualitative timed visual searches with snorkel equipment and/or SCUBA gear. In Cassadaga Creek there were 16 live individuals from six species of unionid mussels found in the vicinity of the proposed crossing location, but no live or dead clubshell or Northern riffleshells were found. In State Drainage Ditch, MP 72.9, no clubshell or Northern riffleshells were found, and only one other live unionid mussel was found.

## **Summary of Impacts**

If the waterbodies were open cut or crossed using a dam and pump, or if an equipment bridge were installed across these waterbodies, potential impacts on these two mussel species could include both direct (displacement or loss of individuals) and indirect impacts (disruption or loss of habitat). Other indirect impacts could also occur as a result of sedimentation from construction disturbances. However, since the species are unlikely to have individuals present at the proposed crossing locations, direct impacts are not likely to potentially occur.

Dry construction techniques would be used to cross all but two of the nine streams that may provide habitat to these two mussel species. Although this technique would limit downstream sedimentation, construction would require disturbance of the streambottom to excavate the trench and install the pipeline. The remaining two streams would be crossed using an open cut construction technique (Cassadaga Creek, MP 59.9 and State Drainage Ditch, MP 72.9). Since direct impacts are not likely to potentially occur, only the potential indirect impacts should be monitored. The stream crossings would be conducted in compliance with state and federal sediment and erosion control measures, and restored to their preconstruction condition. Inspections would be conducted both during construction and after restoration.

TABLE 3.3-1

**Waterbodies Crossed by the Millennium Pipeline Project  
That May Contain the Clubshell or Northern Riffleshell**

Station No./ Approximate Milepost	Waterbody Name	Crossing Width (ft)	Waterbody Type <u>a/</u>	State Water Classification <u>b/</u>	Timing Restrictions	Proposed Crossing Method <u>c/</u>	Equipment Crossing Required
3087 + 38 58.4	Trib. Cassadaga Creek	11	P	C	None	Dry 1	Yes
3126 + 64 59.2	Trib. Cassadaga Creek	5		D	None	Dry 1a	No
3132 + 54 59.3	Trib. Cassadaga Creek	3		D	None	Dry 1a	No
3165 + 53 59.9	Cassadaga Creek	42	P	C	None	Open cut	No
3180 + 64 60.2	Trib. Cassadaga Creek	5	P	C	None	Dry 1	Yes
3188 + 49 60.3	Trib. Cassadaga Creek	113	P	C	None	Dry 1	Yes
3198 + 90 60.5	Trib. Cassadaga Creek	<10	P	C	None	Dry 1	Yes
3200 + 24 60.6	Trib. Cassadaga Creek	3		C	None	Dry 1	Yes
3851 + 15 72.9	State Drainage Ditch	96	P	C	None	Open cut	No
3853 + 00 72.9	Trib. State Drainage Ditch <u>d/</u>	128		D	None	Dry 1a	No
3857 + 02 73.0	Trib. State Drainage Ditch <u>d/</u>	100		D	None	Dry 1a	No
3903 + 89 73.9	Trib. Conewango Creek	15	P	C	None	Dry 1	Yes
3925 + 23 74.3	Trib. Conewango Creek	6		C	None	Dry 1	Yes

a/ P = Perennial; I = Intermittent

b/ C = Fresh surface water. Best uses: fishing. These waters shall be suitable for fish propagation and survival. The water quality shall be suitable for primary and secondary contact recreation although other factors may limit the use for these purposes.

D = Fresh surface water. Best uses: fishing. Due to natural conditions, these waters will not support fish propagation and survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.

c/ Dry 1 = Dam and pump; Dry 1a = Dam and pump if flowing, otherwise open cut.

d/ Crossing width includes associated wetlands.

## Determination of Effect

The FERC staff has determined that the proposed action would not adversely affect or jeopardize the continued existence of either the clubshell or Northern riffleshell.

### 3.4 Bald Eagle

#### Background

The bald eagle was federally-listed as endangered within most of the U.S., including New York, on March 11, 1967. On July 12, 1995, the status of the bald eagle was changed to threatened within the lower 48 states. On July 4, 1999, a proposal to delist the bald eagle was announced, but it has not been delisted yet. The reasons for the decline of the bald eagle population are varied and include effects of organochlorine compounds on reproduction, effects of heavy metals and other toxicants, killing by humans, and general loss of habitat. Most of these threats continue to adversely affect bald eagle populations today, although organochlorine pesticides have been banned for use within the U.S. and indiscriminate killing of bald eagles is a federal crime. The bald eagle is also listed as a state-endangered species in New York.

The range of the endangered bald eagle is restricted to North America. Populations in Alaska and western Canada have been relatively stable through time. However, populations elsewhere exhibited gradual declines primarily due to loss of habitat until the 1940s. Following the development and widespread use of organochlorine pesticides, the populations within the lower 48 states dropped precipitously. Since the regulation of the use of organochlorine pesticides in the 1970s, the numbers of bald eagles have gradually risen in most of the species' former range. In New York, a number of bald eagle nesting sites are presently known. In addition, bald eagles congregate during the winter at several sites within the state.

The life history of the bald eagle is well documented. Bald eagles nest in mature trees along oceans, lakes, rivers, and swamps. They generally prefer to nest in white pine, sycamore, red oak, or red maple trees. Bald eagle pairs exhibit a high degree of fidelity to nesting sites, often returning to the same nest year after year. Nesting in New York generally occurs in April and fledging of the young generally follows in mid-to-late summer. Bald eagles feed primarily on fish. However, bald eagles will also take small mammals and birds, and feed opportunistically on carrion. Perching locations are generally located along the waterbodies where feeding activity takes place. Roosting locations are often found in the general vicinity of nesting locations. Bald eagles follow typical north-south seasonal migration patterns and winter in suitable habitats, mainly along wide rivers, from southern Canada southward.

Nesting activity in New York is presently occurring at the following locations:

- near the east end of Lake Erie and in other western New York counties;
- along the Lake Ontario shoreline and in the Finger Lakes region in the central part of the state;
- along Lake Ontario and St. Lawrence River in the northern portion of the state;
- in the central Hudson River Valley; and
- along the West Branch Delaware River and the Delaware River in the eastern portion of the state.

Wintering areas include the Lake Ontario shoreline, the St. Lawrence River, the Hudson River Valley, the Delaware River valley, and major tributaries to the Hudson and Delaware Rivers. The pipeline would cross seven counties with known bald eagle nesting or wintering activity: Chautauqua, Cattaraugus, Delaware, Sullivan, Orange, Rockland, and Westchester Counties. Millennium has corresponded with the New York

Natural Heritage Program (NYNHP) which indicates that the pipeline would be near seven known locations of bald eagle activity including habitats in the vicinity of Chautauqua Creek, Delaware River, Cannonsville Reservoir, Lebanon Lake, Mongaup River, Neversink River, and Hudson River. The FWS has requested that specific location information be kept confidential.

Based on information received from the NYSDEC, the bald eagle activity in the vicinity of the pipeline at the Mongaup/Rio Reservoir location includes nesting, feeding, and overwintering. During field work in the spring of 1999, Millennium observed an active bald eagle nest near the West Branch Delaware River, about 2,500 feet from the pipeline. Activity at the Hudson River location includes feeding and roosting. At the remaining locations, no specific bald eagle activity occurs in the vicinity of the pipeline, but bald eagles are potentially present and any bald eagles found at these locations are most likely to be engaged in feeding, perching, or roosting activity.

### **Field Survey Methodology and Results**

Because the locations of bald eagle use areas are known, Millennium did not conduct surveys for the bald eagle. According to correspondence between Millennium and the NYSDEC, field surveys for the bald eagle have not been requested (NYSDEC, 1998b and 1998c).

### **Summary of Impacts**

Potential effects on bald eagles using activity areas affected by the project could possibly occur from three aspects of project construction and maintenance: 1) right-of-way tree clearing and maintenance within a bald eagle activity area could remove bald eagle perching, roosting, and/or nesting habitat, 2) construction of waterbody crossings within the bald eagle activity areas could adversely affect bald eagle feeding activity, and 3) the presence of construction equipment and personnel within a bald eagle activity area could disturb and result in the temporary displacement of bald eagles in the immediate area.

The clearing and removal of trees within any of the bald eagle activity areas may affect perching or roosting habitat for the species. However, these effects would be localized and there is ample adjacent forest. Since perching and roosting is not a limiting factor for the bald eagle in these activity areas and most of the clearing would take place adjacent to existing rights-of-way, the forest cleared for the project should not adversely affect bald eagle habitat.

The adverse effects on aquatic resources from open-cut crossings of waterbodies are due primarily to direct and indirect impacts from trenching and elevated levels of suspended solids. Generally, these effects have been found to be spatially limited to the immediate vicinity of the crossing location and temporally limited from days to months following completion of construction activities. Alteration of benthic macroinvertebrate and fish distributions would be short term with recovery of the benthic macroinvertebrate communities occurring within 2 to 12 months (Reid and Anderson, 1998). Fish displaced from the vicinity of the waterbody crossing would return to the area within several weeks of restoration of the construction work area. The only waterbodies proposed for open cut in known eagle habitat are the East Branch Delaware River (a conventional bore and open trench with diversion crossing), the Mongaup River/Rio Reservoir, and Hudson River (open cut). These rivers all support large populations of biological resources and the impact of open-cut crossings on prey of bald eagles would be temporary and localized, with adequate forage opportunities nearby. Additionally, the extent of turbidity created by construction in the stream would not significantly affect foraging opportunities since eagles prey on food at the water surface, which would still be visible even in highly turbid water. Therefore, the proposed construction would not significantly restrict feeding opportunity or limit food availability for bald eagles.

Construction activities may temporarily affect bald eagle distributions within all of the identified activity areas. Construction equipment, vehicles, and construction personnel would be present in each of the activity areas during construction. Construction equipment noise would be generated and the level of human activity in these areas would be significantly increased. Several recent publications have examined the effects of various human activities on bald eagles. These studies have been prompted primarily by issues pertaining to management of public lands containing both bald eagle populations and recreational opportunities. Typically, bald eagles are displaced (flushed) from perches by human activity (Steidl and Anthony, 1996; Stalmaster and Kaiser, 1998). The rate of displacement and the distance that birds are displaced appears to be related to a large number of variables, including the distance at which the human activity is first visible, how near human activity is to the eagle, the type of disturbance, the age of the eagle, the general background rate of human activity in the area, the time of day, and the type of activity the eagle is engaged in.

Bald eagles were generally found to react more strongly to hikers than to vehicles of various sorts (motorized boats, non-motorized boats, and airplanes) (Stalmaster and Kaiser, 1998). Eagles that were disturbed were generally found to be displaced by 300 to 600 feet (Steidl and Anthony, 1996). Stalmaster and Kaiser found that overwintering eagles perched along a shoreline were generally displaced away from the shoreline by human disturbance. They also found some indication that feeding activity may be interrupted by repeated human disturbance. At this time, there is no predictive model for estimating bald eagle responses to human disturbance. However, it is expected that construction activities may temporarily displace bald eagles away from the project areas during construction.

The potential effects of the project on the bald eagle within each of the seven bald eagle activity areas are discussed below:

**Chautauqua Creek** - The pipeline would cross the Chautauqua Creek bald eagle activity area for a distance of about 5.4 miles. About 27.0 acres of forested land would be cleared during construction. Of this, about 14.0 acres would be permanently cleared and the remaining 13.0 acres would be allowed to revert to forest following construction. The relatively high acreage of forest impacted is due to the relatively high proportion of new right-of-way (almost 50 percent) within this activity area. Millennium proposes to identify and avoid removal of large trees within the Chautauqua Creek Gorge area, but some potential perching or roosting trees could be cleared during construction and lost permanently. However, the loss would not be significant since adequate trees for perching and roosting would still be present in the undisturbed adjacent areas. The presence of construction personnel and equipment within the activity area could disturb and result in the temporary displacement of bald eagles using the area.

The pipeline would cross 13 waterbodies within the Chautauqua Creek bald eagle activity area. Nine of these waterbodies are perennial streams and the remainder are intermittent streams. Dry crossing methods (open cut of dry intermittent channels, dam and pump of the remaining streams) are proposed for all of these crossings. The construction of perennial stream crossings may temporarily affect the distribution of fish within the immediate vicinity of the pipeline, but the pipeline would have no permanent effect on fish populations. Many of the streams are probably not used by bald eagles for feeding due to their small size. Therefore, construction would not affect feeding opportunities for the bald eagle within the Chautauqua Creek activity area. In addition, bald eagles using the Chautauqua Creek activity area probably feed at Lake Erie, which is over 6 miles west of the Chautauqua Creek crossing. Millennium proposes to directionally drill the nearshore area of Lake Erie, which is the most productive foraging area for the bald eagle. Therefore, the crossing of Lake Erie is not expected to affect feeding bald eagles.

The project is about 2.5 miles north of the historic bald eagle nesting area at Mt. Baldy and further away from the historic bald eagle nesting area at Little Chautauqua Creek, and would not be expected to affect bald

**Lebanon Lake** - The pipeline would cross the Lebanon Lake bald eagle activity area for a distance of about 0.9 mile. About 7.1 acres of forest land would be cleared for construction, of which about 1.4 acres would remain permanently cleared. The other 5.7 acres would be allowed to revert to forest following construction. Some potential perching and roosting habitat could be affected, but this impact is not considered significant due to the abundance of adjacent similar habitat. The presence of construction personnel and equipment within the activity area could disturb and result in the temporary displacement of bald eagles using the area.

The Lebanon Lake bald eagle activity area crossing would be mostly in a lift and lay section of the project. Therefore, the permanent right-of-way would coincide with an existing right-of-way, except at the eastern end where the proposed route would deviate from the existing right-of-way to avoid an active timber rattlesnake den.

The pipeline would cross one perennial stream within the Lebanon Lake bald eagle activity area. This would be a dry crossing although the stream is probably too small to serve as a food source for resident bald eagles. Therefore, the project would not likely affect feeding opportunities for the bald eagle within the Lebanon Lake activity area. The NYSDEC stated that no adverse effects are anticipated to occur to the bald eagle within this activity area and did not recommend any specific compensation measures.

**Mongaup River** - The pipeline would cross the Mongaup River bald eagle activity area for a distance of about 1.6 miles. About 6.0 acres of forest land would be cleared for construction, but all would be within the temporary right-of-way and allowed to revert to forest after construction. Some potential perching and roosting habitat may be impacted temporarily, but the impact should not be significant due to the presence of similar adjacent habitat. The presence of construction personnel and equipment within the activity area could disturb and result in the temporary displacement of bald eagles using the area.

The Mongaup River bald eagle activity area crossing would be in a lift and lay section of the project. Therefore, the permanent right-of-way would coincide with an existing cleared right-of-way, except within the Mongaup River/Rio Reservoir crossing which would be offset slightly from the existing pipeline. The Mongaup River bald eagle activity area lies within the Mongaup Wildlife Management Area (WMA) and contains active bald eagle nests. It is also an important overwintering location because sections of the Rio Reservoir remain ice-free during the winter, thereby providing feeding opportunities for the bald eagles. Bald eagles congregate in the vicinity of the reservoir beginning in early December. Overwintering bald eagles were observed adjacent to the project area during field surveys.

Millennium proposes to replace the permanent boat launch at the Mongaup River/Rio Reservoir after completing pipeline construction across this waterbody. The FWS stated that the current boat launch is near a bald eagle nest and roosting area, and the new launch should be built so that it does not disturb the eagles, or the nest and roost areas (FWS, 1999).

The pipeline would cross two perennial streams within the Mongaup River bald eagle activity area, the Mongaup River and a small tributary to the river. Millennium determined that directional drilling the Mongaup River crossing would not be feasible due to subsurface geological conditions. Because of the length of the crossing and the adjacent topography, Millennium now proposes to cross the Mongaup River by the open-cut method. The tributary to the Mongaup River would be crossed by the dam and pump method. Both crossings would be done between October 15 and November 30.

It would be expected that fish populations may be temporarily displaced from the vicinity of the project during construction of the open-cut crossing of Mongaup River. However, there is no evidence to show that

fish mortality would increase in the vicinity of the project. Thus, the effect on bald eagle feeding opportunities within the reservoir activity area is not expected to be significant or of long duration.

The Mongaup River crossing would be within the Rio Reservoir, a hydroelectric generating facility. Historically, dissolved oxygen depletion has occurred in the hypolimnion of this impoundment during summer months. Generally, oxygen depletion in deeper waters follows the onset of thermal stratification within the reservoir. This situation prevails until the thermocline dissipates in the fall. At that time, the oxygen-depleted waters of the hypolimnion mix with the oxygenated waters of the epilimnion during fall turnover. During the thermal stratification of Rio Reservoir, oxygen-depleted, colder waters of the hypolimnion may not be capable of supporting a fish population. Fish distribution within the reservoir would be restricted to the warmer, better oxygenated surface waters. This would limit the availability of suitable habitat for coldwater fish species such as trout.

The open-cut crossing of the Mongaup River at Rio Reservoir could potentially disturb the distribution of oxygen depleted waters if the crossing was conducted when the reservoir was thermally stratified (i.e., summer or winter). The mixing of oxygen-depleted waters with surface waters that offer the major suitable habitat for fish in the reservoir could result in reduced oxygen levels in the surface waters. However, construction would be scheduled for the fall (October 15 to November 30) when this effect should be reduced. In addition, disturbance would be limited to the immediate area of the reservoir crossing, affecting only between 1.1 and 1.5 acres of this large reservoir complex (11,967 acres) that extends for several miles north and south of the proposed crossing. Construction is not expected to have any significant effect on the foraging opportunities of overwintering bald eagles nor on an abandoned wooden structure in the Mongaup River, north of the pipeline. This structure consists of a series of timbers and beams extending into the Rio Reservoir and serves as an important perching location for bald eagles. It would not be affected by construction.

The NYSDEC requested that there be no construction in areas adjacent to the Mongaup River between December 1 and July 31 to avoid the bald eagle nesting and overwintering periods in this activity area. Millennium proposes to construct within this activity area from August 1 to November 30. However, the FWS requested that Millennium coordinate with the FWS on the construction time schedule (FWS, 1999). Millennium stated that it would schedule construction within a time period agreed upon by the FWS and NYSDEC.

**Neversink River** - The project would cross the Neversink River bald eagle activity area for a distance of about 0.4 mile. About 2.8 acres of forest land would be cleared for construction, of which 0.1 acre would remain permanently cleared and the remaining 2.7 acres would be allowed to revert to forest following construction. The Neversink River bald eagle activity area crossing would be in the lift and lay section of the project and the permanent right-of-way would coincide with an existing right-of-way. Thus, the loss of potential perching or roosting trees resulting from right-of-way clearing would be limited. The presence of construction personnel and equipment within the activity area could disturb and result in the temporary displacement of bald eagles using the area.

The pipeline would cross the Neversink River within the Neversink River bald eagle activity area. An island at the site of the crossing divides the Neversink River. Millennium proposes to use a conventional bore to cross the Neversink River. The potential effects on the fish populations in the river and feeding opportunities for the bald eagle would be avoided by using this crossing method. The NYSDEC stated that no adverse effects are anticipated to occur to the bald eagle within this activity area and did not recommend any specific compensation measures.

**Hudson River** - The Hudson River bald eagle activity area is an overwintering location. The project would cross the Hudson River bald eagle activity area for a distance of about 2.5 miles. About 0.4 acre of forest would be

cleared for construction on new right-of-way, most of which would be within the grounds of the FDR Veterans Administration Hospital. The loss of potential perching or roosting trees resulting from right-of-way clearing would be very limited.

The Hudson River remains ice-free during the winter, which provides feeding opportunities for the overwintering bald eagles. The pipeline would cross the Hudson River and a perennial tributary within the Hudson River bald eagle activity area. Although Millennium evaluated alternative construction methods for the Hudson River crossing, the river would be open cut due to the crossing length. The tributary would be crossed using a dam and pump. Fish populations in the Hudson River may be temporarily displaced from the immediate crossing location during construction. This effect is expected to be of limited duration and pre-construction conditions should become reestablished within one year of the river crossing construction. The adjacent areas of the river should still provide adequate bald eagle food sources during construction. Therefore, the project would not adversely affect feeding opportunities for the bald eagle within the Hudson River activity area.

In summary, dry construction techniques would be used to cross all streams within known bald eagle activity areas, except for the East Branch Delaware River (conventional bore for most of the crossing with an open cut and diversion for the remainder) and the Mongaup River/Rio Reservoir and Hudson River which would be open cut. The East Branch Delaware River would be crossed between June 1 and September 15, and the Mongaup River/Rio Reservoir would be crossed between October 15 and November 30. Millennium would also complete all construction and maintenance activities within the Mongaup WMA by December 1. To minimize impact on both the shortnose sturgeon and EFH species, we have recommended that the Hudson River be crossed between August 1 and October 31. This construction window would avoid impact on bald eagle overwintering activity.

#### **Determination of Effect**

The FERC staff has determined that construction and operation of the proposed project could have limited adverse effects on the bald eagle nesting and winter habitats. At the Mongaup River/Rio Reservoir, we will recommend conditions to the Certificate that Millennium must file site-specific compensation plans for the Mongaup WMA, and that it consult with the FWS regarding the site-specific plan being developed with the NYSDEC for the proposed new permanent boat launch facility at the Mongaup River/Rio Reservoir. We also believe that impact may occur where blasting is required in eagle activity areas and will recommend a condition to the Certificate that, if blasting is required in designated bald eagle activity areas, Millennium must develop a construction plan in consultation with the NYSDEC and FWS, that includes the potential amount, exact location and schedule of the required blasting. With implementation of our recommended Certificate conditions, we believe the proposed action would not adversely affect or jeopardize the continued existence of the bald eagle.

### **3.5 Bog Turtle**

#### **Background**

The bog turtle was listed as a federally threatened species on November 4, 1997. The primary reason for the listing of this species is its limited distribution due to its restrictive habitat requirements and destruction of suitable habitat. The main threats to the species are habitat modification and destruction, and over-collecting for the pet trade. The bog turtle is also listed as a state-endangered species in New York.

The bog turtle occurs in two disjunct populations. The northern population originally occupied portions of western Pennsylvania and the Lake Ontario Plain and Finger Lakes region of New York. These areas

generally no longer contain known populations of the species. The remaining northern population of the bog turtle occurs in a narrow band that includes western Massachusetts, western Connecticut, southeastern New York, southeastern Pennsylvania, New Jersey, northern Maryland, and northern Delaware. The southern population of the bog turtle inhabits the Appalachian Mountain region from southern Virginia to northern Georgia. Recent trends indicate that bog turtles are declining at many of the remaining locations within the northern population.

The bog turtle is a small, secretive turtle that spends much of its life in hibernation. Bog turtles excavate hibernacula by burrowing into soft mud and they hibernate at depths of 2 to 22 inches (Ernst et al. 1989). Muskrat burrows and meadow vole burrows may also be enlarged and used (Ernst et al. 1989). In New York, the bog turtle generally emerges from hibernation in mid-April, or when both air and water temperatures are generally above 50 degrees. Bog turtles generally feed upon insects, larvae of aquatic insects, snails, nematodes, millipedes, seeds, and carrion. Bog turtles may live 30 or more years.

Mating takes place in spring, either within the hibernaculum or shortly after turtles emerge from hibernation. Female bog turtles generally become sexually mature at 5 to 8 years of age, although females may not mate successfully every year. Eggs are laid within the wetland, but out of the water. In New York, eggs are deposited in early June and nests are often found on sedge tussocks in strong sunlight. Eggs hatch in 42 to 56 days and the young may overwinter near the nest. Adults return to the hibernaculum in October.

Bog turtles are rarely found far from wetlands and appear to require fairly specific habitat characteristics. The wetlands generally need a combination of herbaceous vegetation (including sedge tussocks), sparse to moderate shrub growth, a reliable source of water providing permanent saturation and some inundated areas, a mosaic of wetter and dryer areas, and soft mud and/or stony substrate (Chase et al. 1989).

Natural plant succession processes have been cited as having an adverse effect on bog turtles at certain sites. The species apparently requires exposure to fairly strong sunlight. Thus, seasonally or moderately grazed pastures have been identified as favorable habitat for the species since grazing prevents establishment of trees or dense shrubs. In addition, the introduction of exotic plant species into wetlands has been identified as having a possible adverse effect on bog turtles. In portions of New York, purple loosestrife and common reed (*Phragmites australis*) are common within wetlands.

In New York, historical records for bog turtles indicated they occurred in 17 counties, including Sullivan, Orange, Rockland, and Westchester Counties where proposed project construction would be built. The species is currently known to occur in Orange County, but no bog turtle populations are currently known to occur in Sullivan, Rockland, and Westchester Counties.

### Field Survey Methodology and Results

Information about the possible occurrences of bog turtles is not consistent. The NYNHP indicated that the pipeline would be in close proximity to one known bog turtle site in Westchester County on the east bank of the Hudson River. However, the FWS indicated that bog turtles no longer occur in Westchester County (FWS, 1997). Millennium consulted the NYSDEC and requested identification of suitable habitat for the bog turtle in the vicinity of the proposed project. The NYSDEC indicated that there are no known areas where the pipeline would significantly impact the bog turtle, and that no surveys for this species would be required (NYSDEC, 1998a). As a result of consultations with the FWS in April 1999, Millennium conducted field surveys of 18 wetlands within two segments of the right-of-way in Orange County where the FWS believed populations of bog turtles or their habitat may occur. Both segments are within the area where the pipeline would be removed and replaced in the same ditch. If potential bog turtle habitat exists in these two areas, the

FWS requested that field surveys be conducted to determine if bog turtles exist within the proposed construction work area.

Millennium identified and delineated wetlands during the fall of 1997, including the two segments in Orange County that the FWS believed may contain bog turtles or suitable habitat. Access was obtained to survey the entire construction work area in all but one of the 18 wetlands within the two segments. All of these wetlands were revisited in May and June 1999 to determine whether the habitat is suitable for bog turtles. The 1999 field surveys indicated that the wetlands fell into three categories: wetlands that were too dry to provide suitable habitat for bog turtles; wetlands that contained streams or were within agricultural drainage ditches, but that were unsuitable for bog turtles due to the absence of appropriate vegetation and cover; and wetlands that were outside of the construction work area. The characteristics of each wetland and results of the Millennium's field surveys are in table 3.5-1. The NYSDEC commented that it would review the areas surveyed and work with Millennium to resolve any concerns with respect to this species (NYSDEC, 1999). In a subsequent field meeting, held in August 1999 with representatives of Millennium, FWS, and NYSDEC, one suitable bog turtle habitat was identified in a portion of one forested wetland.

### **Summary of Impacts**

Impact on the bog turtle could include loss or displacement of individuals, and temporary or permanent loss of habitat. Only one site was found with suitable bog turtle habitat in a small forested portion of one wetland. The FWS indicated that if this area could be avoided, then no additional surveys would be required for the bog turtle. Millennium stated that it would reduce the workspace so that no trees would be removed in this wetland and no construction activities would be undertaken within the forested area. The construction alignment sheets will be revised to show the reduced construction work area.

TABLE 3.5-1

Characteristics of Wetlands Surveyed for the Bog Turtle

Wetland <sup>a/</sup>	Wetland Characteristics and Habitat Suitability
	Wetland is dominated by purple loosestrife and common reed. It also appears to have been disturbed and/or partially filled during construction of municipal facilities for the Town of Warwick. The wetland lacked sufficient hydrology to provide habitat for bog turtles.
	Wetland includes purple loosestrife and common reed as dominant species. It also appears to have been disturbed and/or partially filled during construction of municipal facilities for the Town of Warwick. This wetland contains two perennial streams, but lacks adequate soil characteristics and cover for bog turtles.
	Wetland exhibits insufficient hydrology and unsuitable soil and vegetation for bog turtles. This wetland is not suitable habitat for bog turtles.
	Wetland includes a small, man-made pond. It does not contain suitable soil or vegetation for bog turtles. This wetland is not suitable habitat for bog turtles.
5	Wetland is within an agricultural drainage ditch. It does not contain suitable vegetation or soil for bog turtles.
	Wetland contains tussock-forming sedges, sparse shrubs, and is partially inundated and is located within a pasture. This wetland does not offer sufficient hydrology for bog turtles.
	Wetland is in an agricultural drainage ditch and does not contain suitable soil or vegetation for bog turtles.
8	Wetland is in an agricultural drainage ditch and does not contain suitable soil or vegetation for bog turtles.
9	Wetland contains tussock-forming sedges, sparse saplings, and is saturated to the ground surface. A small portion of the construction work area contains habitat suitable for bog turtles.
10	Wetland is part of a NYSDEC-regulated wetland. It is in an agricultural drainage ditch and does not contain suitable soil or vegetation for bog turtles.
	Wetland is part of a NYSDEC-regulated wetland. It is part of a fallow agricultural field. It does not contain suitable vegetation or sufficient hydrology for bog turtles.
12	Wetland is part of a NYSDEC-regulated wetland. It is between agricultural fields and receives surface drainage from those fields. It does not contain suitable vegetation for bog turtles.
13	Wetland is part of a NYSDEC-regulated wetland. It is outside of the construction work and would not be affected. However, it does not contain suitable vegetation for bog turtles.
14	Wetland is outside of the construction work area and would not be affected. However, it is a forested wetland that does not contain suitable vegetation for bog turtles.
15	Wetland is completely within the existing cleared right-of-way for Line A-5. It is saturated, but does not contain suitable vegetation or soil for bog turtles.
16	Wetland is completely within the existing cleared right-of-way for Line A-5. It is saturated, but does not contain suitable vegetation or soil for bog turtles.
17	Wetland is along a small stream. Although hydrology is probably adequate for bog turtles, neither the vegetation nor soils are suitable for the species.
18	Wetland is almost entirely within the Indian Kill Reservoir, which is identified as NYSDEC-regulated wetland and is open water. The construction work area adjacent to the reservoir is extremely rocky and there is little adjacent wetland vegetation. This wetland does not contain suitable vegetation or soil for bog turtles.

<sup>a/</sup> To protect the confidentiality of these locations, the wetland identification number are arbitrary and do not correspond to any other wetland designation provided by Millennium.

## **Determination of Effect**

The FERC staff has determined that, with NYSDEC and FWS approval of the modified construction plan for the one site with potential bog turtle habitat, the project would not adversely affect or jeopardize the continued existence of the bog turtle.

### **3.6 Northern Wild Monkshood**

#### **Background**

The northern wild monkshood was listed as a federally threatened species on April 26, 1978. The primary threat to and reason for the listing of this species is its limited distribution due to its highly restrictive habitat requirements (Read and Hale 1988; Lowe et al. 1990). The northern wild monkshood is also listed as a state-threatened species in New York.

The species is known to occur in Iowa, Wisconsin, Ohio, and New York. In recent years, the number of known sites containing northern wild monkshood has increased substantially, primarily due to discovery of new sites in Wisconsin and Iowa (Kuchenreuther, 1996). The species appears to be relatively secure at this time. In New York, the northern wild monkshood is restricted to several locations in the Catskill Mountains.

The northern wild monkshood is a perennial member of the buttercup family. It is one of six species of monkshood found in North America. Northern wild monkshood grows from a tuberous rootstock and propagation can occur from seed or from rootstock (Kuchenreuther, 1996). Healthy adult plants produce large numbers of seeds and the propagation of individuals from rootstock occurs quite readily. Thus, the limited distribution of the species is believed to be due primarily to its very specific habitat requirements.

Northern wild monkshood is apparently a glacial relict species that requires microhabitats that are moister and cooler than adjacent areas (Kuchenreuther, 1996). In Iowa, Wisconsin, and Ohio, the species occurs on shaded talus slopes and cliffs. These locations are kept moist by seepage or melting of subterranean ice formed during winter. In New York, the species occurs at shaded, high altitude seepage springs and in streamside crevices (Dixon and Cook, 1990; Read and Hale, 1988). The common attribute of all these localities appears to be that they are moister than surrounding habitat. These localities are also cooler than surrounding habitat, but Kuchenreuther (1996) suggests that the preference for cooler locations is an artifact of the species' need to be kept moist. The cooler temperatures reduce the rate of evaporation of available moisture. Attempts to propagate or transplant northern wild monkshood have been relatively unsuccessful. If sufficient moisture is not present, viable adult plants are not produced or maintained.

In New York, northern wild monkshood is presently known to occur in four locations in Ulster County. An additional historic site in Chenango County apparently no longer exists. All of the locations in Ulster County are at altitudes in excess of 3,000 feet. Read and Hale (1988) judged that the probability of finding additional populations in New York was not high.

#### **Field Survey Methodology and Results**

The northern wild monkshood is not known to occur within the project area. All of the known New York sites are at significantly higher elevations than those which occur along the pipeline. In addition, the pipeline in most of Delaware, Sullivan, and Orange Counties would be in the lift and lay segment, where the construction work area consists largely of previously cleared pipeline right-of-way and lacks the shade required to produce and maintain the moist microclimate required by this species. Although the FWS indicated that the

species may occur in the vicinity of the project in its original comments on the project, the FWS stated in its comments on the DEIS that the northern wild monkshood does not occur within the construction work area. Therefore, Millennium did not conduct surveys for this species.

### **Summary of Impacts**

Since the northern wild monkshood does not occur within the construction work area, no impact on the species is expected.

### **Determination of Effect**

The FERC staff has determined that construction and operation of the proposed project would not affect the species or any suitable habitat of the species because the northern wild monkshood is not known or likely to occur within the project area.

## 4.0 CONCLUSIONS

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Eight federally listed endangered or threatened species were considered by the FERC as potentially occurring in the vicinity of the proposed Millennium Pipeline Project facilities. One of the species (the peregrine falcon) was delisted on August 25, 1999. It was therefore eliminated from detailed review in this BA. The remaining seven species are addressed in this BA.

Based on our analysis in this BA, the Millennium Pipeline Project would result in no effect on one species (northern wild monkshood). The FERC staff has determined that with implementation of Millennium's proposed compensation measures, our recommended compensation measures, and the ECS (which incorporates our Plan and Procedures), the project would result in no adverse effect on five species (dwarf wedge mussel, clubshell, Northern riffleshell, bald eagle, and bog turtle). The FERC staff has determined that, even with proposed compensation measures identified by Millennium and recommended by us, the project may affect the shortnose sturgeon, and could result in a "take" of the shortnose sturgeon as defined in section 9 of the ESA. We expect a biological opinion to be issued from the FWS and NMFS in response to this BA.

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- The Nature Conservancy. 1998. Letter dated December 1, from G. Schuler (Director, Neversink River Program) and D. Boergers (Acting Secretary, FERC).
- U.S. Department of Commerce, National Marine Fisheries Service. 1997. Letter dated December 18, from D. Rusanowsky (Fishery Biologist, NMFS) to L. Shumway (Environmental Project Manager, Millennium).
- U.S. Department of Commerce, National Marine Fisheries Service. 1998a. Telephone communication on April 23, between D. Rusanowsky (Fishery Biologist, NMFS) and L. Shumway (Environmental Project Manager, Millennium).
- U.S. Department of Commerce, National Marine Fisheries Service. 1998b. Final Recovery Plan for the shortnose sturgeon (*acipenser brevirostrum*). Prepared by the Shortnose Sturgeon Recovery Team for the National Marine Fisheries Service, Silver Spring, Maryland. 104 pp.

U.S. Department of Commerce, National Marine Fisheries Service. 1999. Telephone communication on February 24, between D. Rusanowsky and N. Haley (NMFS); J. Goggin, J. Shenot, J. Martin, and J. Wachholder (FERC) and P. Patterson (Foster Wheeler Environmental Corporation).

U.S. Department of Commerce, National Marine Fisheries Service. 2000. Letter dated March 10, from S. Gorski (Field Offices Supervisor, NMFS) to K. Madden (Director, FERC).

U.S. Department of the Interior, Fish and Wildlife Service. 1997. Letter dated December 12, from S. Morgan (Field Supervisor, FWS, Cortland Field Office) to L. Shumway (Environmental Project Manager, Millennium).

U.S. Department of the Interior, Fish and Wildlife Service. 1999. Telephone communication on October 29, between Diane Mann-Klager (FWS) and J. Shenot and J. Wachholder (FERC).

U.S. Department of the Interior, Fish and Wildlife Service. 2000a. Letter dated April 21, from D. Stilwell (Field Supervisor, FWS) to D. Boergers (Secretary, FERC).

U.S. Department of the Interior, Fish and Wildlife Service. 2000b. Letter dated April 28, from D. Stilwell (Field Supervisor, FWS) to M. Feierstein (District Engineer, COE).

**APPENDIX A**

**INFORMAL CONSULTATION COMMUNICATIONS**

## APPENDIX A

### INFORMAL CONSULTATION COMMUNICATIONS

#### National Marine Fisheries Service

December 18, 1997 Letter to L. Shumway (Millennium) from D. Rusanowsky (NMFS)

April 23, 1998 Telephone conversation between D. Rusanowsky (NMFS) and L. Shumway (Millennium).

February 2, 1999 Letter to D. Rusanowsky (NMFS) from L. Shumway (Millennium).

February 5, 1999 Letter to D. Rusanowsky (NMFS) from L. Shumway (Millennium)

February 17, 1999 Fax to L. Shumway (Millennium) from D. Rusanowsky (NMFS)

February 24, 1999 Telephone conversation between D. Rusanowsky and N. Haley (NMFS) and J. Goggin, J. Shenot, J. Martin, and J. Wachholder (FERC), and P. Patterson (FERC staff third-party environmental contractor).

March 2, 1999 Letter to D. Rusanowsky (NMFS) from L. Shumway (Millennium).

September 17, 1999 Telephone conversation between D. Rusanowsky (NMFS) and J. Shenot (FERC).

September 23, 1999 E-mail from D. Rusanowsky (NMFS) to J. Shenot (FERC)

December 17, 1999 Letter to D. Rusanowsky (NMFS) from K. Madden (FERC)

March 10, 2000 Letter to K. Madden (FERC) from S. Gorski (NMFS, Highlands, New Jersey)

April 20, 2000 Letter to D. Boergers (FERC) from A. Kemmerer (NMFS).

May 2, 2000 Letter to Lt. Colonel Mark D. Feierstein (COE) from P. Kurkul (NMFS, Gloucester, Massachusetts).

#### U.S. Fish and Wildlife Service

July 17, 1997 Letter to L. Shumway (Millennium) from S. Morgan (FWS).

November 12, 1997 Letter to S. Morgan (FWS) from L. Shumway (Millennium).

December 12, 1997 Letter to L. Shumway (Millennium) from S. Morgan (FWS).

March 27, 1998 Letter to D. Boergers (FERC) from S. Morgan (FWS).

April 22, 1998 Telephone conversation between M. Stoll (FWS) and L. Shumway (Millennium).

**APPENDIX A (cont'd)**

July 16, 1998	FAX to M. Stoll (FWS) from L. Shumway (Millennium).
February 3, 1999	Letter to L. Shumway (Millennium) from D. Stilwell (FWS, Cortland, New York).
February 5, 1999	Letter to S. Morgan (FWS) from L. Shumway (Millennium).
February 19, 1999	Telephone conversation between D. Mann-Klager (FWS) and L. Shumway (Millennium).
February 26, 1999	Letter to D. Stilwell (FWS) from L. Shumway (Millennium).
March 4, 1999	Letter to D. Mann-Klager (FWS) from L. Shumway (Millennium).
June 4, 1999	Letter to D. Boergers (FERC) from D. Stilwell (FWS).
August 17, 1999	Letter to D. Boergers (FERC) from D. Stilwell (FWS).
October 26, 1999	Telephone conversation between D. Mann-Klager (FWS) and J. Shenot and J. Wachholder (FERC).
April 21, 2000	Letter to D. Boergers (FERC) from D. Stilwell (FWS).
April 28, 2000	Letter to Lt. Colonel M. Feierstein (COE) from D. Stilwell (FWS).
<b>New York State Department of Environmental Conservation</b>	
June 22, 1998	Telephone conversation between M. Kallaji (NYSDEC) and LJE (GAI, consultants to Millennium).
July 1, 1998	Telephone conversation between P. Nye (NYSDEC, Delmar, New York) and LJE (GAI, consultants to Millennium).
July 24, 1998	Letter to L. Shumway (Millennium) from P. Nye (NYSDEC).
<b>New York State Department of State</b>	
December 20, 1999	Letter to K. Madden (FERC) from S. Resler (NYSDOS).
April 7, 2000	Letter to D. Boergers (FERC) from G. Stafford (NYSDOS).
<b>New York Natural Heritage Program</b>	
September 8, 1997	Letter to L. Shumway (Millennium) from N. Conrad (NYNHP).
December 22, 1997	Letter to L. Shumway (Millennium) from N. Conrad (NYNHP).
February 2, 1999	Letter to N. Conrad (NYNHP) from L. Shumway (Millennium).

**APPENDIX A (cont'd)**

February 17, 1999 Letter to L. Shumway (Millennium) from K. Seleen (NYNHP).

**The Nature Conservancy**

December 1, 1998 Letter to D. Boergers (FERC) from G. Shuler (TNC, Cuddebackville, New York).

February 5, 1999 Letter to G. Schuler (TNC, Cuddebackville, New York) from L. Shumway (Millennium).

**APPENDIX B**

**NEW YORK STATE  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
SECTION 401  
WATER QUALITY CERTIFICATE AND CONDITIONS  
December 8, 1999**

**New York State Department of Environmental Conservation**

**Division of Environmental Permits, Room 538**

50 Wolf Road, Albany, New York 12233-1750

Phone: (518) 457-2224 • FAX: (518) 457-7759

Website: [www.dec.state.ny.us](http://www.dec.state.ny.us)

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FEDERAL ENERGY  
REGULATORY  
COMMISSION



February 14, 2000

Mr. Rick Hall, Jr.  
Permits Manager  
Millennium Pipeline Company, L.P.  
P.O. Box 2002  
Binghamton, N.Y. 13902-2002

CP 98-150  
CP 98-151

Dear Mr. Hall:

The New York State Department of Environmental Conservation has reviewed your January 31, 2000 request for modification of the 401 Water Quality Certificate issued on December 8, 1999 to Millennium Pipeline Company, L.P.

General Condition Number 2 is hereby modified as indicated in the attached Certificate. All other terms and conditions of the Certificate remain the same. The current Certificate, with which Millennium Pipeline Company, L.P. must comply, contains 14 pages dated February 14, 2000.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Lenore R. Kuwik'.

Lenore R. Kuwik  
Deputy Chief Permit Administrator

cc with attachment:

Mr. David P. Boergers, FERC  
U.S. Army Corps of Engineers  
Pittsburgh District  
Buffalo District  
New York District

U.S. Fish and Wildlife Service, Cortland Office  
New York State Department of State, Division of Coastal Resources & Waterfront Revitalization  
New York State Department of Public Service



**NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS**

**Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification**

The permittee expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, agents, and assigns for all claims, suits, actions, damages, and costs of every name and description, arising out of or resulting from the permittee's undertaking of activities or operation and maintenance of the facility or facilities authorized by the permit in compliance or non-compliance with the terms and conditions of the permit.

**Item B: Permittee's Contractors to Comply with Permit**

The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

**Item C: Permittee Responsible for Obtaining Other Required Permits**

The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

**Item D: No Right to Trespass or Interfere with Riparian Rights**

This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

**GENERAL CONDITIONS**

**General Condition 1: Facility Inspection by the Department**

The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71-0301 and SAPA 401(3).

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

**General Condition 2: Relationship of this Permit to Other Department Orders and Determinations**

Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

**General Condition 3: Applications for Permit Renewals or Modifications**

The permittee must submit a separate written application to the Department for renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing.

The permittee must submit a renewal application at least:

- a) 180 days before expiration of permits for State Pollutant Discharge Elimination System (SPDES), Hazardous Waste Management Facilities (HWMF), major Air Pollution Control (APC) and Solid Waste Management Facilities (SWMF); and
- b) 30 days before expiration of all other permit types.

Submission of applications for permit renewal or modification are to be submitted to:

NYSDEC Regional Permit Administrator, Region < >  
<street>, <city>, <state> <zip>, telephone: < >

**General Condition 4: Permit Modifications, Suspensions and Revocations by the Department**

The Department reserves the right to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

- a) the scope of the permitted activity is exceeded or a violation of any condition of the permit or provisions of the ECL and pertinent regulations is found;
- b) the permit was obtained by misrepresentation or failure to disclose relevant facts;
- c) new material information is discovered; or
- d) environmental conditions, relevant technology, or applicable law or regulation have materially changed since the permit was issued.

401 Water Quality Certificate Conditions for the Millennium Gas Pipeline  
December 8, 1999

1. General Conditions:

A. The New York State Department of Environmental Conservation (DEC) hereby certifies that the subject project will not contravene effluent limitations or standards as provided for under Sections 301, 302, 303, 306, 307 and 401 of the Clean Water Act of 1977 (PL 95-217) provided that all of the conditions listed herein are met.

B. All activities authorized by this Certificate must be in strict conformance with the Construction Alignment Sheets, dated November 10, 1999 (CAS); Environmental Construction Standards dated July 1999 (ECS); and the October 22, 1999 DEC Data Responses (DDR) submitted November 10, 1999, and the November 19, 1999 Transmittal from GAI consultants to Richard C. Benas of DEC.

C. Any provision included in the CAS, ECS or DDR or any other application materials that are in conflict with the conditions included in this 401 Water Quality Certificate are superseded by these conditions.

D. All the individuals listed in Appendix A of this Certificate must be notified 5 working days prior to the start of any stream or wetland crossing.

E. Millennium shall provide to the Chief of DEC's Environmental Analysis Unit, Division of Environmental Permits (CEAU), as built drawings and construction notes for all stream and wetland crossings.

F. For Oquaga Creek wetland Millennium shall provide specific details identical to those referred to in the DDR on page 18 a) 1-7.

2. Within 90 days of the effective date of the License issued by the Federal Energy Regulatory Commission, but in no event later than ninety (90) days prior to the start of construction, Millennium shall:

A. Employ a third party inspector that will report directly to DEC.

B. Submit a 3rd party inspection program to the Ecotoxicology Section Head (ESH), Bureau of Habitat of DEC for review and approval that identifies and details the responsibilities of the 3rd party environmental inspector. Such plan may include provisions for cooperation between State and Federal agencies of 3rd party inspector services.

C. Submit a training program plan that details all environmental protection aspects of this project to the CEAU and ESH for review and approval. Such training program should include all environmental protection aspects of the ECS, CAS, DDR, these 401 Water Quality Certificate conditions, and all other appropriate environmental protection precautions.

D. Make provisions that its construction staff, contractors, sub-contractors, environmental inspectors, and 3rd party inspectors complete the training program and prior to start of construction be prepared to implement all environmental protection aspects of the project. Such training shall be made available to DEC staff listed in Appendix A of this Certificate.

E. File a contingency plan with the CEAU that details and commits all necessary extra equipment and personnel, on stand-by basis, that may be used for environmental protection and construction should unforeseen events be encountered during stream or wetland crossings and construction on steep slopes.

F. Submit to CEAU, for Department review and approval, a signed agreement with Southern Energy, owner of the first hydro-electric generating facility upstream of the Mongaup River pipeline crossing location, that Southern Energy will schedule an outage for its Mongaup Falls generating units during Millennium's construction and crossing of the Mongaup River. The agreement must include a clause meeting Southern Energy's stated requirement of proper advanced notice and planning from Millennium and a commitment from Southern Energy to reduce flow to the minimum allowed under its Federal Energy Regulatory Commission license to operate the facility for the full duration of construction activities to cross the Mongaup.

G. Submit a surface waters and wetland restoration monitoring plan to the CEAU for review and approval.

F. Provide to CEAU a critical path chart that shows all the submittals required by this Certificate.

3. Not less than 60 days prior to the start of construction Millennium shall:

A. Update the CAS, ECS, and the DDR to identify any changes from the original alignment that could in any way affect streams, wetlands, or rare, threatened and endangered species. All changes must be highlighted on the final drawings.

B. Submit to CEAU a storm water management plan for all permanent access roads and facilities and temporary staging and extra work zones.

C. Establish and maintain a 50' un-grubbed buffer around all water bodies until trench construction begins on the water body crossing as indicated in the ECS as supplemented by the November 19, 1999 transmittal from GAI consultants to Mr. Richard C. Benas of DEC.

D. Clearly identify the boundary of all environmentally sensitive areas using brightly colored fencing or silt fencing. Each boundary will also be identified with a clearly legible sign, that can be read from a distance of 30 feet, as the "50 foot non-grubbing stream buffer boundary" or "DEC wetland buffer zone boundary" or "DEC wetland boundary," and any other environmentally sensitive areas as "environmentally sensitive area."

E. Develop rare, threatened and endangered species management plans for the crossings of the Neversink and Susquehanna Rivers, and the Olean and Catatunk Creeks, and file such plans with the CEAU for review and approval prior to commencing any construction at these streams. Such plans will include the following for these water bodies:

1. Neversink River

- a. Millennium will notify the DEC Endangered Species Unit (ESU) at least 5 working days before vegetation clearing and set-up for the drilling operation is begun on the banks of the Neversink River.
- b. Millennium will notify the ESU, by telephone, within 7 days of when construction and restoration has been completed.

2. Olean Creek:

- a. Millennium shall conduct field surveys for the bean villosa (*Villosa fabalis*) and the longhead darter (*Percina macrocephala*) as indicated in the DDR (comment #6, p.15-17).
- b. The plans for these surveys shall be submitted to ESU for approval no later than 30 days before the surveys are scheduled to be conducted.
- c. The results of the surveys must be submitted to ESU no later than 14 days after their completion and at least 30 days before construction begins at the stream crossing. The survey plans should contain proposed protection measures for *Villosa fabalis* and *Percina macrocephala*, if found, and the proposed time frames for these protection measures.
- d. Millennium will notify the ESU, by telephone, at least 5 working days before any construction is performed at the creek.
- e. Millennium will notify the ESU within 7 days of when construction has been completed.

3. Catatunk Creek:

- a. Millennium shall conduct field surveys for the green floater (*Lasmigona subviridis*) as indicated in Millennium's November 10, 1999 submission to DEC.
- b. The plans for these surveys shall be submitted to ESU for approval no later than 30 days before the surveys are scheduled to be conducted.
- c. The results of the surveys must be submitted to ESU no later than 14 days after their completion and at least 30 days before construction begins at the stream. The survey plans should contain proposed protection measures for *Lasmigona subviridis*, if found, and the proposed time frames for these protection measures.
- d. Millennium will notify the ESU, by telephone, at least 5 working days before any construction is performed at the creek.
- e. Millennium will notify the ESU within 7 days of when construction has been completed.

4. Susquehanna River:

- a. If the conventional bore method for crossing the Susquehanna River fails, no work will be performed in the River which involves alteration of stream flow or substrate until Millennium completes a survey for *Lasmigona subviridis* and DEC approves an alternate crossing method.
- b. The plans for these surveys shall be submitted to ESU for approval no later than 30 days before the surveys are scheduled to be conducted.
- c. The results of the surveys must be submitted to ESU no later than 14 days after their completion and at least 30 days before construction begins at the stream. The survey plans should contain proposed protection measures for *Lasmigona subviridis*, if found, and the proposed time frames for these protection measures.
- d. Millennium will notify the ESU, by telephone, at least 5 working days before any construction is performed on the creek whether by drilling or an alternative procedure.
- e. Millennium will notify the Endangered Species Unit within 7 days of when construction has been completed.

4. Not less than 20 days prior to the start of construction Millennium shall:

- A. Require 3rd party inspectors be in place at each spread. 3rd party inspectors will report to appropriate designated Regional Habitat Protection Program Managers (HPM) listed in Appendix A of this Certificate.
- B. Submit pre-clearing photographs of all stream crossings to CEAU and each HPM. Photographs of the crossing will be taken from both sides of the stream showing the ROW where it will cross the stream. Upstream and downstream calibrated stakes indicating in-stream pre-construction sediment elevations must be provided if required by the 3rd party inspector. Post construction evaluation of stakes will be made to determine sediment deposition due to the project. Millennium must place stakes and take photos at locations and times determined by the 3rd party inspector.
- C. Consult with the 3rd party inspector on the location for any approved equipment stream crossings for the purpose of clearing of the ROW. The 3rd party inspector will make final decisions on the location of any approved equipment crossing after consultation with the contractor and the HPM.

5. During Construction Millennium shall:

- A. Require all contractors performing stream crossings have oil booms and other sheen control devices on proximal standby. Millennium and its contractors must be trained in their deployment and maintenance. Oil booms and other appropriate oil control devices as needed shall be installed to contain any oil sheen generated during sediment removal at stream crossings. Silt fences and oil booms will also be required to prevent potentially contaminated ground or surface waters from entering any waterbody from exposed upland pipe trenches or excavations.

B. Promptly collect and dispose of any in-stream oily material observed during dredging, or any other project activity, at a facility approved by the DEC Regional Engineer (RE) as identified in Appendix A,

C. Ensure that activities do not result in erosion of soils, siltation into water bodies or fugitive dust emissions on the site during construction and operation of the project.

D. Implement all erosion control and environmental protection measures described in the CAS, ECS, DDR and these Certificate conditions.

E. With the exception of the Hudson River, restore all stream crossing areas, except for temporary access roads, to preexisting contours and grades to a distance of 50 feet from edge of the stream within 24 hours of backfilling the trench.

F. Restore wetland crossing areas, except for temporary access roads, to pre-existing contours and grades to a distance of 100 feet from the edge of the wetland within 48 hours of backfilling the trench.

G. Not reduce any stream's flow by more than 10% of its flow at the time of withdrawal of hydrostatic test water.

H. Backfill the trench at the Olean Creek with clean washed stone, as approved by the 3rd party inspector. All material excavated from the trench shall be disposed of at a location approved by the RE.

I. With the exception of the Hudson River, not start construction of any open cut (dry or wet) stream crossing in the event of a National Weather Service weather forecast that contains a 40 percent or greater chance of precipitation that may affect the area of the crossing during the projected duration of the construction for the subject crossing unless the environmental inspector authorizes the work to begin. The environmental inspector must document the weather conditions in the vicinity of the crossing and the upstream watershed. Environmental inspectors must keep an up to date log of all authorizations and at all times make the log available for DEC inspection. In the event that an unforecast rainfall event occurs, after a crossing has begun, Millennium shall, upon receiving the approval of the 3rd party inspector, proceed to work on a 24 hour basis in order to complete the crossing as quickly as possible.

J. Monitor the status of all open cut (dry or wet) crossings 24 hours per day until the crossing has been completed and the stream and stream banks have been restored. In the event of any potential or actual failure of the crossing, Millennium must have adequate staff and equipment available to take necessary steps to prevent or avoid adverse environmental impacts.

K. Provide for safe passage or portage of navigational boaters or canoeists at all stream crossings designated by the HRM. Such safety measures must provide an adequate upstream warning that is readily understandable by all travelers.

L. Ensure that equipment crossings are constructed in such a way that soil cannot fall into water bodies through cracks in the crossing or over the edge of the crossing or at the banks. All equipment crossings shall be installed and removed within the timing restrictions set forth in the CAS unless a change is approved by the 3rd party inspector after consultation with the HRM. If Millennium proposes to maintain an equipment bridge during the timing restriction contained in the CAS, that bridge must be a span structure.

M. Implement the erosion and sedimentation control measures for trench de-watering activities contained in the ECS and CAS. Millennium shall ensure that all other necessary measures are taken to prevent pollutants from reaching any water bodies.

N. Meet with the contractor, environmental inspectors and the HRM, on site, 30 days prior to beginning any open cut wet trench crossing to confirm the specific crossing methods to be used by the contractor.

O. Employ blasting in Lake Erie or any other water body only during the time periods allowed in the CAS.

P. Conduct all blasting using inserted delays of a fraction of a second per hole, and stemming, in which rock is placed into the top of the borehole to damp the shock wave reaching the water column, thereby reducing fish mortalities from blasting.

Q. Employ sonar with all blasting operations to detect the presence of fish at all streams designated by the HRM. There shall be no blasting during passage of schools of fish.

R. Only clear, grade and excavate within DEC regulated wetlands in conformance with site specific specifications included in the CAS and the ECS (Section IVB). All such activities will be limited to only that necessary to install the pipeline. Grubbing within a DEC regulated wetland will be confined to the immediate area of the trench. Equipment shall be operated on removable mats to reduce soil disturbance and compaction within wetlands unless otherwise directed by the 3rd party inspector. If there are conflicts between methods outlined in the ECS, CAS, DDR and other the site specific measures specified by DEC in this Certificate, the site specific measures will apply. Where conflicts as to proper construction methods exist, the 3rd party inspector will make final decisions after consultation with the contractor and the HRM. The 3rd party inspector may authorize limited grubbing or clearing to accommodate safe equipment passage and operation, after consultation with the HRM.

S. Design all trench line barriers, breakers, and stream crossing buffers as shown in figures 12 and 29 in the November 19, 1999 Transmittal from GAI consultants to Mr. Richard C. Benas of DEC.

T. Conduct instream backfilling, for all open cut wet ditch trenches, in such a manner to reduce the amount of resuspension of sediments into the water column. Millennium must substitute clean gravel or other suitable material as backfill if the environmental inspector determines that the excavated material contains an excessive amount of fine grained material. Backfill material shall be released from construction equipment as close to the

streambed surface as possible. Discharge of backfill material from above the water surface is not allowed.

6. Olean Creek:

A. Millennium must conduct a geotechnical evaluation of soils showing grain size and distribution at the proposed crossing location to evaluate the suitability of using a closed environmental bucket for the trenching and backfilling operations. Samples collected for geotechnical evaluation shall also be analyzed for polycyclic aromatic hydrocarbons (PAHs), total organic carbon (TOC) and grain size.

B. Millennium must perform all trenching operations using a closed environmental bucket such as the Cable Arm bucket as detailed in the DDR. No other type of trenching and backfilling equipment is approved for the Olean crossing. All equipment shall be sized and operated in such a manner to minimize the resuspension and transport of sediments into the water column. Sizing, operation and maintenance of this and all other equipment shall be in accordance with the manufacturer's specifications. Specifically, this may require Millennium to perform bucket washings during each cycle to eliminate the introduction of sediments attached to the bucket back into the water column, as directed by the environmental inspector.

7. Hudson River Crossing:

A. All Hudson River crossing construction shall be conducted within the 92 day construction window of May 1 until July 31.

B. Millennium must perform all trenching operations using a closed environmental bucket such as the Cable Arm bucket as detailed in the DDR. No other type of trenching and backfilling equipment is approved for this crossing. All equipment shall be sized and operated in such a manner to minimize the resuspension and transport of sediments into the water column. Sizing, operation and maintenance of this and all other equipment shall be in accordance with the manufactures specifications. Specifically, this may require Millennium to perform bucket washings during each cycle to eliminate the introduction of sediments attached to the bucket back into the water column, as directed by the environmental inspector.

C. The enclosed environmental bucket shall be designed to completely enclose the dredged sediment and water captured. The bucket shall be equipped with escape valves which shut when the bucket is withdrawn from the water column.

D. The environmental dredge bucket shall have demonstrated the capability of meeting the following water quality performance standards: (a) Suspended solids not to exceed 25 mg/l over background at 25 m (75 ft) from operation when ambient levels are lower than 100 mg/l, and (b) Turbidity not to exceed ambient levels by more than 30% at 25 m (75 ft) from operation. An equivalent alternative dredging technology may be used if performance data submitted clearly demonstrates to DEC's satisfaction that the technology can meet the water quality performance standards noted above.

- E. Prior to any construction in the Hudson River Millennium shall collect two additional sediment cores as detailed in the DDR and report such results to the Director of Watershed Assessment and Research (DWAR), Division of Water of the DEC, and the CEAU. DEC may, based upon the contaminant concentrations encountered in these sediment cores, if any, require additional sampling and modification to all aspects of the Hudson River Crossing Plan prior to any construction at this crossing.
- F. The contractor shall demonstrate to the 3rd party inspector's satisfaction that the silt dredge operator has sufficient control over bucket depth in the water and bucket closure so that sediment resuspension from bucket contact with the bottom, and bucket over-filling, is minimized.
- G. Only barges employing the best available technology, and in good operating condition, shall be employed to contain the sediment and water placed in them, so that no discharge of sediment or water occurs until the barge has been transported to the authorized disposal location(s). Deck barges shall not be used to contain dredged sediments unless the barge has been modified to provide for complete containment of the sediments. No barge overflow is allowed.
- H. Millennium shall take environmental samples as outlined in the DDR to an analytical laboratory by the end of each sampling day. Millennium shall make every effort to submit sampling results to DEC within 24 hours of collection. Data is required within 36 hours of receipt of the samples by the analytical laboratory and shall be directly e-mailed or faxed to the CEAU and the DWAR. If the 36-hour deadline occurs after 5 PM or during the weekend, the data may be reported by 9 AM the following business day.
- I. Millennium must provide, for DEC review and approval, separate two-week monitoring plans for both the shallow water and deep-water construction activities. Under no circumstances will construction activities begin prior to DEC approval of in-stream monitoring plans.
- J. DEC may modify the ongoing monitoring plan when appropriate to ensure compliance with this Certificate. Specifically, DEC may add monitoring parameters, including chemical analysis based upon the required initial or additional sediment sampling results. The location and frequency of sampling may also be modified by DEC based upon the initial monitoring plan results.
- K. Each day Millennium must submit to DWAR for review summary tables of the composite results of the top, middle and bottom samples, raw total suspended solids (TSS), settleable solids (SS) and turbidity data from the top, middle and bottom sampling depths at all sampling stations. These tables shall be designed to allow easy comparison of all parameters measured at a given sampling transect and at a given time together with the corresponding upstream reference site values for each sampling transect.
- L. Upon completion of each initial 2 week monitoring event for both the shallow and deep water dredging operations a monitoring report shall be submitted to CEAU, DWAR, and ESH within 10 business days of the two week sampling period. These reports shall

summarize: daily sample results, dates, times, and tide time of sample collection; dredge cycle times, backfilling times; sample locations shown on a plan of reasonable scale, depth of samples; laboratory reports of analytical results including appropriate QA/QC test results for blanks, duplicates, spikes, and matrix spikes. Millennium shall collect all data necessary to verify model predictions and provide such verification to DWAR. The source of each barge-load of sediment shall also be documented in the monitoring report for any disposal event.

M. Millennium shall use a contract laboratory, approved by the DWAR, for the chemical analyses specified in this Certification. Laboratory detection limits for the analyses specified in this Certification shall be sufficiently low as determined by the DWAR.

N. Millennium shall provide monitoring plans to DWAR and CEAU that include the measurement of directional velocity at one up-current sampling station (U1 or U2) at the start of each sampling run. Such measurements will be conducted at the start of each longitudinal sampling transect at top, middle and bottom depths during the initial monitoring operations. These same measurements will be required at all longitudinal transects during the ongoing monitoring operations. Directional velocity data will be submitted with daily sampling results.

O. Millennium shall ensure that the maximum mixing zone for dredging and disposal of project sediments shall not exceed 460 feet down-current from the centerline of the trench as referenced in the DDR. Monitoring for water quality parameters is detailed below:

1. Exceedences of water quality standards shall be attributed to project activities when the vertically averaged concentration at any sampling location obtained 500 feet down-current from the project activity exceeds the mean up-current sample concentration as set forth below.
2. The maximum increase in concentration for total suspended solids (TSS) and settleable solids (SS) down-current of the 460 feet mixing zone shall be 35 mg/l above the mean, flow-weighted, up-current concentration from the same sampling transect.
3. If the water samples collected at the edge of the mixing zone fails to meet water quality standards and this effect is attributed to project activities, DWAR and CEAU shall be immediately notified.
4. Verification that the samples were obtained within the sample plume, or that there was no plume, shall also be provided to DWAR and CEAU.
5. In the event of an exceedance of water quality standards, Millennium shall resample under similar conditions within 24 hours. The second set of samples shall be immediately analyzed and the results also provided to DWAR and CEAU.
6. If this second set of samples fails to meet water quality standards, Millennium shall immediately employ one or more of the following environmental protection

measures under the direction and approval of the 3rd party inspector:

- a. Operational controls that increase dredge cycle times.
- b. Silt curtains to contain suspended sediments.
- c. Any reasonable strategy that allows backfill material to be placed directly in the excavated pipeline trench without passing through the water column.
- d. Using the environmental closed bucket to backfill.

7. The 3rd party inspector will consult with DWAR and CEAU during normal working hours and take action in consultation with the Department staff. During non-working hours the 3rd party inspector will require Millennium to take any of these actions necessary to protect aquatic resources and inform DWAR and CEAU of any such action taken by the next business day.

8. Millennium shall perform water quality testing to establish the effectiveness of the mitigation strategy employed. If such testing indicates exceedance of water quality standards after implementation of the mitigation measure(s), then Millennium shall cease all construction activities in the affected work area until an alternative strategy is approved by DEC.

P. Backfill of the pipeline excavation must be performed accurately. Use of differential global positioning system (DGPS), accurate to five (5) meters or better, with real time graphic display, or other methods acceptable to the Department, shall be used to align all offloading and dump barges used during backfilling operations. The final riverbed elevation must be within +/- 1 foot of the original elevation as determined by pre- and post-construction bathymetric surveys .

Q. Sediment backfilling using bottom dump barges shall be performed only during periods of low slack tide. Low slack tide shall be defined for this activity as the time from one hour before to one hour after the NOAA predicted low tide time at Haverstraw. The purpose of this condition is to minimize the dispersion and transport of fine grained sediment during disposal operations. If an alternative technology is proposed (and approved by the Department) that allows the material to be placed directly in the excavated pipeline trench without passing through the water column, disposal may occur at any time during the tidal cycle. Applicant shall make an effort to backfill shallow areas as close to slack tidal current times as possible.

R. Millennium shall recover and properly place any backfill material misplaced or spilled outside of the excavated trench. Such determination shall be made by evaluation of pre- and post-construction bathymetric surveys. Post-construction bathymetric surveys shall be performed in accordance with the DRR Condition No. 5-N. Millennium shall immediately notify the 3<sup>rd</sup> party inspector, CEAU, and DWAR if post construction bathymetric surveys show that backfill material is not being accurately placed in the excavated trench. Within 24 hours of aforementioned notification, Millennium shall submit for CEAU and DWAR a corrective action plan for approval. Further surveys may be required by DEC to verify accurate placement.

S. Millennium shall provide bathymetric transect reports to the Department within one week of completion of backfilling at a given transect (one transect/report per 500 ft. of pipeline trench). Such reports will include an evaluation of accuracy of backfill placement based upon pre- and post-construction bathymetric surveys.

T. Millennium shall not conduct bottom dump backfilling during passage of tugboat in escort or tanker vessels while the vessel is within 1000 ft of the disposal site.

U. Millennium shall dispose of all dredged material unsuitable for backfilling at an approved location.

V. Millennium shall not disturb backfill material in the pipeline trench by means including but not limited to drag bar, bucket smoothing, and barge spudding, unless such disturbance is pre-approved by the Department. Obtaining core samples shall not be considered "mechanical disturbance".

W. Millennium shall use additional backfill material, if needed, that is uncontaminated and possesses the same characteristics as the material where it is placed. Millennium shall evaluate the chemical and physical characteristics of all proposed additional backfill material and submit such evaluation to DWAR for Department review and approval. No additional backfill material shall be used prior to obtaining Department approval.

X. Millennium shall perform water column sampling for chemical analysis of total PCBs, cadmium, lead and total mercury at sampling stations U2 and D2 once per day during the 2 week initial monitoring periods. Sampling shall be performed during periods of maximum suspended solids concentrations. The Department may modify the sampling times and locations and require additional sampling.

Y. Millennium shall obtain reference or up-current samples which represent local background water conditions [total suspended solids (TSS) and settleable solids (SS)] outside of the effect of dredging and sediment disposal events. Acceptable locations for reference samples include locations 500 and 1000 feet up-current of active trenching and backfilling activities. The Department may require additional background sites if construction operations are shown to impact or influence background sampling sites.

Z. Millennium shall obtain plume samples at 2, 4, 6, and 8 hours after commencement of daily operations. Location of samples will be at 500 and 1000 feet up-current and 100, 500, 1000, and 5000 feet down-current as specified in the DDR. The Department may modify the sampling times and locations and require additional sampling runs if trenching and backfilling operations are delayed or extended.

Appendix A

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