4.0 ENVIRONMENTAL ANALYSIS

4.1 GEOLOGY

4.1.1 MILLENNIUM PHASE I PROJECT

The geological resources present in the Millennium Phase I Project area and the associated potential impacts and mitigation measures would not change substantially from those that were previously identified in the 2001 FEIS for the Project. The most significant change in the scope of the Project is the proposed installation of compression facilities at the site of Columbia's existing Corning Compressor Station in Steuben County, New York; the incorporation of the three route variations along the NYSEG powerline ROW in Chemung, Tioga, Broome, and Delaware counties; the continued use of Columbia's existing 24-inch-diameter pipeline in the Neversink River area; and, the route variation around the Warwick Isle subdivision.

4.1.1.1 Physiography

Site specific, physiographic data for the Project were identified in the FEIS that was previously developed for the Project, issued by the Commission in 2001. All of the facilities proposed in the amendment are located within the physiographic provinces discussed in the FEIS and therefore, are not discussed here. No additional impacts are anticipated and no additional mitigation measures are recommended for the proposed amended facilities.

Blasting

Millennium has identified areas where blasting may be required along the pipeline route. Table 4.1.1-1 lists these areas and their approximate mileposts. Millennium does not expect construction activities at the Corning Compressor Station, Ramapo M&R Station or Milford M&R station to require any blasting. However, should blasting be required, it would be performed in accordance with Millennium's ECS.

Table 4.1.1-1
Locations Where Blasting May Be Required Along Millennium Phase I Project a/

County	Approximate Milepost
Chemung	215.2 - 215.5
Tioga	227.6 - 228.0
	229.0 - 230.1
	230.9 - 231.4
Broome	272.1 - 272.5
Delaware	285.1 - 285.3
	285.5 - 287.0
	287.7 - 288.8
	288.9 - 291.1
	297.4 - 297.7
Sullivan	298.1 - 299.1
	299.7 - 300.4
Orange	336 - 372
Rockland	373 - 376

a/ bedrock <5 feet below surface

4.1.1.2 Mineral Resources

Among the proposed Phase I facilities, no new areas affecting mineral resources were identified. Therefore, no new or additional impacts are anticipated, and no further mitigation is needed.

4.1.1.3 Geologic Hazards

Geologic hazards that can affect underground pipelines and appurtenant facilities include seismicity, landslides, and karst terrain. These hazards were previously discussed in detail in the 2001 FEIS for the Millennium Pipeline Project. About 90 percent of the NYSEG Route Variation would be parallel or adjacent to NYSEG's existing ROW, and therefore would encounter the same geological hazards as discussed in the 2001 FEIS. The Warwick Isle Route /variation would be located primarily on new ROW through agricultural fields and farm roads and would not encounter any of these geological hazards. The new compressor station would be located adjacent to the existing Corning Compressor Station where no geologic hazards would be encountered.

4.1.1.4 Paleontological Resources

New York State Law Section 233 mandates the protection of any archaeological, paleontological, or geological sites on state lands unless the sites are determined not to be of historic or scientific interest. To this end, those projects or persons that would disturb archaeological, paleontological or geological sites are required to obtain a section 233 permit. The Columbia Line A-5 replacement portion of the Phase I Project would cross lands owned by New York State, particularly Harriman State Park, Sterling Forest ® State Park, the Ramapo River, and Kakiat Park, all crossings would occur between MPs 367.9 and 376.7.

In August 2004, Millennium was granted permit #2127 in support of completing cultural resources investigations within state lands. With the approval of the New York State Museum, permit #2127 is being updated to include all state lands that would be crossed by the Phase I Project. The amended or new permit would be filed with the Commission when obtained.

It is possible that paleontological materials may be present along the Warwick Isle Route Variation in Orange County, New York. The variation would cross peat deposits which are known to have yielded the remains of Pleistocene megafauna. For this reason, Millennium would monitor construction in this and other peat bog locations in this area in a manner consistent with its Archeological and Construction Work Plan for the Proposed Millennium Pipeline Project Black Dirt Area (Black Dirt Plan). The Black Dirt Plan was developed in consultation with the New York State Department of Agriculture and Markets (NYSDA&M) to address the impact of crossing this unique agricultural area and was addressed in sections 4.2 and 5.2 of the 2001 Millennium Pipeline Project FEIS, and was provided in appendix E2 of that document. In the event that megafauna remains are identified, Millennium would stop construction in the immediate vicinity of the discovery pending consultation with the FERC and the New York State Historic Preservation Officer (SHPO).

4.1.2 EMPIRE CONNECTOR PROJECT

4.1.2.1 Physiography

The Empire Connector Project would be located within the Central Lowlands and Alleghany Plateau physiographic provinces of New York State. Glacial features and deposits of drumlins, eskers, moraines and glacial lake sediments, underlain by upper-Silurian and lower- to middle-Devonian bedrock, dominate the Central Lowland Province topography. The Alleghany Plateau Province consists of

generally flat-lying limestone and shale of upper- to middle-Devonian age deposited in a warm shallow inland sea. Alleghany Plateau bedrock has been uplifted to its current elevations and generally slopes away to the south at a rate of about 50 feet per mile. Structural features are present in some locations and generally are a result of layer-parallel shortening that occurred during the Alleghenian Orogeny, and include vertical cleavage in shales and imbricated thrusts and styolites in limestones.

Blasting

Areas of potential shallow bedrock (or outcropping) that may require blasting to install the pipeline were identified along the proposed alignment. Table 4.1.2-2 lists these areas and their approximate mileposts. In areas of blasting, Empire would engage a licensed and state-approved blasting contractor to comply with applicable federal, state, and local laws, regulations, and ordinances pertaining to the use and management of explosives. Empire would prepare a project-specific Blasting Procedure to address the proper management of explosives, blasting procedures, safety procedures, and pre-blast notifications.

Table 4.1.2-2
Locations Where Blasting May Be Required Along Empire Connector Pipeline a/

County	Approximate Milepost
Ontario	6.4 - 7.4
	16.8 - 17.8
	24.8 - 25.8
Yates	39.6
	50.6 - 52.6
Schuyler	63.7 - 76.0

a/ bedrock <5 feet below surface

4.1.2.2 Mineral Resources

The construction ROW would cross one active NYSDEC-permitted sand and gravel pit property owned by Dolomite Products Company, Inc. located just south of the New York State Thruway near CMP 4.8. About 487 feet of this property would be crossed affecting about 0.8 acre (assuming a 75-foot-wide construction ROW). The pipeline route across this property would be placed at the edge of the active, cleared area and a forested area that occupies roughly the southern third of the property. In addition two apparently inactive private fill borrow pits and one reclaimed (inactive) sand and gravel quarry would be within 200 feet of the proposed construction ROW and would not be affected by project construction. Pipeline construction across the identified mining area may limit the area in which the mining operations may expand. Empire may need to address this issue during its easement negotiations with the property owner.

A currently inactive private sand and gravel pit was identified south of the Oakfield Compressor Station site (SMP 47.0); however, mining is already restricted in the direction of the compressor station because of the presence of the existing Empire State Pipeline and New York Power Authority power transmission lines, both of which would be between the inactive gravel pit and proposed compressor station. Therefore, there would be no impacts to mineral resources in the vicinity due to construction and operation of the proposed Oakfield Compressor Station.

4.1.2.3 Geologic Hazards

Seismic Risk

The proposed project area is considered to have a low potential for a seismic event of sufficient magnitude to affect project construction and operation based on assessment of the potential seismic ground motions in the project area using the National Earthquake Hazard Reduction Program (NEHRP) Spectral Acceleration Maps and information available from the United States Geological Survey (USGS). The NEHRP and USGS estimations are based on past seismic history and are used to develop provisions of building codes (e.g., for structures, bridges, highways and utilities such as natural gas pipelines).

The New York State Preliminary Brittle Structures Map indicates that the proposed pipeline route intersects three apparent subsurface faults showing relative movement as inferred from drill-hole data. There are no mapped faults at the compressor station site. The NEHRP and USGS data indicate that the closest recorded seismic event since 1973 was a shallow quake in 2001 with an epicenter located near Bath, New York. This event was a 3.2 magnitude on the Nuttli scale, centered about 22 miles from the Project. Thus based on the NEHRP and USGS information and the past history of the location we conclude that the risk for seismic activity would be minimal.

Soil Liquefaction

Seismically induced soil liquefaction is not considered to be a major risk to the pipeline and appurtenant facilities. Soil liquefaction can occur when soft, unconsolidated sands and silts are water saturated and subjected to intense seismic shaking. If these conditions exist and there is a 90 percent probability of horizontal ground accelerations of greater than 10 percent of gravity in a 50 year period as indicated by USGS Open File Report 82-1033 (Algermissen et al., 1982), the area is defined as having potential for soil liquefaction.

The soils present in the project area have a limited potential for soil liquefaction. The proposed pipeline alignment between CMP 3.3 and CMP 3.6 would cross a zone of alluvial silt and clay deposits, and between CMP 18.6 and CMP 19.4 it would cross deposits of lacustrine silt and clay. These types of soils may be prone to liquefaction if subjected to intense shaking as described above. The remaining portions of the proposed pipeline alignment would be in glacial deposits that are not generally susceptible to liquefaction. Based on the small amount of prone soil types, existence of overlying structures and slopes, the lack of observable evidence of past failures, and the low potential for significant seismic events, soil liquefaction risk is low.

Landslides

Empire reviewed the New York State Landslide Inventory Map (created from historical reports) and only one slide was mapped in the project area. Near the proposed route, between CMP 24.4 and CMP 25.4, individual slides in an area of steep slopes have been recorded (i.e., Flint Creek valley). The proposed pipeline alignment through this area would generally follow a former Penn Central rail bed through relatively flat terrain and stable soils. Based on field surveys, the areas adjacent to the former rail bed do not exhibit observable evidence of remnant slides, slumps or slope failures. The natural topography in this section has relatively shallow grades. Therefore, we believe that landslide risk in the project areas is low.

4.1.2.4 Paleontological Resources

Inquiries to the New York State Geological Survey (NYSGS) and various experts in that field, including Dr. Carlton Brett (tenured Professor of Geology, Statigraphy, and Paleontology, University of Cincinnati, former Professor of Geology at the University of Rochester, New York, and paleontological advisor to the NYSGS) and Dr. Charles VerStratten, NYSGS indicate that no sensitive paleontological resources have been identified along the proposed pipeline route or at the proposed compressor station site. We believe the potential risk to this resource is low.

4.1.3 ALGONQUIN RAMAPO EXPANSION PROJECT

4.1.3.1 Physiography

The Ramapo Expansion Project would be in the New England Uplands section of the New England Province of the Appalachian Highlands Physiographic Region (Rodgers 1985, USFWS 1997, USGS 2006). The New England Province is a northward extension of the larger Appalachian Highlands and is a plateau-like upland that rises gradually from the sea but includes numerous mountain ranges and individual peaks. The New England Uplands section is the largest of the geomorphic sections in the New England Province extending from Canada, south and west through New England into the highlands of New York and New Jersey. The area has been greatly modified through glaciation and represents some of the region's oldest landforms (USFWS 1997, USGS 2003).

Project facilities within New York and New Jersey would be in an area of the New England Uplands known as the New York-New Jersey Highlands. The geology consists primarily of metamorphic, crystalline rocks dominated by gneiss on the ridges and more easily erodible sedimentary sandstone, dolomite, and shale underlying the valleys. The most recent (Wisconsin) glaciation extended across much of the Highlands, leaving a terminal moraine trending east to west across the Highlands in northern New Jersey. North of the moraine, there are significant accumulations of glacial till, outwash, and numerous lakes and wetlands, reflecting the complicated drainage pattern of the glaciated region. There are several major watersheds within the Highlands, including direct Hudson River drainages east and west of the river, and the Passaic River, Wallkill River, Raritan River, and Delaware River drainages.

The Brookfield and Oxford, Connecticut sites would be in areas characterized by rolling hills and low, rounded mountains interrupted by numerous, generally narrow valleys (Alter 1995). Throughout much of the project area, the hills and valleys have a fairly well developed northeast to southwest trend that is largely the result of glacial motion from the northwest (Standley and Caldwell 1976).

Blasting

Significant blasting is anticipated for the project. Replacement of the existing pipeline would require site-specific blasting (estimated at about 80 percent of the ROW length) to excavate sufficient trench depth to accommodate the larger diameter pipe. These locations would occur in areas with surficial bedrock outcrops or in soils with shallow depth to bedrock. Some portions of the pipeline replacement would require limited blasting to remove surface rock outcrops within the construction ROW during grading to provide sufficient, stable work areas for the operation of construction equipment. Depth to bedrock information was obtained by reviewing available map resources; Natural Resource Conservation Service (NRCS) published County Soil Surveys and Soil Survey Geographic (SSURGO) data.

Construction of the Oxford Compressor Station may involve some limited blasting depending on the type and extent of rock encountered within the site. Algonquin would conduct soil borings to determine the depth of bedrock to determine where blasting is likely to be required prior to construction.

Limited blasting or mechanical rock removal would be necessary at the Southeast Compressor Station to expand the level areas within this existing facility to accommodate construction of new roads, buildings, and equipment. Minor blasting or mechanical rock removal would likely be necessary to install new gas coolers at Stony Point Compressor Station.

Algonquin would implement appropriate pre- and post-blast surveys, coordinate with the appropriate local authorities and develop a project-specific blasting program for the project. Blasting activities would consist of shallow blasting with the initial installation of small drill holes and low charge explosives. The blasting would be open-face blasts, in which the blast moves upward to the surface instead of downward to avoid/minimize potential fracture impact, with controlled delays to relieve the pressure in the rock. Prior to construction, Algonquin would contact each municipality along the pipeline route to determine local ordinances or guidelines for blasting. Specific procedures would be followed for each jurisdiction. During blasting, contractors would adopt and conform to "General Conditions and Land Pipeline Specifications, Section V - Blasting", created by Algonquin to enhance safety, and minimize damage to adjacent areas and structures. The blasting specifications meet or exceed all applicable federal, state and local requirements governing the use of explosives.

In addition to detailed specification requirements the blasting precautions would include:

- identifying public and private groundwater drinking wells and complete pre-blast sampling;
- completing pre-blast inspections of nearby residences and other structures;
- installing blasting mats in congested areas, in shallow waterbodies, or near structures that could be damaged by fly-rock;
- posting warning signals, flags, and barricades;
- following procedures for safe storage, handling, loading, firing, and disposal of explosive materials;
- manning adjacent pipeline valves for emergency response; and,
- controlling excessive vibration by limiting the size of charges and using charge delays that stagger each charge in a series of explosions.

Monitoring and Mitigating the Effects of Blasting

Algonquin would conduct pre-blast surveys, with landowner permission, to assess the conditions of structures or wells within 200 feet of the construction ROW where blasting is anticipated to occur. The survey would include:

- informal discussions to familiarize the adjacent property owners with blasting effects and planned precautions to be taken by Algonquin;
- determination of the existence and location of site specific structures, utilities, and water wells;
- detailed examination, photographs, and or video records of adjacent structures and utilities; and,
- detailed mapping and measurement of large cracks, crack patterns, and other evidence of structural distress.

The results of the survey would be summarized in a report that would be completed prior to the initiation of blasting in the specific area. In the event property owners identify any damage or change to properties, or if excessive peak particle velocities have been recorded, during the blasting operations, Algonquin would perform an additional post-blast survey of the affected properties to verify the damage. Once confirmed, Algonquin would either repair the damage or fairly compensate the owner for blast-related damages.

4.1.3.2 Mineral Resources

The Ramapo Expansion Project would not impact any known existing or future mining operations in New Jersey and New York. The pipeline replacement would occur within an existing ROW and would not cross any active or inactive mines. There are no known active mines within 0.25 mile of the pipeline replacement portion of the project or the proposed Oxford Compressor Station site.

Construction of Algonquin's proposed M&R Station at the Brookfield Compressor Station site on High Meadow Road is unlikely to affect active or planned mining or quarrying activities. See section 4.1.4.2 for additional information about historic mineral development at this location.

Proposed modifications at compressor stations in New Jersey and New York, and new construction at the proposed Oxford Compressor Station site in Connecticut, would occur at locations where there is no active or inactive mines or gravel operations, therefore the project would have no impact on these mineral resources.

4.1.3.3 Geologic Hazards

Geologic hazards are not anticipated to be a significant factor in construction, operation or maintenance of the Ramapo Expansion Project facilities.

Seismic Risk

The USGS database titled "Quaternary Faults and Folds by State and Region" summarizes surficial geologic evidence of faults that have ruptured during the Quaternary Period (recent geologic history). According to this database, no potentially dangerous faults would be in the project area. However, an area of active seismic activity known as the Ramapo Fault System does occur in the area of the project facilities in New York and New Jersey. The Ramapo Fault is part of a system of northeast striking, southeast-dipping faults, which are mapped from southeastern New York through New Jersey to eastern Pennsylvania and beyond. Numerous minor earthquakes have been recorded in the Ramapo Fault Zone, a 10 to 20-mile-wide area lying adjacent to, and west of the actual fault. Earthquakes in the region do not break the ground surface (have surface expression or displacement), their foci are at least two to three miles below the Earth's surface as determined by seismographic records.

Historically, the probability of high intensity earthquakes within the project area has been very low. Seismic risk for the proposed project would be low due to the low potential for strong ground accelerations in this area (USGS 1996).

Soil Liquefaction

Soils subject to liquefaction are not common along the pipeline replacement ROW or at the existing and proposed compressor station and aboveground facility sites. This, combined with the low likelihood of a high intensity earthquake, produces a situation that is unlikely to result in soil liquefaction in the project areas (Frankel et al. 2002).

Landslide/Subsidence

The project areas in New York, New Jersey, and Connecticut would not be underlain by carbonate rock or other rock types in which karst topography is likely to develop; therefore the formation of sink holes or ground subsidence as a result of karst topography is not expected in any of the project areas.

There is no active or historic underground mining within the project area. So, there would be no risk of subsidence due to underground mining.

According to the Digital Compilation of the "Landslide Overview Map of the Conterminous United States" (USGS Open-File Report 97-289), the Ramapo Expansion Project facilities would be in areas of varying susceptibility to landslides. The granite and metamorphic rocks of the region are locally unstable and the marine and lacustrine clays along the Hudson River are prone to slumping. However, landslides are not expected to affect the Ramapo Expansion Project areas.

Implementation of the erosion control and restoration measures as described in our Plan and Procedures and Algonquin's E&SCP are anticipated to adequately mitigate potential ground failure situations. Use of these best management practices would minimize the instability created during construction by controlling off-ROW sedimentation and erosion within construction workspaces.

4.1.3.4 Paleontological Resources

Bedrock at the various, proposed project facility sites consists of rock types that are unlikely to hold paleontological resources due to the processes involved in their formation (New York Paleontological Society 2006). Areas underlain by igneous and metamorphic rocks or that are covered by glacial till are not likely to have been conducive to preserving fossil remains. The sedimentary bedrock underlying the project areas may possess paleontological resources. However, if they occur, they would occur at a depth of about 400 to 2,200 feet below the ground surface and would not be affected by proposed construction activities. Algonquin indicates that it would contact the New York State Geological Survey, the New Jersey Geological Survey, or the Connecticut Geological and Natural History Survey as appropriate, if it discovers paleontological resources during project construction. We anticipate that construction of the Ramapo Expansion Project would have minimal affect on paleontological resources.

4.1.4 IROQUOIS MARKETACCESS PROJECT

4.1.4.1 Physiography

The Brookfield, Connecticut and Dover, New York sites would be in the New England physiographic province (Rodgers 1985), which has previously been described in section 4.1.3.1 (Physiography, Algonquin). Elevations in the project area range from about 432 feet along High Meadow Road, down gradient southward to an elevation of 380 feet along the Iroquois pipeline ROW.

4.1.4.2 Mineral Resources

The proposed construction of the MarketAccess Project would not affect existing or future extraction of mineral resources. Iroquois owns both project locations, which do not possess active mines.

Aerial photography of the Brookfield Compressor Station site taken in 1963 shows that much of the 68.3-acre property was excavated actively and/or used for gravel processing/asphalt production operations (ENSR 2000). A 1979 aerial photograph shows less of the property being used for these operations, and vegetation re-establishing in previously disturbed areas. The Mines Master Index File identifies the property as a non-coal mining facility that has been permanently abandoned. USGS topographic maps also identify the areas of gravel and sand mining at the Brookfield site, although these gravel operations have ceased and are no longer active on the site.

An active sand and gravel operation is located to the north of and adjacent to the Dover Compressor Station property. The proposed addition of the gas coolers to this existing compressor station would affect this on-going mining operation.

4.1.4.3 Geologic Hazards

Seismic Risk

According to the USGS (1996) seismic hazards maps, no active faults would be near the project area; therefore, the seismic risk in the project area would be low. We received a comment about the presence of faults near the proposed Brookfield Compressor Station that cross the existing pipeline ROW. Seismic hazard would be limited to a large-scale catastrophic earthquake. The likelihood of such an earthquake occurring in this area is remote. Further, no adverse impact on the existing pipeline would be anticipated since natural gas pipelines exhibit good inherent ductility.

Soil Liquefaction

Soils subject to liquefaction are not common at either site location. This, combined with the low likelihood of a high intensity earthquake, produces a situation that is unlikely to result in soil liquefaction in the project areas

Karst Topography

The project area would not be underlain by carbonate rock or other rock types in which karst topography is likely to develop; therefore the formation of sink holes or ground subsidence as a result of karst topography is not expected in any of the project areas.

Landslides/Subsidence

Data from USGS Open File Report 97-289 (Godt 1997), Landslide Overview of the Conterminous United States, indicates that both project sites would have a low landslide incidence of less than 1.5 percent. Also the proposed construction activities would not involve work activities in steeply sloping areas, which could potentially become destabilized resulting in a landslide.

There is no active or historic underground mining within the project area. So, there would be no risk of subsidence due to underground mining.

4.1.4.4 Paleontological Resources

The geologic units underlying the Brookfield and Dover Compressor Station sites are comprised of metamorphosed bedrock and glacial deposits. Areas underlain by igneous and metamorphic rocks or that are covered by glacial till are not likely to have been conducive to preserving fossil remains. We anticipate that construction of the MarketAccess Project would have minimal affect on paleontological resources.

4.2 SOILS

Introduction

Pipeline construction and operation could adversely affect soils in several ways. Potential increases in soil erosion (from water and/or wind), loss of soil productivity through soil compaction, damage to soil structure, loss of soil fertility by inversion of soil horizons (i.e., mixing of topsoil and subsoil), and damage to drainage tile systems could result in poor or very poor revegetation, which is necessary for stabilization and restoration of the construction ROW. Most of the soils in New York and New England are glacially derived and have a thin (about 3 to 12 inches thick) layer of topsoil. The relatively high year-round moisture content of soils in the project area makes them susceptible to long-term damage from construction when wet, which can lead to a condition of soil plasticity (a liquid-like state of consistency). The discussion below focuses on impacts and mitigation to soils in general and in agricultural areas. This discussion is applicable to all areas where the NE-07 Project would affect soils.

Soil Erosion

Potentially, one of the most severe impacts on soils from pipeline construction is erosion. Many stages of pipeline construction, including vegetation clearing, grading, topsoil segregation, open trenching and backfilling destabilize the soil material and make it susceptible to water and wind erosion. The most susceptible time for erosion to occur is after initial vegetative clearing and grading and before reestablishment of a vegetative cover. A soil's susceptibility to erosion varies and is a function of its characteristics, such as soil texture, structure, topography (steepness of slope), amount of surface cover (vegetative or other), and climate. Erosion potential increases the longer soils are left bare. Erosion from water primarily occurs in loose soils on moderate to steep slopes. Many glacial till subsoils are proportionally high in silt and remain better bonded than sandier subsoils when exposed. However, gullying can occur along backfilled trenches with their destabilized spoil (subsoil and substrata) materials. Wind erosion can occur in dry, sandy soils where vegetative cover is difficult to establish and maintain. Soil erosion could also result from off-road vehicle traffic, resulting in ruts and gullies on the sloped portions of the ROW following construction.

Soil erosion for all affected soils can be reduced with both temporary and permanent erosion control practices. These controls include temporary and permanent structures such as slope breakers, sediment barriers, and trench barriers and breakers. An erosion hazard can also be reduced by stabilizing the soil surface with temporary and permanent planting and mulching, minimizing the time of soil disturbance, avoiding construction during periods of maximum runoff, and reestablishing contours and vegetative cover as soon as possible. Many potential impacts from soil erosion can be reduced by minimizing the duration of time between initial grading and backfilling and restoration of the ROW.

Soil Compaction and Damage to Soil Structure

The movement of heavy construction equipment back and forth along the construction ROW and access roads can result in soil compaction. This can have severe impact which can be problematic in agricultural and residential areas. Soil compaction damages soil structure and reduces pore space, which impedes the movement of air and water to plant roots, resulting in loss of soil productivity and lower growth rates. Damage to soil structure makes soils more susceptible to erosion and inhibits natural drainage. When soils are wet, compaction and rutting invert or mix the fertile topsoil and the subsoil. Generally, soil is most prone to structural damage during the wettest part of the spring and fall seasons, or in areas of poor drainage. However, abundant year-round moisture in the Northeast makes the vast majority of glacial till, alluvial, and lacustrine soils prone to compaction and structural damage during and

following each heavy rainstorm. Clodding and/or rutting at shallow depths complicates planting in agricultural areas and can increase the erosion potential.

Mitigation measures to reduce soil compaction and soil horizon inversion begin with scheduled avoidance of heavy construction and restoration during excessively wet spring and fall periods. Topsoil segregation and subsurface plowing (deep ripping and soil-profile shattering), particularly in agricultural areas, can help control and mitigate the multiple effects of soil compaction due to construction.

Loss of Soil Fertility

Trenching and backfilling, as well as the concentrated movement of construction equipment along the construction ROW, can result in mixing of topsoil and subsoil and can dilute the productivity of the soil by mixing the physical and chemical properties of the topsoil with the low fertility subsoil. This is especially true in the thin, glacially derived loams of the Northeast. In addition, construction activities, including trench blasting in shallow-to-bedrock soils, could introduce rock into topsoil and interfere with the operation of agricultural equipment.

Mitigation measures include topsoil segregation before trenching in cropland, hay, improved pasture land, wetlands (without saturated soils or standing water), and residential areas, and the removal of excess rock having a 4-inch or greater diameter from the disturbed portions of the soil profile (soil horizons) during the progressive phases of soil restoration. However, even with careful topsoil segregation, some mixing of the topsoil and subsoil can occur during backfilling and restoration. Following construction, the rock content of the disturbed area would be comparable to the surrounding undisturbed areas. Fly-rock from blasting can be contained by matting or controlled blasting techniques. Although some loss of soil fertility may be expected immediately following construction, these measures can help minimize the severity and duration of the impact.

Poor Revegetation

Revegetation is necessary for the stabilization and restoration of the construction ROW. Revegetation potential is inhibited by soil erosion (from water and/or wind), loss of soil productivity through soil compaction, damage to soil structure, loss of soil fertility (i.e., mixing of topsoil and subsoil), damage to drainage tile systems, seeding methods, and planting conditions. The effect of construction on these factors could lead to poor or very poor revegetation potential.

Mitigation measures include soil additives and seeding requirements in accordance with written recommendations obtained from the local soil conservation authority or land management agencies. To minimize the time bare soils are exposed, our Plan recommends completing final grading within 10 calendar days of backfilling, weather and soil conditions permitting. If unsuitable soil conditions for final grading persist for more than 14 calendar days, temporary stabilization measures (including temporary seeding or mulching) would be completed. However, in no case would final grading be delayed beyond the next seeding season.

Because off-road vehicles (ORV) can affect revegetation on the ROW and contribute to rutting and soil erosion, efforts would be made to control unauthorized ORV use of the ROW.

Potential Changes to Drainage

Trenching and sidehill (cross slope) construction grading can alter the natural, lateral drainage pathways along the subsoil horizons of many glacial tills and other affected soils. This occurs when trenching obliterates the natural planes of drainage and is evidenced by concentrated points of seepage or drainage accumulation that are created or enlarged along the trench or the side cut. These impacts would be mitigated after the extent of damage has been observed as part of post-construction monitoring.

Movement of heavy construction equipment along the construction ROW could cause breakage or misalignment of drain tiles. Trenching could also cause drain tile damage and obliterate old "stone drain" lines, affecting farm management (tillage, planting, and harvesting) by causing wet unworkable conditions. This would lower future crop production if such damage is not corrected. Although the location of old, yet functioning, stone drains can seldom be determined before construction, the mitigation of drain tile damage can be helped by locating the fields with drain tiles during preconstruction consultation with landowners and appropriate Federal, state, and local conservation agencies. Drain lines that may be affected by construction would then be clearly staked before construction. Tile damage from vehicular movement or trenching would be repaired by probing the tile to determine the extent of misalignment, or breakage, and replacing the damaged sections. Affected stone drains are usually difficult to detect until the damage is noted by concentrated seepage and saturation during or after construction. Damaged stone drain systems in the project area cannot be repaired and would be mitigated with replacement drain tile systems.

The project sponsors have contacted affected landowners and the local NRCS to identify the locations of drainage tiles and have identified those fields with drainage tiles. All agricultural areas would be monitored for crop productivity for 2 years following construction, and appropriate mitigation (i.e., additional decompaction, additional rock removal, and/or installing additional drain tiles) would be done as necessary to correct for reduced crop productivity.

4.2.1 MILLENNIUM PIPELINE PROJECT - PHASE I

The information provided in this section represents updated information collected and analyzed for the facilities Millennium proposes to amend. Since this application represents a request for an amendment of the existing certificate for the Millennium Pipeline Project, this section will be highly focused. The nature of the amendment (i.e., the construction of a portion of a previously authorized and environmentally reviewed project) is such that the resources that would potentially be affected do not change substantially from those that were identified in the FEIS for the Millennium Pipeline Project issued by the Commission in October 2001. The most significant change in the scope of the project relative to soils is the installation of a new compressor station adjacent to Columbia's existing Corning Compressor Station in Steuben County, New York; the incorporation of three route variations totaling about 19 miles along the existing NYSEG powerline ROW in Chemung, Tioga, Broome, and Delaware Counties; the continued use of a 7-mile-long segments of Columbia's existing 24-inch-diameter Line A-5 pipeline in the Neversink River area; and a 1.21-mile route variation around a proposed Warwick Isle residential subdivision.

4.2.1.1 Pipeline Facilities

The modified Phase I Project pipeline route would not affect soil types that differ significantly from those previously presented in project documents concerning soils for the Millennium Pipeline Project. Although the route of the pipeline has undergone minor adjustments, none of these adjustments would alter the basic information presented for the Millennium Pipeline Project in the 2001 FEIS (see section 4.2 and 5.2 of that document).

The proposed project modifications would not affect the magnitude of impacts on soils or the mitigation previously described and required in project documents. Implementation of Millennium's ECS, which is based on our Plan and Procedures, during construction and restoration of disturbed workspaces, would minimize impacts to soils. Millennium's ECS was developed in consultation with the NYSDA&M and also addresses issues related to construction through agricultural areas and particularly addresses issues related to construction through and restoration of agricultural lands with high water tables and drain tiles.

Also developed during the analysis of the Millennium Pipeline Project was a site-specific plan for crossing the Black Dirt areas in Orange County, New York. The Black Dirt Plan addresses construction impacts, restoration, and monitoring (during construction and after restoration is complete) within this unique area. The Black Dirt Plan was developed in cooperation with and reviewed by the New York SHPO, NYSDA&M, Orange County Soil and Water Conservation District (SWCD), Orange County Cornell Cooperative Extension, the Wallkill Valley Drainage Improvement Association, and affected landowners. It was addressed in sections 4.2 and 5.2 of the 2001 Millennium Pipeline Project FEIS, and was provided in appendix E2 of that document. Millennium filed on July 31, 2006 an updated Black Dirt Plan which was approved by NYSDA&M on July 25, 2006. Millennium would use the Black Dirt Plan as appropriate along the Warwick Isle Route Variation where this unique soil type may be affected.

Use of Millennium's ECS and the Black Dirt Plan would minimize impacts to soils that would be affected by construction of the Phase I Project facilities.

Columbia Line A-5 Replacement

The soil series that would be crossed by Columbia's proposed pipeline replacement are classified by the NRCS as the Charlton-Hollis-Chatfield soil association, characterized as having relatively thin topsoils over crystalline bedrock, and as being stony, low in fertility, and well-drained. Topsoils are typically less than two feet thick and exhibit large amounts of gravel and rock. These soils can be on relatively flat to very steep terrain and are susceptible to erosion. Surface boulders and rock outcrops are common throughout the length of the proposed project except for the Ramapo Valley floodplain crossing. About 4 acres of wetland soils would be disturbed. No prime farmland soils or areas used for agriculture would be disturbed or crossed by the project.

The greatest potential impacts on the soils encountered along the proposed project would result from the mixing of infertile lower horizons with more fertile upper horizons, and loss of topsoil on steep slopes from disturbance and erosion during construction and operation. Introduction of excavated and blasted rock material into the soil profile is possible. Compaction damage is always a possibility during construction in excessively wet conditions or in wetland soils.

Millennium and Columbia have proposed that Millennium construct the Line A-5 Replacement Project; so, Millennium's ECS would be implemented. It contains specific construction methods and mitigation measures including: use of soil erosion control devices; segregation of topsoil and subsoil during grading, trenching, and backfilling in all non-saturated wetlands, residential areas, and other areas where requested by the landowner; soil de-compaction in severely compacted residential areas; use of rock for backfilling only up to the level of the surrounding bedrock; re-contouring of disturbed ROW; and restoration of vegetation using seed mixtures developed by Columbia and seeding methods developed in consultation with local soil conservation authorities or land management agencies.

Columbia/Millennium would conduct follow-up inspections of all disturbed areas after the first and second growing seasons to determine the success of re-vegetation. If vegetative cover or density is not similar to adjacent undisturbed land or excessive amounts of noxious weeds are present after two full

growing seasons, Columbia/Millennium would hire a professional agronomist to determine the need for additional restoration measures and would implement those measures. The use of procedures in the ECS would minimize soil impacts during construction and would aid re-vegetation efforts to ensure long-term soil stability and avoid long-term adverse impacts to soils.

Some public commenters have suggested that the additional excavation required for construction of the 30-inch-diameter pipeline to replace the existing 8-inch-diameter pipeline would increase the existing erosion problem on the Line A-5 ROW through the community of Laurel Ridge. Columbia has responded that this pipeline was installed in 1949 and replacement of this aging pipeline is necessary to insure its safety and continued system operation. After installation of the new pipeline is completed, Columbia would continue to monitor and repair ROWs when there are erosion problems. We believe that implementation of DOT and FERC requirements should adequately address any existing or future erosion problems.

4.2.1.2 Aboveground Facilities

The proposed Millennium/Corning Compressor Station site would be in an area where the soil unit is identified as Arnot channery silt loam, 2 to 20 percent slopes (USDA – SCS 1978). This soil is typically shallow to bedrock and well drained to moderately well drained. Due to these characteristics, the soil is subject to drought. This soil is not classified as a prime farmland soil or farmland soil of statewide importance.

The soil impacts identified at the site of the proposed compressor station would not substantially affect project construction. The potential for shallow bedrock would be accounted for during facility design; however, Millennium does not anticipate that blasting would be required. The possible effect of droughty soils inhibiting revegetation of areas surrounding the compressor station would be minimized through monitoring and maintenance of the restored areas consistent with Millennium's ECS. We believe that implementation of Millennium's ECS during construction, restoration, and operation of the proposed facilities would minimize impacts to soils.

4.2.2 EMPIRE CONNECTOR PROJECT

4.2.2.1 Pipeline Facilities

Soil associations crossed by the pipeline portion of the project were identified from the soil surveys of Ontario/Yates, Schuyler, and Steuben Counties, New York, dated June 1958, June 1979, and July 1978, respectively. Data regarding soils that would be crossed in Chemung County were acquired from the Soil Survey Geographic Database (SSURGO) for Chemung County, U.S. Department of Agriculture Natural Resources Conservation Service (2004).

These soil associations are listed as follows:

Arkport-Dunkirk Association: This association consists of sandy soils and silty soils derived from glacial-lake materials. The topography covered by this association is complex and strongly sloping in parts. The soils are permeable, well-drained, and mostly strongly sloping.

Palmyra-Ontario Association: This association consists of about 70 to 90 percent of gently sloping to nearly level areas that are suited to crops. Drainage is generally good throughout the association.

The Arkport-Dunkirk and Palmyra-Ontario Associations are crossed by the Empire Connector Project facilities at the northernmost end of the route (including SMP 0.0 to SMP 1.2 and CMP 0.0 to CMP 7.5).

Odessa-Schoharie Association: This association occurs on areas of glacial lake clays with slopes primarily less than 10 percent. About 80 to 95 percent of this association is suited to crops with about ten percent of this as good cropland. The Odessa-Schoharie Association is crossed by the Empire Connector Project facilities at the north end of the route, primarily in the central portion of Ontario County (CMP 7.5 to CMP 18.3).

Honeoye-Lima Association: About 80 percent of this association consists of gently undulating soils suited to crops. The remaining 20 percent is unsuited to tilled crops and consist of wet soils or sloping soils that border stream valleys. The Honeoye-Lima Association is crossed by the project facilities at the north end of the route, primarily in the southern Ontario County and northern Yates County (CMP 18.3 to CMP 19.7 and CMP 20.6 to CMP 43.3).

Darien-Romulus Association: This association is comprised of moderately fine-textured soils on glacial till that were derived primarily from clay shales. Slopes are gentle and soils are imperfectly-drained to poorly-drained. This soil is not suited to cropland, and few if any good croplands are found in this association. The Darien-Romulus Association soils crossed by the project facilities are limited to a small area in Ontario County (CMP 19.7 to CMP 20.6).

Lansing-Darien Association: This association consists of soils with parent material derived from clay shales and glacial till. About 40 percent of this association comprises well-drained, medium-textured soils; 40 percent comprises imperfectly-drained, moderately fine-textured soils; and the remainder consists of poorly- and very poorly-drained soils overlying glacial till. About 70 to 90 percent of this association is suited to crops, and about 10 to 20 percent of this is characterized as good cropland. The Lansing-Darien Association soils crossed by the Empire Connector Project facilities are limited to small area in central Yates County (CMP 43.3 to CMP 43.8).

Erie-Langsford Association: This association consists of gently sloping, acidic, poorly to moderately well drained soils. There is very little good cropland in this association; however, up to 40 percent is fair cropland. The Erie-Langsford Association is crossed by the Empire Connector Project facilities in the central portion of Yates County (CMP 43.8 to CMP 46.6).

Mardin-Fremont-Volusia Association: This association lies on broad smooth hilltops with slopes mostly less than 15 percent. Most of the soils are moderately well-drained or imperfectly-drained. There is very little good cropland in this association. The Mardin-Fremont-Volusia Association is crossed by the Empire Connector Project facilities in the central portion of Yates County (CMP 46.6 to CMP 51.7).

Volusia-Mardin Association: This association consists of gently sloping, acidic, poorly to moderately well-drained medium textured soils. Most of this association is considered poor for cropland, due to areas of poor internal drainage and the presence of a very hard substratum which are not suited for establishing drainage.

Mardin-Bath Association: This association consists of predominantly-sloping and moderately steep, deep, moderately well-drained and well-drained, medium-textured soils that are underlain by dense poorly-drained soil, located generally on uplands.

Valois-Howard-Chenango Association: This association consists of gently-sloping, deep, well-drained and somewhat excessively-drained, medium-textured soils in valleys and on plains.

The Volusia-Mardin, Mardin-Bath and Valois-Howard Chenango Associations are crossed by the Empire Connector Project facilities in the southern Yates County and northern Schuyler County (CMP 54.1 to CMP 55.8 and CMP 56.5 to CMP 68.8).

Mardin-Volusia-Lordstown Association: This association is composed partly of gently sloping to steep, moderately well-drained soils that are underlain by dense poorly-drained soils. The remainder consists of moderately steep to very steep, well-drained, moderately-deep soils underlain by sandstone bedrock, located generally on uplands. The Mardin-Volusia-Lordstown Association is crossed by the project facilities at the southern end of the route, in Schuyler, Chemung and Steuben Counties (CMP 68.8 to CMP 76.9).

4.2.2.2 Aboveground Facilities

An assessment of the soils at the proposed Oakfield Compressor Station site was completed using the Soil Survey of Genesee County, New York (dated March 1969) data. The soil series at the compressor station site are summarized on table 4.2-1.

The total construction workspace for the compressor station site would be about 17.8 acres in size. About 6.6 acres would be occupied by permanent facilities (compressor station, access road, valve site). Up to about 6.9 acres of prime farmland, or about 39 percent of the 17.8-acre compressor station site, would be affected by construction. About 3.3 acres of prime farmland, or about 19 percent of the site, would be affected permanently by operation of the proposed Oakfield Compressor Station. The Ontario series soils, Ovid Silt Loam (OvA), could be included as prime farmland soils if properly drained. This would add about 2.3 acres of designated prime farmland soils to the proposed permanent and temporary work areas. The soil series that would be affected by construction of the proposed Oakfield Compressor Station are shown in table 4.2-1.

Table 4.2-1.
Summary of Soil Series at Oakfield Compressor Station
Empire Connector Project

Soil Map Unit	Prime Farmland[1]	Temporary (Construction) Work Area		Permanent (Operation) Work Area	
		acres	% of area	acres	% of area
HlB - Hilton Loam, 0 to 3 percent slopes	Yes	3.4	19.1	1.0	15.2
La - Lakemont Silty Clay Loam	No	0.1	0.6	0.1	1.5
OdA - Odessa Silt Loam, 0 to 2 percent slopes	No	0.4	2.2	0.4	6.1
OnB - Ontario Loam, 3 to 8 percent slopes	Yes	3.5	19.7	2.3	34.8
OnC - Ontario Loam, 8 to 15 percent slopes	No	2.0	11.2	1.3	19.7
OvA - Ovid Silt Loam, 8 to 15 percent slopes	No	0.1	0.6	0.1	1.5
OvB - Ovid Silt Loam, 3 to 8 percent slopes[2]	No	7.7	43.3	1.1	16.7
PaC - Palmyra gravelly loam, 8 to 15 percent slopes	No	0.6	3.4	0.3	4.5
	Totals:	**17.8**	**100.0**	**6.6**	**100.0**

Notes:
1. Prime farmland designation identified by Genesee Soil & Water Conservation District data.
2. Ontario series soils (OvA) not prime farmland unless soils are drained.

Empire would implement its Erosion and Sedimentation Control and Agricultural Mitigation Plan (ESCAMP) during construction, restoration, and operation of the proposed facilities. The ESCAMP was developed in consultation with the NYSDA&M and local soil conservation agencies and is consistent with our Plan and Procedures.

The NYSDA&M filed a number of recommendations and clarifications for the ESCAMP in a letter dated April 21, 2006. In response to the comments, Empire revised the ESCAMP in May 2006. Empire incorporated some of NYSDA&M's recommendations into the ESCAMP. Regarding agricultural biosecurity BMPs (i.e., noxious weeds and soil-borne pathogens), Empire would consult with appropriate agencies and develop specific, practical, cost-effective procedures to mitigate significant agricultural biosecurity risks, if they are determined to exist in the project area. The NYSDA&M requested that Empire include language in the ESCAMP stating that restored farmlands would not be disturbed when accessing sites to remove sediment barriers. In response, Empire proposed that access to restored farmlands for the removal of sediment barriers would be limited to light-weight, wide-tired vehicles. Instead of applying NYSDA&M's recommended spacing for trench breakers in agricultural lands, Empire intends to use the spacing recommended in our Plan and Procedures. The NYSDA&M recommended soil testing at 400-foot intervals for determining soil additives and ditching. Empire responded that they would use a suitable spacing, but that it felt it would be inappropriate to prescribe the testing interval. The NYSDA&M's recommendations for preparing a winterization plan and additional BMP drawing(s) depicting typical dewatering temporary holding areas(s) would be addressed by Empire in future filings.

Empire would construct and operate the project in a manner to avoid or minimize soils impacts to the extent practicable and restore agricultural crop productivity to original or better conditions. Empire would take steps to avoid or minimize (during construction and operation) impacts to soils related to erosion, compaction, shallow bedrock, and wet soils.

Procedures in the ESCAMP that Empire would employ during construction and operation include: installation of slope breakers, temporary sediment barriers and permanent trench breakers; topsoil segregation in wetlands, agricultural areas and residential lands; and the stabilization of exposed surfaces through revegetation and mulching.

During the landowner public outreach program and at the time that access to private property was requested for survey purposes, Empire inquired about the presence of drainage tiles and irrigation systems on agricultural lands in the project area. A review of aerial photography and consultation with the SWCD and NYSDA&M staff were utilized to gather additional information on drainage tiles and irrigation systems that would allow rerouting of the proposed pipeline through agricultural areas to avoid or cause less disturbance to drainage systems. Significant efforts were made to avoid or minimize potential impacts to drain tiles during the route selection. Ultimately, the selection of the route through agricultural land took into consideration the soils crossed, presence of tiles, crop rotation strip alignments, individual landowner requests, and routing requirements for construction. Landowner preferences were accommodated where feasible to avoid or minimize potential impacts.

The NYSDA&M identified other specific concerns through agricultural areas including soil compaction, soil compaction mitigation, and trench water management in locations of high water tables (HWT), which are listed in table 4.2-2. The total length along the pipeline construction ROW where HWT would likely be encountered is about 26.2 miles. The primary agricultural concerns associated with HWT soils are trench sloughing (possibly requiring additional work space in response to larger volumes of spoil), trench dewatering (possibly resulting in crop loss due to prolonged saturation in any areas lacking drainage outlets), and development of post-construction seeps in HWT fragipan soils (possibly resulting in crop damage). Empire has incorporated these identified concerns along with appropriate mitigation steps into its

ESCAMP. Additional general mitigation steps (such as coordination of agency input) and specific mitigation recommend by the NYSDA&M for soil conservation, subsoil decompaction, trench crowning/settling, and monitoring of soil moisture and compaction during construction have been incorporated into Attachment 1 of the ESCAMP, the Soil Protection and Subsoil Decompaction Plan. On April 24, 2006, the NYSDA&M recommended additional revisions, additions, and clarifications to the ESCAMP to reflect continued consultation it has had with Empire in developing mitigation steps and construction procedures. These have been included in a revised ESCAMP as described in section 4.2.2.2.

We believe that use of Empire's ESCAMP, as modified, would minimize impacts to soils in agricultural and other areas.

Table 4.2-2
Summary of Soil Associations With High Water Tables
Along Pipeline Empire Connector Project

Soil Association	County	Soil Unit Description	(CMP)
Palmyra-Ontario	Ontario	Lr- Lima silt loam, 0 to 3 percent slopes	1.5 - 1.6
		Kb- Kendaia silt loam, 0 to 3 percent slopes	1.8 – 2.0
		Ls- Lima silt loam, 3 to 10 percent slopes	2.0 - 2.1
		Kb- Kendaia silt loam, 0 to 3 percent slopes	2.1 - 2.1
		Ls- Lima silt loam, 3 to 10 percent slopes	2.1 - 2.3
		Lr- Lima silt loam, 0 to 3 percent slopes	2.3 - 2.3
		Kb- Kendaia silt loam, 0 to 3 percent slopes	2.3 - 2.4
		Kb- Kendaia silt loam, 0 to 3 percent slopes	3.0 – 3.1
		Lr- Lima silt loam, 0 to 3 percent slopes	3.1 - 3.2
		Lp- Lima silt loam, 12 to 20 in. deep, 0 to 3 perc. slopes	6.4 - 6.6
Odessa-Schoharie		Kb- Kendaia silt loam, 0 to 3 percent slopes	10.5 - 10.5
		Kb- Kendaia silt loam, 0 to 3 percent slopes	10.5 - 10.6
		Kc- Kendaia silt loam, 3 to 8 percent slopes	10.6 - 10.6
		Lr- Lima silt loam, 0 to 3 percent slopes	19.3 - 19.4
		Kb- Kendaia silt loam, 0 to 3 percent slopes	19.4 - 19.4
		Lr- Lima silt loam, 0 to 3 percent slopes	19.4 - 19.8
Darien-Romulus		Ls- Lima silt loam, 3 to 10 percent slopes	19.8 - 19.9
		Lr- Lima silt loam, 0 to 3 percent slopes	20.4 - 20.5
		Lr- Lima silt loam, 0 to 3 percent slopes	20.5 - 20.5
Honeoye-Lima		Kb- Kendaia silt loam, 0 to 3 percent slopes	20.7 - 20.7
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	21.2 - 21.2
		Kb- Kendaia silt loam, 0 to 3 percent slopes	21.2 - 21.3
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	21.3 - 21.4
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	21.5 - 21.7
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	21.7 – 22.0
		Kb- Kendaia silt loam, 0 to 3 percent slopes	22.0 - 22.2
		Lr- Lima silt loam, 0 to 3 percent slopes	22.2 - 22.4
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	22.5 - 22.5
		Kb- Kendaia silt loam, 0 to 3 percent slopes	22.5 - 22.6
		Kb- Kendaia silt loam, 0 to 3 percent slopes	22.6 - 22.6
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	22.6 - 22.7
		Kb- Kendaia silt loam, 0 to 3 percent slopes	22.7 - 22.7
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	22.7 - 22.7
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	22.7 - 22.7
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	22.7 - 22.7
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	22.7 - 22.8

Table 4.2-2 (cont'd)
Summary of Soil Associations With High Water Tables
Along Pipeline Empire Connector Project

Soil Association	County	Soil Unit Description	(CMP)
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	22.8 - 23.2
		Kb- Kendaia silt loam, 0 to 3 percent slopes	23.2 - 23.2
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	23.2 - 23.2
		Kb- Kendaia silt loam, 0 to 3 percent slopes	23.2 - 23.3
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	23.4 - 23.6
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	23.6 - 23.6
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	23.6 - 23.7
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	23.7 - 23.8
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	23.8 - 24.1
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	24.1 - 24.3
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	24.4 - 24.7
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	25.2 - 25.6
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	25.7 - 26.1
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	26.3 - 26.6
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	26.7 - 26.8
		Ka- Kendaia loam, 0 to 3 percent slopes	26.8 - 26.8
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	26.9 - 27.6
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	27.6 - 28.1
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	28.1 - 28.2
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	28.2 - 28.3
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	28.3 - 28.3
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	28.5 - 28.5
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	28.6 - 28.7
		Ka- Kendaia loam, 0 to 3 percent slopes	28.7 - 28.7
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	28.7 - 28.7
		Ka- Kendaia loam, 0 to 3 percent slopes	28.7 - 28.8
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	28.8 - 28.9
		Ka- Kendaia loam, 0 to 3 percent slopes	28.9 - 29.4
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	29.4 - 30.4
		Kb- Kendaia silt loam, 0 to 3 percent slopes	30.4 - 30.5
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	30.5 - 30.5
		Ls- Lima silt loam, 3 to 10 percent slopes	31.1 - 31.3
		Kb- Kendaia silt loam, 0 to 3 percent slopes	31.3 - 31.4
		Kb- Kendaia silt loam, 0 to 3 percent slopes	31.5 - 31.6
		Lr- Lima silt loam, 0 to 3 percent slopes	31.6 - 31.6
	Yates	Lo- Lima fine sandy loam, 3 to 10 percent slopes	32.2 - 32.4
		Kb- Kendaia silt loam, 0 to 3 percent slopes	32.6 - 32.7
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	33.1 - 33.2
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	33.3 - 33.4
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	33.7 - 33.8
		Ln- Lima fine sandy loam, 0 to 3 percent slopes	33.8 - 33.8
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	33.8 - 33.8
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	34.0 - 34
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	34.8 - 35.1
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	35.1 - 35.4
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	35.6 - 35.7
		Kb- Kendaia silt loam, 0 to 3 percent slopes	35.7 - 35.7
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	35.7 - 35.9
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	36.1 - 36.6

Table 4.2-2 (cont'd)
Summary of Soil Associations With High Water Tables
Along Pipeline Empire Connector Project

Soil Association	County	Soil Unit Description	(CMP)
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	36.7 - 36.7
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	37.6 - 37.8
		Kc- Kendaia silt loam, 3 to 8 percent slopes	37.8 - 37.9
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	37.9 - 37.9
		Kc- Kendaia silt loam, 3 to 8 percent slopes	37.9 - 38
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	38 - 38.3
		Kb- Kendaia silt loam, 0 to 3 percent slopes	38.3 - 38.3
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	38.3 - 38.4
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	38.8 - 38.8
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	39 - 39.1
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	40 - 40.1
		Lo- Lima fine sandy loam, 3 to 10 percent slopes	40.6 - 40.7
		Ls- Lima silt loam, 3 to 10 percent slopes	42 - 42.1
		Ls- Lima silt loam, 3 to 10 percent slopes	42.3 - 42.5
		Kc- Kendaia silt loam, 3 to 8 percent slopes	42.5 - 42.6
		Ls- Lima silt loam, 3 to 10 percent slopes	42.6 - 42.8
		Ls- Lima silt loam, 3 to 10 percent slopes	43.2 - 43.2
		Kc- Kendaia silt loam, 3 to 8 percent slopes	43.3 - 43.3
Lansing-Darien		Ls- Lima silt loam, 3 to 10 percent slopes	43.5 - 43.6
Erie-Langford		Ls- Lima silt loam, 3 to 10 percent slopes	43.8 - 44
Mardin-Freemont-Volusia		Vf- Volusia channery silt loam, 3 to 8 percent slopes	48.9 - 48.9
		Vf- Volusia channery silt loam, 3 to 8 percent slopes	49 - 49.4
		Vf- Volusia channery silt loam, 3 to 8 percent slopes	49.6 - 49.8
		Vf- Volusia channery silt loam, 3 to 8 percent slopes	51.4 - 51.5
		Vh- Volusia channery silt loam, eroded, 8 to 15 percent slopes	51.5 - 51.7
Volusia-Mardin		Vf- Volusia channery silt loam, 3 to 8 percent slopes	51.7 - 52.1
		Vf- Volusia channery silt loam, 3 to 8 percent slopes	52.3 - 52.4
		Vf- Volusia channery silt loam, 3 to 8 percent slopes	52.8 - 52.8
		Ve- Volusia channery silt loam, 0 to 3 percent slopes	52.8 - 52.9
		Vf- Volusia channery silt loam, 3 to 8 percent slopes	53 - 53.1
		Ve- Volusia channery silt loam, 0 to 3 percent slopes	53.2 - 53.3
		Vf- Volusia channery silt loam, 3 to 8 percent slopes	53.3 - 53.6
		Ve- Volusia channery silt loam, 0 to 3 percent slopes	53.6 - 53.6
		Vf- Volusia channery silt loam, 3 to 8 percent slopes	53.6 - 53.7
		Ve- Volusia channery silt loam, 0 to 3 percent slopes	53.7 - 53.8
Mardin-Bath	Schuyler	VoB- Volusia channery silt loam, 3 to 8 percent slopes	54.1 - 54.2
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	54.2 - 54.4
		VoA- Volusia channery silt loam, 0 to 3 percent slopes	54.5 - 54.6
		VoA- Volusia channery silt loam, 0 to 3 percent slopes	54.7 - 54.7
		VoA- Volusia channery silt loam, 0 to 3 percent slopes	54.8 - 54.8
		VoA- Volusia channery silt loam, 0 to 3 percent slopes	55 - 55
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	55.2 - 55.3
		VoA- Volusia channery silt loam, 0 to 3 percent slopes	55.3 - 55.3
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	55.3 - 55.8
Volusia-Mardin		VoB- Volusia channery silt loam, 3 to 8 percent slopes	56.5 - 56.7
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	56.9 - 57.2
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	57.3 - 57.4
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	57.4 - 57.6

Table 4.2-2 (cont'd)
Summary of Soil Associations With High Water Tables
Along Pipeline Empire Connector Project

Soil Association	County	Soil Unit Description	(CMP)
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	58.5 - 58.7
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	58.9 - 59
		VoA- Volusia channery silt loam, 0 to 3 percent slopes	59 - 59.1
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	59.2 - 59.2
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	59.5 - 59.8
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	59.8 - 60.3
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	60.3 - 60.5
Valois-Howard-Chenango		VoB- Volusia channery silt loam, 3 to 8 percent slopes	60.9 - 61.1
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	61.1 - 61.2
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	61.3 - 61.5
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	62.4 - 62.5
Volusia-Mardin		VoB- Volusia channery silt loam, 3 to 8 percent slopes	64.2 - 64.4
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	64.4 - 64.5
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	64.8 - 65.2
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	65.4 - 65.5
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	65.5 - 65.8
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	65.9 - 66
		VoD- Volusia channery silt loam, 15 to 25 percent slopes	66 - 66
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	66 - 66.3
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	66.3 - 66.5
Valois-Howard-Chenango		VoC- Volusia channery silt loam, 8 to 15 percent slopes	66.5 - 66.5
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	66.6 - 66.7
Volusia-Mardin		VoB- Volusia channery silt loam, 3 to 8 percent slopes	67.5 - 67.8
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	67.8 - 67.9
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	68.1 - 68.2
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	68.2 - 68.3
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	68.4 - 68.5
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	68.5 - 68.6
		VoA- Volusia channery silt loam, 0 to 3 percent slopes	68.6 - 68.9
Lordstown-Volusia-Mardin		VoB- Volusia channery silt loam, 3 to 8 percent slopes	68.9 - 68.9
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	68.9 - 69
		VoB- Volusia channery silt loam, 3 to 8 percent slopes	69 - 69
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	69 - 69.1
Lordstown-Volusia-Mardin	Chemung	VoC- Volusia channery silt loam, 8 to 15 percent slopes	69.1 - 69.1
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	69.1 - 69.1
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	69.3 - 70.1
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	70.2 - 70.4
		VoD- Volusia channery silt loam, 15 to 25 percent slopes	70.4 - 70.4
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	70.5 - 70.6
		VoB- Volusia channery silt loam, 2 to 8 percent slopes	70.6 - 70.6
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	70.6 - 70.7
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	70.8 - 71
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	71.4 - 71.7
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	72 - 72.1
		VoB- Volusia channery silt loam, 2 to 8 percent slopes	72.9 - 72.9
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	72.9 - 73.5

Table 4.2-2 (cont'd)
Summary of Soil Associations With High Water Tables
Along Pipeline Empire Connector Project

Soil Association	County	Soil Unit Description	(CMP)
Lordstown-Volusia-Mardin	Steuben	VoB- Volusia channery silt loam, 2 to 8 percent slopes	73.9 - 74.1
		VoB- Volusia channery silt loam, 2 to 8 percent slopes	74.1 - 74.1
		VoD- Volusia channery silt loam, 15 to 25 percent slopes	74.8 - 74.9
		VoB- Volusia channery silt loam, 2 to 8 percent slopes	75.6 - 75.7
		VoB- Volusia channery silt loam, 2 to 8 percent slopes	75.7 - 75.7
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	75.7 - 75.8
		VoB- Volusia channery silt loam, 2 to 8 percent slopes	76 - 76.1
		VoB- Volusia channery silt loam, 2 to 8 percent slopes	76.3 - 76.4
		VoC- Volusia channery silt loam, 8 to 15 percent slopes	76.4 - 76.8

4.2.3 ALGONQUIN RAMAPO EXPANSION PROJECT

4.2.3.1 Pipeline Facilities

Soil series crossed by the 4.93-mile-long pipeline replacement, the modification of the Ramapo Meter Station, the relocation of two 30-inch mainline valves on a parallel Algonquin Loop Line, and the modification of the Hudson River Valve Site, all located in Rockland County, New York, were identified using the USDA, NRCS Soil Survey for Rockland County, New York; and, computerized database products developed by the NRCS. These soil associations are listed below.

Chatfield-Charlton-Hollis-Rock Outcrop Association

The site of the Hudson River valve modification in Stony Point, New York, would be located within this soil association. Also, 2.05 miles of these soils would be crossed by the Ramapo pipeline replacement. These soils are dominantly gently sloping to very steep, somewhat excessively drained and well drained soils that are very deep, moderately deep, and shallow over schist, granite, or gneiss and include areas of rock outcrop, on uplands. This unit consists of side slopes, valley sides, and hilltops on mountainous uplands. The underlying crystalline bedrock and surface rock outcrops are dominantly schist, gneiss, and granite. The slope is mainly 8 to 25 percent but ranges from 2 to 60 percent.

This soil association covers about 29 percent of the county and is composed of 30 percent Chatfield soils, 30 percent Charlton soils, 10 percent Hollis soils, and 10 percent rock outcrop. The remaining 20 percent includes soils of minor extent.

Chatfield soils are moderately deep and are well drained to somewhat excessively drained. Permeability throughout is moderate or moderately rapid. The water table is at a depth of more than six feet. Chatfield soils are mainly on hillsides and valley sides.

Charlton soils are very deep and well drained soils that occur on glacially modified uplands. Permeability throughout is moderate or moderately rapid. The water table is at a depth of more than six feet.

Hollis soils are shallow and are somewhat excessively drained and well drained. Permeability throughout is moderate or moderately rapid. The water table is at a depth of more than six feet. Hollis soils typically occur on valley sides.

Rock outcrop appears as exposed ledge on side slopes and as angular and pointed blocks on ridge crests and hilltops. Some areas have a stair step appearance as a series of ledges. Rock outcrop is dominantly crystalline schist, gneiss, and granite. Vegetation is nonexistent or composed of sparse mosses and small shrubs rooted in fractures and joints.

Of minor extent in this unit and adjacent to the rock outcrops are soils that are less than 10 inches deep to bedrock. Also of minor extent are Paxton, Alden, and Palms soils; Fluvaquents and Medisaprists, and soils on the lower parts of valley sides that have an extremely stony surface.

Most areas of this unit are forested and provide habitat for wildlife. Slopes, a severe erosion hazard, droughtiness, and shallowness to bedrock are the main limitations of the unit for farming. The limitations for community development are shallowness to bedrock, rock outcrops, surface stones, and slopes.

Riverhead-Hinckley-Carlisle Association

About 0.5 miles of the Ramapo pipeline replacement would cross these soils. These soils are dominantly very deep, nearly level to moderately steep, excessively drained to well drained soils on outwash plains and terraces. Also included are soils that are very deep, nearly level, very poorly drained soils in bogs and depressions. This unit consists of a series terraces, rolling knolls, ridges, and depressions. The slope is mainly 0 to 8 percent but in some areas is as much as 25 percent.

About 8 percent of the project area is composed of 20 percent Riverhead soils, 20 percent Hinckley soils, 10 percent Carlisle soils, and 50 percent soils of minor extent.

Riverhead soils are nearly level to moderately steep and are well drained. They are on terraces, low hills, and ridges. Permeability is moderately rapid in the upper part of the soil and very rapid in the lower part. The depth to the water table is greater than six feet.

Hinckley soils are nearly level to moderately steep and are excessively drained. They are on the sides and top of stream terraces and on terraced hillsides. Permeability is rapid in the upper part of the soil and very rapid in the lower part. The depth to the water table is more than six feet.

Carlisle soils are nearly level and very poorly drained. They are in broad depressional swamps and bogs that are ponded for much of the year. Permeability throughout is moderately slow to moderately rapid. The water table is at or above the surface most of the year. Of minor extent are areas of urban land and udorthents; Haven, Fredon, Rippowam, and Palms soils; and Fluvaquents and Medisaprists.

This unit is mostly wooded, but some areas are in urban development. Poor drainage and high water table are the major limitations of the Carlisle soils for community development.

4.2.3.2 Aboveground Facilities

The proposed aboveground facilities associated with the project would be in three states: New Jersey, New York, and Connecticut. Soil series that would be affected by the project were identified using USDA NRCS soil surveys for Morris County, New Jersey; Rockland and Putnam Counties, New York; New Haven and Fairfield County, Connecticut; and, computerized database products developed by the NRCS. Soil associations encountered at the aboveground facilities sites are described below.

Hanover Compressor Station

Haledon-Urban land-Boonton Association

These soils are deep, well drained to somewhat poorly drained, gently sloping and strongly sloping silt loams, gravelly loams, and extremely stony loams that overlie basalt or shale, occurring on uplands. The soils in this association formed in thick deposits of glacial till. This association covers five percent of the county and is composed of 40 percent Haledon, 20 percent urban land, 15 percent Boonton soils, and 25 percent minor soils.

Haledon Soils typically occur on undulating and rolling low hills. These soils are gently sloping to strongly sloping and somewhat poorly drained. The areas of urban land have been cut, filled, smoothed, or otherwise mixed during construction and are mostly covered by buildings or pavement. Boonton soils are on ridge tops, side slopes, and hills. These soils are gently sloping to strongly sloping and well drained and moderately well drained. Included in the minor soil category are Holyoke, Riverhead, Pompton, Whippany, Parsippany, and Haledon.

Stony Point Compressor Station

Chatfield-Charlton-Hollis-Rock Outcrop Association-

This association is described in detail above in section 4.2.3.1 (Pipeline Facilities).

Southeast Compressor Station

Paxton-Woodbridge Association

These soils are well drained and moderately well drained, medium textured and moderately coarse textured soils on uplands. These soils formed in glacial till derived dominantly from granite, gneiss, and schist. Slopes range from 3 to 25 percent. This soil association is composed of about 65 percent Paxton soils, 15 percent Woodbridge soils, and 20 percent soils of minor extent. Soils of minor extent include Ridgebury, Sun, Carlisle, and Palms soils.

The well drained Paxton Soils are gently sloping to moderately steep. They are generally located on hilltops and hillsides. The depth to bedrock is greater than 60 inches. The moderately well drained Woodbridge soils are nearly level to gently sloping. They are present on low, broad hilltops and the lower part of hillsides. The depth to bedrock is greater than 60 inches.

Stockbridge Association

These soils are very deep, well drained, medium textured upland soils that formed in glacial till derived dominantly from limestone, marble, and schist. Outcrops of limestone or marble are present in scattered areas, with slopes ranging from 3 to 25 percent. The association is 65 percent Stockbridge, with the remaining 35 percent composed of soils of minor extent including Sutton, Leicester, and Sun soils. Stockbridge soils are gently sloping to moderately steep. They are located on hilltops and hillsides.

Brookfield Meter Station

Paxton-Woodbridge-Ridgebury Association

These soils are level to steep, well drained, moderately well drained, and poorly drained loamy soils with a compact substratum. They are found on glacial till drumlins and broad glacial till plains. This map unit comprises about 25 percent of Fairfield County, Connecticut. The unit itself is composed of about 40 percent Paxton soils, 25 percent Woodbridge soils, 10 percent Ridgebury soils, and 25 percent soils of minor extent. The soils of minor extent include Leicester, Whitman, Charlton, Sutton, Hollis, Adrian, Carlisle, and Udorthents.

The Paxton soils are gently sloping to steep and are well drained. The Woodbridge soils are nearly level to sloping and are moderately well drained. The Ridgebury soils are nearly level and poorly drained. The remainder of the Brookfield Meter Station site is mapped as gravel pits.

Oxford Compressor Station

Charlton-Hollis-Leicester Association

These soils are gently sloping to steep, somewhat excessively drained to poorly drained, loamy soils, located on broad glacial till plains. This map unit makes up about 21 percent of the soils found within New Haven County. The landscape is mainly undulating uplands, low hills and ridges, many of which have relief that is affected by the underlying bedrock.

Charlton soils make up about 35 percent of this map unit and are deep, well drained, and loamy. They are dominantly gently sloping or sloping and occupy hilltops and convex side slopes of the till plain. Stones and boulders are common on the surface in places.

Hollis soils comprise upwards of 30 percent of the map unit. They are somewhat excessively drained, loamy, and underlain by bedrock at a depth of 10 to 20 inches. Hollis soils are gently sloping to steep and occupy hilltops, small ridges, and side slopes in bedrock controlled areas. Stones and boulders are on the surface, and bedrock outcrops are common in most places.

Leicester soils make up about 10 percent of the soil unit. They are deep, loamy, and poorly drained. These soils are mainly nearly level or gently sloping and occupy depressions and drainageways. Stones and boulders are common on the surface in most places.

Minor soils make up the remaining 25 percent of the map unit. These are mainly Agawam, Sutton, Paxton, Woodbridge, and Palms soils.

Paxton-Woodbridge-Ridgebury Association-

This association is described in detail above under the Brookfield Meter Station soils.

Pipeline construction activities generally result in temporary, minor soil impacts so long as proven best management practices are incorporated into the project design and implemented properly from the start of construction until final stabilization is achieved. Impacts would result from soil disturbance due to clearing, grading, blasting, trench excavation, and by heavy machinery traveling along the ROW during pipeline construction. This results in the potential reduction of soil quality due to the intermixing of topsoil and subsoil and increases the potential for soil settling or slumping. The soil resource impacts would occur

only during the construction period and/or post-construction monitoring period. Depending on soil conditions, these impacts can include loss of excavated soil due to water and wind erosion, soil compaction from construction equipment and mixing of wetland topsoil and subsoil. The characteristics of soil types, vegetative cover and slope are important factors in determining whether the potential exists for these construction-related impacts to occur.

Based on the field surveys conducted for the project and review of available published mapping (i.e., NRCS County Soil Surveys), the project facilities and activities would not occur within soil series designated as prime or unique farmland by NRCS and are not expected to adversely affect other agricultural land. Therefore, loss of soil fertility due to trenching and backfilling that could adversely affect these land uses would not occur. Also, the movement of construction equipment and trenching activities would not impact any known drainage tiles or irrigation systems. In residential areas, topsoil replacement and fertilization would be used to mitigate any loss of soil fertility impacts from construction and would be consistent with landowner requests.

To minimize potential soil impacts, Algonquin would construct the pipeline in accordance with its E&SCP which is consistent with our Plan and Procedures. These documents identify erosion control measures designed to reduce potential short-term and long-term impacts on soil and water resources. These measures include installing slope breakers, temporary sediment barriers and permanent trench breakers; topsoil segregation in wetlands and residential lands; and the stabilization of exposed surfaces through revegetation and mulching. Their use would minimize erosion during and after construction. During construction, erosion control structures, erosion control fabrics and temporary seeding/revegetation would be used to minimize erosion. After construction is complete, Algonquin would minimize further erosion by re-grading and reseeding the disturbed areas. Following restoration and cleanup, Algonquin would monitor the disturbed areas to maintain erosion control structures and repair any developing erosion.

We believe that use of Algonquin's E&SCP as well as any additional recommendations identified in this EIS, including the variances addressed below, would minimize construction-related impacts to soils.

Deviations from Our Plan and Procedures

Algonquin states it has developed its E&SCP based on guidelines from FERC, USACE, USFWS, USDA and NRCS, as well as from lessons learned from past construction experience. The following identifies Algonquin's requested variations from our Plan and Procedures, as well as reasons for these requests.

Section V.B.2 of the Plan recommends that permanent slope breakers (or interceptor dikes) be installed in all areas using spacing recommendations obtained from local soil conservation authority or land managing agency or in accordance with the recommended spacing in the Plan, and that energy dissipating devices be constructed at the end of each slope breaker. Specifically, the Plan states that permanent slope breakers are intended to reduce runoff velocity, divert water off the construction ROW, and prevent sediment deposition into sensitive resources. Permanent slope breakers may be constructed of materials such as soil, sand bags, or some functional equivalent. Permanent slope breakers are to be constructed and maintained in all areas, except cultivated areas and lawns, using spacing recommendations obtained from the local soil conservation authority or land managing agency. In the absence of written recommendations, the following spacing should be used unless closer spacing is necessary to avoid excessive erosion on the construction ROW:

Slope (%)	Spacing (feet)
5 - 15	300
>15 - 30	200
>30	100

Further, slope breakers should be constructed to divert surface flow to a stable area without causing water to pool or erode behind the breaker. In the absence of a stable area, construct appropriate energy-dissipating devices at the end of the breaker. Slope breakers may extend slightly (about 4 feet) beyond the edge of the construction ROW to effectively drain water off the disturbed area. Where slope breakers extend beyond the edge of the construction ROW, they are subject to compliance with all applicable survey requirements.

Algonquin requests that its E&SCP (section 3.6.1.1) be allowed to deviate from section V.B.2 of our Plan by changing the number and spacing of permanent slope breakers/interceptor dikes. Algonquin states that it has made this request because of the amount of surface rock and the lack of topsoil along some portions of the construction ROW which may compromise their construction. Algonquin states that it would install permanent slope breakers in areas where soil and ground conditions allow.

Algonquin has not provided any information about the proposed spacing of permanent slope breakers or about the locations where it believes this variance may be used. Along portions of the pipeline replacement component of the Ramapo Expansion Project, the existing ROW is near residences and recreational facilities. Runoff from the ROW could be an issue with these landowners. We believe that there may be site-specific instances where modified spacing of permanent slope breakers may be acceptable. But, we do not believe that it is appropriate to grant a project-wide variance on this issue. Therefore, **we recommend that:**

- **Algonquin file with the Secretary for review and written approval by the Director of OEP, a request for site-specific variances to section V.B.2 of our plan. The request should include milepost location(s), spacing for the permanent slope breakers, and reasons for the requested variance at the identified location(s).**

Algonquin requests that it have the option of replacing topsoil that may become mixed with subsoil during construction in residential areas. Section IV.B.2 of our Plan states: In residential areas importation of topsoil is an acceptable alternative to topsoil segregation. This section allows for this option, therefore a variance is not required.

Section V.C.1 of our Plan requires the pipeline company to test for soil compaction in agricultural and residential areas disturbed by construction activities, and to perform appropriate soil compaction mitigation in severely compacted areas. Algonquin's pipeline replacement would not cross agricultural areas or other areas designated as prone to soil compaction. In residential areas, Algonquin proposes to either conduct topsoil segregation or to replace topsoil.

Topsoil that is segregated or replaced results in little or no compaction and provides a suitable medium for grass in yards since deep root penetration is not required in these areas. Further, we agree that subsequent freeze-thaw cycles affecting the upper portions of the subsoil would provide natural mitigation of any compacted areas of the construction ROW within 2 or 3 years. Algonquin would conduct post-construction monitoring in these areas, in conjunction with it's monitoring of other ROW areas, to assess revegetation and to address repair of areas where vegetation has not been successful. Algonquin's request for this variance is reasonable.

4.2.4 IROQUOIS MARKETACCESS PROJECT

For the preparation of this report, the Soil Survey of Fairfield County, Connecticut (Soil Conservation Service 1981) and Soil Survey of Dutchess County, New York (Natural Resources Conservation Service 2002) were used to identify the soil associations and series for each project area.

4.2.4.1 Aboveground Facilities

Brookfield Compressor Station

The NRCS (1981) identifies the Brookfield, Connecticut project area as occurring along the divide between two associations: the Paxton-Woodbridge-Ridgeburg association and the Carlisle-Adrian-Saco association. The former association consists of nearly level to steep, well drained to moderately well drained, loamy soils and areas of exposed bedrock, on glacial till uplands. The latter association identifies nearly level, very poorly drained, organic and loamy soils, on outwash plains; on glacial outwash plains, and terraces. The NRCS mapping shows the entire 7.3-acre project area consisting of pits, gravel (Ps) soils, which defines areas that have been excavated for sand and gravel. Soil mapping done by Soil Resource Consultants in 1998 and 1999 classifies the site as Udorthents, which is the proper soil classification term depicting Ps soils.

Udorthents consist of moderately well drained to well-drained soils that have been extensively disturbed by grading and, therefore, generally define that same soil conditions as Ps soils. Because of their porous nature, Ps soils have a rapid or very rapid permeability. Iroquois' field surveys determined that no part of the project area has hydric soils and; therefore, should not experience a water table at or near the ground surface. Furthermore, the NRCS does not consider Ps soils to be prime farmland soils.

Dover Compressor Station

The Soil Survey for Dutchess County (NRCS 2002) does not provide soil association mapping. It shows the 2.7-acre site in Dover, New York, occurring in the Udorthents soil type: pits, gravel (Ps). The NRCS (2002) identifies the Ps soils as having a severe revegetation potential, probably because of the absence of topsoil and sandy textures. The NRCS does not list Ps soil as hydric and field surveys have confirmed that wetlands do not occur within the project area.

Project construction and operation of the proposed project at both locations would have minimal impacts on soil resources. Both sites are relatively flat, devoid of wetlands, and do not posses soil types mapped as prime farmland soils. Both sites are owned by Iroquois and are not in residential or agricultural use.

To minimize off-site movement of sediments during construction, Iroquois would adhere to erosion control, dewatering, site stabilization, and re-vegetation standards set forth in our 2003 Plan and Procedures. Seed mixtures recommended by the Fairfield County Soil and Water Conservation District and the Dutchess County Soil and Water Conservation would be used during revegetation at the proposed Brookfield Compressor Station and the Dover Compressor Station, respectively.

4.3 WATER RESOURCES

4.3.1 GROUNDWATER RESOURCES

4.3.1.1 General Construction and Operation Impacts and Mitigation

Construction activities could result in impact on groundwater resources. However, most of the potential impact would be avoided or minimized by the use of both standard and specialized construction techniques.

Shallow aquifers could experience minor impact from changes in overland water flow and recharge caused by clearing and grading in the construction areas along the proposed alignment. Enhanced water infiltration provided by a well-vegetated cover would be temporarily reduced until the area is revegetated. Near surface soil compaction caused by the weight of heavy construction equipment could also reduce available pore space to transmit water to the subsurface. This impact would be short-term and would not be expected to significantly alter the groundwater resources because the construction ROW, in general, is a small portion of the total groundwater recharge area.

Trench dewatering may be required in areas where the proposed construction intersects groundwater. Dewatering activities may affect groundwater by decreasing water levels in the immediate area of the dewatering pumps or trenches or increasing water levels in the area where the pumped water is discharged. Because construction activities at a specific location are of relatively short duration, associated dewatering would only be a temporary activity with minimal impact. Our Procedures and the applicants' project-specific construction procedures require that all water produced from dewatering operations be discharged into well-vegetated upland areas or into containment structures. To promote recharge to the affected aquifer via infiltration or runoff to surface waterbodies, all discharges should be within the same hydrogeologic regime or sub-basin from where the dewatering originated. Any deviations from discharging into the same hydrogeologic sub-basin would be noted on the CAS and any necessary approvals would be acquired in advance from the appropriate federal and state agencies (see hydrostatic testing discussion in the Surface Water Resources subsection of this section). Use of these guidelines would result in minimal impact on the aquifer from dewatering activities.

Grade and trench blasting would be required where bedrock is exposed or less than 6 feet below the ground surface if other equipment cannot open a trench. Use of appropriate blasting procedures can minimize ground motion. This would then lessen the possibility of disrupting existing confining layers, creating new fracture openings or reducing or sealing existing fractures that would alter groundwater flow characteristics. Millennium, Empire, Algonquin, and Iroquois would require their contractors to use procedures that would ensure that air blast and ground vibration limits are set at thresholds below levels at which blasting damage is likely to occur in areas where blasting may be required for pipeline or aboveground facility construction. Further, they would also identify provisions for correcting problems that may arise, including compensation for assessed damages and making provisions for repair with local contractors.

Landowners are often concerned about changes in water quality or flow of their water wells as a result of construction activities. Where water supplies are shallow, there could be some temporary and localized decreases in groundwater quality and recharge rates because of grading and trenching (which may require blasting) or near surface compaction during clearing or grading. These would be expected to be short-term interruptions only and should not affect long-term groundwater quality and recharge rates. Millennium, Empire, and Algonquin would conduct pre- and post-construction water quality and quantity testing of wells and springs used for drinking water purposes within 150 feet of the construction work area

where approved by landowners. There would be no drinking water wells within 150 feet of any construction activities proposed by Iroquois. Testing would include pump inspection, flow rate quantification, and collection of the following water quality parameters: coliform bacteriological cultures, total and dissolved lead, nitrates, nitrites, total and dissolved iron, total and dissolved manganese, sodium, pH, hardness, alkalinity, and turbidity. Temporary fencing would also be erected around all private water supply wells identified within the CWA to minimize any impacts. If a water well or spring is damaged as a result of construction activities, a temporary water source would be provided and repair or replacement of the well would occur.

Groundwater levels could also change in bedrock aquifers during construction if previously sealed fractures at the surface are exposed during trench excavation to create more flow paths for aquifer recharge that may result in local flooding of adjoining properties. Generally, this is not a widespread problem and would be corrected during restoration when the trench is backfilled and the ROW restored to pre-construction contours. If the trench is not constructed with adequate trench barriers (or "plugs", as identified in our Plan), new flow paths could be created for groundwater migration along the pipeline trench. This would be addressed during construction by installation of trench barriers and breakers at specified intervals (a requirement of the Plan) and by follow-up monitoring after construction.

Refueling of vehicles and storage of fuel, oils, lubricants, or other related materials during the construction phase of the pipeline could create a potential contamination hazard to aquifers. Small, localized spills of these materials could occur during construction and could affect aquifer quality. Spills may also occur if an existing pipeline is ruptured during construction. Further contamination could continue to occur for a short time thereafter as precipitation passes through the affected soil and transports more material to the aquifer.

These types of impacts can be avoided or minimized by restricting vehicle refueling areas and maintenance and storage facility locations, and requiring immediate cleanup of any spills or leaks. In their SPCC Plans the applicants outline protective measures to minimize the possibility of a spill and the response measures to be followed in the event of a spill or leak. These measures include designation of fuel and hazardous materials storage areas, containment requirements for fuel depots, minimum setback distances from natural resource areas for specified refueling and maintenance activities, clean up materials that need to be on site, and spill reporting procedures. In those aquifer protection districts that have specific requirements, the district-specific procedures would be followed. These procedures include prohibitions on refueling in specially designated areas, construction of silt fences and booms, or specification of the types of sorbent materials that should be available.

4.3.1.2 Millennium Pipeline Project - Phase I

Sections 4.3.1 and 5.3.1 of the October 2001 FEIS for the Millennium Pipeline Project included detailed descriptions of the groundwater resources that would be affected by Millennium’s originally proposed project. General information presented in the 2001 FEIS related to groundwater has not changed substantially for the amended project and is not repeated in this document. Rather, this section will focus primarily on the proposed route changes and facilities modifications. Therefore, this section will address water resources along the:

- NYSEG Chemung Variation from MP 198.0 to MP 203.6;
- NYSEG Tioga-Broome Variation from MP 232.2 to MP 245.0;
- NYSEG Delaware Variation from MP 284.4 to MP 284.9; and
- Warwick Isle Route Variation from MP 350.8 to MP 351.6.

Also in this section, we address the impact on water resources of Columbia's Line A-5 Replacement Project, which corresponds to the pipeline segment between Millennium MPs 367.9 and 376.4.

Groundwater resources along the proposed Millennium pipeline include: phreatic (water table) aquifers in shallow, unconsolidated sediments; unconfined aquifers in bedrock formations including sedimentary, metamorphic, and igneous rock; and confined and artesian aquifers in bedrock as well as unconsolidated sediments. Most portions of the proposed route have groundwater yields that can sustain single-dwelling, domestic use wells (i.e., 10 gallons per minute [gpm] capacity or less). There are both unconsolidated overburden and bedrock aquifers along the proposed route that have been developed for municipal and community water supplies.

A primary aquifer is defined in Title 6 New York Codes, Rules and Regulations Part 360-1.2(b)(10) as a highly productive aquifer that is presently used as a source of public water supply by major municipal water supply systems. To determine if an aquifer qualifies as a primary aquifer, the NYSDEC Division of Water uses the following guidelines from the Technical and Operational Guidance Series (TOGS) Document 2.1.3 relating specifically to the question of aquifer productivity:

- the aquifer should occupy at least 5 to 10 square miles of contiguous area at a minimum;
- saturated deposits of highly permeable materials should average at least 20 feet through much of the area, with some locations at least 50 feet thick; and
- sustained yields to individual wells should be at least 50 gpm or more from sizable areas (2 square miles or greater) throughout the aquifer.

While the TOGS allows for some degree of flexibility in applying the above guidelines, the document states: "In all cases, however, the general level of water resource capability suggested by these three guidelines should be met." The NYSEG Chemung Variation would cross the Corning Primary Aquifer (MPs 202.7 to 202.9 and MPs 203.1 to 203.4), and all of the Columbia Line A-5 Replacement Project (MPs 367.9 to 376.4) would cross the Ramapo Primary Aquifer (table 4.3.1.2-1). These aquifers are in stratified drift deposits.

The major criteria for sole source aquifer designation are that the aquifer provides 50 percent or more of the drinking water for the aquifer service area, and that the volume of water that could be provided by alternative supplies is insufficient to meet demand. The NYSEG Tioga-Broome Variation would cross the Clinton Street-Ballpark Sole Source Aquifer between MPs 232.2 and 245.0.

The Clinton Street-Ballpark Sole Source Aquifer covers about 41 square miles. Aquifer materials are glacial sediments in bedrock valleys with aquifer thicknesses exceeding 200 feet in some locations. Water quality has been generally good but elevated concentrations have been reported for chlorinated organic compounds, iron, lead, manganese, and total dissolved solids (EPA, 1984). Additionally, increased bacteria levels are reported in areas west of the Endicott-Binghamton area and attributed to dredging activities for river navigation in the Susquehanna River.

The Warwick Isle Route Variation (MPs 350.8 to 351.6) would cross the Fifteen Basin Sole Source Aquifer. The Fifteen Basin Sole Source Aquifer covers about 1,735 square miles in New York and New Jersey. Aquifer materials are fractured bedrock that are recharged by the shallow overlying stratified drift deposits. Depth to water is 20 to 40 feet in the rock aquifer on hillsides and very close to the land surface in the valleys. Ambient water quality is variable because the thinness of the overlying deposits and the fractured nature of the bedrock make this aquifer prone to surface contamination. Reported potential parameters of concern include animal wastes, fertilizers, pesticides, bacteria, petroleum products, and stormwater runoff (EPA, 1988).

Table 4.3.1.2-1
Aquifer Areas Crossed by the Millennium Pipeline Project – Phase I And the Columbia Line A-5 Replacement Project

Project Facility	Approximate Mileposts	Aquifer Area	Distance of Protection Area Crossed (mi)
NYSEG Chemung Variation	202.7 to 202.9	Corning Primary Aquifer	0.2
NYSEG Chemung Variation	203.1 to 203.4	Corning Primary Aquifer	0.3
NYSEG Tioga-Broome Variation	232.2 to 245.0	Clinton Street-Ballpark Aquifer	12.8
NYSEG Tioga-Broome Variation	243.0 to 245.0	Town of Union/Villages of Johnson and Endicott Aquifer Protection District	2.0
Warwick Isle Variation	350.8 to 351.6	Fifteen Basin Sole Source Aquifer	1.6
Columbia Line A-5 Replacement	367.9 to 376.4	Ramapo River Basin Aquifer System	8.5

The NYSEG Tioga-Broome Variation would cross the Town of Union/Villages of Johnson and Endicott Aquifer Protection District between MPs 243.0 and 245.0. Within this aquifer protection district there are nine wells in stratified drift (ranging from 80 to 100 feet deep), but none of these wells would be within 150 feet of proposed construction workspaces.

With the exception of previously identified existing private water supply wells, no public or private water supply wells would be within 150 feet of the proposed facilities at the Millennium Compressor Station. Eleven, 46, and 4 private water supply wells and springs would be within 150 feet of the proposed construction workspaces for the NYSEG Chemung Variation, NYSEG Tioga – Broome Variation, and NYSEG Delaware Variation, respectively. Two private water supply wells would be within 150 feet of the proposed Warwick Isle Route Variation (table 4.3.1.2-2).

In total, 63 private water supply wells and/or springs would be within 150 feet of the proposed construction workspaces for the three NYSEG route variations and the Warwick Isle Route Variation. The exact locations of these wells in relation to the construction workspace would be verified during easement acquisition before construction and would be marked on the construction alignment sheets. To date, Millennium has not supplied the exact locations of these wells beyond an approximate milepost. Therefore **we recommend that:**

- **Millennium file with the Secretary the location by milepost of all drinking water wells and springs within 150 feet of the construction work area for the Phase I Project and for the Line A-5 Replacement Project and include their distance and direction from the construction work area, before construction.**

Table 4.3.1.2-2
Private Water Supply Wells Within 150 Feet
Of the Millennium Pipeline Project – Phase I
And the Columbia Line A-5 Replacement Project

Facilities	Type	Approximate Milepost a/	Approximate Distance from Construction Work Space (feet)
NYSEG Chemung Variation	Spring	198.0	Not provided
	Private Well	198.3	Not provided
	Private Well	199.7	Not provided
	Private Well	200.2	Not provided
	Private Well	200.3	Not provided
	Spring	200.5	Not provided
	Spring	200.6	Not provided
	Private Well	200.7	Not provided
	Spring	203.0	Not provided
	Private Well	203.2	Not provided
	Private Well	203.4	Not provided
NYSEG Tioga-Broome Variation	Private Well	232.6	Not provided
	Private Well	232.6	Not provided
	Spring	233.4	Not provided
	Spring	235.3	Not provided
	Spring	235.6	Not provided
	Private Well	237.4	Not provided
	Private Well	237.6	Not provided
	Spring	238.3	Not provided
	Spring	238.6	Not provided
	Private Well	238.8	Not provided
	Spring	238.9	Not provided
	Private Well	238.9	Not provided
	Spring	238.9	Not provided
	Private Well	238.9	Not provided
	Private Well	239.0	Not provided
	Private Well	239.3	Not provided
	Private Well	239.3	Not provided
	Private Well	239.3	Not provided
	Spring	239.3	Not provided
	Private Well	239.6	Not provided
	Private Well	239.6	Not provided
	Private Well	240.7	Not provided
	Private Well	240.9	Not provided
	Spring	241.0	Not provided
	Spring	241.3	Not provided
	Spring	241.6	Not provided
	Private Well	241.6	Not provided
	Private Well	241.8	Not provided
	Private Well	241.9	Not provided
	Private Well	241.9	Not provided

Table 4.3.1.2-2 (cont'd)
Private Water Supply Wells Within 150 Feet
Of the Millennium Pipeline Project – Phase I
And the Columbia Line A-5 Replacement Project

Facilities	Type	Approximate Milepost a/	Approximate Distance from Construction Work Space (feet)
NYSEG Tioga-Broome Variation (cont.)	Private Well	241.9	Not provided
	Private Well	241.8	Not provided
	Private Well	241.8	Not provided
	Private Well	242.0	Not provided
	Spring	242.2	Not provided
	Spring	242.2	Not provided
	Spring	242.5	Not provided
	Spring	242.6	Not provided
	Spring	242.7	Not provided
	Private Well	242.9	Not provided
	Spring	242.9	Not provided
	Private Well	243.2	Not provided
	Private Well	244.0	Not provided
	Private Well	244.6	Not provided
	Private Well	244.7	Not provided
	Private Well	244.8	Not provided
NYSEG Delaware Variation	Private Well	284.6	Not provided
	Private Well	285.1	Not provided
	Private Well	284.8	Not provided
	Private Well	284.8	Not provided
Warwick Isle Route Variation	Private Well	351.2	Not provided
	Private Well	351.3	
Columbia Line A-5 Replacement Project	Private Well	369.0	90
	Private Well	369.0	140
	Private Well	369.0	80
	Private Well	369.3	130
	Private Well	369.3	80
	Private Well	369.4	55
	Private Well	373.2	20

a/ Mileposts for the Columbia Line A-5 Replacement Project correspond to mileposts for the Millennium Pipeline Project.

To ensure that all issues relating to potential impact on water wells would be identified and addressed, **we recommend that:**

- **Millennium include in its weekly construction progress reports any complaints concerning water supply yield or quality and how each was resolved. Within 30 days of placing the facilities in service, Millennium should file a summary report identifying all potable water supply systems damaged by construction and how they were repaired.**

4.3.1.3 Columbia Line A-5 Replacement Project

The Columbia Line A-5 Replacement Project would be underlain by the Ramapo River Basin Aquifer System, an EPA-designated sole source aquifer. The Ramapo River Basin Sole Source Aquifer covers about 161 square miles in New York and New Jersey and would be crossed by all of the Columbia Line A-5 Replacement Project. The Ramapo M&R Station is also within this aquifer area. Aquifer materials include unconsolidated materials and fractured bedrock that is recharged by the overlying deposits as well as by the Ramapo River. These interconnections make the aquifer susceptible to contaminants introduced at the land surface or from the Ramapo River. Reported potential parameters of concern include volatile organic compounds, heavy metals, and stormwater runoff (EPA, 1992). The unconfined nature of the aquifer and the hydraulic connection between the aquifer and the Ramapo River makes potential contamination from surface sources a water quality concern.

Seven private water supply wells and no public water supply wells would be within 150 feet of the proposed construction workspace for the project.

Table 4.3.1.2-1 lists the aquifer areas that would be crossed by the Phase I Project and the Columbia Line A-5 Replacement Project.

A list of private water supply wells and springs by proposed project component are identified in table 4.3.1.2-2.

Groundwater Impacts and Mitigation

Construction and operation of the Phase I Project and the Columbia Line A-5 Replacement Project are not expected to adversely affect groundwater quality. These projects would cross four aquifers and one aquifer protection district. No specific requirements for crossing these aquifer areas have been identified to date, and no impact on these aquifers would be expected from construction or operation of the project. Millennium would implement its SPCC Plan, as well as any local spill prevention and control plan that may be required, and would ensure that sorbents would be available in all vehicles working within aquifer protection areas during construction of the Phase I Project and the Columbia Line A-5 Replacement Project facilities. Silt fence or booms would be installed around refueling area fences, and refueling would be restricted to the specified extra work areas. In addition, aquifer protection districts should be identified on the construction alignment sheets and equipment should be checked every day for leaks regardless of whether the equipment would be working within an aquifer protection district. This would be done in a manner consistent with the requirements of the Interim Order issued December 19, 2001, and the final Millennium Order issued September 19, 2002.

In addition to the 145 private water supply wells and/or springs listed in the 2001 FEIS for the Millennium Pipeline Project between MPs 190.6 and 376.6 that would be along the Phase I Project, 63 private wells and/or springs have been identified along the proposed route variations that would be within 150 feet of the construction workspaces. Impacts to these groundwater resources would be avoided or minimized by the use of both standard and specialized construction procedures. All construction and operation activities would be conducted in accordance with Millennium's ECS and our Plan and Procedures to minimize groundwater impacts. Millennium has stated that it would offer to conduct pre- and post-construction water quantity and quality testing of wells and springs within 150 feet of the construction work area. These tests would include a pump inspection, flow rate measurement, chemical parameters covered by federal drinking water secondary standards analysis, and the collection of bacteriological cultures. If it is determined that any private water supply well is damaged as a result of the project, Millennium would ensure that a temporary source of water is provided until the damaged supply well is restored to its former capacity.

Several landowners along the Columbia Line A-5 Replacement Project have expressed concerns about impacts to water wells on their properties. Since Millennium would construct the Columbia Line A-5 Replacement Project, it would implement the same construction procedures including pre- and post-construction water well testing, providing temporary water supplies if well water is affected during construction, and repairing or replacing wells if damaged by construction, as described in the preceding paragraph. In areas where the water table is high, trench dewatering may be required. Because the duration of trench dewatering at a given location would be relatively brief, potential impacts would be temporary and minor. Trench water would be discharged to well-vegetated areas adjacent to the ROW, where available, and discharges would be directed through appropriate sediment control devices. This activity would be conducted in a manner consistent with Millennium's ECS.

The refueling and maintenance of vehicles and the storage of fuel, oil, and other fluids during construction could create both temporary and long-term contamination hazards to groundwater. Millennium's ECS contains a SPCC Plan that would be implemented during construction of the Phase I Project and Columbia's Line A-5 Replacement Project. Adherence to this plan would minimize the potential for contamination of shallow groundwater.

Although circumstances may occur where blasting would be necessary, Millennium would follow established industry practices and applicable federal, state, county, and local laws, regulations, and ordinances to minimize the potential for blasting activities to affect nearby water supply wells.

One landowner (Mr. Peter Supa) in Broome County (approximate MP 242.0) has repeatedly expressed concern that his spring-fed water supply system would be interrupted or destroyed by pipeline construction. His issues were addressed in the 2001 FEIS for the Millennium Pipeline Project; and the Commission addressed his issues in the Interim Order issued December 19, 2001, and in the Millennium Order issued September 19, 2002. In the 2001 FEIS we recommended a minor route variation that would realign the CWA further upslope to a location where construction workspaces would be no closer than about 165 feet away from the spring and cistern. The Supas have expressed concern that this variation, as well as the NYSEG Tioga-Broome Variation, would not be enough to protect their water supply system, which would be downslope of the proposed construction workspace. They believe that the construction ROW would still be too close to the water supply.

The 2001 FEIS recommended and the Interim Order required Millennium to conduct a study of the water supply system on the Supa property. Environmental condition 58 required that:

- Millennium should prepare a report that contains the following information regarding the water supply system on the Supa property (approximate MP 242.0):

    a. the elevation of the spring outlet and cistern;
    b. the water bearing stratum for the spring at source, if possible;
    c. the depth to water along the pipeline trench, and the water bearing strata along the pipeline trench and orthogonal (right angle) downhill to spring;
    d. if the pipeline trench or sidehill cut would intersect the water bearing stratum that feeds the spring or the spring's water source, determine if the pipeline trench would convey water away from the spring based on trench elevations; and,
    e. if the pipeline trench would convey water away from the spring, develop engineering and/or other mitigation measures (including a reroute upslope to avoid the water table) to maintain uninterrupted flow to the spring and cistern.

The report should include site-specific diagrams as necessary to illustrate the flow of water to the spring and cistern and shall be filed with the Secretary for review and written approval by the Director of the OEP before construction.

Due to delays in getting access to the Supa property to begin the required study, it is still ongoing. The study began in September 2005 after test holes were drilled to measure groundwater levels. Measurements will be taken over a one year period after which Millennium will have a report prepared to analyze the collected data. Millennium anticipates that the final report will be completed in autumn 2006.

The Supas have expressed concern about the water table levels indicated by interim piezometer measurements from the test holes on the Supa property. The Supas state that water level measurements taken by Millennium in 2005 and 2006 indicate that water in some areas was at a depth less than eight feet from the ground surface. They conclude that it would be possible that the depth required for trench excavation, estimated by Millennium to be about 8 feet in this area, could disturb (either temporarily or permanently) the conditions necessary for the continued optimal operation of the Supas' water supply.

Because study by Millennium of the Supas' water supply system is ongoing, we cannot speculate about its conclusions. However, if after review of the study, we determine that trench construction would intersect the aquifer supplying the Supas' water supply system, the Commission required in the Interim Order that as a contingency Millennium should "develop engineering and/or other mitigation measures (including a reroute upslope to avoid the water table) to maintain uninterrupted flow to the spring and cistern." We believe that our review of the required report will show whether pipeline construction is likely to impact the water supply system as well as the potential extent of such impact. If our analysis indicates that pipeline construction would not affect it, then the proposed route would be acceptable. If our analysis concludes the proposed pipeline route would affect the Supas' water supply system, then Millennium would be required to develop an alternative plan for construction across this property to mitigate the impact on groundwater.

We believe that Millennium should develop a site-specific plan for construction and restoration across the Supa property (approximate MP 242.0). Millennium may consider the use of alternative construction techniques that would limit the impact of construction rather than conventional pipeline construction, such as the stove-pipe method. For stove-pipe construction, a short section of trench is dug, a section of pipe is laid and welded into place, and that section of the trench is backfilled immediately. Millennium may also consider limiting access across the Supa property after construction is complete which may facilitate successful restoration. Therefore, **we recommend that:**

- **Millennium develop a site-specific plan for construction and restoration across the Supa property (approximate MP 242.0). In developing the plan, Millennium should consider alternative construction methods, such as the stove-pipe method, and limited access across the Supa property along the construction ROW after construction. Millennium should file the site-specific plan with the Secretary for review and written approval of the Director of OEP prior to construction in this area.**

The only well in the vicinity of the proposed Millennium compressor station would be the well supplying Columbia's existing Corning Compressor Station. The construction and operation of the new compressor station adjacent to the existing station are not expected to affect this well.

All construction and operation activities would be conducted in accordance with Millennium's ECS and SPCC Plan, as well as our Procedures, to minimize any potential to groundwater impacts. If Millennium implements the identified construction procedures, the applicable requirements of the

Commission's Interim Order and Final Order, and the additional recommendations in this EIS, we believe that construction and operation of the proposed aboveground facilities and route variations would not significantly impact groundwater resources.

4.3.1.4 Empire Connector Project

No state-designated primary aquifers or EPA-designated sole source aquifers would be crossed by the proposed project (including the proposed Oakfield Compressor Station).

The Empire Connector Project would not cross any local wellhead protection areas. However, the New York State Department of Health (NYSDOH) indicates that the Yates County Planning Department has proposed a Wellhead Protection Project Area for the Village of Dundee Public Water Wells. This proposed wellhead protection area (aquifer recharge area) is tentatively identified and is subject to change based on future groundwater flow evaluation and groundwater modeling by the Yates County Planning Department. The closest Village of Dundee supply well associated with these proposed wellhead protection areas would be about 0.75 miles due east of CMP 50.9. The proposed pipeline would cross the tentative wellhead protection area between approximate CMPs 50.5 and 52.0, a total crossing length of about 1.5 miles. Since this wellhead protection area is not yet final, there would be no additional requirements for construction.

No public supply wells would be within 150 feet of the construction workspaces for the Empire Connector Project including the pipeline and the compressor station. However, nine private water supply wells and springs would be within 150 feet of the construction workspaces (table 4.3.1.4-1).

Table 4.3.1.4-1
Private Supply Wells within 150 Feet of the Empire Connector Project

Facilities	Type	Approximate Milepost a/	Approximate Distance from Construction Work Space (feet)
Pipeline	Private Well	0.5	150
	Private Well	3.9	128
	Private Well	43.0	99
	Private Well	44.2	31
	Private Well	56.6	60
	Private Well	76.5	60
	Private Well	91.2	61
Compressor station access road	Private Well	N/A	41

Groundwater Impacts and Mitigation

Construction and operation of the Empire Connector Project is not expected to adversely affect groundwater quality. Impacts to private water wells would be avoided or minimized by performing all construction and operation activities in accordance with the Empire's ESCAMP and our Plan and Procedures.

Some landowners filed comments expressing their concern over the proximity of wells to Empire's proposed pipeline and the possible impact of construction-related activities, including blasting, on well water quality. Although circumstances may occur where blasting may be necessary during construction, Empire states it would follow established industry practices and applicable federal, state, county, and local laws,

regulations, and ordinances to minimize the potential for blasting activities to affect nearby water supply wells. Further, Empire states that it would conduct pre- and post-construction testing of all drinking water wells within 150 feet of the construction ROW with landowner permission. Monitoring of drinking water well yields and water quality would include testing prior to construction to establish pre-construction conditions. Unfiltered water samples would be collected and analyzed at a laboratory for water quality parameters including: coliform bacteria, nitrate, pH, total dissolved solids (TDS), sulfate, iron, manganese, lead, hardness, barium, and strontium. Well yield would be established by interview with the homeowner and confirmation that water runs for at least 20 minutes. This testing would be completed again after construction to determine construction impact on the monitored wells.

If it is determined that any private water supply well is damaged as a result of the project, Empire states that it would ensure that a temporary source of water is provided until the damaged supply well is restored to its former capacity. Empire also states that it would compensate the owner or repair or replace potable water supply systems that are damaged by construction.

We believe that information about water wells and springs should be updated prior to construction. Therefore, we **recommend that:**

- **Empire file with the Secretary the location by milepost of all drinking water wells and springs within 150 feet of the construction work area for the Empire Connector Project and include their distance and direction from the construction work area, before construction.**

To ensure that all issues relating to potential impact on water wells would be identified and addressed, **we recommend that:**

- **Empire include in its weekly construction progress reports any complaints concerning water supply yield or quality and how each was resolved. Within 30 days of placing the facilities in service, Empire should file a summary report identifying all potable water supply systems damaged by construction and how they were repaired.**

Refueling of vehicles and storage of fuel, oil, and other fluids during construction of the project could create a potential for both temporary and long-term contamination hazards to groundwater. This type of impact can be avoided or minimized by restricting vehicle refueling, maintenance, and hazardous material storage locations; and by requiring immediate cleanup of any spills or leaks. Empire would implement its SPCC Plan to address preventative and contingency measures that would be used to minimize the potential impact of a hazardous materials spill in areas where vehicles are refueled and hazardous materials are stored. The SPCC Plan includes procedures for storing hazardous materials; setbacks from sensitive resources; daily vehicle maintenance including checking for leaks; training of personnel handling hazardous materials; establishing, maintaining, and siting spill kits; inventorying hazardous materials; handling waste materials; and notifying emergency contacts in the event of a hazardous material spill.

In areas where the water table is high, trench dewatering may be required. Because the duration of trench dewatering at a given location would be relatively brief, potential impacts would be temporary and minor. Trench water would be discharged through sediment filter bags to well-vegetated upland areas. If the water being discharged from the filter bag appears excessively cloudy, then additional erosion controls would be positioned at least 25 feet from any waterbody and closely monitored to ensure proper function to prevent excessively turbid water from entering a waterbody.

If the Empire Connector Project is constructed and operated in a manner that is consistent with the procedures identified in its ESCAMP and SPCC Plan and our Plan and Procedures, we believe that impacts due to construction and operation of the proposed facilities to groundwater resources would be minimized.

4.3.1.5 Algonquin Ramapo Expansion Project

There would be four principal aquifer areas and one primary recharge zone in the vicinity of the Ramapo Expansion Project (see table 4.3.1.5-1).

Table 4.3.1.5-1
Aquifer Areas Crossed by the Algonquin Ramapo Expansion Project

Project Facility	Approximate Mileposts	Aquifer Area	Distance of Protection Area Crossed (mi)
Ramapo Pipeline Replacement	0 to 4.9	Ramapo Mahwah Primary Aquifer	4.9
Ramapo Meter Station	N/A	Ramapo Mahwah Primary Aquifer	<0.1
Hanover Compressor Station	N/A	Buried Valley Aquifer	<0.1
Southeast Compressor Station	N/A	Haines Pond Aquifer System of the Town of Southeast	<0.1
Brookfield Meter Station	N/A	Primary Recharge Zone of the Town of Brookfield Aquifer Protection District	<0.1

The proposed 4.9-mile-long pipeline replacement and the Ramapo Meter Station modifications would be within the Ramapo River Basin Aquifer System, which has been designated by the EPA as a sole source aquifer. (This aquifer is found underlying NE-07 Project areas in Orange and Rockland Counties, New York.) Ramapo River Basin Aquifer Systems consist of the hydraulically connected aquifers contained within the Ramapo River Basin (EPA 2005). The aquifers include the highly productive valleyfill aquifer in the Ramapo and Mahwah River valleys, and the bedrock aquifer which underlies the eastern portion of the Ramapo River Basin to the east of the Ramapo River in New Jersey and the Mahwah River in New York. In New York, the aquifers include the NYSDEC-designated Ramapo Mahwah Primary Aquifer. The valleyfill aquifer is a surficial aquifer that ranges from 20 to 40 feet in depth within the project area and up to 200 feet in depth along the center of the Ramapo River valley. Within the project area, the valleyfill deposits are unconfined and consist mainly of sand and gravel. The unconfined nature of the aquifer and the hydraulic connection between the aquifer and the Ramapo River makes potential contamination from surface sources a water quality concern.

The proposed modifications to the Hanover Compressor Station in Morris County, New Jersey, would be within the Buried Valley Aquifer System, and EPA-designated sole source aquifer. The Buried Valley Aquifer System area lies in north-central Morris, Union, Essex, and Somerset Counties, New Jersey. Two different types of aquifers occur in the area and these form the aquifer system. One, of regional extent, underlies the entire area and is comprised of consolidated rocks of Triassic Age. The other consists of unconsolidated rocks of Quaternary Age which are buried valley or valley-fill deposits of sand or sand and gravel. Groundwater flows from the upland or hill areas, underlain by Triassic rocks into lowland areas underlain by Quaternary unconsolidated deposits. Under natural conditions groundwater discharges into streams and swamps that drain the low areas. Because groundwater flows from the rocks of Triassic Age into the unconsolidated deposits of Quaternary Age, the two types of aquifers are hydraulically interconnected and comprise a groundwater system. Most of the water pumped for public supply in the service area of the Buried Valley Aquifer System is derived from Quaternary Age deposits. (EPA, 2006).

Water quality of the aquifer is generally good. However, the Buried Valley Aquifer System is highly vulnerable to contamination due to high soil permeability and shallow depth to groundwater. Major pollutants include septic tank effluent, road de-icing salts, and other street runoff. Because the areas served by the aquifer are highly developed, all of these pollutants are presently degrading water quality in the aquifer.

There are two locally-designated aquifers within the Town of Southeast, Putnam County, New York. One aquifer is near Haines Pond on the north side of New York State Route (NY SR) 84. The proposed modifications to the existing Southeast Compressor Station would be on the south side of NY SR 84 within the Haines Pond aquifer area. The second locally-designated aquifer is southwest of Bog Brook Reservoir which serves as the Brewster Village public water supply. However, this aquifer system is about two miles west-north-west of the existing Southeast Compressor Station, does not extend to the Southeast Compressor Station property, and would not likely be affected by project construction. These aquifer systems are also associated with the surface water reservoirs in the Town of Southeast that not only serve the residents of Southeast but also supply part of New York City's municipal water supply.

Any project that creates a land disturbance of greater than two acres within the aquifer system is required to submit a Storm Water Pollution Prevention Plan (SWPPP) to the New York City Department of Environmental Protection (NYCDEP) for its review and approval. Construction at the Southeast Compressor Station would disturb about 12.3 acres during construction, all within Algonquin's existing property.

The City of New York Law Department filed comments on February 10, 2006, on behalf of the NYCDEP, expressing concerns about impacts the NE-07 Project may have on New York City's water supply. In particular, the NYCDEP is concerned with Algonquin's proposed Southeast Compressor Station, which would be within the East Branch Reservoir drainage basin. The NYCDEP has designated the East Branch Reservoir as phosphorous restricted, meaning that phosphorous levels in the water do not comply with state guidance values for phosphorous levels, and should be reduced. In addition, the NYSDEC has determined under the federal Clean Water Act that the East Branch Reservoir exceeds its total maximum daily load of phosphorous, meaning that the phosphorous loadings in the reservoir will not allow the reservoir to meet water quality standards. To reduce phosphorous loadings, NYSDEC has concluded that existing non-point source loadings of phosphorous must be reduced, and new non-point sources should not contribute phosphorous to the reservoir.

The NYCDEP has identified the following concerns about project construction with regards to East Branch Reservoir water quality:

- potential disturbance to watercourses, wetlands, and associated buffer areas,
- alteration of quality and quantity of post-construction stormwater runoff,
- the creation of maintenance-intensive impervious surfaces, and
- the risk of erosion and sedimentation during construction.

The NYCDEP asks that Algonquin consider a porous alternative to asphalt surfacing for access roads to the site. Minimizing the extent of new impervious surfaces ultimately limits the rate, volume, and pollutant load of stormwater runoff at the source. Additionally, the NYCDEP asks that Algonquin adhere to strict limits of disturbance at the site to minimize the loss of woodland. We note that Algonquin is proposing to modify its existing Southeast Compressor Station and that areas disturbed for the new construction that would not be foundations would likely be gravel covered or restored as maintained lawns. Project construction would require removal of about 4.1 acres of forest to accommodate construction workspaces, and about 0.5 acre would be permanently removed for operation of the new facilities.

Consistent with restoration of other temporary workspaces, Algonquin would restore disturbed areas after construction, and this may include plantings. Additional forest restoration may be required by the NYCDEP and would then be included in the SWPPP.

In addition to gaining NYCDEP approval of Algonquin's SWPPP, the NYCDEP states that it would require Algonquin to include detailed erosion and sediment control drawings, and phasing and construction sequencing plans in accordance with accepted industry standards and guidelines in its SWPPP. Algonquin states that it would prepare a SWPPP, would file it with the NYCDEP for review and approval in May 2006, and would incorporate applicable requirements of the NYCDEP into its E&SCP.

The proposed Brookfield M&R Station, Fairfield County, Connecticut, would not be constructed over any state-designated primary or principal aquifer, or any EPA-designated sole source aquifer. The proposed facilities would be constructed adjacent to Algonquin's existing regulating station #251. The Brookfield M&R Station would be within the locally-designated Primary Recharge Zone of the Town of Brookfield Aquifer Protection District. Additional information regarding construction in the aquifer protection district is provided below in Section 4.3.1.6.

Eleven private water supply wells would be within 150 feet of the proposed pipeline replacement construction ROW. The exact locations of these wells in relation to the construction workspace would be verified during easement acquisition before construction and should be marked on the construction alignment sheets. To date, Algonquin has not supplied the exact locations of these wells beyond an approximate milepost. Therefore **we recommend that:**

- **Algonquin file with the Secretary prior to construction the locations by milepost of all drinking water wells and springs within 150 feet of all construction work areas for the Ramapo Expansion Project and include their distance and direction from the CWA, before construction. The project alignment sheets should indicate these well and spring locations.**

Rockland County Health Department Groundwater Protection Zones and Wells (GPZW) maps indicate that the proposed Hudson River Valve Site would be within the 1,500-foot buffer to one public water supply well. Within this buffer, all contained chemical storage sites must be located at least 200 feet from any known well. This site would be about 400 feet south of the nearest public supply well which is adjacent to Liberty Drive. Algonquin stated that it would construct its proposed facility modification in a manner that would be consistent with this requirement. All work areas would be about 400 feet from the public water supply well.

There are no other known public or private water supply wells located within 150 feet of the Hudson River Valve Site.

Rockland County Health Department GPZW maps, as well as consultation with the Rockland County Health Department, indicate that the proposed modifications to the Stony Point Compressor Station would be about 1,500 feet east-northeast of one public-supply well, in the vicinity of Swim Club Road and County Route 69. Within the county's required 1500-foot buffer, all contained chemical storage sites must be at least 200 feet from any known well. In addition, fertilizer and/or pesticide mixing, clean up areas, and all other known sources of contamination must also be 200 feet from any known well. Algonquin stated that it would construct its proposed facility modification in a manner that would be consistent with this requirement. All work areas would be about 1,500 feet from any public water supply well.

There are no known private wells located within 150 feet of the proposed construction area at the Stony Point Compressor Station.

According to the NJDEP GIS database, the existing Hanover Compressor Station would be constructed within a wellhead protection area (WHPA) surrounding a public community water supply. As defined by the NJDEP, a wellhead protection area is a map area that delineates the horizontal extent of groundwater captured by a public supply well pumping at defined rates. These delineations are the first step in defining the source of water to a public supply well, and are conducted in response to the Federal Safe Drinking Water Act of 1986 and 1996 as part of the Source Water Area Protection Program. Under this program, states are required to perform assessments for each and every public water system. Hanover Township has not yet formally adopted the Wellhead Protection model ordinance, and therefore currently lacks formal requirements for material storage or other activities within WHPAs. The proposed workspace for the Hanover Compressor Station would be at least 2,000 feet north-northwest of two public wells, known as the Black Brook Well Field.

Algonquin states that there would be no private water supply wells within 150 feet of the proposed modifications to the Southeast Compressor Station in New York.

In addition, Algonquin states that there would be no known active public or private water supply wells on or within 150 feet of the proposed Oxford Compressor Station site.

Groundwater is the primary source of drinking water for residences near the existing Iroquois Brookfield Sales Meter Station and Algonquin's regulating station #251 on High Meadow Road in Brookfield, Connecticut. Algonquin's proposed project area at the existing station site would be over 400 feet from the closest public drinking water supply wells and would not be within associated wellhead protection areas. Residences along High Meadow Road are served by private wells, and the closest well would be about 175 feet north of the proposed meter station fence boundary and about 325 feet from the proposed control building. The well would also be about 100 feet northeast of the edge of the proposed access road for the facility.

We have recommended that Algonquin conduct a pre-construction survey to verify the location of any wells within 150 feet of the construction workspaces. This would include workspaces at aboveground facilities.

Groundwater Impacts and Mitigation

Construction and operation of the Ramapo Expansion Project is not expected to adversely affect groundwater quality. It would be constructed and operated within four principal aquifer areas. Eleven private wells would be within 150 feet of the proposed pipeline replacement portion of the project in Rockland County, New York. No private water wells would be within 150 feet of any other project areas with the exception of the well Iroquois plans to drill at its proposed Brookfield Compressor Station site in Fairfield County, Connecticut (see section 4.3.1.5 for additional information). The proposed Brookfield M&R Station site would be within a locally-designated primary recharge zone for the Town of Brookfield. The Hanover Compressor Station in Morris County, New Jersey, would be within a wellhead protection area. All construction and operation activities would be conducted in accordance with Algonquin's E&SCP and SPCC Plan, and our Plan and Procedures to minimize any potential for groundwater impacts. If blasting would occur, Algonquin would monitor all drinking water wells within 150 feet of the construction ROW to determine drinking water well yields and water quality. If it is determined that any private water supply well is damaged as a result of the project, Algonquin states that it would ensure that a temporary source of water is provided until the damaged supply well is restored to its former capacity. Algonquin also states that it

would compensate the owner or repair or replace potable water supply systems that are damaged by construction.

To ensure that all issues relating to potential impact on water wells would be identified and addressed, **we recommend that:**

- **Algonquin include in its weekly construction progress reports any complaints concerning water supply yield or quality and how each was resolved. Within 30 days of placing the facilities in service, Algonquin should file a summary report identifying all potable water supply systems damaged by construction and how they were repaired.**

In areas where the water table is high, trench dewatering may be required. Because the duration of trench dewatering at a given location would be relatively brief, potential impacts would be temporary and minor. Trench water would be discharged to well-vegetated upland areas or into properly constructed dewatering structures or filter bags. No heavily silt-laden waters would be allowed to directly enter any waterbody or wetland in accordance with our Plan and Procedures and Algonquin's E&SCP.

Although circumstances may occur where blasting is necessary, Algonquin would follow established industry practices and applicable federal, state, county, and local laws, regulations, and ordinances to minimize the potential for blasting activities to affect nearby water supply wells. If blasting is required within 150 feet of any wells, pre- and post-construction testing of well yield and water quality would be conducted with the well owner's permission. If it is determined that any private water supply is damaged as a result of the project, Algonquin would ensure that a temporary source of water is provided until the damaged supply well is restored to its former capacity.

Refueling of vehicles and storage of fuel, oil, and other fluids during the construction phase of the project could create a potential for both temporary and long-term contamination hazards to groundwater. Algonquin would implement its SPCC Plan to address preventative and contingency measures that would be used to minimize the potential impact of a hazardous materials spill in areas where vehicles are refueled and hazardous materials are stored. The SPCC Plan includes procedures for storing and inventorying hazardous materials; emergency response including emergency contacts; employee training in hazardous waste management procedures; loading and unloading areas including set backs from environmentally sensitive areas; daily vehicle maintenance including checking for leaks; training of personnel handling hazardous materials; establishing, maintaining, and siting spill or emergency response kits; and spill cleanup and waste disposal. It does not however, include procedures concerning daily vehicle maintenance to check for leaks of fuel, lubricants, hydraulic fluids, etc. We believe additional measures should be included in the SPCC Plan to address this issue in a manner that is consistent with other project sponsors. Therefore, **we recommend that:**

- **Algonquin expand its SPCC Plan to specifically include a requirement that all construction equipment be inspected daily for leaks.**

The Hanover Compressor Station, Morris County, New Jersey, would be within a wellhead protection area, but greater than 2,000 feet from public wells. To date, the township does not have any formal requirements for material storage or construction activities within the wellhead protection area. However, to ensure impacts to groundwater in the wellhead protection area are prevented, Algonquin would implement the protocols and mitigation measures outlined in preconstruction documents reviewed by the NJDEP Freshwater Wetlands Program, the New Jersey Pollutant Discharge Elimination System, and through county approval of Algonquin's E&SCP. Algonquin would obtain all appropriate permits and plan approvals prior to construction within the wellhead protection area.

The Brookfield M&R Station would be within a locally designated Primary Recharge Zone of the Town of Brookfield Aquifer Protection District. During construction of the Brookfield M & R Station, Algonquin would conform to all local regulations regarding construction in this Primary Recharge Zone. Further, Algonquin would implement its SPCC and PPC Plans, which outline the procedures for handling, transport, and storage of hazardous or contaminant materials, and which minimize hazards to human health and/or the environment from any unplanned releases of oils, toxics, or other polluting materials to the air, soil, surface water, or groundwater. In addition, Algonquin also has in place environmental Standard Operating Procedures that are utilized by personnel after a facility is in operation. These cover the safe handling, transport, and storage of hazardous materials including spent filter separator filters and pipeline liquids, in the event that liquids are collected from the pipeline during operation. Details about the town's zoning regulations for construction projects in the aquifer protection district are provided below in Section 4.3.1.6.

We have received several comments about the filter separator that Algonquin would construct as part of its proposed M&R station and concern that it may contaminate groundwater. A filter separator physically removes or filters any impurities that may be in the gas that has been transported through the pipeline before it enters the compressor. It typically removes solid materials like dust, sand, or grit; and residual moisture or condensation. This liquid may or may not contain hydrocarbon, so the liquid may be an oil and water mixture. The amount of this material is generally small. Algonquin anticipates that the amount of filtered fluid would be a couple of gallons per month at the Brookfield M&R station. Removal of impurities from the natural gas prior to compression allows for efficient and safe operation of the compressor.

Algonquin states that the filter separator would be designed, manufactured, inspected, and tested in accordance with the requirements of its design specifications and the American Society of Mechanical Engineers (ASME) section VIII, division 1, Boiler and Pressure Vessel Codes. The lower body of the separator would have a capacity of about 100 gallons. Collected impurities would be transported off-site for disposal in accordance with applicable laws and regulations. Removal of the impurities may occur two times a year. A filter separator with a 100 gallon capacity would have adequate storage space for the anticipated amount of impurity collection. Algonquin has a standard SPCC Plan it uses during operation of all aboveground facilities, which addresses hazardous material storage, containment, and removal. We believe that use of the operational SPCC Plan would prevent or contain hazardous spills minimizing potential impact to groundwater.

Proposed construction activities at the existing Hudson River Valve Site and the Stony Point Compressor Station in Rockland County, New York, would be within the 1,500-foot buffer zones of public water supply wells. Algonquin would comply with the above-listed requirements for contained chemical storage sites and other potential contaminants, and ensure that such sites were at least 200 feet from any known public water supply well. Further, Algonquin would use its SPCC Plan and E&SCP for all construction and restoration activities at these locations. Their use along with our recommendations and the requirements of the Rockland County Health Department should minimize or avoid impacts to water supply wells.

The proposed Ramapo Expansion Project construction and operation is not expected to adversely impact groundwater resources because it would be constructed and operated in accordance with local requirements, our recommendations, and implementation of Algonquin's SPCC Plan and E&SCP.

4.3.1.6 Iroquois MarketAccess Project

Table 4.3.1.6-1 lists the two principal aquifer areas that would be in the vicinity of the MarketAccess Project. The Great Swamp Aquifer underlies the existing Dover Compressor Station, Dutchess County, New York, and is a principal aquifer for the region. The aquifer is developed within glacially deposited sands and gravels. The aquifer serves public water supply wells, but current urban land uses present significant groundwater contamination risks. This aquifer is not a federally designated sole-source aquifer.

The groundwater resources underlying the proposed Brookfield Compressor Station site, Fairfield County, Connecticut, are not part of any state-designated primary or principal aquifer, or EPA-designated sole source aquifer. The proposed station site occurs within the locally-designated Primary Recharge Zone of the Town of Brookfield Aquifer Protection District. The Town of Brookfield, Connecticut, has established zoning regulations for activities and proposed developments within this district. These regulations protect public health by preventing contamination of the ground and surface water resources that provide the water supply or potential water supply to the Town of Brookfield. The zoning regulations provide guidance for permitting activities proposed within the district as well as a list of uses that are specifically prohibited. Iroquois states it would adhere to all guidelines and prohibitions in the Town of Brookfield Zoning Regulations to protect groundwater resources.

Table 4.3.1.6-1
Aquifer Areas Crossed by the Iroquois MarketAccess Project

Project Facility	Approximate Mileposts	Aquifer Area	Distance of Protection Area Crossed (mi)
Brookfield Compressor Station	N/A	Primary Recharge Zone of the Town of Brookfield Aquifer Protection District	<0.1
Dover Compressor Station	N/A	Great Swamp Aquifer	<0.1

Groundwater is the primary source of drinking water for residences near both project sites. Both project sites would be over 400 feet from public drinking water supply wells and would not be within wellhead protection areas.

The closest private water supply well to the proposed Brookfield Compressor Station site is on-site at Iroquois' existing Brookfield Sales Meter Station on High Meadow Road, Brookfield, Connecticut. This well would be abandoned and replaced by a new water well that would be used the supply the station with potable drinking water. The only other existing well near this project site is at 67 High Meadow Road, across the street from Iroquois' existing Sales Meter Station and Algonquin's existing regulating station #251. This off-site well is more than 150 feet from proposed construction areas, and is about 100 feet from Iroquois property. There is a planned residence east of 67 High Meadow Road that is under construction and that could have a well installed within 200 feet of the project site. Because the status and location of this well is unknown at this time, **we recommend that:**

- **Iroquois file with the Secretary the locations of all drinking water wells and springs within 150 feet of all construction work areas for the MarketAccess Project and include their distance and direction from the construction work area, before construction. The project plot plans should indicate these well and spring locations.**

The Dover Compressor Station site has an existing well that was installed as part of the compressor station's construction several years ago. No other private water supply wells would be within 150 feet of the proposed construction site based on records maintained by the Dutchess County Health Department.

Groundwater Impacts and Mitigation

Construction and operation of the MarketAccess Project is not expected to adversely affect groundwater quality. All construction and operation activities would be conducted in accordance with our Plans and Procedures to minimize any potential for groundwater impacts.

The proposed Brookfield Compressor Station would be within a locally designated Primary Recharge Zone of the Town of Brookfield Aquifer Protection District. The Town of Brookfield has established zoning regulations for activities and proposed developments within this district. Iroquois would adhere to all guidelines and prohibitions in the Town of Brookfield Zoning Regulations to protect groundwater resources. The proposed use of the site to house a metering facility is specifically permitted. Further, the storage of hazardous or contaminant materials at the site is not a primary activity of the metering facility. These types of materials may be stored at the site in a controlled manner to support the operation and maintenance of the facility. During construction of the meter station, Iroquois would implement its SPCC and PPC Plans to minimize hazards to human health and the environment from any unplanned release of hazardous materials.

Recent monitoring results of wells on Iroquois' 68.3-acre Brookfield, Connecticut property show that groundwater is meeting state water quality standards. The former site owner of the property undertook a voluntary clean-up of the property under Connecticut General Statute 22a-133x. Because the Brookfield site is located in an area where private residences utilize groundwater for potable supply and given the public's interest in the site, the CTDEP elected to retain oversight of the site clean-up. This site has undergone soil remediation conducted under a Connecticut voluntary remediation program pursuant to Connecticut General Statute 22a-133x. Groundwater monitoring is being completed in accordance with the Connecticut Remediation Standard Regulation. As of December 2005, all known debris areas had been removed from the Brookfield site. Based on recent groundwater monitoring results, the former site owner has requested that the CTDEP determine that no further monitoring is needed. This determination is pending at this time. Iroquois would forward to the Commission any additional information received from the CTDEP concerning the clean-up status of the Brookfield site. Significant groundwater contamination is not known to be present at the Brookfield project site.

Iroquois proposes to install an onsite private well for the proposed Brookfield Compressor Station. This private well would serve the potable water needs of the control building, which is anticipated to be at a rate of about 200 to 300 gallons per day. In addition to standard sanitation and drinking water purposes, less than 55 gallons of water would be required for turbine blade cleaning once per quarter. An environmentally safe degreasing agent is mixed with water and sprayed on turbine blades. The solution generated from the cleaning would be collected and stored in a 55-gallon drum and hauled off-site to an approved environmental disposal company. The volume of potable water being used for on-site purposes is anticipated to be minimal, and its withdrawal should not have a significant impact on groundwater resources of the region.

Because the site is not serviced by a municipal wastewater system, the proposed method of wastewater disposal for the Brookfield Compressor Station would be an onsite septic system. Iroquois expects to have a site-specific soil evaluation study conducted that would include test pit excavation and percolation tests. A wastewater disposal system would subsequently be designed for the site conditions, based on applicable CTDEP standards, including wastewater loading rates and the site soil conditions.

Because this compressor station is expected to be generally unmanned, the amount of wastewater generated should to be minimal. The aquifer protection zoning district regulations do not prohibit domestic sewer systems in this area.

The Dover Compressor Station site would be within the recharge area of the Great Swamp Valley Bottom Aquifer. No aquifer protection programs have been identified for proposed activities in this aquifer recharge area. Significant groundwater contamination is not known to be present at the Dover project site.

Refueling of vehicles and storage of fuel, oil, and other fluids during the construction phase of the project could create a potential for both temporary and long-term contamination hazards to groundwater. Iroquois would implement its SPCC Plan to address preventative and contingency measures that would be used to minimize the potential impact of a hazardous materials spill in areas where vehicles are refueled and hazardous materials are stored. The SPCC Plan includes procedures for storing and inventorying hazardous and waste materials; emergency response including emergency contacts and notification; employee training in hazardous waste management procedures; set backs from environmentally sensitive areas; equipment maintenance; training of personnel handling hazardous materials; establishing, maintaining, and siting spill or emergency response kits; and spill cleanup and waste disposal. We recommended in the DSEIS that Iroquois expand its SPCC Plan to specifically include a requirement that all construction equipment be inspected daily for leaks. In its July 31, 2006 comments on the DSEIS, Iroquois committed to this recommendation and filed a revised SPCC Plan which included this requirement. We believe Iroquois' revised SPCC Plan adequately addresses this issue.

In areas where the water table is high, trench or excavated area dewatering may be required. Because the duration of dewatering at a given location would be relatively brief, potential impacts would be temporary and minor. Water would be discharged to well-vegetated areas adjacent to the ROW, where available. Otherwise, the discharge would be directed through appropriate sediment control devices.

Iroquois does not anticipate the need to do any blasting to construct its proposed facilities in Brookfield, Connecticut, or Dover, New York. However, if it is necessary, Iroquois would follow established industry practices and applicable federal, state, county, and local laws, regulations, and ordinances to minimize the potential for blasting activities to affect nearby water supply wells.

The proposed MarketAccess Project construction and operation is not expected to adversely impact groundwater resources since it would be constructed and operated in accordance with our Plan and Procedures, local requirements, our recommendations, and implementation of Iroquois' SPCC Plan.

4.3.2 SURFACE WATER RESOURCES

For the purpose of this SEIS, surface water resources are synonymous with waterbodies. Our Procedures define "waterbody" as any natural stream, river or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes. However, the Clean Water Act regulates streams, rivers and drainages whether or not they exhibit perceptible flow. Wetlands are described separately in section 4.7.

4.3.2.1 General Construction and Operation Impacts and Mitigation

Construction of the NE-07 Project pipeline and aboveground facilities and hydrostatic testing could affect surface waters in a variety of ways. Clearing and grading of stream banks, blasting, in-stream trenching, trench dewatering, and backfilling could result in modification of aquatic habitat, increased sedimentation, turbidity, decreased dissolved oxygen concentrations, stream warming, releases of chemical and nutrient pollutants from sediments, and introduction of chemical contamination, such as fuel and lubricants.

The greatest potential impacts on surface waters would result from suspension of sediments caused by in-stream construction and by erosion of cleared stream banks and ROW. The extent of the impact would depend on sediment loads, stream velocity, turbulence, stream bank composition, and sediment particle size. These factors would determine the density and downstream extent of the turbid plume of sediment. Turbidity resulting from suspension of sediments due to in-stream construction or erosion of cleared ROW areas would reduce light penetration and the corresponding photosynthetic oxygen production. Re-suspension of deposited organic material and inorganic sediments would cause an increase in biological and chemical intake of oxygen, also resulting in a decrease of dissolved oxygen.

Clearing and grading of the stream banks would expose large areas of soil to erosional forces and would reduce riparian vegetation along the cleared section of the stream. The use of heavy equipment for construction may compact near-surface soils, an effect that could result in increased runoff into waterbodies. The increased runoff could erode stream banks, resulting in increased turbidity levels and sedimentation rates of the receiving waterbody. Impact on water temperatures would be expected to be minimal because of the limited length of stream bank canopy that would be cleared for the pipeline crossing.

Refueling of vehicles and storage of fuel, oil, or other fluids near surface waters may create a potential for contamination due to accidental release. If a spill were to occur, immediate downstream users of the water would experience a degradation in water quality. Acute and chronic toxic impacts to aquatic organisms could result from such a spill. The potential for spills would be reduced by implementation of the required SPCC Plan.

Adverse effects on water quality could also result from the re-suspension of pollutants from previously contaminated sediments during in-stream excavation activities. The amount of contamination released from resuspended sediments would depend on the existing concentration and on the sorptive capacity of the surrounding sediments. The use of dry crossing construction techniques to cross streams would substantially reduce downstream migration of resuspended contaminants.

The project sponsors would verify pipeline integrity by hydrostatic testing, which is conducted by pressurizing the pipeline with water and checking for pressure losses resulting from leakage. Withdrawal of test water from streams and rivers could temporarily affect downstream users and aquatic organisms (primarily fish) if the diversion constituted a large percentage of the source's total flow. Impacts could include temporary disruption of surface water supplies, temporary loss of habitat for aquatic species, increased water temperatures, depletion of dissolved oxygen levels, and temporary interruption of spawning, depending on time of withdrawal and current downstream users. In general, these impacts would be minimized by obtaining hydrostatic test water from waterbodies with sufficient flow to supply required test volumes without significantly affecting downstream flow. Impacts on spawning would further be minimized by performing hydrostatic testing during non-spawning periods (July 1 through September 3 or December 1 through March 3) to the extent practicable and in a manner consistent with the section 401 WQC that may be issued for the project.

Potential impacts resulting from the discharge of hydrostatic test waters into streams and upland vegetated areas would be generally limited to erosion of soils and some subsequent degradation of water quality from increased turbidity and sedimentation. High velocity flows could cause erosion of the stream banks and stream bottom, resulting in temporary release of sediment. Continued erosion of the discharge area could occur if it is not properly stabilized with erosion control devices.

In accordance with our Procedures and each project's environmental construction standards, all intake hoses would be screened and protective measures would be implemented to minimize erosion during discharge of test-water. If hydrostatic test water would be discharged directly into any waterbody, the project sponsor would acquire all necessary permits before starting this activity. Hydrostatic test water may also be discharged into well-vegetated upland areas and/or through sediment filter devices or sediment traps. Erosion would be minimized by the use of energy dissipation devices, control of discharge velocity, and proper location of water discharge following testing. In general, these discharges would not take place within 50 feet of waterbodies or wetlands. If it is necessary to discharge within 50 feet of waterbodies or wetlands due to topographic conditions, additional sediment filter devices would be used, as needed, to prevent sediment from entering waterbodies or wetlands.

In response to concerns raised by federal, state, and local agencies regarding the potential environmental impact of construction of pipeline projects in general, we developed our Procedures to provide a minimum level of protection for surface waters affected by pipeline projects. Applicable waterbodies include any streams or rivers with perceptible flow at the time of crossing and other permanent waterbodies, such as ponds and lakes. During development of the Procedures, we evaluated the effectiveness of various crossing methods (including open-cut and dry crossing methods) in mitigating potential impact on surface waters. The Procedures specify construction windows, in-stream construction duration constraints, sediment control procedures, and various fluming requirements to minimize potential impact from construction while providing an appropriate level of protection for a range of waterbody types. Waterbodies classified by the state as sensitive, high quality, or of exceptional value because of the presence of rare species, scenic qualities, recreational values, or important fisheries may require additional mitigation. Some of the more important aspects of the Procedures are summarized below:

- Minor waterbodies (less than or equal to 10 feet wide) supporting coldwater and significant warmwater fisheries would be crossed using a "dry crossing" or flume technique. A dry crossing involves placement of sand bags or other suitable structures in the waterbody channel to funnel stream flow into a flume pipe and past the work area. Trenching is conducted in a dry streambed under the flume pipe, thereby reducing the volume of sediment available for transport. In-stream construction work (except blasting) should be completed within 24 hours.

- Intermediate waterbodies (greater than 10 feet wide and less than or equal to 100 feet wide) would be crossed using either a dry crossing or a "wet crossing" (e.g., open-cut trenching) technique in which pipeline installation would be conducted in the water. If a wet crossing is used, in-stream construction work beginning with trenching should be completed within 48 hours unless blasting is required.

- Detailed, site-specific construction procedures for crossing each major waterbody (greater than 100 feet wide) would be developed and filed with the Secretary.

- Sediment barriers would be installed and maintained on stream banks immediately after initial ground disturbance adjacent to all waterbody crossings.

- All construction equipment (except that used by clearing crews) would be required to cross all minor waterbodies with a state-designated fishery classification, and all intermediate waterbodies, on one of three types of temporary bridge: equipment pads and culvert(s), clean rock fill and culvert(s), or a flexi-float or portable bridge.

- All stream banks would be stabilized and temporary sediment barriers would be installed immediately or, if stream bank soils are saturated, within 24 hours of completing the waterbody crossing. Sediment barriers would be maintained at all stream banks until revegetation of the ROW has been judged successful.

Grading of stream banks for installation of the pipeline and equipment bridges introduces large areas of disturbed earth near the waterbody that are often left exposed for long periods of time. Typically, streams are crossed using specialized tie-in construction crews that complete the crossing before or after the main pipeline crew. While equipment bridges would need to be installed across the waterbody to allow construction equipment access along the ROW, soil exposure can be reduced by limiting grading and clearing activities along stream banks. To minimize the amount of disturbed stream buffer areas before the actual stream crossing, grading would be limited to only the area needed to install the equipment bridge and any temporary work space. Any additional grading to the water's edge would be timed so that grading immediately precedes the actual pipeline trenching and installation process. Equipment bridges would be installed and removed within the timing restrictions set forth in the environmental construction standards unless the NYSDEC approves a change.

To allow us to monitor each project sponsor's implementation of its environmental construction standards and our Procedures, our Procedures require that each project sponsor prepare a schedule identifying when trenching or blasting would occur within each waterbody greater than 10 feet wide, or within any coldwater fishery, and file that schedule be with the Commission. The schedule would be updated to provide at least 14 days advance notice of the crossing, with 48-hour advance notice for any changes within the 14-day period.

We believe that implementation of the specifications in each project's environmental construction standards (which incorporate our Procedures), specifically with regard to construction time windows, erosion control, stream bank stabilization, revegetation, and hydrostatic testing, would minimize impacts on waterbodies that would be crossed by the pipeline. However, because the water quality of surface waters, including surface water discharges and the dredging and filling of waters of the U.S., is regulated by the COE, EPA, and NYSDEC, further water quality protection measures may be required by the NYSDEC in its section 401 Water Quality Certificate and may be required by other agencies. To construct and operate the proposed facilities, each project sponsor would obtain all applicable permits and comply with the requirements of these permits. These requirements may include site-specific waterbody construction plans or analysis of water samples for various water quality parameters after hydrostatic testing and before discharge.

4.3.2.2 MILLENNIUM PIPELINE PROJECT - PHASE I

Existing Surface Water Resources

The 2001 Millennium FEIS included a detailed review of surface waters that would be affected by the Millennium Pipeline Project; however, the number of waterbody crossings and the proposed crossing methods at some waterbodies have changed. We are providing updated information in this section.

Millennium conducted field studies in 2003, 2004, and 2005 to re-delineate streams along the pipeline corridor. Millennium filed an update of this information on July 31, 2006, and it has been included in this section and in appendix E1. However, access was not granted to all properties in the affected area. For portions of the construction area where survey access was denied, the results of fieldwork conducted in 1997 and 1998 were used, where available. For portions of the construction area where access has never been granted, surface waters were identified using aerial photography and USGS 7.5-minute quadrangle mapping.

The Millennium Pipeline Project - Phase I would affect a total of 556 waterbodies, of which 260 are perennial, 253 are intermittent, and 43 are ephemeral (see table E1 in appendix E). Waterbody locations are shown in Appendix B1. The waterbody totals include 503 surface waters that would be crossed by the pipeline and 53 that would be crossed by access roads or which would be adjacent to project workspaces. These totals include nine major waterbody crossings (major waterbodies are greater than 100 feet wide at the point of crossing and include lakes and ponds), 98 intermediate crossings (waterbodies that are greater than 10 feet wide but less than or equal to 100 feet wide at the point of crossing), 419 minor crossings (waterbodies that are less than or equal to 10 feet wide at the point of crossing) and an additional 27 waterbodies which would not be crossed by the pipeline and not classified by stream width (these include waterbodies that would be crossed by access roads). The recent field studies identified 298 more streams along the 189-mile-long Phase I pipeline route than were identified for the previously proposed project. This is due in part to access to additional properties and additional field work. No waterbodies would be affected by any of Millennium's proposed contractor/storage yards although there would be waterbodies adjacent to two storage yards.

Of the nine major waterbody crossings listed in table 4.3.2.2-1, seven would be named rivers or creeks (Chenango River, Susquehanna River, West and East Branches of the Delaware River, Callicoon Creek, Pochuck Creek, and Wheeler Creek), and two would be reservoirs (Mongaup/Rio Reservoir and Indian Kill Reservoir). Three waterbodies are designated or listed in either the Nationwide Rivers Inventory (NRI) or New York State inventory for their wild, scenic, or recreational values: West Branch Delaware, East Branch Delaware, and Wallkill Rivers (see section 4.8.3 of the 2001 FEIS for detailed descriptions).

The waters of New York are classified and protected on the basis of their existing or expected best use. These waters include classifications "AA," "A," "B," and those class C designated as trout (T) or trout spawning (TS) streams (see table H2 in appendix H of the 2001 FEIS for detailed descriptions of state water quality classifications). These waters are collectively referred to as protected waters and are subject to the stream protection restrictions of the NYSDEC Protection of Waters program. A total of 156 trout or trout spawning streams would be crossed by the pipeline, as identified in the table E1 in appendix E.

Table 4.3.2.2-1
Major Waterbody Crossing Techniques - Millennium Pipeline Project - Phase I

Milepost	Waterbody Name	Crossing Width / Top of Bank (feet)	Crossing Construction Method	State Water Use Classification a/
249.8	Chenango River	275	Dry Ditch	B
263.3	Susquehanna River	300	Horizontal Directional Drill	C
276.1	West Branch Delaware River	300	Horizontal Directional Drill	B(T)
287.4	East Branch Delaware River	512	Dry Ditch	C(T)
306.9	Callicoon Creek	190	Dry Ditch	C(T)
329.9	Mongaup River (Rio Reservoir)	675	Open Cut	B(T)
352.4	Pochuck Creek	113	Dry Ditch	C
357.4	Wheeler Creek	345	Open Cut	C
367.1	Indian Kill Reservoir	2500	Bottom Lay	A
Total:		**9 Crossings**		

a/ See Table H2 in our 2001 FEIS for water quality and fishery classifications

NYSEG and Warwick Isle Route Variations

In total, 49 of the 556 waterbodies associated with the Millennium Pipeline Project - Phase I would be along the three NYSEG Variations (see table E1 in appendix E). Included would be 30 perennial, 17 intermittent, and two ephemeral streams. These totals include 11 intermediate and 36 minor crossings. Two additional waterbodies were not classified by stream width as they would not be crossed by the pipeline, but they are near construction workspaces. No major waterbodies would be crossed along the NYSEG Variations. Nine of the waterbodies are designated as trout or trout spawning waters.

Two perennial waterbodies would be crossed as part of the Warwick Isle Route Variation (see table E1 in appendix E). Both waterbodies would be about 15 feet wide at the pipeline crossing, so they would be classified as intermediate crossings. Neither of the waterbodies is designated as trout or trout spawning waters.

Corning Compressor Station

One intermittent stream, an unnamed tributary of the Chemung River, would be near the eastern boundary of the proposed Corning Compressor Station property. However, it would be outside the proposed workspace for the compressor station.

Columbia Line A-5 Replacement Project

The Line A-5 Replacement Project would cross 30 waterbodies. Access roads for the proposed project would cross an additional nine waterbodies. It is important to note that these crossings are incorporated into the data reported for the Millennium Pipeline Project Phase I (see text above and table E1 in appendix E). The pipeline and access roads would cross a total of 24 perennial and 15 intermittent streams. No major waterbodies would be crossed along the Line A-5 Replacement Project route. Nine of the crossings would be intermediate waterbodies, including the Ramapo River and the Mahwah River. The remaining 30 crossings would be minor waterbodies. Nine of the streams are designated as trout or trout spawning waters. The Ramapo River would be crossed by an HDD. Also, one perennial waterbody would be crossed by the temporary use of an existing road as an access road (ARHDD 003).

Surface Water Impacts and Mitigation

As part of the 2001 FEIS, we completed a thorough evaluation of potential impacts to surface water resources. This evaluation included a review of general measures to avoid and minimize surface water impacts, and addressed a number of specific comments from federal and state regulatory agencies. Those aspects of our evaluation are not repeated here. Instead, the following section focuses on describing impacts that would result from construction and operation of the proposed Phase I Project. It also identifies the increase in the total number of stream crossings and proposed changes in construction techniques for many waterbody crossings. Timing restrictions would be observed between May 15 and September 30 for 42 waterbody crossings, June 1 and September 30 for 56 waterbody crossings, between June 1 and November 30 for 320 waterbody crossings, and between October 15 and November 30 for nine waterbody crossings. In total, timing restrictions would be applied to 518 of the 556 waterbody crossings. Our evaluation addresses agency comments received to date in regards to the amended project.

Proposed Changes in Waterbody Construction Techniques

As a result of detailed engineering and constructability reviews, Millennium proposed changes in waterbody crossing methods for 231 waterbodies. Most of the changes involve the substitution of a type of dry-ditch crossing method over the method previously identified. Only a few of the changes in the proposed construction methodology are substantive in nature. These are discussed further below.

Millennium proposes to construct the majority of waterbody crossings using the dam and flume technique. This technique is being proposed as a replacement for the dam and pump technique that was previously proposed. The proposed use of portable cofferdam structures as part of a dam and flume system would allow a dry-ditch pipeline installation for certain waterbody crossings (see appendix E1). The trench area would be isolated and dewatered, using cofferdam structures, prior to excavation. All streambed disturbance during trenching would be contained within the dewatered work area. Downstream flows would be maintained by using flume pipes to convey flows across the dewatered work area. The discharge from the flume pipes would be directed back to the downstream thalweg, pursuant to guidance by staff from the NYSDEC and the requirements of Millennium's section 401 CWA permit and the COE. Millennium states that improvements have occurred in temporary dam technology and Millennium's experience with its use indicate that the use of the dam and flume crossing technique would provide a more reliable method of constructing minor- to intermediate-size crossings than depending on pumping to move stream flows around construction sites.

Between MPs 190.6 to MP 376.6, Millennium originally proposed crossing only two waterbodies with the horizontal directional drill (HDD) crossing method: the Chenango River (MP 249.8) and Ramapo River (MP 370.0). Millennium now proposes using four HDDs to cross the following five waterbodies: Catharine Creek (MP 198.5), the Susquehanna River (MP 263.3); West Branch Delaware River (MP 276.1); and the Tributary of Ramapo River (MP 369.8) and Ramapo River (MP 369.8), which would be crossed with a single HDD (and we note that the Ramapo River crossing would be on the Line A-5 Replacement Project portion of the project). In its May 3, 2006 amendment application, Millennium proposes an alternative location for the Ramapo River HDD. We have recommended this alternative in section 3.2.1.3.

The remaining changes in construction methods would involve intermediate and major waterbody crossings. Crossing methods were discussed during several coordination meetings between Millennium and the NYSDEC, COE, USFWS, TNC, and Trout Unlimited to develop the most appropriate crossing method that would also have a high degree of being successfully completed. Geotechnical reports and site-specific construction drawings are part of the record in this proceeding. In its July 31, 2006 supplemental filing, Millennium provided site-specific plans for crossing certain waterbodies where it proposes changes to the crossing method. These include: Catharine Creek (MPs 198.5), Catatonk Creek (MP 228.2), Owego Creek (MP 230.3), Nanticoke Creek (MP 240.7), Chenango River (MP 249.8), Susquehana River (MP 263.3), West Branch of the Delaware River (MP 276.1), East Branch of the Delaware River (MP 287.0), Wallkill River (MP 350.0), Pochuck Creek (MP 352.4), and Ramapo River (MP 369.9) (see section 3.2.1.3). This additional information is summarized below.

Previously, Millennium proposed crossing Owego Creek, Nanticoke Creek, Wallkill River, and Pochuck Creek via conventional horizontal bore. Millennium states that recent review of the constructability of these crossing methods at these waterbodies concluded that this method would not be feasible. The bases for this conclusion were that the launching and receiving pits would need to be deep due to rugged topography and would require constant pumping to remove groundwater; owing to the gravel/cobble substrates of these streams, there would be concern about the seepage of water into the bore annulus, which could lead to flooding of the bore pits; and in addition to increasing the potential for sediment release into the waterbody, the potential for bore pit flooding raises a safety issue.

Site-specific descriptions of the proposed methods for crossing the above-listed waterbodies are provided below.

Catharine Creek

At the request of the NYSDEC, Millennium completed geotechnical studies to determine that an HDD crossing is feasible for Catharine Creek (MP 198.5). During the December 6 to 7, 2005 field trip, the NYSDEC stated that Catharine Creek is the highest quality trout stream in western New York and that it, along with the adjacent NYSDEC-regulated wetland (wetlands WDLC-007, WDLC-008 [NYSDEC wetland HH-2]), is the most sensitive location on the west end of the Phase I Project.

Millennium has modified its proposed construction method for crossing Catharine Creek and the adjacent wetland. The proposed crossing method is now by HDD. The drill would be set up on the west side of SR 14 and the HDD would extend eastward under SR 14, the historic Chemung Canal, and Catharine Creek and associated wetlands. The HDD would exit east of the wetlands and just west of a parking lot on Elmira College property. Millennium has proposed modified workspaces due to changing the crossing method to accommodate the temporary workspaces that would be needed for the drill entry and exit areas and pipe stringing (see appendix B1).

In the event the initial HDD attempt is not successful, Millennium would shift the alignment about 25 feet and attempt another HDD crossing. In the event that attempt is not successful, Millennium would promptly consult with the Commission, NYSDEC, NYSHPO, and COE regarding the use of alternative crossing methods. This would be done in a manner consistent with the requirement in the Interim Order that:

> "Millennium file with the Secretary a contingency plan for the crossing of each waterbody if the directional drill is unsuccessful. Prior to construction, Millennium should file with the Secretary for review and written approval of the Director of OEP, a plan with the set of criteria it will use to identify when a horizontal directional drill or bore is unsuccessful. This should be a site-specific plan that includes scaled drawings identifying all areas that would be disturbed by construction. Millennium shall file this plan concurrent with its application to the COE and NYSDEC for a permit to construct using this plan. The Director of OEP must review and approve this plan in writing before construction of the alternate crossing plan."

Millennium states that if a second attempt to complete the crossing by HDD is unsuccessful, it would use a dry ditch crossing method to cross Catharine Creek. Dry ditch construction is addressed in section (see section 2.3.2.2). It would use typical wetland construction and revegetation methods (see section 2.3.2.3) to cross the wetlands. Millennium describes the additional procedures it would use in wetland WDLC-008 and to cross the Chemung Canal in its section 401 application with the NYSDEC. These are summarized below.

Sedge tussocks are in WDLC-008 and Millennium would use a sedge tussock mitigation procedure prior to preparing workspaces for construction. Millennium would retain a qualified horticulturist to remove tussocks, store them under appropriate conditions, and reposition them during restoration. Further, Millennium would monitor the substrate, number of shoots, length of shoots, tussock dimensions, and general appearance of these tussocks for three years after initial restoration. The condition of the tussocks would be assessed three months after restoration and then at least twice yearly during the growing season for the following three years. If the replanting effort is a failure (50 percent or more of the individual tussocks die), Millennium states that it would try to determine the reason for failure, and would take practical

measures to correct and restore the site and would include this information in a final report that would be prepared after completing the monitoring program. Progress reports would be sent to the NYSDEC, COE, and other interested agencies and parties.

Millennium would limit the removal of shrubs from wetland WDLC-008 by pruning large shrubs and then placing timber mats over them. Where this is safe, construction equipment would work from the mats. Excavated trench spoil would be transported to an upland storage area by balloon-tire dump trucks. Following construction, Millennium would evaluate the revegetation success by monitoring survival and subsequent growth of the affected shrubs. The condition of the shrubs would be assessed 3 and 6 months after restoration and then yearly during mid-summer for the following three years. Millennium states that the wetland expert responsible for conducting this research would be hired prior to beginning construction activities. Data would be collected documenting the restoration and a final report would be prepared after the monitoring program is completed.

Millennium states that if the HDD is not successful, then the Chemung Canal would have to be open cut since sufficient area for bore pits is not available due to the presence of wetlands. The Chemung Canal has been determined to be eligible for the National Register of Historic Places by the New York State Historic Preservation Office (NYSHPO). An archeological treatment plan which would include documentation is being prepared and would be sent to the NYSHPO in 2006. Millennium states that it would restore the canal to as close as possible to its original profile.

Further, in its July 31, 2006 supplement, Millennium filed site-specific plans for all of its proposed HDD crossings. These include scaled drawings identifying all of the areas that would be disturbed during construction and the set of criteria it would use to identify when an HDD is unsuccessful.

The successful crossing of Catharine Creek, the Chemung Canal, and the wetland by HDD would mean there would be no direct impact on these resources due to clearing the construction ROW and excavating the trench to install the pipeline. Workspace requirements that would affect these areas would be minimized. We believe that this crossing method is reasonable.

Catatonk Creek

Millennium originally proposed crossing Catatonk Creek (MP 228.2) as an open cut due to terrain constraints. However, during the December 2005 interagency meeting Millennium agreed to evaluate using the dry ditch/coffer dam-and-flume method. Millennium now proposes using this method. Millennium's environmental inspector would monitor weather and stream flow so that the crossing is attempted when water body capacity is at or below the design flow for the coffer dam and flume. However, if low flow conditions exist at the time of crossing, it may use the dam and pump crossing method if approved by the appropriate agencies.

Owego Creek

The Owego Creek (MP 230.3) crossing was previously proposed as a conventional bore. Millennium now proposes crossing this waterbody by using the dam and flume construction method. However, if low flow conditions exist at the time of crossing, it may use the dam and pump crossing method if approved by the appropriate agencies.

Recent floods in this area have severely eroded about 150 feet of the west bank of Owego Creek at the crossing location. During restoration of this area, Millennium states that it would stabilize the bank for this extended area using tree and shrub plantings, large riprap, and/or other bank stabilization methods. The

"extended area" may extend beyond the construction workspace for pipeline construction. As part of the restoration, rock vanes may be installed upstream from the crossing area to deflect the current away from the west bank. Additional stabilization would be needed on the west bank downstream from the pipeline construction ROW. The restoration plan would be developed in consultation with the NYSDEC as it may affect the section 401 CWA permit for the project. In some instances, stabilizing and restoring construction workspaces may require activities outside the footprint of the approved construction workspace. The pipeline crossing at Owego Creek is known to be an area where there has been severe erosion recently and it is apparent that this issue should be addressed prior to construction so that it may be included in the restoration plan for this crossing.

In a July 31, 2006 supplement to its section 401/404 joint application filed with the NYSDEC, Millennium states that in-stream flow diversion structures would be installed to deflect currents away from the west bank. The specifications of these structures would be designed by a fluvial geomorphology (FGM) consultant retained by Millennium. The structures that would be evaluated include Cross Vanes, J-Hook Vanes, and W-Weirs. In addition to in-stream structures, the FGM consultant would design bank stabilization measures to: maintain stream stability; facilitate sediment transport; reduce near-bank velocity and shear stress or stream power; enhance center channel shear stress; maintain channel capacity; ensure structural stability during floods; avoid recurrent maintenance; enhance fish habitat; and be visually compatible. Millennium anticipates that bank stabilization may extend 300 feet upstream and downstream from the crossing location. Millennium has surveyed the anticipated workspaces and conducted appropriate cultural and environmental surveys. Millennium states the final plans would be reviewed by the regional NYSDEC office and that they would be filed with the Commission prior to construction along with Millennium's implementation plan for review and written approval by the Director of OEP.

Nanticoke Creek

The Nanticoke Creek (MP 240.7) crossing was previously proposed as a conventional bore. Nanticoke Creek would be a 60-foot-wide, intermediate waterbody at the proposed crossing location. After conducting a site-specific detailed engineering analysis, Millennium now believes that a conventional bore may not be practicable and that it now proposes to use the dam and flume method to cross this waterbody. Nanticoke Creek would be included in the NYSEG Tioga-Broome Variation; therefore, the proposed crossing location has moved to the south side of the powerline ROW due to the proposed use of this variation. At this location, the crossing would be complicated by a tributary that flows into the creek immediately downstream from the proposed pipeline crossing location. Millennium now intends to construct this crossing by the dam and flume method and to install additional bank stabilization measures along the west bank of Nanticoke Creek as well as along the tributary. During the December 2005 interagency meeting, it was noted that the stream banks south of the existing Line A-5 were actively eroding.

The specification for the special stream bank stabilization structures downstream from the crossing would be designed by a FGM consultant retained by Millennium. Millennium anticipates that bank stabilization may extend up to 200 feet upstream and downstream of the crossing. Millennium has surveyed the anticipated workspaces and conducted appropriate cultural and environmental surveys. Millennium states the final plans would be reviewed by the regional NYSDEC office and that they would be filed with the Commission prior to construction along with Millennium's implementation plan for review and written approval by the Director off OEP.

Chenango River

On July 31, 2006, Millennium filed revised site-specific plans for crossing the Chenango River (MP 249.8). This plan was developed in consultation with the NYSDEC, the COE, and the FERC. Millennium

now proposes to cross this waterbody by a dry ditch/coffer dam construction method rather than via an HDD, as previously proposed. Millennium anticipates that it would take about 5 days to complete this crossing. However, if flow conditions remain high during the construction season, Millennium would cross this waterbody by HDD as a contingency plan. Millennium filed site-specific plans for both the proposed dry ditch crossing and contingency HDD crossing. Due to the change in the proposed crossing method, Millennium proposes using two additional access roads and has modified workspaces (see appendix B1) to facilitate construction activities.

The Chenango River is a major waterbody consisting of two channels: the westernmost channel is about 275 feet wide and the easternmost channel is about 100 feet wide. The channels are separated by a roughly 100-foot-wide upland island area. After the coffer dams and flumes are installed, Millennium would begin excavation on the west side (Phase I) between the coffer dams. Concrete coated pipe would be placed into the trench in the Phase I area and across the island before the coffer dams are set up in the Phase II area across the east channel. Then the trench would be excavated between the coffer dams and through the east channel, followed by placement of the concrete coated pipeline, backfilling, and restoration. Restoration would begin as soon as the Phase II area is backfilled and before the coffer dams are removed from the Phase I area. The coffer dams and flumes would be removed after the waterbody contours had been restored and stabilized.

However, if flow conditions approach design flow, Millennium may cross it in two sections, executing construction in the Phase I area and Phase II area separately and independently without the use of flume pipes, if open flow can be maintained around the end of the workspace for the phase being completed. If this occurs, then the tie-in for the Phase II pipeline installation to the Phase I pipeline would be in the middle of the river, but only if an adequate dewatering plan is presented in advance. However, if this or any other contingency crossing method is used, Millennium would need to receive appropriate written approval from the FERC, NYSDEC, and the COE.

The waterbody crossing that Millennium now proposes to construct across the Chenango River would have a different alignment than the originally approved route between US Route 11 in the Town of Chenango, New York, and the Delaware and Hudson Railroad crossing at the border of the Village of Port Dickenson and the Town of Dickenson, New York, between approximate MPs 249.6 and 250.8. The realignment would also move the pipeline ROW from the Village of Port Dickenson park between MPs 250.0 and 250.2 to a location east of the park and between the entrance and exit ramps for Interstate 88 and New York State Route 7.

Susquehanna River

The Susquehanna River (MP 263.3) crossing was proposed to be accomplished via a conventional bore. Millennium has since completed geotechnical studies at this crossing and determined that an HDD installation method would likely be successful. Therefore, Millennium proposes to construct this crossing as an HDD. Due to the depth and water flow at the crossing location, a reasonable open, dry ditch crossing procedure could not be developed. Therefore, should the initial HDD attempt not be successful, Millennium would shift the alignment about 25 feet and attempt another HDD crossing. In the event that attempt is not successful, Millennium would promptly consult with the Commission, NYSHPO, NYSDEC, and COE regarding the use of alternative crossing methods. This would be done in a manner consistent with the requirement in the Interim Order that:

> "Millennium file with the Secretary a contingency plan for the crossing of each waterbody if the directional drill is unsuccessful. Prior to construction, Millennium should file with the Secretary for review and written approval of the Director of OEP, a plan with the set of criteria it will use to identify

when a horizontal directional drill or bore is unsuccessful. This should be a site-specific plan that includes scaled drawings identifying all areas that would be disturbed by construction. Millennium should file this plan concurrent with its application to the COE and NYSDEC for a permit to construct using this plan. The Director of OEP must review and approve this plan in writing before construction of the alternate crossing plan."

Further, in its July 31, 2006 supplement, Millennium filed site-specific plans for all of its proposed HDD crossings. These include scaled drawings identifying all of the areas that would be disturbed during construction and the set of criteria it would use to identify when an HDD is unsuccessful.

The successful crossing of the Susquehana River by HDD would mean there would be no direct impact on this resource due to clearing the construction ROW and excavating the trench through the waterbody to install the pipeline. We believe that this crossing method is reasonable.

West Branch Delaware River

The West Branch Delaware River (MP 276.1) crossing was previously proposed as a conventional bore. Millennium has completed geotechnical studies at this crossing and determined that an HDD would likely be successful. Therefore, Millennium now intends to construct this crossing as an HDD. Millennium filed site-specific scaled drawings on July 31, 2006 identifying all of the areas that would be disturbed during construction, and the set of criteria it would use to identify when an HDD is unsuccessful. Millennium states that if the initial HDD is unsuccessful, then Millennium would shift the alignment about 25 feet and attempt another HDD crossing.

The successful crossing of the West Branch Delaware River by HDD would mean there would be no direct impact on this resource due to clearing the construction ROW and excavating the trench through the waterbody to install the pipeline. We believe that this crossing method is reasonable.

East Branch Delaware River

The East Branch Delaware River (MP 287.0) crossing was proposed as a dry construction technique that would be a combination of conventional bore and open cut with water diversion. This crossing is complicated by the steep slope, the crossing of New York State Route 17, and the crossing of the frontage road on the northwest side of the waterbody; and the steep slope and residences on the southeast side. After consulting with construction contractors, Millennium believes that the originally proposed construction method is not practicable. Millennium now intends to construct this crossing as a dam and flume. Geotechnical investigations concluded that an HDD installation would not be feasible; and the terrain constraints due to rugged topography do not provide good areas to lay out the pull-back pipe string. Therefore, Millennium proposes using the dam and flume method to cross the East Branch Delaware River. Millennium anticipates that it would take five days to complete the crossing.

In developing its crossing plan, Millennium conducted a hydrologic analysis (see Millennium's joint section 401/404 permit application with the NYSDEC) which included published information from the nearest stream gauge, the volume of daily diversions to New York City via the East Delaware Tunnel, daily "directed releases"[1] from Pepacton Dam to maintain the Montague, New Jersey flow objective; daily precipitation, and daily flow at Montague New Jersey. Usually, the directed daily releases from Pepacton Dam show little fluctuation. However, in extreme periods of drought or high precipitation, releases can be

[1] The office of the Delaware River Master defines "directed releases" as the controlled releases from the New York City Reservoirs in the upper Delaware Basin designed by the Delaware River Master to meet the Montague flow objective.

high. Millennium states that the causes of these high releases are identifiable and would be tracked by Millennium's environmental inspectors. Millennium would monitor and record real-time flows for the East Branch of the Delaware River at the gages in Harvard and Fishs Edy, New York; on the Beaverkill at the gage in Cooks Falls, New York; and on the Delaware River at the gage at Montague, New Jersey. Millennium would also monitor and record the volume of daily diversions to New York City via the East Delaware Tunnel, and the daily pool elevation at Pepacton Reservoir. Millennium would also seek the cooperation of the Delaware River Master to limit downstream releases from Pepacton Reservoir during the time of the waterbody crossing.

Millennium would cross this waterbody in two phases by isolating part of the waterbody within coffer dams and flumes. Phase I would consist of installing coffer dams and flumes to isolate an area for trench excavation on the eastern side of the river. The trench would be excavated in this area first. Pipe would be staged in this area prior to installation of the coffer dams and trench excavation for Phase II construction. All flow would be diverted through the flumes in the Phase I area during construction in the Phase II area. After the trench in the Phase II area is constructed, a drag section of pipeline would be pulled across the waterbody for placement in the trench. The trench would be backfilled followed by appropriate restoration of the stream bottom.

However, if flow conditions approach design flow, Millennium may cross it in two sections, executing construction in the Phase I area and Phase II area separately and independently without the use of flume pipes, if open flow can be maintained around the end of the workspace for the phase being completed. If this occurs, then the tie-in for the Phase II pipeline installation to the Phase I pipeline would be in the middle of the river, but only if an adequate dewatering plan is presented in advance. However, if this or any other contingency crossing method is used, Millennium would need to receive appropriate written approval from the FERC, NYSDEC, and the COE.

Wallkill River

The Wallkill River (MP 350.7) crossing was previously proposed as a conventional bore. After conducting a site-specific detailed engineering analysis, Millennium now believes that a conventional bore may not be practicable. Millennium now proposes to use the coffer dam and flume method of construction. Millennium believes that water flow would be low during August when it anticipates crossing this waterbody, which would make using this method feasible.

If water flow conditions are too high preventing the use of the dam and flume crossing method, Millennium states that it would attempt an HDD crossing as a contingency. Should the initial HDD attempt not prove successful, Millennium would shift the alignment about 25 feet and attempt another HDD crossing. Millennium filed site-specific plans for both the proposed dry ditch crossing and the contingency HDD plan for crossing the Wallkill River. They include scaled drawings identifying all of the areas that would be disturbed during construction and the set of criteria it would use to identify when an HDD is unsuccessful. Should that attempt not be successful, Millennium would promptly consult with the Commission, NYSDEC, and COE regarding alternative crossing methods.

Pochuck Creek

The Pochuck Creek (MP 352.4) crossing was previously proposed as a conventional bore. After conducting a site-specific detailed engineering analysis, Millennium now believes that a conventional bore may not be practicable. Millennium now proposes to use the dam and flume method of construction. Millennium believes that water flow would be low during August when it anticipates crossing this waterbody, which would make using this method feasible.

As a contingency, should water flow conditions prevent the use of the dam and flume crossing method, Millennium would use an HDD. Should the initial HDD attempt not prove successful, Millennium would shift the alignment about 25 feet and attempt another HDD crossing. Millennium filed site-specific plans for both the proposed dry ditch crossing and the contingency HDD plan for crossing Pochuck Creek. They include scaled drawings identifying all of the areas that would be disturbed during construction and the set of criteria it would use to identify when an HDD is unsuccessful. Should that attempt not be successful, Millennium would promptly consult with the Commission, NYSDEC, and COE regarding alternative crossing methods.

It is possible that Millennium may not successfully complete crossings of waterbodies where it would use an HDD. If that happens, **we recommend that:**

- **Millennium file with the Secretary a plan for the crossing of any waterbody where the HDD is unsuccessful. This should be a site-specific plan that includes scaled drawings identifying all areas that would be disturbed by construction. Millennium should file this plan concurrent with its application to the COE and NYSDEC for a permit to construct using this plan. The Director of OEP must review and approve this plan in writing before construction of the crossing using this plan.**

Equipment Bridges

Equipment bridges would be required at waterbody crossings along the construction ROW. Millennium addresses equipment bridge construction in section IV.A.4 of its ECS. Construction equipment bridges would consist of culvert(s) with clean rock backfill or equipment pads and would be installed during grading operations at all waterbodies. Equipment bridges would be installed in manner that would be consistent with the construction timing windows for coldwater fisheries (June 1 through September 15) and coolwater and warmwater fisheries (June 1 through November 30) unless expressly permitted by the NYSDEC.

However, Pochuck Creek, Wallkill River, and other waterbodies in Orange and Rockland Counties, New York, would be within the Indiana bat "action area" (MPs 347.7 to 362.3). In order to mitigate potential impacts to federally-listed endangered Indiana bats, Millennium would require a variance from the NYSDEC to the stream crossing window to perform off-season (winter) tree clearing and to install equipment bridges across some waterbodies during the period of October 1 to March 30 in order to complete the tree clearing along the construction ROW in this timeframe. The FWS typically recommends that tree clearing only occur during this time since the Indiana bats would not be using trees for roosting while they were in hibernation. The NYSDEC indicated during the December 6 to 7, 2005 field trip that this variance would not be unreasonable. The bridges would be approved for that purpose so long as there were no grading or in-stream activities that might cause sedimentation into the water. However, we believe that Millennium should identify the waterbodies where equipment bridges would be installed to facilitate winter tree clearing. Therefore, **we recommend that:**

- **Millennium file with the Secretary prior to construction a list of the waterbodies where equipment bridges would be installed to facilitate tree clearing along the construction ROW between October 1 and March 30 to avoid impacting the federally endangered Indian bat, and provide documentation of approval of this activity from the NYSDEC.**

Public Water Supplies and Sensitive Waterbodies

The Phase I Project would not cross any waterbodies that are within three miles of active public water intakes, other than those addressed in our 2001 FEIS. The proposed crossing methods for those waterbodies have not changed. Therefore, impacts to and mitigation for those resources remains the same and are incorporated by reference into this document.

The NYSDEC identified three listed Priority Waterbodies (i.e., waterbodies with environmental impairments) that would be affected by the Columbia Line A-5 Replacement Project: the Ramapo River (MP 369.8), Torne Brook (MP 375.0), and Mahwah River (which would be crossed by access road AR006 RO). The Ramapo River is identified as a Priority Waterbody because aquatic life within the river may be stressed or impaired by silt, sediment, nutrients, and low oxygen concentrations. Aesthetic impairment is also noted due to the presence of debris. This waterbody would be crossed by an HDD; therefore impacts to this waterbody would be avoided or minimized.

Torne Brook is identified as a Priority Waterbody due to the potential effects of construction-related silt and sediments on wild brook trout populations. Millennium is proposing to construct the Torne Brook crossing using the dam and flume dry-ditch method. Therefore, sedimentation effects to this waterbody would be minimized.

The Mahwah River is identified as a Priority Waterbody due to the input of non-point source urban runoff. Water quality impairment is attributed to the possible presence of silt, sediment, nutrients, salts, and pathogens. The Phase I pipeline would not cross the Mahwah River. Access road AR006 RO would cross this waterbody. Millennium would install a temporary bridge crossing for the access road and would use appropriate erosion and sediment control measures to protect the river from construction impacts. Therefore, sedimentation impacts to this waterbody would be minimized.

Contaminated Sediments

Millennium identified potential contaminated sediments in three waterbodies: the Chenango River and the West and East Branches Delaware River. The contaminated sediments were reported at locations other than the proposed crossings, generally between one and four miles downstream of the crossings (see table 4.3.2.2-2). Therefore, there is little probability of contaminated sediments being resuspended in these waterbodies during construction.

Hydrostatic Testing

Millennium identified 16 waterbodies that would be used as source and/or discharge locations for hydrostatic test water (see table 4.3.2.2-3). The volumes listed are the maximum amounts that Millennium anticipates would be used from any given source. Any other water used for hydrostatic testing would be obtained from local water companies or landowners. Millennium estimates that a total of about 115 acre-feet (4,887,771 gallons) of water would be required to test the pipeline.

Withdrawal of hydrostatic test water would be done at a rate such that there would be no perceptible change in downstream water levels or flow rates. The NYSDEC section 401 Water Quality Certificate Millennium received for the original Millennium Pipeline Project required that withdrawal may not reduce stream flow by more than 10 percent at the time of withdrawal. Water would be withdrawn and discharged within the same watershed. It is anticipated that the amended water quality certificate would have similar requirements.

Millennium would need to obtain approval from the Delaware River Basin Commission for withdrawal and discharge of basin waters for the purpose of hydrostatic testing prior to beginning this activity.

Millennium would adhere to its ECS and our Procedures during hydrostatic testing. In accordance with its ECS and our Procedures, Millennium would obtain written permission from the appropriate federal, state, and/or local permitting agencies before withdrawal from or discharge into state-designated high quality streams or public water supply streams. Test water would not be withdrawn from any source that could result in degradation of its state-designated water uses.

Construction Permits

Section 404 of the Clean Water Act is administered by the COE for all discharges of dredged or fill material, mechanical land clearing, and excavation and backfilling in waters of the United States. Activities in or affecting navigable waters of the United States are regulated by the COE pursuant to section 10 of the Rivers and Harbors Act of 1899. Millennium filed a section 404 permit application to the COE in August 2005 for both section 404 and section 10 construction activities for the Phase I Project. Subsequent to Millennium's filing, in a letter dated January 30, 2006, the COE indicated its intention to treat the NE-07 Project, including all of its component parts, as a single and complete project under the agency's regulations. Therefore, the COE would review the NE-07 Project components together, release one public notice, and if a decision is made to issue permits for the proposed activity, would issue separate permits to each applicant for the individual components of the NE-07 Project.

Table 4.3.2.2-2
Waterbodies Crossed with Recorded Contaminated Sediments

Waterbody Name	Milepost	Sampling Location	Contaminants
Millennium			
Chenango River	249.8	4 miles downstream	Heavy metals, pesticides, semi-volatile organic compounds, and PCB's
West Branch Delaware River	276.0	2 miles downstream	Heavy metals, pesticides, semi-volatile organic compounds, and PCB's
East Branch Delaware River	287.0	1 mile downstream	Heavy metals, pesticides, semi-volatile organic compounds, and PCB's
Empire Connector Project			
No Waterbodies with Contaminated Sediments			
Algonquin Ramapo Expansion Project			
No Waterbodies with Contaminated Sediments			

Table 4.3.2.2-3
Proposed Hydrostatic Test Water Source and Discharge Locations

Project Component	Source	Milepost	Source Volume (Gallons)
Millennium Pipeline Phase I a/			
	Newtown Creek	202.9	5,024,629
	Cayuta Creek	215.0	5,122,384
	Catatonk Creek	228.1	3,124,915
	Owego Creek	230.3	2,000,728
	Nanticoke Creek	240.7	2,486,246
	Chenango River	249.8	4,799,792
	Susquehanna River	263.2	5,500,372
	West Branch Delaware River	276.1	4,685,744
	East Branch Delaware River	287.4	2,795,805
	Basket Creek	299.3	3,946,061
	Callicoon Creek	306.8	3,792,911
	Smith Mill Brook	317.9	3,190,085
	Rutgers Creek	347.2	2,033,313
	Wallkill River	350.7	1,199,133
	Pochuck Creek	352.4	1,896,455
	Indian Kill Reservoir	367.1	3,737,516
		Subtotal:	**55,336,090**
Line A-5 Project (In Addition to Those Listed for Millennium)			
	Ramapo River	369.8	2,000,000
	Mahwah River	376.3	2,000,000
		Subtotal:	**4,000,000**
Empire Connector Project			
	Ganargua Creek	3.6	470,933
	Canandaigua Outlet	15.1	2,354,666
	Flint Creek	25.0	1,412,800
	Keuka Outlet	40.6	1,726,215
	Big Stream	46.4	1,673,710
	Tributaries of Glen Creek	61.2	836,855
	Tributaries of Post Creek	70.4	418,427
		Subtotal:	**8,893,606**
Algonquin Ramapo Expansion Project			
Ramapo Pipeline Replacement	Mahwah River	0.5	1,750,000
Hanover Compressor Station	Municipal	NA	10,000
Hudson River Valve Site	Hudson River	NA	2,000
Stony Point Compressor Station	Cedar Pond Brook	NA	5,000
Southeast Compressor Station	Municipal	NA	10,000
Oxford Compressor Station	Long Meadow Pond and/or Municipal	NA	25,000
Brookfield Meter Station	Municipal	NA	5,000
		Subtotal:	**1,807,000**

Table 4.3.2.2-3 (cont'd)
Proposed Hydrostatic Test Water Source and Discharge Locations

	Source	Milepost	Source Volume (Gallons)
Iroquois MarketAccess Project			
Brookfield Compressor Station	Municipal supply or water trucked to site	NA	59,000
Dover Compressor Station	On-site well or water trucked to site	NA	35,000
		Subtotal:	**94,000**

a/ The source volume reported here is the maximum volume identified by Millennium
NA = Not Applicable

The West and East Branches Delaware River are navigable waterbodies regulated by the COE. The West Branch Delaware River would be crossed by an HDD, and there would be no impact to navigation. The East Branch Delaware River would be crossed using the dry ditch crossing method. Navigation may be somewhat restricted (e.g., in the immediate vicinity of construction equipment) but should not be significantly affected because the open cut would be completed in a few days. However, the COE is soliciting comments on how the project may affect navigation and is currently determining what other navigable waters may be affected by the NE-07 Project.

A section 401 Water Quality Certificate was issued by the NYSDEC on December 8, 1999 for the originally proposed Millennium project (see appendix G of the 2001 FEIS). Millennium submitted a section 401 amendment application to the NYSDEC in August 2005, and that application is pending at this time.

Summary and Conclusion

The proposed waterbody crossings for the Phase I Project are summarized in table 4.3.2.2-4. The pipeline would cross a total of 503 waterbodies, of which 4500 (99 percent) would be crossed using dry crossing techniques (e.g., dam and flume, HDD, or dry ditch). This includes all of the intermittent streams and all but three of the perennial waterbodies. An additional 53 waterbodies would be crossed by access roads or would be adjacent to the project.

Although the proposed crossing methods have changed for many waterbodies, most of the changes involve the substitution of one standard dry-ditch construction method for another. The proposed modifications would not change the types of surface water impacts that would result from the project (see section 5.3.2.3 of the 2001 FEIS), and the magnitude of effects would be reduced considerably from those of the previously certificated project. For example, dry ditch construction methods would be used to cross 99 percent of waterbodies with flowing water at the time of the crossing (versus 97 percent for the previously certificated project). Moreover, the current project would no longer result in direct impacts to Lake Erie or the Hudson River. Proper waterbody construction and restoration procedures would serve to minimize the short-term water quality impacts associated with the waterbody crossings, and successful installation of the pipeline by HDD would avoid impacts to waterbodies crossed by this method of construction. We believe that if Millennium implements the construction, restoration, and operation procedures of its ECS and SPCC Plan, our Plan and Procedures, the requirements of the NYSDEC and the COE, the recommendations identified in this document and the Commission's requirements in the Interim Order and the Final order, that impacts to surface waters would be minimized and short-term.

Table 4.3.2.2-4
Summary of Proposed Waterbody Crossing Techniques

	Perennial	Intermittent a/	Ephemeral	Total
Millennium Pipeline Phase I b/				
Dry Construction Techniques:				
Dam and Flume	218	3		221
Dam and Flume if Flowing; Otherwise Open Cut		233	36	269
Horizontal Directional Drill Method	6			6
Dry Ditch Crossing Method	9			9
Open Cut Crossing Method	3			3
Bottom Lay Crossing Method	1			1
Culvert (Access Road Crossings)	15	5		20
Not Crossed - Silt Fence as Needed to Protect	8	13	6	27
Subtotal:	**260**	**254**	**42**	**556**
Empire Connector Project				
Dry Construction Techniques:				
Dam & Pump	3			3
Dam & Pump (Blast)	1			1
Multi-Flume	2			2
Horizontal Directional Drill	2			2
Bore	1			1
Non-specified Dry Crossing	40	3		43
Open Cut Crossing Method	1	58		59
Install culvert		4		4
Install Permanent Culvert		2		2
Subtotal:	**50**	**67**	**0**	**117**
Algonquin Ramapo Expansion Project				
Dam and Pump	1			1
Open Cut Crossing Method	9			9
Subtotal:	**10**	**0**	**0**	**10**

a/ The intermittent waterbody total for the Empire Connector Project includes waterbodies identified as drainage ditches.
b/ Millennium updated the waterbody information on July 31, 2006.

The National Park Service (NPS), Upper Delaware Scenic and Recreational River, filed a letter on February 10, 2006, in which it expressed concern about the potential effects of Delaware River tributary crossings on water quality and aquatic life in those streams and the Delaware River. NPS states that multiple stream crossings in given Millennium construction "spreads" during a short period of time could result in cumulative impacts to receiving waters such as the Delaware River, with potential impairment to biological resources and water quality. There may possibly be violations of the turbidity standard set for the Delaware River (UDSRR) in the Special Protection Waters Regulations established by the Delaware River Basin Commission. NPS hopes that every effort will be made to limit the duration of sedimentation events and the resulting impacts to aquatic life.

We believe that construction impacts in the Delaware River basin would be minimized to the greatest extent practicable by Millennium's adherence to the water quality requirements that would be imposed by the NYSDEC, and by implementing its ECS and SPCC Plan, our Plan and Procedures, the recommendations in this document, and the requirements of the Commission's Interim and Final Orders About 99 percent of the waterbodies that would be crossed by the Phase I Project would be accomplished by a dry crossing method, thereby minimizing sedimentation. The West Branch Delaware River would now be crossed by an HDD. The more complicated crossing of the East Branch Delaware River would be accomplished by using the dam and flume method, as described above, and may take three or four days to complete. Smaller waterbodies typically are crossed in less time. Waterbody crossings would be completed as quickly and as safely as possible while making sure that the equipment being used to complete dry crossings are adequately sized and functioning properly. Further, not all of the Delaware River tributary crossings would occur at the same time within the Delaware River drainage basin, thereby minimizing the cumulative impact of multiple waterbody crossings occurring at the same time. However, we believe that the NPS should be informed about the construction schedule for crossing Delaware River tributaries. Therefore, **we recommend that:**

- **Millennium provide the National Park Service, Delaware Scenic and Recreational River with an initial waterbody crossing schedule for Delaware River tributary crossings and provide updates to that schedule as may be needed in a manner consistent with section II.A.2 of our Procedures.**

Mr. DeBuck filed a letter on February 6, 2006, in which he expressed concern about the potential effect of an open cut crossing of Pochuck Creek on an existing levee that protects his property from flooding. Millennium acknowledged that the crossing would breach the levee, but indicated that it would restore the levee to its pre-construction condition. Millennium would use the dam and flume method to construct this pipeline crossing of Pochuck Creek and would complete the crossing during the drier months of the year (June 1 to November 30). We believe that Millennium's design for the Pochuck Creek crossing and commitment to restore the levee to pre-construction condition adequately addresses Mr. DeBuck's concerns.

Corning Compressor Station

Based on Millennium's design for the Corning Compressor Station, construction would not directly affect the unnamed tributary of the Chemung River located within the Columbia-owned property. The stream would be more than 200 feet from the proposed construction workspace for the compressor station. We anticipate that Millennium would protect surface waters from sedimentation due to surface runoff from disturbed areas by implementing the procedures described in its ECS and our Plan and Procedures.

Columbia Line A-5 Replacement

Construction of the Line A-5 Replacement Project would temporarily disturb 24 perennial and 15 intermittent streams (see table E1 in appendix E). As noted above, surface water impacts associated with the Line A-5 Replacement Project are incorporated into the effects reported for the previously approved pipeline facilities of the Millennium Pipeline Project - Phase I. Proper waterbody construction procedures would serve to minimize the short-term water quality impacts associated with construction of the waterbody crossings. The Line A-5 Replacement Project would be constructed by Millennium and, therefore, its ECS and SPCC Plan would be used during construction, restoration and operation of these facilities. Therefore, we conclude impact to surface waters resulting from construction of the Line A-5 Replacement Project would be minimized by following the requirements that would be established in the section 401 water quality certificate issued by the NYSDEC, and implementing the measures identified in our Procedures, Millennium's ECS and SPCC Plan, as well as any other measures that may be required in federal and state permits.

4.3.2.3 EMPIRE CONNECTOR PROJECT

Existing Surface Water Resources

Pipeline Facilities

The pipeline component of the Empire Connector Project would cross three drainage basins: the Lake Ontario Basin (between CMPs 0.0 and 2.2); Seneca River Basin (between CMP 2.2 and 69.1); and Chemung River Basin (between CMP 69.1 and 78.1). A total of 111 surface waters would be crossed by the pipeline component of the project, of which 50 would be perennial, 39 would be intermittent, and 22 would be drainage ditches that were not identified to a flow regime (see table E2 in appendix E). Waterbody locations are shown in Appendix B2. The crossings include 20 intermediate crossings and 91 minor crossings. There would be no major waterbody crossings. In addition, four intermittent streams and two drainage ditches would be crossed by access roads.

Two streams are designated as coldwater fisheries (Keuka Outlet at CMP 40.6 and Shequaga Creek at CMP 67.0), using the NYSDEC's classification criteria (see table E2 in appendix E). The remaining perennial streams are classified as warmwater fisheries.

Oakfield Compressor Station

The proposed Oakfield Compressor Station site would be within the Oak Orchard Creek drainage basin. No waterbodies would be present within the proposed workspace for the compressor station, but an unnamed intermittent tributary to Oak Orchard Creek would be crossed by the proposed access road for the site. The tributary is a minor (2 to 3 feet wide), Class D stream located south of the proposed facility.

Surface Water Impacts and Mitigation

Pipeline Facilities

Waterbody Construction Techniques

Empire proposes to cross most intermittent waterbodies using the open cut crossing method (see table 4.3.2.2-4). Empire intends, to the extent practicable, to perform stream crossings during the dry

season to minimize or avoid surface water impacts. Weather forecasts would be factored into scheduling work for individual crossings. Based on the characteristics of the waterbodies, Empire anticipates that most of the intermittent streams would exhibit no flow at the time of crossing. Crossing of intermittent streams during no-flow situations would be via the open cut method, with provisions to employ a dry crossing if conditions change during construction.

Most perennial waterbodies would be crossed using a non-specified dry crossing method (see table 4.3.2.2-4). Empire indicates that it would use either the dam and pump method or the flume crossing method, with the selection to be determined in the field at the time of crossing. The method selected would be that which provides the least disturbance and most expedient crossing to minimize overall impact. The method would be implemented at the contractor's discretion, with approval of Empire's environmental inspector, and scaled accordingly to prevent interruption of stream flow and to maintain water quality. In the event that water is encountered below the dry streambed, trench dewatering would be performed in accordance with Empire's Erosion and Sedimentation Control and Agricultural Mitigation Plan (ESCAMP).

Empire proposes crossing four perennial waterbodies by using the dam and pump method and two by using the multi-flume or dam and flume method (see table 4.3.2.2-4). The dam and pump method would be used at White Brook (CMP 0.3), Glen Creek (CMP 62.9), Townsend Creek (CMP 63.8), and a tributary of Post Creek (CMP 70.4). A multi-flume crossing method would be used at Flint Creek (CMP 25.0) and Ganargua Creek (CMP 3.6), where stream flow may be too high to be accommodated by a single flume.

The NYSDEC commented that it was concerned about the crossing of Ganargua Creek. The NYSDEC and COE recommended that Empire consider using an HDD at that location. This waterbody is north of the New York State Thruway (Thruway). On June 28, 2006, Empire filed information related to crossing this waterbody and the adjacent wetland (wetland 80B, crossing length of approximately 637 feet, and it includes a drainage channel) by HDD and other methods. Empire states that it has considered various methods for crossing Ganargua Creek and its associated wetland including: open cut, restricted construction ROW, multi-flume, conventional bore, and HDD.

A conventional bore may be infeasible due to the high saturation of soils which would make the safety of constructing and working in the bore and receiving pits an issue. An HDD may be infeasible because of complications related to siting the pipe lay down area to construct the pull-back string. On the west side of Ganargua Creek there are constraints due to man-made and natural features. The pull-back string would need to pass over or through an area north of a construction berm that parallels the north side of the Thruway and then a drumlin (glacially-made hill). Work would probably have to occur within the Thruway ROW and there may not be adequate room for other construction workspaces. Due to the topography and limited flexibility of the pipe, some areas would have to be graded to establish a relatively level area for the pull-back string. Operation of the HDD for 24-hours a day for up to 2 weeks would affect residents along Crowley Road.

Empire is proposing to cross Ganargua Creek by the multi-flume method and to cross the associated wetlands east of the waterbody by using restricted construction ROW. The multi-flume method would use several flumes to convey water across the area where the crossing would occur. This would minimize water quality impacts since less disturbed trench spoil would transported by flowing water. The multi-flume would be pre-fabricated and would be used in areas where there is high flow. The crossing of the waterbody would begin from the west side to minimize impacts to the wetland on the east side. Stream banks would be restored in a manner consistent with our Procedures and Empire's ESCAMP. Empire would cross wetland 80B by using a restricted construction ROW. Rather than using

a typical 75-foot-wide construction ROW through the wetland, Empire would only use a 50-foot-wide construction ROW and would excavate the trench just prior to installation of the pipeline. Empire would pull a prefabricated drag section of pipe into the excavated trench, install the pipe, and then immediately backfill the trench. This would reduce both the amount of required workspace and the amount of time construction activities would be within the wetland. The drag sections would be constructed within the construction ROW to the east and/or west of the wetland. The wetland would be restored in a manner consistent with our Procedures and Empire's ESCAMP. Using the restricted construction ROW method would reduce temporary construction impacts to wetland 80B by about 0.37 acre.

We believe the proposed crossing of Ganargua Creek by multi-flume and the proposed crossing of wetland 80B are reasonable. If conducted according to its ESCAMP, the multi-flume crossing method should minimize impacts to Ganargua Creek due to sedimentation; and the restricted construction ROW used to cross wetland 80B would reduce direct impacts. We note that the NYSDEC and the COE may have additional requirements for crossing this waterbody and wetland. However, Empire has not filed detailed site-specific plans for crossing these resources. Therefore, **we recommend that:**

- **Empire file with the Secretary, prior to construction across Ganargua Creek, a site-specific plan for completing the crossing of the creek at CMP 3.6 and for crossing wetland 80B for review and written approval of the Director of OEP. The plan should include scaled drawings identifying all areas and resources that would be disturbed by construction workspaces including pipe lay down areas. The Ganargua Creek crossing plan should also be provided to the COE and NYSDEC for their review. Any comments Empire receives from these agencies should be filed with the Secretary.**

Empire proposes HDD crossings for Canandaigua Outlet (CMP 15.1) and Keuka Lake Outlet (CMP 40.6). Both are sensitive surface waters and have other associated features (e.g., nearby parallel roadways, railroads, narrow ravines, and recreational areas such as trails) that are best avoided by using an HDD.

Empire has completed geotechnical studies for both of these proposed HDD crossings. The Canandaigua Outlet HDD would also cross County Route 21. This waterbody has a general north-south alignment at the crossing location. HDD crossings require extra workspace on the drill side and the pipe lay down side where pipe segments are strung, assembled, and pulled through the drilled hole. Access to the east side of the HDD workspace would be from State Highway 488 and across an agricultural field. Access to the west side would be from County Route 21. Due to constraints caused by structures and roads on the east side of the crossing, the pipe lay down area would be on the west side of the crossing.

The Keuka Lake Outlet alignment in this area is roughly east-west. The HDD crossing would also include crossing Outlet Road and Stiles Road, both to the north of Keuka Lake Outlet. The pipe lay down area would be to the south due to the constraints caused by structures on the north side of the crossing. Access to the HDD workspaces would be from Stiles Road on the north side and Himrod Road on the south side.

Empire has not provided site-specific plans for either of these HDD crossings, nor had it identified a contingency crossing method or alternative alignment if the HDD is not successful. Therefore, **we recommend that:**

- **Empire file with the Secretary site-specific plans for completing the crossings of Canandaigua Outlet (CMP 15.1) and Keuka Lake Outlet (CMP 40.6) by HDD, prior to construction of the waterbody crossings for review and written approval by the Director**

of OEP. The plans should include scaled drawings identifying all areas and resources that would be disturbed by construction workspaces including pipe lay down areas.

Empire proposes to cross Shequaga Creek (CMP 67.0), a sensitive Class C(TS) waterbody, by using a conventional bore. Empire completed a geotechnical evaluation of using this method at Shequaga Creek and determined that it would be feasible. Empire would cross Shequaga Creek, State Highway 414, and the Norfolk and Southern Railroad in one approximately 250-foot-long bore. The bored crossing would require entry and receiving pits at each end of the bore. Additional temporary workspaces would be required to accommodate the bore pits and related construction activities. However, Empire has not provided final plans for the layout of these workspaces. Therefore, **we recommend that:**

- **Empire file with the Secretary, prior to construction of the waterbody crossing, site-specific plans for completing the crossing of Shequaga Creek (CMP 67.0) by a bored crossing, for review and written approval of the Director of OEP. The plan shall include scaled drawings identifying all areas and resources that would be disturbed by construction workspaces.**

Based on comments from the NYSDEC, in-stream work would be restricted from taking place between April 1 and May 15 for the Keuka Lake Outlet (MP 40.6), between May 1 and June 30 for the Canandaigua Outlet (MP 15.1), and between October 1 and May 15 for Shequaga Creek (MP 67.0). Empire listed no other timing restrictions for waterbody crossings.

Public Water Supplies and Sensitive Waterbodies

The Empire Connector Project pipeline ROW would not cross any surface waters located within three miles of active public water intakes, or waterbodies that are used for water supply. No waterbodies known to contain contaminated sediments would be crossed.

Empire consulted with state agencies (i.e., NYSDEC, NYSDOH) to determine the sensitivity of the waterbodies crossed. Four sensitive and one potentially sensitive waterbody were identified, as described below.

Canandaigua Outlet (CMP 15.1) was identified by NYSDEC as an important warmwater fishery resource at the crossing location. Canandaigua Outlet is classified as a Class C waterbody at the crossing location, but is classified as a Class C(T) waterbody further downstream. Also, the waterbody is recreationally important to canoeists and fisherman. An HDD has been proposed as the crossing method for Canandaigua Outlet in order to eliminate impact to the stream, and also to facilitate crossing parallel features, including Route 21 and a rail line. We believe a successful HDD crossing would avoid impacts to this resource.

Keuka Lake Outlet (CMP 40.6) is a Class C(T) waterbody that NYSDEC indicated is an important fishery resource with recreational importance. The Friends of the Outlet (Friends) is a non-profit land trust that owns the land adjoining Keuka Outlet between Penn Yan, New York (to the west of the pipeline alignment) and Dresden, New York (to the east of the anticipated crossing location). The Friends have established a hiking trail along the northern bank of Keuka Lake Outlet. The Keuka Lake Outlet also has many important historical aspects that are protected and promoted by the Friends. Consultation with the Friends has been initiated by Empire and would continue during project planning. An HDD has been proposed as the preferred crossing method for Keuka Lake Outlet in order to eliminate impact to the Outlet and land surface area associated with the Outlet ravine. We believe a successful HDD crossing would avoid impacts to this resource.

Van Zandt Hollow/Glen Creek (CMP 62.9) is a Class B waterbody. The western boundary of Watkins Glen State Park would be about 0.5 mile downstream of the proposed crossing location. Townsend Creek (CMP 63.8) is a potentially sensitive Class C waterbody. Empire proposes to cross both waterbodies using the dam and pump method to allow stream flow to be maintained and to minimize water quality impacts. Both waterbodies have the potential for periodic high volume flows and actively eroding stream banks. Empire indicated that weather forecasts would be factored into the scheduling of the Glen Creek and Townsend Creek crossings to avoid potential high flows, and that site-specific bank stabilization methods are currently being evaluated. The pipeline crossings at Glen Creek and Townsend Creek are known to be areas where there has been severe erosion and it is apparent that this issue should be addressed prior to construction so that it may be included in the restoration plan for this crossing. Therefore, **we recommend that:**

- **Empire file with the Secretary for review and written approval of the Director of OEP, site-specific restoration plans, including scaled drawings, for the crossing of Glen Creek (CMP 62.9) and Townsend Creek (CMP 63.8) that describe and show the areas that would be affected by restoration and how these areas would be restored, prior to construction of the waterbody crossings. Also, Empire should provide any correspondence concerning this issue with the NYSDEC and the COE.**

Use of dry crossing techniques and development of site-specific restoration plans addressing the known erosion issues at these crossings would minimize the impact of pipeline construction on these waterbodies.

Shequaga Creek (CMP 67.0) is a Class C(TS) waterbody identified by NYSDEC as an important fishery resource at the crossing location. Empire proposes crossing this waterbody by using a conventional bore to avoid or minimize impacts to the creek, and also to facilitate crossing the adjacent State Highway 414 and a rail line. We believe a successfully bored crossing would avoid impacts to this resource.

Hydrostatic Testing

Empire identified five waterbodies that would be used as source and/or discharge locations for hydrostatic test water (see table 4.3.2.2-3). Empire estimated the volume anticipated to be used from each source. Any other water used for hydrostatic testing of components of the pipeline would be obtained from municipal water supplies.

Empire would adhere to its ESCAMP and our Procedures during hydrostatic testing. In accordance with its ESCAMP and our Procedures, Empire would obtain written permission from the appropriate federal, state, and/or local permitting agencies before withdrawal from or discharge into state-designated high quality streams or public water supply streams. Test water would not be withdrawn from any source that could result in degradation of its state-designated water uses. Withdrawal of hydrostatic test water would be done at a rate such that there would be no perceptible change in downstream water levels or flow rates. Water would be withdrawn and discharged within the same watershed.

Construction Permits

Empire filed a joint application for a COE section 404 permit and a NYSDEC section 401 Water Quality Certificate for construction of the Empire Connector Project. A section 10 permit for crossings of navigable waterways would not be required for this component of the NE-07 Project.

Summary and Conclusion

Table 4.3.2.2-4 summarizes the proposed waterbody crossings for the Empire Connector Project. The pipeline would cross a total of 111 waterbodies, of which 50 are perennial waterbodies. Forty-nine (98 percent) of the perennial waterbodies would be crossed using dry crossing techniques (e.g., dam and pump, multi-flume, HDD, or conventional bore). Empire indicated that it would attempt to schedule the crossings of intermittent waterbodies during no-flow periods so that open cut crossings may be performed. If water is flowing at the time intermittent streams would be crossed, Empire would employ a dry crossing method, such as dam and pump or dam and flume. An additional five intermittent waterbodies would be crossed by access roads for the pipeline facilities.

We believe that if Empire implements the construction, restoration, and operation procedures of its ESCAMP and SPCC Plan, our Plan and Procedures, the requirements of the NYSDEC and the COE, the recommendations identified in this document, that impacts to surface waters due to pipeline construction and operation would be minimized and short-term.

Oakfield Compressor Station

Based on Empire's current design for the Oakfield Compressor Station, a permanent access road would be constructed across the unnamed tributary of the Oak Orchard Creek located south of the proposed facility site. Empire has not yet completed or filed a final design for the permanent access road to the Oakfield Compressor Station. Construction of the access road may require the installation of a permanent bridge which may require a permit from the COE and/or the NYSDEC. Bridge construction, whether temporary or permanent, would likely result in a minor impact on surface waters (e.g., sedimentation during construction). However, Empire would use this access road in a manner that would be consistent with its ESCAMP and with sections V.B.5.b, c, and d of our Procedures which recommend:

b. Construct equipment bridges to maintain unrestricted flow and to prevent soil from entering the waterbody. Examples of such bridges include:

(1) equipment pads and culvert(s);
(2) equipment pads or railroad car bridges without culverts;
(3) clean rock fill and culvert(s); and
(4) flexi-float or portable bridges.

c. Design and maintain each equipment bridge to withstand and pass the highest flow expected to occur while the bridge is in place. Align culverts to prevent bank erosion or streambed scour. If necessary, install energy dissipating devices downstream of the culverts.

Additional options for equipment bridges may be utilized that achieve the performance objectives noted above. Do not use soil to construct or stabilize equipment bridges.

d. Design and maintain equipment bridges to prevent soil from entering the waterbody.

On July 24, 2006, Empire filed some information in the form of plot plans about the bridge for the Oakfield Compressor Station access road. These have been filed with the Town of Oakfield as part of an application to receive a Special Use Permit from the Town for the property. From the plot plans it

appears that there is a culvert where an existing dirt/gravel road crossed the waterbody. Empire would extend by 10 feet and replace the western side of the culvert. Empire has better defined the location of the proposed permanent access road to the Oakfield Compressor Station, but it still has not provided details about the impacts of constructing a permanent or temporary bridge at this location. Therefore, **we recommend that:**

- **Empire file with the Secretary, prior to construction of the Oakfield Compressor Station, a site-specific plan for the access road to the proposed Oakfield Compressor Station, Genesee County, New York, which identifies how it would cross the unnamed waterbody on a permanent and temporary basis and identifies all of the temporarily and permanently affected areas for review and written approval of the Director of OEP.**

We believe that if Empire implements the construction, restoration, and operation procedures of its ESCAMP and SPCC Plan, our Plan and Procedures, the requirements of the NYSDEC and the COE, the recommendations identified in this document, that impacts to surface waters due to construction of aboveground facilities would be minimized and short-term.

4.3.2.4 Algonquin Ramapo Expansion Project

Existing Surface Water Resources

Pipeline Facilities

The project area would be within the Hackensack-Passaic drainage basin. The pipeline replacement project would cross 10 surface waterbodies, only one of which, the Mahwah River (AMP 0.5), is perennial and nine are intermittent (see table E3 in appendix E). Waterbody locations are shown in Appendix B3. These crossings include six intermediate and four minor crossings. The project includes no major waterbody crossings.

The Mahwah River is classified as a Class A(TS) stream suitable for trout spawning. Algonquin reports that the NYSDEC stocks brown trout in the river several times a year between March and May, at a location downstream of the proposed pipeline crossing location. The Mahwah River is also a County Regulated Stream under the authority of the Rockland County Drainage Agency (RCDA). The Rockland County Stream Control Act, Chapter 846, Laws of 1975 grants jurisdictional authority to the RCDA over activities that occur within the stream channel, the 100-year floodplain, and/or within 100 feet of the 100-year floodplain.

Ramapo pipeline replacement ROW would not cross any waterbodies located within three miles of active public water intakes or that are used for water supply. No waterbodies known to contain contaminated sediments would be crossed.

Miscellaneous Pipeline and Meter Station Modifications

Algonquin’s field investigation identified no waterbodies within the Ramapo Meter Station 202 site or the proposed workspace areas for the relocation of 30-inch mainline valves.

The pipeline modifications proposed at the Hudson River Valve Site would occur in an upland area within Algonquin’s existing permanent pipeline ROW to the west of Algonquin's existing pipeline crossing of the Hudson River. No impacts to the Hudson River would occur as all of the construction

activities would be about 150 feet west of the Hudson River and west of an existing road and railroad that lie between the proposed work area from the Hudson River.

Compressor Station Modifications

No surface waters have been identified within or adjacent to the Hanover Compressor Station site. An unnamed tributary to Haines Pond is present along the northwestern edge of the Southeast Compressor Station property, outside the proposed workspace. One stream, a tributary to Cedar Pond Brook, is present within the Stony Point Compressor Station property, but it would be greater than 200 feet west of the proposed workspace for the compressor station modification.

Oxford Compressor Station

An unnamed tributary to Eightmile Brook has been identified in the central portion of the Oxford Compressor Station property. It is associated with Wetland B, but it would be greater than 200 feet northeast of the proposed workspace for the compressor station.

Brookfield Meter Station

A field investigation for water resources of the Brookfield Meter Station property was conducted by Iroquois in November 2005. One unnamed intermittent stream was identified within the 68.3-acre site. It would be outside the proposed workspace for Algonquin's meter station. For additional information about waterbodies at the Brookfield, Connecticut site, see section 4.3.2.5 below for Iroquois' MarketAccess Project.

Surface Water Impacts and Mitigation

Pipeline Facilities

Algonquin proposes to cross the nine intermittent waterbodies using the open cut crossing method (see table 4.3.2.2-4). We note that if Algonquin would cross intermittent waterbodies when they have no flow, it may cross them using the open cut method. If water flow is present at the time these intermittent waterbodies would be crossed, Algonquin indicates that it would open cut these waterbodies and would complete trenching, installing pipe, and backfilling within 24 continuous hours for minor waterbody crossings and within 48 continuous hours for intermediate waterbodies, unless a flume is used to allow uninterrupted flows across the ditch-line or if blasting is required since they would require additional time. Algonquin states that it would insure that waterbodies are crossed in a minimal amount of time and in a manner consistent with our Procedures and its E&SCP.

Construction across the Mahwah River and its associated wetlands would be complicated by the built environment, the meandering nature of the waterbody, and the associated wetlands. The built environment includes the existing Algonquin pipeline ROW and residences built outside the ROW. A meander of the Mahwah River has moved over the pipeline that would be removed and replaced for this project. So, crossing the Mahwah River and its associated wetlands may not be accomplished in a typical manner.

Algonquin proposes to dam and pump the Mahwah River. Algonquin also requests approval from the FERC, COE, and NYSDEC to permanently relocate a section of the Mahwah River channel. In order to prevent scour over the pipelines, Algonquin proposes to permanently relocate a section of the river channel approximately 30 feet to the south. Algonquin states that this would facilitate construction,

minimize construction impacts to the river, and allow Algonquin to restore and maintain cover over the two pipelines in the future. A dam and pump set up would be installed in an upland area near the river. After the temporary dams are installed, the river flow would be pumped around the work area. Algonquin would then construct the new channel and fortify the channel banks to reduce the potential for the channel to encroach on the pipelines in the future. Algonquin would then discontinue using the pump, remove the temporary dams, and allow the river to flow through the newly constructed channel. Based on a hydraulic analysis for the proposed relocated channel, Algonquin does not anticipate any change to the river flow characteristics.

To facilitate the pipeline replacement, Algonquin also proposes to install temporary sheet piling directly within the existing river bed, between the existing pipelines. This would allow for the isolation of the existing 26-inch-diameter pipeline while protecting the active 30-inch-diameter pipeline and minimizing the potential for sloughing of trench slope. The sheet piling would also allow Algonquin to effectively dewater the work area. The sheet piling would be installed to a depth of approximately 20 feet below the river bottom and would parallel the banks. The piling would be extended out of the existing river bed into the adjacent wetland for a length of approximately 60 feet to either side of the river banks.

In-stream work at the Mahwah River crossing would occur between June 1 and September 30 to protect coldwater fisheries. All other in-stream work, except that required to install or remove equipment bridges, would occur between June 1 and November 30.

Algonquin filed a joint application on March 28, 2006 to obtain a section 404 permit from the COE and a section 401 Water Quality Certificate from NYSDEC for the Ramapo Pipeline Replacement Project. The Project would also require a permit under section 10 of the Rivers and Harbors Act of 1899 for the crossing of the Mahwah River, a navigable waterway.

The NYSDEC Bureau of Fisheries prefers that the Mahwah River crossing occur during low-flow periods. Algonquin's crossing plan states that construction would occur during a low-flow period. Final approval of the Mahwah River crossing plan would be subject to the permit requirements that may be issued by the NYSDEC and the COE pursuant to Algonquin's CWA section 401 and section 404 permit applications, respectively, and pursuant to COE authorization under section 10 of the Rivers and Harbors Act of 1899.

We believe that Algonquin's plan addresses the complicated issue of constructing its pipeline at this location, and also anticipates the possibility of continued meandering of the Mahwah River channel which may affect pipeline operation in the future. We believe that if Algonquin implements the construction, restoration, and operation procedures of its E&SCP and SPCC Plan, our Plan and Procedures, the requirements of the NYSDEC and the COE, and the recommendations identified in this document, impacts to surface waters due to construction of the proposed replacement pipeline facilities would be minimized and short term. However, the NYSDEC and the COE may have additional permit requirements.

Algonquin requested variances from section V.B.2.a and section VI.B.1.a. of our Procedures.

Section V.B.2.a states:

> Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from water's edge, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land.

Section VI.B.1.a states:

> Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from wetland boundaries, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land.

Algonquin states that the reasons for its request are that there are steep slopes, large amounts of rock, limited workspace along and adjacent to the construction ROW, and the need for extra workspace along Sky Meadow Road (which has adjacent wetlands). Due to these issues, Algonquin states that extra workspaces must be placed within 50 feet of wetlands and waterbodies at these locations: Mahwah River, AMP 0.54; Intermittent Stream (Wetland 02), AMP 0.76; Intermittent Stream, AMP 1.43; Intermittent Stream, AMP 2.35; Intermittent Stream, AMP 2.95; Intermittent Stream (Wetland 03), AMP 3.26; Intermittent Stream (Wetland 04), AMP 3.29; Intermittent Stream, AMP 4.12; Intermittent Stream, AMP 4.66; and Intermittent Stream, AMP 4.87. Algonquin indicated that it would file site-specific plans for crossing the Mahwah River and Sky Meadow Road (AMP 0.6).

We concur that the existing conditions at the identified locations justify the need for additional temporary workspace within 50 feet of either a wetland or a waterbody. Section V.B.2.b of our Procedures states that:

> The project sponsor shall file with the Secretary for review and written approval by the Director, a site-specific construction plan for each extra work area with a less than 50-foot setback from the water's edge (except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land) and a site-specific explanation of the conditions that will not permit a 50-foot setback.

While Algonquin has filed adequate information to justify the location of extra workspaces within 50 feet of the identified waterbodies and wetlands, we believe that site-specific plans should be developed for these locations so they can be included as extra detail with the alignment sheets for the Ramapo Expansion Project and we believe Algonquin should attempt to maintain at least a 10 foot setback from these areas, if possible. Therefore **we recommend that:**

- **Algonquin may use extra workspaces within 50 feet of these resources: Mahwah River, AMP 0.54; Intermittent Stream (Wetland 02), AMP 0.76; Intermittent Stream, AMP 1.43; Intermittent Stream, AMP 2.35; Intermittent Stream, AMP 2.95; Intermittent Stream (Wetland 03), AMP 3.26; Intermittent Stream (Wetland 04), AMP 3.29; Intermittent Stream, AMP 4.12; Intermittent Stream, AMP 4.66; and Intermittent Stream, AMP 4.87. However, prior to the use of these extra workspaces, Algonquin should file with the Secretary for review and written approval by the Director of OEP, site-specific plans for each of the identified locations that show the configuration and dimensions of the extra workspaces relative to the waterbody or wetland, the setback from these resources, the proposed pipeline construction ROW, and all existing or proposed pipeline facilities. The site-specific plans should be included with the pipeline construction alignment sheets.**

Algonquin indicated that the Mahwah River would be used as the source and discharge location for hydrostatic test water. Algonquin estimated that 1,750,000 gallons of water would be necessary (see table 4.3.2.2-3). Algonquin would adhere to its E&SCP and our Procedures during hydrostatic testing. In accordance with its E&SCP and our Procedures, Algonquin would obtain written permission from the appropriate federal, state, and/or local permitting agencies before withdrawal from or discharge into state-

designated high quality streams or public water supply streams. Test water would not be withdrawn from any source that could result in degradation of its state-designated water uses. Withdrawal of hydrostatic test water would be done at a rate such that there would be no perceptible change in downstream water levels or flow rates. Water would be withdrawn and discharged within the same watershed.

We believe that if Algonquin implements the construction, restoration, and operation procedures of its E&SCP and SPCC Plan, our Plan and Procedures, the requirements of the NYSDEC and the COE, and the recommendations identified in this document, impacts to surface waters due to hydrostatic testing of the proposed replacement pipeline facilities would be minimized and short-term.

Miscellaneous Pipeline and Meter Station Modifications

No direct impacts to surface waters would result from modification of the Ramapo Meter Station 202 and relocation of 30-inch mainline valves. No waterbodies were identified within the meter station site or the proposed workspace areas for the mainline valves relocations; however, removal of the mainline valve next to Sky Meadow Road would affect wetlands within the existing ROW (see section 4.7.3). This wetland area would be restored after removal of the aboveground facility. No discharging of hydrostatic test water would be completed independent of that described above for the pipeline replacement project.

Modifications to the Hudson River Valve Site would have no direct impact to the Hudson River because construction activities would be set back from the river by about 150 feet, with an existing road and railroad separating the proposed work area from the Hudson River. Algonquin proposed using about 2,000 gallons of Hudson River water to hydrostatically test the valve site after the modifications are completed.

The COE commented that installing an intake structure for the purpose of withdrawing hydrostatic test water from the Hudson River may be a section 10 regulated activity and would potentially affect the federally-listed endangered shortnose sturgeon. We believe the intake hose would have minimal or limited impact on the shortnose sturgeon or its habitat. But, we believe an alternative water source would be obtainable and there would be no need to withdraw water from the Hudson River. Further, to access this water source, the intake hoses would have to cross the active railroad that lies between the Hudson River Valve Site and the Hudson River potentially affecting railroad traffic. Therefore, we believe that Algonquin should look for another water source for hydrostatic testing at this location. Only 2,000 gallons would be required for testing and should be available from local suppliers. Algonquin would obtain water from local suppliers for hydrostatic testing at some of its compressor stations; and the volume of water needed for testing at these facilities is greater than the volume needed at the Hudson River Valve Site.

In the DSEIS we recommended that Algonquin obtain an alternate source of water for hydrostatic testing of the facilities it would install at its Hudson River Valve Site rather than using the Hudson River. In Algonquin's comments on the DSEIS, it indicated that it would us an alternative source of water for hydrostatic testing.

Algonquin would protect surface waters from surface runoff from disturbed areas by installing appropriate erosion and sediment controls in accordance with its E&SCP and our Procedures. Therefore, we believe that construction and operation of the proposed aboveground facilities and facility modifications would have minimal impact on surface water resources.

Compressor Station Modifications

No waterbodies would be affected by the proposed modification to the Hanover Compressor Station because no waterbodies were identified within or adjacent to the site.

There would be no direct impact to the unnamed tributary to Haines Pond from modifications to the Southeast Compressor Station because the proposed construction workspace would be more than 200 feet from the stream. We anticipate that Algonquin would protect the stream from exposed soils by installing appropriate erosion and sediment controls in accordance with its E&SCP and our Procedures. The tributary would be the source and discharge site for about 10,000 gallons of water that would be required to hydrostatically test the compressor station after the modifications are completed. Assuming that the hydrostatic test waters are discharged in accordance with our Procedures and in the project's NYSDEC SPDES permit conditions, we expect there would be minimal environmental impact.

In a February 10, 2006 letter, the City of New York Law Department identified potential adverse impacts to the quality of the New York City water supply posed by the disturbance of watercourses, wetlands, and associated buffer areas from construction of the Southeast Compressor Station. If the compressor station is constructed in conformance with Algonquin's E&SCP and our Procedures, and any appropriate permit requirements of the NYSDEC, then we believe there would be no adverse impacts to water quality in the unnamed tributary to Haines Pond or other downstream waters. (See additional discussion in section 4.7.5).

Modifications to the Stony Point Compressor Station would have no direct impact to the tributary to Cedar Pond Brook that traverses the property because the proposed construction workspace would be greater than 200 feet east of the stream. We anticipate that Algonquin would protect the stream from exposed soils by installing appropriate erosion and sediment controls in accordance with its E&SCP and our Procedures. The tributary would be the source and discharge site for about 5,000 gallons of water that would be required to hydrostatically test the compressor station after the modifications are completed. Assuming that the hydrostatic test waters are discharged in accordance with our Procedures and in the project's NYSDEC SPDES permit conditions, we expect there would be minimal environmental impact.

Oxford Compressor Station

Based on Algonquin's design for the Oxford Compressor Station, construction would not directly affect the unnamed tributary to Eightmile Brook that is near the center of the property. The stream would be greater than 200 feet northeast of the proposed workspace limits for the compressor station. We anticipate that Algonquin would protect surface waters from exposed soils by using appropriate erosion and sediment controls in accordance with its E&SCP and our Procedures. About 25,000 gallons of water would be required to hydrostatically test the compressor station after the modifications are completed. The proposed source would be Long Meadow Pond or municipal water. If the hydrostatic test waters are discharged in accordance with our Procedures and conditions specified in the project's CTDEP hydrostatic test water discharge permit conditions, then we expect there to be minimal environmental impact.

Brookfield Meter Station

The proposed workspace areas for construction of Algonquin's Brookfield Meter Station would not directly affect the intermittent stream channel located within the 68.3-acre property. If Algonquin constructs the facility in accordance with its E&SCP and our Procedures which would include installing and maintaining appropriate erosion and sediment controls to minimize impacts to areas outside the

approved construction workspaces, then project construction would have minimal indirect impact to surface waters including the intermittent stream.

About 5,000 gallons of water would be required to hydrostatically test the meter station. Municipal water would be used for testing purposes. If the hydrostatic test waters are discharged in accordance with Algonquin's E&SCP, our Procedures, and CTDEP hydrostatic test water discharge permit conditions, then we expect there to be minimal environmental impact.

4.3.2.5 Iroquois MarketAccess Project

Existing Surface Water Resources

Brookfield Compressor Station

The proposed Brookfield Compressor Station site would be within the Housatonic River drainage basin, which makes up about 1,970 square miles in western Connecticut and smaller parts of New York and Massachusetts (USEPA 2001a). It is also within the subregional drainage basin of Pond Brook. A perennial waterbody that parallels the railroad and powerline lies outside the 68.3-acre property. This waterbody drains into Pond Brook.

One unnamed intermittent stream is present within the Brookfield Compressor Station property, It originates in the northern corner of this property where it receives drainage from off-site wetlands and stormwater runoff via a culvert under High Meadow Road. The waterbody channel is about 3 to 12 feet wide, has varying bank heights, and has been disturbed by past activities at this location which may include activities related the former asphalt processing operation. But, this waterbody would not be crossed by any construction-related activities at the proposed Brookfield Compressor Station site.

No sensitive waterbodies would be affected by this portion of the MarketAccess Project.

This portion of the MarketAccess Project would not be within a public water supply watershed.

Dover Compressor Station

The Dover Compressor Station Project site would be within the Tenmile River regional drainage basin, which covers about 210 square miles of the eastern Dutchess County, New York (Dutchess County Department of Planning and Development and the Dutchess County Environmental Management Council 1985). At the local level, the Dover site drains to Swamp River.

Two intermittent streams, Streams 1 and 2, are within the existing Dover Compressor Station property. Both, however, would be outside the proposed project workspace. Stream 1 would be about 200 feet south and Stream 2 would be about 200 feet northeast of the proposed workspace. Both are unnamed tributaries of Swamp River. The Dover Compressor Station Project site would be within the Tenmile River regional drainage basin, which covers about 210 square miles of the eastern Dutchess County (Dutchess County Department of Planning and Development and the Dutchess County Environmental Management Council 1985). At the local level, the Dover site drains to Swamp River.

No sensitive waterbodies would be affected by this portion of the MarketAccess Project.

The Dover Compressor Station workspace would be outside New York City Public Water Supply Watershed, which encompasses parts of Dutchess County. This portion of the MarketAccess Project would not be within a public water supply watershed.

Surface Water Impacts and Mitigation

Brookfield Compressor Station

Based on Iroquois' preliminary site plan for the Brookfield Compressor Station in Brookfield, Connecticut, the proposed workspaces would not cross or otherwise infringe upon the intermittent waterbody located within the property. Portions of the proposed station yard, driveway, septic system, and other facilities would be within 100 feet of this waterbody. However, it would be outside all construction workspaces. Therefore, the project would have no direct impact on surface waters. Iroquois would construct the facility in accordance with our Plan and Procedures and Iroquois' SPCC Plan, which should minimize project impacts on surface water resources during construction and operation of the proposed facilities.

About 59,000 gallons of water would be used to hydrostatically test the piping and other appropriate facilities at the new compressor station. Either municipal supplies or water trucked to the site would be used for testing purposes. Iroquois would adhere to our Procedures and to any additional conditions the CTDEP may require Iroquois to implement pursuant to its NPDES permit. We believe that use of the recommendations in our Procedures and any additional requirements the CTDEP may impose in its hydrostatic test water discharge permit during hydrostatic testing would minimize impacts related to hydrostatic testing. Therefore we believe the impact of hydrostatic testing on water resources would be minimal.

Dover Compressor Station

No permanent facilities would be constructed within 100 feet of Streams 1 and 2 at the Dover Compressor Station in Dover, New York. Iroquois would install the proposed gas cooler facilities in accordance with our Plan and Procedures and Iroquois' SPCC Plan, which should minimize project impacts on surface water resources during construction and operation of the proposed facilities.

Iroquois estimates that about 35,000 gallons of water would be required to test the new Dover Compressor Station piping once the gas cooler facilities are installed. Either water drawn from an on-site well or water trucked to the site would be used for testing purposes. We believe that use of our Procedures and any additional requirements the NYSDEC may impose in its hydrostatic test water discharge permit during hydrostatic testing would minimize impacts related to hydrostatic testing. Therefore, we believe the impact of hydrostatic testing on water resources would be minimal.

4.4 FISHERIES AND WILDLIFE RESOURCES

4.4.1 MILLENNIUM PIPELINE PROJECT - PHASE I

The FEIS for the Millennium Pipeline Project (October 2001) included detailed descriptions of the fisheries and wildlife resources that would be affected by Millennium's originally proposed project. General information presented in sections 4.4 and 5.4 of the 2001 FEIS has not changed substantially for the amended project and is not repeated here. The Phase I Project impacts reflect the fact that the amendment proposal would involve construction of the pipeline along a segment of the approved Millennium Pipeline Project route between MPs 190.6 and 376.6[2] rather than along the original 424-mile-long route.

Affected resources also reflect the fact that Millennium would not construct any pipeline along an approximate 7.1-mile-long segment of the existing 24-inch-diameter Line A-5 between MPs 340.5 and 347.7. In re-evaluating the engineering design of its amendment project and customer requirements, Millennium determined that it could leave this 24-inch-diameter pipeline segment in service between Columbia's Huguenot and Middletown M&R Stations (MPs 340.5 and 347.7, respectively). One advantage to this would be that Millennium would not need to construct across the Neversink River (MP 340.8) potentially affecting the federally-listed and New York state-listed endangered dwarf wedge mussel that may be present in this waterbody (see section 4.6.1.1 of this document). A second advantage is that Millennium would not need to disturb resources along a 7.1-mile-long corridor.

The affected resources also incorporate Millennium's proposed pipeline route changes and the new compressor station that are the subjects of Millennium's amendment application. The proposed route changes are:

1. NYSEG Chemung Variation from MP 198.0 to MP 203.6,
2. NYSEG Tioga-Broome Variation from MP 232.2 to MP 245.0,
3. NYSEG Delaware Variation from MP 284.4 to MP 284.9, and
4. Warwick Isle Route Variation from MP 350.8 to MP 351.6.

4.4.1.1 Fisheries

The surface waters that would be crossed by Millennium's Phase I Project pipeline support both warmwater and coldwater fisheries. Waterbodies classified as warmwater fisheries would provide habitat for species such as smallmouth bass, largemouth bass, yellow perch, and bluegill. Warmwater streams are typically slow moving, less oxygenated waterbodies with soft substrates of sand and silt. Waterbodies classified as coldwater fisheries generally provide habitat for fish such as trout, northern pike, and salmon. Coldwater streams are usually well-oxygenated with temperatures below 65° F. A detailed description of fisheries that would be affected by construction of the Millennium Pipeline Project between MP 190.6 and MP 376.6, which corresponds to the segment of that project that Millennium proposes to construct for its Phase I Project, is in section 4.4.1 and 5.4.1 of the 2001 FEIS. Information in that document has been incorporated by reference into the analysis of the Phase I Project and will not be repeated. Additional surface water resources that were identified during fieldwork conducted by Millennium in 2003, 2004, and 2005 were primarily ephemeral streams. These waters do not support fisheries due to lack of perennial flow.

[2] This segment includes Columbia's Line A-5 Replacement Project since it has been incorporated into the environmental analysis of Millennium's Phase I Project. The Line A-5 Replacement Project portion is between approximate MPs 367.9 and 376.6 in Orange and Rockland Counties, New York.

A description of potential impacts to fisheries due to construction of the Millennium Pipeline Project was included in the 2001 FEIS. The proposed pipeline route modifications to the previously approved project, including the NYSEG and Warwick Isle Route Variations, would not affect the previously reported scope of potential fishery impacts or the mitigation measures proposed by Millennium or required by the Commission in its Interim and Final Orders for that project.

Millennium has proposed crossing modifications for a number of waterbodies that would occur along the Phase I Project: Owego Creek (MP 230.3), Nanticoke Creek (MP 240.9), Susquehanna River (MP 263.3), West Branch of the Delaware River (MP 276.1), East Branch of the Delaware River (MP 287.4), Wallkill River (MP 350.8, and Pochuck Creek (MP 352.4). These are discussed further in section 4.3.2.2.

Rather than attempt a crossing of the Neversink River as originally proposed, Millennium now proposes to continue to use a 7.1-mile-long segment between MP 340.5 and MP 347.7 of Columbia's existing 24-inch-diameter Line A-5 pipeline. This would avoid any impacts to fisheries or other aquatic resources in the Neversink River.

The construction workspace for the proposed new compressor station in Corning, New York would not contain or affect surface waters. Therefore, construction of this new facility would not have any impact on fisheries resources.

Columbia Line A-5 Replacement

Most of the streams in the Columbia Line A-5 Replacement portion of the project are identified by the NYSDEC as coolwater or warmwater streams, while the Ramapo River and Stony Brook are classified as coldwater fisheries. Ramapo River is stocked with brown trout and rainbow trout. Two Ramapo River channels would be crossed by an HDD. Millennium proposed an alternative location for this HDD crossing in its May 3, 2006 amendment. This alternative is addressed in section 3.2.1.3.

Construction impacts to fishery resources for the Line A-5 Replacement portion of Millennium's Phase I Project (between MP 367.9 and MP 376.7) would include temporary habitat alteration and substrate disturbance at the site of the pipeline installation across waterbodies. In addition, some invertebrates would likely be destroyed at the immediate waterbody crossing locations. The use of HDDs and dry-ditch crossing methods would reduce or eliminate downstream turbidity and sedimentation resulting from construction activities, and HDD crossings when successfully completed would have no in-stream impacts and, therefore, no fisheries impacts. Operation and routine maintenance of the project would not affect fishery resources.

The Ramapo River would be crossed by using an HDD. The other waterbody crossings would be crossed using dry-ditch construction techniques. Impacts to fisheries could occur if the HDD experiences a loss of drilling fluids, or "frac out" into the waterbody. Although drilling mud consists of naturally occurring nontoxic materials, such as bentonite clay and water, the release of large quantities of drilling mud into a waterbody could affect fisheries or other aquatic organisms by settling and temporarily inundating the habitats used by these species. The probability of an inadvertent release is greatest near the entry and exit points rather than under the riverbed. Columbia/Millennium has prepared procedures in its HDD Contingency Plan for the Ramapo River that would minimize the potential for a frac out (see Millennium's ECS).

Streambeds and banks would be restored as closely as possible to their pre-construction state, to minimize long-term impacts to fisheries. The implementation of the construction, restoration and maintenance procedures and methods described in Millennium's ECS, use of our Procedures, as well as timing restrictions and other requirements of other state and federal permits, would minimize impacts to fisheries within waterbodies crossed by the project.

Based on the measures planned by Millennium and Columbia to avoid or minimize project impacts on water resources and fisheries, we conclude that the construction and operation of the project would not constitute a significant impact to fishery resources.

4.4.1.2 Wildlife Resources

The Phase I Project would cross a variety of habitat types commonly found in rural agricultural and forested areas of the Southern Tier of New York, including upland forest, early successional, wetland, and agricultural habitats. Table 4.4-1 at the end of this subsection identifies a number of representative wildlife species that may be present in these habitat types. A detailed description of wildlife and wildlife habitats that may be in the vicinity of the Millennium Phase I Project is contained in the 2001 FEIS for the Millennium Pipeline Project and is incorporated by reference into this document. While the Millennium Phase I Project contains minor modifications or variations to the project route, including the NYSEG and Warwick Isle Route Variations, these would not alter the previously reported existing wildlife resources since they would be in the same general area.

The proposed installation of the new compressor station next to the existing Columbia Corning Compressor Station would affect an additional 6.5 acres of land; 6.0 acres of which would be forested and 0.5 would be herbaceous open land. This land is currently owned by Columbia.

Impacts to wildlife along the proposed Phase I Project pipeline route, including the NYSEG and Warwick Isle Route Variations, would not significantly differ from those identified in the Millennium Pipeline Project 2001 FEIS. The new compressor station would affect 6.5 additional acres of forested and open land. Construction would result in the direct loss of some terrestrial species that do not have the ability to displace quickly (e.g. voles, mice, amphibians). However, other wildlife that may be displaced would be able to utilize alternative habitat in the immediate vicinity. Therefore, the expected impacts to wildlife from the construction of this facility would be minimal and temporary.

Millennium proposes to obtain from Columbia and continue to use a 7.1-mile-long segment of the existing 24-inch-diameter Line A-5 pipeline between MP 340.5 and MP 347.7 rather than replacing this segment with 30-inch-diameter pipeline. This acquisition would mean that Millennium would not need to disturb about 64.5 acres along and within this segment of the Line A-5, thereby minimizing the environmental impact of the project on the wildlife in that area.

<u>Columbia Line A-5 Replacement</u>

The Columbia Line A-5 Replacement Project would be included in the construction of Millennium's Phase I Project. This portion of the Phase I Project would cross a variety of habitat types commonly found in rural areas of southeastern New York: upland forest, early successional, and wetland. In general, all wildlife species common in these habitat types could be expected to occur in the project area.

The Line A-5 Replacement Project would cross about 2,709 feet of Sterling Forest® State Park located in two sections between MP 367.9 and MP 368.0 and between MP 368.3 and MP 368.7. Sterling

Forest® State Park is a unit of the Palisades Interstate Park Commission (PIPC). These short crossings would be on existing pipeline and would pass through adjacent forested area. The portion of the park that is crossed by the project is relatively undeveloped except for the existing Columbia Line A-5 pipeline and ROW. The project would cross Harriman State Park in two sections between MP 369.9 and MP 366.7 and also between MP 366.8 and MP 375.7. This park is also a unit of the PIPC. This large state park is relatively undeveloped, especially in the areas adjacent to the project route.

Storage Yard 98 would be located within the boundary of Harriman State Park. The storage yard location has been previously cleared and graded. Thus, wildlife habitat quality at the proposed site of Storage Yard 98 has been altered from the forest habitat that is predominant elsewhere in the Park. The project would cross Kakiat Park, a Rockland County park unit, between MP 375.8 and MP 376.6. This county park is relatively undeveloped, especially in areas adjacent to the project route.

Storage Yard 96 would be located within Samuel Fisher Mount Ivy Educational County Park in Rockland County. A large wetland occupies most of this park. However, the location of the proposed storage yard has been previously cleared and graded. Thus, the wildlife habitat available within the proposed storage yard is considerably different than the wetland habitat typical of the majority of the park.

Since much of the Line A-5 Replacement Project portion of the project route would lie within relatively undeveloped forest, forest species are expected to be predominant in the area of the project.

Temporary impacts on wildlife resources along the Line A-5 Replacement Project would be minimal. Some smaller, less mobile animals may be lost within the construction work area, and larger animals would be temporarily displaced during construction. However, it is anticipated that most wildlife would relocate to suitable adjacent habitat. Long-term loss of habitat would be minimal, since construction would occur within and adjacent to the existing ROW and temporary workspace, and would be restored following construction.

Long-term impacts associated with the Line A-5 Replacement Project would include a temporary loss of about 55.4 acres of upland forest habitat. All of this acreage would be in temporary workspace adjacent to the existing ROW. This acreage would be allowed to revert to forest following construction. In the interim, this habitat type would be replaced with ecotone[3] vegetation cover.

Because construction of about 90 percent of the Line A-5 Replacement Project would be accomplished using the lift-and-lay method of construction, which would replace much of the existing Line A-5 pipeline with the 30-inch-diameter Millennium pipeline, most of the construction-related disturbance would be within the existing pipeline ROW or immediately adjacent land. Impacts to neotropical migrant birds due to loss of forest interior habitat would be minimal. There would be minimal, if any significant impact on forest interior habitat.

The Columbia Line A-5 Replacement section would follow existing ROW across Sterling Forest® State Park, Harriman State Park, and Kakiat County Park. Pipeline construction would be by the lift-and-lay procedure through most of the park land, so impacts to areas outside the existing pipeline ROW would be minimized to the greatest practicable extent. Construction activities would affect about 7.4 acres in the Sterling Forest ® State Park; 78.9 acres in Harriman State Park; 11.1 acres in Kakiat County Park; and 3.5 acres in Samuel Fisher Mount Ivy Educational County Park.

[3] Ecotone refers to transitional and/or successional vegetation between forest and cleared ROW habitat.

Columbia coordinated with the staffs of the state parks and with Rockland County concerning construction within the park lands and prepared a specific Environmental Management and Construction Plan (EM&CP) for Harriman State Park and other affected park lands (see section 4.8). Millennium has proposed and we have evaluated and recommended route alternatives that would affect land in Sterling Forest ® State Park and Harriman State Park (section 3.2.1.3).

Based on the measures planned by Millennium and Columbia to avoid or minimize project impacts on wildlife and wildlife habitat we conclude that the construction and operation of the project would not constitute a significant impact to wildlife resources.

4.4.2 EMPIRE CONNECTOR PROJECT

4.4.2.1 Fisheries

The surface waters that would be crossed by the Empire Connector Project support both warmwater and coldwater fisheries. The proposed pipeline would cross 48 perennial streams classified as warmwater fisheries by the NYSDEC. The proposed route would cross two coldwater fisheries: Shequaga Creek (CMP 67.0) and Keuka Outlet (CMP 40.7).

Streams that would be crossed by the project may support a variety of minnows (Cyprinidae), sunfish (Centrarchidae), darters (Percidae), suckers (Catostomidae), and catfishes (Ictaluridae). An annual spring migration of rainbow smelt (*Osmerus mordax*), from Seneca Lake, spawn in the Keuka Outlet (at CMP 40.7). Although smelt are not considered a game fish, they are privately netted for human consumption.

Fisheries may be considered significant for a variety of reasons including particular state management practices, recreational use, or the presence of commercial fisheries or protected species. The following four streams are designated by the NYSDEC as important fishery resources: Keuka Outlet (stocked brown trout) (CMP 40.7), Canandaigua Outlet (warmwater fishery [smallmouth bass, northern pike, panfish]) (CMP 15.1), Shequaga Creek (wild brown trout) (CMP 67.0), and Glen Creek (suitable for trout survival) (CMP 62.9).

Empire would employ specific construction techniques to complete waterbody crossings to minimize the effects of construction on habitats in and along waterbodies at and downstream from crossing locations. Waterbody crossing methods would include conventional open cut techniques, HDD, dam and pump, flume, and bore techniques.

Crossings at the Keuka Outlet (CMP 40.7) and Canandaigua Outlet (CMP 15.1) would employ the HDD method of construction as the preferred crossing method. Successful completion of an HDD would result in installation of the pipeline without any disturbance to the waterbody and adjacent riparian and/or wetland areas. Since the drilling conveys the pipeline at a depth equal to or greater than 25 feet beneath the streambed, direct effects to the water quality, streambed media and aquatic life, and stream banks would not be expected.

Empire would monitor all HDD construction for the potential impacts from “frac out” (sudden visible increase in turbidity caused by drilling mud entering the stream through the fractured streambed). In the event that a frac out does occur that impacts the stream bed, the first response would be to halt the pumping of the drilling fluid and communicate with the environmental inspector and standby staff who would install a silt curtain downstream to minimize the area of the stream potentially impacted. The

HDD drill paths would be designed with adequate depth under the stream channel, such that the likelihood of a frac out is minimized.

The crossing of Shequaga Creek (CMP 67.0) would be accomplished by conventional bore technique. This technology allows the pipe to be installed under the streambed, with no impact on the streambed or banks, water quality or aquatic life.

The crossing of Glen Creek (CMP 62.9) would be conducted as a dry crossing by use of dam and pump to minimize or avoid impacts to water quality or habitat. Construction activities at the crossing would be limited to a few days or less, so the potential impacts would be temporary.

Flint (CMP 25.0) and Ganargua Creeks (CMP 3.6) would be crossed using a multi-flume method. This crossing method would be implemented because these waterbodies would be too wide to be crossed by the dam and pump technique or a single flume. The method was selected to provide the least disturbance and most expedient crossing to minimize overall impact. For the remaining perennial streams, dry crossing techniques such as dam and pump or single flume methods would be employed.

The open-cut construction method would be used to cross intermittent streams and man-made channelized drainages in instances where there is no flow during the time of construction. The construction process generally takes less then one day per crossing. Following backfilling each side of the crossing would be restored for a distance of about ten to twenty feet upland from the waterbody edge in a manner consistent with restoration of flowing waterbodies that were crossed using a dry crossing method. Since there would be no flow in the waterbody when this crossing method would be used, there would be minimal impacts to aquatic habitat.

To minimize the potential impacts associated with the stream crossings described above, Empire would implement its ESCAMP. The ESCAMP describes the waterbody crossing methods and the erosion and siltation control methods and devices that Empire would use while constructing its project.

The pipeline would be hydrostatically tested following construction. With proper engineering technology and controls, hydrostatic testing would not negatively impact the fishery resources at the take and discharge points. A hydrostatic testing plan would be included as part of Empire's section 402 of the Clean Water Act, Hydrostatic Test Water Discharge Permit it would request from the NYSDEC. Empire would provide the Commission with a copy of this permit after it receives it from the NYSDEC and prior to construction.

Based on the measures proposed by Empire to avoid or minimize project impacts on water resources and fisheries, we conclude that the construction and operation of the project would not constitute a significant impact to fishery resources.

4.4.2.2 Wildlife Resources

The wildlife resources within the Empire project area are diverse due to the variability of habitats and geography along the project. Seven wildlife habitat types have been identified: forested upland, forested wetland, upland shrub/upland meadow, scrub-shrub wetland, emergent wetland, agricultural, and natural drainages. The proposed project would traverse along existing pipeline ROW in the southern portion of the project, in areas of deciduous upland forest adjacent to open uplands. The general setting of the southern portion of the project area is characterized by the dominance of deciduous forest-covered hills, with fields, pastures, upland shrub, wetlands, streams and rural development in the valleys. In areas of lower elevation and gentler topography in the central and northern portions of the Empire Connector

Project, the landscape is primarily agricultural and comprised of segmented forest, hedges, wetlands and active, fallow or abandoned farm fields.

Upland Hardwood Forest

Trees such as red oak, white oak, black cherry, maple species, American beech, ash species, hickory, and basswood dominate the upland forests. The upland forest habitat provides essential mast (i.e. acorns, beechnuts and hickory) to a variety of mammals and birds. The mature trees also provide nesting and roosting habitat for many bird species native to New York. A number of reptiles and amphibians are permanent inhabitants of eastern forests. Fox and coyote tracks and scat were routinely observed along the proposed pipeline route during field surveys performed by Empire.

Upland Shrub/Upland Meadow

Upland shrub habitat was identified during field surveys, particularly in the northern portion of the project area, where farm fields have been abandoned. Gray and red-osier dogwood, viburnum, multiflora rose, weed and grass species and tree saplings dominate the upland shrub habitat. A variety of native birds feed extensively on dogwood berries and the stems are a forage source for white-tailed deer and cottontail rabbits. Songbirds use dogwood thickets for nesting and cover. Upland shrub provides cover habitat for many species of mammals, and predators such as red and gray fox utilize upland shrub as hunting grounds.

Upland meadow identified along the project route primarily consists of native grasses, weeds, and tree saplings in the early stages of successional growth. The upland meadow habitat was more common in the central and northern portions of the project area than elsewhere. Upland meadow was the dominant habitat identified at the proposed Oakfield Compressor Station in Genesee County. It was apparent during field surveys that the majority of upland meadows are converted farm fields or pastures as evidenced by the presence of stonewalls, hedgerows and rock piles.

The fields provide valuable edge habitat along their perimeters. The dense grasses provide nesting habitat, cover, and seed production for a variety of birds; while groundhogs, skunks and opossums utilize upland meadows as den and feed locations. Predatory birds such as red-tail hawks, northern harriers and kestrels utilize these fields for hunting small mammals (e.g. meadow voles, cottontail rabbit) and birds. White-tailed deer utilize upland meadow for fawning, browse and cover. Snakes, frogs, and toads commonly inhabit upland meadows because of the quantity of insect life present.

Agricultural Land

Agricultural land dominates the landscape primarily in the central portion of the Empire project area. Agricultural crops typically consist of corn, soybeans, and alfalfa/hay. Although mammals such as white-tailed deer, wild turkey, and raccoons forage on these crops, active farm fields are not considered an important wildlife habitat in comparison to the others identified.

Scrub-shrub Wetland

In addition to their water retention and filtration benefits, scrub-shrub wetlands provide food, cover and nesting habitat for a wide variety of wildlife. During field surveys, both leopard and pickerel frogs were routinely observed as well as garter snakes. Heavily used deer trails crossed most scrub-shrub wetlands. Most scrub-shrub wetlands appear favorable for black-capped chickadees, cardinals, blue jays, sparrow species and American robins. Bird nests were commonly observed in the shrubs and evidence of predator use (scat and tracks) was abundant in many scrub-shrub wetlands.

For purposes of this project, wet meadow habitat is grouped into the scrub-shrub category. Wet meadow existed within the pre-existing utility corridor within the proposed project area. Although this habitat is routinely mowed and does not provide the wildlife diversity of the previously stated meadows, it does provide openings in the forest canopy and provides transitional habitat along the edges of the utility corridors. Fall flocks of wild turkey and white-tailed deer were commonly seen feeding and browsing on the existing utility ROW during field surveys. Numerous frogs and occasional snakes were observed within the existing utilities, probably due to the persistent moisture and greater concentration of insect life.

Wet meadows outside the existing utility corridors were dominated by grasses, weeds and saplings that thrive in frequently flooded or seasonally wet areas (i.e. canary reed grass). If left undisturbed, these wet meadows would transition to scrub-shrub wetland habitat.

Forested Wetlands

Wildlife benefits in forested wetlands include roosting and nesting habitat for predatory birds. Swamp white oaks, where present, provide acorn mast for white-tailed deer, wild turkey, raccoon, squirrels and smaller ground mammals. Red maple, green ash and understory shrubs were common and provide a food source for deer and turkey. Tree cavities and dead trees provide nesting and food sources for woodpeckers and other birds. Amphibians such as wood frogs, American toads, and salamanders thrive under fallen trees and decaying wood.

Emergent Wetlands

Several small isolated emergent wetlands, often interspersed with scrub-shrub wetlands, were identified within the Empire project area. Expansive emergent wetlands were also identified in the northern portion of the project near the New York State Thruway. Emergent wetlands provide a source of water, food, nesting, and cover for a variety of wildlife. Some wildlife species such as muskrat and mink are dependent upon emergent wetlands as a primary food and breeding source. When flood conditions or open water exist, great blue herons, little green herons, bitterns, and kingfishers frequently visit these wetlands. These birds feed on resident frogs, snakes and tadpoles. Red-winged blackbirds and other bird species, including waterfowl, utilize emergent wetlands as breeding and nesting habitat.

Wildlife abundance is highly dependent upon the size and vegetation diversity of the wetlands, and with the exception of the emergent wetlands immediately south and north of the NYS Thruway, the remaining emergent wetland encountered during field surveys provided limited wildlife diversity and nesting habitat.

Construction of the Empire Connector Project would affect about 854.8 acres of existing vegetation cover types (including areas designated as developed land) and associated wildlife habitats. The construction ROW would consist of the 50-foot-wide permanent ROW (maintained during pipeline

operation) plus, typically, an additional 25 feet of temporarily disturbed workspace for construction for a total of 75 feet. This width may increase in agricultural areas where additional temporary workspace would be needed for topsoil segregation, in areas where additional temporary workspace would be needed at road, railroad, waterbody, wetland, and buried utility (including other pipelines) crossings, and where rugged terrain would be crossed.

Maintenance of the permanent pipeline ROW would result in the direct conversion of some natural vegetation to managed grassland. Clearing of forested and shrub land would be permanent within the 50-foot-wide permanent pipeline ROW because scrub-shrub and forested cover would not be allowed to revert to their pre-construction state. The ROW would be mowed no more frequently than once every three years. A permanent ROW width of 50 feet through wetlands would be used and a 10-foot wide strip would be maintained by hand through forested wetland areas.

Overall, habitat alterations generally benefit some species and negatively impact others. Species that are likely to benefit from the proposed habitat conversions are generalists like white-tailed deer, cottontail rabbit, raccoon, crow, and red-tailed hawk. Species requiring contiguous forest such as red-eyed vireo, ovenbird, wood thrush, and scarlet tanager would lose habitat. Amphibians such as red-spotted newts and mole salamanders that use forested habitats during the non-breeding season would also lose habitat.

Site clearing would result in the loss of some terrestrial species that do not have the ability to displace (e.g. voles, mice, amphibians). However, this impact to vegetative cover and wildlife habitat would have little impact to local wildlife populations, based on the expanse of area of the same habitat types that are available adjacent to the project area.

Clearing in mature forested areas may provide benefits such as creating edge habitat and increased mast crop from trees adjacent to the opening; however, due to the vegetative distribution within the Empire project area, the positive impact is expected to be insignificant. The negative impacts of clearing forest include loss of forest habitat, reductions in forest island size and forest interior habitat[4], and the disadvantages of abrupt edges relative to "feathered" or "functional" edges. Creation of abrupt edges and reduction in forest interior habitat has been identified as a contributing factor in the declines of many species of forest songbirds.

The evaluation of route alternatives included the objective of minimizing impacts to forested areas. The Empire Connector Project would pass through about 19 miles of forest. The project would parallel about 11.1 miles of existing pipeline ROW in forested areas that already has established edge. So, no new net edge effect would be generated in this section. Of the remaining 8.8 miles of forest, 3.5 miles would pass through forest adjacent to cropped field, roads, and trails. About 5.3 miles of new edge would be created by the proposed route. Only one of the lengths of forest crossed appears to be within a contiguous forested area greater than 100 acres.

Overall, limited areas of mature forest would be cleared over several short distances during project construction. The majority of the forested areas that might require clearing would be adjacent to existing utility ROW. Therefore, loss of forest habitat, reductions in forest island size and forest interior habitat would be minimal. Short-term effects include noise, equipment operation, and human activity, which would temporarily displace wildlife inhabiting the project area during construction. This displacement would not result in long-term impacts to wildlife, as the same habitat types are available in areas adjacent to the project area.

[4] Reductions in forest island size and forest interior habitat may negatively impact forest songbird nesting success.

Project construction is not expected to have a long-term impact on wildlife populations because the loss and/or permanent displacement of terrestrial wildlife would be negligible. Species and habitats affected by the project are common throughout the region, and based on consultation with the FWS and the NYNHP, no sensitive or unique habitats have been identified within the pipeline route or at the proposed Oakfield Compressor Station site. To avoid or minimize potential impacts of construction on wildlife, Empire would implement its ESCAMP, as well as our Plan and Procedures. Potential impacts to threatened and endangered species are addressed in section 4.6.2.

Operational impacts following pipeline and compressor station installation would not have a detrimental impact to local wildlife populations. With the exception of forested and scrub-shrub habitat removal and construction of the Oakfield Compressor Station, most of the permanent ROW would revert to pre-construction conditions and be maintained in an herbaceous state.

Based on the measures planned by Empire to avoid or minimize project impacts on wildlife and wildlife habitat we conclude that the construction and operation of the project would not constitute a significant impact to wildlife resources.

4.4.3 ALGONQUIN RAMAPO EXPANSION PROJECT

4.4.3.1 Fisheries

The surface waters that would be crossed by the Ramapo Expansion Project pipeline support both warmwater and coldwater fisheries as described in section 4.4.1.1. The Mahwah River (MP 0.54) would be crossed within the existing Algonquin pipeline ROW, and is the only perennial watercourse along the ROW. The Mahwah River supports both warm and coldwater fisheries. An additional nine intermittent waterbodies would be crossed by the pipeline replacement component of the project and only support warmwater fisheries during events of periodic or sporadic flows within the stream channels.

The Mahwah River is a perennial stream designated as a Class A (TS) water. Class A waters are defined by the NYSDEC as those waters with best use of water supply for drinking, culinary or food processing purposes, primary and secondary contact recreation, and fishing. The designation of (TS) denotes that certain reaches of the Mahwah River are stocked with trout by the NYSDEC. Class A (TS) waters are considered suitable for fish spawning and survival. The Mahwah River also provides habitat for a state-listed species of freshwater mussel, the brook floater. More information on this species is found in section 4.6.3.2.

Construction across the Mahwah River and its associated wetlands would be complicated by the built environment and the meandering nature of the waterbody. The built environment includes the existing Algonquin pipeline ROW and residences built outside the ROW. A meander loop of the Mahwah River has moved over the pipeline that would be removed and replaced for this project. So, crossing the Mahwah River and its associated wetlands may not be accomplished in a typical manner. Issues related to this crossing are addressed in section 4.3.2.4. The erosion and sedimentation controls and restoration methods described in Algonquin's E&SCP, which are consistent with our Plan and Procedures, would be implemented during construction. Their use and other best management practices would minimize or avoid construction-related impacts on fisheries associated with this waterbody and its associated wetland.

The Oxford Compressor Station site is in the vicinity of Eightmile Brook, a coldwater trout stream that supports significant populations of fisheries. Eightmile Brook is classified by the CTDEP as a

Class A Surface Water. This waterbody is near the western property line of the 216-acre parcel that Algonquin proposes to acquire for its 17.8-acre Oxford Compressor Station, and the compressor station would be located about 850 feet to the east of Eightmile Brook. Construction activities are not expected to directly affect this waterbody. Therefore, no adverse impact to this waterbody would be expected. No streams identified that support significant populations of fisheries for any of the other proposed aboveground compressor facilities have been identified.

The Hudson River Valve Site is an existing aboveground facility located about 150 feet west of the Hudson River. At this location, Algonquin proposes reconfiguring or replacing portions of the aboveground facility mainly within the valve site footprint. Appropriate erosion controls would be used during construction and the area would be restored to pre-construction condition. There would be no in-water activities within the Hudson River or directly along its banks. The project would not affect the fisheries or waters of the Hudson River.

Construction and restoration activities within and adjacent to waterbodies, as well as post-construction ROW maintenance, would be conducted in accordance with our Plan and Procedures and Algonquin's E&SCP to allow for the continued re-growth of vegetation along the edges of waterbodies, minimizing any potential long-term impacts on fisheries.

Based on the measures planned by Algonquin to avoid or minimize project impacts on water resources and fisheries, we conclude that the construction and operation of the project would not constitute a significant impact to fishery resources.

4.4.3.2 Wildlife Resources

Wildlife species typically inhabiting the project area around the existing Southeast Compressor Station and the proposed Oxford Compressor Station sites are those characteristic of successional old-field habitat, successional shrubland, and mixed (successional) hardwood forest (see table 4.4-1 at the end of this subsection). Early successional habitats dominated by scrub-shrub vegetation and open areas with dense grasses or other herbaceous vegetation are found generally along the existing Algonquin pipeline ROW. Scrub-shrub habitats can provide wildlife habitat for nesting birds, browse for deer and cover for small mammals. A number of turtle species may exploit exposed surface soils in the ROW for nesting and basking, and many small mammal and bird species utilize the associated edge habitat.

The pipeline replacement component of the project, the Ramapo M&R Station, the Stony Point Compressor Station, and the Hudson River Valve Site are all located in the New York - New Jersey Highlands, an area designated by the state of New York as a Significant Habitat Complex of the New York Bight Watershed. The New York - New Jersey Highlands contains continuous and relatively unfragmented hardwood forests, higher elevation ridges, and networks of relatively undisturbed, forested wetlands in the valleys. The NYNHP has identified much of this area as a chestnut oak forest community, which is considered a significant natural community with high ecological and conservation value.

The ecological significance of the New York – New Jersey Highlands relates to its large, contiguous, predominantly mature forest and wetlands and the disturbance-sensitive species dependent on these habitats, as well as the diversity of plants, communities, and animals unique to this region. Species found in the Highlands that are indicative of undisturbed forest and wetland habitats include wood turtle, timber rattlesnake, red-shouldered hawk, barred owl, warblers and thrushes, black bear, bobcat, and native brook trout. For a discussion of federal- and state-listed protected wildlife species, see section 4.6.

All activities and facilities that would be constructed within the New York - New Jersey Highlands would occur along existing ROW or at existing aboveground facility locations. Therefore no impacts to the wildlife of this natural community are anticipated as a result of the project. Only 0.26 acres of forested area (at the Ramapo M&R Station) would be permanently cleared for the project. As this represents a very small amount of habitat, impacts to this sensitive ecosystem would likely be minimal.

The majority of the Algonquin project construction areas would be limited to previously disturbed, successional habitats. Construction would result in the loss of some terrestrial species that do not have the ability to displace (e.g. voles, mice, amphibians), while larger species such as rabbits, deer and raccoons would be temporarily displaced during construction and would likely return once restored. These larger animals would be permanently displaced from developed portions of the project but may utilize some of the restored areas of temporary disturbance.

Based on the measures planned by Algonquin to avoid or minimize project impacts on wildlife and wildlife habitat we conclude that the construction and operation of the Ramapo Expansion Project would not constitute a significant impact to wildlife resources.

4.4.4 IROQUOIS MARKETACCESS PROJECT

4.4.4.1 Fisheries

All of the proposed work activities at the Brookfield, Connecticut and Dover, New York project sites would be in upland areas that have been disturbed by various land use activities. The Brookfield site has been significantly disturbed historically by sand and gravel mining and asphalt processing. Neither project site contains fisheries resources. No perennial or intermittent waterbodies would be directly affected by construction activities. At the Brookfield site, the proposed construction workspace (about 7.3 acres would be used for construction and 7.0 acres for operation) would be west of an intermittent channel that drains into a relatively large wetland complex present in the southern portions of the 68.3-acre Iroquois-owned property on which the proposed Brookfield facilities would be built. This intermittent channel appears to flow as a result of storm events, and does not support fisheries resources.

The proposed project area at the Dover Compressor Station would be at least 100 feet from two intermittent waterbodies located within the eastern portion of the property. Both waterbodies drain eastward into the Swamp River, which is located on the east of the railroad tracks. New York State water quality regulations classify the Swamp River as a C (TS), which identifies this watercourse as supporting trout spawning.

The proposed workspace for the new Brookfield Compressor Station and the modifications at the Dover Compressor Station would not impact or be located within the immediate vicinity of any waterbody. To ensure that no resources are impacted off-site, Iroquois would implement appropriate erosion controls and stormwater management practices in accordance with our Plan and Procedures. These steps would ensure that construction-related impacts to fishery resources supported in the Swamp River, the intermittent channel, or any other off-site waterways would be avoided or minimized to the greatest practicable extent.

Based on the measures planned by Iroquois to avoid or minimize project impacts on water resources and fisheries, we conclude that the construction and operation of the project would not constitute a significant impact to fishery resources.

4.4.4.2 Wildlife Resources

Brookfield Compressor Station

Wildlife species typically inhabiting the Iroquois project area around the proposed Brookfield Compressor Station are those characteristic of successional old-field habitat, successional shrubland, and mixed (successional) hardwood forest (see table 4.4-1 at the end of this subsection). Protected wildlife species are discussed in section 4.6.4.

A variety of birds, amphibians, reptiles, and mammals inhabit successional open fields and successional shrubland habitat, and could utilize these areas. The mixed hardwood forests provide a variety of food, cover, and nesting habitat for many wildlife species as well.

Dover Compressor Station

The areas outside of the existing Dover Compressor Station are within successional old-field habitat and mixed upland hardwood forest. Undeveloped areas within the existing station fencing are maintained as lawn. A variety of birds, amphibians, reptiles, and mammals inhabit successional old fields. Many of the species described for the old-field habitat are applicable to the forest-edge habitat, where the Iroquois project would encroach.

Summary

Most of the two Iroquois project areas would affect previously disturbed, successional habitats. Construction may result in the loss of some terrestrial species that do not have the ability to displace (e.g. voles, mice, amphibians), while larger species such as rabbits, deer and raccoons would be temporarily displaced during construction and likely return once restored. These larger animals would be permanently displaced from the developed portions of the site, which would be surrounded by fence, but may utilize some of the restored areas outside the perimeter fencing.

Iroquois consulted with the FWS, CTDEP, and NYNHP and identified no significant or unique habitats at or near the Brookfield Compressor Station or Dover Compressor Station sites. On December 8, 2005, Iroquois requested confirmation from the FWS, CTDEP, and NYNHP regarding the presence of significant or unique habitat within the project locations. Receipt of that information is pending.

Restoration would occur immediately after construction has been completed, and the areas of impact would be monitored until final site stabilization is achieved. During construction and restoration activities, Iroquois would adhere to the recommendations of our Plan and Procedures to ensure that vegetative cover and associated wildlife habitat conditions are re-established in temporary workspaces.

Based on the measures planned by Iroquois to avoid or minimize project impacts on wildlife and associated habitats, we conclude that the construction and operation of the MarketAccess Project would not constitute a significant impact to wildlife resources.

4.4.5 GENERAL CONSTRUCTION IMPACTS AND MITIGATION

Fisheries Impacts and Mitigation

Impacts on fishery resources resulting from construction of the NE-07 Project could include sedimentation and turbidity, acoustic shock from blasting, alteration or removal of stream cover,

entrainment of fish during hydrostatic testing, introduction of water pollutants, and interruption of fish migration and spawning. The magnitude of any potential impacts would be influenced by the crossing method employed and the seasonal timing of instream work as it relates to the occurrence and spawning of fish populations. Many stream fishes typically spawn throughout waterbody reaches depending on the availability of localized suitable habitat (e.g., substrate, velocity, depth).

The use of directional drilling or dry-crossing construction techniques would eliminate most of the potential for construction activities to increase sedimentation and turbidity in waterbodies. Standard wet-crossing techniques could elevate the concentration of suspended solids, but the elevated levels would be relatively high for only short periods and short distances downstream of the crossing. Overall, the suspended sediment concentration levels during construction could increase invertebrate drift and reduce fish feeding for brief periods. However, our Procedures require most in-stream work to be completed in less than 48 hours at each individual stream. Therefore, impact would be temporary, and suspended sediment concentrations would return to background levels soon after construction in each stream is completed.

Some waterbody crossings may require blasting of bedrock, which, due to acoustic shock, could be harmful to fish in the immediate vicinity of the explosion. Scare charges in streams with important fisheries would be used if recommended by the state. The NYSDEC, in its section 401 Water Quality Certificate, typically requires that blasting in waterbodies be conducted only during certain time periods and that specific measures be taken to reduce fish mortalities.

Streambank vegetation, in-stream logs, rocks, and undercut banks provide important cover for fish. Some in-stream and shoreline cover would be altered or lost at the stream crossings and fish that normally reside in these areas would be displaced. However, these effects would be relatively minor because of the small area affected at each stream. In addition, the Procedures limit vegetation maintenance on streambanks and allow for revegetation of all shoreline areas with native plant species, except for a 10-foot-wide corridor over the pipeline.

Entrainment of fish during hydrostatic testing would not likely occur during withdrawal of water, since intakes would be screened as required by the Procedures. However, fish larvae, eggs and young-of-the-year could be entrained if present in the source of water. The timing restrictions in the Procedures and those that may be requested by other resource agencies are designed to minimize this likelihood because construction activities are largely restricted to times outside of fish spawning periods. The Procedures limit instream construction work for coldwater fisheries to June 1 through September 30. Work in coolwater and warmwater fisheries is limited to June 1 through November 30.

Direct spills into streams could be toxic to fish, depending on the type, quantity, and concentration of the spill. To reduce the potential for direct surface water contamination, equipment would be refueled, and fuel and other potentially toxic materials would be stored at least 100 feet from waterbodies, or else other special precautions would be implemented as per the Spill Prevention Control and Countermeasures Plan (SPCC Plan).

Implementing our Procedures, as well as the procedures identified by each pipeline company in their erosion and sedimentation control plan (Algonquin's E&SCP, Millennium's ECS, and Empire's ESCAMP) and SPCC Plans, would minimize impacts on fisheries resources. Based on the measures planned by each pipeline company to avoid or minimize project impacts on water resources and fisheries, we conclude that the construction and operation of the NE-07 Project would not constitute a significant impact to fishery resources.

Wildlife Impacts and Mitigation

Construction and operation of the NE-07 Project would result in temporary and permanent alteration of wildlife habitat, as well as direct impact on wildlife such as disturbance, displacement, and mortality. The clearing of ROW vegetation would reduce cover, nesting, and foraging habitat for some wildlife. During construction of the proposed facilities, the more mobile species would be temporarily displaced from the construction ROW and surrounding areas to similar habitats nearby. Some displaced wildlife would return to the newly disturbed areas and adjacent habitats soon after the completion of construction. Less mobile species, such as small mammals, reptiles, and amphibians, as well as bird nests located in the proposed ROW, could be destroyed by construction activities. Routine maintenance activities on the permanent ROW could have similar but less extensive impact to wildlife species in the area, depending on the time of year. However, the overall impact on general wildlife would not be significant because of the short duration of the activities and availability of undisturbed habitats adjacent to the ROW.

In forested areas, the principal impact on wildlife would be a change in species using the ROW from those favoring forest habitats (e.g. northern flying squirrel, barred owl, downy woodpecker) to those using edge habitats and more open areas (e.g. white-tailed deer, American kestrel, white-footed mouse). Some species adapt well to this habitat reversal and take advantage of the increased populations of small mammals that prefer open areas. Predatory species such as the red-tailed hawk, coyote and gray fox commonly use utility ROWs for hunting.

Although the project may be advantageous for some species, it would create newly cleared ROW or widen existing cleared ROW, which may negatively affect some forest interior species, or species that prefer large tracts of unbroken forest. For these species, additional loss of forest habitat in tracts of already marginal size could further reduce breeding success. The cleared ROWs may also encourage population expansion or parasitic species such as the brown-headed cowbird. It may also encourage population expansion of exotic species, such as the English sparrow and European starling, which compete with many native species.

The loss of forest habitat and the creation of open early successional and induced edge habitats in these woodlots could reduce the density and diversity of forest interior species in a corridor much wider than the actual cleared ROW, by decreasing the quality of adjacent habitat for those species. It is not likely that a permanently cleared 50-foot-wide ROW would impede the movement of most forest interior species, although it could reduce the breeding habitat of those species. In addition, the proposed route would be within or adjacent to existing cleared ROWs for a significant percent of its total length on land, resulting in minimal impact related to forest fragmentation.

Non-forested habitats that would be affected by construction and operation of the proposed facilities include agricultural areas, non-forested wetlands, and open land. Generally, the impact of the proposed project on these habitats and associated wildlife species would be relatively minor and short-term. The temporary alteration of these areas would not have a significant or permanent impact on their wildlife habitat values.

The proposed pipeline would cross numerous wetlands and riparian systems. These areas are important as yearlong habitats for numerous resident wildlife species and are used seasonally as stopovers for migrating waterfowl along migratory flyway routes. Disturbance to these habitats would be minimized through implementation of the Procedures, and except for the conversion of forested riparian and wetland vegetation to herbaceous vegetation within the ROW, there would not be a permanent impact on these habitats.

Table 4.4-1
Representative Wildlife Species by Habitat Type That Potentially Occur Along the NE-07 Project

Mammals	Birds	Reptiles and Amphibians
Successional Old Field		
Eastern cottontail rabbit, eastern mole, gray fox, meadow jumping mouse, meadow vole, New England cottontail rabbit, raccoon, red fox, short-tailed shrew, white-tailed deer	Eastern bluebird, field sparrow, gray catbird, great crested flycatcher, house wren, indigo bunting, northern mocking bird, northern oriole, prairie warbler yellow warbler	American toad, black rat snake, brown snake, racer, redbelly snake
Successional Shrubland		
Woodchuck, eastern cottontail, New England cottontail	American robin, blue-winged warbler, prairie warbler, ruffed grouse, rufous-sided towhee, willow flycatcher	Rat snake
Successional Hardwood Forest		
Eastern chipmunk, New England cottontail, striped skunk, white-footed mouse	Chestnut-sided warbler, eastern wood-pewee, northern mockingbird, red-eyed vireo, red-tailed hawk, white-breasted nuthatch	Common garter snake, northern brown snake
Upland Hardwood Forest		
Black bear, boreal red-backed vole, chipmunk, deer mouse, flying squirrel, fox squirrel, gray fox, raccoon	Blue jay, ruby-throated hummingbird, ruffed grouse, tufted titmouse, wild turkey	Common garter snake, eastern box turtle, eastern ribbon snake, redbacked salamander, two-lined salamander, wood frog
Upland Meadow/Upland Shrub		
Eastern cottontail rabbit, gray fox, groundhog, meadow vole, opossum, red fox, skunk, white-tailed deer	Kestrel, northern harrier, red-tail hawk, ringneck pheasant, sparrows, warblers	American toad, brown snake
Scrub-shrub Wetland		
Coyote, gray fox, red fox, white-tailed deer	American robins, black-capped chickadee, blue jay, cardinal, sparrow spp., wild turkey	Garter snake, bull frog, green frog, leopard frog, pickerel frog
Forested Wetland		
Raccoon, white-tailed deer	Barred owl, downy woodpecker, great horned owl, pileated woodpecker, red-bellied woodpecker, red tail hawk, sharp-shinned hawk, wild turkey, white-breasted nuthatches, wood thrush, vireo, yellow-bellied sapsucker	American toad, spring peeper, wood frog
Emergent Wetlands		
Mink, muskrat	Bittern, great blue heron, kingfisher, little green heron, red-winged blackbird, yellow warbler	American toad, wood frog
Natural Drainage (Stream)		
Beaver, mink, weasel	Great blue heron, kingfisher	Northern water snake, painted turtle, snapping turtle

Table 4.4-2
Representative Game and Non-Game Fish Species Known to Occur In the NE-07 Project Area

Millennium Phase I	Empire Connector	Algonquin Ramapo Expansion	Iroquois Market Access
Coldwater species			
Black nosed dace, brook trout, brown trout, northern pike, rainbow trout	Atlantic salmon, brown trout, rainbow smelt, rainbow trout	Black nosed dace, brown trout	None
Warmwater species			
Bluegill sunfish, largemouth bass, smallmouth bass, yellow perch	Bluegill sunfish northern pike, smallmouth bass	Bluegill sunfish, pumpkinseed sunfish, smallmouth bass, yellow perch	None

To minimize the potential impact on migratory bird species that may use the permanent ROW for nesting, routine vegetation maintenance of the ROW would be limited to once every three years. However, to facilitate periodic corrosion and leak surveys, a corridor not exceeding 10 feet in width centered on the pipeline may be maintained annually in an herbaceous state. In no case would routine vegetation maintenance clearing occur between April 15 and August 1 of any year.

Each pipeline company would implement the procedures identified in their erosion and sedimentation control plans (Algonquin's E&SCP, Millennium's ECS, and Empire's ESCAMP) and their SPCC Plans). Iroquois would implement the mitigation measure in our Plan and Procedures. These procedures were developed to minimize disturbance to vegetation and waterbodies, and to provide for rapid stabilization of affected areas. Based on the measures planned by each pipeline company to avoid or minimize project impacts on wildlife and wildlife habitat, we conclude that the construction and operation of the NE-07 Project would not constitute a significant impact to wildlife resources.

4.5 VEGETATION

4.5.1 MILLENNIUM PIPELINE PROJECT - PHASE I

The FEIS for the Millennium Pipeline Project (October 2001) included detailed descriptions of the vegetation types that would be affected by Millennium's originally proposed project. General information presented in section 4.5 of the FEIS (e.g., species composition of the vegetation types) has not changed substantially for the amended project and is not repeated here. However, the crossing lengths within the various vegetation types and, therefore, the acreage totals for affected vegetation types have changed considerably and have been updated in the following paragraphs. The affected resource totals for the Phase I Project reflect the fact that the amendment proposal would involve construction of the pipeline ROW along a segment of the approved Millennium Pipeline Project route between MPs 190.6 and 376.6[5] rather than along the original 424-mile-long route.

[5] This segment includes Columbia's Line A-5 Replacement Project since it has been incorporated into the environmental analysis of Millennium's Phase I Project. The Line A-5 Replacement Project portion is between approximate MPs 367.9 and 376.6 in Orange and Rockland Counties, New York.

Affected resource totals also reflect the fact that Millennium would not construct any pipeline along an approximate 7.1-mile-long segment of the existing 24-inch-diameter Line A-5 between MPs 340.5 and 347.7. In re-evaluating the engineering design of its amendment project and customer requirements, Millennium determined that it could leave this 24-inch-diameter pipeline segment in service between Columbia's Huguenot and Middletown M&R Stations (MP 340.5 and 347.7, respectively). One advantage to this would be that Millennium would not need to construct across the Neversink River potentially affecting the federally-listed and New York state-listed endangered dwarf wedge mussel that may be present in this waterbody (see section 4.6.1.1). A second advantage is that Millennium would not need to disturb resources along a 7.1-mile-long corridor.

The affected resource totals also incorporate Millennium's proposed pipeline route changes and the new compressor station that are the subjects of Millennium's amendment application. The proposed route changes are:

- NYSEG Chemung Variation from MP 198.0 to MP 203.6,
- NYSEG Tioga-Broome Variation from MP 232.2 to MP 245.0,
- NYSEG Delaware Variation from MP 284.4 to MP 284.9, and
- Warwick Isle Route Variation from MP 350.8 to MP 351.6.

Also included in this section are new data regarding significant natural communities identified in recent correspondence with the NYNHP.

Pipeline Facilities

The Phase I Project ROW would affect a total of about 857.5 acres of forest (42 percent of the total ROW, see table 4.5-1), of which about 837.8 acres are upland forests and about 19.7 acres are forested wetlands or forested wetlands mixed with other wetland cover types. About 358.5 acres of the cleared forest area would be maintained in herbaceous cover within the pipeline ROW and the remaining 499.0 acres would be allowed to revert to forest. About 94 percent of the route would be adjacent to existing ROWs, and most forested areas would be crossed adjacent to existing ROWs. Access roads and storage yards for the project would affect about 81.4 acres (25 percent) of forest (see table 4.5-1).

Other vegetative cover types that would be affected by construction of the Phase I Project within the pipeline construction ROW include open land (718.0 acres) and agricultural land (339.5 acres). Use of the proposed access roads and storage yards would affect about 177.4 acres of open land and 23.7 acres of agricultural land (see table 4.5-1).

Included within the acreages of affected vegetation types listed above are the subtotals for constructing along the proposed route variations. The construction ROW for the three proposed NYSEG Variations would affect a total of about 67.9 acres of forest, 70.7 acres of open land, and 52.5 acres of agricultural land (see table 4.5.1-1). The permanent ROW would affect about 37.3 acres of forest, 49.1 acres of open land, and 28.5 acres of agricultural land. The construction ROW for the Warwick Isle Route Variation would affect about 0.7 acres of forest, 0.1 acres of open land, and 10.5 acres of agricultural land. Permanently affected land along the Warwick Isle Route Variation would be 0.4 acres of forest, 0.1 acres of open land, and 6.5 acres of agricultural land. No significant natural communities have been identified within the NYSEG and Warwick Isle Route Variations.

Also included in the data listed in table 4.5.1-1 are data related to the Columbia Line A-5 Replacement Project. This information is provided separately for those parties who are interested in

Table 4.5-1
Acres Affected by Construction and Operation of the NE-07 Project - Vegetation

	Forest		Open		Agriculture		Other		Total	
	Const. Work Area (acres)	Perm. ROW/ Facility (acres)	Const. Work Area (acres)	Perm. ROW/ Facility (acres)	Const. Work Area (acres)	Perm. ROW/ Facility (acres)	Const. Work Area (acres)	Perm. ROW/ Facility (acres)	Const. Work Area (acres)	Perm. ROW/ Facility (acres)
Millennium Pipeline Project Phase I										
Millennium and A-5 Pipelines	857.5	358.5	718.0	575.6	339.5	161.6	109.3	46.6	2,024.3	1142.2
Access Roads	47.9	0.0	9.4	0.0	21.2	0.0	16.6	0.0	95.1	0.0
Storage Yards	33.5	0.0	168.0	0.0	2.5	0.0	22.1	0.0	226.1	0.0
Corning Compressor Station	6.0	6.0	6.5	0.5	0.0	0.0	0.0	0.0	12.5	6.5
Subtotal:	**944.9**	**364.5**	**901.9**	**576.1**	**363.2**	**161.6**	**148.0**	**46.6**	**2,358.0**	**1148.7**
Empire Connector Project										
Pipeline	121.4	80.9	159.3	106.2	525.5	262.8	33.1	22.1	839.3	472.0
Access Roads	0.6	0.0	11.4	1.2	2.4	0.0	0.0	0.0	14.4	1.2
Storage Yards	0.0	0.0	0.0	0.0	0.0	0.0	53.9	0.0	53.9	0.0
Oakfield Compressor Station	0.0	0.0	1.9	0.8	17.1	5.9	0.0	0.0	19.0	6.7
Subtotal:	**122.0**	**80.9**	**172.6**	**108.2**	**545.0**	**268.7**	**87.0**	**22.1**	**926.6**	**479.9**
Algonquin Ramapo Expansion Project										
Ramapo Pipeline Replacement	5.9	0.0	54.6	41.1	0.0	0.0	0.0	0.0	60.5	41.1
Access Roads	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2
Storage Yards	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Ramapo Meter Station	0.3	0.3	0.6	0.6	0.0	0.0	0.5	0.5	1.4	1.4
Relocate 30-inch Mainline Valves	0.03	0.03	0.43	0.43	0.00	0.00	0.00	0.00	0.46	0.46
Hudson River Valve Site	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6
Hanover Compressor Station	7.8	0.0	0.0	0.0	0.0	0.0	4.3	4.3	12.1	4.3
Stony Point Compressor Station	0.7	0.0	0.0	0.0	0.0	0.0	11.5	11.5	12.2	11.5
Southeast Compressor Station	4.1	0.5	0.0	0.0	0.0	0.0	8.2	8.2	12.3	8.8
Oxford Compressor Station	4.3	4.3	13.5	13.5	0.0	0.0	0.0	0.0	17.8	17.8
Brookfield Compressor Station	0.0	0.0	0.4	0.4	0.0	0.0	0.4	0.4	0.8	0.8
Subtotal:	**23.1**	**5.2**	**69.5**	**56.0**	**0.0**	**0.0**	**25.6**	**25.6**	**118.2**	**86.8**

Table 4.5-1 (cont'd)
Acres Affected by Construction and Operation of the NE-07 Project - Vegetation

Iroquois MarketAccess Project										
Brookfield Compressor Station	2.8	2.8	1.2	0.9	0.0	0.0	3.3	3.3	7.3	7.0
Dover Compressor Station	0.0	0.0	2.1	1.1	0.0	0.0	0.6	0.6	2.7	1.7
Subtotal:	**2.8**	**2.8**	**3.3**	**2.0**	**0.0**	**0.0**	**3.9**	**3.9**	**10.0**	**8.7**
NE-07 Project Summary										
Pipeline Facilities	**1,066.8**	**439.4**	**1,120.7**	**724.1**	**891.1**	**424.4**	**235.2**	**68.9**	**3,311.2**	**1,656.8**
Aboveground Facilities	**26.0**	**14.0**	**26.6**	**18.2**	**17.1**	**5.9**	**29.3**	**29.3**	**99.0**	**67.4**
NE-07 Project Total:	**1,092.8**	**453.4**	**1,147.3**	**742.4**	**908.2**	**430.3**	**264.5**	**98.2**	**3,410.2**	**1,724.2**

Table 4.5.1-1
Acres Affected by the Amended Facilities for the Millennium Pipeline Project - Phase I - Vegetation

	Forest		Open		Agriculture		Other		Total	
	Const. Work Area (acres)	**Perm. ROW/ Facility (acres)**	**Const. Work Area (acres)**	**Perm. ROW/ Facility (acres)**	**Const. Work Area (acres)**	**Perm. ROW/ Facility (acres)**	**Const. Work Area (acres)**	**Perm. ROW/ Facility (acres)**	**Const. Work Area (acres)**	**Perm. ROW/ Facility (acres)**
NYSEG Variations										
Chemung Variation	17.9	8.3	24.3	15.4	20.8	10.0	3.2	1.7	66.2	35.4
Tioga-Broome Variation	47.1	28.4	42.9	31.4	31.7	18.5	4.4	2.5	126.1	80.8
Delaware Variation	2.9	0.6	3.5	2.3	0.0	0.0	0.4	0.3	6.8	3.2
Subtotal:	67.9	37.3	70.7	49.1	52.5	28.5	8.0	4.5	199.1	119.4
Warwick Isle Variation	0.7	0.4	0.1	0.1	10.5	6.5	0.4	0.3	11.7	7.3
Line A-5 Replacement	57.4	1.6	72.8	50.4	0.0	0.0	9.6	2.3	139.8	54.3
Sterling Forest ® State Park/Laurel Ridge Alternative	9.4	4.6	0.5	0.4	0.0	0.0	0.4	0.1	10.4	5.1
Ramapo River HDD Variation	2.3	1.5	6.0	1.6	0.0	0.0	2.8	2.2	11.2	5.3

following the analysis of the Line A-5 Replacement Project. The Line A-5 Replacement Project would cross about 57.4 acres of forest and 72.8 acres of open land. No agricultural land would be crossed. About 1.6 acres of forested upland would be permanently converted to herbaceous vegetation for operation. The remaining 55.8 acres of forest would be allowed to regenerate as forest following construction. The open land would quickly revert to its current vegetation type after construction.

The Sterling Forest ® State Park/Laurel Ridge Alternative would cross about 9.4 acres of forest, 0.5 acres of open land, and 0.4 acres of developed land. About 4.6 acres of upland forest would be permanently converted to herbaceous vegetation. The Ramapo River HDD Variation would cross 2.3 acres of forest, 6.0 acres of open land, and 2.8 acres of developed land. About 1.5 acres of upland forest would be converted to herbaceous vegetation (table 4.5.1-1).

Representative tree and shrub species for the forest communities in the Line A-5 Replacement Project area would include chestnut oak, northern red oak, scarlet oak, eastern hemlock, red maple, mountain laurel, blueberry, and European barberry. Big bluestem, flat-top goldenrod, European barberry, and dogbane are typical open land species that would be within the project area.

Most of the Line A-5 Replacement Project would be within Sterling Forest® State Park, Harriman State Park, and Kakiat County Park. Columbia and Millennium have initiated coordination with the staffs of the state parks and with Rockland County concerning construction within the park lands. A project-specific EM&CP for Harriman State Park and other park lands managed by the PIPC was developed with the PIPC to address construction in these resource areas and to address easement issues. The EM&CP addresses concerns relating to the impacts of the project on vegetation. This document would be filed with the Secretary when it is completed. Columbia and Millennium have committed to construct the project in these areas in a manner that would address the PIPC's concerns.

Since the Line A-5 Replacement Project would consist of lift-and-lay replacement of existing pipeline for about 90 percent of its length, most construction-related disturbance would be located in the existing pipeline ROW and immediately adjacent land. A small proportion (3 percent) of the cleared forest vegetation would be converted to open land for operation.

The NYNHP identified nine significant natural communities that would occur near the Phase I Project (see table 4.5-2). Further coordination with the NYNHP determined that three significant natural communities would be affected west of the Line A-5 Replacement Project and two would be affected along the Line A-5 Replacement Project route. The former would affect 6.22 acres of Appalachian oak-hickory forest, 4.01 acres of chestnut oak forest, and 1.86 acres of hemlock-northern hardwood forest. The latter would affect 27.24 acres of chestnut oak forest and 1.73 acres of rocky summit grassland (Table 4.5-2). About 0.83 acre of rocky summit grasslands would be maintained in the permanent ROW. Millennium believes that the present construction plans and the proposed construction work areas represent the minimum space required for construction in these areas. Millennium stated in its July 31, 2006 supplemental environmental report that the NYNHP indicated that mitigation for impacts to the significant natural communities would not be possible and that the PIPC approved the construction drawings following numerous on-site meetings.

The final Environmental Management and Construction Plan (EM&C Plan) for Harriman State Park and Sterling Forest State Park, July 2006, was filed with the FERC by Millennium on July 31, 2006. It includes procedures for construction, restoration, and maintenance within these parks. We believe the EM&C Plan would minimize impacts to significant natural communities within the parks.

Table 4.5-2
New York State-Identified Significant Natural Communities

Name	Impact Area (acres)	County
Millennium Pipeline Project Phase I a/		
Black spruce - Tamarack bog	No Impact	Sullivan, NY
Hemlock - Hardwood swamp	No Impact	Sullivan, NY
Dwarf shrub bog	No Impact	Orange, NY
Red cedar rocky summit	No Impact	Orange, NY
Hemlock - Northern hardwood forest	1.86	Orange, NY
Chestnut oak forest	31.25	Orange & Rockland, NY
Pitch pine - Oak - Heath rocky summit	No Impact	Orange, NY
Appalachian oak - Hickory forest	6.22	Orange, NY
Rocky summit grassland	1.73	Orange & Rockland, NY
Empire Connector Project b/		
None Identified in Project Area	No Impact	N/A
Algonquin Ramapo Expansion Project c/		
Chestnut oak forest	No Impact	Rockland, NY
Highbush blueberry bog thicket	No Impact	Rockland, NY
Iroquois MarketAccess Project d/		
None Identified in Project Area to date	No Impact	N/A

a/ Sources = New York Natural Heritage Program, September 14, 2004 and May 31, 2005; Millennium July 2006.
b/ Source = New York Natural Heritage Program, June 30, 2004 and January 21, 2005
c/ Source = New York Natural Heritage Program, November 2, 2005
D/ Pending receipt of correspondence from NYNHP
N/A = Not Applicable

Construction of the Phase I Project would have a permanent impact on forest land within the permanent pipeline ROW. While forest within the temporary workspaces would be allowed to revegetate naturally, this impact would be long-term to permanent since it would take over 20 years for the cleared forest areas to return to preconstruction conditions.

Impact to forested areas has been minimized to the greatest extent practicable by placing the proposed construction ROW within and along existing, cleared utility corridors (about 94 percent of the proposed route would be along existing ROWs). Further, much of the project would be constructed by the lift and lay (or same ditch) replacement method of construction whereby the old pipeline is removed and the new pipeline is installed within the same ditch (although the ditch would be increased in both depth and width to accommodate the larger diameter pipeline). Using these previously disturbed areas for the proposed construction minimizes the amount of new disturbance to forests.

There would be minimal changes to vegetation in agricultural and open lands and these areas should only be affected temporarily. Vegetative cover within these areas would recover typically within a few years after construction is completed to conditions similar to that found prior to construction. Use of our Plan and Procedures and Millennium's ECS procedures for restoration of all workspaces would facilitate recovery of all affected resources.

Typically, the permanent ROW would be about 50 feet wide. Full width ROW clearing or mowing would occur no more frequently than once every 3 years, and this activity would not occur between April 15 and August 1 of any year. A 10-foot-wide corridor centered over the pipeline would be mowed annually to facilitate periodic corrosion and leak surveys.

Corning Compressor Station

The addition of new compression facilities at the Corning Compressor Station would affect a total of 6.0 acres of forest and 6.5 acres of open land (see Table 4.5-1). The species composition of the two vegetation types is similar to that described for the previously certificated pipeline facilities (see Section 4.5 of the 2001 FEIS). All 6.0 acres of forest and about 0.5 acres of open land would be permanently converted to developed land. The remaining 6.0 acres of open land would revert to herbaceous open land. Although a small area of forest and open land would be lost as a result of the project, the overall impact on vegetation would be minimal. There would be no impacts to significant natural communities because none are known to occur in the immediate vicinity of the site.

4.5.2 EMPIRE CONNECTOR PROJECT

Pipeline Facilities

Information about vegetation types was developed from data gathered during field surveys or interpreted from aerial photographic analysis where field access could not be obtained. Open land consisting of upland meadow, shrub habitat, and abandoned farm fields is most commonly encountered in the northern portion of the proposed pipeline alignment. Gray and red-osier dogwood, viburnum species, multiflora rose, weed and grass species, and tree saplings dominate the upland shrub habitat. Upland meadow primarily consists of native grasses, weeds and tree saplings in the early stages of successional growth. Agricultural land dominates the landscape in the central portion of the proposed alignment. Agricultural crops consist primarily of corn, soybeans, and alfalfa/hay. Deciduous upland forest is the predominant vegetation type in the

southern portion of the project area. The dominant tree species include red oak, white oak, black cherry, maple species, American beech, ash species, hickory and American basswood.

The Empire Connector Project Pipeline ROW would affect a total of about 122.0 acres of forest (15 percent of the total ROW, see table 4.5-1), of which about 109.5 acres would be upland forests and about 12.5 acres would be palustrine forested wetlands or forested wetlands mixed with other wetland cover types (see section 4.7). About 47 percent of the proposed route would be adjacent to existing ROWs, and most cleared forested areas would be adjacent to existing ROWs. Access roads and storage yards for the project include a total of about 0.6 acre (1 percent) of forest (see table 4.5-1).

Other vegetative cover types that would be present within the pipeline ROW include open land (159.3 acres) and agricultural land (525.5 acres). Access roads and storage yards would require a total of about 11.4 acres of open land and 2.4 acres of agricultural land (see table 4.5-1).

Although the NYNHP identified four significant natural communities in the general vicinity of the project corridor, none would be crossed by the proposed project and none were or observed during field surveys.

About 80.9 acres of the cleared forest area would be converted to open land in the permanent ROW. The remaining 40.5 acres would be allowed to revert to forest, resulting in a long-term impact to forest vegetation. Impacts to forest vegetation have been reduced by establishing a route that is adjacent to existing ROWs for about 47 percent of the route. There would be a minimal, short-term impact on agricultural and open land because these areas would quickly revegetate and would be maintained in vegetative cover similar to that found before construction. There would be no impact on significant natural communities since none would be encountered.

Oakfield Compressor Station

The proposed construction workspace within the Oakfield Compressor Station would include about 1.9 acres of open land and 17.1 acres of agricultural land (see table 4.5-1). The species composition of these vegetation types would be similar to that described above for the Empire Connector Project pipeline facilities. No significant natural communities would be present within or adjacent to the proposed workspace.

Permanent impact on vegetation at this facility would be about 6.7 acres, including about 0.8 acres of open land and 5.9 acres of agricultural land. Within the fenced area of the compressor station, all permanently affected land would be occupied by the new aboveground facilities. The ground surface within the fenced compressor station would be gravel-covered, paved, or maintained as mowed grass. Although a small area of open and agricultural land would be lost as a result of the project, the overall impact on vegetation would be minimal.

4.5.3 ALGONQUIN RAMAPO EXPANSION PROJECT

Pipeline Facilities

A mixed-oak forest would be the predominant vegetation type affected by the Ramapo pipeline replacement. Forest areas are adjacent to the existing ROW. The dominant trees include red oak, black oak, and white oak, with lesser amounts of white ash, red maple, sugar maple, chestnut oak, scarlet oak, American beech, tulip poplar, hickories and sassafras. Common understory species include flowering

dogwood and maple-leaved viburnum, with lesser amounts of eastern hophornbeam and American hornbeam.

Upland portions of the ROW are generally dominated by shrub thickets and old field habitats as a result of periodic maintenance. Common plant species in these communities include goldenrods, asters, ragweed, common milkweed, common mullein, chicory, wood sorrel, narrow-leaved plantain, common plantain, raspberry species, fox grape, bittersweet, poison ivy, multiflora rose, witch hazel, Tartarian honeysuckle, eastern red-cedar, and black locust. The project does not cross any active agricultural lands.

The ROW for the Ramapo pipeline replacement project would affect a total of about 5.9 acres of forest (10 percent of the total ROW, see table 4.5-1), of which about 5.3 acres would be upland forests and about 0.6 acre would be palustrine forested wetlands or forested wetlands mixed with other wetland cover types (see section 4.7). These affected forested areas would be cleared adjacent to the existing Algonquin ROW. Access roads for the project would not cross forest (see table 4.5-1).

The remaining vegetative cover type present within the pipeline ROW would be about 54.6 acres of open land. Access roads would not cross open land (see table 4.5-1).

The NYNHP noted that two significant natural communities would occur in the vicinity of the pipeline replacement project: chestnut oak forest and highbush blueberry bog thicket. The chestnut oak forest community is predominantly mature matrix forest with diverse ecological features and composition. The matrix forest covers the majority of the Hudson Highland's rolling to mountainous terrain. The highbush blueberry bog thicket community is a scrub-shrub bog habitat found at higher elevations in the landscape. This community is a diverse bog thicket embedded in an extensive chestnut oak forest. The bog thickets occur in small, muck and peat filled, depressed basins within the upper elevations of a glacial till plain, within a chestnut oak forest matrix with embedded lowland mesic forests, small wetlands and acidic talus slopes.

Algonquin reported that the pipeline replacement component of the project would be near chestnut oak forest habitat within Harriman State Park, but not directly within a chestnut oak forest community. Similarly, the project would not be located directly within a highbush blueberry bog thicket community.

None of the cleared forest would be converted to open land in the permanent ROW. Although all of the cleared forest would be allowed to revert back to forest, the project would result in a long-term impact to forest vegetation. Those impacts have been minimized, however, by using the existing, cleared, 75-foot-wide permanent Algonquin Pipeline ROW for most of the construction ROW and by only disturbing an addition 25 feet for temporary work space. There would be a minimal, short-term impact on open land as those areas would quickly revegetate and would be maintained in vegetative cover similar to that found prior to construction within a few years. No direct or indirect impacts on significant natural communities are anticipated from the project.

Miscellaneous Pipeline and Meter Station Modifications

The proposed workspace for construction of the Ramapo Meter Station 202 would affect about 0.3 acres of forest, 0.6 acres of open land, and 0.5 acres of developed land within the existing M&R Station (see table 4.5-1). The species composition of these vegetation types is similar to that described above for the Ramapo pipeline replacement project area. All of the cleared forest and open land would be permanently converted to developed land and maintained as grass or would be gravel covered within the fenced M&R Station. No significant natural communities would be present within or adjacent to the

proposed workspace, so there would be no direct or indirect impacts to significant natural communities. The permanent impact to vegetation would be minimal considering the small area of forest and open land that would be lost as a result of construction of this component of the project.

The relocation of 30-inch mainline valves would affect to two small areas totaling about 0.06 acre. These areas would affect a total of about 0.03 acre (50 percent) of upland forest and 0.03 acre of open land. The species composition of the two vegetation types would be similar to that described above for the Ramapo pipeline replacement ROW. The relocation of the 30-inch mainline valves would permanently impact 0.03 acre of upland forest and 0.03 acre of open land, constituting a minimal impact on vegetation. No direct or indirect impacts to significant natural communities would be anticipated from this component of the project because none are present within or adjacent to the proposed construction workspaces.

The 0.6-acre workspace for the Hudson River Valve Site would be within developed land maintained in a grassy state at the valve site (see table 4.5-1). Peripheral to this area is open land dominated by forbs, with construction debris and mineral materials throughout. Therefore, this component of the project would have no impact to forest or open land. Similarly, the project would not impact significant natural communities as the site is located outside of the chestnut oak forest and highbush blueberry bog thicket communities.

Compressor Station Modifications

Upland areas that would be used to construct the proposed facility modifications at the Hanover Compressor Station include 4.3 acres of developed land within the existing compressor station consisting of buildings, paved and gravel roads, and maintained grass. The remainder of the proposed workspace consists of 7.8 acres of upland forest dominated by oak, hickory, ash and maple trees in the canopy. The canopy is subtended by an understory composed of these tree species in addition to honeysuckle and multiflora rose. No significant natural communities are present within or adjacent to the proposed workspace. Modification of the Hanover Compressor Station would require the clearing of 7.8 acres of upland forest as temporary workspace (see table 4.5-1). The entire area would be allowed to revert back to forest following construction. This would result in a minor, long-term impact to vegetation. No direct or indirect impacts to significant natural communities would be anticipated from the portion of the project.

Workspace areas for constructing the proposed modifications at the existing Stony Point Compressor Station facility would occupy about 11.5 acres of developed land and maintained grass-covered areas within the compressor station and along its permanent access road. The remainder land that would be used for workspace is upland forest (0.7 acres) dominated by red oak, black oak, and white oak, with lesser amounts of white ash, red maple, sugar maple, chestnut oak, scarlet oak, American beech, tulip poplar, hickories and sassafras. Common understory and shrub species include flowering dogwood and maple-leaved viburnum, with lesser amounts of eastern hophornbeam and American hornbeam. The site does not contain chestnut oak forest and highbush blueberry bog thicket significant natural communities. About 0.7 acre of upland forest would be cleared temporarily for modification of the Stony Point Compressor Station (see Table 4.5-1) and would be allowed to revert back to forest following construction. This would result in a minimal, long-term impact to forests. This portion of the project would not impact significant natural communities as the site is located outside of the chestnut oak forest and highbush blueberry bog thicket communities.

The construction workspace for the proposed facilities at the Southeast Compressor Station site would include 8.2 acres of developed land presently occupied in part by roadways, buildings, and maintained grassy areas within the existing fenced compressor station, and an additional 4.1 acres of

upland forest. The plant species composition of the upland forest is similar to that described above for the Stony Point Compressor Station site. About 0.5 acres of forest would be permanently converted to developed land, resulting in a minor, permanent impact to vegetation at the site. The remainder (3.6 acres) would be allowed to revert back to forest, resulting in a minor, long-term impact to forest vegetation. All of the 8.2 acres of developed land within the existing compressor station would be used permanently for the proposed modification. No significant natural communities are present within or adjacent to the proposed workspace, so there would be no direct or indirect impacts to them due to construction of this component of the project.

Oxford Compressor Station

The proposed new Oxford Compressor Station site is currently undeveloped and consists of a patchwork of upland forest and open land. Upland forest would cover about 4.3 acres of the proposed construction workspace. Upland forest here is dominated by red oak, black oak, and white oak, with lesser amounts of white ash, red maple, sugar maple, American beech, tulip poplar, hickories, and sassafras. Common understory and shrub species include flowering dogwood and maple-leaved viburnum, with lesser amounts of eastern hophornbeam and American hornbeam. Open land covers about 13.5 acres of the proposed site which includes the maintained Algonquin pipeline ROW and shrub thickets dominated by autumn olive, multiflora rose, gray dogwood, bittersweet, and fox grape. No significant natural communities are present within or adjacent to the proposed workspace.

Construction of the Oxford Compressor Station would affect about 4.3 acres of forest (including 0.09 acre of palustrine forested wetland) and about 13.5 acres of open land (see Table 4.5-1). All of the cleared forest and open land would be converted to developed land for the new compressor station and permanent access road and areas maintained with grass cover. That permanent loss of forest and open land would result in a moderate impact to vegetation at the site. No direct or indirect impacts to significant natural communities are anticipated from the project.

Brookfield Meter Station

The proposed new Brookfield M&R Station site contains existing meter station facilities owned by Algonquin (Meter Station #251) and Iroquois (sales meter), which occupy about 3.3 acres of industrial/commercial developed land. Other features at the site include paved areas, buildings and a gravel lot. Iroquois owns the about 68.3 acres of land at this location. The property had been used to make asphalt and similar products, and to quarry sand and gravel. As a result, the vegetation types in the proposed workspace are mostly in early successional stages, including successional upland forest and open land. No significant natural communities are present within or adjacent to the proposed workspace.

The successional forest has developed in response to major disturbance caused by historic activities and is dominated by black locust, white ash, quaking aspen, and eastern cottonwood. The understory and groundcover species are predominately multiflora rose, goldenrods, and garlic mustard.

Open land in the proposed workspace includes shrubland and old field. Autumn olive dominates large areas of the shrubland, with multiflora rose, eastern red-cedar, grey birch, quaking aspen, big-tooth aspen, and eastern cottonwood distributed outside the Algonquin workspace. Typical old field species include little bluestem, Queen Anne’s lace, white clover, wild strawberry, northern bedstraw, common ragweed, goldenrods, common reed, horsetail, and grasses.

Construction of the Brookfield Meter Station would impact about 0.4 acre of open land and 0.4 acre of developed land (Table 4.5-1). No forest habitat would be affected, and no direct or indirect impacts to significant natural communities are anticipated from the project.

4.5.4 IROQUOIS MARKETACCESS PROJECT

Brookfield Compressor Station

The workspace to construct the proposed Brookfield Compressor Station site would include about 2.8 acres of upland forest (38 percent of the site), 1.2 acres of open land, and 3.3 acres of industrial/commercial developed area/maintained grass (see Table 4.5-1). The species compositions of the forest and open land vegetation types are described above for Algonquin's proposed meter station (see section 4.5.3). No significant natural communities are present in the vicinity of the Brookfield Compressor Station site.

All of the affected forest and 0.9 acres of the open land in the proposed workspace would be permanently converted to developed land for the compressor station and would be maintained with grass-and-gravel covered areas within the fenced compressor station. The remaining 0.3 acres of open land would revert to herbaceous cover (see Table 4.5-1). The project would have no impact to significant natural communities. The impact on vegetation would be minor considering the relatively small area of forest and open land that would be lost as a result of the construction project.

Dover Compressor Station

As a consequence of its former use, the proposed workspace within the Dover Compressor Station includes 0.6 acre of developed land within the existing fenced compressor station that is maintained with grass cover, and 2.1 acres of open land just outside the fence. Open land consists of successional old field around the station fencing that is mowed occasionally for security purposes, although not at a frequency where it should be classified as maintained grass. The field is vegetated with forbs and grasses such as fescue, goldenrod, white clover, hay-scented fern, northern bedstraw, Queen Anne's lace, and common plantain. Correspondence from the NYNHP dated January 24, 2006 indicated that no significant natural communities are known to occur in the vicinity of the Dover Compressor Station site.

About 1.1 acres of the open land in the proposed workspace would be permanently converted to developed land/maintained grass. The remaining 1.0 acre of open land would be used as temporary workspace and would be allowed to revert to pre-project conditions (see Table 4.5-1). These impacts would be minor considering the small area of open land that would be lost and the lack of impact to forest vegetation.

4.5.5 GENERAL CONSTRUCTION IMPACTS AND MITIGATION

Construction of the proposed aboveground facilities for the NE-07 Project would convert a total of 14.0 acres of forest, 18.2 acres of open land, and 5.9 acres of agricultural land to developed land (see table 4.5-1). The clearing of temporary workspaces surrounding the aboveground facilities would affect an additional 12.0 acres of forest, 8.4 acres of open land, and 11.2 acres of agricultural land. The clearing of forest would cause long-term impacts to vegetation as it would take over 25 years to reestablish forest vegetation. Clearing would cause minor, short-term impacts to open lands and agricultural lands as these areas would be reseeded and allowed to revegetate naturally to preconstruction conditions. Implementation of each project's environmental construction plans would minimize long- and short-term impacts to

vegetative communities. Construction of the aboveground facilities for the NE-07 Project would result in no direct or indirect impact to significant natural communities.

The primary impact on vegetation from the construction of the pipeline facilities that are proposed for the NE-07 Project would be the temporary and permanent alteration of vegetative cover within the pipeline ROW, access roads, and storage yards. A total of about 1,066.3 acres of forest, 1,111.0 acres of open land, and 896.2 acres of agricultural land would be cleared (see table 4.5-1). About 439.4 acres of the cleared forest area would be permanently converted to open land within the pipeline ROW. The remaining 626.9 acres of forest would be allowed to revert to forest, representing a long-term impact. There would be minimal, short-term impacts on open land and agricultural land in the temporary workspaces as these areas would be maintained in vegetative cover similar to that found prior to construction. These areas should recover in a few years. The Columbia Line A-5 Replacement Project would impact a currently undefined area of two significant natural communities designated by the NYNHP. Consultation with the NYNHP and NYSDEC concerning this issue is ongoing. We have recommended that Millennium update information about these communities.

The construction ROW would be cleared of vegetation and then graded to create a level and safe working surface for construction equipment. Forest vegetation in upland areas would be cut at ground level and stacked along the edge of the ROW (with landowner approval) or removed to an approved disposal site. Stumps would be removed as needed to maintain a level work surface and either cut flush with the ground using a stump grinder or disposed of by burying in non-agricultural, -wetland, or -residential areas; windrowing along the construction work area; or hauling to an approved landfill (see each project's ECS). Slash and other vegetative debris would be disposed of in accordance with each project's ECS and generally would be stockpiled adjacent to the construction work area (but not within 50 feet of streams, floodplains, or wetlands), burned, or chipped. Brush would be burned only if permitted by local regulations. In pasture lands, any cherry (*Prunus spp.*) debris would be removed immediately after cutting to avoid contact with livestock.

Following installation of the pipeline and recontouring of the ROWs, all disturbed areas would be reseeded with seed mixtures specified by the NRCS, landowners, or the appropriate land management agencies (e.g., NYSOPRHP for Harriman State Park and Rockland County for Kakiat County Park). In the absence of other specific requirements, disturbed areas would be re-vegetated in compliance with each project's environmental construction plans, as approved by the Commission, and in accordance with our Plan and Procedures. The rate of revegetation would depend on several factors, including local climate, soil type, vegetation maintenance practices, land use, and the existing and seeded vegetation. The amount of time required for complete recovery of vegetation to preconstruction levels would depend on these factors as well as the size and age of the preexisting vegetation when cleared. All temporary work areas would be allowed to revegetate naturally to preconstruction conditions. The permanent ROW in upland areas would be maintained free of woody vegetation for the life of the project. Less ROW maintenance would occur within wetlands. Trees within 15 feet of the pipeline that are greater than 15 feet in height may be selectively cut and removed from the permanent ROW. Even though the permanent ROW through wetlands would be 50 feet centered over the pipeline, maintenance would only affect a 30-foot-wide strip centered over the pipeline. To facilitate periodic corrosion and leak surveys, a corridor not exceeding 10 feet in width centered on the pipeline may be maintained annually in an herbaceous state. In no case would routine vegetation maintenance clearing occur between April 15 and August 1 of any year.

The relative impact of clearing would be greatest in forested areas because the removal of trees would result in the greatest change in the structure and environment of the vegetative community. Moreover, the effect of clearing would be of longer duration in forested areas than in other areas (e.g., agricultural land, open land) and, in the case of maintained (permanent) ROW, would be for the life of the project. In

temporary work areas where forest regeneration would be allowed following construction, the reestablishment of forest to preconstruction conditions would probably take between 25 and 150 years depending on the age of the cleared forest. In contrast, the reestablishment of old fields, pastures, and rotated croplands following construction would probably take 1 to 5 years and would be a short-term impact.

4.6 ENDANGERED AND THREATENED SPECIES

Section 7 of the ESA requires a federal agency 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 destruction or adverse modification of the designated critical habitat of a federally-listed species. The agency is required to consult with the FWS and/or the National Marine Fisheries Service (NMFS) to determine whether any federally-listed or proposed species, or critical or proposed critical habitat may occur in the proposed project areas, and to determine the proposed action's potential impacts to these species or critical habitats. If the proposed project would affect a listed species, the Commission must report its findings to the FWS and/or NMFS in a biological assessment (BA). If the BA determines that the proposed action would affect a federally listed or proposed species, then the Commission must enter into formal consultation and obtain a Biological Opinion (BO) from the FWS or NMFS before taking final agency action. Consultation with the FWS and the appropriate state resource agencies for the NE-07 Project is ongoing.

To comply with the requirements of section 7 of the ESA, we have conducted informal consultation with the FWS and the NMFS regarding the presence of federally-listed or proposed endangered or threatened species and their critical habitats in the project areas and have prepared a BA for the NE-07 Project (appendix F). Table 4.6-1 (at the end of this subsection) lists each federally-listed species, its potential location near the NE-07 Project area, and its determination of effect for the NE-07 Project. Table 4.6-2 (at the end of this subsection) lists each state-listed species or species of concern that potentially occurs along the NE-07 facilities.

4.6.1 MILLENNIUM PIPELINE PROJECT - PHASE I

Millennium, as a non-federal party, assisted the Commission in meeting the requirements of section 7 of the ESA by conducting informal consultation with the FWS and the NMFS, and by reviewing rare and endangered species databases maintained by the NYNHP. To further assist the Commission in meeting its obligations under section 7 of the ESA, Millennium prepared a draft BA for six federally-listed endangered or threatened species. In addition, due to the depth and complexity of the issues involved, Millennium prepared a separate draft BA for the Indiana bat (*Myotis sodalis)*.

Because the Millennium Phase I Project is an amendment of the previously certificated Millennium Pipeline Project, this section will primarily address endangered and threatened species associated with new facilities, modifications or variations from the previously certificated project. A single exception is the Indiana bat, a federally-listed and New York state-listed endangered species that was not addressed in the previously approved Millennium Pipeline Project. Potential impacts on the Indiana bat will be considered for the whole of the Millennium Phase I Project. For a more detailed analysis of potential impacts and mitigation regarding endangered and threatened species that may be in the vicinity of the previously approved Millennium Pipeline Project, refer to the FEIS for the Millennium Pipeline Project, FERC/EIS-0123F Vol. 1 (2001). The Columbia Line A-5 Replacement Project is included herein as a part of the Millennium Phase I Project. Therefore potential impacts to endangered and threatened species that may be in the vicinity of the Columbia Line A-5 Replacement Project are also addressed here. We are recommending in this document that the Sterling Forest ® State Park/Laurel Ridge Alternative and the Ramapo River HDD Variation be used as the preferred route, replacing a

portion of the proposed route in this area. Therefore, it is likely that these would require similar mitigation, which may include construction timing restrictions and other requirements.

4.6.1.1 Federally-Listed or Proposed Endangered or Threatened Species

We identified four federally-listed endangered or threatened species that would potentially occur in the proposed Millennium Phase I Project areas. These species, their status, and areas where they may occur are listed in table 4.6-1. A description of federally-listed species potentially occurring in the vicinity of the proposed project and an assessment of potential impacts on each species are included below.

An additional four federally-listed species were included in the original Millennium Pipeline Project FEIS: northern wild monkshood (*Aconitum noveboracense*), the northern riffleshell (*Epioblasma torulosa rangiana*), the clubshell (*Pleurobema clava*), and the shortnose sturgeon (*Acipenser brevirostrum*). The FWS and the NMFS have determined that these species do not occur in the vicinity of the Phase I Project, so they will not be discussed here. A more detailed discussion of these species as they pertain to the previously approved Millennium Pipeline Project may be found in the FEIS for the Millennium Pipeline Project, FERC/EIS-0123F Vol. 1 (2001).

Indiana Bat (*Myotis sodalis*)

The Indiana bat is a federally-listed and New York state-listed endangered species with known hibernacula in six counties in New York State. During the summer, maternity colonies can be found along streams and woodlands in riparian habitats. Groups of 50 to 100 females congregate under loose tree bark or in tree crevices and snags. Foraging occurs along vegetated streams, old fields or forest canopies; the bats feed exclusively on insects. During their period of hibernation from mid-October through April, Indiana bats can be found in large caves and abandoned mines that provide stable, cold temperatures.

The Indiana bat was not identified by the FWS in 1997 as potentially occurring in the Millennium Pipeline Project area, and was not addressed in the FEIS issued in 2001. However, in correspondence dated June 9, 2005, the FWS indicated that suitable summer habitat for the Indiana bat might be present throughout most of the Orange and Rockland County portions of the Millennium Phase I Project, including the Columbia Line A-5 Replacement section. At the request of the FWS, Millennium conducted surveys in 2005 and prepared a draft BA to assess potential effects of the project on the Indiana bat in Orange and Rockland Counties. Habitat surveys located suitable summer habitat for the species in the form of surrounding woodlands and woodlots bisected by agricultural fields and development. A total of 13 Indiana bats were captured by Millennium during mist netting surveys, including reproductive adult females, adult males, and juveniles. Mist netting surveys conducted by Columbia on a coincident portion of Line A-5 in Rockland County in June 2005 also captured two male Indiana bats. Radiotelemetry studies on the bats captured by Millennium produced 11 roosts, including maternity roosts, in nearby habitat outside the project construction areas.

No known bat roosts exist within the project ROW. However, some potential Indiana bat roosting habitat would be removed during construction. Considering that the proposed pipeline construction is a linear project along an existing cleared ROW, this is estimated to be an insignificant portion of the overall suitable habitat available in the vicinity of the project area. We have determined that the Phase I Project may affect, but is not likely to adversely affect the Indiana bat if the construction timing restrictions proposed by Millennium are implemented. Pending review and concurrence by the FWS, **we recommend that:**

- **Millennium conduct tree clearing during the period of October 1 to March 30, to minimize adverse affects on the Indiana bat in the areas of known bat activity, between MPs 346 and 363. Future maintenance activities that involve tree removal, pruning, or similar activities, be scheduled to occur between October 1 and March 30 to avoid disturbing roosting bats. Millennium should employ the services of a qualified bat scientist to investigate trees and/or conduct other surveys as may be recommended by the FWS for the presence of Indiana bats if removal of a limited number of trees is necessary between April 1 and September 30, to avoid a take of bats.**

Bog Turtle (*Clemmys muhlenbergii)*

The bog turtle is a federally-listed and New York state-listed endangered species known to occur in Orange County, New York. The bog turtle is a small, secretive turtle that spends much of its life in hibernation. The species prefers open canopy wetlands with shallow water depths, and soft, saturated soils such as fens or sedge meadows. Bog turtles excavate hibernacula by burrowing into soft mud at depths of 2 to 22 inches. In New York, the bog turtle generally emerges from hibernation in mid-April, and mating takes place in the spring. Eggs are laid out of the water and nests are often found on sedge tussocks in strong sunlight. Bog turtles feed upon insects, snails, seeds, carrion and other invertebrates. Bog turtles are rarely found far from wetlands and appear to have restrictive habitat requirements as well as limited distribution. Therefore, the species is vulnerable to habitat destruction, which has caused it to be extirpated from much of its historical range.

The FWS indicated (June 9, 2005) that the bog turtle was known to occur in the vicinity of the Millennium Phase I Project in Orange County, New York and requested that a Phase I Habitat Assessment survey be conducted to determine if suitable habitat for the species existed in the Orange County project area. Millennium conducted Phase I bog turtle habitat surveys in the spring and fall of 2005. Eighty-two (82) wetland locations were examined for suitable habitat. Two wetlands were not surveyed due to refusal by the landowner to grant access to the property. However, neither of these wetlands may be likely to exhibit the characteristics necessary to be considered potential bog turtle habitat.

In April and May 2006, Millennium conducted a supplemental phase I habitat assessment for 14 additional wetlands. Three of these wetlands were associated with the proposed modifications to the Phase I Project; and the remaining 11 were for portions of the Phase I Project located in Rockland County.

Of the 96 wetlands surveyed in 2005 and 2006, three wetlands (W595, W611, and W640) contain potential bog turtle habitat. Wetland W595 exhibits suitable habitat within two breached manmade ponds. Both the hydrologic source and the suitable soils are located within the drained pond substrates. The landowner has indicated an interest in rebuilding the ponds; if this occurs the wetland would no longer offer suitable habitat for the species. This wetland is also located in an area of Orange County where no known bog turtle populations occur and is lacking suitable surrounding habitat. Therefore, the site is likely temporary and it is unlikely to contain bog turtles. Wetland W640 contains suitable bog turtle habitat, but the vegetation consists primarily of the common reed (*Phragmites australis*), an invasive plant species whose habitat is not used by the bog turtle, due to the lack of basking and nesting habitat. In addition, Wetland W640 is located near the summit of Pound Mountain, an area that is likely inaccessible to the species due to steep slopes and rough, rocky terrain. Therefore, the site is unlikely to contain bog turtles.

Wetland W611 contains suitable bog turtle habitat adjacent to the project construction area and is separated from the ROW by a rock wall. We believe that if Millennium enacts suitable avoidance measures during construction, the bog turtle is unlikely to be adversely affected by the Phase I Project. Pending concurrence from the FWS, **we recommend that:**

- **Millennium install turtle exclusion fencing during the bog turtle window of activity (April 15 to October 31), where Wetland W611 borders the project construction area. Further, Millennium should employ a bog turtle monitor to be on hand when construction coincides with the bog turtle window of activity (April 15 to October 31), to conduct a preconstruction survey of the Wetland W611 project site and to provide daily monitoring and relocation of bog turtles to suitable habitat outside the Wetland W611 construction area when necessary.**

Bald Eagle (*Haliaeetus leucocephalus*)

The bald eagle is a federally-listed threatened species that breeds and winters within the Millennium Phase I Project vicinity. The bald eagle is found in association with major river systems, lakes and large reservoirs. Because bald eagles often return to nest in the areas where they were raised, emphasis has been placed on protecting habitats where successful breeding is known to have occurred.

The NYNHP has indicated that the Millennium Phase I Project would cross five known bald eagle nesting or wintering areas. Project effects on the bald eagles using these activity areas could occur from three aspects of project construction and maintenance: (1) tree clearing and maintenance within a bald eagle activity area could remove bald eagle perching, roosting, or nesting habitat; (2) construction of waterbody crossings within the bald eagle activity areas could indirectly adversely affect bald eagle feeding activity; and (3) the presence of construction equipment, personnel, and blasting within a bald eagle activity area could result in the temporary displacement of bald eagles in the immediate area.

In the Millennium Pipeline Project FEIS, the NYSDEC stated that no adverse affects on bald eagles are expected for four bald eagle activity areas now in the vicinity of the Phase I project: Cannonsville Reservoir, Delaware River, Lebanon Lake and Neversink River activity areas. The Millennium Pipeline FEIS recommended specific mitigation measures for the fifth Phase I bald eagle activity area at the Mongaup River/Rio Reservoir area which would still apply to the Phase I Project. Millennium proposes to replace the permanent boat launch at the 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 boat launch should be built so that it does not disturb the eagles or the nest and roost sites in this area.

The NYSDEC requested that there be no construction in areas adjacent to the Mongaup River between December 1 and July 31 to avoid the nesting and overwintering periods in this bald eagle activity area. Millennium proposed to construct within this bald eagle activity area from August 1 to November 30. However, the FWS requested that Millennium coordinate with the FWS on the construction time schedule. The result of this coordination was an agreement to construct the crossing of the Mongaup River between October 15 and November 30 because, during this time, the water level of the dam could be lowered. However, since these discussions took place, the dam is now kept at a low water level year-round. Millennium is in the process of reconsidering the October 15 to November 30 window, and will notify the Commission should the agencies agree to an August 1 to November 30 construction window for this area.

We believe that the Phase I Project, including the Columbia Line A-5 Replacement Project may have limited adverse impact to the bald eagle nesting and winter habitats as a result of project construction, especially where blasting is required. In this case, mitigation measures would be required in order to avoid potentially adverse effects to eagles due to blasting. Therefore, **we recommend that:**

- **If blasting is required in designated bald eagle activity areas when bald eagles are present, Millennium develop in consultation with the NYSDEC and FWS a bald eagle activity area construction plan that identifies the milepost locations where blasting would occur within bald eagle activity areas and a schedule of when blasting would occur. The bald eagle activity area construction plan and all associated consultation documents, should be filed with the Secretary before construction.**

With implementation of the recommended mitigation described above, we believe the proposed action may affect, but is not likely to adversely affect, the bald eagle. However, the FWS recommends that Millennium contact the FWS and NYSDEC to determine if there are any additional nests in the project area. Therefore, **we recommend that:**

- **Millennium consult with the FWS and NYSDEC at least one month before the start of construction to determine if any additional bald eagle nests have been found in the vicinity of the project area. Documentation of the results of this consultation should be filed with the Secretary before construction.**

Dwarf Wedge Mussel (*Alasmidonta heterodon*)

The dwarf wedge mussel is a federally-listed and New York state-listed endangered freshwater mussel that inhabits large streams and rivers that drain into the Atlantic Ocean. In New York, the dwarf wedge mussel occurs in the Neversink River in Orange County. Correspondence with the FWS (June 9, 2005) stated that this species has also recently been found in the main stem of the Delaware River in Delaware County. The primary threats to this mussel are associated with loss of suitable habitat from dam construction, water pollution, and sedimentation.

The original Millennium Pipeline Project included construction of a bored crossing of the Neversink River (MP 340.8). The dwarf wedge mussel has been found historically both upstream and downstream of the approved crossing location and was assumed to occur at the crossing location. The bored crossing was proposed and approved because that type of crossing would not disturb the streambed, and therefore would minimize, if not avoid disturbance to dwarf wedge mussels and their habitat.

Millennium conducted a survey in 2005 in the Neversink River to determine whether the species was present at the crossing location. No evidence of live or dead dwarf wedge mussels was found.

Pipeline construction across the Neversink River could potentially result in either direct (displacement or loss of individuals) or indirect (disruption or loss of habitat) adverse affects on the dwarf wedge mussel, if they are present. During consultation for the Millennium Phase I Project, Millennium, the FWS, the USACE, NYSDEC and TNC considered alternative crossing locations. However, TNC argued that any alternative crossing locations would likely still result in adverse affects on the species since the Neversink River bottom would be disturbed.

In 2004 and 2005 Millennium conducted a reassessment of the use of a conventional bore technique to construct the Neversink River crossing. The result of this review was that the method was

likely to fail based on the subsurface conditions at the site. After review of all possible alternatives, Millennium proposed incorporating a segment of Columbia's existing 24-inch-diameter Line A-5 pipeline between MPs 340.5 and 347.7 into the project to avoid making a new crossing of the Neversink River. The continued utilization of this segment of the existing Line A-5 pipeline would result in the avoidance of any construction in the vicinity of the Neversink River.

We believe that with the revised plan to avoid disturbances to or near the Neversink River by using the 7.1-mile-long segment of existing 24-inch-diameter segment of Line A-5 between MPs 340.5 and 347.7, the Millennium Phase I Project is not likely to adversely affect the dwarf wedge mussel. Further, adherence to all water quality requirements and best management practices while constructing stream crossings in the Delaware River basin would avoid any potentially adverse indirect effects to dwarf wedge mussel populations in the Upper Delaware River due to excessive sedimentation or turbidity.

4.6.1.2 Other Special Status Species

In addition to the four federally listed endangered and threatened species, 14 other state-listed endangered or threatened species were identified by the NYNHP as potentially occurring in the vicinity of Millennium's proposed project areas (see table 4.6-2). Each species, its potential to occur near the proposed facilities, results of any field surveys, potential impacts, and proposed conservation measures are discussed below.

The NYNHP identified eight New York state-listed endangered or threatened plants that may occur in the vicinity of the project: nodding wild onion (*Allium cernuum* var. *cernuum*), clustered sedge (*Carex cumulata*), reflexed sedge (*Carex retroflexa*), Willdenow's sedge (*Carex willdenowii*), ensiform rush (*Juncus ensifolius*), slender pinweed (*Lechea tenuifolia)*, small-flowered crowfoot (*Ranunculus micranthus*), and Michaux's blue-eyed grass (*Sisyrinchium mucronatum*). Millennium is consulting with the NYSDEC to determine the need for surveys for these plants. The NYSDEC's comments on the need for surveys are pending.

The upland sandpiper (*Bartramia longicauda)*, the pied-billed grebe (*Podilymbus podiceps)*, and the Allegheny woodrat (*Neotoma magister*) were also identified as potentially occurring in the project area, although the Allegheny woodrat is thought by the NYSDEC to be extirpated in New York State. Millennium requested that the NYSDEC determine the need for surveys for these species. The NYSDEC's comments on the need for surveys are pending. The other three New York state-listed species, the brook floater (*Alasmidonta varicosa*), green floater (*Lasmigona subviridia*), and timber rattlesnake (*Crotalus horridus)*, are discussed below.

During discussions with the NYSDEC in 2005, Millennium was asked to survey seven streams within the proposed Phase I Project corridor that may potentially harbor state-listed threatened, endangered or other species of concern. The surveys included two New York state-listed threatened Unionid mussel species, the brook floater and the green floater. Neither species was found during the surveys. Therefore, no adverse impacts on these species would be anticipated from the Phase I Project. The yellow lampmussel (*Lampsilis cariosa*), a federal species of concern not listed by New York, was found at the proposed Catatonk Creek crossing. This mussel would be directly impacted by construction at the site. To mitigate habitat loss, Millennium proposes restoring the streambed by removing, stockpiling, and replacing the top 12 inches of streambed material. In addition, relocation of yellow lampmussels from the direct impact area to an upstream bed could mitigate impacts to the mussels.

The brook floater, as well as two species of greatest conservation need in New York, the eastern pearlshell (*Margaritifera margaritifera*) and the bridle shiner (*Notropis bifrenatus*), have also been documented by the National Park Service as occurring in the Upper Delaware River. These species could be potentially affected by excessive sedimentation or turbidity in the Upper Delaware River due to multiple stream crossings in the Delaware River basin. However, potential impacts to water quality would be minimized to the greatest extent practicable by Millennium's adherence to all water quality requirements and regulations, as well as timing of stream crossings. Therefore, no adverse effects on these species are anticipated from the Phase I Project.

At the request of the NYSDEC, the 2005 surveys also included the eastern hellbender (*Cryptobranchus alleganiensis*), a New York species of special concern and a species of interest to the FWS, and the tiger beetle (*Cincindela spp.),* a beetle genus of interest to the NYSDEC. No hellbenders or tiger beetles were found, and habitat for these species was absent or marginally present. Therefore no adverse impacts to these species would be anticipated from the Phase I Project. The results of the 2005 surveys were sent to the FWS and the NYSDEC as a report, entitled *Final Report: Unionid, Tiger Beetle, and Hellbender Surveys at Seven Proposed Stream Crossings of the Millennium Pipeline in New York*. Comments from these agencies are pending.

Timber Rattlesnake (*Crotalus horridus)*

The timber rattlesnake is a New York state-listed threatened species whose range extends throughout most of New York. This rattlesnake favors forested mountainous terrain with steep ledges, rockslides, dry ridges and second growth deciduous or coniferous forests with high rodent populations. During the drier summer months these snakes are often found near streams. This species is active from late March to late October.

In 2001, Millennium, in consultation with the NYSDEC, identified 14 locations where the timber rattlesnake could be affected by pipeline construction. In coordination with the NYSDEC, Millennium is currently working to identify which of these locations is in the vicinity of the Phase I Project.

Since that time, any additional rattlesnake dens have not been discovered. In consideration with representatives of NYNHP and NYSDEC Millennium has developed a minor route variation that would avoid impacts to one of the identified dens and its associated timber rattlesnake habitat. In its July 31, 2006 supplemental filing, a route variation to avoid timber rattlesnake dens was included in the pipeline route variances Millennium requested be incorporated into the proposed Phase I Project. We have recommended approval of this request. For the second timber rattlesnake den that would be near the construction ROW, Millennium proposes to implement the previously agreed-to avoidance and mitigation measures as documented in the FEIS for these additional rattlesnake den sites. In addition, a NYSDEC rattlesnake expert would assess the site to determine further avoidance measures that may be necessary.

NYNHP and NYSDEC indicated they would provide, to Millennium project-specific map information about the extent of all proposed project areas where the timber rattlesnake may be encountered during construction. Millennium would use this mapping to avoid potential impacts to the timber rattlesnake in the area of the project.

4.6.2 EMPIRE CONNECTOR PROJECT

Empire, as a non-federal party, assisted the Commission in meeting the requirements of section 7 of the ESA by conducting informal consultation with the FWS, and by reviewing rare and endangered species databases maintained by the NYNHP.

4.6.2.1 Federally-Listed or Proposed Endangered or Threatened Species

We identified two federally-listed endangered species that potentially occur in the vicinity of the proposed Empire Connector Project areas. These species, their status, and areas where they may occur are listed in table 4.6-1. A description of the federally-listed species potentially occurring in the vicinity of the proposed project and an assessment of potential impact on each species are included below.

Indiana Bat

The Indiana bat is a federally-listed and New York State-listed endangered species with known hibernacula in six counties in New York State.

The FWS (January 31, 2005) indicated that a known hibernaculum of the Indiana bat occurs in Onondaga County, New York, about 50 miles from Empire's proposed pipeline construction. Because the bats may travel 40 miles or more from their winter hibernacula to their spring roosts, limited clearing of suitable summer roosting, maternity, and foraging trees in the proposed pipeline construction area could affect this species. However, the FWS also stated that based on the most recent information on the movements of bats emerging from hibernacula, they believed that impacts to the Indiana bat would be unlikely to occur in Empire's proposed project areas. Therefore, we believe that the proposed Empire Connector Project is not likely to adversely affect the Indiana bat.

Leedy's Roseroot (*Sedum integrifolium* ssp. *Leedyi)*

The Leedy's roseroot is a federally-listed threatened and New York state-listed endangered perennial plant that lives on talus slopes or cliffs in which groundwater maintains a cool, wet environment throughout the summer. The FWS (October 26, 2004) indicated that this species occurs along the face of shale cliffs located about two miles from Empire's project site. However, the FWS believes that the proposed work would not adversely affect Leedy's roseroot provided that the project activities avoid disturbance of any adjacent cliff vegetation. Because no cliff areas have been observed at Empire's project site and no disturbance of cliff vegetation would occur, we believe that Leedy's roseroot is unlikely to be adversely impacted by the proposed Empire project.

4.6.2.2 Other Special Status Species

In addition to the two federally-listed endangered and threatened species, four other state-listed endangered or threatened species were identified by the NYNHP as potentially occurring in the vicinity of Empire's proposed facilities (see table 4.6-2). Each species, its potential to occur along the proposed facilities, results of any field surveys, and potential impacts and proposed conservation measures are discussed below.

Short-eared Owl (*Asio flammeus*) and Northern Harrier (*Circus cyaneus)*

The NYNHP identified two bird species as potentially occurring in the proposed project areas. The short-eared owl, a New York state-listed endangered species, was indicated by the NYSDEC as

having been sighted within 5000 feet of CMP[6] 69.5. Empire observed the northern harrier, a New York state-listed threatened species, on one occasion in fields near CMP 8.0. Both the northern harrier and the short-eared owl prefer large, open habitat such as fields or grasslands. If they occur in the vicinity, these two species could be temporarily displaced during construction in the proposed project areas because of impacts to foraging habitat. However, the disturbed project areas would be restored to grassland, and therefore displacement would likely be temporary. Therefore, we believe that the proposed Empire project is unlikely to adversely impact the short-eared owl or the northern harrier.

Timber Rattlesnake

The timber rattlesnake is a New York state-listed threatened species whose range extends throughout most of New York. Empire stated that the proposed project would remove about 21 acres of deciduous hardwoods in the southern portion of the pipeline route where timber rattlesnake habitat may be present, and that this loss is not expected to significantly impact timber rattlesnake habitat. NYSDEC comments are pending.

Bird's Eye Primrose (*Primula mistassinica)*

This New York state-listed threatened species grows mostly on wet, calcareous ledges, riverbanks, shores and slopes. The species was previously reported on a north-facing shale ledge of Big Stream in Yates County, New York. Empire plans to survey for bird's eye primrose in the late spring or early summer of 2006, in the vicinity of the proposed pipeline crossing of Big Stream in Yates County. Therefore, the NYSDEC comments and recommendations concerning this species are pending

4.6.3 ALGONQUIN RAMAPO EXPANSION PROJECT

Algonquin, as a non-federal party, assisted the Commission in meeting the requirements of section 7 of the ESA by conducting informal consultation with the FWS, and by reviewing rare and endangered species databases maintained by the NYNHP, the Connecticut Department of Environmental Protection (CTDEP), and the New Jersey Natural Heritage Program (NJNHP).

4.6.3.1 Federally-Listed or Proposed Endangered or Threatened Species

We identified four federally-listed endangered or threatened species that potentially occur in the proposed Algonquin Ramapo Expansion Project areas. These species, their status, and areas where they may occur are listed in table 4.6-1 (at the end of this subsection). A description of federally-listed species potentially occurring in the vicinity of the proposed project and an assessment of potential impact on each species are included below.

Shortnose Sturgeon (*Acipenser brevirostrum)*

The shortnose sturgeon is a federally-listed and New York state-listed endangered species known to occur in the Hudson River as far north as the Federal Lock and Dam at Troy, New York. The Hudson River provides spawning, seasonal foraging, and overwintering habitat for this species. The shortnose sturgeon inhabits estuaries and large coastal rivers, and moves upstream and downstream with the seasons. 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. This species was identified by the NYSDEC as potentially occurring in the vicinity of the Hudson River Valve Site.

[6] "CMP" refers to mileposts on the Empire Connector Pipeline.

However, the Hudson River Valve Site does not involve any in-water activities in the Hudson River, nor would any of the project components result in any temporary or permanent disturbances to the Hudson River. We have recommended that Algonquin not use the Hudson River as a source for hydrostatic test water since it would require placement of intake hoses into this waterbody and into areas potentially used by shortnose sturgeons. Therefore, we believe that the Algonquin Ramapo Expansion Project is not likely to adversely affect the shortnose sturgeon. On August 18, 2006, the FERC requested concurrence with this determination from the NMFS. Concurrence is pending at this time.

Indiana Bat

The Indiana bat is a federally-listed and New York and New Jersey state-listed endangered species with known winter hibernacula in two counties near Algonquin project components, Ulster County, New York, and Morris County, New Jersey. The FWS indicated that suitable summer habitat for the Indiana bat might exist in Rockland County (June 9, 2005). Indiana bats may travel up to 40 miles or more from their winter hibernacula in Ulster and Morris Counties to their spring and summer roosts. During subsequent mist netting surveys in 2005, both Millennium and Columbia captured Indiana bat individuals along the Phase I Project ROW. Therefore, it is likely that potential summer habitat may exist for the Indiana bat in the vicinity of the Algonquin project as well.

The FWS (October 21, 2005) indicated to Algonquin that known hibernacula of the Indiana bat occur in Ulster County, New York. Ulster County is north of Rockland County, and the hibernacula occur within 47 miles of three of Algonquin's proposed project areas: the Stony Point Compressor site, the Southeast Compressor site, and the pipeline replacement component in Rockland County. Limited clearing of suitable summer roosting, maternity, and foraging trees in these project areas could affect this species. A known hibernaculum also exists within six miles of the proposed Hanover Compressor Station in Morris County, New Jersey. Algonquin conducted field surveys of the project locations identified as potential habitat between June 15 and July 14 of 2006. No Indiana bats were captured during the surveys, based on the executive summary filed by Algonquin on July 31, 2006, of the associated report. As of September 20, 2006, the complete report for the surveys, including detailed information on capture results for six other bat species, as well as habitat assessments and data supporting compliance with FWS guidelines, is pending. Acceptance of the report by the FWS is also pending.

Forest clearing for the Ramapo Expansion Project would affect about 7.8 acres at the Hanover Compressor Station, about 5.9 acres along the pipeline replacement component of the project, about 4.1 acres at the Southeast Compressor Station, and about 0.7 acres at the Stony Point Compressor Station. Some potential Indiana bat roosting habitat would be removed during construction. Considering that the proposed pipeline construction is a linear project along an existing cleared ROW, this is estimated to be an insignificant portion of the overall suitable habitat available in the vicinity of the project area. The forest clearing at the compressor stations may have a different impact because that clearing would not be linear. While preliminary results indicate that no Indiana bats were found in the project areas, potential Indiana bat habitat may still be affected by construction. Therefore, we believe that Algonquin should implement the mitigation recommended by the FWS to minimize impacts on Indiana bats that might be using certain trees for roosting. Therefore, pending comment from the FWS, **we recommend that:**

- **Algonquin conduct tree clearing during the period of October 1 to March 30, to minimize adverse affects on the Indiana bat, pending comment by the FWS. Future maintenance activities in bat activity areas that involve tree removal, pruning, or similar activities, should be scheduled to occur between October 1 and March 30 to avoid disturbing roosting bats.**

Bog Turtle

The bog turtle is a federally-listed and New York and Connecticut state-listed endangered species known to occur in Orange County, New York, and Litchfield County, Connecticut. Algonquin is not proposing to construct any facilities in either of these counties. However, Algonquin conducted a Phase I survey of all areas of potentially suitable bog turtle habitat at the Ramapo Pipeline Replacement, Stony Point Compressor Station, Southeast Compressor Station, and the Oxford Compressor Station project areas. Suitable habitat was not found at the Oxford Compressor Station sites A and F, some marginal wetland habitat was found at the Ramapo Pipeline Replacement and at the Southeast Compressor Station, and suitable bog turtle habitat was found at the Stony Point Compressor Station. Concurrence by the FWS with these results is pending. Due to the marginal nature of the habitat at the Southeast Compressor Station and the Ramapo Pipeline Replacement area, Algonquin believes it is unlikely that the project would adversely impact the bog turtle at these sites.

No wetlands would be directly impacted or disturbed during construction and modifications to the Stony Point Compressor Station. Further, the proposed modifications as the Stony Point Compressor Station would occur within previously disturbed areas encompassed with the fenced portions of the compressor station yard. Nevertheless, Algonquin has proposed installing turtle exclusion fencing adjacent to potential habitat areas. Algonquin has agreed to assign a biological monitor to survey for the presence of turtles prior to and during the initial clearing and site preparation required for the staging areas. Algonquin proposes that the biological monitor would inspect the site periodically during the construction phase of the project to provide oversight for the construction crews, as needed, and believes that a full-time biological monitor is not necessary for the proposed activities at this site. Due to the location of the potential habitat compared to the construction areas and the use of turtle exclusion fencing, we agree that a full-time turtle monitor would not be necessary at the Stony Point Compressor Station. Therefore, pending additional recommendations from the FWS, we believe these measures would minimize potential impact to bog turtles.

If Algonquin follows the above mentioned avoidance measures during construction at the Stony Point Compressor Station site, we believe that the proposed project is unlikely to adversely impact the bog turtle.

Bald Eagle

The bald eagle is a federally-listed threatened species that breeds and winters in areas within the project vicinity. Nest sites of bald eagles have been documented in New York and New Jersey. However, only transient bald eagles were identified by USFWS as potentially occurring at the Hanover Compressor Station and Hudson River Valve Site, and there are no known bald eagle nest sites near any component of the project areas. Therefore, we believe that the project would not likely adversely affect the bald eagle.

4.6.3.2 Other Special Status Species

In addition to the four federally listed endangered and threatened species, 11 state-listed endangered or threatened species were identified by the NYNHP and NJNHP as potentially occurring in the vicinity of Algonquin's proposed facilities (see table 4.6-2). There were no state-listed species occurrences identified by the CTDEP for any of the proposed Algonquin project facilities in Connecticut. Each species, its potential to occur along the proposed facilities, results of any field surveys, and potential impacts and proposed conservation measures are discussed below.

The NYNHP identified two plant species, large twayblade (*Liparis lilifolia*) and hyssop-skullcap (*Scutellaria integrifolia*), as state-listed endangered, and three plant species, showy aster (*Eurybia spectabilis)*, Willdenow's sedge and clustered sedge, as threatened. Algonquin has scheduling field surveys for these five plant species in 2006.

Wood Turtle (*Clemmys insculpta)*

The wood turtle is a New Jersey state-listed threatened species known to occur in Morris County, New Jersey. Wood turtles utilize a wide range of moving water habitat including slow-moving streams with sandy bottoms and overhanging vegetation, swift, rocky-bottomed streams, and meandering, turbid waters. During summer months, wood turtles disperse from the streams to upland meadows or wooded areas. The species requires open upland areas with sandy soils for nesting. Breeding occurs in the spring or fall in shallow water. Egg deposition occurs in May and June in an excavated hole in sandy or gravelly soils. Eggs hatch out some time in August through October. In the northern part of the range, hatchlings may overwinter in the nest.

The wood turtle has been identified by the NJNHP as potentially occurring at the Hanover Compressor Station site. Algonquin completed a Phase I habitat assessment at the site and identified the entire undeveloped portion of the site as wood turtle habitat in the form of a mixed habitat wetland complex. Hibernating or mating habitat is not present on the site, but is located adjacent to the site in association with small stream. However, potential foraging, basking, and nesting habitat is present, and foraging or nesting adults, or eggs or young, may be encountered. Algonquin proposed installing turtle exclusion fencing and to employ a wood turtle monitor at the Hanover Compressor Station during the May to September wood turtle activity period to conduct a daily preconstruction survey of the project site and to provide daily monitoring and relocation of wood turtles to suitable habitat outside the construction area when necessary.

Timber Rattlesnake

The timber rattlesnake is a New York state-listed threatened species whose range extends throughout most of New York. The timber rattlesnake has been identified by the NYSNHP as potentially occurring along several of Algonquin's proposed project areas: the pipeline replacement component, the Stony Point Compressor Station and the Hudson River Valve Site. Algonquin proposes to have a timber rattlesnake monitor be on hand at the pipeline replacement component, the Stony Point Compressor Station and the Hudson River Valve Site during any construction activity that coincides with the timber rattlesnake window of activity (March 16 to October 31), to conduct daily preconstruction surveys for the timber rattlesnake and provide daily monitoring and relocation of rattlesnakes to suitable habitat outside the construction area when necessary. NYSDEC comments are pending.

Allegheny Woodrat (*Neotoma magister)*

The Allegheny woodrat is a New York state-listed endangered species thought to be extirpated in New York. However, according to the NYSDEC, Allegheny woodrat scat has been located on the southwest slope of Pingyp Mountain, which is about one mile from the Stony Point Compressor Station. This species is closely associated with caves, rock outcrops, cliffs, and talus slopes and requires rocky areas with a nearby food source of fruits, berries, nuts, seeds, bark, and grasses. The proposed construction activity at the Stony Point Compressor Station has been previously developed and now consists of old roads, fill piles, and maintained grass areas, which may not provide suitable habitat.

Least Bittern (*Ixobryhus exilis)*

The least bittern, a New York state-listed threatened species, has been identified by the NYSDEC as potentially occurring near the Hudson River Valve Site in Stony Point, New York. The least bittern utilizes freshwater and brackish marshes with tall, dense, herbaceous and sometimes woody vegetation. The species will also use the edges of lakes and rivers with emergent and tall vegetation. The Hudson River Valve Site contains only one small wetland pocket (10 feet by 20 feet) that does not provide the habitat requirements for this species.

Pied-billed Grebe (*Podilymbus podiceps)*

The pied-billed grebe is a Connecticut state-listed endangered species that has been identified by the CTDEP as occurring in the vicinity of preferred Site F for the proposed Oxford Compressor Station. Pied-billed grebes are small, secretive wetland birds that require quiet wetlands and ponds with abundant emergent vegetation such as cattails for nesting. Nesting occurs primarily from late April through June, and it is during this time that this bird is most sensitive to disturbance. If Site F is used for the Oxford Compressor Station, Algonquin would continue to consult with the CTDEP regarding the need for surveys for the pied-billed grebe and would provide the results of that consultation when available.

Brook Floater

The brook floater is a New York state-listed threatened species that has been reported to occur in the Mahwah River in Kakiat County Park, Rockland County, New York. This freshwater mussel inhabits medium-sized streams and rivers, preferring clean, swift water with stable gravel or sand and gravel substrates. The species has also been documented among boulders where they occur in sandy or silty substrate and relatively slow flow. Female brook floaters are gravid for long periods, and have been documented bearing eggs from August through May. Algonquin has scheduled field surveys for 2006 for the brook floater in the segment of the Mahwah River that would be affected by the pipeline replacement component of the project.

4.6.4 IROQUOIS MARKETACCESS PROJECT

Iroquois, as a non-federal party, assisted the Commission in meeting the requirements of section 7 of the ESA by conducting informal consultation with the FWS, and by reviewing rare and endangered species databases maintained by the NYNHP and the CTDEP.

4.6.4.1 Federally-Listed or Proposed Endangered or Threatened Species

We identified one federally-listed endangered species that potentially occurs in the vicinity of the proposed Iroquois MarketAccess Project areas. This species, its status, and areas where it may occur are listed in table 4.6-1. A description and assessment of potential impact on the species are included below.

Bog Turtle

The bog turtle is a federally-listed and New York and Connecticut state-listed endangered species known to occur in Orange County, New York and Litchfield County, Connecticut. Iroquois conducted field surveys for bog turtles at the Dover Compressor Station, in Duchess County, New York, in October 2002. Iroquois located potential bog turtle wetland habitat, however, because of the habitat's isolation from additional suitable habitat, the FWS (January 2, 2002) concluded that construction actions at the Dover Compressor Station would not be likely to affect the bog turtle. Iroquois' proposed construction

activities at the Dover Compressor Station would be at least 300 feet away from the wetland previously identified as potential bog turtle habitat. The FWS (March 28, 2006) agreed that bog turtles are unlikely to occur within the proposed project area. Therefore, we conclude that the proposed Iroquois MarketAccess Project would be unlikely to adversely affect the bog turtle.

Indiana Bat

The Indiana bat is a federally-listed and New York state-listed endangered species with known hibernacula in six counties in New York State.

The FWS (March 28, 2006) stated that there was potential for the Indiana bat to occur in the proposed project area. However, Iroquois does not plan to do any tree clearing activities and therefore no Indiana bat habitat is likely to be impacted. Therefore, we believe that the proposed Iroquois project would be unlikely to adversely affect the Indiana bat.

4.6.4.2 Other Special Status Species

In addition to the single federally-listed endangered bog turtle, two other state-listed endangered or threatened species were identified by the NYNHP as potentially occurring in the vicinity of Iroquois' proposed project areas (see table 4.6-2). There were no state-listed species occurrences identified by the CTDEP for the proposed project sites in Connecticut. Each species, its potential to occur in the vicinity of the proposed facilities, results of any field surveys, and potential impacts and proposed conservation measures are discussed below.

Side Oats Grama (*Bouteloua curtipendula*)

Side oats grama is a New York state-listed endangered species known to occur in the cinder bed of the railroad that is adjacent to the eastern property boundary of the Dover Compressor Station. Side oats grama is a medium-size perennial bunchgrass found on rocky, open slopes, woodlands, and forest openings. Iroquois completed a survey for side oats grama in July 2002 at the Dover Compressor Station site. The grass species was not found, and the NYSDEC concurred that the construction activities at this location would not likely adversely affect side oats grama.

Timber Rattlesnake

The timber rattlesnake is a New York state-listed threatened species whose range extends throughout most of New York. The NYSDEC indicated that the Dover Compressor Station was in the vicinity of timber rattlesnake habitat. The associated habitat was described as a ledge face on nearby Dobar Mountain. However, because the compressor station site was not within Dobar Mountain or within an area with similar rocky terrain, the NYSDEC concurred that construction at the Dover Compressor Station would not adversely affect the timber rattlesnake, and did not require surveys for this species in 2002. Iroquois has requested an update of this determination, and it is pending at this time.

Table 4.6-1
Federally–Listed Endangered or Threatened Species That Potentially Occur Along the NE-07 Project and Determinations of Effect

Species	Status a/	Millennium Phase I	Empire Connector	Algonquin Ramapo Expansion	Iroquois MarketAccess	Locations/Facilities Where Species May Occur b/
Birds						
Bald Eagle *Haliaeetus leucocephalus*	F-T,NY-T, NJ-E, CT-E	X Not Likely to Adversely Affect		X Not Likely to Adversely Affect		M - Delaware, Sullivan, and Orange Counties A - Hanover Compressor Station, Hudson River Valve Site
Reptiles						
Bog Turtle *Clemmys muhlenbergii*	F-T, NY-E, NJ-E, CT-E	X Not Likely to Adversely Affect		X Not Likely to Adversely Affect	X Not Likely to Adversely Affect	M - Orange County A - Pipeline Replacement, Stony Point, Southeast, and Oxford Compressor Stations I - Dover Compressor Station
Fish						
Shortnose Sturgeon *Acipenser brevirostrum*	F-E, NY-E, NJ-E, CT-E			X Not Likely to Adversely Affect		A - Hudson River Valve Site
Invertebrates						
Dwarf Wedge Mussel *Alasmidonta heterodon*	F-E, NY-E	X Not Likely to Adversely Affect				M - Neversink River, Orange County
Mammals						
Indiana Bat *Myotis sodalis*	F-E, NY-E, NJ-E, CT-E	X May Affect, But Not Likely to Adversely Affect	X Not Likely to Adversely Affect	X May Affect, But Not Likely to Adversely Affect		M - Orange and Rockland Counties E - Ontario, Yates, Schuyler, Chemung, and Steuben Counties A - Stony Point, Southeast, and Hanover compressor Stations, Pipeline Replacement
Plants						
Leedy's Roseroot *Sedum integrifolium* ssp. *leedyi*	F-T, NY-E		X Not Likely to Adversely Affect			E - Schuyler County

a/ F = Federal Endangered (E) or Threatened (T) Species
NY = New York Endangered (E) or Threatened (T) Species
NJ = New Jersey Endangered (E) or Threatened (T) Species
CT = Connecticut Endangered (E) or Threatened (T) Species

b/ M = Millennium Pipeline Phase I Facilities
E = Empire Connector Facilities
A = Algonquin Ramapo Expansion Facilities
I = Iroquois MarketAccess Facilities

Table 4.6-2
State–Listed Threatened or Endangered Species That Potentially Occur in the Vicinity of the NE-07 Project

Species	Status a/	Project	Locations/Facilities Where Species May Occur
Reptiles			
Wood Turtle *Clemmys insculpta*	NJ-T	Algonquin Ramapo Expansion	Hanover Compressor Station
Timber Rattlesnake *Crotalus horridus*	NY-T	Algonquin Ramapo Expansion	Ramapo Pipeline Replacement, Stony Point Compressor Station, Hudson River Valve Site
		Iroquois MarketAccess	Dover Compressor Station
		Empire Connector	Chemung, Schuyler, Yates Counties
		Millennium Phase I	Delaware, Sullivan, Orange, Rockland Counties
Mammals			
Allegheny Woodrat *Neotoma magister*	NY-E	Algonquin Ramapo Expansion	Stony Point Compressor Station
		Millennium Phase I	Rockland County
Birds			
Least Bittern *Ixobryhus exilis*	NY-T	Algonquin Ramapo Expansion	Hudson River Valve Site
Northern Harrier *Circus cyaneus*	NY-T	Empire Connector	Ontario County
Pied-billed Grebe *Podilymbus podiceps*	NY-T	Millennium Phase I Algonquin Ramapo Expansion	Orange County Oxford Compressor Station, preferred site F)
Short-eared Owl *Asio flammeus*	NY-E	Empire Connector	Chemung County
Upland Sandpiper *Bartramia longicauda*	NY-T	Millennium Phase I	Orange County
Invertebrates			
Brook Floater *Alasmidonta varicosa*	NY-E	Algonquin Ramapo Expansion	Ramapo Pipeline Replacement (Mahwah River crossing)
		Millennium Phase I	Orange County
Green Floater *Lasmigona subviridia*	NY-T	Millennium Phase I	Broome and Tioga Counties

Table 4.6-2 (cont'd)
State–Listed Threatened or Endangered Species That Potentially Occur in the Vicinity of the NE-07 Project

Plants			
Bird's Eye Primrose *Primula mistassinica*	NY-T	Empire Connector	Yates County
Clustered Sedge *Carex cumulata*	NY-T	Algonquin Ramapo Expansion Millennium Phase I	Ramapo Pipeline Replacement Orange County
Ensiform Rush *Juncus ensifolius*	NY-E	Millennium Phase I	Delaware County
Hyssop-skullcap *Scutellaria integrifolia*	NY-E	Algonquin Ramapo Expansion	Ramapo Pipeline Replacement
Large Twayblade *Liparis lilifolia*	NY-E	Algonquin Ramapo Expansion	Ramapo Pipeline Replacement
Michaux's Blue-eyed Grass *Sisyrinchium mucronatum*	NY-E	Millennium Phase I	Chemung County
Nodding Wild Onion *Allium cernuum* var. *cernuum*	NY-T	Millennium Phase I	Chemung County
Reflexed Sedge *Carex retroflexa*	NY-E	Millennium Phase I	Chemung County
Showy Aster *Eurybia spectabilis*	NY-T	Algonquin Ramapo Expansion	Ramapo Pipeline Replacement
Side Oats Grama *Bouteloua curtipendula*	NY-E	Iroquois MarketAccess	Dover Compressor Station
Slender Pinweed *Lechea tenuifolia*	NY-T	Millennium Phase I	Orange County
Small-flowered Crowfoot *Ranunculus micranthus*	NY-T	Millennium Phase I	Orange and Rockland Counties
Willdenow's Sedge *Carex willdenowii*	NY-T	Algonquin Ramapo Expansion Millennium Phase I	Ramapo Pipeline Replacement

a/
NY = New York Endangered (E) or Threatened (T) Species
NJ = New Jersey Endangered (E) or Threatened (T) Species
CT = Connecticut Endangered (E) or Threatened (T) Species

4.7 WETLANDS

Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of wetland vegetation typically adapted for life in saturated soil conditions (COE, 1987). The 1987 COE Wetlands Delineation Manual (COE, 1987) was used to identify and delineate wetlands that would be crossed by or that are in the vicinity of the four NE-07 project areas, with two exceptions. The 1989 Federal Wetland Delineation Manual (Federal Interagency Committee for Wetland Delineation, 1989) was used for the Hanover, New Jersey compressor station site, as required by the NJDEP Freshwater Wetlands Protection Act Rules. Wetlands within the two Connecticut sites (i.e., the Oxford and Brookfield Compressor Station sites) were delineated in conformance with the Connecticut Inland Wetlands and Watercourses Act (CGS Sections 22a-36 through 22a-45). All wetlands were classified using the FWS's *Classification of Wetlands and Deepwater Habitats in the United States and Canada* (Cowardin et al., 1979).

The majority of wetlands that would be affected by the four projects are freshwater palustrine wetlands. Palustrine wetlands systems include all nontidal wetlands that are dominated by trees, shrubs, emergent herbaceous plants, and emergent mosses or lichens. It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 8 ha (20 acres); (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of basin less than 2 m at low water; and (4) salinity due to ocean-derived salts less than 0.5 percent (Cowardin et al., 1979). Palustrine wetlands were further classified as palustrine forested (PFO), scrub-shrub (PSS), emergent marsh (PEM), and open water (POW) wetlands. PEM wetlands include both marsh and wet meadow communities. Two small riverine wetland habitats were identified within the Empire Connector project area, including a riverine aquatic bed (RAB) wetland and a riverine unconsolidated shore (RUS) wetland. However, the COE has not verified this delineation and has commented that there may be more riverine wetlands.

Section 404 of the Clean Water Act is administered by the COE for all discharges of dredged or fill material, mechanical land clearing, and excavation and backfilling in waters of the United States, including wetlands. In a January 30, 2006 letter, the COE indicated its intention to treat the NE-07 Project, including all of its component parts, as a single and complete project under the agency's regulations. Therefore, the COE would review the project cumulatively, release one public notice, and if a decision is made to issue permits for the proposed activity, would issue separate permits to each applicant for the individual components of the NE-07 Project.

4.7.1 MILLENNIUM PIPELINE PROJECT - PHASE I

The 2001 FEIS included detailed descriptions of wetlands affected by Millennium's originally proposed project. General information presented in section 5.7.3 of the 2001 FEIS (e.g., species composition of the wetland communities) has not changed substantially for the amended project and is not repeated here. The numbers and lengths of wetland crossings have changed considerably and are therefore updated in the following paragraphs. New data from Millennium's recent wetland delineation studies are also included.

Based on wetland delineations completed by Millennium and filed with the FERC as of July 31, 2006, the pipeline would affect a total of 525 wetlands for a total crossing length of 21.82 miles[7], or 12 percent of the total length of the pipeline (see table G1 in appendix G). Wetland locations are shown in

[7] The original Millennium Pipeline Project would have crossed about 41.4 miles of wetlands, affecting 414.3 acres during construction and 247.8 acres during operation.

appendix B1. Millennium's data indicated that 383 of the affected wetlands (18.0 miles of wetland crossings) are regulated by the COE and that 142 affected wetlands (3.8 miles) are isolated, federally non-jurisdictional wetlands. The COE had not provided written verification of Millennium's wetland delineations or its identification of isolated, non-jurisdictional wetlands as of May 15, 2006.

The pipeline would cross 23 NYSDEC-regulated freshwater wetlands, with a total of 32 crossings and a total crossing length of 2.64 miles (see table 4.7-1). As of May 15, 2006, the NYSDEC had not verified Millennium's delineation of state-regulated freshwater wetland boundaries.

About 3.0 miles (14 percent) of the wetland crossings are PFO wetlands or mixtures of PFO and other wetland types that are predominantly forested (see table 4.7-2). About 0.98 miles (4 percent) of the wetlands are PSS, and 17.0 miles (78 percent) are PEM, or mixtures of these cover types with other wetland types. About 0.86 mile (4 percent) of POW habitat would be crossed.

Although wetlands are adjacent to four of Millennium's proposed contractor/storage yards (67, 100-5, 106-5, and 110-5), none would occur within the proposed workspace areas.

Millennium has not been able to complete wetland delineation field studies for about 20 miles of the pipeline corridor due to access being denied by landowners. Millennium anticipates gaining access to about 4 miles of the route during spring 2006, and expects to file supplemental wetland data from those areas in June 2006. Wetland data from the remaining 16 miles will be recorded and filed once access is gained; however, Millennium may not gain access to these areas until after a Certificate is issued in this proceeding.

NYSEG Variations and Warwick Isle Route Variation

In total, 73 of the 525 wetlands that would be crossed by the pipeline occur within the three NYSEG Variations (see table G1 in appendix G). The total length of wetland crossings within the NYSEG variations would be about 1.8 miles (10 percent of the NYSEG Variations). Two NYSDEC-regulated freshwater wetlands would be crossed: Wetland HH-2 (0.1 mile) in the NYSEG Chemung Variation, and Wetland ME-4 (<0.1 mile) in the NYSEG Tioga-Broome Variation (see table 4.7-1).

One PFO/PEM wetland and one POW wetland would be crossed within the Warwick Isle Route Variation (see table G1 in appendix G). Millennium indicated that both wetlands appear to be federally jurisdictional wetlands. The total length of these wetland crossings would be 0.1 mile (9 percent of the variation length). No NYSDEC-regulated freshwater wetlands would be crossed.

It is important to note that wetland crossing data reported above for the NYSEG and Warwick Isle Rout Variations are included in the data reported for the Millennium Pipeline Project - Phase I (see text above, tables 4.7-1 and 4.7-2, and table G1 in appendix G). The species composition of the wetland communities in wetlands along the route variations would be similar to that reported in section 4.7 of the 2001 FEIS for the Millennium Pipeline Project.

Table 4.7-1
NYSDEC-Regulated Freshwater Wetlands Affected by Construction and Operation of the NE-07 Project

NYSDEC Wetland Number	Beginning Milepost	NWI Classification a/	Crossing Length (feet)		Wetlands Affected b/ During Construction (acres)	During Operation (acres)	Comments c/
Millennium Pipeline Project Phase I							--
HH-2	198.6	PSS/PEM	70		0.14	0.09	A
HH-2	198.6	PSS/PEM	462		0.76	0.52	A
ER-1	206.4	POW/PEM/PSS	270		0.39	0.27	--
ME-4	240.7	PSS/PEM	218		0.46	0.27	B
CC-12	249.9	PEM/PFO/PSS	74		0.24	0.09	--
Oquaga	272.4	PEM/PSS/PFO	1,149		1.88	1.11	--
CA-13	304.3	PEM	59		0.10	0.07	--
CA-13	304.4	PFO	183		0.32	0.21	--
LH-55	317.9	POW/PEM	261		0.45	0.29	--
EL-2	318.9	PEM/PFO	216		0.54	0.37	--
EL-2	319.0	PEM/PFO	108		0.57	0.39	--
EL-21	320.7	PEM/PFO	1,090		1.87	1.24	--
EL-22	321.3	PSS/PEM	239		0.41	0.27	--
EL-22	321.5	PEM/PSS	263		0.44	0.29	--
EL-34	322.0	PEM/PFO	124		0.22	0.14	--
EL-34	322.2	PEM/PFO	210		0.36	0.24	--
EL-34	322.3	PEM	589		1.02	0.67	--
EL-34	322.4	PEM	68		0.19	0.08	--
HL-28	323.8	PEM/PSS/PFO	375		00.65	0.43	--
HL-43	326.0	PEM	344		0.58	0.38	--
PN-9	334.5	PEM	740		1.25	0.84	--
PN-14	335.3	PEM/PSS/PFO	921		1.58	1.06	--
PN-23	337.1	PEM/PSS	279		0.48	0.32	--
PN-26	337.6	PEM/PFO	1,145		1.97	1.31	--
UN-18	349.7	PFO	85		0.15	0.10	--
PI-13	352.4	PSS/PEM	339		0.37	0.22	--
PI-14	353.3	POW	70		0.12	0.08	--
PI-14	353.3	PEM	148		0.33	0.17	--
PI-21	355.6	PEM	352		0.61	0.40	--
WR-27	362.4	PEM	404		0.89	0.46	--
WR-27	362.7	PEM/PSS	1,042		1.73	1.16	--
SL-3	367.4	POW	2,064		0.49	1.23	--
Subtotal		**32 crossings**	**13,961**	**feet**	**21.56**	**13.74**	
			2.6	**miles**			

Table 4.7-1 (cont'd)
NYSDEC-Regulated Freshwater Wetlands Affected by Construction and Operation of the NE-07 Project

NYSDEC Wetland Number		Beginning Milepost	NWI Classification a/	Crossing Length (feet)		Wetlands Affected b/ During Construction (acres)	During Operation (acres)	Comments c/
Empire Connector Project								
CG-1	22604	4.3	PFO/PEM	1026		0.8	0.7	--
CG-2	26766	5.1	PFO/PSS/PEM	696		1.2	0.8	--
ST-25	146700	27.8	PFO/PEM	616		0.9	0.5	--
ST-40	161300	30.5	PFO	0		0.0	0.0	--
ST-44	166610	31.6	PFO	0		0.0	0.0	--
Subtotal			**5 crossings**	**2,338**	**feet**	**2.9**	**2.0**	
				0.4	**miles**			
Algonquin Ramapo Replacement Project								
TH-28		0.7	PEM/PSS	475		1.2	0.0	--
Subtotal			**1 crossing**	**475**	**feet**	**1.2**	**0.0**	
				0.1	**miles**			
NE-07 Total			**30 crossings**	**16,724**	**feet**	**25.7**	**14.7**	
				3.1	**miles**			

a/ NWI Classification:
P = Palustrine
EM = Emergent
FO = Forest
SS = Scrub-shrub
OW = Open water

b/ Construction impacts based on a 75-foot-wide ROW for the Millennium and Empire Projects (100-foot for the Algonquin Project). Operational impacts based on a 50-foot-wide ROW for the Millennium and Empire Projects (75-foot for the Algonquin Project), of which only a 10-foot-wide corridor (centered on the pipeline) would be maintained in an herbaceous state.

c/ Comments:
A = NYSEG Chemung Variation
B = NYSEG Tioga-Brome Variation

Table 4.7-2
Wetlands Affected by Construction and Operation of the NE-07 Project

NWI Classification a/	Number Crossed	Crossing Length (feet)	Crossing Length (miles)	Wetlands Affected b/ During Construction (acres)	Wetlands Affected b/ During Operation (acres)
Millennium Pipeline Project Phase I					
PEM	430	89,732	17.00	103.09	68.97
PFO	56	15,790	2.99	19.16	13.03
POW	16	4,516	0.96	3.73	2.26
PSS	23	5,151	0.9	8.46	5.16
Subtotal	**525**	**115,189**	**21.75**	**134.08**	**89.42**
Empire Connector Project					
PEM	56	7,537	1.4	13.0	8.7
PFO	37	8,044	1.5	12.5	8.3
POW	1	0	0.0	0.0	0.0
PSS	48	11,107	2.1	19.3	12.9
RAB	1	0	0.0	0.0	0.0
RUS	1	108	<0.1	0.2	0.1
Subtotal	**144**	**26,796**	**5.1**	**44.9**	**30.0**
Algonquin Ramapo Replacement Project					
PFO	5	263	<0.1	0.6	0.5
PEM/PSS	2	2,111	0.4	6.1	4.5
Subtotal	**7**	**2,374**	**0.4**	**6.7**	**5.0**
NE-07 Project Summary					
PEM	486	97,269	18.4	116.09	77.67
PEM/PSS	2	2,111	0.4	6.1	0.0
PFO	98	24,097	4.49	31.72	21.33
POW	17	4,516	0.89	3.73	2.26
PSS	71`	16,258	3.0	27.76	18.06
RAB	1	0	0.0	0.0	0.0
RUS	1	108	<0.1	0.2	0.1
Total	**674**	**114,359**	**28.18**	**185.6**	**119.42**

a/ NWI Classification:

P =	Palustrine
R =	Riverine
EM =	Emergent
FO =	Forest
SS =	Scrub-shrub
OW =	Open water
AB =	Aquatic Bed
US =	Unconsolidated Shore

b/ Construction impacts based on a 75-foot-wide ROW for the Millennium and Empire Projects (100-foot for the Algonquin Project). Operational impacts based on a 50-foot-wide ROW for the Millennium and Empire Projects (75-foot for the Algonquin Project), of which only a 10-foot-wide corridor (centered on the pipeline) would be maintained in an herbaceous state.

Corning Compressor Station

No wetlands would be present within the proposed workspace for Millennium's Corning Compressor Station. However, four wetlands were delineated within the boundaries of the compressor station property. Additional wetlands were identified but not flagged or surveyed in forested areas of the northern portion of the property where there would be no project-related disturbance.

Columbia Line A-5 Replacement Project

Wetland delineations were conducted for the Line A-5 Replacement Project in areas for which access permission was available, and Columbia filed a wetland delineation report with the Commission. Access was not granted from about MP 368.1 to MP 368.2. However, Columbia's examination of National Wetlands Inventory (NWI) maps and recent aerial photography did not reveal the presence of any evident wetlands in that area. The COE had not verified Columbia's wetland delineation as of May 15, 2006.

Based on Columbia's 2004 wetland delineation report, the pipeline would cross 19 wetlands for a total crossing length of about 0.7 mile, or 8 percent of the total length of the pipeline (see table G1 in appendix G). An additional five wetlands would be crossed by access roads, for a total crossing length of 0.2 mile. No wetlands would be affected by the proposed modifications of aboveground facilities, and no NYSDEC-regulated wetlands would be crossed by the Line A-5 Replacement Project.

It is important to note that wetland crossing data for the Line A-5 Replacement Project are incorporated into the data reported for the Millennium Pipeline Project - Phase I (see text above, tables 4.7-1 and 4.7-2, and table G1 in appendix G).

No wetlands would be crossed by the Sterling Forest ® State Park /Laurel Ridge Alternative. The Ramapo River HDD Variation would cross four wetlands, but three would be avoided by a successful HDD crossing. Two wetlands would be along access road ARHDD 003. Therefore, the Ramapo River HDD Variation would temporarily affect about 1.38 acres of wetlands including about 0.41 acre along ARHDD 003 during construction. About 0.7 acre of wetlands would be within the permanent ROW during pipeline operation.

Wetland Impacts and Mitigation

The following paragraphs describe project-specific wetland impacts that would result from the Millennium Phase I project, and measures that have been proposed to mitigate those impacts. A more detailed description of wetland impacts and mitigation measures that would be associated with all components of the NE-07 Project is provided in section 4.7.5.

We completed a thorough evaluation of potential wetland impacts that would result from the originally proposed Millennium project, as part of the 2001 FEIS. Our evaluation included a review of general measures to avoid and minimize wetland impacts, and addressed a number of wetland-related comments from federal and state regulatory agencies. Those aspects of our evaluation are not repeated here. Instead, the following description focuses on impacts that would result from the amended project, which represents a change in the numbers and lengths of wetlands crossings, as well as agency comments received in regards to the amended project. In part this change is due to Millennium getting access to additional properties to complete surveys.

Construction of the Millennium Pipeline Project - Phase I would temporarily disturb about 134.4 acres of wetlands in the construction ROW and extra workspace areas (see table 4.7-2). About 89.4 acres

of wetlands would be within the permanent ROW during operation of the project. About 21.6 acres of NYSDEC-regulated freshwater wetlands would be affected by construction, of which 13.7 acres would be within permanent ROW during operation of the pipeline (see table 4.7-1).

About 19.2 acres (14.4 percent) of the affected wetlands area are classified as PFO or other wetlands with a major forest component (see table 4.7-2). The PFO wetlands would be crossed adjacent to existing ROWs, where actual forest clearing would be less than 75 feet because of the partial use for construction of 25 to 50 feet of the previously cleared ROW for construction.[8]

Following construction, about 13.0 acres of forested wetland would be maintained as PEM or PSS for the operational ROW. The remaining 115.3 acres (85.7 percent) of wetlands affected by construction are classified as non-forested wetlands, including PSS (8.5 acres; 6.4 percent), PEM (103.1 acres; 76.9 percent), and POW (2.3 acres; 1.8 percent), or mixtures of these wetland types.[9]

Millennium identified 142 locations on the Phase I route where extra workspaces would be within wetland or waterbody buffer areas (within 50 feet of the wetland or waterbody boundary). The acreage of wetland that would be affected in the extra workspaces is included in the summaries provided above. Most of the extra workspaces would be required to complete road crossings. A second group of extra workspaces within the 50-foot buffer would be used at or near major bends in the pipeline centerline where extra workspace would be required to install pre-fabricated pipe sections. We note that the COE would need to approve the use of extra workspaces within wetlands.

Millennium identified 13 small wetlands in Sullivan, Orange, and Rockland Counties that it proposes to fill permanently as part of project construction between MPs 304.7 and 347.5, affecting a total of 0.26 acre. One wetland is a drainage ditch in the “black dirt” area. The remaining wetlands are narrow linear features within the existing ROW, typically ruts from vehicle traffic. All of the wetlands are PEM wetlands. Millennium would consult with the COE to develop compensation plans for this wetland loss, if necessary.

Millennium filed a section 404 permit application with the COE in August 2005 for construction of the Phase 1 Project. Subsequent to Millennium’s filing, the COE notified the Commission and the NE-07 Project sponsors of its intention to treat all components of the NE-07 Project as a single and complete project. Millennium filed data from its fall 2005 wetland delineation to the COE in March 2006, and plans to file data from its spring 2006 field delineation when compiled.

A section 401 Water Quality Certificate (WQC) was issued by the NYSDEC on December 8, 1999 (see appendix H of the 2001 FEIS) for the original Millennium Pipeline Project. The WQC included the requirement that Millennium restore all wetland crossing areas, except for temporary access roads, to pre-existing contours and grades within the wetland and for a distance of 100 feet from the edge of the wetland, within 48 hours of backfilling the trench. A section 401 amendment application was filed with the NYSDEC in August 2005. Millennium reported that the NYSDEC determined that an Article 24 Freshwater Wetlands Permit would not be required for this Project. Millennium requested written confirmation of this determination and would file it with the Commission as soon as it is available.

[8] The original Millennium Pipeline Project would have affected about 71.6 acres of PFO wetlands during construction and about 43.8 acres during operation.

[9] The original Millennium Pipeline Project would have affected about 295.3 acres of PEM wetlands during construction and about 174.4 acres during operation; about 39.7 acres of PSS wetlands during construction and about 24.6 acres during operation; and about 7.7 acres of POW wetlands during construction and about 5.0 acres during operation. These wetland amounts were not verified by the COE, but were reported in the 2001 FEIS.

NYSEG and Warwick Isle Route Variations

Although the recent wetland delineation surveys determined that a considerably larger number of wetlands are crossed by the NYSEG Variations compared to the number along the previously certificated route (73 versus 24), the affected area of wetlands increased only slightly (10.8 acres versus 10.6 acres).

Two wetlands (one PFO/PEM and one POW) were delineated along the Warwick Isle Route Variation compared to one along the corresponding segment of previously certificated route, affecting 0.8 acre of wetland.

Corning Compressor Station

Construction of the Corning Compressor Station would have no direct impact to wetlands as none occur within the proposed workspace. If Millennium would construct the facility in accordance with its ECS and our Procedures to protect nearby wetlands, the project would have no indirect impact to wetlands.

By constructing the project adjacent to and often overlapping existing ROWs, new clearing for construction and new areas where the permanent ROW would be maintained are minimized. Most wetland areas would be allowed to revegetate in a manner consistent with section VI.D.1 of our Procedures. ROW vegetation maintenance would not occur over the full width of the permanent ROW in wetlands. However, to facilitate periodic pipeline corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be maintained in a herbaceous state. Trees within 15 feet of the pipeline that are greater than 15 feet in height may be selectively cut and removed from the permanent ROW. So, that even though the permanent ROW through wetlands would be 50 feet centered over the pipeline, maintenance would only affect a 30-foot-wide strip centered over the pipeline. The proposed project modifications would not change the types of wetland impacts that would result from the project (e.g., long-term loss of forested wetland habitat), and the magnitude of project impacts on wetland would be reduced considerably from those of the original Millennium Pipeline Project (from 414.3 acres along the original 424-mile-long Millennium Pipeline Project to 149.1 acres for wetlands delineated to date for the Phase I Project). Millennium's proposed mitigation plan (described below) would compensate for the permanent conversion of PFO to PEM and PSS.

Cleared PFO wetlands with mature trees would be affected permanently since it would require more than 25 years for affected areas within temporary workspaces to recover to pre-construction condition. PFO cleared within areas that would become permanent ROW, while remaining wetland, would be permanently changed from PFO to PEM or PSS within the maintained ROW.

A conceptual wetland mitigation plan was included with Millennium's August 2005 section 404 application to the COE. The primary components of the wetland mitigation plan include on-site restoration of affected wetlands, purchase of off-site properties to permanently protect mature forested wetlands, creation of off-site forested wetlands, and the funding of research specific to pipeline construction activities. Forested wetland acquisition would be completed at a minimum ratio of 2:1, and forested wetland creation at a minimum ratio of 1:1 for all forested wetlands that would be converted to non-forested wetland communities (i.e., PFO wetlands in the permanent ROW). Millennium would fund post-construction monitoring of the wetland creation areas in years 1, 2, 5, 7, and 10. The proposed research projects include procedures for restoring sedge tussocks and the use of construction mats over existing shrub vegetation, both of which would include a minimum of three years of post-construction monitoring. The COE may require special conditions for restoration of areas with tussock sedge. Millennium has also proposed to restore temporarily affected wetlands with appropriate wetland plantings.

We believe that if Millennium implements the construction, restoration, and operation procedures of its ECS and SPCC Plan, our Plan and Procedures, the requirements of the COE and NYSDEC including recommended wetland mitigation, and the recommendations identified in this document, then the impacts to wetlands would be minimized.

Columbia Line A-5 Replacement Project

Construction of the Line A-5 Replacement Project would temporarily disturb 24 wetlands with a total wetland area of 3.9 acres in the construction ROW and extra workspace areas (see table 4.7-2). Operation of the project would affect a total of 2.7 acres of wetland, mostly as a result of routine ROW vegetation maintenance. No NYSDEC freshwater wetlands would be affected. Wetland impacts associated with the Line A-5 Replacement Project are incorporated into the data reported for the Phase I Project.

About 0.2 acre of PFO wetlands would be affected by Line A-5 construction activities (see table 4.7-2). Locating the pipeline on the existing Line A-5 ROW to the greatest extent possible could minimize impacts to PFO wetlands. Most of the Line A-5 Replacement Project would be constructed by using the lift and lay or same-ditch replacement method. The new pipeline would be installed in the same ditch as the old pipeline. This minimizes the need for construction workspace and generally minimal new permanent ROW would be required. Long-term impacts would be minor and there would be no permanent conversion of PFO to PEM and PSS. However, the reestablishment of PFO wetlands in the temporary construction areas may take 25 years or longer, so this would be considered a long-term or permanent impact. There would be no impacts to PFO wetlands associated with access roads or staging areas.

Columbia applied in October 2004 for a section 404 Permit from the COE for construction of the project. However, that application would be superseded by Millennium's application for the Phase I Project facilities, which would include the Line A-5 Replacement Project. Moreover, the proposed wetland mitigation described above for the Phase I Project would also be implemented for the wetland impacts associated with the Line A-5 Replacement Project.

We believe construction of the Columbia Line A-5 Replacement Project would have a minor adverse impact on wetlands, assuming that our Procedures, Millennium's ECS, as well as federal and state wetlands permit conditions are followed. Utilization of lift-and-lay construction methods within the existing ROW over most of the project route would minimize wetland impacts, and the project would not result in the permanent conversion of forested to non-forested wetland communities.

4.7.2 EMPIRE CONNECTOR PROJECT

Pipeline Facilities

Based on Empire's wetland delineation field studies, the pipeline would affect a total of 144 wetlands for a total crossing length of 5.1 miles, or 7 percent of the total length of the pipeline (see table G2 in appendix G). Wetland locations are shown in appendix B2. Ninety-one wetlands (3.8 miles of wetland crossings) would be federally jurisdictional and 38 wetlands (1.3 miles) isolated, federally non-jurisdictional wetlands. Empire did not describe the potential jurisdictional status of an additional 15 wetlands associated with proposed access roads. To date, the COE had not verified all of Empire's wetland delineations or its identification of isolated, non-jurisdictional wetlands.

Wetland delineation field studies could not be completed at 10 parcels along about 2.4 miles of ROW due to a lack of property access. Aerial photographs and topographic maps were used to estimate potential wetland boundaries within these properties. Four potential wetlands were identified on five of the properties using these sources. Those wetlands are not included in table G2 (appendix G), Table 4.7-1, or Table 4.7-2 due to the preliminary nature of their identification.

The pipeline would cross five NYSDEC-regulated freshwater wetlands, with a total crossing length of 0.4 mile (see table 4.7-1). To date, the NYSDEC had not verified Empire's delineation of state-regulated freshwater wetland boundaries.

About 1.5 miles (30 percent) of the wetlands that would be affected by project construction are PFO, 2.1 miles (42 percent) are PSS, and 1.4 miles (28 percent) are PEM, or mixtures of these cover types with other wetland types. One RAB wetland and one RUS wetland were identified, with a combined crossing distance of less than 0.1 mile (less than 1 percent).

Swamp white oak, red and silver maple, green ash, and quaking aspen occur commonly in the PFO wetlands along the Empire Connector Pipeline route. Understory shrubs include spicebush, red-osier dogwood, and European buckthorn. The dominant species in PSS wetlands include American elm and green ash saplings, black and pussy willow, European buckthorn, red-osier dogwood, and arrow-wood. Wetland grasses, rushes, sedges, sensitive fern, boneset, joe-pye weed, willow-herb, and bugleweed occur in open areas.

The PEM wetlands include emergent marsh and wet meadow habitats. Emergent marshes consist of narrow-leaf and broad-leaf cattail, purple loosestrife, various rush and sedge species, reed canary grass and other wetland grasses, *Phragmites*, beggar's ticks, climbing hempweed, poison ivy, boneset, joe-pye weed, and bugleweed. Wet meadow exists generally within the existing utility corridor or within fallow crop fields. The dominant plants include Canada rush, soft rush, sedges, sensitive fern, arrow-leaved tearthumb, willow-herb, and wetland grasses. Individual willow and red-osier dogwood shrubs were often observed in the PEM communities.

Oakfield Compressor Station

No wetlands were identified within the Oakfield Compressor Station site.

Wetland Impacts and Mitigation

Pipeline Facilities

Construction of the Empire Connector Project would temporarily disturb about 44.9 acres of wetlands for the construction ROW and extra workspace areas (see table G2 in appendix G). About 30.0 acres of wetlands would be located within the permanent ROW for the project (see Table 4.7-2). About 2.9 acres of NYSDEC-regulated freshwater wetlands would be affected by construction, of which 2.0 acres would be retained for operation of the pipeline (see table 4.7-1).

About 12.5 acres (28 percent) of the affected wetlands are classified as PFO wetland or other wetlands with a major forest component. For about 47 percent of the route, PFO wetlands would be crossed adjacent to existing ROWs, where actual forest clearing would be less than 75 feet because of the partial use for construction of 25 to 50 feet of the previously cleared ROW for construction.

Following construction, about 8.3 acres of previously forested wetland would be maintained as PEM or PSS for the operational ROW. The remaining 32.4 acres (72 percent) of the wetlands affected by

construction are classified as non-forested wetlands and include PSS (19.3 acres; 43 percent), PEM (13.0 acres; 29 percent), and riverine wetlands (0.2 acres; less than 1 percent) wetlands, or mixtures of these wetland types.

Empire filed a joint application for a COE section 404 permit and a NYSDEC section 401 WQC for construction of the Empire Connector project. The COE has indicated to the FERC and the NE-07 project sponsors that it would treat all components of the NE-07 Project as a single and complete project during its permitting process.

Empire initiated discussions with the COE regarding mitigation of permanent impacts to forested wetlands along the pipeline route. The COE indicates that Empire's wetland mitigation plan should be consistent with that prepared for the Millennium Pipeline Project Phase I and provided Empire with the formula for determining mitigation requirements that is being applied to the Millennium project. The plan would be filed with the Commission and cooperating agencies upon completion. Therefore, **we recommend that:**

- **Empire consult with the COE to develop a wetland mitigation plan, consistent with that prepared for the Millennium Pipeline Project Phase I, to compensate for impacts to forested wetlands. The plan should include on-site restoration of all affected wetlands, as well as off-site forested wetland acquisition, at a minimum ratio of 2:1, and forested wetland creation, at a minimum ratio of 1:1, for the total acreage of forested wetlands that would be converted to non-forested wetland communities, and should address restoration of temporary workspaces. Empire should file the final wetland mitigation plans with the Secretary as soon as it is available.**

We believe that impacts to wetlands would be minimized to the greatest extent practicable by constructing the pipeline along existing ROW (about 47 percent of the pipeline ROW would be along existing ROW) where construction workspaces can overlap previously disturbed areas and by limiting the ROW width in wetlands to 75 feet and implementing the construction and restoration procedures identified in our Procedures and Empire's ESCAMP and any additional requirements imposed by the COE and the NYSDEC. Further, we have recommended that Empire develop a wetland mitigation plan that would be consistent with the plan being developed by Millennium in consultation with the COE. This would compensate for the loss of forested wetlands and would address restoration of forested wetlands in temporary workspaces.

Oakfield Compressor Station

Construction of the Oakfield Compressor Station would have no direct or indirect wetland impacts since there are no wetlands at the proposed compressor station site.

4.7.3 ALGONQUIN RAMAPO EXPANSION PROJECT

Pipeline Facilities

Seven wetlands would be crossed by or would be in close proximity to the pipeline component of the project, for a total length of about 0.4 mile, or about 8 percent of the total project length (see table G3 in appendix G). Wetland locations are shown in appendix B3. The affected wetlands are riparian and are associated with the Mahwah River and intermittent streams. The COE has not verified Algonquin's wetland delineations or determined which wetlands may be isolated and federally non-jurisdictional as of May 15, 2006.

One of the delineated wetlands (Wetland W-01-RK-02) coincides with a mapped NYSDEC-regulated freshwater wetland (Wetland TH-28, a class I wetland). The total crossing length would be about 0.1 mile (see table 4.7-1).

The existing maintained ROW crosses wetlands which contain PEM communities consisting of *Phragmites*, shallow sedge, arrow-leaf tearthumb, boneset, smartweeds, tussock sedge, soft rush, joe-pye weed, cinnamon fern, jewelweed, wool-grass, and reed-canary grass. North of the ROW the wetlands include about 0.55 acre of PFO communities dominated by red maple, green ash, pin oak, American hornbeam, spicebush, highbush blueberry, and sedges. Along the Mahwah River and adjacent to the ROW to the southwest, the wetlands consist of a combination of PSS and PFO communities composed of the plants mentioned above as well as speckled alder, winterberry, silky dogwood and purple loosestrife.

Miscellaneous Pipeline and Meter Station Modifications

One small, PEM wetland (Wetland W-RO-001) was delineated between West Shore Road and the railroad tracks at the Hudson River Valve Site. The wetland is located south of the pipeline centerline within the existing pipeline ROW. It is about ten feet long and is dominated by *Phragmites*. No wetlands were found along the bank of the Hudson River, and no NYSDEC freshwater wetlands occur within the site.

Algonquin's wetland delineation identified no wetlands within the Ramapo Meter Station 202 site or the workspaces relocated 30-inch mainline valves. No NYSDEC-regulated freshwater wetlands occur within the sites.

Compressor Station Modifications

Six wetlands (Wetlands W-MO-001, W-MO-002, and W-MO-004 to W-MO-007) were delineated at the Hanover Compressor Station property, although none occur within the proposed construction workspace. Two of the wetlands (Wetlands W-MO-005 and W-MO-007) appear to be isolated, non-jurisdictional wetlands. Two of the wetlands are predominantly PFO, two are PEM, and two are PFO/PEM. The dominant plants in the PFO communities include red maple, American elm, pin oak, gray dogwood, and poison ivy. Typical plants in the PEM communities include *Phragmites*, cattails, soft rush, sedges, purple loosestrife, goldenrods, and wetland grasses.

The Stony Point Compressor Station property contains three wetlands (Wetlands W-01-RK-08 to W-01-RK-10). None extend into the proposed construction workspace. The three wetlands are riparian PFO wetlands associated with an unnamed tributary to Cedar Pond Brook, although Wetland W-01-RK-09 contains a small area of PEM habitat. All three appear to be federally jurisdictional. Typical plant species occurring in the wetland includes red maple, swamp white oak, sycamore, eastern hemlock, green ash, spicebush, steeplebush, skunk cabbage, soft rush, lurid sedge, rough-stemmed goldenrod, wool-grass, wild raisin, cinnamon fern, sensitive fern, goldenrods, and sedges. No NYSDEC-regulated freshwater wetlands occur within the site.

One wetland, Wetland W-01-PT-001, is present within the Southeast Compressor Station property. It does not extend into the proposed construction workspace for the compressor station addition. It is a PFO wetland, except along the gas pipeline ROW where a disturbed, *Phragmites*-dominated PEM community occurs. Typical plants in the forested portion of the wetland include red maple, yellow birch, American elm, spicebush, winterberry, sedges, and sphagnum moss. No NYSDEC-regulated freshwater wetlands are present within the site.

Oxford Compressor Station

Seven wetlands (Wetlands A to G) were delineated within the proposed Oxford Compressor Station property. Four of the wetlands (Wetlands A and D to F) appear to be isolated, non-jurisdictional wetlands. All of the wetlands support PFO, and Wetland B also includes PSS and PEM. The dominant plants in the PFO community include red maple, American elm, yellow birch, spicebush, winterberry, highbush blueberry, swamp azalea, speckled alder, sweet pepperbush, cinnamon fern, royal fern, sensitive fern, and sphagnum moss. The dominant plants within the PEM community of Wetland B include cattail, wool-grass, soft-stem bulrush, soft rush, arrow-leaf tearthumb, and spatterdock.

Brookfield Meter Station

Iroquois performed wetland delineation surveys for the 68.3-acre Brookfield property. The wetlands are described in section 4.7.4. No wetlands were identified within the proposed workspace for Algonquin's proposed meter station.

Wetland Impacts and Mitigation

Pipeline Facilities

The Ramapo pipeline replacement component of the project would temporarily disturb about 6.7 acres of wetlands in the construction ROW and extra workspace areas (see table 4.7-2). We estimated about 5.0 acres of wetlands would be located within the permanent ROW for the project. About 1.2 acres of NYSDEC-regulated freshwater wetlands would be affected by construction (see table 4.7-1). The majority of the NYSDEC wetland (about 0.83 acres) would be maintained as low PSS or PEM communities on Algonquin's existing permanent ROW.

About 0.6 acre (9 percent) of the affected wetland area is classified as PFO or other wetlands with a major forest component (see table 4.7-2). The PFO wetlands would be crossed adjacent to existing ROWs, where actual forest clearing would be less than 100 feet because of the partial use for construction of the existing 75-foot-wide previously cleared Algonquin pipeline ROW. Following construction, all of the previously forested wetland would be allowed to revert to PFO as it would be outside the permanent ROW. The remaining 6.1 acres (91 percent) of wetlands affected by construction are classified as PEM/PSS wetlands.

Algonquin filed a joint application for permit on or about March 28, 2006 to obtain a section 404 permit from the COE and a section 401 WQC from NYSDEC for the Ramapo Expansion Project. The application did not include a project-specific wetland mitigation plan. It is important to note that compensatory mitigation for the permanent loss of forested wetland communities, as the COE has indicated it would require from Millennium and Empire, would not be relevant because the proposed Ramapo Expansion Project would not convert forested wetlands to non-forested wetlands in the permanent ROW.

Algonquin requests a variance from section VI.A.3 of our Procedures. This section states in part:

> Limit the width of the construction ROW to 75 feet or less. Prior written approval of the Director of OEP is required where topographic conditions or soil limitations require that the construction ROW width within the boundaries of a federally delineated wetland be expanded beyond 75 feet.

Algonquin states that due to the high amount of surface rock and shallow depth to bedrock, steep topography, and limited available workspace outside the existing pipeline ROW, it needs additional

workspace for vehicles, construction personnel, spoil storage, and a safe work environment. Algonquin would use its existing 75-foot-wide pipeline ROW which contains its 26- and 30-inch-diameter pipeline plus an additional 25 feet of temporary workspace. Along the first approximate mile of the pipeline replacement portion of the project, the permanent ROWs for pipelines owned by Columbia and Orange & Rockland Utilities are adjacent to the Algonquin ROW. Algonquin has requested a variance at these locations along the pipeline replacement portion of its project: Wetland 01, AMP 0.29 to AMP 0.60; Wetland 02, AMP 0.73 to AMP 0.82; Wetland 03, AMP 3.25 to AMP 3.27; and Wetland 04, AMP 3.28 to AMP 3.31. The COE has commented that Algonquin should coordinate with it about this request. The COE is reviewing this request at this time. We believe the additional temporary workspace at the limited locations is reasonable so that pipeline construction may be completed safely, if the COE concurs. Therefore, **we recommend that:**

- **Algonquin may use an additional 25 feet of temporary extra workspace adjacent to the existing Algonquin ROW at these locations: Wetland 01, AMP 0.29 to AMP 0.60; Wetland 02, AMP 0.73 to AMP 0.82; Wetland 03, AMP 3.25 to AMP 3.27; and Wetland 04, AMP 3.28 to AMP 3.31. However, prior to the use of these extra workspaces, Algonquin should file with the Secretary site-specific plans for each location showing all workspaces and the existing and proposed pipeline facilities, for review and written approval by the Director of OEP. Algonquin should also file with the Secretary concurrence from the COE about the use of these areas.**

The COE has commented that impacts to forested wetlands should be addressed in a wetland mitigation plan. Therefore, **we recommend that:**

- **Algonquin consult with the COE to develop a wetland mitigation plan, consistent with that prepared for the Millennium Pipeline Project Phase I, to compensate for impacts to forested wetlands. The plan should include on-site restoration of affected wetlands, off-site forested wetland acquisition, at a minimum ratio of 2:1, and forested wetland creation, at a minimum ratio of 1:1, for all forested wetlands that would be converted to non-forested wetland communities, and should address restoration of temporary workspaces. Algonquin should file the final wetland mitigation plans with the Secretary as soon as it is available.**

We believe that impacts to wetlands would be minimized to the greatest extent practicable by construction the pipeline along existing ROW where construction workspaces can overlap previously disturbed areas and by implementing the construction and restoration procedures identified in our Procedures and Algonquin's E&SCP and any additional requirements imposed by the COE and the NYSDEC. Further, we have recommended that Algonquin develop a wetland mitigation plan that would be consistent with the plan being developed by Millennium in consultation with the COE. This would compensate for the loss of forested wetlands and would address restoration of forested wetlands in temporary workspaces.

Miscellaneous Pipeline and Meter Station Modifications

No direct wetland impacts would result from the modification of the Ramapo Meter Station 202, relocation of 30-inch mainline valves on parallel Algonquin Loop Line, or modification of Hudson River Valve Site. No wetlands were identified within the Ramapo Meter Station 202 site or the workspace areas for the Relocation of 30-inch mainline valves. If Algonquin implements the construction, restoration, and operation procedures of its E&SCP and SPCC Plan, our Plan and Procedures, the requirements of the COE and NYSDEC, and the recommendations identified in this document then impacts to wetlands would be minimized to the greatest extent practicable.

Compressor Station Modifications

Modifications to the existing Hanover, Stony Point, and Southeast Compressor Stations would have no direct impact on wetlands because no wetlands were identified in the proposed workspaces for the facilities.

Oxford Compressor Station

Based on Algonquin's conceptual design for the Oxford Compressor Station, construction would result in the permanent loss of less than <0.1 acre of wetland (see table 4.7-2) from crossing Wetland C with a new access drive entrance off Oxford Airport Road (CT SR 486). Algonquin identified Wetland C as an isolated, non-jurisdictional wetland, although the COE has not yet verified that determination. The area of wetland impact may be modified once the final design plan is completed. Algonquin's design for the road minimized wetland impacts to the greatest degree practicable considering the need for the road to provide safe ingress and egress to the site, and to minimize traffic disruption on CT SR 486 in accordance with Connecticut Department of Transportation (CTDOT) and Oxford Highway Department requirements. Algonquin reduced the width of the crossing to that necessary for safe ingress and egress to the site, and to maintain flow through the wetland.

Once the final design for the Oxford Compressor Station has been completed and the area of wetland impact has been verified, Algonquin would apply for a section 404 permit from the COE, a section 401 WQC from the Connecticut Department of Environmental Protection (CTDEP), and an Inland Wetlands Permit from the Town of Oxford Inland Wetlands Agency. Algonquin anticipates filing with these agencies during the third quarter of 2006. Some of the work activities at the Oxford site may occur within the locally regulated 50-foot upland review area pursuant to the Town of Oxford Inland Wetlands and Watercourses Regulations (pending an anticipated change to 100-foot upland review area). Algonquin's work activities in or affecting jurisdictional wetlands would adhere to special conditions in the above-listed permits. Algonquin would consult with the agencies regarding the need for a wetland mitigation plan. If a plan is required, it would be filed with the Commission, the COE and CTDEP as appropriate, upon completion. The COE commented that this project is not an independent utility and, therefore, the Programmatic General Permit would not apply. Impacts associated with this portion of the project would be reviewed under the COE's Individual Permit process for the NE-07 Project.

In a February 10, 2006 letter, the CTDEP filed a letter on February 10, 2006 in which they requested a discussion of the functional values that would be lost or impaired as a result of constructing the Oxford Compressor Station Site. Algonquin listed the functions performed by Wetland C as groundwater recharge/discharge, flood flow alteration, sediment and toxicant retention, nutrient removal/retention/transformation, and wildlife habitat. We anticipate that the overall functionality of Wetland C would not be adversely affected by the loss of less than <0.1 acres of wetland due to access road construction. The remnant wetland would not be fragmented, nor would its hydrology be directly affected.

Construction of the Oxford Compressor Station would have a minor, permanent impact to wetland resources. The proposed road crossing over Wetland C would require the filling of less than <0.1 acre of forested wetland, which may not be replaced through compensatory mitigation (depending on COE permit conditions). Although a small area of wetland would be lost as a result of the project, the overall impact on wetlands have been minimized and would be insignificant.

Brookfield M&R Station

The preliminary configuration for the Brookfield M&R Station would not directly impact wetlands on the site, and would be outside the locally regulated 100-foot upland review area. A final evaluation of project impacts to wetlands would be made once the construction plan for the meter station is finalized. We anticipate that construction of the facility would have no indirect impact to wetlands, assuming that Algonquin would construct it in accordance with their E&SCP and SPCC Plan and our Procedures to protect nearby wetlands.

4.7.4 IROQUOIS MARKETACCESS PROJECT

In November 2005, Iroquois re-delineated wetland and watercourse boundaries at the Brookfield and Dover Compressor Station sites. A wetland delineation report was subsequently filed with the Commission. As of March 28, 2006, the COE had not verified Iroquois's wetland delineations or determined which wetlands may be isolated and non-jurisdictional. Iroquois reported that the COE anticipated conducting a site visit to review the wetland boundaries by the end of March 2006.

Brookfield Compressor Station

Iroquois delineated nine wetlands on the 68.3-acre Brookfield property. Nine wetlands (Wetlands 1 to 9) were identified and flagged on the site, although none occur within Algonquin's proposed workspace. Wetland 1 is a large wetland complex consisting of PEM, PSS, and POW components associated with Bound Swamp and bordering portions of an unnamed intermittent stream channel. The remaining wetlands consist of an assemblage of PSS, PEM, and PFO communities. Due to the nature of this disturbance on the site, the wetland plant communities in most of the wetlands can best be described as a sprawling shrub thicket, with smaller areas of emergent marsh and wet meadow distributed randomly.

Dover Compressor Station

Two wetlands were delineated on the 44.8-acre Dover Compressor Station property. However, neither occurs within the proposed compressor station workspace. Wetland 1 is located south of the compressor station. It was characterized as a PFO/PSS complex, and contains a section of Intermittent Watercourse 1. Wetland 2 is a relatively small PSS wetland located east of the compressor station facility. No NYSDEC-regulated freshwater wetlands occur within the site.

Wetland Impacts and Mitigation

Brookfield Compressor Station

Based on the preliminary Brookfield site plan, all workspace would be outside wetlands. Therefore, the project would have no direct impact on wetlands. The proposed station yard, driveway, septic system, and other apparatus would be within 100 feet of wetlands. If Iroquois constructs the facility in accordance with our Procedures then the project would have no indirect impact to wetlands.

Several commenters expressed concern about the potential for various pollutants to contaminate wetlands and aquatic habitats adjacent to the Brookfield Compressor Station workspace. However, we believe that there would be no indirect impact on wetlands assuming that Iroquois would construct the facility in accordance with our Procedures and would implement the procedures in its SPCC Plan, which include measures for protecting adjacent wetlands and waterbodies and address handling and storing hazardous materials to prevent and contain spills of these materials.

Dover Compressor Station

No permanent facilities at the Dover Compressor Station are proposed within 100 feet of wetlands. Iroquois would construct the gas coolers in accordance with our Procedures to protect nearby wetlands from exposed soils during construction, and stabilize and restore the work areas. Therefore, no significant impact to wetlands is anticipated from the project.

4.7.5 CONSTRUCTION IMPACTS AND MITIGATION

Construction of the pipeline facilities that are proposed for three of the four NE-07 Project sponsors would affect a total of about 200.7 acres of wetlands in the construction ROW and extra workspace areas (see table 4.7-2). About 29.6 acres of NYSDEC-regulated freshwater wetlands would be affected by construction (see table 4.7-1). The primary effect on wetlands from pipeline construction would be the temporary and permanent conversion of forested wetland to non-forested wetland within the pipeline ROW, access roads, and storage yards. A total of about 32.7 acres of PFO would be cleared for the NE-07 pipeline segments, of which about 21.3 acres would be permanently converted to PEM and PSS within the permanent ROW (see Table 4.7-2). The remaining 11.4 acres of PFO would be allowed to revert to forested wetland, representing a long-term impact as it would take over 25 years to reestablish forest vegetation. There would be minimal, short-term impacts to PEM and PSS wetlands that currently exist in the temporary workspaces as these areas would be maintained in vegetative cover similar to that found prior to construction.

The proposed NE-07 project would have less impact on wetlands than the original Millennium Pipeline Project. Construction of the Millennium Pipeline Project would have directly affected about 414.3 acres of wetlands and operation would have affected about 247.8 acres of wetlands. The NE-07 Project would affect about 213.6 fewer acres during construction and 120.2 fewer acres during operation than the Millennium Pipeline Project. Impacts to all wetland types would be less for the NE-07 Project. For example, impacts to forested wetlands during construction would be reduced by about 38.9 acres and permanent impacts would be reduced by 22.5 acres.

Construction of the proposed aboveground facilities for the four NE-07 Projects would convert a total of less than <0.1 acre of wetland to developed land (see table 4.7-1). There would be no other direct impacts to wetlands as all other workspace areas have been sited outside of wetlands. Assuming that each project sponsor would construct their facilities in accordance with their environmental construction plans, our Procedures, and federal and state permit conditions to protect adjacent wetlands, aboveground facility construction proposed for the NE-07 Project would have no minimal impact on wetlands.

The primary impact of pipeline construction and ROW maintenance activities on wetlands would range from temporary to permanent alteration of wetland vegetation. In PEM wetlands, the impact of construction would be relatively brief, since the herbaceous vegetation would regenerate quickly. In PFO and PSS wetlands, the impact would be longer-term due to the extended regeneration period of the vegetative types and maintenance of the ROW.

Construction would also diminish the recreational and aesthetic value of wetlands crossed. These effects would be greatest during and immediately following construction.

Other types of impacts associated with pipeline construction could include temporary changes to wetland hydrology and water quality. During construction, surface drainage patterns and hydrology could be temporarily altered and there could be an increased potential for the trench to act as a drainage channel. Trenching could penetrate or remove impervious soil layers under the wetland and,

consequently, drain perched water tables. This in turn could result in drier soil conditions that could inhibit the reestablishment of wetland vegetation. Disturbance of wetlands could minimally affect the wetlands' capacity to control erosion and floods.

Increased siltation and turbidity may result from trenching activities. Failure to segregate topsoil in wetlands could result in the mixing of the topsoil with the subsoil. This could result in altered biological activities and chemical conditions in wetland soils and could impact the reestablishment of wetland plants. In addition, compaction and rutting of wetland soils could result from the temporary stockpiling of soil and the movement of heavy machinery. This could alter the hydrologic patterns of the wetlands, which could result in decreased seed germination and seedling survival.

To minimize the potential environmental impact on wetlands, each of the four NE-07 Projects would implement the mitigation methods in their respective environmental construction plans and our Procedures during construction and restoration in all federal and state jurisdictional wetlands pursuant to the requirements of the section 401 and 404 CWA permits. The following requirements are included in these documents:

- Hazardous materials, chemicals, fuels, and lubricating oils would not be stored within a wetland or within 100 feet of a wetland boundary.

- All extra workspace areas would be located at least 50 feet away from wetland boundaries; if topographic conditions do not permit a 50-foot setback, extra workspace areas would be located at least 10 feet from the wetland's edge.

- Construction equipment operating within the ROW would be limited to that equipment necessary for clearing, excavation, pipe installation, backfilling, and restoration activities. All non-essential equipment would use upland access roads to the maximum extent practicable.

- Equipment operating within saturated wetlands would operate on wide tracks, balloon tires, timber pads, or prefabricated construction mats.

- Temporary erosion controls would be installed immediately after the initial disturbance of soil and would be inspected and maintained regularly until final stabilization. Erosion controls would be installed across the construction ROW on any slopes leading into wetlands and along the edge of the construction ROW within wetland boundaries.

- Vegetation would be cut at ground level, leaving existing root systems in place to promote revegetation. Stumps would only be removed from the trenchline and, if removal is required for safety concerns, along the working side of the ROW.

- The uppermost 1 foot of wetland topsoil would be segregated from the underlying subsoil in areas disturbed by trenching, except in areas with standing wafer or saturated soils, or where no topsoil layer is evident. The topsoil would be restored over the trench after construction is complete.

- Within PFO wetlands, native trees and shrubs would be planted to restore the temporary and non-maintained ROW to preconstruction conditions.

- Routine vegetative maintenance would be confined to a corridor 30 feet wide, centered over the pipeline. The four projects may selectively remove trees and shrubs within 15 feet of the pipeline that are greater than 15 feet in height. A 10-foot-wide corridor, centered over the pipeline, may be maintained in an herbaceous state.

The wetland crossing procedures would be implemented in all wetlands (including isolated, federally non-jurisdictional wetlands) unless the wetland is used for agriculture and agricultural construction, procedures would apply. Construction through wetlands would also comply, at a minimum, with each project's section 404 permit conditions.

Section 404(b)(1) guidelines restrict discharges of dredged or fill material where a less environmentally damaging, practicable alternative exists. When wetland impacts are proposed, the COE would require that all appropriate and practicable actions be taken to avoid or mitigate those impacts. For the COE to determine if appropriate and practicable measures have been taken, each project sponsor must demonstrate that it has avoided wetland impacts through the selection of the least environmentally damaging practicable alternative and has taken appropriate and practicable steps to minimize wetland impacts, including compensatory mitigation for unavoidable impacts. See sections 3.2.1, 3.2.2, 3.2.3, and 3.2.4 for discussions of route variations and alternative sites for aboveground facilities to avoid or minimize impacts on wetlands.

Impacts to wetlands from the construction of access roads would be avoided to the extent possible by locating the graded roadway outside of the wetland areas and erecting sediment barrier devices between the access roads and wetlands. Where access across a wetland cannot be avoided, the project sponsors would install and maintain equipment crossings for the duration of construction in that area. All equipment crossings would be constructed in accordance with each project's environmental construction plan and our Procedures.

Wetland restoration and vegetation maintenance would be conducted in accordance with each project's environmental construction plan and our Procedures, as well as applicable permit requirements. The restoration would be monitored and recorded annually for three years post-construction or until wetland restoration is deemed successful. After three years post-construction, a report would be filed with the Commission and permitting agencies documenting the status of wetland restoration activities, including percent cover achieved and problems encountered.

Wetland functions would be affected by construction, although the construction and restoration procedures in the applicants' environmental construction standards would reduce the loss of overall functions primarily by preserving the original ground surface grade and maintaining tree stumps for revegetation in PFO wetlands. The biggest change in function would occur in PFO wetlands. Removal of trees from a wetland may increase the performance of some functions and decrease others. The ability of wetlands to maintain long-term surface water storage, for example, may be enhanced when trees are removed. Water would be stored longer because evapotranspiration would be suppressed in the absence of vegetation. Conversely, negative effects on other functions, particularly related to wildlife habitat, would result from removing vegetation.

The construction and restoration measures contained in the applicants' environmental construction standards limit post-construction vegetation maintenance in the ROW to about 30 feet centered over the pipeline. For the remaining portion of the construction ROW, the functional conversions would not be sustained over time. The wetland vegetation community would eventually transition back into a PFO community with functions similar to those performed by the wetland prior to construction in areas used for temporary ROW. Consequently, affected wetland communities would lose only those

functions unique to PFO wetlands and only for the period of years equal to the time required for reforestation.

We understand that this represents a loss of specific wetland functions, but not functionality. The COE through the Section 404 Permit process and the states through their Section 401 WQC and state wetland permitting processes may require mitigation as compensation for this loss of function over time. We do not feel that any additional analysis or mitigation, beyond what would be required by the COE and the states, is necessary.

Based on wetlands data filed for the NE-07 Projects, invasive plant species such as purple loosestrife, *Phragmites*, and Japanese knotweed are present in wetlands that would be crossed by the proposed projects. Mowing or cutting of these invasive species does not destroy the rootstalks and creates pieces that may resprout. Seeds, viable propagules, and rhizome fragments may attach to construction equipment and be conveyed to other wetlands. Under section VI.C.4 of our Procedures, the project sponsors are required to coordinate with the states to develop strategies to control the spread of exotic plant species such as purple loosestrife, *Phragmites*, and Japanese knotweed.

4.8 LAND USE, RECREATION, AND VISUAL RESOURCES

An easement would be used to convey ROW to the pipeline company. The easement gives the company the right to construct, operate, and maintain the pipeline in the ROW, and in return compensates the landowner for the use of the land. The easement negotiations between the company and the landowner would also include compensation for loss of use during construction, loss of nonrenewable or other resources, damage done to property during construction, and allowable uses of the ROW after construction.

If an easement cannot be negotiated with the landowner and the project has been certificated by the Commission, the company may use the right of eminent domain granted to it under section 7(h) of the NGA and the procedure set forth under the Federal Rules of Civil Procedure (Rule 71A) to obtain the ROW and extra workspaces identified in the Certificate. The company would still be required to compensate the landowner for the ROW, and for any damages incurred during construction. However, a court according to state law would determine the level of compensation once the Commission issues a certificate. In either case, the pipeline companies would compensate landowners for the use of the land. Generally, the pipeline companies would be acquiring additional ROW adjacent to existing ROWs. Special permits would be obtained as needed for pipeline crossings of roads, railroads, and streams, as well as for pipeline ROW through town, state, or federal lands.

4.8.1 MILLENNIUM PIPELINE PROJECT - PHASE I

Potential impacts and mitigation measures for the project would not change substantially from those that were identified in the FEIS for the project issued in October 2001. The most significant changes in the scope of the project would be pipeline construction between MP 190.6 and MP 376.6 rather than along the original 424-mile-long corridor, installation of compression facilities adjacent to Columbia's existing Corning Compressor Station in Steuben County, New York; incorporation of three route variations totaling about 19 miles along the existing NYSEG powerline ROW in Chemung, Tioga, Broome, and Delaware Counties; continued use of about 7.1 miles of Columbia's existing 24-inch-diameter pipeline in the Neversink River area; and incorporation of a 1.21-mile-long route variation around the proposed Warwick Isle subdivision in Warwick, Orange County, New York. Only the proposed changes to the approved certification for the Millennium Pipeline Project will be addressed in detail in this document and in this section.

4.8.1.1 Land Use

Pipeline Facilities

The project would cross a variety of land use types commonly found in rural agricultural and forested areas of the southern tier of New York. Although the route of the Phase I Project has been adjusted in certain areas, the resulting changes do not substantially alter those assessed in the 2001 FEIS for the Millennium Pipeline Project.

Impacts to land use would not change substantially from those previously assessed. Table 4.8-1 lists land use acreage that would be affected by construction and operation of the entire Phase I Project pipeline construction ROW, access roads, and storage yards, by county. Table 4.8-2 lists land use acreage that would be affected by construction and operation of the proposed variations only. Construction of the NYSEG Route Variations would temporarily affect an estimated 199.1 acres of land and the pipeline ROW would permanently occupy about 119.4 acres of land. Construction of the Warwick Isle Route Variation would temporarily affect an estimated 11.7 acres of land and the pipeline ROW would permanently occupy about 7.3 acres of land. Construction of the Sterling Forest ® State Park/Laurel Ridge Variation would affect 10.3 acres of land and the pipeline ROW would permanently occupy 5.1 acres of land. Construction of the Ramapo River HDD Variation would temporarily affect about 12.8 acres of land and the pipeline ROW would permanently affect about 4.9 acres of land.

Millennium proposes to use 17 access roads in addition to the 121 access roads previously approved. In addition, based upon recent investigations and discussions with resource agencies and conservation groups, as well as analysis of the proposed pipeline design and the anticipated market demand, Millennium now proposes to use about 7.1 miles of the existing 24-inch-diameter Line A-5 pipeline between MP 340.5 to MP 347.7 this would avoid construction across the Neversink River. Since there would be no construction along this pipeline segment, the amount of construction acreage required would be reduced by about 65.20 acres compared to the approved route.

Generally, remote conventional ground beds would be installed a minimum of 500 feet from the pipeline, and anodes would be installed perpendicular to the pipeline. The ground bed would affect an area 500 feet long by 50 feet wide in which a 2-foot-deep by 1-foot-wide trench would be excavated along the length of the ground bed. The anodes would be installed in 12-inch-diameter by 20-foot-deep vertical holes adjacent to the trench. After installation, the area would be backfilled and marked to prevent damage. Deep well anodes could also be installed using a 10-inch-diameter well drilled a minimum of 50 feet below the surface and connecting to a surface junction box. This would require an approximate 500-foot by 50-foot area that is perpendicular to the ROW and protected by a permanent fence.

A total of 10 cathodic protection ground beds would be constructed within the Phase I Project area. We reviewed the locations of these ground beds in the Millennium Pipeline Project FEIS (October 2001) issued by the FERC, and the locations were certificated as part of that process. These cathodic protection ground beds would generally be installed a minimum of 500 feet from the pipeline, and anode lines would be installed perpendicular to the pipeline. The ground bed would affect an area 500 feet long by 50 feet wide, in which a 2-foot-deep by 1-foot-wide trench would be excavated along the length of the ground bed. The anodes would be installed in 12-inch-diameter by 20-footh-deep vertical holes adjacent to the trench. After installation, the area would be backfilled and marked to prevent damage. The cathodic protection ground beds are located perpendicular to the following MPs: 195.4 and 215.1 in Chemung County, 235.2 in Tioga County, 254.8 in Broome County, 276.3 and 296.2 in Delaware County, 315.9 in Sullivan County, and 336.6, 359.4, and 369.6 in Orange County, New York.

Table 4.8-1

Land Use Acreage Affected by the Millennium Pipeline Project – Phase I by County a/

	Agricultural		Forest		Open		Residential		Industrial / Commercial		Open Water		Other		Total	
	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW
Steuben																
Pipeline	0.0	0.0	4.3	2.0	3.8	2.5	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	8.4	4.6
Compressor Station	0.0	0.0	6.0	6.0	6.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	6.5
Access Roads	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Contractor/Storage Yards	0.0	0.0	6.5	0.0	3.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	10.0	0.0
Steuben County Subtotal	**0.0**	**0.0**	**16.7**	**8.0**	**13.5**	**3.0**	**0.3**	**0.1**	**0.4**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**30.9**	**11.1**
Chemung																
Pipeline	53.7	24.6	152.2	65.3	73.7	61.6	2.3	1.3	3.1	2.0	0.6	0.4	1.5	0.7	287.2	155.8
Access Roads	3.9	0.0	3.4	0.0	0.6	0.0	0.1	0.0	1.1	0.0	0.0	0.0	1.7	0.0	10.7	0.0
Storage Yards	0.8	0.0	0.0	0.0	26.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	0.0	32.9	0.0
Chemung County Subtotal	**58.4**	**24.6**	**155.6**	**65.3**	**100.7**	**61.6**	**2.4**	**1.3**	**4.2**	**2.0**	**0.6**	**0.4**	**8.9**	**0.7**	**330.8**	**155.8**
Tioga																
Pipeline	50.0	23.0	117.3	55.0	70.4	51.0	2.5	1.4	3.9	2.4	0.9	0.4	0.0	0.0	244.4	133.2
Access Roads	3.1	0.0	3.0	0.0	0.9	0.0	0.4	0.0	1.2	0.0	0.0	0.0	0.0	0.0	11.6	0.0
Storage Yards	0.0	0.0	0.3	0.0	44.6	0.0	0.0	0.0	4.6	0.0	0.0	0.0	0.0	0.0	49.5	0.0
Tioga County Subtotal	**53.1**	**23.0**	**120.6**	**55.0**	**115.8**	**51.0**	**2.9**	**1.4**	**9.7**	**2.4**	**0.9**	**0.4**	**0.0**	**0.0**	**303.5**	**133.2**
Broome																
Pipeline	76.5	36.6	206.9	96.6	109.4	84.1	5.4	2.3	10.8	6.0	2.0	1.0	1.5	0.6	412.4	227.0
Access Roads	5.1	0.0	8.7	0.0	2.3	0.0	1.1	0.0	1.9	0.0	0.0	0.0	0.0	0.0	19.1	0.0
Storage Yards	1.4	0.0	2.4	0.0	11.8	0.0	0.4	0.0	1.4	0.0	0.0	0.0	0.0	0.0	17.5	0.0
Broome County Subtotal	**83.1**	**36.6**	**217.9**	**96.6**	**123.5**	**84.1**	**6.8**	**2.3**	**14. 2**	**6.0**	**2.0**	**1.0**	**1.5**	**0.6**	**449.0**	**227.0**
Delaware																
Pipeline	17.7	7.9	137.3	54.7	85.3	69.8	1.3	0.6	2.8	1.6	1.8	0.9	0.2	0.0	246.4	134.6
Access Roads	0.9	0.0	3.5	0.0	1.0	0.0	0.4	0.0	1.5	0.0	0.0	0.0	0.0	0.0	7.3	0.0
Storage Yards	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	7.5	0.0	0.0	0.0	0.0	0.0	12.6	0.0
Delaware County Subtotal	**18.6**	**7.9**	**140.8**	**54.7**	**91.3**	**69.8**	**1.7**	**0.6**	**11.8**	**1.5**	**1.8**	**0.9**	**0.2**	**0.0**	**266. 2**	**134.6**

Table 4.8-1 (cont'd)

Land Use Acreage Affected by the Millennium Pipeline Project – Phase I by County a/

	Agricultural		Forest		Open		Residential		Industrial / Commercial		Open Water		Other		Total	
	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW
Sullivan																
Pipeline	53.7	26.2	178.0	45.8	146.8	131.1	4.3	1.9	10.1	6.6	0.9	0.5	0.0	0.0	393.7	212.0
Access Roads	1.1	0.0	13.3	0.0	1.0	0.0	0.8	0.0	4.5	0.0	0.0	0.0	0.0	0.0	20.7	0.0
Storage Yards	0.0	0.0	11.1	0.0	25.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	36.3	0.0
Sullivan County Subtotal	**54.0**	**26.2**	**202.5**	**45.8**	**172.8**	**131.1**	**5.1**	**1.9**	**14.7**	**6.6**	**0.9**	**0.5**	**0.0**	**0.0**	**450.9**	**212.0**
Orange																
Pipeline	81.9	38.4	148.3	37.3	125.3	109.3	20.2	7.5	12.8	7.6	6.9	3.2	4.5	3.5	399.8	206.6
Access Roads	3.5	0.0	9.0	0.0	5.5	0.0	1.3	0.0	2.3	0.0	0.0	0.0	0.6	0.0	22.2	0.0
Storage Yards	0.0	0.0	12.8	0.0	26.6	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	39.6	0.0
Orange County Subtotal	**85.4**	**38.4**	**170.1**	**37.2**	**157.4**	**109.3**	**21.5**	**7.5**	**15.2**	**7.6**	**6.9**	**3.2**	**5.2**	**3.5**	**461.6**	**206.6**
Rockland																
Pipeline	0.0	0.0	34.5	5.3	21.8	20.6	0.0	0.0	0.5	0.1	0.0	0.0	0.0	0.0	56.8	26.0
Access Roads	0.0	0.0	5.9	0.0	0.4	0.0	1.2	0.0	0.6	0.0	0.0	0.0	0.0	0.0	7.0	0.0
Storage Yards	0.0	0.0	0.6	0.0	37.1	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	39.1	0.0
Rockland County Subtotal	**0.0**	**0.0**	**41.0**	**5.3**	**59.3**	**20.6**	**1.6**	**0.0**	**2.5**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**102.8**	**26.0**
Grand Totals	**353.3**	**156.7**	**1,065.0**	**367.8**	**834.4**	**529.6**	**40.8**	**14.9**	**72.7**	**26.3**	**13.2**	**6.3**	**15.7**	**4.8**	**2,395.0**	**1,106.4**

a/: Totals include Columbia's Line A-5 Replacement Project

Table 4.8-2
Land Use Acreage Affected by the Millennium Pipeline Project – Phase I Proposed Variations

Agricultural		Forest		Open		Residential		Industrial / Commercial		Open Water		Other		Total	
Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW
NYSEG Chemung Variation															
20.8	10.0	17.9	8.3	24.3	15.4	0.4	0.3	1.0	0.6	0.2	0.1	1.6	0.7	66.2	35.4
NYSEG Tioga-Broome Variation															
31.7	18.5	47.1	28.4	42.9	31.4	2.3	1.2	1.5	1.0	0.6	0.3	0.0	0.0	126.1	80.8
NYSEG Delaware Variation															
0.0	0.0	2.9	0.6	3.5	2.3	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	6.8	3.2
Warwick Isle Variation															
10.5	6.5	0.7	0.4	0.1	0.1	0.0	0.0	0.1	0.1	0.3	0.2	0.0	0.0	11.7	7.3
Ramapo River HDD Variation															
0.0	0.0	2.8	0.4	6.7	4.0	2.6	0.3	0.7	0.2	0.0	0.0	0.0	0.0	12.8	4.9
Laurel Ridge/Sterling Forest ®Variation															
0.0	0.0	9.4	4.6	0.5	0.4	0.0	0.0	0.4	0.1	0.0	0.0	0.0	0.0	10.4	5.1
Total: 63	**35**	**80.8**	**42.7**	**78**	**53.6**	**5.6**	**2.0**	**3.8**	**2.1**	**1.1**	**0.6**	**1.6**	**0.7**	**233.9**	**136.7**

Aboveground Facilities

The long-term impacts of construction and operation of the Corning Compressor Station would be minor. The new compressor station would permanently occupy 6.5 acres of land, 6.0 acres of which is forested and 0.5 is herbaceous open land. An additional 6 acres of herbaceous open land would be utilized temporarily as extra workspace to construct the new facilities. The new compressor Station would be a separate facility adjacent to Columbia's existing compressor station, on land currently owned by Columbia. There are no nearby sensitive land uses.

4.8.1.2 Existing and Planned Residential and Commercial Development

Pipeline Facilities

A total of 135 residences would be within 50 feet of the construction workspace for the entire Millennium Phase I project, including where the route of the modified project deviates from the originally certificated route. This includes four residences within 50 feet of the NYSEG Tioga – Broome Variation and two residences within 50 feet of the NYSEG Delaware Variation. Residential structures would not be condemned for construction or operation of the project.

The Warwick Isle Route Variation is specifically proposed to avoid an approved subdivision plan in the Town of Warwick, New York. Millennium is unaware of any other planned residential areas along the NYSEG Route Variation or in the vicinity of the Corning Compressor Station.

Where possible, Millennium has reduced the construction workspace or relocated the pipeline to be more than 50 feet from residences. Millennium also would continue to attempt to refine the construction workspace in an effort to assure that no residences would be located within 25 feet of the construction workspaces. If construction would be required within 50 feet of a residence, Millennium would attempt to avoid removal of mature trees and landscaping; install temporary construction fence along the edge of the construction workspace within 100 feet of the residence; backfill the trench on the same day that construction is undertaken; and restore the construction workspace in the vicinity of the residence as soon as possible. For areas where construction within 50 feet of a residence would be required, Millennium has attempted to reduce the width of the construction ROW to stay at least 25 feet from the residence. Before construction, Millennium would develop site-specific plans detailing the specific construction measures for any property on which construction workspaces would be within 25 feet of a residence. The 2001 FEIS recommended and the Interim Order required Millennium to file these site-specific plans prior to construction. That requirement is still in effect.

We believe Millennium should update the information about the locations of residences within 50 feet of the construction ROW along the Phase I Project and mitigate the impact of construction near residences and implement the procedures for residential construction in its ECS. Therefore, **we recommend that:**

- **Prior to construction, Millennium update the list of residences within 50 feet of the proposed facilities, and adopt the following measures to minimize the impact on residences within 50 feet of the construction ROW for their respective projects:**

  a. Avoid removal of trees and landscaping unless necessary to construct the pipeline or for the safe operation of the construction equipment;

  b. Restore all lawns, landscaping areas and driveways within the construction ROW area promptly after backfilling the trench; and

c. Install and maintain construction fencing at the edge of the construction ROW for a distance of 100 feet on either side of the residence and at a minimum maintain this fencing throughout the open trench phases of the pipe installation.

However, Millennium has not yet provided us with these site-specific residential construction plans for our review. Therefore, **we recommend that:**

- **For any residence within 25 feet of the construction workspace, Millennium file a site-specific plan with the Secretary for the review and written approval of the Director of OEP before construction. The plan should include:**

  a. a description of construction techniques to be used (such as reduced pipeline separation, centerline adjustment, use of stone-pipe or drag-section techniques, working over existing pipelines, pipeline crossover, bore, etc.), and include a dimensioned site plan that shows:

  (1) the location of the residence in relation to the new pipeline and where appropriate, the existing pipelines;
  (2) the edge of the construction workspace;
  (3) the edge of the new permanent ROW; and
  (4) other nearby residences, structures, roads, or waterbodies.

  b. a description of how Millennium would ensure the trench is not excavated until the pipe is ready for installation and the trench is backfilled immediately after pipe installation; and

  c. evidence of landowner concurrence if the construction workspace and fencing would be located within 10 feet of a residence.

A comment was filed from a landowner regarding the location of a proposed Millennium staging area in Warwick, New York, at MP 357 and the impact that location would have upon the removal of trees and construction noise. Millennium has re-evaluated the need for this staging area and determined that it is not necessary. Millennium removed the staging area from the construction alignment sheets and filed a revised alignment sheet with the Secretary on July 31, 2006.

A series of comments were filed from Woodstone Lakes Development, LLC regarding the Millennium easement between approximate MP 322.7 to MP 323.7. Pipeline construction along this segment of the Phase I Project would be accomplished by using the lift and lay construction method whereby the old Columbia Line A-5 pipeline would be removed and replaced with Millennium's new pipeline. Woodstone Lakes Development, LLC commented that Columbia's easement on its property is 33 feet in width, not 50 feet as stated by Columbia and Millennium. They are concerned that Columbia and Millennium may be attempting to acquire property without just compensation. Millennium has confirmed that in fact the easement is 33 feet and that Millennium and Columbia inadvertently indicated that it was 50 feet. Millennium would, however, request an amendment to the existing easement to increase the width of the permanent ROW to 50 feet to include the necessary permanent operations and maintenance easement for the project. The parties in question would be compensated for such an amendment.

Aboveground Facilities

No residences would be within the immediate vicinity of Millennium's proposed Corning Compressor Station. The nearest residences would be about 1,000 feet away from the proposed site to the south and southeast. However, there is a Columbia-owned residence on its existing compressor station property.

4.8.1.3 Recreation and Public Interest Areas

Pipeline Facilities

The public land, recreation, and other designated areas crossed by the proposed route variations only are presented in table 4.8-3, and are discussed below. The majority of the route variations parallel existing ROW through these areas.

The NYSEG Chemung Variation would cross the Catharine Valley Trail at MP 198.6. It would also cross two portions of the Soaring Eagle/Mark Twain State Park (between MP 198.6 and 198.8 and between MP 199.0 and MP 199.5). The state park property includes the Murray Athletic Center of Elmira College, a private liberal arts school. A property owned by the County of Chemung would be crossed between MP 201.6 and MP 201.8. All of these crossings would be on ROW adjacent to the existing cleared NYSEG power line ROW.

The approved Millennium Pipeline Project route would have crossed all of these properties, although at slightly different locations. The approved route was generally located within the NYSEG powerline ROW. The proposed variations were developed in consultation with NYSEG to generally situate the pipeline out of, but adjacent to, the NYSEG power line ROW either to its north or south. Therefore, the Phase I Project route proposed in the amendment would affect land uses similar to the approved route, although the variations typically would result in the removal of more of the adjacent vegetation (typically forest).

The Catharine Valley Trail would be crossed parallel to the existing NYSEG electric transmission line ROW adjacent to NY Route 14. The trail follows the towpath for the abandoned Chemung Canal. Based on field observations, Millennium stated that the trail in this area is undeveloped and appears to be unused. However, the NYSOPRHP commented that construction on this segment of the trail is scheduled to begin in 2007. Millennium stated it would develop additional mitigation measures with the NYSOPRHP.

Construction across the two parcels of Soaring Eagle/Mark Twain State Park would affect a total of about 4.1 acres of public land. The property would be crossed parallel to an existing electric transmission line where there are no developed park recreational facilities. However, a parking lot for the Murray Athletic Center of Elmira College would be crossed on this property for about 700 feet. Millennium stated it would coordinate with the NYSOPRHP and Elmira College concerning mitigation measures for the park and parking lot crossings.

The property owned by the Town of Chenango would be crossed by the NYSEG Chemung Variation in a wooded area along the existing NYSEG powerline ROW. About 1.9 acres of public land would be affected. Millennium stated it would coordinate with the Town regarding possible mitigation measures.

Table 4.8-3
Public Land and Designated Recreation, Scenic, or Other Areas
Millennium Pipeline Project – Phase I

County	Mileposts	Name of Area	Use of Area	Crossing Length (ft)	Acreage Affected by Construction	Proposed Mitigation/Action
Chemung	198.6	Mark Twain State Park	Forested open land.	88	0.2	Mitigation to be developed with landowner.
Chemung	198.6	Catharine Valley Trail	Trail – owned by NYSOPRHP.	25	>0.1	Implement construction procedures in section II.G of ECS, including maintaining safe passage and backfilling the trench immediately following installation.
Chemung	198.6-198.8	Soaring Eagles/Mark Twain State Park	Multi-use trails.	1880	2.9	Timing and mitigation measures to be developed with landowner. NYSOPRHP would be notified 1 week before construction. Apply weed-free straw as mulch in all disturbed areas. The NYSOPRHP also notes that the crossing would be within several trail areas and that these be crossed in accordance with Millenniums ECS (section II G).
	199.0-199.5			2940	1.2	
Chemung	201.6-201.8	County of Chemung	Public Open Space.	901	1.9	Mitigation to be developed with landowner.
Tioga	241.7	Secretary of Department of Housing and Urban Affairs		206	0.4	Mitigation to be developed with landowner.
Columbia Line A-5 Replacement Project						
Orange	0.03-0.1	Sterling Forest ® State Park	Public open space and forested parkland. Jointly managed by NYSOPRHP and PIPC.	399	1.1	Final mitigation to be developed with NYSOPRHP and PIPC.
	0.4-0.8			2310	6.3	

Table 4.8-3 (cont'd)
Public Land and Designated Recreation, Scenic, or Other Areas
Millennium Pipeline Project – Phase I

County	Mileposts	Name of Area	Use of Area	Crossing Length (ft)	Acreage Affected by Construction	Proposed Mitigation/Action
Orange/Rockland	2.1-5.3	Harriman Forest State Park	Second largest park in the New York parks system, with 31 lakes and reservoirs, 200 miles of hiking trails, three beaches, two public camping areas, a network of group camps, miles of streams, and scenic roads and vistas. Major recreation facilities include lakes, the Anthony Wayne Recreation Area, Sebago Cabins, and Beaver Pond Campgrounds. Several trails would be crossed. Area jointly managed by NYSOPRHP and PIPC.	16814	41.1	Final mitigation to be developed with NYSOPRHP and PIPC. Notification in writing 1 week before construction. Landscape plantings at road crossings in accordance with detailed drawings. Trail crossings in accordance with section II.G of Millennium's ECS. Provide NYSOPRHP with 4 weeks notice and opportunity to review and approve of all plantings.
	5.27-5.31			219	0.6	
	5.4-7.9			13026	35	
Orange/Rockland	Storage Yard 98	Harriman Forest State Park		N/A	2.2	
Rockland	7.9-8.7	Kakiat County Park	A 353-acre Rockland County park providing opportunities for hiking, fishing, and picnicking.	4684	11.1	Final mitigation to be developed with landowner.

N/A = Not Applicable

Table 4.8-3 lists each identified recreation or public interest area and mitigation proposed by Millennium for each crossing. Proposed mitigation includes construction timing restrictions; use of specific mitigation for all trail crossings (see section II.G of Millennium's ECS); and consultations with affected landowners to develop site- specific mitigation plans, timing restrictions, and restoration procedures. These would be developed as part of the easement negotiations Millennium would conduct with affected recreational area managers or landowners.

Aboveground Facilities

No recreational or public interest areas would be within the immediate vicinity of Millennium's proposed Corning Compressor Station.

4.8.1.4 Visual Resources

Pipeline Facilities

Generally, visual impact resulting from construction of the pipeline would be temporary and confined to the construction period. The impacts on non-forested lands would be relatively brief because the non-forested areas would revegetate back to pre-construction conditions relatively quickly after construction. Clearing of forest areas would produce longer-term changes in the landscape. Clearing of trees along the fringe of the existing pipeline ROW and at aboveground facilities would increase visibility of the proposed facilities. In these areas, visual impact would generally be confined to the clearing of hedgerows and trees along stream banks and roads. Re-vegetation of the disturbed ROW with natural succession of plant communities would over time mitigate for the initial construction-generated visual impacts. In areas where a new ROW corridor would be introduced in forested areas, visual impacts would be most noticeable at the crossings of roadways and other public access areas. However, the majority of the pipeline would be constructed adjacent to existing cleared ROWs, significantly reducing the introduction of new cleared corridors. This impact would also be reduced at waterbodies, where native vegetation would be re-established across the ROW, except for a 10-foot-wide inspection access strip over the pipeline.

About 90 percent of the NYSEG Route Variations would be parallel or adjacent to NYSEG's existing cleared power line ROW, and should have minimal, if any, impact to visual resources after construction is completed. The Warwick Isle Route Variation would be primarily on new ROW through agricultural fields and farm roads. It should have little or no impact to visual resources following construction.

Aboveground Facilities

The new compression facilities would be constructed adjacent to Columbia's existing Corning Compressor Station, and would require the permanent clearing of about 6.0 acres of forested land. However, the existing compressor station is already a dominant visual element in the viewshed. The new facilities would not introduce contrasting visual elements into the landscape. Therefore, no substantial visual impacts would occur as a result of the installation of new facilities.

Site-specific impacts and mitigation measures for the project were identified in the original Environmental Report previously issued by Millennium in 1997 and in the FEIS for the project issued by the Commission in October 2001. The facilities proposed in the amendment are anticipated to have minimal or no visual impacts due to their location primarily along existing ROWs or in open areas where removal of vegetation is minimized. No visual affects to State or National Register of Historic Places

(S/NRHP) eligible or potentially eligible properties have been identified (see Section 4.9 Cultural Resources), therefore, no additional mitigation measures would be recommended for the proposed amended facilities.

4.8.2 Columbia Line A-5 Replacement Project

Land Use

Construction and operation of the Line A-5 Replacement Project would be accomplished as a part of Millennium's Phase I Project. We have provided separate information about this project in this document to facilitate its review by parties who have expressed interest in it since it was originally filed. Data for it has been included in the total project acreages for the Phase I Project; so, the tabulated data for the Line A-5 Project should not be added to that provided for the Phase I Project.

Construction and operation of the project would affect the following land uses: forest, industrial/commercial, residential, wetland, and open land. Table 4.8-1 (Land Use Affected by the Millennium Pipeline Project-Phase I) includes land use impacts for the Line A-5 Replacement. The majority of land that would be crossed by the pipeline is open land, reflecting the proposed use of lift-and-lay construction within existing ROW. This construction technique would minimize impacts to forest lands since most of the land that would be affected by construction would be within the existing, cleared pipeline corridor within which the land use is characterized as being open land. The lift-and-lay construction would be used along about 90 percent of the proposed Line A-5 Replacement Project route. Areas of mature forest community would be crossed in Harriman State Park as discussed in Section 4.5.

Columbia has contacted county offices of NRCS and/or the Farm Service Agency for locations of Conservation Reserve Program (CRP) lands and Conservation Security Program (CSP) lands. To date, no CRP or CSP lands have been identified along the project route.

The majority of the access roads required for replacement of the pipeline (acreage associated with access roads for the Line A-5 Replacement Project are included with the Millennium Phase I Project in table 4.8-1) are existing roads. Although these access roads would require only minor widening (except at tight turns), it was assumed for impact calculation purposes that existing access roads are 15 feet wide and would be widened by 10 feet. Unless otherwise noted, new access road impacts are based on a 25-foot width.

Because this is a pipeline replacement project, it would be primarily on existing ROW. The only locations where the project would depart from the existing ROW would be near the Laurel Ridge residential development (MP 367.9 to MP 368.5) (see discussion in section 3.2) and along the path of the HDD proposed for the crossing of the Ramapo River valley between MP 369.5 and MP 370.3.

Construction of the Line A-5 Replacement Project would temporarily affect an estimated 139.8 acres of land, including 57.4 acres are forest, 72.8 acres are open land, 0.8 acres are residential, 8.7 acres are industrial/commercial, and 0.1 acres are open water. Of this, about 57.4 acres would be forestland cleared temporarily for construction, and 1.6 acres of forestland would be permanently maintained in a 50-foot-wide easement. Temporary workspaces would be allowed to revert to forest once construction is complete. Construction through open land would cause temporary impacts to vegetation; however these areas are expected to revegetate rapidly.

The project would permanently occupy about 54.3 acres of land. However, the vast majority of this land is existing pipeline ROW. Of the above total, 1.6 acres would be forest, 50.4 acres would be open land, 0.4 acres would be residential, and 1.9 acres would be industrial/commercial. The

industrial/commercial land represents land occupied by existing Columbia M&R stations. The majority of the open land corresponds to the existing A-5 pipeline ROW. The major issues pertaining to land use would be associated with impacts to state park lands through which the existing pipeline passes. These issues are discussed below.

Existing and Planned Residential and Commercial Development

A total of 8 residences would be within 50 feet of the construction workspace. Residential structures would not be condemned for construction and operation of the project. One residence would be within 25 feet of the construction workspace at MP 0.09. The major concentration of residences in the vicinity of the project is located in the Laurel Ridge subdivision between MP 367.9 to MP 368.5. This is an established residential community with mature trees and landscaping and has built up around the existing Columbia Line A-5 pipeline.

Residential Impact Mitigation

Millennium would undertake construction and restoration of the proposed Line A-5 Replacement Project. Therefore, the general construction techniques proposed for it would also be implemented for this portion of the project. Refer to the discussion above for general information.

For the residence at MP 368.8, Columbia prepared a site-specific construction plan that includes placement of the construction equipment on the opposite side of the existing pipeline away from the house which would move the pipeline farther away from the residence, erecting a temporary barrier fence between the workspace and the adjacent structures, vehicle access to the residence would be maintained during construction, dust abatement measures would be applied, vegetation removal would be minimized, and all work would be limited to daylight hours. Site-specific plans detailing the specific construction measures for residences within 50 feet of the construction workspaces would be shown on the Construction Alignment Sheets for the project.

Within the Laurel Ridge subdivision, the construction workspace would be limited to a width of 75 feet. This would minimize the removal of mature trees and landscaping to the maximum extent possible. However, we have recommended a route variation to minimize impacts to the Laurel Ridge community, the Sterling Forest® State Park/Laurel Ridge Variation from MP 367.8 to MP 368.5. See section 3.2 for details.

Mr. Lawrence A. Benson has expressed concern about the proximity of the centerline of the project to his home, near MP 368.1, particularly his deck and stairs that could possibly be damaged by construction. He has also raised some concern about safety. Several other residents of the Laurel Ridge development have expressed similar concerns about the construction of the proposed 30-inch-diameter pipeline through the community, which has built up around the existing Line A-5 pipeline. We have recommended that Millennium/Columbia incorporate the Sterling Forest® State Park/Laurel Ridge Variation between MP 367.9 and MP 368.5 to avoid construction through the Laurel Ridge residential community. We believe this would mitigate Mr. Benson's and others' concerns about the project.

The proposed pipeline route would cross a planed residential subdivision between MP 369.6 and MP 369.8. The proposed route would be on new ROW as part of the western approach to the HDD planned for the Ramapo River crossing. On May 3, 2006, Millennium filed a request to use an alternative route to cross the Ramapo River, the Ramapo River HDD Variation. This variation would move the pipeline route to an alignment that more closely approximates the original Line A-5 route. We have recommended that this route variation be incorporated into the Phase I Project pipeline route.

One comment was received regarding the potential for the project to need to widen roads in order to complete the pipeline project, consequently taking land from the front of properties. Columbia has responded that there would be no temporary or permanent widening of public roadways.

A commenter expressed concern regarding the possible impacts to his septic system and driveway, possibly restricting residential access. Columbia has responded by visiting the site and concluding that it could shift and narrow the workspace in order to avoid the leach field. In addition, Columbia would provide a pre and post- construction inspection to assure that the system is not adversely affected. In addition, no landowners would lose access to their homes, except possibly for scheduled brief periods of time. If any portion of a landowner's driveway were affected by construction (for example, if the pipeline construction ROW would cross the driveway and it would be open cut), a temporary driving surface would be installed so that access to the property is maintained. Columbia would provide for the repair of the driveway area and any adjacent areas affected by construction.

Recreation and Public Interest Areas

Except for a small portion of the proposed HDD route between MP 370.0 and MP 370.4, all construction within public lands would be accomplished by using the lift-and-lay construction method within existing ROW. The public land and other designated recreation areas crossed by the construction are discussed below and listed on table 4.8-3.

The project would not affect designated or marked hazardous waste sites or any other specially designated areas other than the parklands discussed below.

Sterling Forest® State Park

The project would cross about 2,709 feet of Sterling Forest® State Park located in two sections between MP 367.9 and MP 368.0 and between MP 368.3 and MP 368.7. Sterling Forest® State Park is a unit of the PIPC and is jointly managed by the PIPC and NYSOPRHP. These short crossings would be on existing ROW and would pass through adjacent forested area. The portion of the Sterling Forest® State Park that would be by the project contains no developed facilities.

With the exception of a proposed variation to avoid a residential area (i.e., the Sterling Forest ® State Park/Laurel Ridge Variation from MP 367.8 to MP 368.5, see section 3.2), the project would follow existing ROW across Sterling Forest® State Park. Pipeline construction would be by the lift-and-lay method in this area, so impacts to areas adjacent to the existing ROW would be minimized to the maximum extent practicable. About 7.4 acres would be disturbed by construction, the majority of which is open land in the existing ROW. Columbia has met with park management and the PIPC to identify concerns and public access/trailhead opportunities. This coordination and planning is ongoing. To date, Columbia states that the concerns expressed by park staff can be addressed by strict adherence to the measures specified in Millennium's ECS as well as the Harriman State Park EM&CP that was filed on July 31, 2006. Additional coordination with Sterling Forest® State Park staff would occur prior to the development of the project Implementation Plan. The results of any additional coordination would be filed promptly with the Commission.

Harriman State Park

Harriman State Park would be crossed by the project in 2 sections between MP 369.9 and MP 366.7 and also between MP 366.8 and MP 375.7. This park is a unit of the PIPC. The project route through Harriman State Park would be almost entirely on existing ROW. The entire length of the project route within the park is forested on either side of the existing Line A-5 ROW.

The only developed facilities within Harriman State Park in the vicinity of the project are hiking trails. Major trails crossed within Harriman State Park include the Ramapo-Dunderberg Trail (MP 371.7) and the Kakiat Trail (MP 372.9) (New York-New Jersey Trail Conference 2003; Appalachian Mountain Club New York – North Jersey Chapter Hiking Committee 1996). These trails extend for considerable distances outside of the project area. Nine other shorter trails also would be crossed within Harriman State Park.

In addition to the portions of the pipeline route that would cross Harriman State Park, Storage Yard 98 would be located within this park near the intersection of New York Routes 17 and 17A immediately adjacent to a highway ramp. Storage Yard 98 would be restricted to an area that was graded previously and used for similar purposes. Vegetation within the proposed storage yard that would be affected by its use is primarily herbaceous with some shrub and sapling growth.

Impacts to forest land have been minimized by locating the project on existing ROW to the extent feasible. Tree clearing would not typically occur within extra workspace required for disposal of excess rock and slash within Harriman State Park. Instead, stockpile sites would be placed in existing openings in the forest stand as part of the Harriman State Park EM&CP. Columbia and Millennium would continue to coordinate with PIPC at Harriman State Park as well as Sterling Forest® State Park and park staff at Kakiat County Park concerning the minimization of tree clearing within these parks.

Construction of the project across Harriman State Park would utilize existing pipeline ROW to the extent possible. This includes the entire route except for a small portion (0.3 miles) associated with the HDD crossing of the Ramapo River valley. Most of the proposed new ROW within the park created by the HDD route is presently open land.

About 78.9 acres of Harriman State Park would be disturbed by construction, including the 2.2 acres occupied by Storage Yard 98. Impacts outside of the existing ROW would be minimized to the maximum extent feasible in this area. With the exception of hiking trails, developed public facilities would not be crossed within the park.

Columbia and Millennium have engaged the PIPC in an organized coordination effort involving a wide variety of issues concerning construction within Sterling Forest® State Park and Harriman State Park. Chief among the issues of concern are minimizing the removal of mature trees, visual impacts associated with the project, and impacts to recreational users of the park associated with disturbance of the park trail system during construction. Columbia and Millennium have identified approaches to deal with all of these issues (as discussed below) and would continue to coordinate with the PIPC to finalize these plans prior to and during construction.

Columbia and Millennium have proposed to minimize the removal of mature trees to the extent feasible, while maintaining a safe working environment during project construction. Although most of the construction work space through the park would be 100 feet wide, tree removal would be limited to a 75-foot-wide corridor and disturbance in the outer 25-foot-wide portion of one side of the work space would be used for stockpiling timber, brush and rock.

Trail-related issues would be addressed with park staff. Advance notice of construction activities that would affect specific trails would be provided to the park staff. Columbia has stated that it would also work with the park staff to determine which trails may need to be temporarily closed during construction and which trails would need to be maintained open. Mitigation procedures such as re-routing trails around existing construction activities or opening a safe passage for trail users through the construction area during weekends and other high usage periods would be discussed.

Additional coordination with the PIPC and Harriman State Park staff would be an ongoing activity and the Harriman State Park EM&CP would be updated as needed to incorporate new agreements regarding construction and mitigation agreements. The results of any additional coordination would be filed promptly with the Commission.

Columbia would also coordinate with Harriman State Park staff concerning the use of Storage Yard 98. The use of this location as a storage yard for the project would not require tree or shrub removal, extensive grading, or extensive changes to the existing conditions that presently occur.

Kakiat County Park

Kakiat County Park, a Rockland County park, would be crossed for about 4,684 feet between MP 375.8 and MP 376.6. The project route through this park would be on existing ROW through a forested area. About 11.1 acres of park land would be disturbed during construction using the lift and lay procedure throughout the park. Impacts outside of the existing ROW would be minimized to the maximum extent feasible in this area.

The only developed facilities within Kakiat County Park in the vicinity of the project are two hiking trails. Both of these trails are major trails that extend considerably beyond the project area. These trails are the Suffern-Bear Mountain Trail (MP 375.9) and the Kakiat Trail (MP 376.4). Columbia would coordinate with county park officials to identify any mitigation measures in this area, and would provide the Commission with the results of this coordination.

Visual Resources

The majority of the pipeline construction would involve lift-and-lay activities on existing ROW, and thus would have either no or minimal impact to visual resources.

Staying on existing ROW or widening existing ROW rather than creating new corridors would minimize visual impacts in sensitive areas. A visual impact assessment for Sterling Forest® State Park and Harriman State Park was conducted. Conceptual visual impact mitigation has been discussed with park staff as well. Columbia would continue to conduct coordination with park staffs concerning visual impact mitigation prior to the development of the project Implementation Plan and the Harriman State Park EM&CP. The results of any additional coordination would be filed promptly with the Commission.

4.8.3 EMPIRE CONNECTOR PROJECT

4.8.3.1 Land Use

Pipeline Facilities

The land uses that would be affected by the project are summarized in table 4.8-4, and would include agricultural, forest, open, residential and commercial/industrial land uses. The majority of the pipeline route would traverse agricultural lands (55.7 percent), and lesser amounts of forest woodlands (10.0 percent), open lands (15.4 percent), residential lands (0.8 percent), industrial/commercial lands (3.9 percent), and other lands, which include mixed land use along the existing ROW (14.3 percent), would also be traversed.

Empire would construct the pipeline within a 75-foot-wide construction ROW, except in the following areas: agricultural (non-wetland) area or where ATWS would be necessary to accommodate

Table 4.8-4
Land Use Acreage Affected by the Empire Connector Project by County

	Agricultural		Forest		Open		Residential		Industrial / Commercial		Open Water		Other a/		Total	
County/Facility	**Const. Workspace**	**Perm. ROW**	**Const. Workspace**	**Perm. ROW**	**Const. Workspace**	**Perm. ROW**	**Const. Workspace**	**Perm. ROW**	**Const. Workspace**	**Perm. ROW**	**Const. Workspace**	**Perm. ROW**	**Const. Workspace**	**Perm. ROW**	**Const. Workspace**	**Perm. ROW**
Ontario																
Pipeline	243.1	121.5	48.9	32.6	48.9	32.6	4.8	3.2	17.3	11.5	0.0	0.0	0.0	0.0	362.9	201.4
Interconnect Facility	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5	0.0	0.0	0.0	0.0	0.6	0.5
Yates																
Pipeline	218.5	109.2	18.7	12.5	14.5	9.7	0.0	0.0	2.8	1.9	0.0	0.0	0.0	0.0	254.5	133.3
Schuyler																
Pipeline	60.0	30.0	33.2	22.1	53.9	35.9	0.5	0.3	3.1	2.1	0.0	0.0	0.0	0.0	150.7	90.5
Chemung																
Pipeline	4.0	2.0	19.0	12.7	36.1	24.1	0.4	0.3	1.0	0.7	0.0	0.0	0.0	0.0	60.5	39.8
Interconnect Facility	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3	0.0	0.0	0.0	0.0	0.6	0.3
Steuben																
Pipeline	0.0	0.0	1.6	1.1	5.9	3.9	0.0	0.0	3.1	2.1	0.0	0.0	0.0	0.0	10.6	7.1
Genesee																
Compressor Station	17.1	5.9	0.0	0.0	1.9	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.0	6.7
Grand Totals	**542.7**	**268.6**	**121.4**	**81.0**	**161.2**	**108.1**	**5.7**	**3.8**	**28.5**	**19.1**	**0.0**	**0.0**	**0.0**	**0.0**	**859.4**	**479.6**

Notes:

Additional temporary workspace may be utilized for the storage of excess topsoil or rock. The additional contingency width would only be used, if necessary, in areas of greater than average topsoil thickness or shallow bedrock conditions in agricultural lands. Since it would not be used (unless necessary) and would be limited to soil or rock spoil storage it has not been included in the affected acreage.

_a/: Other lands include mixed land use along existing ROW (combination of forest land adjacent to open maintained ROW).

Approximate land area subtotals and total for land use categories are based on rounding of length values, access roads are included in the commercial-industrial category, and no open waters greater than 100 feet are crossed by the project. Open waters less than 100 feet wide would be crossed, but are not accounted for in this table, consistent with FERC guidance.

additional topsoil and spoil storage, equipment, materials or for safety purposes (e.g., road crossings). About 37 miles (or 47 percent) of the overall route length would be parallel to existing utility, rail or road ROWs.

In addition to existing state, county or local roads, temporary access roads would be used to safely access the ROW. Empire proposes to use 27 temporary access roads for the pipeline portion of the project. In addition, Empire proposes to construct two permanent access roads - one located at the pressure reduction station at CMP-0.0, and one at the Oakfield Compressor station. Table 4.8-5 summarizes land use affected by the proposed access roads.

Empire identified three pipe yards and three contractor yards for temporary use for contractor equipment and materials storage. Each of the pipe yard areas would occupy an area about 10.0 acres in size for a total of 30.0 acres. Areas proposed for contractor equipment and materials storage would occupy about a total of 23.9 acres. These areas presently have open/commercial/industrial land use types.

Empire would install six cathodic protection anode beds to provide appropriate corrosion protection to the pipeline (CMP 6.4, CMP 18.9, CMP 32.3, CMP 45.5, CMP 58.7, and CMP 71.5). Each of these areas would occupy an area about 0.7 acres in size (50 feet by 600 feet), for a total of 4.2 acres.

Agricultural Areas

About 542.7 acres of agricultural land would be affected during construction of the project. Of this, 525.6 acres would be affected by construction of the pipeline and 17.1 acres would be affected by construction of the new compressor station. Several comments have been filed concerning project impacts on agricultural areas. In an effort to minimize temporary and permanent impacts in agricultural areas, Empire has evaluated soils along the project area and consulted with NYSDA&M and SWCD personnel to identify areas of potentially sensitive soils, where specific mitigation efforts may be necessary.

During the routing and survey activities in 2005, Empire's agricultural/drainage specialist conducted a field review of the pipeline route to assist in avoiding areas of potentially sensitive agricultural features or soil types. For areas where these soils or features could not be avoided by routing, Empire developed mitigation measures what would be included in its ESCAMP, and which Empire would implement during construction to avoid or minimize potential impacts to soils in agricultural areas. In addition, Empire is identifying existing or potential future locations of drainage tiles and irrigation systems. Empire continues to consult with landowners and agency (NYSA&M and SWCD) personnel to avoid or minimize potential impacts in agricultural lands.

Aboveground Facilities

The aboveground facilities for the project would include a new compressor station (SMP 47.0), two interconnect/tie-in locations (CMP 0.0 and CMP 76.9), and mainline valves (locations based on DOT requirements), along the pipeline and described below. A summary of the land use assessment for construction and operation of these aboveground facilities is included in table 4.8-4.

The compressor station and associated facilities site encompasses about 19.0 acres, including about 17.1 acres (90 percent) of agricultural land and 1.9 acres (10 percent) of open lands (fallow lands or upland scrub-shrub). The area that would be permanently developed for the compressor station includes the access road, the tie-in and piping location and the footprint of the compressor station – totaling about 6.7 acres (5.9 acres of agricultural lands and 0.8 acres of open land).

Table 4.8-5
Land Use Affected By Proposed Access Roads for the Empire Connector Project

Access Road	Mileposts (CMP)	Impact Area (acres)	Existing Land Use
AR38 (Permanent)	0	1.2	Open
AR62	0.8	0.2	Forest
AR115	6.5	0.3	Ag
AR149	11.1	1.2	Open*
AR194	14.8	0.9	Open*
AR226	17.8	0.7	Open*
AR242.1	20.5	0.2	Open
AR255.3	22.4	0.2	Open*
AR258.1	22.3	0.3	Open*, Ag
AR324	32	0.1	Open*
AR336.1	32.5	0.9	Open*
AR352	35.4	0.8	Open*
AR376	40.3	0.3	Open*
AR385	41.1	0.6	Open*
AR404	45	1.0	Open*
AR418C	48.5	0.5	Ag
AR456	52.7	1.3	Ag
AR511	60.2	0.8	Open, Forest
AR548A	62.9	0.1	Forest
AR548	62.9	0.3	Forest
AR549	63	0.2	Open
AR551	63.4	0.2	Open
AR562	65.1	0.2	Open*
AR564	65.9	0.3	Ag
AR574	67.1	0.2	Open
AR616	74.5	0.7	Open
AR618	75.1	0.4	Open, Ag, Forest
AR5	SMP 91.1	0.3	Open*
Oakfield Compressor Station (Permanent Access Road)		2.0	Open
Totals:		16.4	

The pipeline would interconnect with the existing Empire State Pipeline at SMP 92.4 and with the proposed Millennium Phase I Project at CMP 76.9. Interconnect facilities would require about 0.5 acres at the Empire State Pipeline (SMP 92.4) and 0.3 acres at the proposed Millennium Phase I Project (CMP 76.9) interconnection locations. The interconnection with the Millennium Phase I Project would be at Columbia's existing Corning Compressor Station, which would be leased from Columbia.

The effects of pipeline construction on agricultural areas would be short-term. Construction of aboveground facilities would take some agricultural land out of production permanently. To construct the proposed Oakfield Compressor Station, about 5.9 acres of agricultural land would be affected permanently and 17.1 acres would be affected temporarily. Construction of these aboveground facilities would have a permanent impact on agricultural land use at this location. During construction, agricultural areas would be directly affected where they would be within the construction workspaces since crop production would be limited. Construction may also affect drain tile and irrigation systems outside construction workspaces. Empire has agreed to employ agricultural inspectors to monitor construction and restoration activities, and to implement the procedures described in its ESCAMP, which should minimize impacts to agricultural areas. The proposed pipeline route was selected to try to minimize construction impacts on drain tile and irrigation systems. After construction is complete, workspaces would be restored and areas within the pipeline ROW would return to agricultural use. Construction activities may affect crop production post-restoration, however, since heavy equipment can cause soil compaction, which would affect crop production in future years. Agricultural areas would be subject to a monitoring program to assess post-construction recovery of construction workspaces and to assess damage to drain tile and irrigation systems. See section 4.2 for additional information about agricultural impacts and monitoring. We believe that if Empire implements its ESCAMP and other recommendations suggested by the NYSDA&M that impacts on agricultural land use would be minimized.

4.8.3.2 Existing and Planned Residential and Commercial Development

Empire identified a total of 13 residences that would be within 50 feet of the construction ROW. Several commercial/industrial buildings were identified within 50 feet of the construction ROW along CMP 28.9 to CMP 29.3 in Hall, New York. No additional structures were identified within 50 feet of the construction ROW.

To avoid or minimize potential residential impacts Empire would complete the proposed construction in accordance with the measures identified in the FERC Guidance Manual and develop a site specific residential mitigation plan for each residence within 25 feet of the construction ROW. At minimum, in residential areas during construction, Empire would:

- provide notice to landowners regarding the construction schedule by phone or in person prior to the start of the construction on the landowner's property;
- maintain access and traffic flow (particularly for emergency vehicles);
- eliminate or reduce hazards associated with open ditches by erecting temporary barricades or fencing;
- minimize the length of trench remaining open during construction; and
- minimize fugitive dust emissions by the use of dust suppression techniques (e.g., water spray).

In addition, for residences within 50 feet of the construction work area to avoid or minimize impacts, Empire would employ the following mitigation measures, as appropriate:

- mature trees and landscaping would not be removed from within the edge of the construction work area to the extent practicable;
- immediately after backfilling the trench, all lawn areas and landscaping within the construction work area would be restored consistent with Empire's restoration procedures in the ESCAMP;
- homeowners would be notified in advance of any scheduled disruption of household utilities and the duration of the interruption will be kept as brief as possible. Furthermore, representatives of the local utility companies would be on-site during construction when necessary.

Empire would make efforts to maintain a minimum of 25 feet of separation between the residence and the construction work area for a distance of 100 feet on either side of the residence; if necessary the construction work area may be reduced to maintain the minimum distance. However, if a minimum of 25 feet of separation cannot be maintained between the residence and the construction work area, or if the residence is within the construction work area, Empire would develop a site specific Residential Mitigation Plan and consider the use of specialized construction techniques, such as stovepipe and drag section construction, in order to minimize the impacts of construction in residential areas on a site-specific basis. Site-specific Residential Mitigation Plans for properties on the Empire Connector Project would be submitted to the Commission when complete.

A few comments were filed expressing concern over the proximity of homes to the proposed pipeline. Empire would use the mitigation techniques identified above, which may include residential mitigation planning with individual landowners if construction disturbance would pass within 25 feet of the residence. Furthermore, Empire states the proposed pipeline is anticipated to have minimal impacts due to its location primarily along existing ROWs, in disturbed areas, or in open areas where removal of vegetation is minimized. Where new ROW is necessary, Empire would minimize impacts and implement restoration efforts as discussed above.

A few individuals have commented that they are concerned about pipeline construction in close proximity to residences. To avoid or minimize potential residential impacts Empire would complete the construction in accordance with the measures identified in our Plan and would develop a site-specific plan for each residence within 25 feet of the construction workspace. During construction in residential areas, Empire would provide notice to landowners regarding the construction schedule, maintain access and traffic flow, eliminate or reduce hazards associated with open ditches by erecting temporary barricades or fencing, minimize the length of each trench remaining open during construction, and minimize fugitive dust emission by the use of dust suppression techniques. In addition, for residences within 50 feet of the construction workspace, Empire would employ mitigation measures to avoid or minimize impacts, including the avoidance of mature trees and landscaping from within the edge of the construction workspace; immediately after backfilling the trench; restoring all lawn areas and landscaping consistent with Empire's restoration procedures in the ESCAMP; and, notifying homeowners in advance of any scheduled disruption of household utilities and keeping any interruption as brief as possible.

We believe Empire should update the information about the locations of residences within 50 feet of the construction ROW along the Empire Expansion Project and mitigate the impact of construction near residences and implement the procedures for residential construction in its ESCAMP. Therefore, **we recommend that:**

- **Prior to construction, Empire update the list of residences within 50 feet of the proposed facilities, and adopt the following measures to minimize the impact on residences within 50 feet of the construction ROW for their respective projects:**

  a. Avoid removal of trees and landscaping unless necessary to construct the pipeline or for the safe operation of the construction equipment;
  b. Restore all lawns, landscaping areas and driveways within the construction ROW area promptly after backfilling the trench; and
  c. Install and maintain construction fencing at the edge of the construction ROW for a distance of 100 feet on either side of the residence and at a minimum maintain this fencing throughout the open trench phases of the pipe installation

Empire has not yet submitted to the Commission site-specific residential construction plans for our review. Therefore, **we recommend that:**

- **For any residence closer than 25 feet to the construction workspace, Empire should file a site-specific plan with the Secretary for the review and written approval of the Director of OEP before construction. The plan should include:**

  a. a description of construction techniques to be used (such as reduced pipeline separation, centerline adjustment, use of stone-pipe or drag-section techniques, working over existing pipelines, pipeline crossover, bore, etc.), and include a dimensioned site plan that shows:

    (1) the location of the residence in relation to the new pipeline and where appropriate, the existing pipelines;
    (2) the edge of the construction workspace;
    (3) the edge of the new permanent ROW; and
    (4) other nearby residences, structures, roads, or waterbodies.

  b. a description of how Empire would ensure the trench is not excavated until the pipe is ready for installation and the trench is backfilled immediately after pipe installation; and

  c. evidence of landowner concurrence if the construction workspace and fencing would be located within 10 feet of a residence.

Empire identified the following planned residential or commercial development within 0.25 miles of the project area:

- Preliminary subdivision plans have been filed and are under review in the Town of Victor for construction of residences near and to the north of a segment of Empire's existing pipeline between SMP 91.3 to SMP 91.5. Pending approval of the plans, construction of the development is planned for 2006 and 2007. The Empire Connector Project was routed along and to the south of the existing Empire State pipeline and along the southern edge of the parcel on which this planned development would be constructed. The planned residential dwellings would be located more than 500 feet from the project area. The portion of the parcel in which the project area would be located is identified as planned green space.

- Two parcels of land in the Town of Victor are being developed for residential development near SMP 91.6 on the existing Empire State pipeline. The construction of the residences on these two properties began in 2005.

- Several parcels between CMP 16 and CMP 18 of the proposed pipeline in the Town of Hopewell have been identified for potential residential development. Three residences were constructed during 2005, but no additional permits or plans have been submitted to, are under review, or have been approved by the Town of Hopewell at the time of Empire's inquiry. Two of the new residences would be about 1,000 feet or more from the proposed pipeline alignment. The pipeline alignment was modified during the initial routing to avoid the third residence.

4.8.3.3 Recreation and Pubic Interest Areas

Recreational and public interest land use identified in the project area include one campground (adjacent to the project area), three shooting ranges, and two church properties that would be crossed by the project. The campground would be about 250 feet from the project area near CMP 9.6. Three properties containing shooting ranges would be crossed by the project, including Victor Rod and Gun Club (CMP 1.8), Canandaigua Sportsman Club (CMP 11.4), and a private sportsman club (CMP 62.0). Two properties with churches, Hopewell Christian Fellowship at CMP 18.3 and a church at CMP 44.9, would be crossed by the pipeline construction ROW, but the buildings would be more than 60 feet and 800 feet from the construction ROW, respectively. Impacts to all of the above properties would be limited to those associated with construction and would be temporary. Except for the Victor Rod and Gun Club and the church at CMP 44.9, the proposed construction would occur in existing ROW on the above properties therefore limited impacts would be anticipated on these properties.

During its public outreach efforts, Empire consulted with the Mennonite communities in Ontario and Yates Counties to determine the location of schools and churches in the project area. Empire states that it has made efforts to avoid these facilities.

A summary of public land, recreational, and other designated land use areas that would be crossed by the project is included in table 4.8-6. Two properties were identified during this review as publicly owned lands. The New York State (NYS) Thruway would be crossed at two locations (CMP 2.9 and CMP 4.5), and the Ontario County Office Complex would be crossed between CMPs 18.4 and 18.8.

Both the NYS Thruway Authority and Ontario County representatives have been contacted about the project and the nature of the planned route across each property. Neither party has raised any concerns about the proposed crossings and each party has expressed a willingness to work with Empire on the respective crossings. Construction would involve the use of bored crossing techniques to install the pipeline under the NYS Thruway ROW and therefore, no adverse effects are anticipated to the use of this highway.

Additional lands with recreational or public interest areas within the project area include: Victor Hiking Trails, crossed twice at SMP 91.1 and SMP 92.2; Ontario Pathways, which is paralleled from CMP 19.4 to CMP 25.8; the Keuka Outlet trail, which would be crossed by a planned horizontal direction drill at CMP 40.6; and, the Finger Lakes trail crossed at CMP 63.0 trails. Impacts to all of the above properties would be limited to those associated with construction and would be temporary. Discussions with landowners and recreation interest groups associated with these properties have been ongoing and would continue. Empire states that to date, significant efforts have gone into routing and planning to

Table 4.8-6
Public Land and Designated Recreation, Scenic, or Other Areas
Empire Connector Project

County	Mileposts	Name of Area	Use of Area	Crossing Length (ft)	Acreage Affected by Construction	Proposed Mitigation/Action
Ontario	SMP-91.1 and 91.2	Hiking Trail (Victor)	Trail – owned and maintained by Victory Hiking Trails, Inc.	<50	<0.1	Mitigation to be developed with landowner.
Ontario	CMP-1.8	Victor Rod and Gun Club	Private recreation facility.	2566	5.9	Mitigation to be developed with landowner.
Ontario	CMP-2.9 and 4.5	NYS Thruway ROW	Public roadway – New York State Thruway Authority	8500	** 13.9	Bored crossings.
Ontario	CMP-9.6	Campground	Private campground and recreational facilities.	0	0	Mitigation to be developed with landowner.
Ontario	CMP-11.4	Canandaigua Sportsman Club	Private recreation facility.	1708	2.9	Mitigation to be developed with landowner.
Ontario	CMP-18.3	Hopewell Christian Fellowship Church	Private place of worship.	307	0.7	Mitigation to be developed with landowner.
Ontario	CMP-18.4-18.9	Ontario County Complex	County government complex.	2650	4.56	Mitigation to be developed with landowner.
Ontario-Yates	CMP-19.4-25.8	Hiking Trail	Trail – owned and maintained by Ontario Pathways, Inc.	250	0.4	Mitigation to be developed with landowner. Crossings reduced to five locations.
Yates	CMP-40.6	Keuka Outlet Trail	Trail – owned and maintained by Friends of the Outlet.	<50	** 0	Crossed by planned horizontal directional drill
Yates	CMP-44.9	Church	Private place of worship.	1500	3.44	Mitigation to be developed with landowner.
Schuyler	CMP-62.0	Private Sportsman Club	Private recreation facility.	1707	2.94	Mitigation to be developed with landowner.
Schuyler	CMP-63.0	Hiking Trail (Finger Lakes)	Trail – owned and maintained by Finger Lakes Trail Conference, Inc.	<50	<0.1	Mitigation to be developed with landowner.

** Keuka Outlet and part of the NYS Thruway ROW would be crossed using bore and horizontal directional drill (HDD), respectively. Calculations of affected area have been adjusted to reflect no surface area affected for the bore or HDD segments

avoid or minimize impacts to the public lands and trails (and associated tree canopy and drainage features). Examples include reducing the impacts to Ontario Pathways to five crossing locations over the six miles of area paralleled by the alignment and the use of horizontal drilling at the Keuka Outlet crossing.

No other Federal, state, or local conservation lands (e.g., National forest, state parks, Native American reservations, wilderness area, wildlife management areas, nature preserves, national trails, or registered natural landmarks) were identified as crossed by the project area. NYSDEC-owned lands were identified within 0.25 mile west of a segment of the proposed Empire Connector Pipeline between CMP 66.2 and CMP 66.6.

We believe that the impact of construction and operation of the proposed project would have limited impact on the identified recreational and public interest areas. Most of the impact would occur during construction when activities within these areas may be affected, i.e. access to some trails may be affected from time to time.

4.8.3.4 Visual Resources

Potential impact on visual resources associated with construction of the Empire Connector Project would be primarily of two types: that resulting from alteration of terrain and vegetative patterns due to pipeline construction and ROW maintenance, and that resulting from the construction of aboveground facilities.

Pipeline Facilities

About 50 percent of the project would parallel existing ROWs, and should have little, if any, impact to visual resources where this would occur. Visual impacts resulting from construction of the pipeline along existing ROW would be temporary and confined to the construction period. These impacts would be similar to those previously discussed in regard to the construction of Millennium's Phase I Project. Only minor impacts on visual resources would be associated with operation of the pipeline and would also be similar to those discussed for the Phase I Project. Visual impacts could result from the widening of existing ROW or the creation of new ROW where the pipeline would cross or parallel recreation trails or cross roads in forested areas. However, Empire states that has been and would continue to work with various land managers to minimize adverse effects of pipeline construction and operation, including addressing visual impact issues. Most of the trail crossings would be along existing ROWs (such as pipeline or road ROW), or within or adjacent to open, non-forested areas. We believe that the proposed pipeline would have minimal visual impacts where it would be located along existing ROWs, in disturbed areas, or in open areas where removal of vegetation would be minimized.

No federal-, state-, or locally designated scenic roads, rivers, or areas would be crossed by the project. With the exception of NYSDEC-owned lands identified west of a segment of the proposed Empire Connector Pipeline between CMP 66.2 and CMP 66.6, no other designated areas (e.g. National Wild and Scenic Rivers, National Trails or wilderness areas) have been identified within one-quarter mile of the proposed Empire Connector Project. This NYSDEC property is used for timber and no visual impacts to it would be expected by project construction.

Comments have been filed expressing concern about the visual impacts from tree removal, as well as the removal of side growth, the tree canopy, and hedgerows; and converting wooded land to cleared land that would be maintained as open land within the pipeline easement. Empire has responded by stating that canopy damage would be minimized and restoration efforts along the construction ROW

could be coordinated with the landowner to address this type of concern. Clearing some forested land is usually unavoidable for pipeline construction projects. Several alternative routes have been evaluated and we have considered among other things the changes in land use that would occur due to construction and operation of these alternatives. We believe that Empire has minimized forest clearing to the extent practicable along its proposed route. Further, tree clearing would be minimized by using the proposed nominal 75-foot-wide construction ROW and by allowing temporary workspaces to revegetate after construction. (See additional discussion about the impact on forests in section 4.5.) This would minimize the visual impact of the project.

Aboveground Facilities

The aboveground facilities include the proposed compressor station located in the Town of Oakfield, Genesee County, New York (SMP 47.0), two interconnect/tie-in locations (CMP 0.0 and CMP 76.9), and mainline valves (at locations determined by DOT regulations). The southern interconnect/tie-in facilities would be constructed at existing Millennium facilities, which are already dominant visual elements in the immediate viewshed. The new interconnect/tie-ins would not introduce contrasting visual elements into the landscape. Empire states that it has worked with the landowner to develop a location that minimizes the visual impacts of the pressure reduction facility to be constructed at the north end of the proposed route. Therefore, no substantial visual impacts would occur as a result of their installation.

The Oakfield Compressor Station would be constructed on agricultural and open lands. Nevertheless, the view of the compressor station would be partially obscured from view by the natural topographic features of the proposed location. To further minimize potential visual impacts at the proposed compressor station site and interconnect facilities, Empire would consider additional screening measures. These screening measures may include additional vegetation, soil berms, or engineered facades to better mask the facility.

4.8.4 ALGONQUIN RAMAPO EXPANSION PROJECT

4.8.4.1 Land Use

Pipeline Facilities

Land use categories that would be affected by the proposed pipeline replacement include forest, existing ROW, wetlands, and residential/recreational. The mixed residential/recreational land use category describes areas that represent a mixture of private residences and large private recreational facilities. The existing land use and acreage of each land use affected, both temporarily and permanently, by the construction of the proposed pipeline replacement are presented in table 4.8-7.

Algonquin identified six temporary and two permanent access roads that would be used to access the ROW, the Ramapo Meter Station, and the two terminal facilities during construction. The temporary access roads would be at AMPS 0.11, 1.32, 3.18, 4.10, 4.68, and 4.87. The permanent access roads would be at AMP 0.28 and AMP 4.33 and are currently used by Algonquin for access to the existing pipeline ROW for maintenance. The temporary access roads include a combination of existing paved and gravel roads. Algonquin is proposing to use these access roads with minor improvements, as necessary, to the surfaces of the roads. The majority of the construction of three of the proposed new temporary access roads would be within previously disturbed areas.

Table 4.8-7
Land Use Acreage Affected by the Algonquin Ramapo Expansion Project

	Agricultural		Forest		Open		Residential		Industrial / Commercial		Open Water		Other		Total	
	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW
Pipeline Replacement																
(MP 0.0 – MP 4.93)	0.0	0.0	5.9	0.0	54.6	41.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.5	41.1
Access Roads	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.5
Storage Yards	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Remote Blow-off Valve	0.0	0.0	0.03	0.03	0.43	0.43	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.46	0.46
Rockland County, NY																
Ramapo Meter Station																
Rockland County, NY	0.0	0.0	0.3	0.3	0.6	0.6	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	1.3	1.3
Hudson River Valve Site																
Rockland County, NY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.55	0.55	0.0	0.0	0.0	0.0	0.55	0.55
Hanover Compressor Station																
Morris County, NJ	0.0	0.0	7.8	0.0	0.0	0.0	0.0	0.0	4.3	4.3	0.0	0.0	0.0	0.0	12.1	4.3
Stony Point Compressor Station																
Rockland County, NY	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	11.5	11.5	0.0	0.0	0.0	0.0	12.2	11.5
Southeast Compressor Station																
Putnam County, NY	0.0	0.0	4.1	0.5	0.0	0.0	0.0	0.0	8.2	8.2	0.0	0.0	0.0	0.0	12.3	8.8
Pipeline and Terminal Remote Blow-off Valve																
(MP 0.0 & 4.86)	0.0	0.0	0.03	0.03	0.43	0.43	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.46	0.46
Oxford Compressor Station																
New Haven County, CT	0.0	0.0	16.7	14.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.8	17.8
Brookfield Meter Station																
Fairfield County, CT	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.8	0.8
Grand Totals	**0.0**	**0.0**	**23.1**	**5.2**	**69.5**	**56.1**	**0.0**	**0.0**	**25.5**	**25.5**	**0.0**	**0.0**	**0.0**	**0.0**	**118.2**	**86.8**

Algonquin identified one remote staging area for use during construction, located at approximate MP 3.15. Additional pipe/contractor yards would be required for the pipeline replacement. Algonquin is in the process of identifying these areas. Once these workspaces have been selected, Algonquin stated that it would provide supplemental data about these temporary workspaces to the Commission for review and approval. To date, however, we have not received this supplemental information. Therefore, **we recommend that:**

- **Algonquin file with the Secretary prior to construction, information about any proposed additional pipe/contractor yard(s) it would use to construct the Ramapo Expansion Project including topographic maps showing the pipe/contractor yard locations; and quantified information about impacts on land use, residences, wetlands, wildlife, and vegetation for review and written approval of the Director of OEP.**

Aboveground Facilities

Five existing aboveground facilities would be modified as part of this project. These existing facilities are currently located on existing ROW or land owned and/or operated by Algonquin. In addition, Algonquin is proposing to construct two new aboveground facilities: Oxford Compressor Station, Oxford, Connecticut; and the Brookfield Meter Station, Brookfield, Connecticut.

Algonquin would utilize existing access roads to the existing aboveground facilities; however it would also need to construct five new permanent access roads. The new access roads would include about 150 feet of additional permanent access road at each of the three existing compressor stations that would be modified within previously disturbed areas within the station yards. A new access road also would be constructed off High Meadow Road to provide permanent access to the proposed Brookfield, Connecticut Meter Station (see following section). The final design and area impacts of this facility are yet to be determined. Once this information is finalized, it will be provided to the Secretary of the Commission. In addition, about 700 feet of new access road would be constructed from the new entrance off Oxford Airport Road (Connecticut State Route 486) to the proposed Oxford Compressor Station site in Oxford, Connecticut (see following section).

<u>Oxford Compressor Station</u>

Several alternative sites have been evaluated for the Oxford Compressor Station, as described in section 3.0 (Alternatives). Originally, Algonquin chose Site A as its preferred site, but on June 13, 2006, it requested that the preferred site be changed to Site F. Site F is about 0.85 miles east of the Oxford Airport runway along its existing pipeline near Algonquin MP 132.5. The preferred site is in Oxford, New Haven County, Connecticut, about 3.5 miles east of Naugatuck. The property consists of about 41.0-acres of predominantly undeveloped forest, in the Town of Oxford. The property borders on the neighboring Town of Middlebury to the north. The property is crossed by Algonquin's 75-foot-wide pipeline ROW that includes two natural gas pipelines. Part of the pipeline ROW has been in existence on the property at least since 1952.

The property is associated with a planned Industrial Park but was included in the current plans for the Park and is mostly wooded. Portions of the property have been used as farm fields, but Algonquin indicated that this land use has not occurred there since the mid-1970's. The Town of Oxford Zoning Regulations, last amended in February 2004, designates the property as industrial.

The Waterbury-Oxford Airport is less than a mile to the east of the property. The property is currently bordered by undeveloped forest land. One small wetland and an intermittent waterbody are within the property boundaries.

Brookfield Meter Station

The proposed Brookfield Meter Station would be on a portion of an Iroquois-owned 68.3-acre property in Brookfield, Connecticut. Algonquin and Iroquois presently own and operate existing aboveground facilities at this location, which have been built within about 3.3 acres of this property. Iroquois operates sales meter station and Algonquin has its existing meter regulating station number 251. These facilities are presently used to deliver gas to Algonquin from Iroquois' system. Algonquin's proposed Brookfield M&R Station would provide for deliveries from its system into Iroquois' system. Iroquois has proposed the construction of a new natural gas compressor station on a portion of the site and it would be designed and operated to increase the pressure of gas delivered to it by Algonquin up to a pressure so that gas may be delivered into Iroquois' pipeline. In addition, the site contains segments of Algonquin's 90-foot-wide pipeline ROW (which contains its existing 26- and 30-inch-diameter pipelines) and Iroquois 50-foot-wide pipeline ROW (which contains its 24-inch-diameter pipeline). Based on review of aerial photograph from 1963, the entire site has been excavated and/or used for gravel processing/asphalt productions in the past. Railroad and power lines are located to the south of the property.

Algonquin's proposed M&R station would be constructed on about 0.8 acres of land that has been or is being used for industrial purposes. In its June 30, 2006 Findings of Fact, and Opinion and Recommendations for Algonquin's Ramapo Expansion Project facilities in Connecticut, the CSC stated that it finds the proposed site for the Brookfield M&R Station appropriate. We concur with this finding.

Modifications to Existing Aboveground Facilities

Table 4.8-7 summarizes land use acreage where modifications would occur at existing facilities. The primary effect of construction on forested areas would be the removal of trees and shrubs from the construction ROW. Algonquin has proposed nominal expansion of the temporary ROW to safely complete the lift and lay for the pipeline. In some areas, tree clearing would be minimal since the Algonquin ROW is adjacent to other cleared utility corridors. Following construction, the area would be restored and trees and shrubs would be allowed to revegetate within the areas not retained as permanent ROW. The permanent ROW would be maintained as open space as described in Algonquin's E&SCP. Since this would be a pipeline replacement project, with Algonquin replacing its 26-inch-diameter pipeline with 42-inch-diameter pipeline in the same ditch, the permanent ROW width would not change. Tree clearing for the proposed aboveground facilities would be permanent where the facilities would be operated. Temporary workspaces would be allowed to revegetate naturally. But, impacts to forested areas would be long-term (see section 4.5).

Effects of pipeline construction on open land use would be minor and short-term. The pre-construction herbaceous and shrub communities would become reestablished within one or two growing seasons after construction, and open land uses would be allowed to continue within the permanent ROW after construction.

No agricultural areas would be affected by construction of Algonquin's Ramapo Expansion Project.

Effects of project construction on any commercial areas within, adjacent, or near the construction area could include temporary impacts from construction noise and dust, disruptions to local traffic, and disturbances to commercial activities. Since this would be a replacement project within and along Algonquin's existing pipeline ROW, there would be no new limitations on future development along it.

4.8.4.2 Existing and Planned Residential and Commercial Development

Pipeline Facilities

A total of 16 residences and 7 business structures would be within 50 feet from the construction ROW associated with the pipeline replacement. No displacement or demolition of homes or businesses would occur as a result of construction of the proposed facilities.

Aboveground Facilities

Hanover Compressor Station, Morris County, New Jersey

The Hanover Compressor Station is abutted by some residential land use within 0.25 mile of the compressor station property. A residential development abuts the west and northwest portions of the compressor station property. Nine residential property boundaries are about 50 feet from Algonquin's construction workspace for the compressor station modifications. Five of these properties are south and four of these properties are west of the station modifications. However, none of the residences on these properties are located within 50 feet of the construction workspaces. During pre-construction layout of workspaces, Algonquin would realign the workspace to maintain greater than 50 feet separation from the property lines.

Effects of construction on residential and recreational areas can include impacts on landscaping and buildings, operation of heavy equipment, generation of noise and dust, disruptions to local traffic, visibility of cleared areas and spoil piles, and an increase in vehicular and truck traffic. A number of the identified access roads run parallel to these types of land uses. Algonquin would limit their activities to the construction ROW and access roads that have been approved by the Commission. Algonquin would coordinate with local police departments and landowners to maintain the full use and operation of existing land uses throughout the duration of construction. If for some reason, there would be an extended disruption that would affect a particular landowner; Algonquin would first contact the landowner to coordinate and implement reasonable mitigation measures.

During the open houses held by Algonquin, several landowners along the ROW expressed concern about the existing condition of proposed access roads and concerns about potential flooding or drainage problems. Algonquin would assess the condition of each access road prior to construction and if corrective measures were necessary, Algonquin would make minor improvements to the existing roads to the extent allowed by the Commission and local agencies.

To further minimize the impact on residences within 50 feet of the construction ROW, Algonquin would adopt the following mitigation measures:

- Avoid removal of trees and landscaping unless necessary to construct the pipeline or for the safe operation of the construction equipment;
- Restore all lawns, landscaping areas and driveways within the construction ROW area promptly after backfilling the trench; and

- Install and maintain construction fencing at the edge of the construction ROW for a distance of 100 feet on either side of the residence and at a minimum maintain this fencing throughout the open trench phases of the pipe installation.

In addition, Algonquin would develop site-specific construction plans for residences within 50 feet of the construction ROW or construction workspace. The plans would verify the mitigation measures Algonquin would implement to promote safe and efficient installation with minimal residential impact. Drag section construction is being considered to reduce the working space requirements and to reduce the time construction disturbances occur adjacent to residential properties.

We believe Algonquin should update the information about the locations of residences within 50 feet of the construction ROW along the Ramapo Expansion Project and mitigate the impact of construction near residences and implement the procedures for residential construction in its ES&CP. Therefore, **we recommend that:**

- **Prior to construction, Algonquin update the list of residences within 50 feet of the proposed facilities, and adopt the following measures to minimize the impact on residences within 50 feet of the construction ROW for their respective projects:**

  a. Avoid removal of trees and landscaping unless necessary to construct the pipeline or for the safe operation of the construction equipment;
  b. Restore all lawns, landscaping areas and driveways within the construction ROW area promptly after backfilling the trench; and
  c. Install and maintain construction fencing at the edge of the construction ROW for a distance of 100 feet on either side of the residence and at a minimum maintain this fencing throughout the open trench phases of the pipe installation.

Algonquin has not yet provided a site-specific residential construction plan for our review. Therefore, **we recommend that:**

- **For any residence closer than 25 feet to the construction workspace, Algonquin should file a site-specific plan with the Secretary for the review and written approval of the Director of OEP before construction. The plan should include:**

  a. a description of construction techniques to be used (such as reduced pipeline separation, centerline adjustment, use of stone-pipe or drag-section techniques, working over existing pipelines, pipeline crossover, bore, etc.), and include a dimensioned site plan that shows:

    (1) the location of the residence in relation to the new pipeline and where appropriate, the existing pipelines;
    (2) the edge of the construction workspace;
    (3) the edge of the new permanent ROW; and
    (4) other nearby residences, structures, roads, or waterbodies.

  b. a description of how Empire would ensure the trench is not excavated until the pipe is ready for installation and the trench is backfilled immediately after pipe installation; and

c. evidence of landowner concurrence if the construction workspace and fencing would be located within 10 feet of a residence.

4.8.4.3 Recreation and Public Interest Areas

Pipeline Facilities

The public land, recreation, and other designated areas crossed by the proposed project are presented in table 4.8-8, and are discussed below. The project pipeline replacement would cross Kakiat County Park from the beginning of the pipeline route for about 0.02 miles before exiting the park property. Kakiat County Park is about 376 acres in size and is located off U.S. Highway 202 in Rockland County. Use of the park falls under the jurisdiction of the Rockland County Division of Environmental Resources (Rockland County DER). The present uses of Kakiat County Park include hiking, horseback riding, fishing, picnicking, winter activities, and scenic outlooks.

The existing Algonquin pipeline represents the approximate boundary of Harriman State Park along sections of the pipeline ROW. For the majority of its distance, the construction ROW would be adjacent to the eastern boundary of Harriman State Park. Harriman State Park is in Rockland and Orange Counties, New York and is the second largest state park within New York's parks system at about 46,650 acres. Major facilities contained within Harriman State Park are Welch, Sebago, Tiorati and Silvermine Lakes, the Anthony Wayne Recreation Area, Sebago Cabins, and the Beaver Pond Campgrounds. Activities at Harriman State Park include, but are not limited to camping, fishing, swimming, biking, hiking and sightseeing. Because the proposed replacement pipeline alignment would be on the eastern boundary of Harriman State Park, none of the above-mentioned resources would be affected by the project.

Construction would have minor and temporary impacts on public use of special interest/recreational areas such as Harriman State Park and Kakiat County Park. Algonquin would implement site-specific measures to maintain safe access to these areas during construction. Algonquin is in the process of consulting with representatives of the PIPC and the Rockland County DER regarding ways to avoid or minimize impacts on Harriman State Park and Kakiat County Park, respectively. Algonquin stated it would file with the Secretary the results of these consultations once they are completed, and would work with the appropriate authorities to implement reasonable mitigation measures.

The pipeline replacement component of the project would require Algonquin to obtain additional temporary workspace on portions of the Harriman State Park and the Kakiat County Park outside the existing permanent pipeline ROW. Algonquin would negotiate with the PIPC and the Rockland County DER, respectively, to secure temporary workspace easements on these public lands.

Table 4.8-8
Public Land and Designated Recreation, Scenic, or Other Areas
Algonquin Ramapo Expansion Project

County	Mileposts	Name of Area	Use of Area	Crossing Length (miles)	Acreage Affected by Construction	Proposed Mitigation/Action
Orange/Rockland	0.00-0.54 0.91-1.69 2.52-2.55 2.58-2.75 4.70-4.93	Harriman Forest State Park	Second largest park in the New York parks system, with 31 lakes and reservoirs, 200 miles of hiking trails, three beaches, two public camping areas, a network of group camps, miles of streams, and scenic roads and vistas. Major recreation facilities include lakes, the Anthony Wayne Recreation Area, Sebago Cabins, and Beaver Pond Campgrounds. Area jointly managed by NYSOPRHP and PIPC.	1.75	14.94	Final mitigation will be developed with landowner.
Rockland	0.54-0.56	Kakiat County Park	A 353-acre Rockland County park providing opportunities for hiking, horseback riding, fishing, picnicking, winter activities, and scenic outlooks.	0.02	0.19	Final mitigation will be developed with landowner.

Use of the proposed mitigation in Algonquin's E&SCP and additional mitigation that may be required by the PIPC and the Rockland County DER for construction within Harriman State Park and Kakiat County Park would reduce short-term and long-term impact of the pipeline on these recreational and public interest areas. Algonquin has not provided copies of draft or final versions of these plans or suggested mitigation recommendations from the PIPC or Rockland County. Therefore, **we recommend that:**

- **Algonquin file with the Secretary all mitigation plans for construction of the pipeline and restoration of the construction ROW developed with the PIPC for construction in Harriman State Park and with the Rockland County DER for construction in Kakiat County Park before construction in the parks for review and written approval of the Director of OEP.**

Aboveground Facilities

Based on field surveys conducted at the aboveground facility sites and review of publicly available GIS databases, only one of Algonquin's proposed aboveground facilities would be located within 0.25 mile of public-designated lands. The Brookfield Meter Station site would be about 0.25 mile south of the Town of Brookfield Open Space located off High Meadow Road and within 2000 feet of the Whisconier Middle School (a public school) on Whisconier Road. Based on the current preliminary layout of the meter station, these public facilities would be more than 0.25 mile from the planned construction workspace.

None of Algonquin's other compressor stations would be within 0.25 mile of designated public and recreational lands or private recreational areas. The Stony Point Compressor Station and Hudson River Valve site would be within a half of a mile of Harriman State Park but since the work activities at these locations would be outside the boundaries of the park at existing Algonquin facilities, no adverse effects are anticipated. The Southeast Compressor Station modification would not be near any known public lands or recreational areas.

Coastal Zone Management Areas

The Hudson River Valve Site is within the boundary of the New York State Coastal Zone Management Boundary and would be affected by the proposed construction of facility modifications. The New York State Department of State (NYSDOS) Division of Coastal Resources administers New York State's Coastal Management Program (CZMP).

Activities and development affecting New York coastal resources that involve a federal permit or license are evaluated for compliance with the CZMP through a process called "Federal Consistency". The applicant for a federal permit or license is responsible for determining whether or not the proposed activity may affect any land use, water use, or natural resource of the coastal zone must comply with the requirements of the CZMP. The applicant then prepares and submits a Certification of Consistency with the CZMP to the NYSDOS Division of Coastal Resources for review and concurrence.

Algonquin's proposed Hudson River Valve Site modification construction area would be within the NYS Coastal Zone Management Boundary. The State of New York Department of State (NYDOS), Division of Coastal Resources, has determined that Algonquin's project meets its general consistency concurrence criteria and that no further review of the proposed activity would be required by the NYDOS. This General Concurrence was dated March 15, 2006. No other project areas would affect coastal zone areas.

The pipeline replacement component of the project, the Ramapo M&R Station, the Stony Point Compressor Station and the Hudson River Valve Site would be within the New York - New Jersey Highlands, a unique wildlife habitat component (Habitat Complex #25) of the New York State-designated Significant Habitats and Habitat Complexes of the New York Bight Watershed. The New York - New Jersey Highlands core habitat contains continuous and relatively un-fragmented forests, higher elevation ridges, and networks of relatively undisturbed wetlands in the valleys. All of the proposed activities within this habitat would affect existing Algonquin natural gas facilities. However, only the Hudson River Valve Site would be within Habitat Complex #25 and within the New York State Coastal Zone Management Boundary. There would be no forest cutting at the Hudson River Valve Site component of the project since no forest is present at that location. Therefore, proposed construction activities at this location would have no impact on Habitat Complex #25.

Private Recreational Facilities/Mixed Residential

The pipeline replacement ROW would parallel, but not cross, several private recreational uses/facilities that are located within 0.25 mile of the construction ROW and are summarized in table 4.8-9. These recreational facilities are collocated with mixed residential development situated south of Algonquin's ROW. Facilities that are used at these recreational areas include campground facilities, ballparks, tennis courts, and banquet facilities.

Construction activities are expected to have minimal impact on the use of the private recreational areas immediately to the south of the existing pipeline ROW. Access to these recreational areas would not be limited, although construction-related vehicle traffic may access the pipeline ROW via existing access roads on the properties. Construction activities may be distracting to individuals and groups using the facilities during construction. Algonquin would need to be sure that its proposed activities are conducted in a safe manner and that persons using the private recreational areas are mindful of construction.

Table 4.8-9
Private Recreational Facilities Located Within 0.25 Mile of Construction ROW
Algonquin Ramapo Pipeline Replacement

Milepost	Land Use	Location
3.44 – 3.60	Recreational/Mixed Residential	Call Hollow Road, Ramapo & Haverstraw, NY (east of Mountain Road)
3.86 – 4.01	Recreational/Mixed Residential	Call Hollow Road, Haverstraw, NY (east of Palisades Court)
4.33 – 4.68	Recreational/Mixed Residential	Call Hollow Road, Haverstraw, NY
4.68 – 4.86	Banquet Facility/Recreational	Call Hollow Road ("Platzl House")

Hazardous and Solid Waste Sites

A review of available EPA databases and an ASTM (American Standards for Testing and Materials) records search conducted by Environmental Data Resources (EDR) identified no hazardous, potentially hazardous, or solid waste sites that would be crossed by the pipeline replacement. However, several sites were identified within 0.25 mile of the pipeline replacement. The majority of these sites are along Route 202, to the east and down gradient of the pipeline replacement section.

A Phase I Environmental Site Assessment (ESA) for the Oxford Compressor Station preferred site was completed. As part of this assessment, specified state and federal regulatory list information for potential sites of environmental concern located at or in the vicinity of the Oxford site was reviewed. That search identified no sites within a quarter mile of the site; however, of particular note is a former Superfund site associated with Mikon Products, Inc just over a mile from the property. The Oxford site was not identified on any databases reviewed for this assessment as a potentially hazardous or solid waste site. Algonquin did not identify any recognized environmental conditions in association with the property, any potentially significant environmental liabilities related to hazardous substances or petroleum hydrocarbon contamination problems on or beneath the property, including contamination possibly originating from off-site sources during the Phase I ESA.

According to information provided by Iroquois, groundwater contamination may no longer be present at the Brookfield, Connecticut site where Algonquin proposes to construct its new M&R Station. The former site owner of Iroquois' 68.3-acre property in Brookfield undertook the cleanup of the property as a voluntary cleanup of the 65-acre parcel (part of the total 68.3-acre Iroquois property) under Connecticut General Statute (CGS) 22a-133x. Since the site is located in an area where private residences utilize groundwater for potable supply and given the public's interest in the site, the CTDEP elected to retain oversight of the site cleanup. This site has undergone soil remediation conducted under a Connecticut voluntary remediation program pursuant to CGS 22a-133x and groundwater monitoring is being completed in accordance with the Connecticut Remediation Standard Regulation. Iroquois reported that as of December 2005, all known debris areas had been removed from the site. Based on recent groundwater monitoring results, the former site owner's consultant has requested that the CTDEP determine that no further monitoring is needed. Concurrence from the CTDEP is pending.

4.8.4.4 Visual Resources

Pipeline Facilities

Impacts to visual resources from construction of the pipeline facilities would be limited primarily to alteration of the vegetation and the temporary use of heavy construction equipment on the ROW and at aboveground facility locations. The project's longer-term effect on the landscape would be the elimination of some existing forested areas. The majority of the proposed activities, including the pipeline replacement and pipeline modifications, would occur at existing facilities where they are currently part of the landscape. The impacts on non-forested lands would be relatively brief because the non-forested areas would revegetate back to pre-construction conditions relatively quickly after construction. Clearing of forested areas would produce longer-term changes in the landscape. Clearing of trees along the edge of the existing pipeline ROW would increase visibility of the proposed facilities. Revegetation of disturbed ROW with natural re-colonization of plant communities would, over time, mitigate for the initial construction-generated visual impacts.

For the pipeline replacement, Algonquin intends to consult with the representatives of Harriman State Park and Kakiat County Park to reduce the post-construction visual impact. These state and county parks, respectively, are used intensely for outdoor recreation, including the use of hiking trails that overlook sections of the pipeline ROW. Algonquin would evaluate mitigation measures to minimize the visual effect to the surrounding park environment would be evaluated by Algonquin to reach a mutually agreed upon mitigation program.

Aboveground Facilities

Visual impact to the local landscape may result from the construction of the new Oxford Compressor Station on a currently undeveloped piece of land located off of Woodruff Hill Road and the construction of the Brookfield Meter Station off of High Meadow Road. The Oxford Compressor Station is not expected to cause significant visual impact to the local viewshed due the size of the property and the existing vegetated buffers between the property and adjacent properties. The design of the Oxford Compressor Station would help to reduce visual effects by minimizing the extent of initial clearing to maintain mature woody vegetation; installing landscaping to screen facilities, and creating earthen berms to minimize the visibility of the compressor station.

The construction and operation of the Brookfield Meter Station is expected to have a minimal effect on visual resources due to the isolated and previously disturbed nature of the site. The project area has been excavated and/or used for gravel processing/asphalt productions and contains existing aboveground natural gas facilities for Iroquois and Algonquin, and should therefore not be considered a significant visual resource. The property and the surrounding area are also visually affected by these existing easements: the cleared 90-foot-wide Algonquin pipeline ROW, the cleared 50-foot-wide Iroquois pipeline ROW, a power line ROW, and a railroad. Existing wooded buffers along High Meadow Road would be retained. The existing metering facilities are roughly 30 feet below the elevation of High Meadow Road and Algonquin's proposed facilities would be set back farther from the road. Retaining the wooded buffer along the road should aid in screening views of the site from some points along High Meadow Road. However, the existing wooded buffer would not screen the view of the existing or proposed facilities from the existing residence and the residence under construction across High Meadow Road from the existing metering station in Brookfield. These properties would continue to have an industrial site within their viewshed.

Overall, visual effects of the proposed aboveground facilities should not significantly affect the localized viewsheds of the project areas. The proposed modifications to the existing aboveground facilities would simulate the scale and approximate dimensions of the existing buildings and equipment currently operated at these sites. Aboveground facilities and modifications to existing facilities would be the most visible features constructed as part of the project and may result in long-term visual impact on the landscape. The degree of impact would depend on several factors, including the existing landscape, number of viewpoints from which to observe the structures, the type of viewers who would view the facility, and the remoteness of the location. Of the new facilities, the Oxford Compressor Station and possibly the Brookfield Meter Station may be the most visually intrusive. The modifications of meter stations and mainline valves would also have visual effects, but these would be significantly smaller in scale and less intrusive.

Algonquin is in the process of developing measures to reduce the visual impact of proposed aboveground facilities, including site-specific mitigation measures for the construction of the Oxford Compressor Station and Brookfield Meter Station. Algonquin would submit site-specific plans, as appropriate, to the Secretary of the FERC once they are completed, and would work with the appropriate local authorities to implement reasonable mitigation measures.

4.8.5 IROQUOIS MARKETACCESS PROJECT

4.8.5.1 Land Use

Iroquois is seeking the Commission's authorization to construct and operate a new compressor station and gas cooler facility in the Town of Brookfield, Fairfield County, Connecticut, and a new gas

cooler facility at an existing compressor station in the Town of Dover, Dutchess County, New York. The total land requirement for the project would be about 10.0 acres and would occur on Iroquois-owned properties (see table 4.8-10).

Table 4.8-10
Land Use Acreage Affected by the Iroquois MarketAccess Project

	Forest		Open		Industrial / Commercial		Total	
	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW	Const. Workspace	Perm. ROW
Brookfield Compressor Station w/Coolers								
	0.0	2.8	0.0	0.9	0.3	3.3	0.3	7.0
Dover Cooler Facility								
	0.0	0.1	1.0	1.6	0.0	0.0	1.0	1.7
Project Totals:	**0.0**	**2.9**	**1.0**	**2.5**	**0.3**	**3.3**	**1.3**	**8.7**

Brookfield Compressor Station

The proposed Brookfield Compressor Station would be built on portions of two Iroquois-owned parcels totaling 68.3 acres in size. One parcel is 3.3 acres in size and contains the Brookfield Sales Meter Station and Algonquin's regulator station #251. This existing facility includes several buildings, paved and grassy/weedy areas, a gated entrance, and perimeter fencing. The second parcel is about 65 acres in size and is currently vacant. It consists of a mix of successional habitat types, mature forest, wetlands, an intermittent channel/watercourse, a ponded area along the railroad tracks, a dirt drive from High Meadow Road, and a dilapidated building structure. In addition, the site also contains portions of Algonquin's 90-foot-wide pipeline ROW (for its 26- and 30-inch-diameter pipelines and Iroquois' 24-inch-diameter pipeline) and Iroquois' 50-foot-wide pipeline ROW (for its 24-inch-diameter mainline). The Algonquin and Iroquois ROWs meet within this property.

Iroquois purchased the 3.3-acre parcel in 1991 and the existing metering facilities were constructed after the land purchase. Iroquois purchased the 65.0-acre parcel in 2003, following the removal of subsurface debris as part of an agreement with the previous landowner and after Iroquois received FERC approval on October 31, 2002, to construct the compressor facility described in Docket No CP02-31-000.

The total land requirement to construct the Brookfield Compressor Station is estimated at 7.3 acres (see table 4.8-7). The operational land component would be about 7.0 acres and would include the entire existing 3.3-acre meter station site. The perimeter fencing of the existing meter station would be expanded to include the new compressor station yard. The estimated 0.3 acres of temporary workspace is proposed within Algonquin's maintained pipeline ROW, where open field habitat exists. It would be restored in accordance with our Plan. No workspace is proposed in wetland areas.

At the proposed Brookfield Compressor Station site, Iroquois' proposal would permanently change the land use of about 2.8 acres of forest and 0.9 acre of open land to industrial use. The industrial land use of the affected 3.3 acres within this site would continue to have the same land use. For the project approved by the FERC on October 31, 2002, the approved compressor station and related facilities would have permanently occupied 10 acres of land, including the 3.3-acre existing metering facility site.

Dover Compressor Station

The total land requirement for the gas cooler installation would be about 2.7 acres (see table 4.8-7). Following construction, Iroquois would maintain about 1.7 acres to operate the new facilities. The existing station fencing would be expanded to incorporate this area. The balance of the proposed project area, roughly one acre, would be temporary workspace adjacent to the southern side of the existing station yard. This temporary workspace consists of old field habitat and would be restored in accordance with our Plan. No workspace is proposed in wetland areas.

Construction of this component of the MarketAccess Project would result in the permanent change on land use for about 1.6 acres of open land and 0.1 acre of forest land to industrial land use.

4.8.5.2 Existing and Planned Residential and Commercial Development

No residences or buildings (excluding Iroquois facilities and abandoned buildings to be removed) would be within 50 feet of the proposed workspace at either project site. All of the proposed facilities and associated workspace areas would be within the boundaries of Iroquois' properties and, thus, no access permission from nearby private or public property owners would be required.

Brookfield Compressor Station

The proposed Brookfield Compressor Station would be near one existing residence, which is located about 440 feet northeast of the proposed compressor, across High Meadow Road. A second residence next door to (east of) this existing home is currently under construction.

Iroquois would minimize the extent of initial clearing to maintain mature woody buffer vegetation along High Meadow Road and other areas within its property to the greatest practical extent. It is likely that construction activities would be disruptive to the residents immediately across High Meadow Road from the proposed Brookfield Compressor Station. This disruption would be temporary and would last only until construction is completed. Also, construction traffic may affect other residents along High Meadow Road on a temporary basis until construction is completed (see section 4.10.4).

Vehicle trips on High Meadow Road associated with the operation of the Brookfield Compressor Station would be minimal.

No known planned residential developments are proposed near the Brookfield, Connecticut project site. The 68.3.0-acre property was previously the location of a residential subdivision known as Low Meadow Estates. This project consisted of constructing ten new single-family building lots. However, this subdivision plan is no longer under consideration and Iroquois purchased the property in June 2003.

Several comments were filed regarding the proximity of the proposed project to nearby residences, future residences, and the residential character of the neighborhood in general from residents of the Town of Brookfield, elected town officials, and Connecticut state offices. The Brookfield Compressor Station site property is currently zoned as residential, however, it has been used historically and presently for industrial purposes. The previous activities at that site have included gravel mining and an asphalt plant, and there is an existing abandoned warehoused that would be removed as part of the compressor station development. The present uses of the site include the existing Iroquois and Algonquin aboveground metering facilities and portions of existing pipeline ROWs as described previously.

Iroquois stated that it would design and construct the facility to minimize the impact of the station on the surrounding area as described above.

On June 30, 2006, the CSC filed its Findings of Fact, and Opinion and Recommendations about the proposed Brookfield CS. It stated that it believes that in comparison to the Vale Road Site, the proposed site on High Meadow Road is the preferred location for the compressor station. It stated that construction of the compressor station at the proposed site would have less environmental impact and there would be fewer residences in close proximity.

We believe that Iroquois' proposed use of the Brookfield meter station site for facilities related to the MarketAccess Project would be consistent with its present industrial land use, the co-location of Algonquin's two pipelines and Iroquois' pipeline ROWs, and its recent historical industrial land use for gravel mining and as an asphalt plant. This is also consistent with the decision made by the Commission in approving the Brookfield Expansion Project on October 31, 2002. Issues related to the existing residences on High Meadow Road, the Whisconier Middle School, and alternative sites were addressed in that document and newly filed comments about the MarketAccess Project are similar to those filed and addressed then. The October 31, 2002 order also stated that since the visual impact of the proposed project on the closest residence to the project (which would be immediately across High Meadow Road from the project site) had been addressed in the environmental assessment, then issues related to the visual impact on the Dairy Farm community which would be farther away from the proposed site than the High Meadow Road residence had been adequately addressed. The October 31, 2002 order also concluded that while the facility would be visible from the Dairy Farm Community when deciduous trees are bare, this would not be a significant impact. Additional information about visual impact is in section 4.8.5.4.

Dover Compressor Station

The closest residence to the proposed gas cooler and associated workspace areas is on the west side of Dover Furnace Road, north of the station access road. This residence is about 1,000 feet west of the proposed work location. A barn near the station access road and storage buildings for a camp along Dover Furnace Road southwestern of Iroquois' property are the closest buildings (non-residential), with distances ranging from about 600 feet to 800 feet from the proposed work location (eastern portion of the compressor station). No planned developments would be near the Dover, New York project site.

4.8.5.3 Recreation and Public Interest Areas

Brookfield Compressor Station

A majority of the project area has been previously disturbed from sand and gravel operations and now includes a meter station. The Brookfield, Connecticut project site does not contain, nor is located within 0.25-mile of, a designated recreational or other public interest area administered by federal, state, or local government agencies or private entities. However, the site would be about 0.25 mile south of the Town of Brookfield Open Space located off High Meadow Road and about 2000 feet of the Whisconier Middle School (a public school) on Whisconier Road.

The Brookfield Compressor Station would be outside of any state or national wild or scenic river system and Connecticut's state coastal zone, would not contain prime farmland soils, and is not being used for agricultural purposes.

Dover Compressor Station

The installation of the gas coolers at the existing Dover Compressor Station is not expected to adversely affect recreation or public interest areas. The site is not within a 0.25 mile of any recreational or public interest areas administered by federal, state, or local government agencies. About 800 feet east of the Dover Compressor Station is a private camp/picnic area on Dover Furnace Road. This recreation area is sometimes used during summer months. These uses would not be affected by the proposed construction or operation of the gas coolers at the Dover compressor Station. Additionally, the site does not contain any component of the state or national wild or scenic river system, and is outside the New York State Coastal Zone.

Hazardous and Solid Waste Sites

Brookfield Compressor Station

Iroquois conducted a Phase I ESA in March 2000 for the entire 68.3-acre proposed Brookfield Compressor Station property in accordance with the scope and limitations of the ASTM Standard Practice E 1527-97 for ESAs. The purpose of the ESA was to identify the presence of any hazardous substances or petroleum products affecting the subject property; establish a baseline of environmental conditions for historic and comparative purposes; identify whether any hazardous substances has been stored, released, or disposed of on the subject property. The preparation of the ESA included a review of the five previous investigations conducted at the site since 1991, and summarized updated records reviews and site inspections. The ESA concluded the following:

- According to previous reports, three underground storage tanks (USTs) were present at the subject site. The tanks included two petroleum tanks estimated to have a capacity of 3,000 gallons each, and a concrete waste oil tank. The presence of the USTs was evidenced by vent pipes noted in the area of the tanks at the time of the consultant's inspection. These tanks were not registered with state or local authorities and were out of compliance with Connecticut UST regulations.

- In March 1992, test pits were installed at the subject site to investigate the onsite USTs. Results of the test pit installation activities indicated the presence of subsurface soil contamination in the area of the concrete UST. In 1994, product samples from two of the three onsite USTs were collected. Results of the product samples obtained from two of the three USTs indicated that gasoline and diesel were stored in the two steel USTs, about 2,000 gallons of water were present in each of them and about 180 gallons of diesel fuel were present. No samples were obtained from within the concrete UST.

- In March of 1995, one well was installed downgradient of the USTs (GW-4). Samples collected from this well registered contaminants above applicable CTDEP groundwater protection criteria that were in effect at that time. The contaminants identified were benzene and TPH, consistent with the storage of petroleum products. In January 2000, a second round of samples was collected from the seven-onsite groundwater monitoring wells. Analysis of the samples indicated concentrations of cadmium, chromium, and TPH above applicable CTDEP groundwater standards in well GW-4. Finally, in February 2000, a sample was obtained from well GW-4 to confirm the results of previous sampling events. Analysis of this sample indicated concentrations of cadmium and TPH above applicable CTDEP groundwater standards. The results from GW-4 indicate that a release had likely occurred from the USTs.

In addition, numerous areas of un-permitted solid waste dumping were noted at the time of the site inspection for the March 2000 Phase I ESA. Solid waste observed on site include abandoned automobiles, automobile parts, tires, construction debris, household furniture and appliances, pails, storage tanks, and empty 55-gallon drums. Although no areas of staining or stressed vegetation was observed, a 1992 Phase I ESA had identified areas of minor staining. It is Iroquois' opinion that the solid waste disposed of on site has the potential to contain hazardous wastes, lead based paint, asbestos and/or petroleum products.

A former settling lagoon that has been filled with solid waste debris is located on the boundary of the subject property and the adjacent Iroquois meter station (former Peckham Materials) property. This lagoon was associated with the former asphalt plant that was located on the Iroquois property.

Since the completion of the March 2000 ESA, additional work has been completed at the site. This work has included:

- The registration and removal of the USTs and about 20 cubic yards of oil-impacted soil. Consultants reported a release of oil from the USTs to the CT DEP.
- The removal of surficial solid waste debris, including 55-gallon drums, automobile bodies and parts, tires and solid waste.
- The installation and sampling of additional monitoring wells.

As site work has progressed, six main areas of solid waste disposal have been identified. These include:

- An area of partially buried automobiles in the northern portion of the site;
- An area of surficial and buried solid waste along the site access road in the central portion of the site. Clean-up of this area was initiated but is incomplete;
- An area of buried tires near the fence line of the adjacent Iroquois meter station; this is likely the former Peckham Materials settling lagoon;
- An area of partially buried drums and automobile bodies and parts located in the southeastern portion of the site;
- An area of solid waste disposal located in the southern portion of the site; and,
- An area of metal debris located on the western side of the site just south of the Algonquin Gas ROW.

Site-wide Phase II/Phase III investigations were undertaken by Iroquois consultants to fully characterize the site and identify potentially unknown disposal areas. The Phase II and Phase III investigations included a site-wide magnetometer survey to identify buried metal, test pits conducted in areas with magnetic anomalies, a "fence-line" groundwater investigation, installation of additional monitoring wells in and around disposal areas, and additional characterization of soil within the disposal areas. As a result of these investigations it was determined that no additional extensive areas of solid waste disposal were present, no groundwater contaminant plume was identified at the downgradient edge of the property, and scattered surface debris across the property was mapped. The tires identified at the fence line with the meter station property proved to be only minor debris as evidenced by three test pits.

The former site owner undertook the cleanup of the property as a voluntary cleanup under Connecticut General Statute (CGS) 22a-133x. Since the site is located in an area where private residences utilize groundwater for potable supply and given the public's interest in the site, the CTDEP

elected to retain oversight of the site clean up. Debris removal continued from the fall of 2004 into the summer of 2005. The remediation activities included sampling for and removal of asbestos containing materials from the site. As of December 2005, all known debris areas had been removed from the site.

In November 2005, Iroquois' consultant conducted a test pit program to evaluate soil conditions in the vicinity of proposed compressor station building footprints. A total of 22 test pits were excavated either in foundation footprints, lateral pipe routes, or to evaluate existing features discovered. The primary purpose of the test pits was to ensure that no undiscovered pockets of debris or potential contaminated soil would be encountered during construction. The soil observed in most of the test pits consisted of brown fine to medium sand with some silt. Some test pits contained occasional to abundant cobbles. A metal pipe was discovered traversing the existing access road that appears to have been used for stormwater drainage. Both ends of the pipe were exposed and no evidence of the pipe having been used for conveying anything other than water was observed. No staining, odor or elevated field screening instrument responses were observed in the soil at either end. A test pit was also excavated next to a former truck scale foundation located adjacent to the derelict former gravel pit office building. The test pit demonstrated that the truck scale foundation extended to about six feet below surface grade. Soil in this area consisted of medium to coarse sand with subangular gravel. Some fragments of asphalt were observed; however, no significant evidence of debris or contaminated soil was observed in any of the test pits.

Two reports documenting the debris removal were submitted to CTDEP for review and approval and are still in review. Iroquois indicated that it would file the CTDEP's comments when they are available. Groundwater monitoring relative to the solid waste and debris removal had not taken place as of December 2005. However, groundwater monitoring relative to the former USTs was completed as part of the CTDEP approved Work Plan for the site wide cleanup effort. Monitoring consisted of the replacement of one well that had historically had low concentrations of petroleum constituents detected, as well as two additional down gradient wells installed in relatively close proximity to the former USTs. Four consecutive quarters of monitoring were completed, beginning in December 2004 and ending in October 2005. No petroleum related compounds were detected in any round and only one metal, arsenic, was detected; however, this was in only one round and was not detected in a duplicate sample. It was the analytical laboratory's opinion that this detection was likely a laboratory artifact that had been introduced to the sample and was not from the site. The former site owner's consultant has requested that the CTDEP approve a determination that no further monitoring or other action is required for the UST area.

In its comments on the DSEIS, the CTDEP stated that the 3.3-acre parcel that makes up part of the 68.3-acre Iroquois property was not included in the voluntary remediation program. It recommends that Iroquois have a contingency plan in place for properly handling waste, if any is encountered during construction of any facilities (including those proposed by Algonquin) on the entire property. Therefore **we recommend that :**

- **Iroquois develop in consultation with the CTDEP a plan for handling waste materials that may be encountered during construction of any facilities at the Brookfield Compressor Station site on High Meadow Road in Brookfield, Connecticut. This plan should be filed with the Secretary for review and written approval by the Director of OEP, prior to construction of the compressor station.**

On June 30, 2006, the CSC filed its Findings of Fact, and Opinion and Recommendations about the proposed Brookfield CS. It recommended that Iroquois remediate soil contamination at the site consistent with the Connecticut Remediation Standards Regulations as specified by the CTDEP. Iroquois responded that it agrees with this recommendation and would remediate the existing soil contamination.

Dover Compressor Station

In October 1999, Iroquois conducted a Phase I ESA to identify the presence, release, storage, or threat of release of any hazardous substances or petroleum products affecting the subject property. As part of this report, Iroquois obtained state and federal regulatory information from a database report prepared by Environmental Data Resources, Inc., which did not indicate that sources of contamination were present within one-half-mile of the Iroquois property. A review of mapped hazardous waste sites on EPA's Enviromapper website in January 2006 still does not indicate any areas of potential concern within 0.5-mile of the project site.

4.8.5.4 Visual Resources

The MarketAccess Project facilities at the proposed Brookfield Compressor Station and the existing Dover Compressor Station would not affect designated scenic areas or visually sensitive areas.

Brookfield Compressor Station

The construction and operation of the Brookfield Meter Station is expected to have a minimal effect on visual resources due to the isolated and previously disturbed nature of the site. The project area has been excavated and/or used for gravel processing/asphalt productions and contains existing aboveground natural gas facilities for Iroquois and Algonquin, and should therefore not be considered a significant visual resource. The property and the surrounding area are also visually affected by these existing easements: the cleared 90-foot-wide Algonquin pipeline ROW, the cleared 50-foot-wide Iroquois pipeline ROW, a power line ROW, and a railroad. Existing wooded buffers along High Meadow Road would be retained. The existing metering facilities are roughly 30 feet below the elevation of High Meadow Road and Algonquin's proposed facilities would be set back farther from the road. Retaining the wooded buffer along the road should aid in screening views of the site from some points along High Meadow Road.

The compressor station would likely be visible by one existing residence and the one currently under construction across High Meadow Road from the existing meter station, particularly because these residences have or would be constructed on a hillside and are higher in elevation than the existing meter station and proposed compressor station. The proposed project should not significantly detract the views from these residences because views of the site would be viewed in conjunction with the existing meter station, an industrial site. Iroquois would implement appropriate architectural measures, including the use of "barn-like" features on buildings and a color scheme that would be determined after consultation with the town. Iroquois is planning to design the exterior lighting for the Brookfield compressor station to be as non-intrusive as practicable, and to avoid illuminating the night sky. Iroquois would prepare a landscaping plan that would incorporate features designed to mitigate the visual impact of the proposed station. In addition, Iroquois has minimized the fenced area to the extent possible to maintain a buffer of natural vegetation around the compressor station.

In response to a comment from the CSC, Iroquois prepared a visual impact analysis of the Brookfield Compressor Station facilities illustrating how the existing and proposed Iroquois and Algonquin facilities would appear from the driveway of the residence across the street from the facility (67 High Meadow Road). The analysis included a photograph of the existing site conditions and a conceptual rendering of the facilities after construction (see figures 4.8.5.4-1 and 4.8.5.4-2, respectively, which are inserted at the end of section 4).

The Whisconier Road Middle School is about 2,000 feet to the north of the proposed compressor station. The construction and operation of the proposed Brookfield Compressor Station would not be visible from the school since it would be located at a lower elevation than the school and would be visually screened from the school property by mature forest that exists between the school and the compressor station site.

The State of Connecticut Attorney General and several residents of the surrounding area commented that the project might affect visual and cultural resources near the Brookfield Compressor Station. No cultural or visual resources such as designated scenic areas would be near the Brookfield location. Furthermore, Iroquois would maintain existing wooded buffers along High Meadow Road and would also leave about 57 acres of its property undeveloped. As stated previously, the proposed compressor station site would be about 30 feet below High Meadow Road and retaining the existing wooded buffer of mature trees along the road should aid in screening views of the site from points along High Meadow Road. Iroquois has stated that it would prepare a landscaping plan that would incorporate features designed to improve the aesthetic appearance of the proposed station. In addition, Iroquois is planning to design the exterior lighting for the Brookfield compressor station to be as non-intrusive as practicable, and to avoid illuminating the night sky.

The CSC has recommended that Iroquois implement a plan for landscaping, lighting, and architecture of the buildings including a color scheme in consultation with the Town of Brookfield. Iroquois has provided a preliminary landscaping and building color plan in its conceptual rendering of the facilities after construction shown in figures 4.8.5.4-1 and 4.8.5.4-2. Iroquois has stated that it would work with local authorities on these plans.

We believe that Iroquois' proposed use of the Brookfield meter station site for facilities related to the MarketAccess Project would be consistent with its present industrial land use, the co-location of Algonquin's two pipelines and Iroquois' pipeline ROWs, and its recent historical industrial land use for gravel mining and as an asphalt plant. Visual impact would be greatest at the residences immediately across High Meadow Road, but would be similar to the present visual impact of this industrial site. Iroquois would minimize the visual impact of the facility by constructing "barn-like" buildings to house its proposed facilities. It would install plantings along fence lines or other landscaping to further reduce visual impact. This is also consistent with the decision made by the Commission in approving the Brookfield Expansion Project on October 31, 2002. Issues related to the existing residences on High Meadow Road, the Whisconier Middle School, and alternative sites were addressed in that document and newly filed comments about the MarketAccess Project are similar to those filed and addressed then. The October 31, 2002 order also stated that since the visual impact of the proposed project on the closest residence to the project (which would be immediately across High Meadow Road from the project site) had been addressed in the environmental assessment, then issues related to the visual impact on the Dairy Farm community which would be farther away from the proposed site than the High Meadow Road residence had been adequately addressed. The October 31, 2002 order also concluded that while the facility would be visible from the Dairy Farm Community when deciduous trees are bare, this would not be a significant impact.

Dover Compressor Station

The construction and operation of the gas cooler facility is not expected to significantly alter the visual or aesthetic character of the surrounding area because of the isolated and disturbed nature of the site. The proposed gas coolers would be a maximum of 25 feet in height. The project would maintain a wooded fringe along the northern, southern, and eastern site boundaries of the Iroquois property that screen the compressor station from commuters and residences along most of County Route 26, as well as

Non-Internet Public

FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR THE NORTHEAST (NE)-07 PROJECT

Iroquois Gas Transmission System, LP
Docket No. CP02-31-002

Figure 4.8.5.4-1
Photograph of Existing Site Conditions at
Brookfield Compressor Station

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Non-Internet Public

FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR THE NORTHEAST (NE)-07 PROJECT

Iroquois Gas Transmission System, LP
Docket No. CP02-31-002

Figure 4.8.5.4-2
Conceptual Rendering of Proposed Facilities at Brookfield Compressor Station Site.

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Public access for the above information is available only through the Public Reference Room, or by e-mail at public.referenceroom@ferc.gov.

views of the site from higher vantage points (i.e. West Mountain). Iroquois has sited the proposed gas cooler facility off the northeastern corner of the compressor station that is about 1,000 feet away from County Road 26 along the western site boundary. Where the gas cooler facility would be observable from the surrounding areas, it would be viewed as part of the compressor station. Since the proposed extension is consistent with the aesthetics of the existing facilities and is not believed to detract from the local visual character, no aesthetic mitigative measures have been proposed. We believe that there would be minimal visual impact resulting from construction of this component of the proposed facilities.

4.9 CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act (NHPA), as amended, requires the Commission to take into account the effect of its undertakings (including issuance of certificates) on properties that are listed in or eligible for listing in the National Register of Historic Places (NRHP) and to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the undertaking. Millennium, Columbia, Empire, Algonquin, and Iroquois, as non-Federal parties, are assisting the Commission in meeting its obligations under section 106 and the ACHP's regulations, set forth in 36 CFR 800.

The Commission anticipates executing a Programmatic Agreement (PA) with the New York State Historic Preservation Office (NYSHPO) and the ACHP to fulfill the Commission's obligations under section 106.

4.9.1 MILLENNIUM PIPELINE PROJECT - PHASE I

Millennium completed initial cultural resources surveys of the pipeline route and extra work areas, pipe storage/contractor yards, and access roads. These surveys were conducted in consultation with the New York and Pennsylvania State Historic Preservation Offices (SHPOs) during 1997 and 1998, and are summarized in a final report that was filed with the Commission and the SHPOs in November. In 1999, surveys were conducted on the mainline and access roads that had not been surveyed previously, geomorphological deep testing was conducted at high and medium probability locations, and additional testing was conducted at some of the sites identified in the 1997 and 1998 surveys. The results of the 1997, 1998, and 1999 surveys are summarized in the original Environmental Report previously issued by Millennium in 1997 and in the FEIS for the project issued by the Commission in October 2001. In 2004 and 2005, surveys were conducted on modifications to the project that include installation of a new compression facility at an existing station and pipeline route alignment modifications. These modifications are described in detail in section 2.1.1. The results of the 2004 and 2005 efforts have been filed with the Commission and the NYSHPO and are summarized below.

2004, 2005, and 2006 Surveys

The cultural resource investigations of the proposed Corning Compressor Station and the proposed NYSEG and Warwick Isle route variations included a comprehensive background literature review, surveys of 19 miles for route variations and 60.7 acres for the new compressor station construction, and additional field work including archaeological, architectural history, and geoarchaeological investigations at 26 sites identified previously as requiring additional cultural resource investigations. In addition, the spring 2006 cultural resource investigations included survey of 241.33 acres of new survey area, including construction work area, access roads, and storage yards. A total of 101 new cultural resources were identified (83 cultural resources on the NYSEG Variations, three

cultural resources on the Warwick Isle Route Variation, and 15 on the proposed 194 variations to the preferred route).

Millennium has not completed surveys along about 9.4 miles corresponding to areas where construction planning is incomplete and where landowners have denied access. Furthermore, several areas have been identified for additional testing or additional consultation.

NYSEG Route Variations

The NYSEG Route Variations were subjected to walkover surveys in 2004 and systematic surveys in 2005. The results of these surveys identified 83 cultural resources within the NYSEG Route Variations. Table 4.9-1 summarizes the types of cultural resources identified by county. Table 4.9-2 summarizes the types of cultural resources that may potentially be impacted by the project in its current design. The table also provides proposed treatment of the cultural resources and SHPO comments.

Overall, while the number of resources identified on the variance alignment is slightly higher than that of the original alignment, the site types recorded on each are identical. From a cultural resources perspective, the two alignments contain the same types of cultural sites and features. Most of these cultural resources have been recommended not eligible for listing in the NRHP (see table 4.9-2). The following Millennium resources have been determined previously by the NYSHPO to be individually eligible: CHE-9901 (Chemung Canal), BRO-117, BRO-212, BRO-0509, DEL-9931, ORA-001/503 (Delaware & Hudson Canal), ORA-9931, ORA-9942, and ORA-0550. Two districts also were also recommended previously and NYSPHO concurred pending landowner approval. These are the Mission Lands Historic District and the Pine Island Archaeological District. None of the sites or districts except Field Site DEL-9931 can be avoided by the project as it is currently routed. As such, these sites would be subjected to data recovery if the project is approved.

Warwick Isle Route Variation

The systematic survey of the Warwick Isle Route Variation resulted in the identification of three archaeological sites. Table 4.9-1 summarizes the types of cultural resources identified. Table 4.9-2 summarizes the types of cultural resources that may potentially be impacted by the project in its current design. The table also provides proposed treatment of the cultural resource and SHPO comments.

Corning Compressor Station and Yard

The existing Corning Compressor Station facility was evaluated and recommended not eligible for listing in the NRHP. The NYSHPO concurred with this recommendation.

The entire 60.7-acre parcel was also subjected to systematic survey. No subsurface archaeological materials were recovered. Four surface features were identified. Features 1, 3, and 4 are stone-ringed fire hearths associated with a modern tree stand. Feature 2 is a stone-encircled springhead. None of these features were recommended eligible for listing in the NRHP. In addition, a 1970's split-level ranch style house located just off Narrows Road was identified within the project area. This structure does not meet the age criteria for inclusion in the NRHP.

Contractor/Storage Yards

Table 4.9-1 summarizes the status of cultural resources investigations at the 19-contractor/storage yards. All of the yards have been evaluated for the presence of cultural resources. Of the 19 yards, 12

(Yards 7, 53, 56, 67, 76, 89, 97, 98, 100-5, 101-5, 106-5, and 110-5) contain no cultural resources. Summaries of the cultural resources identified in the other 7 (Yards 12, 61, 75, 80, 84, 103-5, and 107-5) are provided below.

Field Site DEL-9826 was identified in Yard 12 (Walsh and Weed 1998:783-784). This site is an historic artifact scatter once associated with a mobile home. The scatter did not meet the age criteria and it was recommended for no further work. The NYSHPO concurred with the recommendation.

Field Sites BRO-9835, BRO-9836, BRO-9837, and BRO-9838 were identified in Yard 61 (Weed and Walsh 1998:770-772). Field Site BRO-9835 is a small historic scatter which yielded both 19th and 20th century artifacts. The site was recommended for no further work as Millennium agreed to avoid it by fencing. Field Site BRO-9836 is an isolated historic artifact. The site was recommended for no further work. Field Sites BRO-9837 and BRO-9838 are historic scatters, which represent the remnants of household dumps. No further work was recommended for either site. The NYSHPO concurred with all the recommendations identified above.

Field Site ROC-9845 was identified in Yard 75. It was a brick and concrete wall remnant that was secondarily deposited. Walsh and Weed (1998:852) recommended no further work on the feature. The NYSHPO concurred with the recommendation.

Field Site SUL-9832 was identified in Yard 80 (Walsh and Weed 1998:812). Field Site SUL-9832 is a service building foundation. The foundation is the last remnant of a once, more-extensive bungalow colony. The other colony structures were razed by the present landowner. No further work was recommended for the structure and the NYSHPO concurred with the recommendation.

Field Site SUL-9831 was identified in Yard 84 (Walsh and Weed 1998:811-812). The site is comprised of several elements including foundations and a well in addition to an associated scatter. These features are confined to the southwest quadrant of the proposed yard. Walsh and Weed (1998:812) reported that the site would be avoided by fencing it and therefore there would be no impact to it. The NYSHPO concurred with the recommended action.

Field Site TIO-0546 was identified on the east side of Yard 103-5. This site is an expansive historic archaeological scatter with minor prehistoric component. The high artifact density area of the site, encompassing about 11,034 square meters, was recommended for Phase II testing (Kelly and Weed 2005:78-79, 221-222 and figures 5, 51, 52, 68, and 101). The NYSHPO concurred with the recommendation. The Project, however, has determined that the east side of the proposed yard would not be needed for storage. No further CRM work is required.

Field Site BRO-0548 was identified immediately adjacent to Yard 107-5. The site is an historic dump and scatter. Kelly and Weed (2005:97-98, 226) recommended no further work at the site. The NYSHPO concurred with the recommendation.

Unanticipated Discovery Plans

Millennium prepared and filed Unanticipated Discovery Plans with its application to address inadvertent discoveries of cultural resources, including human remains, during construction of the project. These initial plans have been reviewed by the Commission and the New York and Pennsylvania SHPOs and are acceptable.

Table 4.9-1
Sites Identified within Project Areas During the Cultural Resource Surveys

County	Industry	Structures	Recreation Trails/Golf Course	Railroads/ Transportation	Historic Utility	Historic Isolates	Historic Scatters and Dumps	Prehistoric/Historic Sites	Pre-historic Isolates	Pre-historic Scatters	Total
Millennium Pipeline Project Phase I											
Steuben						1					**1**
Chemung	1					3	6	4	3		**17**
Tioga	1					2	5	4			**11**
Broome	2	2				4	13	3		1	**20**
Delaware	2	2					2	2	4		**11**
Sullivan	1	1				1	5	1	7		**14**
Orange	4			2	2	3	6	6	6	1	**14**
Pike	1								1		**2**
Columbia Line A-5 Replacement Project											
Orange		2	2	2	3		2	1		2	**12**
Rockland		1	1	2	1	1					**5**
Empire Connector Project											
Ontario		1				2	2	1	24	7	**37**
Yates		1					2		18	4	**25**
Schuyler		2							1		**3**
Chemung		1					1				**2**
Steuben		1									**1**
Genesee									1		**1**
Algonquin Ramapo Expansion Project											
Rockland						2			3		**5**
Morris											
Fairfield											
New Haven						1			2		**3**
Iroquois MarketAccess Project											
Dutchess							1			1	**2**
Totals	**12**	**14**	**3**	**5**	**5**	**17**	**35**	**19**	**71**	**16**	**197**

Table 4.9-2
Cultural Resources That May be Affected by the Proposed Projects

Site Name	Site Type/Description	Treatment	SHPO Comments/Status of Site Evaluation
Millennium Pipeline Project Phase I			
BRO-006/154	Historic Structure	Phase I complete.	Phase II recommended.
BRO-010	Historic, transportation canal, Chenango Canal	Phase I complete – Phase II mechanical testing recommended.	Concur – filed testing needed to identify. Mitigate if intact remains found.
BRO-0510	Historic, farmstead and historic/prehistoric scatter	Phase I complete – archaeological recommended not eligible 2005, architectural component recommended not eligible 2006.	SHPO concurred archeological component not eligible. Architectural component pending – Report submitted to SHPO February 2006.
BRO-0509	Prehistoric/historic, fill overlying scatter and features	Phase I/II complete – recommended NRHP eligible.	SHPO concurs with recommendation and plans outlined for Data Recovery investigations.
BRO-117	Prehistoric/historic scatter	Phase II complete – recommended NRHP eligible.	Concur
BRO-212	Prehistoric/historic scatter	Phase II complete – recommended NRHP eligible.	SHPO concurs with recommendation and plans outlined for Data Recovery investigations.
BRO-9835	Historic artifact scatters	Field site BRO-9835 yielded 19th & 20th century artifacts and is to be fenced off and avoided.	Concur
BRO-9931	Prehistoric scatter	Phase I complete – site cannot be avoided, no effect if road is matted.	Concur
BRO-0603	Quarry	Phase I compete – recommended not NRHP, no additional work recommended	Pending
BRO-0604	Quarry	Phase I compete – recommended not NRHP, no additional work recommended	Pending
BRO-0601	Historic Structure	Phase I complete – recommended additional architectural assessment	Pending
BRO-0602	Historic Structure	Phase I complete – recommended additional architectural assessment	Pending
CHE-0601	Historic Scatter	Phase I compete – recommended not NRHP, no additional work recommended	Pending

Table 4.9-2 (cont'd)
Cultural Resources That May be Affected by the Proposed Projects

Site Name	Site Type/Description	Treatment	SHPO Comments/Status of Site Evaluation
CHE-0603	Historic/Prehistoric Scatter	Phase I complete – recommended NRHP eligible. Proposes to mat site to avoid impact.	Pending
CHE-9901	Historic, Transportation, canal	Phase I complete.	Determined potentially eligible by NYSHPO, work plan would be developed.
DEL-9931	Prehistoric/historic scatter and features	Phase II complete – recommended NRHP eligible.	Concur
DEL-0603	Historic Structure	Phase I complete – recommended additional architectural assessment	Pending
DEL-0602	Historic Structure	Phase I complete – recommended additional architectural assessment	Pending
ORA-001/503	Historic, transportation, canal	Phase I complete. NYSHPO has determined canal is potentially eligible. Project proposed conventional bore and archaeological monitoring was recommended. Project has determined that all disturbances can be restricted to the existing Line A-5 work area.	Concur with additional recommendation to reconsider if intact deposits encountered.
ORA-0601	Prehistoric Scatter	Phase I compete – recommended not NRHP, no additional work recommended	Pending
ORA-0604	Historic Scatter	Phase I compete – recommended not NRHP, no additional work recommended	Pending
ORA-0550	Prehistoric/historic scatter with stratified deposits	Phase I/II complete – recommended NRHP eligible.	SHPO concurs with recommendation and plans outlined for Data Recovery investigations.
ORA-9936	Prehistoric scatter with feature	Phase I/II complete – recommended NRHP eligible.	SHPO concurs with recommendation and plans outlined for Data Recovery investigations.
ORA-9942	Prehistoric scatter	Phase I/II complete – recommended NRHP eligible.	SHPO concurs with recommendation and plans outlined for Data Recovery investigations.

Table 4.9-2 (cont'd)
Cultural Resources That May be Affected by the Proposed Projects

Site Name	Site Type/Description	Treatment	SHPO Comments/Status of Site Evaluation
ORA-9931	Prehistoric scatter	Phase II complete – recommended not NRHP eligible.	Did not concur - SHPO recommends site NR eligible. SHPO concurs plans outlined for Data Recovery investigations.
ORA-0402	Historic Farmstead	Recommended not eligible, no further work.	Cannot concur that farmstead is not eligible at this time. Will need additional photographs showing more detail to make final determination. However, based on scope of proposed work, project will have no adverse impact even if property is eligible.
SUL-9801/9830	Historic, industry, sawmill, camp, race, bridge and associated hamlet	Phase I/II complete – recommended NRHP eligible. Project will utilize existing two track road, area will be fenced to avoid any impacts. No further investigation needed.	Concur
SUL-9831 (yard 84)	Historic scatter, building foundations and a well.	To be avoided by fencing.	Concur
SUL-0601	Historic Structure	Phase I complete – recommended additional architectural assessment	Pending
TIO-0546 (yard 103-5)	Expansive historic scatter with a minor prehistoric component	Project has decided not to utilize the east side of the yard thus avoiding the site, therefore no further investigation is needed.	Concur
Columbia Line A-5 Replacement Project (Ramapo River HDD Variation)			
TIO-0602	Prehistoric Isolate	Phase I complete – no additional work recommended.	Pending
ORA-020/182a	Erie Railroad (Metro-North)	Project will bore beneath the feature and it will not be impacted.	Concur
ORA-0412	Historic scatter with feature	Phase I complete - additional work recommended unless site can be avoided. (proposal to fence the site and mat the road)	Concur
ORA-9830	Historic scatter with feature	Phase I/II complete-no further investigation recommended.	Concur

Table 4.9-2 (cont'd)
Cultural Resources That May be Affected by the Proposed Projects

Site Name	Site Type/Description	Treatment	SHPO Comments/Status of Site Evaluation
ROC-001	Historic, Recreation/Park, Harriman State Park	Treatment plan is being developed.	SHPO concur – site NRHP Eligible.
Empire Connector Project			
22-1	Prehistoric scatter	Phase II evaluation or avoidance	Concur
22-3	Prehistoric scatter	Phase II evaluation or avoidance	Concur
32-1	Prehistoric scatter	Phase II evaluation or avoidance	Concur
37-1	Prehistoric scatter	Phase II evaluation or avoidance	Concur
43-3	Prehistoric scatter	Phase II evaluation or avoidance	Concur
44-1	Historic scatter	Phase II evaluation or avoidance	Concur
54-1	Prehistoric scatter	Phase II evaluation	Concur
56-1	Prehistoric scatter	Phase II evaluation	Concur
65-1	Prehistoric scatter	Phase II evaluation or avoidance	Concur
78-1	Prehistoric scatter	Phase II evaluation or avoidance	Concur
81-1	Historic scatter	Phase II evaluation	Concur
94-1	Historic scatter	Phase II evaluation	Concur
112-1	Historic scatter	Phase II evaluation	Concur
Algonquin Ramapo Expansion Project			
Hudson River I	Prehistoric scatter	Phase I complete, no further work recommended.	Did not concur – recommended additional testing.
Iroquois MarketAccess Project			
Vincent Site	Prehistoric	Avoidance, if not possible Phase II evaluation.	Concur
IGTS 243-AFI-1	Prehistoric	Avoidance, if not possible Phase II evaluation.	Concur

Native American Consultation

Millennium wrote to the Cherokee Nation of New Jersey, Eastern Delaware Nations, Eastern Lenape Nation of Pennsylvania, Ramapough Mountain, St. Regis Mohawk Tribe, Seneca Nation, Tonawanda Band of Seneca, Tuscarora Nation, Cayuga Nation, Onondaga Nation, Oneida Indian Nation, and Western Mohegan to request their comments on the proposed project. The Seneca Nation requested copies of archaeological survey reports/references and archaeological site location maps for Steuben, Chemung, and Tioga counties. The Oneida Indian Nation requested copies of archaeological survey reports/references and archaeological site location maps for Broome and Delaware counties. On July 11, 2006, the Seneca nation of Indians commented that they have no further comments at this time. No other responses have been received to date.

Public Comment

The Town Supervisor of the Town of Warwick commented that the project might affect cultural resources near the proposed Warwick Isle Route Variation, Orange County, New York. Millennium expects to conduct several archaeological investigations within the Town limits and to provide the Town historian with reports and information once the work is complete.

Proposed Project Effects

None of the cultural resources identified at the Corning Compressor Station are recommended eligible for listing in the NRHP. Surveys of the proposed modifications to the previously approved Millennium Pipeline Project identified 18 potentially affected cultural resources. Cultural resources determined eligible or potentially eligible for listing in the NRHP would be avoided or mitigated. Moreover, any necessary treatment plans would be prepared on a site-specific basis in consultation with the appropriate SHPOs and the Commission.

To ensure that the Commission's responsibilities under section 106 of the National Historic Preservation Act and implementing regulations are met, **we recommend that:**

- **Millennium defer implementation of any treatment plans/measures (including archaeological data recovery), construction or use or all staging, storage and temporary work areas or new or to-be-improved access roads until:**

  a. Millennium files with the Secretary cultural resource inventory, evaluation reports, and any necessary treatment plans and the SHPO comments; and

  b. The Director of OEP reviews and approves all reports and plans and notifies Millennium in writing that treatment plans/measures may be implemented or construction may proceed.

  All material filed with the Commission containing location character and ownership information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: "CONTAINS PRIVILEGED INFORMATION—DO NOT RELEASE."

4.9.1.1 Columbia Line A-5 Replacement Project

Columbia has completed initial cultural resources surveys of the proposed Line A-5 Replacement Project in the Town of Tuxedo, Orange County, and the Town of Ramapo, Rockland County, New York.

These surveys were conducted in consultation with the NYSHPO and included the survey of 8.8 miles of pipeline ROW, 10 access roads, and three temporary storage yards.

The existing Line A-5 permanent ROW, the Ramapo M&R Station, the Tuxedo/Central Hudson M&R Station, the facilities themselves, and Storage Yard 97 (Union Carbide) were subjected to prior cultural resource investigations. Documentary research, systematic walkover, and shovel testing conducted between 1997 and 2001 resulted in the identification of six cultural resources, representing historic sites and properties, which include railroads, elements of the historic Tuxedo Park Golf Course, various other building foundations, a park, farm land, gas facilities, scatters, and a mill race. Of these historic resources, five are now within the project footprint or are crossed by it. Results of these investigations were previously reported and the NYSHPO accepted these results.

Surveys of the proposed pipeline ROW, 10 access roads, and three temporary storage yards identified 17 cultural resources. Table 4.9-1 summarizes the types of cultural resources identified by county. Table 4.9-2 summarizes the types of cultural resources that may potentially be impacted by the project in its current design. The table also provides proposed treatment of the cultural resource and SHPO comments.

The NYSHPO recommended that three of the sites were not eligible for listing in the NRHP. One site, the Erie Railroad (now Metro-North) would be avoided by the proposed HDD under the Ramapo River. In the event that the HDD fails, the railroad berm would be bored. The fifth site, Harriman State Park, is eligible for listing in the NRHP. For this reason, a site-specific treatment plan is being developed in cooperation with the PIPC for construction through this resource.

Sterling Forest® State Park/Laurel Ridge Route Variation

The Phase I cultural resources investigations on the Laurel Ridge Variation were completed March 20-21, 2006. The Sterling Forest® State Park/Laurel Ridge Variation was surveyed using two methods: walkover survey and systematic shovel testing and surface observations. Upon completion, no cultural materials were recovered; therefore no further cultural resources investigation is recommended for the Laurel Ridge Variation. The results of the investigations will be formally reported in Myers et al. 2006 which will be filed in July 2006.

Ramapo River HDD Variation

Phase I cultural resources investigations have been completed on the Millennium approved route and the Ramapo River HDD Variation (Walsh and Weed 1998; Weed and Walsh 1999; Walwer and Walwer 2001; Weed et al. 2004). The routing of the Ramapo River HDD Variation combines elements of the Millennium certificated route and the proposed Line A-5 Replacement Project (Weed et al. 2004).

The Phase I investigations of the Millennium certificated route resulted in the identification of 4 cultural resources: Field Sites ORA-020/182a, ORA-36a/301, ORA-9830, and ROC-001. Field Site ORA-020/182a is the Erie Railroad (now Metro-North). The Project would bore beneath this feature and it would not be impacted. Field Site ORA-36a/301 was a small historic scatter. The site was destroyed by new house construction. Field Site ORA-9830 was an historic scatter with feature. The site was recommended for Phase II testing and equivalent work was conducted by Walwer and Walwer (2001). No further work was recommended for the property after their work and the New York State Historic Preservation Office (NYSHPO) concurred. Field Site ROC-001 is Harriman State Park. The park and associated elements were previously determined potentially eligible for inclusion in the National Register of Historic Places (NRHP). The Project has developed a site-specific construction plan for the Park

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The Phase I investigations of the Line A-5 Replacement Project route resulted in the identification or relocation of five cultural resources within the CWA and two other sites on proposed Access Road ARHDD 003 which would have been utilized to access the conventional crossing alignment. The resources within the CWA are NYOPRHP #A071.16.000400 (Tuxedo Park golf course barn/stable foundation), ORA-0401 (Tuxedo Park golf course elements), ORA-0410 (pump house, dams, pond, outflow and intake piping), ORA-0413 (historic scatter), and ORA-0414 (Continental Road). The two sites on the access road are ORA-0411 (prehistoric/historic scatter) and ORA-0412 (historic scatter with feature). Of these sites, only Field Site ORA-0412 was recommended for additional work if the site could not be avoided. The Project, however, proposed to fence the site and mat the road. The NYSHPO concurred that such actions would eliminate the need for additional work, as the site would not be impacted.

Native American Consultation

Columbia wrote to the Cherokee Nation of New Jersey, Eastern Delaware Nations, Eastern Lenape Nation of Pennsylvania, Ramapough Mountain, Seneca Nation, and Western Mohegan to request their comments on the proposed project. The Eastern Delaware Nation requested that the notice of intent for the project be sent to Walter VanDunk, Chief of the Ramapough Nation, and Dr. Philip Laporta, Geologist, for consultation on any sacred or known archaeological sites. No other responses have been received to date.

Unanticipated Discovery Plans

Columbia has prepared a plan in the event any unanticipated historic properties or human remains are encountered during construction. Columbia revised the plan in response to the SHPO's and the Commission's comments.

Proposed Project Effects

Only one of the cultural resources, Harriman State Park, identified within the current project footprint is recommended potentially eligible for listing in the NRHP. Millennium would prepare a site-specific treatment plan for review by the NYSHPO and the FERC. If site ORA-0412 cannot be avoided, additional testing is also recommended. No additional effects are anticipated as a result of the proposed pipeline and its anticipated aboveground activities.

To ensure that the Commission's responsibilities under section 106 of the National Historic Preservation Act and implementing regulations are met**, we recommend that:**

- **Columbia defer implementation of any treatment plans/measures (including archaeological data recovery), construction or use or all staging, storage and temporary work areas or new or to-be-improved access roads until:**

  a. Columbia files with the Secretary any additional cultural resources reports and treatment plans and the SHPO comments; and

  b. The Director of OEP reviews and approves all reports and plans and notifies Columbia in writing that treatment plans/measures may be implemented or construction may proceed.

All material filed with the Commission containing location character and ownership information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: "CONTAINS PRIVILEGED INFORMATION—DO NOT RELEASE."

4.9.2 EMPIRE CONNECTOR PROJECT

Empire has completed initial cultural resources surveys of the proposed pipeline route, compressor station locations, and associated facilities. These facilities would be located within Ontario, Yates, Schuyler, Chemung and Steuben Counties. Empire's new compressor station would be located on Empire's existing pipeline in the Town of Oakfield, Genesee County, New York.

The project cultural resource investigations included comprehensive background literature review of the proposed pipeline route and the Oakfield Compressor Station. The surveys consisting of both systematic walkover and subsurface testing for the proposed pipeline, pipeline reroutes, access roads, cathodic protection areas, additional workspaces, and for the proposed Oakfield Compressor Station; geomorphological investigations along 31 waterbody crossings; and an architectural survey including documentation of all buildings and structures 50 years or older located adjacent to or within the viewshed of anticipated aboveground activities and at the compressor station.

Empire has not completed surveys along about 9.6 miles in areas were construction planning is incomplete and where access has been denied by landowners. Furthermore, several areas have been identified for additional testing or additional consultation.

Pipeline Facilities

Surveys identified a total of 69 cultural resources. Sixty-three (63) archaeological sites were identified and six historic architectural features that are NRHP-eligible or potentially eligible. Table 4.9-1 summarizes the types of cultural resources identified by county. Table 4.9-2 summarizes the types of cultural resources that may potentially be impacted by the project in its current design. The table also provides proposed treatment of the cultural resource and SHPO comments.

Thirty-one (31) locations with potential for deeply buried archaeological deposits were investigated. During this assessment, only one location was determined to have potential for deeply buried archaeological resources. Deep testing with the use of a backhoe is recommended along the floodplain at this location to determine the presence or absence of one or more buried surfaces at that site.

Architectural evaluation identified six resources as NRHP-eligible or potentially eligible. Additional architectural survey is recommended to review and assess the final design changes and their impact to immediate settings and general viewsheds associated with NRHP or NRHP-eligible properties. As part of the architectural survey, completion of New York State Historic Resource Inventory Forms is recommended for these properties previously identified as NRHP-eligible.

Aboveground Facilities

<u>Oakfield Compressor Station</u>

Background and literature research indicated that no previously reported sites or resources are located within the compressor station's 17.45-acre area of potential impact (APE). However, 18 archaeological sites were identified within one mile of the project area. The entire parcel was subjected to

systematic survey. One piece of prehistoric lithic material was recovered. This find represents an isolated occurrence of stone tool maintenance and is not recommended eligible for listing in the NRHP.

Manchester Storage Yard

The Manchester Pipe Yard, part of the Lehigh Valley Railroad rail yards, would be used for temporary storage of pipes. The open area adjacent to the railroad has historically functioned as open storage and no historic properties would be affected by use of the pipeyard.

Unanticipated Discovery Plans

Empire filed an Unanticipated Discovery Plan to address inadvertent discoveries of cultural resources, including human remains, during construction of the project. The Commission, the NYSHPO, the Seneca Nation of Indians Tribal Historic Preservation Office (THPO), and the Tonawanda Band of Seneca Nation of Indians reviewed the initial plans. The plans were modified based on comments received from THPO and were further reviewed by the Tonawanda Band of Seneca Nation of Indians.

Native American Consultation

Empire and FERC staff met with the Seneca Nation and the Tonawanda Band of Seneca Indians. The Seneca Nation THPO confirmed that the project area lies within the aboriginal territory of the Seneca Nation and the Tonawanda Band of Seneca Nation of Indians. The preliminary summary of the cultural resources investigation was provided to the Indian Nations' contacts for review and comment and well as the Unanticipated Discovery Plan. On July 11, 2006, the Seneca nation of Indians commented that they have no further comments at this time.

Proposed Project Effects

Systematic surveys of the proposed project identified 13 potentially affected cultural resources. Cultural resources determined eligible or potentially eligible for listing in the NRHP identified during the survey would be avoided, if possible, or additional investigations would be conducted to determine NRHP eligibility. If determined eligible, the site would be avoided or mitigated. Moreover, any necessary treatment plans would be prepared on a site-specific basis under consultation with and for review by the appropriate SHPOs and the Commission.

No structures are proposed for demolition and few, if any, effects to historic structures are anticipated as a result of subsurface placement of the pipeline. With the ROW in its current location, no physical or visual effects to these properties are anticipated as a result of the proposed pipeline and its anticipated aboveground activities.

To ensure that the Commission's responsibilities under section 106 of the National Historic Preservation Act and implementing regulations are met, **we recommend that:**

- **Empire should defer construction and use of the proposed pipeline and project facilities together with the use of related ancillary areas for staging, storage and temporary work areas or new or to-be-improved access roads until:**

  a. Empire files with the Secretary cultural resource survey and evaluation reports, any necessary treatment plans, and the SHPO comments; and

b. The Director of OEP reviews and approves all reports and plans and notifies Empire in writing that treatment plans/measures may be implemented or construction may precede.

All material filed with the Commission containing location character and ownership information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: "CONTAINS PRIVILEGED INFORMATION—DO NOT RELEASE."

4.9.3 ALGONQUIN RAMAPO EXPANSION PROJECT

Algonquin completed initial cultural resources surveys for the proposed Ramapo Expansion Project in 2005. This project includes 4.93 miles of pipeline replacement, a new compressor station, and a number of upgrades to existing compressor and meter stations. The project's facilities are located within Rockland County, New York, Morris County, New Jersey, and Fairfield and New Haven Counties, Connecticut. In New York, much of the proposed undertaking would occur within areas previously surveyed. Therefore the current survey was limited to new access roads, new staging areas, new workspaces adjacent to existing pipeline ROW and at the Southeast compressor station facility, and new aboveground meter stations in Haverstraw, New York. The survey also included a new aboveground meter station in Brookfield, Connecticut and a new compressor station in Oxford, Connecticut.

The west and east ends of the pipeline ROW (between MP 0.0 and MP 1.5, and MP 1.5 and MP 2.0), where Columbia's 24-inch-diameter pipeline ROW parallels and overlaps the two Algonquin ROWs, were not subjected to cultural resource investigations as these areas were previously surveyed. The cultural resource survey was conducted at the proposed Brookfield, Connecticut location for the Iroquois MarketAccess Project where Algonquin would construct an M&R station, and discussed below.

The cultural resources investigations included comprehensive background literature review of the proposed project elements, systematic surveys consisting of both walkover and subsurface testing, and architectural surveys including documentation of all buildings and structures 50 years or older located adjacent to or within the viewshed of anticipated aboveground facilities.

Pipeline Facilities

The archaeological investigation identified two prehistoric find spots within the proposed pipeline corridor. The recovered prehistoric material consists of low-density lithic debris deposits representing isolated occurrences of stone tool maintenance. In addition, one historic find spot was designated as a historic non-site deposit. The non-site deposits consist of scattered historic refuse and are not associated with any known or identified historic archaeological sites.

Based on the results of the systematic survey, the proposed project would not impact any potentially significant archaeological resources and no further archaeological investigations were recommended. The NYSHPO concurs with this recommendation.

Aboveground Facilities

The archaeological investigation of the aboveground facilities identified one location that yielded prehistoric artifacts. The prehistoric material recovered in Rockland County, New York, consisted of multiple artifacts excavated from multiple locations. The NYSHPO asked for additional work at this location. In addition, one historic find was identified in Rockland County, New York.

Base on the results of these surveys, the proposed aboveground facilities may impact potentially significant archaeological resources in Rockland County, New York. However, the remainder of the project would not impact potentially archaeological resources and no further investigations were recommended for these areas. The NYSHPO recommended additional work at the Rockland County, New York site. The proposed project would not visually affect any structures listed in or eligible for listing in the NRHP at any of the proposed aboveground facility locations.

Unanticipated Discovery Plans

Algonquin filed Unanticipated Discovery Plans with its application to address inadvertent discoveries of cultural resources, including human remains, during construction of the project. The Commission and the New York, New Jersey, and Connecticut SHPOs have reviewed these initial plans. The NYSHPO has submitted several comments and recommendations concerning the Plan.

Native American Consultation

Algonquin wrote to Native American groups to request their comments and provide the opportunity to identify any concerns about properties of traditional religious or cultural importance that may be affected by this undertaking. Included were the Delaware Nation, Ramapough-Lenape, Powhatan-Renape, Shinnecock, Poospatuck, Pequot, and Mohegan groups. The Mohegan Tribe requested information regarding any positive data from New London County, Connecticut. The Delaware Nation requested status as a consulting party and that all related forms for the project be sent to the Nation for review. Furthermore, the Delaware Nation requested that, should there be an inadvertent discovery in Fairfield County, Connecticut or Broome, Delaware, Sullivan, Orange, or Rockland Counties, New York, all activity be stopped and the appropriate authorities be contacted, as well as the Delaware Nation. No other responses were received as of May 15, 2006.

Proposed Project Effects

Systematic surveys of the proposed project identified one potentially affected cultural resource. Additional investigations would be conducted to determine NRHP eligibility. If determined eligible, the site would be avoided or mitigated. Moreover, any necessary treatment plans would be prepared on a site-specific basis under consultation with and for review by the appropriate SHPOs and the Commission.

No structures are proposed for demolition and no effects to historic structures are anticipated as a result of the proposed pipeline replacement and its anticipated aboveground activities.

To ensure that the Commission's responsibilities under section 106 of the National Historic Preservation Act and implementing regulations are met, **we recommend that:**

- **Algonquin should defer construction and use of the proposed pipeline and project facilities together with the use of related ancillary areas for staging, storage and temporary work areas or new or to-be-improved access roads until:**

    a. Algonquin completes and files with the Secretary cultural resource survey and evaluation reports, any necessary treatment plans, and the SHPO comments; and

    b. The Director of OEP reviews and approves all reports and plans and notifies Algonquin in writing that treatment plans/measures may be implemented or construction may precede.

All material filed with the Commission containing location character and ownership information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: "CONTAINS PRIVILEGED INFORMATION—DO NOT RELEASE."

4.9.4 IROQUOIS MARKETACCESS PROJECT

Iroquois conducted cultural resource surveys for the proposed MarketAccess Project, which proposes the construction of a new compressor station and gas cooler facility in the Town of Brookfield, Fairfield County, Connecticut and the construction of a new gas cooler facility at an existing compressor station in the Town of Dover, Dutchess County, New York. The APE for the project includes the area that may be affected by construction, operation, and maintenance of the proposed facilities and associated activities. The proposed Brookfield compressor station would occupy a property that is also the location of the existing Iroquois Brookfield Sales Meter Station and Algonquin's regulator station #251. This would be the location of a proposed new M&R station as part of the Algonquin Ramapo Expansion Project (see above).

The cultural resource investigations included comprehensive background literature review of the proposed project elements, a survey consisting of both systematic walkover and subsurface testing, and architectural survey including documentation of all buildings and structures 50 years or older located adjacent to or within the viewshed of anticipated aboveground facilities.

Brookfield Compression Station and Gas Cooling Facility

The literature review and background research for the Brookfield location was completed in 2000, as part of Docket CP02-31-000, and an archaeological survey was conducted in 2001. The survey did not identify any cultural resources. The Connecticut SHPO (CTSHPO) concurred with the recommendation for no additional work. In 2005, additional surveys were conducted in the project area. No cultural resources were identified. On February 27th, 2006, CTSHPO commented that the proposed project would have no effect on historic properties. We concur.

Dover Compression Station

The literature review, background research, and archaeological surveys were conducted for the Dover location in 2000, as part of Docket CP02-232-000. The archaeological surveys identified one prehistoric site and one historic site adjacent to the project area, one of which was identified as eligible for listing in the NRHP. The NYSHPO has recommended fencing to protect these sites during construction of the proposed compressor station. Iroquois has agreed to fence and avoid these sites.

In order to assure the prehistoric site discussed above would not be affected by the proposed construction, supplemental shovel test investigations were performed in 2005. No cultural materials were recovered and NYSHPO comments are pending.

Unanticipated Discovery Plans

Iroquois prepared and filed Unanticipated Discovery Plans with its application to address inadvertent discoveries of cultural resources, including human remains, during construction of the project. These initial plans have been reviewed by the Commission and the New York and Connecticut SHPOs and are acceptable.

Native American Consultation

Iroquois wrote to Native American groups to request their comments and to provide the opportunity to identify any concerns about properties of traditional religious or cultural importance that may be affected by this undertaking. Included were the Stockbridge Munsee Tribe, the Schaghticoke Tribal Nation, the Paucatuck Eastern Pequot Indian Tribal Nation, the Oneida Indian Nation of New York, the St. Regis Mohawk Tribe, and the Mashantucket Pequot Tribal Nation. The Stockbridge Munsee Tribe responded in a letter dated December 16, 2005 indicating that the MarketAccess Project did not appear to endanger sites of special interest to the group. No other replies were received as of May 15, 2006.

Public Comments

The State of Connecticut Attorney General commented that the project might affect cultural resources near Iroquois proposed Brookfield Compressor Station, Fairfield County, Connecticut. Iroquois' consultant did not identify any cultural resources within the APE for the Brookfield location.

Proposed Project Effects

Extensive background research and systematic surveys of the proposed project did not identify any directly affected cultural resources. However, two sites identified adjacent to the project area potentially may be affected.

No structures are proposed for demolition and no effects to historic structures are anticipated as a result of the proposed aboveground activities.

To ensure that the Commission's responsibilities under section 106 of the National Historic Preservation Act and implementing regulations are met**, we recommend that:**

- **Iroquois should defer construction and use of the proposed compressor station and gas cooler facilities together with the use of related ancillary areas for staging, storage and temporary work areas or new or to-be-improved access roads until:**

    a. **Iroquois files with the Secretary all additional required cultural resource survey and evaluation reports, any necessary treatment plans, and the SHPO comments; and**

    b. **The Director of OEP reviews and approves all reports and plans and notifies Iroquois in writing that treatment plans/measures may be implemented or construction may precede.**

  All material filed with the Commission containing location character and ownership information about cultural resources must have the cover and any relevant pages therein

clearly labeled in bold lettering: "CONTAINS PRIVILEGED INFORMATION—DO NOT RELEASE."

4.9.5 General Construction and Operation Impacts

Construction and operation of the proposed pipelines and associated facilities could potentially affect historic properties. Project impacts could be direct or indirect. Direct impacts could include the physical destruction or damage to all or a portion of a site, or alteration or removal of a historic property. Indirect impacts could include the introduction of visual, atmospheric, or audible elements that diminish the integrity of the site or alter settings associated with historic properties.

Both direct and indirect project impacts on cultural resources can be mitigated to a less-than-significant level. Mitigation measures for both direct and indirect project impacts on historic properties may include route variation to avoid historic properties; data recovery, including the scientific excavation of archaeological sites; detailed documentation, including architectural drawings of historic buildings; and the use of landscaping techniques to screen visual intrusions and maintain site settings.

4.10 SOCIOECONOMICS

4.10.1 MILLENNIUM PIPELINE PROJECT - PHASE I

Potential impacts and mitigation measures for the project would not change substantially from those that were previously identified and analyzed in the FEIS for the Millennium Pipeline Project issued by the Commission in October 2001. The Phase I Project would consist of pipeline construction in Steuben, Chemung, Tioga, Broome, Delaware, Sullivan, Orange, and Rockland Counties, New York, between MPs 190.6 and 376.6 (or between Corning and Ramapo, New York) of the original Millennium Pipeline Project. The most significant change in the scope of the project is the proposed installation of compression facilities at the site of Columbia's existing Corning Compressor Station in Steuben County, New York; the incorporation of three route variations along the existing NYSEG powerline ROW in Chemung, Tioga, Broome, and Delaware Counties; the continued use of a 7.1-mile-long segment of Columbia's 24-inch-diameter Line A-5 pipeline from MP 340.5 to MP 347.7 in the Neversink River area; and the route variation around the Warwick Isle subdivision in Orange County, New York. Columbia's Line A-5 Replacement Project corresponds to pipeline construction for the Millennium Phase I Project between MPs 367.9 and 376.7 (between the existing Central Hudson/Tuxedo and Ramapo M&R Stations), in Orange and Rockland Counties, New York.

Millennium indicated that four new workers would be hired permanently to operate the pipeline, two at the western end of the pipeline near Corning in Steuben County and two at the eastern end of the pipeline near Ramapo M&R Station in Ramapo, New York. The pipeline facilities proposed in the amendment are anticipated to result in negligible to no new socioeconomic impacts due to their placement along the already approved pipeline route and existing pipeline and compressor facilities. The analysis of the socioeconomic impact of the Millennium Pipeline Project completed for the October 2001 FEIS is incorporated by reference into this document.

4.10.2 EMPIRE CONNECTOR PROJECT

The Empire Connector Project would traverse six counties in New York State. The pipeline would traverse from north to south: Ontario, Yates, Schuyler, Steuben and Chemung Counties. The new compressor station would be in Genesee County.

Existing Socioeconomic Conditions

Table 4.10-1 provides a summary of selected demographic and socioeconomic conditions for the counties through which the pipeline passes. The summary table includes current population and population density statistics, per capita personal income, current unemployment rate (latest year of record), rental vacancy rates for temporary housing (e.g. apartment rentals, hotels/motels, and campgrounds), civilian labor force statistics, and the major industry within these counties.

Construction and Operation Impacts

The construction and operation of the pipeline would have a positive socioeconomic impact in the region surrounding the project area. Construction material purchases, sales tax on miscellaneous purchases, labor wages to local workers, and construction worker expenditures would result in positive short-term effects on the local economy. In the operational phase, Empire would pay county and local property taxes, representing a positive effect of continuing tax revenue generation for the counties in the project area.

It is not anticipated that any new permanent employee positions would be created to support pipeline operation. However, after the construction period, local services and personnel would be required to maintain the pipeline ROW, including mowing and brushing, aerial patrolling, snow plowing, and utility services. Empire stated it would employ local contractors for some maintenance activities at the compressor station facility.

Over 500 temporary construction workers would be expected to work along the Empire Connector Project over an about six- to nine-month period. Most construction workers would temporarily live within or near the Project area. About 220 construction personnel would staff each of the two pipeline spreads. Construction of the compressor station would require about 40 additional workers. Crews of about 15 each would be needed to build the interconnecting points (CMP 0.0 and CMP 76.9). The pipeline and compressor station construction would also require the employment of about 40 inspectors to monitor construction, health, safety, and environmental/agricultural plans and mitigation.

Empire anticipates that about 50 percent of the pipeline construction workforce would be employed from local sources. The other 50 percent would be non-local construction workers who would relocate temporarily to or lodge near the Project area. The majority of construction workers would not be expected to relocate families during construction. Therefore, the impact on local school districts would be negligible. Potential impact to other government facilities and services is also expected to be negligible as it is not anticipated that a significant number of new permanent employee positions would be created that would require these services.

Housing

Non-local construction workers would temporarily reside at various locations within the project area. Since Empire would not provide housing or dictate commuting distance, the areas in which workers would seek temporary housing cannot be conclusively identified or qualified. Workers would choose housing based on personal preference; however, they are likely to reside within short commuting distances of the construction site. Most construction workers relocating within the proposed project area are anticipated to opt for temporary housing such as hotels, motels, campground sites, and rental housing units. Since about 50 percent would be local, the remaining 50 percent of the construction workforce, or about 250 people would require temporary lodging in the project area.

Table 4.10-1
Existing Socioeconomic Conditions in the Project Area
Empire Connector Project

Area	New York State	Chemung County	Genesee County	Ontario County	Schuyler County	Steuben County	Yates County
2002 Population	18,976,457	91,070	60,370	100,224	33,342	98,726	24,621
2002 Population Density (people per square mi.)	401.9	223.1	122.2	155.5	102.6	70.9	72.8
2002 Per Capita Personal Income	$35,805	$34,980	$28,788	$25,024	$22,807	$22,365	$19,925
2000 Rental Vacancy Rate (Percent)	4.6%	9.2%	8.1%	8.1%	8.5%	9.3%	8.6%
2000 Civilian Labor Force	9,023,026	42,544	31,027	53,200	9,268	47,452	11,959
2004 (August) Unemployment Rate (Percent)	5.6%	5.6%	5.2%	4.0%	5.1%	5.4%	3.2%
1999 Poverty Rate (Percent)	14.6%	13.0%	7.6%	7.3%	11.8%	13.2%	13.1%
Major Industry	Retail Trade	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing

Source: Data compiled from the U.S. Census Bureau, Census 2000; U.S. Department of Commerce, Bureau of Economic Analysis 2002; U.S. Department of Labor, Bureau of Labor Statistics 2004.

As shown in table 4.10-2, an adequate number of lodging establishments exist within, and particularly at both ends (Ontario and Steuben Counties) of, the pipeline project area and would be sufficient to accommodate the project's construction crews. In addition to private and commercial lodging establishments, New York State Parks provide other housing options with tent/trailer sites statewide. Short-term hotel/motel shortages may exist on a seasonal basis in tourist areas. However, we believe that the existing temporary housing should be adequate to meet the demands required by the construction workforce.

Table 4.10-2
Housing and Infrastructure
Empire Connector Project

Area	Number of Vacant Housing Units	Number of Vacant Housing Units for Seasonal, Recreational, or Occasional Use[1]	Number of Renter-Occupied Housing Units
Chemung County	2,696	253	10,900
Genesee County	1,420	182	6,159
Ontario County	4,277	2,142	10,145
Schuyler County	1,807	1,254	1,689
Steuben County	7,061	3,843	10,481
Yates County	3,035	2,400	2,069

Source: Data compiled from the U.S. Census Bureau, Census 2000

[1] Numbers exclude commercial lodging and campgrounds.

Public Services

In order to minimize the impact on public services, Empire plans to conduct training and close cooperation with fire, rescue, and police, mediated by Empire contractors.

Empire would require successful contract bidders to contact fire departments and emergency response agencies prior to the start of construction. Through these meetings, Empire intends to establish a relationship between the contractor and the emergency response organizations. This relationship would explore timely response options and facilitate response coverage in case of an accident or injury.

Empire expects that the short-term spending generated by the Project would create significant tax revenue within the Project area. Short-term spending includes money spent on food, entertainment, recreation, housing, and miscellaneous purchases. Since about 50 percent of the construction workforce would be local, it is expected that the remaining non-local workforce would stay in lodging with an estimated average cost of $55 per night rate. The cumulative revenue generated in local sales of lodging is about $13,750 per night. Based on these assumptions, during the four to six weeks of peak construction, the project would generate about $577,500 in revenues for lodging establishments alone, plus food and other incidental purchases. The local taxes paid by these establishments should help to offset the burden created by the short-term use of public services.

Transportation

Empire plans to minimize the potential impact to transportation by boring under major highways, railroads, and some paved roads to avoid interruption of traffic flow on the roadways crossed. Empire has already initiated contacts with local public works departments and, prior to construction and in concert with its contractors, would establish detours where needed and would provide sufficient notice and signs on roadways to inform the public that would be affected by road closures.

Workers for the pipeline portion of the project would park vehicles at pipe yards, staging and warehouse areas, and along access roadways. Transportation to the construction site would be facilitated to minimize traffic. Construction would occur primarily during daylight hours; therefore, the peak construction traffic would be from 6:00 a.m. until 6:00 p.m., Monday through Saturday. The communities near the designated parking areas may experience heavy traffic during the beginning and end of the construction shift, but the duration of peak staffing is short lived and progresses geographically along the route with pipeline activities. Parking for compressor station construction would occur on the compressor station property or at the access road and would involve parking for at most 40 temporary workers.

During peak traffic periods, communities may also experience minor and temporary negative impacts from delivery trucks and the movement of construction equipment. At this time, it is not possible to quantify the number of trips anticipated or determine when deliveries are likely to occur. Empire would instruct its contractor(s) to coordinate these activities with local highway departments and law enforcement to minimize the impact on surrounding communities. In addition, if damage does occur to roadways as a result of this project, Empire would repair (or bond for repair of) those roadways to previous or improved condition.

Economic Value of Agriculture/Pasture Land or Timberland Removed from Production

The impacts to agriculture/pasture land or timberland would be temporary, except on the permanent ROW. Agricultural/pasture land would be restored to pre-construction production capacity. The permanent ROW on timberland would require that no timber crop be re-established over the pipeline and would therefore reduce production of timber in some areas. The pipeline alignment has been selected to avoid timber resources to the extent feasible and therefore the proposed routing has already minimized the potential for impact to such resources. Empire would negotiate with landowners to provide fair compensation for loss of production in agricultural/pasture land and timberland due to the Project construction and operation. The construction of the compressor station would result in a permanent loss of agricultural production and Empire has negotiated for the acquisition of this acreage with the landowner.

Displacement of Residences or Businesses

Construction may impact residences and business along very limited portions of the Empire pipeline construction ROW. For each residence affected (those that occur within 50 feet of the construction ROW) Empire would prepare a Residential Mitigation Plan. Impacts to residences and businesses would be temporary. No residences or businesses would be displaced by the Project.

Economy and Tax Revenues

The total pipeline construction payroll is estimated to be in the tens of millions of dollars during the construction period. Similarly, spending on materials, equipment and supplies would also be in the tens of millions of dollars. This spending would generate an estimated $3 million in new sales tax revenue to state and local governments. The positive impact on sales tax revenue is further enhanced when local spending by project workers on hotels, restaurants, and other retail stores is included.

The pipeline materials would be supplied by Empire's wide array of local suppliers. Empire expects to obtain many of its products and services from manufacturers and/or distributors in Buffalo, Rochester, Corning, and the surrounding areas of Western New York. In addition, local retailers would benefit from the general contractor's purchase of materials. Following construction, Empire would continue to purchase materials and services, including ROW maintenance services such as mowing and brushing, aerial patrolling, snow plowing, and utility services. Empire expects construction material purchases, construction payroll, and construction worker spending to result in a positive impact on project communities.

Empire estimates that over $4 million would be generated by the project in new sales tax revenue from locally purchased equipment, services, and supplies. In addition, an estimated $4.3 million would be generated from new property tax payments to schools and localities on an annual basis, of which more than $1 million would be associated with the compressor station. The overall tax revenue generated from the construction and operation of the pipeline and compressor station would have a substantial positive socioeconomic impact on the project area.

4.10.3 ALGONQUIN RAMAPO EXPANSION PROJECT

The proposed facilities for the project include the construction of one new compressor station in Oxford, Connecticut, the in-situ replacement of a short length of existing pipeline, and the expansion and/or modification of existing compressor stations. Algonquin stated that no socioeconomic concerns were raised during project coordination in the area. Algonquin's project would not have a significant overall socioeconomic impact in the project area.

The only new major aboveground facility proposed as a component of the Project is the Oxford Compressor Station. Therefore, the scope of the socioeconomic impact analysis for this project has been limited to the new compressor station proposed in Oxford, Connecticut.

Existing Socioeconomic Conditions

The Oxford Compressor Station would be constructed in the Town of Oxford, New Haven County, Connecticut. New Haven County is considered part of the greater New York City metropolitan area. The U.S. Census Bureau estimates the total population for New Haven County in 2004 as 845,694, which represents a 2.6% increase from the 2000 census data. The largest city by population in the County is New Haven, and the majority of the population in the County is located in the southern portion of the County in New Haven and surrounding areas. The Town of Oxford is ranked 22nd out of 27 towns in the County in population size (U.S. Census Bureau 2000).

The Town of Oxford encompasses an area of about 32 square miles and is a traditional New England community that provides economic opportunities for business creation, expansion,

and relocation. The population of Oxford in 2000 was 9,922, which was a 13% increase from 1990 (U.S. Census Bureau 2000). The current unemployment rate for the Town of Oxford, Connecticut, latest year of record (2005), is 4.01% (average over 12 months) per the U.S. Department of Labor, Bureau of Labor Statistics. Per capita income in Oxford in 2000 was $29,096, an increase from $18,747 in 1990 (U.S. Census Bureau 2000). The Town of Oxford supports its own schools and emergency services. Police, fire and ambulance services are all available within the town. Construction, mining, trade, and services make up the largest economic sectors in Oxford (US Census Bureau 2000), and private employers employ the greatest number of workers in the town. Available land is one of Oxford's many resources.

Construction and Operation Impacts

Both short and long-term socioeconomic effects would result from the construction and operation of the Oxford Compressor Station. Short-term impacts include the potential increase in use of public services such as police, fire protection and medical services during the construction phase. The increase in the use of public services would be offset by the benefits derived from increased short-term revenue streams. During construction of the Oxford Compressor Station there would be minor, temporary increases in the local population, demand for temporary housing, and use of transportation services. There would also be an increase in expenditures for local goods and services. Algonquin anticipates using a percentage of local workers for the construction of the compressor station, adding additional positive short-term socioeconomic benefits in terms of increased payrolls and employment. Sufficient services exist within the Town of Oxford to support the needs of the construction crew and personnel associated with the operation of the compressor station. Long-term socioeconomic benefits associated with the operation of the Oxford Compressor Station include: payment of local property taxes; purchases of services, materials, and supplies from local businesses; employment of up to three permanent staff; and periodic temporary employment for various construction, operation and maintenance activities.

Construction Schedule and Workforce

The majority of the Oxford Compressor Station construction is scheduled to occur over a six-month period from June 2007 to November 2007. Construction of the compressor station is anticipated to require about 50 workers on a regular basis and up to 100 workers including deliveries and other periodic services. Algonquin, through its construction contractors and subcontractors, would hire local construction workers that possess the required skills and experience to incorporate into the project workforce. Based on previous experience, Algonquin anticipates that local hires would likely be union labor and would account for about 30 to 50 percent of the workforce. The majority of inspectors would be non-local due to the specialized knowledge required for the position.

Non-local workers would reside generally in the project area for the duration of the construction period and typically family members would accompany few workers. As a result, the socioeconomic impacts resulting from the construction of the Oxford Compressor Station would probably not be significant (i.e., impact on schools and other locally provided services). Local communities would benefit from the payroll taxes paid by construction workers during the construction period. A percentage of this money would be spent locally and may provide significant short-term revenues to the community. Additional positive impacts would result from payments for construction materials as well as for rental space for field offices and temporary storage of materials. The leasing and/or renting of these facilities and office and construction equipment would result in additional expenditures in the community.

Housing

The majority of the non-local workers would probably use temporary housing such as hotels, motels, apartments, and campgrounds within commuting distance to the Oxford site. Algonquin does not anticipate that construction crews would encounter any difficulties locating temporary housing and/or hotel accommodations in the project vicinity. In the Town of Oxford, Connecticut, the total number of renter-occupied housing units, based on the 2000 U.S. Census, was 300. The number of vacant housing units (of any kind – including those for sale only) at the time of the census was 77; the number of vacant seasonal, recreational, or occasional use housing units was 26. The rental vacancy rate was 1.3% (U.S. Census Bureau 2000). Within the Central Naugatuck Valley Region (CNVR), of which Oxford is a part, there were 2,281 vacant rental-housing units in 2000, with a rental vacancy rate of 2.1%.

Transportation

Minor, short-term impacts to the transportation network may result from the construction of the Oxford Compressor Station. These impacts would result from the movement of construction equipment and materials to and from the site and daily commuting of workers to and from the site. These impacts are not expected to be significant.

To maintain safe conditions, Algonquin would require its contractors to comply with applicable vehicle weight and width restrictions. The construction of the Oxford Compressor Station would probably not require the crossing of public roads by construction equipment. The movement of equipment and materials from contractor yards and storage yards to the Oxford site would result in additional short-term impact on the transportation network. Truck traffic associated with transporting construction equipment to the site may increase the workload of local police due to monitoring of vehicle weight, width restrictions and traffic details. Also, large vehicles may cause some temporary obstructions in traffic flow. Algonquin would work cooperatively with the local police and fire departments, as well as the Connecticut State Police, to ensure a safe and efficient traffic management plan would be implemented during construction of the Oxford Compressor Station. It is anticipated that Project-related demands on local police would not be significant.

The transportation network would experience a short-term incremental increase to traffic as a result of the movement of construction workers between their residences and the construction site. Access to a major highway, Interstate Route 84 (I-84) would be less than one mile to the north of the site via Connecticut State Route (SR) 188N. I-84 could also be accessed via Connecticut SR 67W. Several trips may be made each day to and from the site. Connecticut SR 486 would experience a short-term increase in traffic during the construction phase of the project. This higher level of traffic would remain fairly constant throughout the construction period and would typically occur during early morning and late evening hours when most construction personnel are arriving to and leaving from the construction site. It is anticipated that the impacts to the transportation network from construction workers commuting to and from home or work would not be significant and should have minimal effect on the local traffic.

Residential or Business Displacements

No residences or businesses would be displaced as a result of the construction of the Oxford Compressor Station. The Oxford Compressor Station Preferred Site is located on a parcel of vacant land in private ownership.

Tax Revenues, and Local Expenditures

The economic benefits associated with operation of the compressor station include increased revenue to the Town of Oxford in the form of property taxes. The Town of Oxford would benefit from the annual property taxes paid by Algonquin for the compressor station property.

4.10.4 IROQUOIS MARKETACCESS PROJECT

This section summarizes the socioeconomic conditions of the MarketAccess Project locations in Brookfield, Connecticut, and Dover, New York. The Project would involve the construction of a new compressor station, including gas cooling facilities and related interconnecting facilities to Algonquin's pipeline in the Town of Brookfield, Connecticut; and installation of new gas coolers at the existing compressor station located in Dover, New York.

Existing Socioeconomic Conditions

The socioeconomic conditions of the Towns of Brookfield and Dover are provided in table 4.10-3. Table 4.10-3 provides a summary of selected demographic and socioeconomic conditions for the counties through which the pipeline passes. The summary table includes current population and population density statistics, per capita personal income, current unemployment rate (latest year of record), rental vacancy rates for temporary housing (e.g. apartment rentals, hotels/motels, and campgrounds), civilian labor force statistics, and the major industry within these counties.

Brookfield Compressor Station

The Brookfield Compressor Station site is located in the Town of Brookfield, Fairfield County, Connecticut. The U.S. Census Bureau estimated the total population for Fairfield County in 2004 as 884,639, which is a slight increase from the 2000 Census (882,567). The largest city by population in the county is Bridgeport, and the majority of the population for the county is located in surrounding areas. Major sources of tax revenue within Brookfield include residential properties, commercial and industrial businesses, and professional services.

The Town of Brookfield encompasses an area of about 20.4 square miles and is a traditional New England community that provides economic opportunities for business creation, expansion, and relocation.

The Town of Brookfield supports its own schools and emergency services. Police, fire and ambulance services are all available within the town. No hospitals are located in the Town of Brookfield; however, Danbury Hospital and New Milford Hospital are both located within about eight miles of Brookfield. Significant transportation infrastructure is available as Route 7 essentially bisects the Town and there is access to I-84. Brookfield has a minimum of three hotels/motels within the municipality, and sources of temporary housing are located in adjacent Danbury.

Table 4.10-3
Summary of Existing Socioeconomic Conditions in the MarketAccess Project Area

Parameter	Brookfield, CT[1]	Dover, NY[2]
Land Area (mi^2)	20.4	56.3
Population (2004)	16,236	8,847
Population (2000)	15,664	8,565
Per Capita Income (Dollars)(2000)	37,063	21,250
Rental Vacancy Rate (%) (2000)	3.6	7.1
Civilian Labor Force (2000)	8,517	4,139
Unemployment Rate (2000)	1.9	2.4
Major Industries	Health & Social Services Manufacturing Retail Trade	Manufacturing Retail Trade Professional

Sources: [1] - U.S. Census Bureau 2006a, [2] – U.S. Census Bureau 2006b and U.S. Census Bureau 2000.

Dover Compressor Station

The existing Dover Compressor Station is in the Town of Dover, Dutchess County, New York. The U.S. Census Bureau estimates the total population for Dutchess County in 2004 as 275,748, which is a decrease from the 2000 census of 280,150. The largest city by population in the County is Poughkeepsie, and the majority of the population for the County is located in surrounding areas. Major sources of tax revenue within Dover are similar to those previously listed for Brookfield and include residential properties and commercial and industrial business services.

The Town of Dover is on the eastern boundary of the county and encompasses an area of about 56.3 square miles (U.S. Census Bureau 2006b).

The Town of Dover does not support its own emergency services. Dover is served by the Dutchess County Sheriff's department as well as by the New York State Police, which has a department in the Hamlet of Dover Plains. Police, fire and ambulance services are all available within adjacent hamlets. No hospitals are in the Town of Dover; however, Sharon (CT) Hospital and New Milford (CT) Hospital are within about 12 and 17 miles, respectively, of Dover. Transportation infrastructure is available as Routes 22 and 343 essentially bisect the Town and I-84 extends through the town. Dover has a minimum of five hotels/motels and two campgrounds within a 10-mile radius.

Construction and Operation Impacts

Both short and long-term socioeconomic effects would result from construction and operation of the Brookfield Compressor Station and related facilities, and gas coolers at the Dover Compressor Station. Short-term impacts may include the potential increase in use of public services such as police for traffic control. The increase in the use of public services would be offset by the benefits derived from increased short-term revenue streams. During construction of the Brookfield Compressor Station there would be minor, temporary increases in the local population, demand for temporary housing, and use of transportation services. There would also be an increase in expenditures for local goods and services. Iroquois anticipates using a percentage of local workers for the construction of the compressor station, resulting in additional positive short-term socioeconomic benefits in terms of increased payrolls and employment. Sufficient services exist within and adjacent to the Towns of Brookfield and Dover to support the needs of the construction crew and personnel associated with the construction and operation of the proposed facilities. Long-term socioeconomic benefits associated with the operation of the Brookfield Compressor Station include payment of local property taxes; purchases of services, materials, and supplies from local businesses; and periodic temporary employment for various construction, operation and maintenance

Construction Schedule and Workforce

The majority of the Brookfield Compressor Station construction is scheduled to occur over a six-month period from April 2007 to October 2007. Construction of the compressor station is anticipated to require about 50 workers on a regular basis and up to 100 workers including deliveries and other periodic services. The construction workforce required for installation of the gas coolers at the existing Dover Compressor Station would be about 10 to 20 workers. Iroquois, through its construction contractors and subcontractors, would hire local construction workers to incorporate into the project workforce that possess the required skills and experience. Based on previous experience, Iroquois anticipates that local hires would likely be union labor and would account for about 20 percent of the workforce. The majority of inspectors are anticipated to be non-local due to the specialized knowledge required for the position.

Non-local workers would generally reside in the project area for the duration of the construction period and typically, few workers are accompanied by family members. As a result, the socioeconomic impacts resulting from the construction of the Brookfield Compressor Station are not expected to be significant due to the temporary population increase caused by the construction workforce (i.e., impact on schools and other locally provided services). Local communities would benefit from the payroll taxes paid by construction workers during the construction period. A percentage of this money would be spent locally and may provide significant short-term revenues to the community. Additional positive impacts would result from payments for construction materials and equipment.

Housing

The majority of the non-local workers would probably use temporary housing such as hotels, motels, apartments, and campgrounds within commuting distance to the sites. Temporary housing is typically used because the construction period is relatively short and workers generally do not travel with their families. Iroquois does not anticipate that construction crews would encounter any difficulties locating temporary housing, campgrounds and/or hotel accommodations in the project vicinity.

Transportation

Minor, short-term impacts to the transportation network may result from the construction of the Brookfield Compressor Station. These impacts would result from the movement of construction equipment and materials to and from the site and daily commuting of workers to and from the site. These impacts are not expected to be significant.

To maintain safe conditions, Iroquois would require its contractors to comply with applicable vehicle weight and width restrictions. The construction of the Brookfield Compressor Station and related facilities, or the installation of the gas coolers at the existing Dover Compressor Station is not anticipated to require the crossing of public roads by construction equipment. The movement of equipment and materials from contractor yards and storage yards to the sites would result in additional short-term impact on the transportation network. Truck traffic associated with transporting construction equipment to the site may increase the workload of local police due to monitoring of vehicle weight, width restrictions and traffic details. Also, large vehicles may cause some temporary obstructions in traffic flow. Iroquois would work cooperatively with the local police and fire departments, as well as the Connecticut and New York State Police, to ensure a safe and efficient traffic management plan is implemented during construction of the Project. Project related demands on local police are not expected to be significant.

The transportation network may experience a short-term incremental increase to traffic as a result of the movement of construction workers between their residences and the construction site. Several trips may be made each day to and from the site. This level of traffic would remain fairly constant throughout the construction period and would typically occur during early morning and late evening hours. Impacts to the transportation network from construction workers commuting to and from home or work are not expected to be significant and should have minimal effect on the local traffic.

Residential or Business Displacements

No residences or businesses would be displaced as a result of the construction of the project. The Brookfield Compressor Station Preferred Site is located on a parcel of vacant land currently owned by Iroquois.

Tax Revenues, and Local Expenditures

The economic benefits associated with operation of the Brookfield Compressor Station include increased revenue to the Town of Brookfield in the form of property taxes. The improvements at the Dover Compressor Station would not provide significant local economic benefit as property taxes are already being paid to the municipality. The increase in tax revenue to the Town of Brookfield is estimated at about $400,000 to $500,000 per year.

4.11 AIR QUALITY AND NOISE

Background and Regulatory Overview

The U. S. Environmental Protection Agency (EPA), the Connecticut Department of Environmental Protection (CTDEP), the New York State Department of Environmental Conservation (NYSDEC), and the New Jersey Department of Environmental Protection (NJDEP) regulate the project components that may affect air quality. The Clean Air Act (CAA) (42 USC

7401-7671q), as amended, gives EPA the responsibility to establish the primary and secondary National Ambient Air Quality Standards (NAAQS) (40 CFR §50) that set safe concentration levels for six criteria pollutants: fine particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen oxides (NO_x), ozone (O_3), and lead (Pb). Short-term standards (1-, 8-, and 24-hour periods) have been established for pollutants contributing to acute health effects, while long-term standards (annual averages) have been established for pollutants contributing to chronic health effects. Each state has the authority to adopt standards stricter than those established under the federal program; however, CTDEP, NYSDEC, and NJDEP accept the federal standards. A State Implementation Plan (SIP) is an enforceable plan developed at the state level that explains how the state will comply with air quality standards according to the CAA.

Federal regulations designate Air-Quality Control Regions (AQCRs) in violation of the NAAQS as "nonattainment" areas. Federal regulations designate AQCRs with levels less than the NAAQS as "attainment" areas. "Maintenance" AQCRs are areas that have previously been designated "nonattainment," and have been redesignated "attainment" for a probationary period through implementation of maintenance plans. EPA has also identified an Ozone Transport Region (OTR) encompassing twelve northeast states and the District of Columbia. Because ozone attainment is a region-wide problem involving interstate transport of ozone precursors, projects locating in all areas within the OTR must meet stricter regulatory requirements. Table 4.11-1 lists the location, AQCR and attainment status of all of the project's components that effect air quality. All areas associated with the project are located within the OTR.

Emissions from stationary sources such as the proposed and modified compressor stations would be subject to state and federal pre-construction and permit requirements. These requirements include, but would not be limited to, new source review (NSR) for sources in nonattainment areas, prevention of significant deterioration (PSD) for sources in attainment areas, and new source performance standards (NSPS) for selected categories of industrial sources. NSR includes requirements for best available control technology (BACT) and emission offsets. PSD requirements include BACT, evaluation of emission impacts on vegetation and soils, and dispersion modeling. Title V permits would be required if the annual potential to emit exceeds thresholds for criteria and hazardous air pollutants (40 CFR part 70). In addition, under the National Emission Standards for Hazardous Air Pollutants (NESHAP), the proposed and modified compressor stations may be subject to Maximum Achievable Control Technology (MACT) requirements.

Title V Operating Permit

Title V of the CAA Amendments of 1990, as outlined in 40 CFR Part 70 (Part 70 Operating Permit), requires a federal operating permit for major sources of criteria pollutants. The major source designation for the project components is based on the attainment status of NO_x, volatile organic compounds (VOCs), or CO for each individual AQCR.

Prevention of Significant Deterioration

The regulations under the federal PSD program are intended to preserve the existing air quality in areas where pollutant levels are below the NAAQS. PSD regulations impose specific limits on the amount of pollutants that major new or modified stationary sources may contribute to existing air quality levels. These limits are 250 tons per year of a criteria pollutant for pipeline compressor stations. In addition, a facility is subject to PSD permit requirements if net emission increases associated with modifications within a contemporaneous 5-year period equal or exceed

Table 4.11-1.
Project Components That Affect Air Quality - Location, AQCR and Attainment Status

Project Component	Location	Air Quality Control Region	8-Hour Ozone Standard	All Other NAAQS
Millennium Pipeline Project Phase I				
New Millennium Compressor Station*	Steuben County, NY	Southern Tier West Intrastate (AQCR 164)	Attainment	Attainment
Empire Connector Project				
New Oakfield Compressor Station	Genesee County, NY	Genesee-Finger Lakes Intrastate (AQCR 160)	Nonattainment (Basic)	Attainment
Algonquin Ramapo Expansion Project				
Upgrade Hanover Compressor Station	Morris County, NJ	New Jersey - New York - Connecticut Interstate (AQCR 043)	Nonattainment (Moderate)	Nonattainment for $PM_{2.5}$
Upgrade Stony Point Compressor Station	Rockland County, NY	Hudson Valley Intrastate (AQCR 161)	Nonattainment (Moderate)	Attainment
Upgrade Southeast Compressor Station	Putnam County, NY	Harford – New Haven – Springfield Interstate (AQCR 042)	Nonattainment (Moderate)	Attainment
New Oxford Compressor Station	New Haven County, CT	New Jersey - New York - Connecticut Interstate (AQCR 043)	Nonattainment (Moderate)	Nonattainment for $PM_{2.5}$
Iroquois MarketAccess Project				
New Brookfield Compressor Station	Fairfield County, CT	New Jersey - New York - Connecticut Interstate (AQCR 043)	Nonattainment (Moderate)	Attainment

Source: 40 CFR PART 81—Designation of Areas for Air Quality Planning Purposes
* Millennium's new Compressor Station would be built adjacent to Columbia's existing Corning Compressor Station.

40 tons per year of NO_x or VOC, both precursors of ozone. Under the PSD Program, Class I areas are assigned to protect federal wilderness areas, such as national parks, where the least amount of air quality deterioration is allowed. The NE-07 Project compressor stations' emissions resulting from additions and changes do not trigger PSD review at any of the proposed or existing compressor stations (Table 4.11-2).

New Source Review

The NSR program requirements outlined in 40 CFR Part 52.21 are part of the NAAQS. The NSR program requires major stationary source facilities in areas that exceed the NAAQS to obtain a permit prior to building proposed facilities or modifying existing facilities, if operation of the new or modified compressor stations would result in a significant increase in the emissions of a regulated pollutant. The NE-07 Project compressor stations' emissions resulting from additions and changes do not trigger NSR at any of the proposed or existing compressor stations (Table 4.11-2).

New Source Performance Standards

The New Source Performance Standards Subpart G. "Standards of Performance for Stationary Gas Turbines," (40 CFR Part 60, Subpart GG) are applicable to stationary gas turbines with a heat input at peak load equal to or greater than 10.7 gigajoules per hour (GJ/h). NO_x and SO_2 emission restrictions apply. The permit applications would demonstrate that the proposed turbines would comply with the NO_x and SO_2 emission standards of Subpart GG.

National Emission Standards for Hazardous Air Pollutants

The CAA Amendments of 1990, under revisions to Section 112, required the EPA to list and promulgate National Emission Standards for Hazardous Air Pollutants to reduce the emissions of hazardous air pollutants, such as formaldehyde, benzene, xylene, and toluene from categories of major and area sources. As these standards are promulgated, they are published in Title 40, CFR, Part 63. Stationary gas turbines are listed among the source categories that would be subject to emission standards. The new turbines may be subject to Maximum Achievable Control Technology (MACT), which would apply to sources whose potential to emit hazardous air pollutants (HAPs) exceeds either 10 tons per year of a single HAP, or 25 tons per year of all regulated HAPs. Since the gas-fired turbines proposed for installation at the NE-07 Project compressor stations emit very low amounts of HAPs, additional control equipment is unlikely to be required for MACT compliance (Table 4.11-2).

Noise

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and are sensed by the human ear. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies according to the type and characteristics of the noise source, distance between source and receiver, and receiver sensitivity. Sound levels are expressed in units of decibels. The term decibel (dB) implies a logarithmic ratio of the measured pressure to a reference pressure. This reference pressure refers to a pressure just barely detectable by the human ear. The human ear responds differently to sounds at different frequencies. To adjust for the different "loudness" levels as perceived by humans, a standard "A" weighting curve (dBA) is applied to measured sound levels.

Table 4.11-2
Air Quality Regulatory Review Matrix for Project's Compressor Stations

Regulation	Proposed Millennium Compressor Station	Proposed Oakfield Compressor Station	Stony Point Compressor Station	Southeast Compressor Station	Hanover Compressor Station	Proposed Oxford Compressor Station	Proposed Brookfield Compressor Station
New Source Review (NSR)	Potential emissions would not exceed NSR thresholds. Therefore, NSR would not be required for any facility.						
Prevention of Significant Deterioration (PSD)	Potential emissions would not exceed the 250-tpy PSD threshold. Therefore, no facility would be subject to PSD review.						
Title V Permitting Requirements	Potential emissions would not exceed major source thresholds. Therefore, a Title V permit would not be required for these facilities.				The current Title V Permit would need to be modified to include the new emission sources.	Potential emissions would not exceed major source thresholds. Therefore, a Title V permit would not be required for these facilities.	
National Emission Standards for Hazardous Air Pollutants (NESHAP)	Potential HAP emissions would not exceed NESHAP thresholds. Therefore, the use of MACT is not required for any facility.						
NYSDEC Air Quality Facility Permitting	NYSDEC would require a facility permit prior to construction or modification of the facility.				*Not Applicable*		
New Jersey "State-of-the-art" SOTA Emission Requirements	*Not Applicable*				Because its emissions exceed 5 tpy of at least one criteria pollutant, the new turbine would be subject to NJ SOTA requirements.	*Not Applicable*	
Connecticut Air Quality Facility Permitting	*Not Applicable*					CTDEP would require a facility permit prior to construction of the facility.	
Connecticut BACT Requirements	*Not Applicable*					Potential emissions would exceed BACT threshold of 15 tpy. Therefore, use of BACT would be required	
Connecticut Minor NSR Dispersion Modeling	*Not Applicable*					CTDEP may require dispersion modeling for this project.	

Source: GAI 2005, Millennium 2005, Empire 2005, Algonquin 2006, Iroquois 2006

Because noise levels can vary over a given time period, they are further quantified using different time weighted sound metrics. Two of these metrics commonly used by federal agencies to relate the time-varying quality of environmental noise to its known effects on people are the equivalent sound level (L_{eq}) and the day-night sound level (L_{dn}). L_{eq} is a weighted average of sound energy over a given time. L_{dn} is a weighted 24-hour average of sound energy that takes into account the time of day the noise is encountered. Late night and early morning (10:00 p.m. to 7:00 a.m.) noise exposures are penalized 10 decibels, to account for people's greater sensitivity to sound during the nighttime hours. For a steady sound source that operates continuously over a 24-hour period (such as a compressor station), L_{dn} is about 6.4 dBA above the measured L_{eq}. For example, an L_{dn} of 55 dBA corresponds to a continuous L_{eq} of 48.6 dBA.

In 1974, EPA published "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety" (EPA 1971). This publication evaluates the effects of environmental noise with respect to health and safety. The document provides information to help state and local government agencies develop noise standards and regulations. EPA recommends that L_{dn} should not exceed 55 dBA (a continuous L_{eq} of 48.6 dBA) to protect public welfare. FERC has adopted the EPA's recommendations and require that the sound attributable to any new compressor engine or modification not exceed an L_{dn} of 55 dBA at the nearest noise sensitive area (NSA) (18 CFR 380.12(k)(4)(v)); unless such NSAs are established after facility construction. FERC guidelines also require that a proposed or modified compressor station not result in a perceptible increase in vibration at any NSA.

NE-07 Project Air Quality and Noise Context and Issues

It is anticipated that the project would meet all applicable federal, state and local air quality and noise regulations. The applicants would make good faith efforts to comply with any local or state noise requirements as long as they don't conflict with the FERC certificate. This would ensure compliance with the SIP of the CAA and the timely attainment of the NAAQS. With the implementation of recommended mitigation measures, sound levels attributable to the project would be adequate to protect human health and welfare with an adequate margin of safety.

Both operation of compressor stations and pipeline construction can affect air quality. Algonquin, Millennium, Empire, and Iroquois cumulatively propose the construction of three new compressor stations, the modification and/or upgrading of six existing compressor stations, and the construction or upgrading of 270 miles of pipeline. During operation, the compressor stations would emit varying quantities of criteria pollutants. However, the combustion of natural gas produces significantly lower emissions when compared to the combustion of coal or oil. One of the project's primary goals is to increase the availability and use natural gas as opposed to other traditional fossil fuels.

Several components of the new and modified compressor stations, as well as construction associated with the project, would generate sound. The compressor station components include, but would not be limited to: the turbine, compressor, turbine exhaust and ducting, aboveground piping, lube oil coolers, gas after coolers, air intake system, air handling units, and blowdown equipment. The use of noise control measures for the compressor stations and associated equipment would be necessary to reduce the potential impact to surrounding areas and ensure compliance with federal, state and local regulations. Noise control measures that have been evaluated, and would be incorporated where necessary include, but would not be limited to: the use of appropriate building materials, installation of

muffler systems, use of acoustical pipe insulation, and the installation of air intake and blowdown silencers.

4.11.1 MILLENNIUM PIPELINE PROJECT - PHASE I

The new Millennium Compressor Station adjacent to the existing Corning Compressor Station during Phase I of the Millennium Pipeline Project would meet all applicable state and federal air quality standards and regulations. This would ensure compliance with the SIP and timely attainment of the NAAQS. With the implementation of recommended mitigation measures, sound levels attributable to Phase I of the Millennium Pipeline Project would be adequate to protect human health and welfare with an adequate margin of safety.

State and Local Regulations

The State of New York does not regulate noise at the state level. There would be no local air-quality or noise regulations applicable to Phase I of the Millennium Pipeline Project.

4.11.1.1 Air Quality

The existing Corning Compressor Station is located in Steuben County, New York, and within the Southern Tier West Intrastate AQCR (AQCR 164). EPA has designated AQCR 164 as an attainment area for all criteria pollutants. The nearest federal Class I area is in West Virginia. Existing air emission sources at the facility include a 1,240 horsepower (hp) Ingersoll-Rand 4-cycle lean burn compressor, a 66 hp Ford reciprocating stand-by engine, a small boiler and a small heater. NYSDEC regulates the existing station under a synthetic minor operating permit (DEC # 8-4638-00027/00011). The NO_x emissions from the Ingersoll-Rand compressor are the only emissions from the existing facility that have an enforceable limit.

Millennium would install the new equipment adjacent to the existing Columbia Corning Compressor Station. The air emissions sources that would be introduced by Millennium at the existing site include a 15,002 hp Solar Mars 100 gas turbine compressor, an emergency generator with an approximate rating of 250 kW, and a gas heater with an approximate rating of 7.1 MMBtu/hr. The estimated emissions from these sources are tabulated in Table 4.11.1-1. The facility would not be subject to NSR, PSD analysis, Title V permitting or MACT requirements. However, a facility permit from the NYSDEC would be required prior to modification of the facility (Table 4.11-2).

4.11.1.2 Noise

Compressor Station

The Millennium Compressor Station would be located on the property of the existing Columbia Corning Compressor Station. The existing facility is located on Quackenbush Hill (elevation 1,903 feet) about 10 miles north of Corning, New York, in Steuben County. This location is one of the highest points within the county. The proposed upgrade for this compressor station would consist of adding a Solar Mars 100 gas turbine compressor and associated support equipment.

The sound attributable to the current compressor station plus the sound attributable to the compressor addition was estimated at the nearest NSAs. The sound contribution of the station at other more distant NSAs or residential property lines would be less than the sound contribution at these

locations. Table 4.11.1-2 provides a summary of the current and estimated future sound environment at the closest NSAs. If the recommended noise control measures for the proposed compressor addition are successfully implemented, the noise attributable to the station would be less than 55 dBA (L_{dn}) at the nearby NSAs. Therefore, it is anticipated that the upgraded facility would meet the FERC sound level requirements for compressor stations. There are no other applicable federal, state or local noise regulations. To ensure L_{dn} sound levels attributable to both the Millennium Compressor Station and Columbia's Corning Compressor Station would not exceed 55 dBA at the NSAs, **we recommended that:**

- **Millennium file a post-construction noise survey with the Secretary no later than 60 days after placing the new Millennium Compressor Station in service. If the noise attributable to the operation of both the Millennium Compressor Station and the adjacent existing Columbia Corning Compressor Station at full load exceeds an L_{dn} of 55 dBA at any nearby NSAs, Millennium should install additional noise controls to meet the level within 1 year of the in-service date. Millennium should confirm compliance with this requirement by filing a second noise survey with the Secretary no later 60 days after it installs the additional noise controls.**

Table 4.11.1-1
Estimated Air Emissions [tpy] and Regulatory Thresholds for Project Compressor Stations

	NO_x	CO	VOC	PM_{10}	SO_2
Millennium Compressor Station[1]					
Estimated Potential Emissions	98.1	55	11.6	4.4	0.3
NSR Major Source Threshold	100	100	50	100	100
Exceeds Major Source Threshold?	No	No	No	No	No
Oakfield Compressor Station					
Estimated Potential Emissions	69.9	80.7	9.0	4.3	2.2
NSR Major Source Threshold	100	100	50	100	100
Exceeds Major Source Threshold?	No	No	No	No	No
Hanover Compressor Station					
Estimated Potential Emissions	18	28	2	2	1
NSR Major Source Threshold	25	NA	25	NA	NA
Exceeds Major Source Threshold?	No	No	No	No	No
Stony Point Compressor Station					
Estimated Potential Emissions	39	25	4	7	3
NSR Major Source Threshold	40	100	NA	15	40
Exceeds Major Source Threshold?	No	No	No	No	No
Southeast Compressor Station					
Estimated Potential Emissions	37	68	5	5	2
NSR Major Source Threshold	40	NA	NA	NA	40
Exceeds Major Source Threshold?	No	No	No	No	No
Oxford Compressor Station[1]					
Estimated Potential Emissions	45	83	6	6	3
NSR Major Source Threshold	50	NA	NA	NA	40
Exceeds Major Source Threshold?	No	No	No	No	No
Brookfield Compressor Station					
Estimated Potential Emissions	17.2	16.4	3	11.2	0.2
NSR Major Source Threshold	25	100	25	100	100
Exceeds Major Source Threshold?	No	No	No	No	No

1 An enforceable NOx emission limit would be incorporated into the air permit. Includes emissions from Columbia's adjacent Corning Compressor Station.
Source: GAI 2005, Millennium 2005, Empire 2005, Algonquin 2006, Iroquois 2006

Table 4.11.1-2
Existing and Estimated Future Noise Levels at Noise Sensitive Areas Near Compressor Stations

Project Component and NSA	Distance and Direction to NSA	Estimate or Measured Existing Ldn [dBA]	Estimated Sound Attributable to Project Ldn [dBA]	Total Estimated Ldn [dBA]
Millennium Compressor Station				
NSA #1	1600 feet (WSW)	37.8	44.5	45.4
NSA #2	1000 feet (S)	45.8	49.1	50.8
NSA #3	1000 feet (SE)	47.7	49.1	51.5
NSA #4	1400 feet (E)	44.7	45.9	48.3
NSA #5	2200 feet (NE)	37.1	41.4	42.7
Oakfield Compressor Station				
NSA #1	2700 feet (S)	<45	53	53
Hanover Compressor Station				
NSA #1	800 feet (W)	48.2	47.7	51
Stony Point Compressor Station[1]				
NSA #1	650 feet (WSW)	62.9	NA	62.2
NSA #2	700 feet (W)	63.0	NA	62.3
NSA #3	800 feet (SSE)	49.9	NA	50.9
NSA #4	1000 feet (E)	49.6	NA	50.6
Southeast Compressor Station[2]				
NSA #1	1200 feet (NW)	39.2	45.7	46.5
NSA #2	1300 feet (SSW)	38.4	44.8	45.7
Oxford Compressor Station				
NSA #1	1700 feet (NNW)	48.7	50.0	52.4
NSA #2	2000 feet (NNE)	51.2	47.2	52.7
Brookfield Compressor Station				
NSA #1	440 feet (NE)	59	TBD	TBD
NSA #2	1100 feet (NW)	55	TBD	TBD
Dover Compressor Station				
NSA #1	750 feet (S)	46	38	46
NSA #1	1200 feet (NW)	44	34	44

NA = Not Available
TBD = To Be Determined
Sources: Haley & Aldrich of New York 2005, H&K 2006, LSG&A 2006b

4.11.2 EMPIRE CONNECTOR PROJECT

It is anticipated that the Empire Connector Project would meet all applicable state and federal air quality standards and regulations where applicable. This would ensure compliance with the SIP and the timely attainment of the NAAQS. With the implementation of recommended mitigation measures, sound levels attributable to the Empire Connector Project would be adequate to protect human health and welfare with an adequate margin of safety.

State and Local Regulations

The State of New York Noise regulates noise as described in section 4.11.1. There would be no local air-quality or noise regulations applicable to the Empire Connector Project.

4.11.2.1 Air Quality

The proposed Oakfield Compressor Station would be in Genesee County, New York and within the Genesee-Finger Lakes Intrastate (AQCR 160). EPA has designated AQCR 160 as basic (subpart 1) nonattainment area for the 8-hour O_3 standard. EPA has designated AQCR 160 as an attainment area for all other criteria pollutants. The nearest federal Class I areas would be the Lye Brook National Wilderness Area in southern Vermont and the Brigantine National Wilderness Area in southeastern New Jersey. Because this would be a new facility, there are no existing air emission sources.

The proposed sources of air emissions introduced by the Empire Connector Project at the proposed compressor site include: two (2) Solar - Model Taurus 70 turbine compressors, a emergency generator with an approximate rating of 500 kW, a natural gas boiler, and a gas heater with an approximate rating of 0.5 MMBtu/hr. Estimated emissions from these sources are tabulated in Table 4.11.1-1. Due to the limited size of the project, total emissions for the proposed facility would not exceed major source regulatory thresholds. The Empire Connector Project would not be subject to NSR, PSD analysis, Title V permitting or MACT requirements. However, a facility permit from the NYSDEC would be needed prior to construction (Table 4.11-2).

4.11.2.2 Noise

The proposed Oakfield Compressor Station would be in Genesee County, New York. No existing baseline noise level measurements are known for the Oakfield Compressor Station site. The only significant existing sources of noise near the site are assumed to be local road traffic and agricultural equipment. The year 2000 population of Genesee County was 122.2 people per square mile. This would classify the site as a very quiet suburban and rural residential area. The L_{dn} for an area of this type was estimated to be less than 47, with a typical level of 45 dBA (L_{dn}). The proposed upgrade for this compressor station would consist of adding two (2) 10,310 hp (ISO) Taurus 70 gas turbine compressors and associated support equipment.

The nearest NSAs to the proposed compressor facility site are residences located about 2,700 feet south of the site along Lockport Road. The sound levels attributable to the proposed compressor station were estimated at the nearest NSAs. The sound contribution of the station at other more distant NSAs or residential property lines would be less than the sound contribution at these locations. Table 4.11.1-2 provides a summary of the current and estimated future sound environment at the closest NSAs. If the recommended noise control measures for the proposed compressor were successfully implemented, the noise attributable to the station would be less than 55 dBA (L_{dn}) at the nearby NSAs. Therefore, it is anticipated that the proposed facility would meet the FERC sound level requirements for compressor stations. The proposed compressor station may increase sound levels more than 6 dBA over the existing environment. Therefore, if NYSDEC requires SEQRA review, the project may require closer analysis, depending on existing noise environment and surrounding land uses.

Since this would be a new compressor station in a relatively quiet area and to ensure L_{dn} sound levels attributable to the Oakfield Compressor Station would be minimized to the greatest extent practicable and not exceed 55 dBA at the NSAs, **we recommended that:**

- **Empire should make all reasonable efforts to assure its predicted noise levels from the Oakfield Compressor Station are not exceeded at nearby NSAs, and file a noise survey with the Secretary no later than 60 days after placing the new compressor station in-service. However, if the noise attributable to the operation of the compressor station at full load exceeds an L_{dn} of 55 dBA at any nearby NSAs, Empire should file a report on what changes are needed and install additional noise controls to meet that level within 1 year of the in-service date. Empire should confirm compliance with the L_{dn} of 55 dBA requirement by filing a second noise survey with the Secretary no later than 60 days after it installs the additional noise controls.**

The Empire Connector Project includes proposed locations for horizontal directional drill (HDD) waterbody crossings at Canandaigua Outlet in Ontario County and Keuka Lake Outlet in Yates County, New York. The background noise at each of the NSAs is assumed less that 45 dBA (L_{dn}) as the locations are rural and agricultural in nature. The exact locations for the HDD work areas have not yet been determined. Each entry location would have a HDD setup comprising DD-330 or DD-500 equipment, drill rig/pipe puller, mud handling system, and operating excavator. Each exit location would have a mud handling system and operating excavator. Empire indicates that HDD operations would occur 24 hours/day. Empire provided estimates for the noise levels at the nearest NSAs for both the entry and exit work areas for both of these locations (Table 4.11.2-1). If the recommended noise control measures for the proposed HDD activities were successfully implemented, the noise would not exceed 55 dBA (L_{dn}) at the nearby NSAs. Therefore, it is anticipated that the HDD activities would meet the FERC sound level requirements. However, the proposed HDD activities may increase sound levels more than 6 dBA over the existing environment. Therefore, if NYSDEC requires SEQRA review, the project may require closer analysis, depending on existing noise environment and surrounding land uses. There are no other applicable federal, state or local noise regulations.

Empire indicates that the final design for the HDDs, including final location of the entry and exit points, equipment sizing and specifications, and work area layout has not yet been determined. In addition, the sound levels presented are estimates of future conditions and borderline with respect to FERC's 55 dBA L_{dn} criteria. Therefore, **we recommend that:**

- **Empire file with the Secretary for review and written approval of the Director of OEP site-specific plans identifying how noise would be reduced during horizontal directional drilling at Canandaigua Outlet and Keuka Lake Outlet prior to construction of the crossings. The plan should include projected daytime and nighttime noise levels at nearby residences and mitigation measures that would be used to minimize noise at these residences.**

Table 4.11.2-1
Noise Levels at Noise Sensitive Areas Nearby the Horizontal Directional Drill Sites for the Empire Connector Project

Horizontal Directional Drill Site	Distance & Direction of Closest NSA from Work Area	Estimated Ambient L_{dn}	Total Estimated L_{dn} (Ambient plus the HDD Activities)
Ontario County (entry)	575 feet (West)	45 dBA	54 dBA
Ontario County (exit)	598 feet (SE)	45 dBA	55 dBA
Yates County (entry)	521 feet (NE)	45 dBA	55 dBA
Yates County (exit)	1076 feet (NE)	45 dBA	49 dBA

4.11.3 ALGONQUIN RAMAPO EXPANSION PROJECT

It is anticipated that the Algonquin Ramapo Expansion Project would meet all applicable state and federal air quality standards and regulations where applicable. This would ensure compliance with the SIP and the timely attainment of the NAAQS. With the implementation of recommended mitigation measures, sound levels attributable to the Algonquin Ramapo Expansion Project would be adequate to protect human health and welfare with an adequate margin of safety.

State and Local Regulations

The New Jersey Noise Control Act (Chapters 29, 29B) regulates noise in the State of New Jersey. In summary, the regulation states that sound levels at a receiving residential property line not exceed 65 dBA during the daytime (7:00 AM to 10:00 PM) and 50 dBA during the nighttime (10:00 PM to 7:00 AM). In addition, sound levels at an industrial or commercial property line shall not exceed 65 dBA (day or night). There are also unweighted octave-band (O.B.) sound pressure levels (SPLs) that should not be exceeded (Table 4.11.3-1).

Table 4.11.3-1
State of New Jersey Noise Control Act - Maximum Allowable Octave Band Sound Pressure Level at Receiving Residential Property Line

	Unweighted SPL [dB] for O.B. Center Frequency [Hz]								
	31.5	63	125	250	500	1000	2000	4000	8000
Daytime/Residential	96	82	74	67	63	60	57	55	53
Nighttime/Residential	86	71	61	53	48	45	42	40	38

Source: New Jersey Administrative Code - Chapter 29 - New Jersey Noise Control Statute

The State of Connecticut has established noise regulations (Title 22a, Part 69) limiting noise from a sound source, as measured at certain Noise Zones (i.e., residential, commercial and industrial) when emitted from other Noise Zones (Table 4.11.3-2). In general, no one shall emit noise exceeding the levels stated, as applicable to the adjacent Noise Zone(s).

Table 4.11.3-2
State of Connecticut - Summary of Noise Zone Standards

Noise Zone Class	Class A Receptor (Residential) (Daytime)	Class A Receptor (Residential) (Nighttime)	Class B Receptor (Commercial)	Class C Receptor (Industrial)
Class A Emitter (Residential)	61 dBA	51 dBA	66 dBA	70 dBA
Class B Emitter (Commercial)	55 dBA	45 dBA	62 dBA	62 dBA
Class C Emitter (Industrial)	55 dBA	45 dBA	55 dBA	62 dBA

Source: CTDEP Title 22a - Section 22a - Part 69- Control Of Noise

The State of New York Noise regulates noise as described in section 0. The Hanover Township, New Jersey, where the Hanover Compressor Station is located, has a local noise regulation that states continuous airborne sound at the residential receiver must not exceed 45 dBA during the nighttime (10:00 PM to 7:00 AM). In addition, the maximum allowable unweighted O.B. SPLs that should not be exceeded at the residential receiver are shown below (Table 4.11.3-3). In addition, there is a 5 dB pure tone penalty and some adjustments related to the duration of the noise source. The Hanover Township noise regulations (nighttime) are slightly more stringent than either the State noise regulations or the FERC sound level requirement. There would be no applicable local noise regulations for the Town of Oxford, Connecticut, or in Stony Point, or Brewster, New York where the other proposed or modified compressor stations are located.

Table 4.11.3-3
Hanover Township, New Jersey Noise Regulation
Maximum Allowable Octave Band Sound Pressure Level at Receiving Residential Property

	Unweighted SPL [dB] for O.B. Center Frequency [Hz]								
	31.5	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
Nighttime/Residential	67	60	50	45	40	36	33	30	27

Source: Township of Hanover, NJ - Chapter 184: NOISE

4.11.3.1 Air Quality

The Algonquin Ramapo Expansion Project would include upgrading three existing compressor stations: Southeast Compressor Station, Stony Point Compressor Station and Hanover Compressor Station. The Expansion Project would also include the installation of a 37,700 hp natural gas pipeline compressor station (the Oxford Compressor Station). The proposed and modified compressor stations associated with the project would be located within areas designated as moderate nonattainment for the 8-hour O_3 standard. EPA has designated all the areas as in attainment for all other criteria pollutants (Table 4.11-1).

Hanover Compressor Station

The proposed sources of air emissions introduced at the Hanover Compressor Station site include a 7,700 hp Taurus 60 turbine compressor, a generator with an approximate rating of 250 kW, and a boiler with an approximate rating of 2.75 MMBtu/hr. Estimated emissions from these sources are tabulated in Table 4.11.1-1. The Hanover Compressor Station would not be subject to NSR, PSD analysis, or MACT requirements. The existing facility operates under a Title V permit. A modification to the existing permit

would be necessary to include the new air emission sources. Because its emissions would exceed five tons per year (tpy) of a criteria pollutant, the new turbine would also be subject to New Jersey SOTA requirements (Table 4.11-2).

Stony Point Compressor Station

The proposed sources of air emissions introduced at the Stony Point Compressor Station include two 7,700 hp Taurus 60 turbine compressors, the rebuilt Mars 100 turbine compressor, a 500 kW generator, and a replacement boiler with an approximate rating of 11.23 MMBtu/hr. The estimated emissions from these sources are tabulated in Table 4.11.1-1. The Stony Point Compressor Station would not be subject to NSR, PSD analysis, or MACT requirements. However, a facility permit from the NYSDEC would be needed prior to modification of the facility (Table 4.11-2).

Southeast Compressor Station

The proposed sources of air emissions introduced at the Southeast Compressor Station site include a 7,700 hp Taurus 60 turbine compressor, a 10,310 hp Taurus 70 turbine compressor, a generator with an approximate rating of 350 kW; and one replacement boiler with an approximate rating of 3.85 MMBtu/hr. The estimated emissions from these sources are tabulated in Table 4.11.1-1. The Southeast Compressor Station would not be subject to NSR, PSD analysis, or MACT requirements. However, NYSDEC would require a facility permit prior to construction (Table 4.11-2).

Oxford Compressor Station

The sources of air emissions that would be introduced at the proposed Oxford Compressor Station site include two 15,000 hp Mars 100 turbine compressors, one 7,700 hp Taurus 60 turbine compressor, one emergency generator with an approximate rating of 350 kW and one boiler with an approximate rating of 5.61 MMBtu/hr. Estimated emission from these sources are tabulated in 4.11.1-1. Due to the limited size, the Oxford Compressor Station would not be subject to NSR, PSD analysis, Title V permitting or MACT requirements. However, CTDEP would require a facility permit and the use of BACT (Table 4.11-2). The station would not be equipped with any odorization facilities.

An air quality dispersion modeling analysis for the proposed Oxford Compressor Station was prepared to support Algonquin's air permit application. The modeling effort demonstrated that emissions of all criteria pollutants (including fine particulate matter) from the proposed facility would not cause a violation of the NAAQS at any nearby receptors. The air quality analysis was performed in accordance with CTDEP guidance provided in its Ambient Impact Analysis Guideline (CTDEP 1989) and EPA's Guideline on Air Quality Models (EPA 2005). Worst-case meteorological conditions and site topography were accounted for in the model.

4.11.3.2 Noise

Hanover Compressor Station

The existing Hanover Compressor Station is in Hanover Township, Morris County, New Jersey about 2 miles east of Morristown, New Jersey. The closest NSA is at the east end of Overlook Road, about 800 feet west of the compressor building. The west property line of the compressor station, which borders a residential property line, is also about 800 feet west of the compressor building. The Morristown Airport borders the station on the east side, and commercial properties are to the south of the

compressor station. The compressor station is equipped presently with two (2) turbine-driven gas compressors, each consisting of a 7,300 hp Solar Model Taurus 60 gas turbine driving a Solar centrifugal gas compressor. The turbine-compressor for each unit is inside a skid-mounted enclosure, and both units are inside a single building which is constructed of concrete block walls with brick exterior and interior insulation. The existing outdoor aboveground suction and discharge gas piping is not covered with any type of acoustical pipe insulation but is located inside a "piping courtyard" that is surrounded with a brick wall/barrier.

The current compressor station sound level plus the sound level of the compressor addition were estimated at nearby NSAs. The sound contribution of the station at other more distant NSAs or residential property lines would be less than the sound contribution at the nearest NSA or closest residential property line. Table 4.11.1-2 provides a summary of the noise quality analysis for the station related to the proposed compressor addition, noting that the estimated/calculated sound level was used to estimate L_{dn}. This location is also considered the closest residential property line (west property line of the station). If the anticipated and/or recommended noise control measures for the proposed compressor addition at the Hanover Compressor Station were to be successfully implemented, the noise attributable to the station would be less than 55 dBA (L_{dn}) at the nearby NSAs. Therefore, it is anticipated that the upgraded facility would meet the FERC sound level requirements for compressor stations. In addition, after installation of the proposed compressor addition, the sound contribution of the Hanover Compressor Station should meet the sound level requirements specified by the State noise regulations; but, may exceed some of the maximum allowable O.B. SPLs (nighttime) of the Hanover Township noise regulations at the west property line. There are no other applicable federal, state or local noise regulations.

Stony Point Compressor Station

The Stony Point Compressor station is in Rockland County, New York, about 2 miles west of the town of Stony Point, New York, and the Palisades Interstate Parkway is located about 0.5 mile west of the station. The closest NSAs are located about 650 feet west-southwest, 700 feet west, 800 feet south-southeast and 1,000 feet east of the station site center (i.e., location of the compressor building), respectively. The existing compressor station is equipped with four (4) 2,700 hp engine-driven reciprocating gas compressor units, two (2) 4,700 hp Solar Model Centaur 40 turbine-driven gas compressor units and a 12,600 hp Solar Model Mars 90 turbine-driven gas compressor.

The proposed compressor replacement/upgrade project would consist of replacing the two (2) 4,700 hp Solar Centaur 40 turbine compressors with two (2) 7,700 hp Solar Taurus 60 turbine compressors and associated equipment, upgrading of the 12,600 hp Mars 90 turbine compressor with a 15,000 hp Mars 100 turbine compressor, and adding a gas cooler that would be utilized for both pipelines. Table 4.11.1-2 tabulates future sound levels at the NSAs estimated based on the manufacturer's sound data for the new and replacement equipment. Because the existing noise levels at the nearest NSA already exceed 55 dBA L_{dn}, FERC requires that noise attributable to the compressor stations after the modifications are do not exceed those currently attributable to the station. This is normally achieved though the selection of quieter equipment and the installation of additional noise control equipment. If the recommended noise control measures were successfully implemented, it is anticipated that the upgraded facility would meet the FERC sound level requirements for compressor stations. There are no other applicable federal, state or local noise regulations.

Southeast Compressor Station

The Southeast Compressor station is in Putnam County, New York, about 3 miles south-southeast of the Town of Brewster, New York. The Connecticut state line borders the compressor station on the east side and I-84 borders the north property line of the compressor station. The closest NSAs are about 1,200 feet northwest and 1,300 feet south-southwest of the station, respectively. The Southeast Compressor Station is equipped with two (2) 4,700 hp Solar Centaur turbine-driven gas compressors and a 12,600 hp Solar Mars turbine-driven gas compressor. The proposed upgrade for this compressor station would consist of adding two (2) turbine- driven compressors and associated equipment, and a gas cooler.

The sound attributable to the current compressor plus the sound attributable to the compressor addition were estimated at the nearest NSAs (Table 4.11.1-2). The sound contribution of the station at other more distant NSAs or residential property lines would be less than the sound contribution at these locations. If the anticipated and/or recommended noise control measures for the proposed compressor addition were to be successfully implemented, the noise attributable to the station would be less than 55 dBA (L_{dn}) at the nearby NSAs. Therefore, it is anticipated that the upgraded facility would meet the FERC sound level requirements for compressor stations. There are no other applicable federal, state or local noise regulations.

However, to ensure L_{dn} sound levels attributable to the existing and new facilities at the Hanover, Stoney Point, and Southeast Compressor Stations would be minimized to the greatest extent practicable and not exceed 55 dBA at the NSAs, **we recommended that:**

- **Algonquin should file a post-construction noise survey with the Secretary no later than 60 days after placing the modified Hanover, Stony Point, and Southeast Compressor Stations in service. If the noise attributable to the operation of any of these compressor stations at full load exceeds an L_{dn} of 55 dBA at any nearby NSAs, Algonquin should install additional noise controls to meet the level within 1 year of the in-service date. Algonquin should confirm compliance with this requirement by filing a second noise survey with the Secretary no later 60 days after it installs the additional noise controls.**

Oxford Compressor Station

The proposed location of the Oxford Compressor Station would be in New Haven County, Connecticut about 0.85 miles east of the Oxford Airport runway. There are currently no existing facilities at the Oxford site. Ambient sound levels were measured at the closest NSAs. These consist of several homes located on the north side of the compressor station, about 1,700 to 2,200 feet from the anticipated location of the compressor building. During the sound measurements, the audible noise sources included the nearby meter station, aircraft associated with the nearby Waterbury-Oxford Airport, and distant vehicle traffic.

It is anticipated that the Oxford Compressor Station would be equipped with two 15,000 hp Solar Mars 100 turbine-driven gas compressors, one 7,700 HP Solar Taurus 60 turbine-driven gas compressor, one gas aftercooler, lube oil coolers, turbine exhaust system/stack, turbine air intake system, gas piping, and a unit blowdown silencer for each unit. Noise from unit blowdown venting would be designed to meet a sound level of 60 dBA at 300 feet using a silencer. This level corresponds to an Ldn of 52 dBA. Approximately two blowdown events would occur each year lasting for a period of 1 to 5 minutes.

The anticipated noise attributable to the proposed station would be less than 55 dBA (L_{dn}) at the

nearby NSAs (Table 4.11.1-2). Therefore, it is anticipated that the proposed facility would meet the FERC sound level requirements for compressor stations. The station would also fall under the State of Connecticut's Noise regulations. The proposed site is currently located in the area zoned for office and industrial uses. Therefore, it is a Class C Noise Zone. To comply with the state standard, the sound level contributable to the station must not exceed 51 dBA at the adjacent Class A Noise Zone (i.e. residences) (Table 4.11.3-2). The FERC sound requirement for the station (i.e., Leq < 48.6 dBA) is more stringent than the state noise requirements (i.e. Leq < 51 dBA). Therefore, it is anticipated that the proposed facility would meet the State of Connecticut's sound level requirements as well. There are no other applicable federal, state or local noise regulations. No perceptible vibration from station operation is anticipated at any NSA.

Since this would be a new compressor station in a relatively quiet area and to ensure L_{dn} sound levels attributable to the Oxford Compressor Station would be minimized to the greatest extent practicable and not exceed 55 dBA at the NSAs, **we recommended that:**

- **Algonquin should make all reasonable efforts to assure its predicted noise levels from the Oxford Compressor Station are not exceeded at nearby NSAs, and file a noise survey with the Secretary, the Connecticut Siting Council, and the Towns of Oxford and Middlebury no later than 60 days after placing the new compressor station in-service. However, if the noise attributable to the operation of the compressor station at full load exceeds an L_{dn} of 55 dBA at any nearby NSAs, Algonquin should file a report on what changes are needed and install additional noise controls to meet that level within 1 year of the in-service date. Algonquin should confirm compliance with the L_{dn} of 55 dBA requirement by filing a second noise survey with the Secretary no later than 60 days after it installs the additional noise controls.**

4.11.4 IROQUOIS MARKETACCESS PROJECT

State and Local Regulations

The State of Connecticut regulates noise as described in section 4.11.3. The State of New York Noise regulates noise as described in section 4.11.1. There are no local noise regulations for Brookfield, Connecticut. However, the Town of Dover noise regulation states no person, firm or corporation shall allow the emission of sound, which, as measured at the property lines, has a sound level in excess of 60 dBA in the daytime (7:00 a.m. - 8:00 p.m.) or 50 dBA at night (8:00 p.m. - 7:00 a.m.)

It is anticipated that the Iroquois MarketAccess Project would meet all applicable state and federal air quality standards and regulations where applicable. This would ensure compliance with the SIP and the timely attainment of the NAAQS. With the implementation of recommended mitigation measures, sound levels attributable to the Iroquois MarketAccess Project would be adequate to protect human health and welfare with an adequate margin of safety.

4.11.4.1 Air Quality

Brookfield Compressor Station

The proposed compressor station would be in Fairfield County, Connecticut and within the New Jersey - New York - Connecticut Interstate (AQCR 043). EPA has designated AQCR 043 as moderate nonattainment area for the 8-hour O_3 standard. EPA has designated AQCR 043 as an attainment area for

all other criteria pollutants. The nearest federal Class I areas are the Lye Brook National Wilderness Area in southern Vermont and the Brigantine National Wilderness Area in southeastern New Jersey. Because this is a proposed facility, there are no existing air emission sources.

The proposed sources of air emissions associated with the proposed Oxford Compressor Station include two Mars 100 turbine compressors, one Taurus 60 turbine compressor, one emergency generator with an approximate rating of 350 kW, and one boiler with an approximate rating of 5.61 MMBtu/hr. Estimated emission from these sources is tabulated in Table 4.11.1-1. The proposed Brookfield Compressor Station would not be subject to NSR, PSD analysis, Title V permitting or MACT requirements. However, CTDEP would require a facility permit and the use of BACT (Table 4.11-2).

We received several comments from landowners concerned about the relatively low elevation of the proposed compressor station and the ability and efficiency of the stack to disburse emission. The primary concern was the potential for the stack plume to introduce localized elevated concentrations ("hot spots") of air pollutants at or around the Whisconier Middle School and residences at the higher elevations.

An air quality dispersion modeling analysis for the proposed Brookfield Compressor Station was prepared to support Iroquois' air permit application. The modeling effort demonstrated that emissions of all criteria pollutants (including fine particulate matter) from the proposed facility would not cause a violation of the NAAQS at any nearby receptors. Iroquois' air permit application to construct and operate a stationary source was submitted to the CTDEP on March 20, 2006. In a letter dated April 27, 2006, the CTDEP notified Iroquois that the application is administratively sufficient. The air quality analysis was performed in accordance with CTDEP guidance provided in its Ambient Impact Analysis Guideline (CTDEP 1989) and EPA's Guideline on Air Quality Models (EPA 2005). Worst-case meteorological conditions and site topography were accounted for in the model. This analysis is attached to Iroquois' CTDEP air permit application.

4.11.4.2 Noise

Brookfield Compressor Station

The proposed Brookfield Compressor Station would be in Brookfield, Connecticut. There are currently no existing compressor facilities at this site. The closest NSAs to the proposed compressor station include several homes located about 440 feet northeast and 1,100 feet northwest along High Meadow Road. Ambient sound levels of 59 and 55 dBA (L_{dn}) were recently measured at these NSAs. During the daytime, the predominate noise sources included the distant traffic noise from I-84 and Route 25. Other in situ noise sources included local vehicle traffic, dogs barking, birds chirping, and occasional aircraft overflight. The Whisconier Middle School is farther away from the proposed compressor station locations than the nearest NSAs; therefore, the sound environment at the school would be less than that of the sites that were evaluated.

The final equipment for of the Brookfield Compressor Station has not been determined at this time. Therefore, Iroquois stated it was not possible to estimate the anticipated noise attributable to the proposed station and to determine if it would be less than 55 dBA (L_{dn}) at the nearby NSAs, meet the FERC requirements, or comply with the State of Connecticut's Noise regulations (Table 4.11.1-2).

We received several comments from landowners concerned about the potential compressor station noise, and specifically, about noise generated by the equipment, periodic blow-offs and venting,

and potential impacts to the nearby school and residential areas. Also, the CSC suggested no maintenance venting above the Town of Brookfield noise standard between the hours of 10:00 p.m. and 7:00 a.m., except in emergency situations, and recommended post-construction noise surveys for the Brookfield Compressor Station. Iroquois plans smaller routine maintenance venting during weekdays between 8:00 a.m. and 5:00 p.m. Larger maintenance or repair venting of a non-emergency nature are generally one-time events that are coordinated with the CTDEP and local governmental agencies. Iroquois proposes to conduct post-construction surveys to confirm that the compressor station complies with the Commission's noise regulations.

Iroquois states that the noise analysis it has performed is based on the preliminary site layout and equipment locations and establishing noise specifications for individual noise sources such that the site's total sound emissions would meet the regulatory standards. Until its final layout, building design, and equipment selection are determined, a final noise evaluation cannot be determined. Therefore **we recommend that:**

- **Before construction and once the final site layout, building design and equipment selection are determined, Iroquois file with the Secretary a comprehensive noise analysis showing that the noise levels at nearby NSAs, such as schools (specifically the Whisconier Middle School), hospitals, and residences would not exceed an Ldn of 55 dBA, due to the operation of the Brookfield Compressor Station at full load. This noise analysis should be filed with the Secretary prior to beginning service.**

Since this would be a new compressor station in a relatively quiet area and to ensure L_{dn} sound levels attributable to the Brookfield Compressor Station would be minimized to the greatest extent practicable and not exceed 55 dBA at the NSAs, **we recommended that:**

- **Iroquois should make all reasonable efforts to assure its predicted noise levels from the Brookfield Compressor Station are not exceeded at nearby NSAs, and file a noise survey with the Secretary and the State of Connecticut Siting Council no later than 60 days after placing the new compressor station in-service. However, if the noise attributable to the operation of the compressor station at full load exceeds an L_{dn} of 55 dBA at any nearby NSAs, Iroquois should file a report on what changes are needed and install additional noise controls to meet that level within 1 year of the in-service date. Iroquois should confirm compliance with the L_{dn} of 55 dBA requirement by filing a second noise survey with the Secretary no later than 60 days after it installs the additional noise controls.**

Dover Compressor Station

The Dover Compressor Station is in Dover Plains, New York. The proposed additions include a sixteen-fan gas cooler, manufactured by Hudson Products, Inc., to be installed within the existing control building. The nearest habitable structure is the New York City Mission Society and Camp Green Acres cabin, about 750 feet south of the proposed gas cooler, on the north side of Dover Furnace Road. The nearest residence is about 1,200 feet west of the proposed gas cooler.

The current compressor station sound level plus the sound level of the new gas coolers were estimated at the nearest NSAs. The sound contribution of the station at other more distant NSAs or residential property lines would be less than the sound contribution at these locations. Table 4.11-1 provides a summary of the current and estimated future sound environment at the closest NSAs. If the

recommended noise control measures for the proposed compressor addition were to be successfully implemented, the noise attributable to the station would be less than 55 dBA (L_{dn}) at the nearby NSAs. Therefore, it is anticipated that the upgraded facility would meet the FERC sound level requirements for compressor stations and the Town of Dover noise regulation. There are no other applicable federal, state or local noise regulations.

To ensure sound levels attributable to the Dover Compressor Station would be adequate to protect human health and welfare with an adequate margin of safety, **we recommended that:**

- **Iroquois file a post-construction noise survey with the Secretary no later than 60 days after placing the modified Dover Compressor Station in service with the proposed additional gas coolers. If the noise attributable to the operation of the modified compressor station at full load exceeds an L_{dn} of 55 dBA at any nearby NSAs, Iroquois should install additional noise controls to meet the level within 1 year of the in-service date. Iroquois should confirm compliance with this requirement by filing a second noise survey with the Secretary no later 60 days after it installs the additional noise controls.**

4.11.5 General Construction Impacts and Mitigation

Air Quality

The use of equipment to construct the pipelines and compressor stations proposed for the NE-07 Project would result in temporary, short-term emissions of certain air pollutants. These emissions would be restricted to the period of construction and would terminate upon its completion. During construction, trucks, dozers, trenchers, side booms, compressors, other miscellaneous heavy construction equipment, and worker commuting vehicles would emit NO_x, $S0_2$, CO, PM_{10} and VOCs.

We received several comments from landowners in the Laurel Ridge area where pipeline construction is proposed for the Columbia Line A-5 Replacement Project/Millennium Phase I Project. Concern has been expressed regarding the duration of and air emissions associated with construction activities.

Pipeline construction would progress at a rate of about one mile every six to eight weeks. Construction of the proposed facilities would cause a temporary reduction in local ambient air quality as a result of fugitive dust and emissions generated by construction equipment. However, construction emissions would occur at a particular location for only a limited period and would have an insignificant impact on air quality in the region.

Fugitive dust emissions from activities such as grading, trenching, backfilling, and vehicle traffic would occur during construction periods. All of the project sponsors have committee to using best management practices when and where necessary to minimize fugitive dust emission. These include: adding water or chemicals for control of dust from disturbed soils; limiting vehicle travel in disturbed areas; covering open equipment when conveying or transporting material likely to generate dust; promptly removing spilled or tracked dirt from paved streets; and, stabilizing and re-vegetating disturbed areas upon construction completion.

In a comment from CTDEP, it recommends that best management practices be used to minimize air quality impacts, and specifically, that diesel construction equipment should be fitted with emission control equipment such as oxidation catalysts and particulate matter filters. The project sponsors have

committed to proper maintenance of construction-related equipment including emission controls which would minimize local air quality impacts. The transient nature of pipeline construction would mean that impacts on air quality from pipeline construction would be localized and temporary.

There would be minimal emissions associated with operating the proposed pipeline. Therefore, pipeline operation is not expected to have a significant impact on air quality.

Noise

Construction of the NE-07 Project is expected to be typical in terms of schedule, equipment used, and other types of activities. Individuals in the immediate vicinity of the construction activities would experience a local, temporary increase in noise levels.

We received several comments from landowners in the Laurel Ridge area where pipeline construction is proposed for the Columbia Line A-5 Replacement Project/Millennium Phase I Project. Several comments expressed concern about the duration and impacts of noise associated with construction. Noise levels would vary greatly depending on the construction phase. Normally, construction occurs during the daylight hours (i.e., 7 a.m. to 7 p.m.) and as such, would occur when residents would be awake and active. Nighttime sound levels would be unaffected normally by construction activities. Best management practices would be implemented to minimize construction related noise including operating construction equipment on an as-needed basis; maintaining construction equipment to manufacturer's specifications; minimizing as much as possible the period of construction near the residences.

4.11.6 General Conformity

The Clean Air Act (CAA) contains the legislation that mandates the general conformity rule to ensure that federal actions in nonattainment and maintenance areas do not interfere with a state's timely attainment of the NAAQS. The general conformity rule divides the air conformity process into two distinct areas: applicability analysis and conformity determination. The applicability analysis process requires federal agencies to determine if their proposed action(s) would increase emissions of criteria pollutants above preset threshold levels (40 CFR §93.153). These threshold rates vary depending on severity of the nonattainment and geographic location. A formal conformity determination must be conducted if a federal action would generate emissions that exceed the de minimis threshold levels of pollutant(s) for which an AQCR is in non-attainment. For the project, there are multiple AQCR designated as non-attainment areas (NAAs). Therefore, an applicability analysis was performed (see appendix H) to determine if a formal conformity determination must be completed. All the associated AQCR are within the OTR.

AQCR 042 - Hartford - New Haven - Springfield Interstate: This area is classified as basic non-attainment under the 8-hour ozone standard. Construction components associated with the project in Putnam County, New York are within AQCR 042.

AQCR 043- New York - New Jersey - Connecticut Interstate (NY-NJ-CT AQCR): This area is classified as moderate non-attainment under the 8-hour ozone standard, and as non-attainment under the PM2.5 standard. Construction components associated with the project in Orange and Rockland Counties, New York; Morris County, New Jersey; and Fairfield and New Haven Counties, Connecticut are within AQCR 043.

AQCR 160 - Genesee-Finger Lakes Intrastate: This area is classified as basic non-attainment under the 8-hour ozone standard. Construction components associated with the project in Ontario and Genesee Counties, New York are within AQCR 160.

AQCR 161 - Hudson Valley Intrastate: This area is classified as moderate non-attainment under the 8-hour ozone standard. Construction components associated with the project in Dutchess County, New York are within AQCR 161.

AQCR 164 Southern Tier West Intrastate: This area is classified as an attainment area for all criteria pollutants; therefore, was not carried forward for detailed study. Construction components associated with the project in Schuyler County, Steuben County, and Chemung County, New York are within AQCR 164.

AQCR 163 Southern Tier East Intrastate: This area is classified as an attainment area for all criteria pollutants; therefore, was not carried forward for detailed study. Construction components associated with the project in Sullivan County, Tioga County, Broome County, and Delaware County, New York is within AQCR 163.

In a moderation-attainment area for ozone, located inside the OTR, de minimis levels for NOx and VOCs are 100 tpy and 50 tpy respectively. There is currently no de minimis thresholds for PM2.5 NAAs; however, as recommended in a March 2005 EPA memorandum regarding the implementation of the New Source Review requirements in PM2.5 NAAs, a de minimis threshold of 100 tpy for PM2.5 and its precursors (SO2, VOCs and ammonium) be used. If the total direct and indirect emissions for any pollutant would be greater than ten percent of the NAAs total emissions for that pollutant, then the action is defined as “regionally significant” and a General Conformity Determination would be required, even if they would be de minimis.

Table 4.11.6-1 details the total of direct and indirect emissions in all associated NAAs. The emissions from the project construction and operation do not meet the applicability threshold and would not be regionally significant. Therefore, a formal conformity determination is not required.

4.12 RELIABILITY AND SAFETY

One of the most common issues raised by commenters concerns reliability and safety. Pipelines are operated under a variety of federal and state regulations and industry standards intended to assure their safe and reliable operation. These regulations and standards address aspects of pipeline operations, including where they are built; how they are built, operated and maintained; how they are tested; and what programs and procedures the operators must institute and follow to assure the integrity of their pipelines and their operation. Additionally, there are various government organizations, such as the National Transportation Safety Board (NTSB), private citizens groups, landowners, and other stakeholders that monitor the operation of pipelines and make recommendations for improvements and changes. However, the pipeline company has the ultimate responsibility to assure the safety and reliability of the project.

The transportation of natural gas by pipeline involves some risk to the public in the event of an accident and subsequent release of gas. The greatest hazard is a fire or explosion following a major pipeline rupture.

Methane, the primary component of natural gas, is colorless, odorless, and tasteless. It is not toxic, but is classified as a simple asphyxiate, possessing a slight inhalation hazard. If breathed in high

concentration, oxygen deficiency can result in serious injury or death. Mercaptan is added to natural gas for safety so that it can be detected by smell.

Methane has an ignition temperature of 1,000 degrees Fahrenheit and is flammable at concentrations between 5.0 percent and 15.0 percent in air. Unconfined mixtures of methane in air are not explosive. However, a flammable concentration within an enclosed space in the presence of an ignition source can explode. It is buoyant at atmospheric temperatures and disperses rapidly in air.

TABLE 4.11.6-1
Total Construction Emissions For Non-Attainment Air Quality Control Regions (AQCR)

AQCR / Project Component	County	NO_x [tpy]	$PM_{2.5}$ [tpy]	SO_2 [tpy]	VOC [tpy]
AQCR 042 Hartford – New Haven – Springfield Interstate					
Building Addition Southeast Compressor Station	Putnam County	0.36	0.02	0.05	0.03
Commuting Construction Workers	Putnam County	0.59	NA	NA	0.43
TOTAL		**0.95**	**0.02**	**0.05**	**0.46**
AQCR 043 NY-NJ-CT Interstate					
39 Miles of Pipeline	Orange County	35.43	2.09	5.28	2.22
4 Miles of Pipeline	Rockland County	3.63	0.21	0.54	0.23
5 Miles of Pipeline	Rockland County	4.54	0.27	0.68	0.28
Building Addition Hanover Compressor Station	Morris County	0.23	0.01	0.03	0.02
New Brookfield Compressor Station	Fairfield County	5.65	0.35	0.83	0.48
New Brookfield Meter Station	Fairfield County	0.48	0.03	0.07	0.04
New Oxford Compressor Station	New Haven County	7.09	0.43	1.05	0.60
Upgrades to the Ramapo Meter Station	Rockland County	0.12	0.01	0.02	0.01
Commuting Construction Workers		7.23	NA	NA	5.27
TOTAL		**57.18**	**3.40**	**8.50**	**3.88**
AQCR 160 Genesee-Finger Lakes Intrastate					
32 miles of Pipeline	Ontario County	29.07	1.71	4.34	1.82
Mainline Valve / Interconnect Facility	Ontario County	0.14	0.01	0.02	0.01
New Oakfield Compressor Station	Genesee County	3.61	0.22	0.53	0.31
Commuting Construction Workers		3.91	NA	NA	2.85
TOTAL		**36.73**	**1.94**	**4.89**	**4.99**
AQCR 161 Hudson Valley Intrastate					
Dover Compressor Station	Dutchess County	0.59	0.04	0.09	0.05
Commuting Construction Workers	Dutchess County	0.59	NA	NA	0.43
TOTAL		**1.18**	**0.04**	**0.09**	**0.48**
	***De Minimis* Threshold [tpy]**	**100.00**	**100.00**	**100.00**	**50.00**
	Exceeds *De Minimis* Threshold? [Yes/No]	**No**	**No**	**No**	**No**
	Regionally Significant? [Yes/No]	**No**	**No**	**No**	**No**

The Connecticut Siting Council commented about prevention of releases of raw methane gas at Iroquois' proposed Brookfield Compressor Station. Iroquois responded that it maintains pipeline and compressor equipment to meet or exceed federally imposed standards to minimize the release of natural gas.

4.12.1 SAFETY STANDARDS

The DOT is mandated to provide pipeline safety under 49 U.S.C Chapter 601. The Research and Special Programs Administration's (RSPA), Office of Pipeline Safety, administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. It develops safety regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of pipeline facilities. Many of the regulations are written as performance standards that set the level of safety to be attained and allow the pipeline operator to use various technologies to achieve safety. RSPA ensures that people and the environment are protected from the risk of pipeline incidents. This work is shared with state agency partners and others at the Federal, state and local level. Section 5(a) of the Natural Gas Pipeline Safety Act provides for a state agency to assume all aspects of the safety program for intrastate facilities by adopting and enforcing the Federal standards, while Section 5(b) permits a state agency that does not qualify under Section 5(a) to perform certain inspection and monitoring functions. A state may also act as DOT's agent to inspect interstate facilities within its boundaries; however, the DOT is responsible for enforcement action. The majority of the states have either 5(a) certifications or 5(b) agreements, while nine states act as interstate agents.

The DOT pipeline standards are published in parts 190-199 of Title 49 of the CFR. Part 192 of 49 CFR specifically addresses natural gas pipeline safety issues. It does not, however, address other issues like siting and routing, bond issues, etc. These items, in part, are a matter of private negotiation between pipeline companies, landowners, and/or local government zoning boards. The Federal Statutes that govern DOT's authority do not authorize DOT to regulate those activities. The FERC takes the Federal lead on issues regarding environmental impacts (which often affect siting and routing), financing, tariffs etc.

Under a Memorandum of Understanding (MOU) on Natural Gas Transportation Facilities dated January 15, 1993, between the DOT and the FERC, the DOT has the exclusive authority to promulgate Federal safety standards used in the transportation of natural gas. Section 157.14(a)(9)(vi) of the FERC's regulations require that an applicant certify that it would design, install, inspect, test, construct, operate, replace, and maintain the facility for which a certificate is requested in accordance with Federal safety standards and plans for maintenance and inspection, or shall certify that it has been granted a waiver of the requirements of the safety standards by the DOT in accordance with section 3(e) of the Natural Gas Pipeline Safety Act. The FERC accepts this certification and does not impose additional safety standards other than the DOT standards. If the Commission becomes aware of an existing or potential safety problem, there is a provision in the MOU to promptly alert DOT. The MOU also provides for referring complaints and inquiries made by state and local governments and the general public involving safety matters related to pipeline under the Commissions jurisdiction.

The FERC also participates as a member of the DOT's Technical Pipeline Safety Standards Committee, which determines if proposed safety regulations are reasonable, feasible, and practicable.

The pipeline and aboveground facilities proposed by Millennium, Columbia, Empire, Algonquin, and Iroquois would be designed, constructed, operated, and maintained in accordance with the DOT

Minimum Federal Safety Standards in 49 CFR 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures.

Part 192 specifies material selection and qualification, design requirements, and protection from internal, external, and atmospheric corrosion. Pipelines are built in areas of varying population density throughout the U.S. Because avoidance of populated areas is not always possible, the standards in the Federal regulations become more stringent as the human population density increases.

Part 192 also defines area classifications, based on population density in the vicinity of the pipeline, and specifies more rigorous safety requirements for more populated areas. The class location unit is an area that extends 220 yards on either side of the centerline of any continuous 1-mile length of pipeline. The four area classifications are defined as follows:

Class 1 Location with 10 or fewer buildings intended for human occupancy.

Class 2 Location with more than 10 but less than 46 buildings intended for human occupancy.

Class 3 Location with 46 or more buildings intended for human occupancy or where the pipeline lies within 100 yards of any building, or small well-defined outside area occupied by 20 or more people during normal use.

Class 4 Location where buildings with four or more stories aboveground are prevalent.

Class locations representing more populated areas require higher safety factors in pipeline design, testing and operation. Pipelines constructed on land in class 1 locations must be installed with a minimum depth of cover of 30 inches in normal soil and 18 inches in consolidated rock.

Classes 2, 3, and 4 locations, as well as drainage ditches of public roads and railroad crossings, require a minimum cover of 36 inches in normal soil and 24 inches in consolidated rock. Class locations also specify the maximum distance to a sectionalization block valve (e.g., 10.0 miles in class 1, 7.5 miles in class 2, 4.0 miles in class 3, and 2.5 miles in class 4). Pipe wall thickness and pipeline design pressures, hydrostatic test pressures, maximum allowable operating pressure, inspection and testing of welds, and frequency of pipeline patrols and leak surveys must also conform to higher standards in more populated areas.

Part 192 prescribes the standards for operating and maintaining pipeline facilities, including the requirement to establish a written plan governing these activities. Under section 192.615, each pipeline operator must also establish an emergency plan that includes procedures to minimize the hazards in a natural gas pipeline emergency. Key elements of the plan include procedures for:

- receiving, identifying, and classifying emergency events, gas leakage, fires, explosions, and natural disasters;
- establishing and maintaining communications with local fire, police, and public officials, and coordinating emergency response;
- emergency shutdown of system and safe restoration of service;
- making personnel, equipment, tools, and materials available at the scene of an emergency; and,
- protecting people first and then property, and making them safe from actual or potential hazards.

Part 192 requires that each operator must establish and maintain liaison with appropriate fire, police, and public officials to learn the resources and responsibilities of each organization that may respond to a natural gas pipeline emergency, and to coordinate mutual assistance. The operator must also establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a gas pipeline emergency and report it to appropriate public officials.

In 2002, Congress passed an act to strengthen the Nation's pipeline safety laws. The Pipeline Safety Improvement Act of 2002 (HR 3609) was passed by Congress on November 15, 2002, and signed into law by the President in December 2002. No later than December 17, 2004, gas transmission operators must develop and follow a written integrity management program that contains all the elements described in §192.911 and addresses the risks on each covered transmission pipeline segment. Specifically, the law establishes an integrity management program, which applies to all high consequence areas (HCAs). The DOT (68 Federal Register [FR] 69778, 69 FR 18228, and 69 FR 29903) defines HCAs as they relate to the different class zones, potential impact circles, or areas containing an identified site as defined in §192.903 of the DOT regulations.

OPS published a series of rules from August 6, 2002 to May 26, 2004 (69 FR 29903), that defines HCAs where a gas pipeline accident could do considerable harm to people and their property and requires an integrity management program to minimize the potential for an accident. This definition satisfies, in part, the Congressional mandate in 49 U.S.C. 60109 for OPS to prescribe standards that establish criteria for identifying each gas pipeline facility in a high-density population area.

The HCAs may be defined in one of two ways. In the first method an HCA includes

- current class 3 and 4 locations,
- any area in Class 1 or 2 where the potential impact radius[10] is greater than 660 feet and there are 20 or more buildings intended for human occupancy within the potential impact circle[11], or
- any area in Class 1 or 2 where the potential impact circle includes an identified site[12].

In the second method an HCA includes any area within a potential impact circle which contains

- 20 or more buildings intended for human occupancy, or
- an identified site.

The facilities associated with the Millennium Pipeline Project, Columbia Line A-5 Replacement Project, Empire Connector Project, Algonquin Ramapo Expansion Project, and the Iroquois MarketAccess Project, would be designed, constructed, operated, and maintained in accordance with the USDOT Minimum Federal Safety Standards at 49 CFR Part 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas pipeline accidents and failures. Part 192 specifies material selection and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion. A contractor would be selected by Millennium, Columbia, Empire,

[10] The potential impact radius is calculated as the product of 0.69 and the square root of the MAOP of the pipeline in psi multiplied by the pipeline diameter in inches.
[11] The potential impact circle is a circle of radius equal to the potential impact radius.
[12] An identified site is an outside area or open structure that is occupied by 20 or more persons on at least 50 days in any 12-month period; a building that is occupied by 20 or more persons on at least 5 days a week for any 10 weeks in any 12-month period; or a facility that is occupied by persons who are confined, are of impaired mobility, or would be difficult to evacuate.

Algonquin, and Iroquois to construct the pipeline according to these standards and each company's individual project-specific plans. These facilities would be designed to maintain minimal hazard potential to the surrounding area. We believe this project does not present a substantial safety risk to the public.

4.12.2 Pipeline Accident Data

Since February 9, 1970, 49 CFR Part 191 has required all operators of transmission and gathering systems to notify the DOT of specific types of incidents that occurred during the operation of the natural gas transmission and gathering systems nationwide. Reportable incidents are defined as any leaks that:

- caused a death or personal injury requiring hospitalization;
- required taking any segment of transmission line out of service;
- resulted in gas ignition;
- caused estimated damage to the property of the operator, or others, or both, of a total of $5,000 or more;
- occurred while testing with gas or another medium; or,
- if the judgment of the operator was significant, even through it did not meet the above criteria.

The DOT changed reporting requirements after June 1984 to reduce the amount of data collected. Table 4.12.2-1 presents a summary of incident data for the 1970 to 1984 period, as well as more recent incident data for 1991 through 1997, recognizing the difference in reporting requirements. However, because the 14.5-year period from 1970 through June 1984 provides a larger universe of data and more basic report information than subsequent years, it has been subject to detailed analysis, as discussed below (Jones et al. 1986).

Table 4.12.2-1
Natural Gas Service Incidents by Cause

Cause	Incidents per 1,000 miles of Pipeline (percentage)	
	1970-1984	1986-2005
Outside Force	0.70 (53.8)	0.10 (38.5)
Corrosion	0.22 (16.6)	0.06 (23.1)
Construction or material defect	0.27 (21.7)	0.03 (15.4)
Other	0.11 (8.2)	0.06 (23.1)
Total	1.30	0.26

From February 1970 through June 1984, the dominant incident cause was outside forces, constituting 53.8 percent of all service incidents. Outside force incidents result from the encroachment of mechanical equipment such as bulldozers and backhoes; earth movements due to soil settlement, washouts, or geologic hazards; weather effects such as winds, storms, and thermal strains; and willful damage. Table 4.12.2-2 shows that human error in equipment usage was responsible for about 75 percent of outside force incidents. Since April 1982, operators have been required to participate in "One Call" public utility programs in populated areas to minimize unauthorized excavation activities in the vicinity of pipelines. The "One Call" program is a service used by public utilities and some private sector companies (e.g. oil pipelines and cable television) to provide pre-construction information to contractors or other maintenance workers on the underground location of pipes, cables, and culverts. The 1986 through 2005 data show that the portion of incidents caused by outside forces have decreased to 38.5 percent.

Table 4.12.2-2
Outside Forces Incidents by Cause (1970-1984)

Cause	Percent
Equipment operated by outside party	67.1
Equipment operated by or for operator	7.3
Earth movement	13.3
Weather	10.8
Other	1.5

The frequency of service incidents is strongly dependent on pipeline age. While pipelines installed since 1950 exhibit a fairly constant level of service incident frequency, pipelines installed before that time have a significantly higher rate, partially due to corrosion. Older pipelines have a higher frequency of corrosion incidents, since corrosion is a time-dependent process. Further, new pipe generally uses more advanced coatings and cathodic protection to reduce corrosion potential. Table 4.12.2-3 clearly demonstrates the effectiveness of corrosion control in reducing the incidence of failures caused by external corrosion. The use of both an external protective coating and a cathodic protection system, required on all pipelines installed after July 1971, significantly reduces the rate of failure compared to unprotected or partially protected pipe.

Table 4.12.2-3
External Corrosion by Level of Control (1970-1984)

Corrosion Control	Incidents per 1,000 miles per Year
None-bare pipe	0.42
Cathodic protection only	0.97
Coated only	0.40
Coated and cathodic protection	0.11

The available data show that natural gas pipelines continue to be a safe, reliable means of energy transportation. Based on about 311,000 miles in service, the rate of public fatalities for the nationwide mix of transmission and gathering lines in service is 0.01 per year per 1,000 miles of pipeline. This data supports that the construction, operation and maintenance of the pipeline systems pose no significant hazards or any adverse impact or risk to the nearby public.

4.12.3 PIPE DESIGN AND SAFETY MEASURES

The proposed projects would adhere to the following:

- Class locations specified in 49 CFR Part 192 would be used to determine minimum pipe wall thickness, shutoff valve spacing, and depth of cover required. High-strength carbon steel pipe per American Petroleum Institute ("API") Specification API 5L would be used for the pipe.
- Large diameter pipe would meet or exceed specifications required of part 192, and API's manufacturing standard, which provides for traceability of all pipe through the manufacturing process.
- The pipe coatings would be factory applied fusion-bond epoxy (FBE) to help eliminate risks to external corrosion.
- Before placing the pipeline in service, hydrostatic testing of the piping would be conducted to verify the integrity of the pipe and welds. Any pipe segment that does not pass the hydrostatic test would be repaired and retested. The piping would be designed to allow for the use of

electronic in-line inspection tools to determine wall thickness and the presence of detectable corrosion or defects.

- Supervisory Control and Data Acquisition (SCADA) System – SCADA systems are sophisticated communication systems that take measurements and collect data along the pipelines (e.g., metering and compressor stations) and transmit the data to a centralized control station for analysis and reporting.
- External corrosion protection would be achieved by means of externally coated pipe and cathodic protection using rectifiers and anodes as required by 49 CFR 192.
- Internal Inspection and Cleaning – The pipelines are equipped with launching and receiving equipment to facilitate integrity evaluations. Actual pipe inspection is done through the use of equipment known as pigs. Pigs are intelligent electronic devices that are propelled through pipelines to evaluate the pipe wall. Sensors incorporated into inspection Pigs can test pipe thickness and roundness, and check for signs of corrosion and other defects along the interior of the pipeline that may either impede the flow of gas, or pose a potential safety risk for the operation of the pipeline.
- Mainline Valves and Blow Down Vents – The mainline valves equipped with blow down vents would be installed at regular intervals, as specified by 49CFR192 requirements for the design classification. These valves provide for securing and depressurizing sections of the pipeline in the event of maintenance or emergency isolation.
- The use of pipeline markers, aerial markers and warning tape.
- The pipeline systems would be monitored 24 hours/day, 365 days per year telemetrically by the various control centers of each pipeline company.
- Aerial and Ground Reconnaissance – Aircraft would be used to monitor right of way vegetation, identify abnormalities, and monitor for unauthorized activities so that they do not occur within the permanent pipeline corridor. Unauthorized activities include encroachment such as unauthorized ground disturbing activities or building unauthorized structures within the permanent easement. Ground activities associated with aerial follow-up or normal operations and maintenance activities would also monitor for abnormalities and unauthorized activities. The pipeline would be monitored by air as required by 49CFR192.

4.12.4 ACCIDENTS AND NATURAL DISASTERS

In the event of an accident, inspection of the pipeline would be undertaken immediately and, if necessary, that section of the pipeline would be isolated for repair. If an accident results in a gas release, any escaped gas would quickly disperse. Contamination of surface or groundwater resources because of a natural gas leak is not likely due to the physical/chemical nature of methane. The gas transported historically by the existing pipelines has been very dry, making liquid content in any portion of the line highly unlikely. Based on this history, the gas to be transported through the Pipeline Projects is not expected to contain any liquids that would leak from the pipeline.

4.12.5 COMPRESSOR STATION FACILITIES

Each compressor station would be designed, constructed, operated, and maintained in accordance with the DOT Minimum Federal Safety Standards in 49 CFR Part 192. The compressor stations would be centrifugal compressors driven by natural gas-fueled turbines. This offers the advantage of reduced vibration and pulsation effects, and thus vibration and fatigue induced failures compared with reciprocating engines and compressor units. The turbo-compressor package is proposed to incorporate a dry gas seal system, which eliminates the high pressure, seal oil system, and thus some points of potential failure. The turbo compressor package, including both the turbine engine and gas compressor would be enclosed within an on skid enclosure that provides turbine lube oil containment.

The proposed compressor stations would be equipped with a full range of automatic emergency detection and shut down systems. The stations would have a hazardous gas and fire detection alarm system, a compressor unit enclosure fire suppression system, as well as, a standard fire alarm system and emergency equipment shut down systems. These safety and emergency systems would be monitored 24 hours a day by each individual company's gas control centers.

The SCADA system is the backbone to the Gas Control Center. Data collection, monitoring and control of the compressors, meter stations and mainline block valves are accomplished by the SCADA system. If operating conditions fall outside predetermined ranges, alarms are activated at the Gas Control Center enabling rapid diagnosis and mitigation of the alarm condition. Mainline block valves could be operated remotely from the Gas Control Center as well as manually at the field location. If operating conditions at the compressor station fall outside predetermined ranges, alarms would be activated at the applicant's Gas Control Center for remote diagnosis. The Gas Control Center has the ability to remotely initiate an emergency shut down. An on-call person would be sent to the compressor station to investigate the problem.

Iroquois states that its compressor stations would be designed for unattended operation. Emergency response by on-call personnel would be about one hour, and there would be someone on-call 24 hours a day, seven days a week.

Standard fire protection, first aid, and safety equipment would be maintained at the existing compressor station, and station maintenance personnel would be trained in proper equipment use and in first aid. The fire-fighting equipment that would be maintained on-site would include dry chemical fire extinguishers. Millennium, Algonquin, Empire and Iroquois also would coordinate with the local emergency response services concerning the equipment at their stations.

The CSC commented that Iroquois' proposed Brookfield Compressor Station be accessible by emergency vehicles and personnel, and that a turnaround area be provided for emergency vehicles. Iroquois' responded that emergency vehicles can enter the site from either the north or south entrance off High Meadow Road and turnaround in either a 100-foot x 100-foot area between the control and storage buildings or a 70-foot x 170-foot paved area in front of the compressor building.

Emergency Shut-Down Systems

Part 192 specifies that each compressor station must have an emergency shut-down system that could be manually operated from at least two points. In addition to a higher number of manual shutdown points, the proposed compressor stations would have a number of monitoring systems that would initiate shutdown automatically. The turbo-compressor enclosure would also be equipped with ultraviolet and infrared (UV/IR) fire/heat detectors, fire suppression, and gas detection systems. The turbo-compressor package would in turn be housed within a compressor building, with its own UV/IR and gas detection systems. The station would automatically shut-down and evacuate gas from the station piping in the event of UV/IR (flame/heat) detection, or gas levels at 50 percent of the Lower Explosive Limit (LEL). The (LEL) is the lowest amount of gas that could cause an explosion.

The unit and station control systems themselves would be self- protecting. The systems would not accept local or remote control set points that would cause the station to operate in an unsafe manner. Loss of signal from either the unit or station control system would cause the station to shut down and depressure. Electric power to the control systems would have a number of redundant features that would enhance the reliability and safety, including a local on-site Auxiliary Power Unit (APU) that would start up on loss of commercial electric power to the station. In the event that the APU fails, the station

controls, unit controls, and SCADA communication system would have a minimum of 4 hours of operation through battery back-up. In the event that all batteries fail, the station would shut down and depressurize on loss of power. A number of the valves and actuators within the station would be "fail safe", that is they would require a positive signal to remain in the operating position. On any loss of signal, those valves would "fail" to their shutdown condition. An example is the compressor unit suction and discharge valves immediately outside of the compressor building. Any valves inside the compressor building, such as the compressor blowdown valve, would be actuated by compressed air, in itself a method to reduce the possibility of gas leaks within the compressor building. The compressed air system has multiple air compressors, and a compressed air storage tank to increase the reliability of that system. The pneumatically operated valves would require positively compressed air pressure to remain in their operating position. If, however, for any reason, there would be a reduction in air pressure to those valves, they would "fail" into their safe position, and cause the unit to shutdown.

4.12.6 SECURITY STANDARDS

Measures used to protect the pipelines and aboveground facilities would include the following:

- depth of cover to protect the pipeline and deter vandalism or other disruptive activities from occurring is substantial and reflective of the area classification/exposure potential;
- regular ground and aerial monitoring activities;
- controlling access at aboveground installations with fencing and secured entry points;
- Intrusion detection alarms to alert dispatch if/when unauthorized entry occurs at the compressor station;
- security lighting would be provided at the compressor station;
- limit information regarding the exact location of the buried pipeline;
- surveillance cameras would be provided at the compressor station;
- alternate power sources available (e.g., backup generators, battery-based uninterruptible power supplies) to sustain operation, provide power to control system(s) and charge batteries in the event main power is lost; and
- SCADA and transmitters would be used to send surveillance data directly via satellite network to central monitoring sites.

4.12.7 FREQUENTLY ASKED PIPELINE SAFETY QUESTIONS

In a letter dated December 10, 1998, the DOT staff responded to a November 19, 1998, letter from Mr. John Diacsuk of Pen Argyl, Pennsylvania, regarding construction of the Market Link Project. Both letters are in the FERC's public file. Mr. Diacsuk's questions reflect concerns that have also been expressed in comments filed on the Millennium Pipeline Project and other projects. Because his questions and the DOT's responses could apply to pipeline projects in general and are not project-specific, we include them to provide additional information from the DOT.

1. When natural gas is not being pumped, what inert gas is used to prevent internal pipe corrosion and related stress corrosion cracking?

Natural gas pipelines remain under a dry methane atmosphere, even when gas is not actively being "pumped." Pipelines are normally only purged for some maintenance activities.

Stress corrosion cracking (SCC) in pipelines is a complex process that is not completely understood. In some forms, the process is electrochemical, similar to general corrosion. SCC typically occurs at breaks in the coating or at regions where the coating is disbonded. Soil conditions and

temperature of the pipe and the surrounding media are other factors that contribute to SCC. The presence of inert gas or corrosion inhibitors, however, are not factors that contribute to stress corrosion cracking. To date, failure due to SCC in natural gas pipelines in the eastern United States has not been a major problem.

2. Where is the weld inspection and documentation data maintained?

The requirements for welding of steel in pipelines are contained in Subpart E of 49 CFR part 192. This subpart documents the procedures companies have to follow for the qualifications of welders (section 192.227), inspection and testing of welds (section 192.241), and nondestructive testing (section 192.243). The code does not specifically address the location where the weld inspection and documentation are retained. By choice, most companies prefer to retain all the weld-related information in a central repository.

3. What type of crack detection is provided for the pipeline?

Modern pipeline materials with their improved metallurgical and microscopic structure and innovative manufacturing processes are not prone to cracking. The steel mills are also responsible for implementing inventive quality control and quality assurance checks throughout the manufacturing process. After a pipe length is manufactured, it is subjected to a hydrostatic test to verify that it is crack-free. The pipe is also transported in accordance with RP 5Ll: Recommended Practice for Railroad Transportation of Line Pipe to prevent the formations of cracks. As stated in the specification, most purchasers also specify that the manufacturer furnishes a report on the finished pipe.

In addition, section 192.55 (e) states that *"New steel pipe that has been cold expanded must comply with the mandatory provisions of American Petroleum Institute (API) Specification 5L."* The API Specification for high-test line pipe is under the jurisdiction of the Committee on Standardization of Tubular Goods of the API and was prepared with the cooperation of the American Gas Association.

After the installation of the pipeline and before putting it into service, according to section 192.505 (a) of the CFR, *"... each segment of the steel pipeline that is to operate at a hoop stress of 30 percent or more of SMYS must be strength tested...to a test pressure of at least 125 percent of maximum operating pressure on that segment..."* and to higher levels in densely populated areas.

4. What type of inspection is provided in the event of seismic activity?

Section 192.605 specifies that *"Each operator shall prepare and follow for each pipeline, a manual of written procedures for conducting operations and maintenance activities and for emergency response."* A seismic activity is characterized as an incident requiring emergency response.

If a pipeline resides in a seismically active zone, the operator should have sufficiently detailed plans that enumerate the steps that the company would take following a seismic activity. After a major earthquake, hydrostatic testing or in-line inspection can determine if a pipeline endured damage to assure integrity.

In addition to the above-mentioned code requirement there are other regulations that natural gas transmission operators must abide by to protect the public and minimize hazardous occurrences. They are:

- Section 192.103 - addresses the design requirement for line pipe;
- Section 192.613 - Continuing surveillance;

- Section 192.615 - Emergency plans;
- Section 192.616 - Public education; and,
- Section 192.617 - Investigation of failures.

5. In the area of airport approach patterns, can the pipeline withstand an aircraft crash?

Just like all engineered structures, pipelines are designed using well-established engineering principles and codes. Similar to other structures, pipelines are designed to withstand calamitous and emergency situations they are routinely subjected to. Similar to other engineered structures, pipelines cannot withstand aircraft crashes if they occur directly over the pipeline. Both the DOT and FERC are not aware of commercial aircraft crashes damaging underground pipelines.

6. In the event of rupture, what is the shutdown reaction time, and does it meet DOT specifications?

In the event of a rupture, a shutdown is achieved by closing valves in the transmission line on either side of the rupture. Section 192.179 of 49 CFR identifies the distance transmission line valves must be placed. This distance is a function of the terrain traversed and varies from a minimum of two and one-half miles in populated areas to a maximum of 10 miles in remote areas. A blowdown valve is another appurtenance that must be installed between mainline valves to vent the transmission line as rapidly as practicable without hazard in the event of a rupture.

The valve spacing criteria are established by Class locations as referenced in section 192.5 and the valve spacing requirement in section 192.179.

The first criteria is Class location, defined hereinabove in section 5.12.1 Safety Standards. The relevant spacing is enumerated as follows:

192.179 TRANSMISSION LINE VALVES.

(a) Each transmission line, other than offshore segments, must have sectionalizing block valves spaced as follows:
  (1) Each point on a pipeline in a Class 4 location must be within 2½ miles of a valve.
  (2) Each point on a pipeline in a Class 3 location must be within 4 miles of a valve.
  (3) Each point on a pipeline in a Class 2 location must be within 7½ miles of a valve.
  (4) Each point on a pipeline in a Class 1 location must be within 10 miles of a valve.

Most transmission lines are also monitored remotely through the use of telephone or radio communications by a system called Supervisory Control and Data Acquisition (SCADA). For large pipeline systems, the SCADA system is located at the operator's control center and is monitored 24 hours a day throughout the year. A rupture that causes the loss of gas is identified by the SCADA system as a loss of pressure and is exhibited by any combination of audiovisual signals called alarms. The operator routinely has a set of protocols that identify how and what has to be done by the control center to mitigate a disastrous condition.

As mentioned earlier, the DOT regulations are written as performance standards, which set the level of safety to be attained and allow the pipeline operator to use various technologies to achieve safety. The regulations do not specify the shutdown time of a segment of a facility because of an accident. However, the operator is expected to use diligence and current industry practices to assign a reasonable shutdown time.

7. What type of disaster contingency plan is in place?

Refer to the answer to question number 4.

8. Can the pipeline be damaged during floods in flood prone areas?

Floods in flood prone areas can damage pipelines. However, according to section 192.317 of 49 CFR, *"The operator must take all practicable steps to protect each transmission line or main from washouts, floods, unstable soil, landslides or other hazards that may cause the pipeline to move or to sustain abnormal loads."*

Based on published surveys of flood plains and high water marks in active waterways, companies generally use established engineering best practices to prevent their facilities from becoming undermined during floods. They commonly use casings, heavy wall pipe, and concrete coating in susceptible locations to protect the pipe. They may also install weights on the pipeline to prevent flotation and routinely vegetate the ground cover with grasses to prevent soil erosion.

Based on historical flood data, companies may also horizontally directionally drill segments of their pipelines for much greater lengths and at greater depths than required under the channel to prevent damage due to floods. Areas susceptible to floods and other natural disasters are also patrolled more often than other areas.

9. What type of over-pressure protection is provided for the pipeline?

Sections 192.195, 192.199 and 192.201 of 49 CFR address over-pressure protection in natural gas transmission pipelines. The commonly used over-pressure protection devices are rupture discs, pressure relief, or pressure limiting devices and control valves. The recognized methods of preventing overpressuring the downstream-carrying components of gas control equipment include the following:

- Selecting equipment rated to withstand the inlet pressure on the downstream side. This is particularly important if the equipment employs internal sensing and the adjacent downstream piping is not otherwise protected;
- Connecting the control or sensing line to the downstream pressure system where over-pressure protection has been provided; and
- Protecting the downstream pressure carrying components by installing a relief valve, regulator, backpressure valve, or other suitable device in the control or sensing line.

10. Is a bond provided to ensure that the taxpayer and land owner are not burdened in the event of pipe line disaster or collapse of abandoned sections in future years (e.g., the coal mines under Scranton are still collapsing, and the coal company is not responsible for the repair costs)?

Bond issues and other financial instruments to compensate land owners in the event of pipeline failures are not within DOT's or FERC's jurisdiction. However, local jurisdictions may have requirements for bonds for construction projects.

11. What protection is in place to ensure that the pipeline is not used for storage of natural gas or other gases?

If an applicant receives FERC approval to transport natural gas, that is the purpose of the pipeline. Depending on the nature of the natural gas, an operator must protect its internal surface from internal corrosion. Subpart I of 49 CFR addresses the requirements for corrosion control on natural gas

pipelines. Section 192.451 *"...prescribes minimum requirements for the protection of metallic pipelines from external, internal and atmospheric corrosion."*

Sections 192.475 and 192.477 address the general aspects and the monitoring for internal corrosion control, respectively. According to section 192.475 (a), *"Corrosive gas may not be transported by pipeline, unless the corrosive effect of the gas on the pipeline has been investigated and steps have been taken to minimize internal corrosion."* Even though the term "corrosive gas" is not defined in part 192 of 49 CFR, the analogous term "corrosive material" is defined in the hazardous materials regulations under 49 CFR § 173.136. This definition, which contains criteria for determining damage to human skin or the corrosion rate on steel or aluminum, is cross-referenced in the definition of "corrosive product" in the hazardous liquid pipeline safety standards (49 CFR section 195.2).

12. What protection is in place to ensure that only natural gas is pumped in the pipeline?

The purpose of the proposed pipeline is to transport natural gas. The FERC certificate does not allow products other than natural gas to be transported through the pipeline.

As the gas is transported through the pipeline system, the operator samples the gas at various locations to determine the BTU content and chemical composition. The shipper of the product (local distribution company, end-user, marketer, etc.) from the transmission company also assesses the quality of the gas stream to ensure that it meets their standards.

As mentioned in the previous answer, if corrosive material is found in the natural gas stream, the operator must take steps to minimize internal corrosion.

13. Is the pipeline monitored twice daily to protect against terrorism as is the Alaska Pipeline?

Section 192.705 of DOT's regulations requires that *"Each operator shall have a patrol program to observe surface conditions on and adjacent to the transmission line ROW for indications of leaks, construction activity, and other factors affecting safety and operation."* The frequencies of these patrols are a function of the population density adjacent to the pipeline and vary from a minimum of at least once per year to four times per year. Many operators, however, patrol the pipeline more often that the DOT regulations specify.

14. Is the pipeline at road and railroad crossings buried deep enough so that it would prevent rupture and explosion in the case of tanker explosion or terrorist activity?

According to section 192.327, *"...Each buried transmission line must be installed with a minimum cover..."* which again is a function of population density. In normal soil the cover varies from a minimum of 30 inches in sparsely populated areas to 36 inches in densely populated areas. When the pipeline crosses drainage ditches, public roads and railroads, the minimum cover is 36 inches. However, the minimum cover under railroads is generally higher than what is specified in the codes because railroad companies have their own requirements in their permit application. Also, as mentioned in the answer to question number 9, most companies use heavy wall pipe, casings, concrete coating, or a combination thereof under obstructions and areas that are heavily traveled or are subject to heavier loads.

15. Are local fire and disaster relief agencies funded and capable of handling a catastrophic pipeline accident (e.g., a backhoe punctured a pipe line in New Jersey, and it took several fire companies and an evacuation to control the accident)?

The communities themselves can best answer the capabilities of local fire and disaster relief agencies and their funding levels. In the unlikely event of a pipeline emergency, local emergency personnel would be expected to assist in the evacuation of the public during the emergency, control traffic, and if necessary, control secondary fires. It is expected that applicants would meet with emergency personnel to coordinate emergency plans, and overall responsibilities during a pipeline emergency.

16. In the event that a pipeline accident was to occur and property is damaged, would the applicant reimburse the property owner for damages? Who would be responsible for assessing damage costs?

In the unlikely result of an applicant's negligence, it would be responsible for property damage. Each applicant has stated that it would maintain adequate insurance to provide for payment for any such costs. Damage cost would be determined by negotiation among the parties, or their insurers, or, if agreement cannot be reached, by appropriate legal proceedings. If an outside third-party caused the pipeline accident, the most likely scenario would be legal proceeding to determine fault and extent of compensation.

17. What percent of failures occur where pipelines are constructed within roadbeds?

The DOT's Office of Pipeline Safety maintains statistical information with respect to gas pipeline incidents. That information provides pipeline incident information in broad categories. One of these categories identifies incidents "under pavement." This category appears to be the most analogous to the question. While not defined, "under pavement" could include, in addition to roadbeds, parking lots, driveways, and sidewalks. Based on the statistics for this category, 1.54 percent of all gas transmission incidents occurred "under pavement."

18. What additional safety measures are required for construction under roads? Are there any additional requirements if such construction is in an urban setting?

The DOT, the Federal agency charged with the responsibility for pipeline safety, has specific requirements for construction under 49 CFR part 192. In addition, the safety regulations specify certain requirements in urban settings, which would include roads. These requirements are determined by population density. The relevant section of the code is as follows:

192.111 DESIGN FACTOR (F) FOR STEEL PIPE

(A) Except as otherwise provided in paragraphs (b), (c),and (d) of this section, the design factor to be used in the design formula in section 192.105 is determined in accordance with the following table:

Class Location	Design Factor
1	0.72
2	0.60
3	0.50
4	0.40

(B) A design factor of 0.60 or less must be used in the design formula in section 192.105 for steel pipe in Class 1 locations that:

(1) crosses the ROW of an unimproved road, without a casing;

(2) crosses without a casing, or makes a parallel encroachment on, the ROW of a hard surfaced road, a highway, a public street, or a railroad;
(3) is supported by a vehicular, pedestrian, railroad, or pipeline bridge; or
(4) is used in a fabricated assembly, (including separators, mainline valve assemblies, cross connections, and river crossing headers) or is used within five pipe diameters, in any direction from the last fitting of a fabricated assembly, other than a transition piece or an elbow used in place of a pipe bend which is not associated with a fabricated assembly.

(C) For Class 2 locations, a design factor of 0.50 or less must be used in the design formula in section 192.105 for uncased steel pipe that crosses the ROW of a hard surfaced road, a highway, a public street, or a railroad.

(D) For Class 1 and Class 2 locations, a design factor of 0.50 or less must be used in design formula in section 192.105 for:

(1) steel pipe in a compressor station, regulating station, or measuring station; and
(2) steel pipe, including riser pipe, on a platform located offshore or in inland navigable waters.

19. How does DOT evaluate natural gas pipelines and enforce their safety standards?

The DOT conducts periodic audits of pipeline companies, both during and after construction. One of the tools it uses is a checklist known as an "Evaluation Report of Gas Transmission Pipeline" which can be found on the DOT's Internet web site http://ops.DOT.gov.

4.12.8 SPECIFIC COMMENTS RELATED TO PIPELINE SAFETY FOR NE-07 PROJECT

Several commenters have expressed concern regarding the safety of Iroquois' proposed Brookfield Compressor Station and Algonquin's proposed M&R station, specifically in regard to the proximity of these facilities to the Whisconier Middle School, which would be located about 2,000 feet from the school. Commentators have raised concerns over the possibility of a "shock wave" shattering windows at Whisconier Middle School if there were to be an accident at the compressor station.

The construction and operation of the proposed Brookfield Compressor Station is not expected to adversely affect the school. The proposed compressor station would be located at a lower elevation than the school and would be visually screened from the school property by a mature forest that exists between the school and compressor station site. Air emissions and noise associated with the construction and operation of the compressor station are also not expected to adversely affect the school, as the compressor station would be constructed and operated in compliance with applicable air quality and noise standards. See Section 4.11 for further information on air and noise. In addition, Iroquois and Algonquin propose to construct and operate their facilities in accordance with applicable DOT safety requirements. Iroquois proposes to incorporate the same or similar safety features as those that have been successfully designed and are being used at Iroquois' existing compressor stations in the Towns of Wright, Croghan, and Athens, New York. Algonquin would construct and operate its M&R station in a manner that is consistent with similar facilities on its pipeline system.

As previously noted, while unconfined mixtures of natural gas and air, are not explosive, a flammable concentration within an enclosed structure can explode upon ignition. However, the dominant hazard from a pipeline explosion is the thermal radiation from a sustained fire, not from blast effects. In

its Notice of Proposed Rulemaking for High Consequence Areas (January 9, 2002 Federal Register), the DOT's Research and Special Programs Administration identified four significant characteristics of gas pipelines that it used in developing a proposed definition of high consequence areas. First, the effects of a gas pipeline rupture and subsequent explosion are highly localized, based on its observation at the damage sites of pipeline ruptures. Second, the zone of damage from an explosion and burning of gas following a pipeline rupture is related to the pipe diameter and operating pressure. Third, the size of the heat affected zone for ruptures of pipelines of less than 36 inches in diameter and operating pressures less than 1,000 pounds per square inch gauge measurement (psig) was limited to 660 feet. Fourth, for ruptures of pipelines with diameters 36 inches or greater and pressures above 1,000 psig, the heat affected zone can extend up to 1,000 feet. The potential impact radius for the existing Iroquois 24-inch-diameter pipeline operated at 1,440 psi with a threshold heat flux of 5,000 Btu (related to burning wood) would be about 624 feet. Two residences would be located within this area.

The Whisconier Middle School is located well beyond these distances from either the proposed compressor station or the three existing pipelines, and therefore, there would be no significant hazard to the school or students in the event of a rupture and fire at the station. A review of 116 compressor station incidents since 1984 supports the localized nature of compressor station hazards. In all cases, personnel injuries were limited to the station employees or contract personnel.

Several commentators expressed concern about the compressor station being a potential target for terrorism. The attacks of September 11, 2001, have changed the way pipeline operators as well as regulators must consider terrorism, both in approving new projects and in operating existing facilities. However, the likelihood of future acts of terrorism or sabotage occurring on the proposed compressor station, or at any of the myriad natural gas pipeline or energy facilities throughout the United States is unpredictable given the disparate motives and abilities of terrorist groups. The continuing need to construct facilities to support the future natural gas pipeline infrastructure is not diminished because of the threat of any such future acts. Moreover, the unpredictable possibility of such acts does not support a finding that this particular pipeline facility should not be constructed.

Increased security awareness has occurred throughout the industry and the nation. Following September 11, the Executive Branch of the United States of America, established the Office of Homeland Security with the mission of coordinating the efforts of all executive departments and agencies to detect, prepare for, prevent, protect against, respond to, and recover from terrorist attacks within the United States. The Commission, in cooperation with other Federal agencies and industry trade groups, has joined in the efforts to protect the energy infrastructure. The concerns raised by commentators fall within the scope of these ongoing efforts to protect the more than 300,000 miles of interstate natural gas transmission pipeline and associated facilities.

Safety and security are important considerations in any Commission action. The siting of pipeline facilities in proximity to other major structures, buildings, and public works is commonplace, yet today even commonplace actions must be evaluated in a new light. Millennium, Columbia, Empire, Algonquin, and Iroquois intend to construct and operate their proposed facilities safely within the proposed areas.

4.13 PCB CONTAMINATION

The Commission requires that pipeline companies proposing activities involving the replacement, abandonment by removal, or abandonment in place of facilities determined to have polychlorinated biphenyls (PCBs) in excess of 50 parts per million (ppm) in pipeline liquids provide information on the proposed methods of testing and facility disposal associated with their proposed activities. However, if the company has received an "Approval to Remove Natural Gas Pipeline Contaminated with PCBs and Dispose of PCBs " permit from the EPA, and the company affirms that its activities would comply with the EPA disposal permit, then the Commission does not consider PCBs to be an issue of concern for the purposes of its evaluation of the project.

For compressor station modifications at sites that have been listed on the EPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) because of soils contaminated with PCBs, the Commission requires companies to describe remediation efforts completed to date at the site, or provide the schedule for when remediation will be completed. The Commission requires the company to provide copies of correspondence documenting investigations, work plan approvals, submittal of closure reports, and the EPA determinations associated with these listed compressor station sites.

This section describes the status of PCB contamination issues for the proposed facilities to be replaced, abandoned by removal, and abandoned in place; and also for the proposed modifications at existing compressor stations.

4.13.1 MILLENNIUM PIPELINE PROJECT – PHASE I

The Millennium Phase I Project includes pipeline removal activities associated with the removal and replacement of a 0.2-mile segment of 10-inch-diameter pipeline with new 24-inch pipeline along Columbia's Line A-5 between MP 343.8 and MP 344.0, and the proposed removal and replacement of 8.8 miles of 8- and 16-inch-diameter pipeline with 30-inch-diameter pipeline along the Columbia Line A-5 Replacement Project. In addition, the Line A-5 Replacement Project includes the abandonment in place of about 1.0 mile of the existing Line A-5 pipeline.

Since Millennium/Columbia's proposed pipeline removal activities would be performed in accordance with the USEPA's regulations located in 40 CFR 761.30(i)(4), consistent with the USEPA regulations under the Toxic Substances Control Act (TSCA), no significant impact to environmental resources would be expected.

4.13.2 EMPIRE CONNECTOR PROJECT

Empire does not propose to modify any existing compressor stations, and therefore, the issue of PCB contaminated soils and sediments at existing compressor stations is not applicable to the project. However, a section of the existing Empire pipeline and a pressure reduction station would be removed and replaced and a new compressor station tie-in would also be constructed.

Empire routinely performs chemical testing of samples of pipeline filters, dust, and/or liquid collected during maintenance activities. Historically, these samples, located both upstream and downstream of the existing pressure reduction station and location of the new compressor station, have indicated no presence of PCBs above the method detection limit. Therefore, Empire does not expect that PCBs will be present above the 50-ppm threshold for determination of PCB-contaminated material, in sampled media from the existing Empire pipeline. Therefore, PCB-related project impacts are not

expected at the points of pipeline replacement and connection to the existing Empire State Pipeline at the new compressor station location.

Empire indicates that it manages all PCBs in accordance with the requirements of TSCA and applicable New York State regulations. During project construction activities that involve removal of existing facilities, pipeline and equipment sampling would be conducted in accordance with the National Fuel Gas PCB Procedure (dated December 8, 2003).

4.13.3 ALGONQUIN RAMAPO EXPANSION PROJECT

The Algonquin Ramapo Expansion Project includes the replacement of 4.93 miles of existing 26-inch-diameter pipeline with 42-inch-diameter pipeline, as well as modifications to three existing compressor stations, and other miscellaneous modifications to existing pipeline facilities and meter stations.

Algonquin states that the removal of any existing piping or equipment that has been in contact with natural gas would be done in accordance with the USEPA-issued PCB rules and regulations contained within 40 CFR Part 761, as revised (CFR: June 29, 1998, Volume 63, No. 124). Handling of PCB contaminated pipeline and materials would be performed in accordance with federal and state standard operating procedures. These materials would be tested (wipe sampled), decontaminated, decommissioned, and disposed by Algonquin in accordance with all applicable federal and state regulations.

4.13.4 IROQUOIS MARKETACCESS PROJECT

The Iroquois MarketAccess Project involves the construction of gas cooling facilities at an existing compressor station, and construction of a new compressor station.

Based on Iroquois' statement that it is not proposing any activities that involve the replacement, abandonment by removal, or abandonment in-place of pipeline facilities determined to have PCBs in excess of 50-ppm in pipeline liquids, there would be no issues of concern regarding testing or handling of PCB contaminated facilities for this project.

4.14 REASONABLY FORESEEABLE FUTURE ACTIONS AND CUMULATIVE IMPACTS

Cumulative impacts are the incremental impacts of the proposed action, when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result when the environmental effects associated with a project are added to either temporary (construction related) or permanent (operation related) impacts associated with recent past, present, or reasonably foreseeable future projects. Although the individual impact of each separate project might not be significant, the additive or synergistic effects of multiple projects could be significant. NEPA requires the lead federal agency to consider the cumulative impacts of proposals under their review.

There are five Projects under the Commission's review in the vicinity of the proposed NE-07 Project which could be constructed during the same or similar timeframe as the NE-07 Project. These include the Brookhaven Lateral Project, Broadwater LNG Project, Stagecoach Phase II Expansion Project, Amended Wyckoff Gas Storage Project, and Northeast ConneXion Project – New England. As part of the Commission's review, an assessment of need is being conducted on each and all of these projects. Each of these projects is described below.

Reasonably Foreseeable Future Actions

Brookhaven Lateral Project

Iroquois proposed the Brookhaven Lateral Project in Suffolk County, New York. This project is currently in the Commission's pre-filing review process, but preliminary information about it may be found in Docket No. PF05-16-000. Iroquois indicated in a letter dated April 5, 2006, that it has developed an alternative route for this project, and that it anticipated filing supplemental environmental information about it in June 2006. Therefore, we can only provide general information about this project at this time. Additional information about the Brookhaven Lateral Project will be provided in the final EIS for the NE-07 Project if it is available.

Iroquois anticipates constructing this project between the spring and winter of 2007. Pipeline construction would begin at the existing South Commack Meter Station in Smithtown, New York. In general, the project would consist of constructing about 21 miles of 24-inch-diameter pipeline and associated facilities. The purpose of the project would be to supply gas to a proposed new 350 megawatt power plant (Caithness Energy Center) being developed by Caithness Long Island, LLC., and to be located in the Town of Brookhaven, New York. The power plant would be a non-jurisdictional facility and commercial operation is expected to begin in April 2008. The proposed pipeline would be operated at a MAOP of 1,440 psig and would be capable of providing 80,000 decatherms per day of natural gas to the power plant. Iroquois has been asked by the Long Island Power Authority to construct the proposed pipeline lateral to serve this power plant.

Broadwater LNG Project

Broadwater Energy LLC and Broadwater Pipeline LLC (jointly referred to as Broadwater) propose to construct the Broadwater LNG Project in Long Island Sound, within New York State waters. It would consist of an offshore liquefied natural gas (LNG) import terminal and an offshore natural gas pipeline that would connect to an existing offshore natural gas transmission pipeline owned by Iroquois. Broadwater filed applications to construct the LNG facilities in Docket No. CP06-54-000 and to construct the pipeline in Docket No. CP06-55-000. This project is pending before the Commission. Broadwater states that the purpose of its LNG project would be to provide a new source of natural gas to meet the growing demand for gas in New York. Average deliveries would be about 1 bcf per day.

The Broadwater LNG Project would include a floating storage and regasification unit (FSRU) that would receive LNG from LNG carrier vessels, store the LNG in onboard storage tanks, and vaporize the LNG to natural gas. The natural gas would be sent out to the existing interstate natural gas pipeline system via a new offshore pipeline. The FSRU would be moored a distance of about 9 miles from the Long Island shoreline and about 10 miles from the Connecticut shoreline. Operation of the FSRU would involve the following basic activities:

- receipt of LNG from two to three LNG carriers per week, each with a capacity of 125,000 to 250,000 cubic meters;
- temporary storage of up to 8 billion cubic feet (350,000 cubic meters) of LNG in onboard storage tanks; and
- vaporization of the stored LNG, using a closed-loop, shell-and-tube vaporization system that would not require seawater intakes or discharges.

After vaporization of the LNG, natural gas would be sent out from the FSRU into a new 30-inch-diameter offshore pipeline that would extend about 22 miles from the FSRU to an offshore connection

with an existing pipeline owned by the Iroquois. The existing Iroquois pipeline extends across Long Island Sound in a generally northeast to southwest direction. The project would deliver an average of about one billion cubic feet of natural gas per day to the Iroquois pipeline, with a peak delivery rate of 1.25 billion cubic feet per day. Iroquois would deliver the natural gas from the Broadwater LNG Project to its existing and future customers. Broadwater plans to have the project in operation by 2010.

Stagecoach Phase II Expansion Project

Central New York Oil and Gas, LLC (CNYOG), in Docket No. CP06-64-000, has proposed the construction of the Stagecoach Phase II Expansion Project. This project is pending before the Commission. CNYOG states that the purpose of its project would be to provide high deliverability natural gas storage service to serve northeaster U.S. markets. It would involve construction and operation of gas storage facilities by CNYOG in Tioga County, New York, and Bradford County, Pennsylvania. CNYOG would develop the four remaining pools (Lidell, Racht, Brenchley-Cook, and Nichols-Mead pools) for an additional working storage capacity estimated at 13 Bcf. CNYOG proposes to begin construction in the fall of 2006 and to complete construction by September 2007. Proposed project facilities would include:

- an additional 12,000-hp electric-drive centrifugal compressor to be installed within the existing Stagecoach Central Compressor Station building;
- a power transformer and gas cooling unit and other appurtenant facilities to be installed within the Central Compressor Station;
- a total of nine storage injection/withdrawal wells;
- about 7.3-miles of 6-inch-, 8-inch-, and 20-inch-diameter gathering pipeline and associated ROWs;
- eight wellhead meter stations and other appurtenant facilities, including isolation valves, separators, measurement and communication equipment, and a 20-foot by 70-foot building at each storage well site to house equipment; and
- about 4.4 miles of access roads not contained within pipeline or well easements.

As part of the storage facility, CNYOG also proposes to construct and operate a 9.3-mile-long, 24-inch-diameter lateral (North Lateral) from its existing compressor station to the proposed Millennium Pipeline located north of the town of Owego, New York.

Construction of the proposed facilities would require about 278.1 acres of land. Of this acreage, 115.5 acres would be permanently affected. The remaining 162.6 acres would be temporarily impacted and allowed to revert to their former use. Each of CNYOG's nine test/storage wells would temporarily disturb about a 250-foot-radius area.

A 100-foot-wide construction ROW is proposed for the North Lateral pipeline facilities, and a 50-foot-wide construction ROW is proposed for all pipeline laterals to the storage wells. The North Lateral construction area parallels/crosses a New York State Electric and Gas Company (NYSEG) electric transmission line for about 2,852 feet. The North Lateral would follow the same general alignment as an existing Columbia pipeline across the Susquehanna River north to the proposed Millennium Pipeline interconnect. CNYOG would maintain a 50-foot permanent ROW for operation of the pipeline facilities.

Amended Wyckoff Gas Storage Project

Wyckoff Gas Storage Company, LLC (Wyckoff) proposes to construct and operate the Amended Wyckoff Gas Storage Project, which would involve construction and operation of facilities in Steuben

County, New York. Wyckoff's amendment applicant was filed in Docket No. CP03-33-002 and a certificate was issued April 11, 2006, approving this project. The purpose of the project is to serve a growing market with gas storage service.

A certificate order was issued on October 6, 2003 for Wyckoff's original proposal. Wyckoff proposes in its amendment to:

- relocate the compressor station about 900 feet to the southern end of the Wyckoff parcel;
- construct 1.2 miles of 6-inch-diameter lateral called the Chase Lateral, 0.5 mile of 6-inch-diameter lateral called the Banks Lateral, and 0.7 mile 8-inch-diameter lateral called the Banks/Cornell Lateral;
- install two 2,370-hp units for a total of 4,740 hp and one dehydration unit, instead of two 4,735 hp compressor units and two dehydration units;
- defer the construction of the 7.7-mile-long southern pipeline to Dominion Transmission, Inc. (Dominion) Interconnect for three years;
- acquire and operate National Fuel Gas Supply Corporation's (National Fuel) Line Z-67;
- directionally drill six new injection/withdrawal wells rather than vertically drilling each well;
- reduce the diameter of the 3.6-mile-long northern pipeline, the 0.07 mile of pipeline interconnection with Tennessee, and the 0.15 mile of pipeline interconnection with Columbia from 20-inch-diameter to 16-inch-diameter; and
- phase the construction of certain facilities over time.

Construction affecting the amended facilities that include the well laterals, injection withdrawal wells, and compressor station would require about 21.1 acres of land. Following construction, about 13.6 acres would be maintained as new permanent ROW and aboveground facility sites. The remaining 7.5 acres of land would be restored and allowed to revert to its former use.

Northeast ConneXion Project – New England

Tennessee Gas Pipeline Company (Tennessee) proposes in Docket No. CP05-412-000 the construction and operation of the Northeast ConneXion Project – New England. The Commission issued a certificate for this project on May 9, 2006. The purpose of the project is to provide up to 110,300 Dth/d of natural gas transportation capacity to New England from Gulf of Mexico supply sources. The proposed facilities consist of the installation of additional compression at four of its existing compressor stations in Potter County, Pennsylvania; Onondaga, Herkimer, and Schoharie Counties, New York; the abandonment and installation of additional compression at two existing compressor stations in Columbia County, New York, and Worcester County, Massachusetts; and the construction of one new compressor station in Steuben County, New York. Tennessee will install 55,400-hp and replace 10,500-hp for a net total increase of 44,900-hp of compression. No construction of pipeline is proposed. Tennessee indicated that the proposed facilities would allow it to provide up to 136,300Dth/d incremental firm transportation service on its Lines 200 and 400. If approved, project construction would begin during the spring/summer of 2007 and would be completed by the proposed November 1, 2007 in-service date.

Tennessee seeks to:

- Install two additional 3,550-hp CAT 3612 compressors at each of the existing Compressor Stations 241, 245, and 249 located in Onondaga, Herkimer, and Schoharie Counties, New York;
- Replace an existing 4,500-hp compressor with a single 10,300-hp Solar Taurus 70S turbine-driven compressor at existing Compressor 254 in Columbia County, New York;

- Replace three existing compressors totaling 6,000-hp with two 6,275-hp Solar Centaur 50L turbine-driven compressors (12,550-hp total) at existing Compressor Station 264 in Worcester County, Massachusetts;
- Install one additional 3,550-hp CAT 3612 compressor at existing Compressor Station 313 in Potter County, Pennsylvania; and
- Construct the new Compressor Station 405A, with a single 7,700-hp Solar Taurus 60S turbine-driven compressor in Steuben County, New York.

The new Compressor Station 405A would require about 20.0 acres of land, of which about 10.0 acres would be used for during construction. Following construction, about 3.2 acres would be maintained as the new aboveground facility site. Tennessee would not need to acquire any additional acreage or land for the proposed modifications at the existing compressor stations.

Cumulative Impacts

The potential cumulative impacts that could occur during the construction phase of the proposed NE-07 project and other reasonably foreseeable future actions are generally more varied and greater than the impacts of operation. In addition, the schedules for other planned construction projects, if approved, are subject to change and uncertainty. Thus, consideration of potential impacts during the construction phases of planned projects is one aspect of identifying the areas most vulnerable to significant cumulative impacts. In addition, some cumulative impacts could be experienced in the long term operational phase of the projects, and consideration of these impacts is also important to this analysis.

Under the proposed NE-07 Project, adverse impacts to several environmental resource areas would be reduced or mitigated through scheduling construction to avoid the most sensitive times, such as scheduling waterbody crossings to avoid fish spawning periods. For the NE-07 Project and other federal jurisdictional projects under the Commission's review, it is anticipated that various environmental impacts would be avoided, minimized, or mitigated as a result of the Commission's and other regulatory agencies' review and authorization of the projects (through routine permitting processes). As a result, cumulative impacts should also be reduced.

The cumulative benefits of all of the reasonably foreseeable future projects currently under review by the Commission include increased natural gas energy supplies to the New York City/New Jersey area and the northeastern United States. There is a demonstrated public need for projects with these objectives.

The primary cumulative impacts from construction of the proposed NE-07 Project and the other reasonably foreseeable future projects evaluated would include:

- Long term temporary and permanent clearing of forested areas to accommodate new pipelines;
- Potential temporary soil erosion during construction;
- Short-term surface water quality effects from temporary suspension of sediments resulting from in-stream (and in-wetland) construction activities and potential upland erosion/sedimentation;
- Long term land use effects from siting project facilities;
- Potential air quality impacts associated with new compressor stations or additions to existing stations; and
- Socioeconomic effects on a local or regional scale.

Most of the reasonably foreseeable projects would involve some amount of forest or mature tree clearing, either for temporary construction work areas or on a permanent basis for siting facilities. Cumulatively, the acreage of clearing could be substantial, but not significant in relation to the proposed action. However, the Commission's siting and maintenance regulations in 40 CFR 380.15 require several aspects of project siting, as well as operations and maintenance of projects, to minimize the extent of required forest clearing. Therefore, such impacts to forested areas would be cumulatively reduced through project siting and maintenance requirements.

Large-scale construction activities involve the temporary disturbance of soils over large areas. In addition, in-water construction work to install pipelines under waterbodies and wetlands and the associated temporary suspension of sediments can decrease surface water quality in the short term. Projects that are constructed at the same time in the same watersheds (or larger water basins) could cause cumulative adverse effects associated with potential topsoil loss from disturbed areas, as well as surface water quality impacts from sedimentation or suspended sediments. In addition, fisheries and aquatic species can be adversely affected. To minimize the occurrence of these impacts, we require project applicants to follow specific procedures for crossing waterbodies and wetlands, and prescribed erosion and sedimentation control measures during construction and restoration of all of the projects we review and authorize. In addition, we (and applicable state regulatory agencies) require the scheduling of in-water work to avoid periods when coldwater and other designated fisheries are most sensitive (e.g., spawning periods). Moreover, the Commission conducts routine field inspections of construction activities, and for major projects, requires that pipeline companies employ full-time Environmental Inspectors to monitor daily implementation of the approved erosion and sedimentation control measures. Also, local and state agencies may have additional requirements and oversight of these projects pursuant to the National Pollutant Discharge Elimination System programs in effect in the various project areas. Therefore, cumulative impact associated with soil erosion and sedimentation would be reduced.

Like most development projects, the combined projects would result in the collective transformation of generally undeveloped land to developed areas dedicated for energy/utility use, on a permanent basis (or for the life of the projects). Some of these areas would require the conversion of agricultural areas to aboveground facility sites and therefore, would exclude them from future agricultural use (although on pipeline ROWs, most agricultural uses would be allowed to continue). In addition, the siting of portions of the pipeline projects through some areas used for public recreation would constitute a use of public lands for energy infrastructure; however, these uses are not always incompatible. Conversions of land for the development of project facilities in or adjacent to residential areas would typically pose constraints on future residential or other development within the permanent easement areas. The main impacts on land use would be the preclusion of most types of future developments within the project facility easements or properties. Although some level of these impacts would be unavoidable, siting considerations usually attempt to minimize significant, site-specific land use conflicts and impacts.

Over the long term, multiple projects involving the addition of compression, either through new compressor stations or additions to existing compressor stations, would result in incremental increases in air pollutant emissions. Although individually, the proposed compressor station additions would not contribute significantly to air pollution in any of the regions involved, air pollutant emissions would be generated by both the project compressor stations and the burning of natural gas by customers of these projects in the northeastern United States. The air quality impacts of each project would be reviewed as part of required air permitting for each project component. The applicable regulatory agencies within each state and air quality control region would impose its standards and requirements on each project to assure that air emissions from the proposed additional compression would not exceed allowable emissions thresholds. Therefore, cumulative impacts from operation of the combined projects are not anticipated to be significant. However, the burning of natural gas by the project customers could increase ambient air

pollutant concentrations in the regional airshed. Nevertheless, the demand for additional energy in the projects' customer service areas cannot be met by currently available non-polluting sources of energy. Because natural gas is a relatively clean-burning fuel, the NE-07 project, combined with other natural gas supply expansion projects, could minimize the possible impacts on air quality, compared to alternative projects involving the supply of other possible sources of energy.

The cumulative socioeconomic impacts of the combined projects would occur on a local or regional basis, and accordingly, the magnitude of impact would depend on whether construction occurs simultaneously and in the same geographic area. The beneficial impacts of the projects would result from their combined contribution to employment and purchase of lodging, food, and materials during construction; and long term payment of local property taxes for the placement of utility infrastructure on properties. In addition, there would be beneficial spin-off impacts from the injection and circulation of money originating with the project into the local economy, in addition to sales and income taxes at the local, state, and federal level that would result. These effects would generally be considered small with respect to the total population and economy, but would still contribute to the area economies. Finally, through the provision of a valued economic entity – energy – the combined projects could benefit the regional economy by maintaining or increasing profits and the region's ability to retain and attract new businesses and residents.

In general, these additional projects would not create substantial increased impacts with regard to terrestrial or aquatic resources or land use or socioeconomic conditions. The impacts that would occur would be largely mitigated as a result of the regulatory review requirements applicable to these projects.

The addition of compression and the increased use of natural gas could result in cumulatively greater impacts to air quality. However, such impacts may be offset by the replacement of other, less clean energy sources such as coal or oil. While the public demand for energy continues to increase, the potential for increased air pollutants and greenhouse gas emissions also increases. However, these impacts may be offset to some degree by recent advances in technology (such as more efficient heating systems that use natural gas). As a result, greenhouse gas emissions may be reduced or remain the same through the combination of using cleaner, natural gas-based energy and better technology.

In conclusion, due in part to the regulatory review processes that are required for the projects considered, we believe that the cumulative environmental impacts of these projects would not be unacceptably adverse. In addition, we believe that some of the cumulative project effects (e.g., employment during construction, long term payment of local property taxes, injection and circulation of money into the local economy, and provision of energy) could be beneficial to the regions in which these projects are proposed.