3.0 ALTERNATIVES

In accordance with NEPA and Commission Policy, we evaluated alternatives to each subset of the NE-07 Project to determine whether they would be reasonable and environmentally preferable to the proposed action. These alternatives include the no action or postponed action alternative, system alternatives, major route alternatives, route variations, and aboveground facility site alternatives. The full range of alternatives considered for the NE-07 Project is discussed in the following section.

3.1 No Action or Postponed Action

The Commission has three alternative courses of action in processing an application for a Certificate. It may: (1) grant the Certificate with or without conditions, (2) deny the Certificate, or (3) postpone action pending further study. The course of action that would best serve the public convenience and necessity would be the selected alternative.

If the Commission postpones or denies the application, the short- and long-term environmental impacts identified in this FSEIS would not occur. However, potential natural gas customers would be forced either to make other arrangements to obtain natural gas service, or to use (or continue to use) alternative fuel sources (e.g., fuel oil, coal, wood) with higher emission rates of nitrogen oxides (NO_x) or sulfur dioxide (SO_2) than natural gas.

Denial of the application also could prevent a potential improvement in regional air quality. Compared with other fossil fuels, natural gas is a relatively clean-burning and efficient fuel that can reduce many pollutants. For example, a natural gas turbine cogeneration plant would require about 25 percent less input energy than a combination new coal-fired electric power plant with an oil-fired boiler producing steam. A gas-fired cogeneration plant would also emit less than 1 percent of the sulfur dioxide (SO_2), 27 percent of the particulates, and 50 percent of the nitrogen oxide (NO_x) produced by a comparably sized conventional coal and oil-based cogeneration plant with pollution control equipment.

If the NE-07 Project was postponed or denied, one or more alternative natural gas projects could be implemented to provide expanded natural gas service to the region. The implementation of alternative projects would require the construction of additional and/or new pipeline facilities in the same or other locations to transport natural gas supplies. Alternative natural gas projects would result in their own set of specific environmental impacts, which could be lesser or greater than those associated with the current proposal.

It would be purely speculative and beyond the scope of this FSEIS to attempt to predict what actions may be taken by policy-makers or end users in response to the no-action or postponed-action alternative. Therefore, the assessment of impacts associated with these scenarios also would be speculative.

In considering the NE-07 Project, the Commission will review both the environmental and non-environmental record, including alternatives, in deciding whether issuance of a Certificate is in the public convenience and necessity. This process will include weighing the non-environmental benefits associated with the project, such as the need to meet the growing fuel requirements in the northeast and mid-Atlantic region with competitively priced natural gas, against the environmental impacts associated with the proposed project, including the recommended mitigation and alternatives discussed in this FSEIS.

3.1.1 MILLENNIUM PIPELINE PROJECT - PHASE 1

As discussed in the final EIS (FEIS) for the Millennium Pipeline Project, FERC/EIS-0123F Vol. 1 (2001), Millennium's Phase I Project would be necessary to provide the services requested by the shippers who would contract with Millennium, to provide additional necessary pipeline capacity to customers in the State of New York, to provide supply diversification, and to provide reliable service. Should the Phase I Project not be built, Millennium would not be able to provide the requested natural gas transportation service or the other benefits described above.

3.1.1.1 Columbia Line A-5 Replacement Project

Under the no-action alternative, Columbia would proceed with the replacement of Line A-5 using 10-inch-diameter pipeline, rather than the proposed 30-inch-diameter pipeline. Columbia indicated that replacement of the Line A-5 pipeline with 10-inch-diameter pipe would occur early in 2006 to comply with a commitment to the DOT, Office of Pipeline Safety and the New York State Public Service Commission to proceed with expeditious replacement of this section of Line A-5. However, this larger, 30-inch-diameter pipeline would be needed to provide the transportation services proposed by the other NE-07 project sponsors. The transportation customers may or may not be able to find transmission capacity on other pipelines. But, Columbia has asked that this project be included in the Millennium Phase I Project. So, if the Phase I Project, including the Line A-5 Replacement Project is not built, the requested natural gas transportation service or the other benefits described in section 3.1.1 above would not be provided.

3.1.2 EMPIRE CONNECTOR PROJECT

The Empire Connector Project would provide a relatively short-distance system expansion to allow natural gas transmission from Dawn, Ontario, Canada, to the Millennium's Phase I Project. The no-action alternative would entail not constructing Empire's project between Victor and Corning, New York, and the proposed compressor station in Oakfield, New York. Not constructing the pipeline could have adverse consequences for New York City and New England markets where current pipeline infrastructure constrains capacity, and would prevent natural gas delivery to the KeySpan Energy Delivery (KeySpan) with whom Empire has executed a transportation service precedent agreement. Should the Empire project not be built, there would also be adverse consequences for other electric generators and local distribution companies (LDCs) looking for alternative or incremental sources of natural gas to meet their growing markets. The no-action alternative would not provide Empire's customers with the flexibility to access storage and local production directly (as those interconnects develop), and to access the increased capacity and interconnection points (and the increased value they bring) for their own use and in the capacity release market.

3.1.3 ALGONQUIN RAMAPO EXPANSION PROJECT

The Ramapo Expansion Project would provide additional natural gas to help meet growing demand in the northeastern United States, and additional energy reliability and flexibility by expanding the current pipeline infrastructure to efficiently transport these new supplies of natural gas. The no-action alternative would result in not constructing the Ramapo Expansion Project facilities. This would mean that Algonquin could not provide the natural gas transportation service for KeySpan and Consolidated Edison Company (Con Edison) with whom Algonquin has executed precedent agreements. KeySpan and Con Edison would have to locate alternative means to obtain natural gas for their customers; or the construction and operation of

alternative facilities at other locations would be required. This could have adverse consequences for the electric generating market and commercial and residential natural gas consumers in New York and New England.

3.1.4 IROQUOIS MARKETACCESS PROJECT

The no-action alternative for the MarketAccess Project would mean that the proposed Brookfield Compressor Station and related facilities and the additional facilities at the existing Dover Compressor Station would not be built or operated by Iroquois. To supply gas to its end-users, Con Edison would have to locate alternative means to obtain natural gas. It may be likely that construction of similar facilities to those proposed by this project would be required at another location. The potential impacts of this project would not be alleviated, but simply transferred to another location and possibly increased.

3.2 PROJECT LOCATION ALTERNATIVES

3.2.1 MILLENNIUM PIPELINE PROJECT - PHASE I

3.2.1.1 System Alternatives

System alternatives are alternatives to the proposed action that would make use of other existing, modified, or proposed pipeline systems to meet the stated objective of the proposed project. A project system alternative would make it unnecessary to construct all or part of the proposed project, although some modifications or additions to another existing pipeline system may be required to increase its capacity, or another entirely new system may be required. Although these modifications or additions also could result in environmental impact, this impact may be less, similar to, or greater than that associated with construction of the proposed project.

The objective of identifying and evaluating system alternatives is to avoid or reduce the potential impact associated with construction and operation of the proposed facilities while still allowing the stated objective of the project to be met. Potential impact factors considered may include new ROW requirements, land use effects (including those associated with residences and public interest areas), stream and wetland disturbance, and effects on endangered and threatened species.

The system alternatives considered for the Millennium Pipeline Project are described in the final EIS for the Millennium Pipeline Project, FERC/EIS-0123F Vol. 1. These alternatives would apply not only to Millennium's Phase I Project and the Columbia Line A-5 Replacement[1], but to all of the combined NE-07 Project components. In section 3.2 of the 2001 Millennium Pipeline Project FEIS, we considered system alternatives using existing interstate pipeline facilities, possible modifications of existing interstate pipeline facilities (additional pipeline and compression) to perform the same service proposed by Millennium. We considered:

- system alternatives that would replace all of the proposed Millennium Pipeline Project (Iroquois Pipeline System Alternative, Tennessee Pipeline System Alternative, and Duke [Texas Eastern and Algonquin] System Alternatives);

[1] On August 1, 2005, Columbia requested that its application for the Line A-5 Replacement Project be consolidated with Millennium's amendment application for consideration by the Commission.

- system alternatives that would replace the western portion of the Millennium Pipeline Project (Lake Erie System Alternatives, Canadian Niagara Spur System Alternative, Tennessee's U.S. Niagara Spur System Alternative, and National Fuels' U.S. Niagara Spur System Alternative);
- system alternatives that might have combined projects that were under consideration at the time the Millennium Pipeline Project was originally filed with Millennium's proposal (One-Pipe System Alternative, Vector-Millennium System Alternative, Leidy Interconnection System Alternative; and ANR/Independence/national Fuel Leidy System Alternative); and
- system alternatives that would have replaced the portion of the Millennium Pipeline Project east of Ramapo, New York (Algonquin/Iroquois Pipeline System Alternative)

None of the owners of these pipeline companies had proposals before the Commission to construct any of these system alternatives at the time the Millennium Pipeline Project was under review. Further, these system alternatives were developed based on Millennium's proposed pipeline design that would include 36-inch-diameter pipeline operating at a MAOP of 1,440 psig and would make it capable of making deliveries of up to 714,000 Dth/d rather than the design proposed in the Phase I Project application for a 30-inch-diameter pipeline operating at a MAOP of 1,200 psig and a delivery capacity of 525,400 Dth/d.

The NE-07 Project is generally similar to portions of some of these system alternatives. It was developed due in part to a re-examination of the market demand and Millennium's modified project design. The Empire Connector Project is generally similar to the National Fuels' U.S. Niagara Spur System Alternative. The Algonquin/Iroquois Pipeline System Alternative is generally similar to the Ramapo Expansion Project and the MarketAccess Project. They would replace the western and eastern portions of the original Millennium Pipeline Project.

3.2.1.2 Major Route Alternatives

Geographic or major route alternatives are identified to determine if these alternatives could avoid or reduce impact on environmentally sensitive resources, such as large population centers, scenic areas, or wildlife management areas that would be crossed by the proposed pipeline. Route alternatives generally do not change the origin and delivery points for natural gas along the proposed pipeline. Although route alternatives may follow routes significantly different from those proposed, they would not make use of another existing or modified pipeline system, as would a system alternative.

In accordance with Commission regulations (18 CFR, section 2.69[1][in]), primary consideration in identifying potential route alternatives is given to the use, enlargement, or extension of existing ROWs to avoid sensitive resources. In general, installation of new pipeline along or within existing, cleared ROWs (e.g., pipeline, powerline, road, railroad) is environmentally preferable to the clearing of new ROWs. The partial use of previously cleared ROWs can reduce construction effects by avoiding creation of new ROW through previously unaffected areas. To the greatest extent possible, facilities have been located to avoid or minimize impacts to known resources.

In the 2001 FEIS for the original Millennium Pipeline Project, we evaluated major route alternatives that would place the pipeline adjacent to or in the median strip of New York State Route 17 (see section 3.3.2 of the 2001 FEIS). That analysis is incorporated by reference into this document. These were referred to as the State Route 17 Alternatives and they included these segments: between the intersection of State Route 17 and the proposed pipeline at MP 111.3

(Olean) and MP 182.5 (Coopers Plains); between the intersection of State Route 17 and the proposed pipeline at MP 182.5 (Coopers Plains) and MP 287.3 (Hancock); and between the intersection of State Route 17 and the proposed pipeline near MP 287.3 (Hancock) and MP 369.6 (Tuxedo). The first segment would be west of the currently proposed Phase I Project. These routes all deviated away from the Line A-5 pipeline corridor and part of the objective of the project is to replace Line A-5. Further, while there are sections of Route 17 that are relatively remote, it does pass through areas where there are commercial and residential developments. It would have been a longer pipeline, so it would have affected more land during construction and operation. Because of the commercial and residential development along segments of the State Route 17 corridors, the longer length, and because it would not replace Line A-5 we eliminated this alternative from further analysis.

The facility locations for the Columbia Line A-5 Replacement portion of the Millennium project have been reviewed during early planning stages to determine where the facilities would impact known resources. To the greatest extent possible, facilities have been located to avoid or minimize impacts to these known resources. The project route was selected to take maximum advantage of the existing Columbia Line A-5 ROW. Columbia has attempted to identify major route alternatives that would avoid the environmentally sensitive areas along this route, in particular Sterling Forest State Park, Harriman State Park, and Kakiat County Park. These are discussed below in section 3.2.1.5 and some of them have been eliminated from further consideration because they would not lessen environmental impacts associated with the project.

Original Millennium Pipeline Project

We compared the original Millennium Pipeline Project to the NE-07 Project. The original Millennium Pipeline Project would have required about 5,956.0 acres for construction including about 797.6 acres in US portion of Lake Erie. The permanent land requirement for easements and aboveground facilities would have been about 3,139.0 acres. The land requirement for the NE-07 Project facilities would be about 3,461.1 acres for construction and 1,726.9 acres for operation.

Impacts to waterbodies would be less for the NE-07 Project compared to the original Millennium Pipeline Project considering the NE-07 Project would not include 32.9 miles of construction in the US waters of Lake Erie, or a 2.1-mile-long crossing of the Hudson River. The original Millennium Pipeline Project pipeline route would have crossed a total of about 507 waterbodies (308 perennial) compared to 557 waterbodies (255 perennial) for the NE-07 Project.

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 wetland 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, the original Millennium Pipeline Project would have affected about 71.6 acres of forested wetlands during construction and about 43.8 acres during operation. Impacts to forested wetlands during construction would be reduced by about 38.9 acres and permanent impacts would be reduced by 22.5 acres by construction of the NE-07 Project.

We believe that the NE-07 Project is the preferred alternative.

3.2.1.3 Route Variations

Route variations differ from system or major route alternatives in that they are identified to resolve or reduce construction impacts on localized, specific resource issues, including wetlands areas, residences, landowner requests, and terrain conditions. While some variations are a number of miles in length, most are short and close to the proposed route. A number of factors are considered in identifying and evaluating route variations.

First, as described in section 3.2.1.2, Major Route Alternatives, primary consideration in identifying potential route variations is given to the use, enlargement, or extension of existing ROWs to avoid sensitive resources. Many of the proposed areas of new ROW are developed to reduce impact on specific resource areas, including agriculture, wetland, and waterbody crossings. Other areas of new ROW would connect existing corridors along the proposed route and cannot be avoided.

Second, to comply with NEPA and section 404(b)(1) guidelines requiring analysis of the use of practicable alternatives that would eliminate or minimize the discharge of dredged or fill material into wetlands or other waters of the U.S. (40 CFR 230.10), we reviewed the need for route variations that would avoid or minimize disturbance to wetland resources. Because a significant portion of the Phase I Project pipeline route would be constructed adjacent to existing ROWs, the need for clearing of forested wetland vegetation would be considerably reduced compared to the use of new ROW. Also, since placement of the pipeline adjacent to existing ROWs usually allows for some overlap of the existing cleared and maintained ROWs, some of the wetland areas that would be affected by construction of the Phase I pipeline are previously disturbed wetlands. Millennium proposes to implement construction and restoration procedures that would minimize, to the extent practicable, impact on the wetlands that would be crossed.

Third, we reviewed comment letters and the proposed route to identify other issues or concerns that warranted further analysis, as well as route variations that were identified after the Final Order for the Millennium Pipeline project was issued on September 19, 2002. These include minor variations on specific properties that were requested by landowners in their comments to avoid specific features, such as trees or springs.

As noted previously, in the Commission's Interim Order issued on December 22, 2001, Millennium was instructed to consider certain route variations that were identified and evaluated in the Millennium Pipeline Project FEIS. Environmental condition number 45 required Millennium to continue consultations with New York State Electric and Gas (NYSEG) regarding the placement of the pipeline within or adjacent to the NYSEG powerline ROW between mileposts 232.2 and 243.5.

As a result of this consultation, variations in three locations have been developed. Three of these collectively are referred to as the NYSEG Route Variation, and individually are referred to as NYSEG Chemung Variation (MP 198.0 to MP 203.6), NYSEG Tioga-Broome Variation (MP 232.2 to MP 245.0), and NYSEG Delaware Variation (MP 284.4 to MP 284.9).

The NYSEG Route Variation would be necessary to maintain NYSEG's buffer distance (typically a 55-foot minimum) from the nearest grounded structure, steel tower, counterpoise, guy anchor rod, or wooden pole in their ROW. The NYSEG Route Variation consists of a realignment of the Millennium Pipeline from along the center of the powerline ROW to various locations within or adjacent to NYSEG's ROW either north or south of the existing ROW, as determined by terrain, environmental features, and landowner constraints.

An additional variation, not related to NYSEG, is referred to as the Warwick Isle Route Variation (MP 350.8 to MP 351.6). It was developed to avoid a planned residential development.

Table 3.2.1.3-1 provides a comparison of the proposed variations with the approved portions of the pipeline that they would replace. The individual variations are summarized below.

NYSEG Chemung Variation, MP 198.0 to MP 203.6

Millennium proposes using the NYSEG Chemung Variation as the preferred route in this area. Since consultation with NYSEG identified the need to move the pipeline so that it would be at least 55 feet from grounded power line structures, Millennium developed an alignment to accomplish this. Also considered when developing the new alignment were resources and structures that would be affected by the change in the route. For this reason, the NYSEG Chemung Variation crosses the NYSEG power line corridor several times to increase the distance of the construction ROW from homes, and to avoid ponds and forested areas.

The proposed NYSEG Chemung Variation would be about 5.89 miles long and would replace about 5.74 miles of the approved Millennium Pipeline Project route. The NYSEG Chemung Variation would be parallel to the NYSEG power line ROW for about 5.44 miles of its 5.89-mile length, or for about 92 percent of its length. The approved route was within the NYSEG ROW for its entire 5.74-mile length.

The NYSEG Chemung Variation would cross a wooded property owned by the NYSOPRHP at MP 198.6, and two portions of the Soaring Eagle/Mark Twain State Park between MPs 198.6 and 198.8, and between MPs 199.0 and 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. The Catharine Valley Trail would be crossed at MP 198.6. All of these crossings would be adjacent to the existing cleared NYSEG power line ROW. With the exception of the property owned by the NYSOPRHP, the approved Millennium Pipeline project route also crossed all of these properties.

The NYSEG Chemung Variation would be about 0.15 mile longer and would require about 0.92 acre more land within the permanent ROW; but it would require about 1 acre less construction workspace for the construction ROW and additional temporary workspaces. The NYSEG Chemung Variation would cross three fewer wetlands and one more stream than the corresponding segment of the approved pipeline route. Neither project would be within 50 feet of a residence.

Most of the land uses that would be affected by construction of either pipeline segment would be agricultural land use and forest. Agricultural land affected by the NYSEG Chemung Variation compared to the approved Millennium Pipeline Route would be about 0.6 fewer acres during construction. The biggest impact associated with construction of the pipeline along the NYSEG Chemung Variation would be associated with forest land. The construction ROW would require clearing about 6.8 more acres of forest than the approved route; and maintenance of the permanent ROW during operation would affect about 3.1 more forested acres.

Table 3.2.1.3-1
Millennium Phase I Route Variation Comparison Summary

Comparison Factor	NYSEG Chemung Variation	Approved Route a/	NYSEG Tioga-Broome Variation	Approved Route	NYSEG Delaware Variation	Approved Route	Warwick Isle Variation	Approved Route
County	Chemung		Tioga, Broome		Delaware		Orange	
Mileposts	198.0 to 203.6		232.2 to 245.0		284.4 to 284.9		350.8 to 351.6	
Total length (mi)	5.89	5.74	13.54	13.17	0.52	0.50	1.21	0.89
Estimated land requirements								
Permanent ROW (ac)	35.71	34.79	82.03	79.82	3.15	3.04	7.34	5.37
Construction ROW (ac)	67.10	66.96	147.82	143.47	6.78	5.58	11.60	10.01
Total length next to existing ROW (mi)	5.44	5.74	12.79	12.53	0.32	0.32	0.34	0.00
Number of residences within 50 feet	0	0	4	1	2	2	0	0
Number of waterbody crossings	9	9	27	21	3	3	2	2
Number of wetlands	13	16	49	41	2	2	2	2
Wetland acreage affected	2.5	4.3	7.3	8.0	1.0	1.3	0.8	0.01
Forest in Permanent ROW (ac)	8.3	5.2	28.4	3.6	0.6	0.8	0.4	2.0
Forest in Construction ROW (ac)	17.9	11.1	47.1	7.3	2.9	1.4	0.7	3.6

a/ Approved route indicates the corresponding segment of the Millennium Pipeline Project approved by the FERC on September 19, 2002.

The Commission required Millennium to consult with NYSEG regarding the placement of the pipeline within or along NYSEG's power line so that both could be operated safely without interfering with each other. In order to safely operate both entities, the pipeline must be aligned so that a minimum 55-foot separation distance between the pipeline and any grounded power line structure is maintained. As a consequence of this requirement, the pipeline had to be moved, but in so doing, Millennium proposed a route that considered the land use in these newly affected areas and has minimized the impact of the variation by crossing the power line corridor several times. Millennium worked with the NYSEG to minimize number of crossovers. Even though the length of the variation would be slight longer that the approved route, Millennium has reduced the amount of temporary workspace it would need during construction.

NYSEG Tioga-Broome Variation, MP 232.2 to MP 245.0

The proposed NYSEG Tioga-Broome Variation would be about 13.54 miles long and would replace about 13.17 miles of the approved route. At its eastern end, this variation incorporates the Micha Variation that was approved by the FERC. The NYSEG Tioga-Broome Variation would be parallel to the NYSEG power line ROW for about 12.79 miles of its 13.54-mile length, or for about 94 percent of its length. The approved route paralleled the NYSEG ROW for 12.53 miles of its 13.17-mile length (about 95 percent).

The NYSEG Tioga-Broome Variation would be about 0.37 mile longer, would require about 18.9 less acres of construction workspace, and would require about 2.2 more acres of permanent ROW than the corresponding segment of the approved pipeline. It would be within 50 feet of three more residences and would cross 5 more waterbodies and 8 more wetlands. Also, one farm pond would be crossed near approximate MP 237.7. The approved Millennium Pipeline Project pipeline route would have crossed this same area, and construction workspace for it may have affected another farm pond.

Most of the land uses that would be affected by construction of the NYSEG Tioga-Broome Variation would be agricultural and forest. There would be more impact to agricultural land because while the construction workspaces would require about 1.6 fewer acre, the permanent ROW would require about 2.3 more acres. The biggest impact on land use would be to forests. About 39.8 more acres of forest clearing would be required to construct the NYSEG Tioga-Broome Variation compared to the approved route. This reflects the fact that moving the pipeline from within the cleared NYSEG power line corridor to a location that's at least 55 feet from any grounded structure results in increased impact to other resources, and along this variation the greatest impact is on forests. The permanent ROW would require that about 24.8 more acres be maintained as open land compared to the approved route.

A number of homeowners have expressed concern over the proximity of the NYSEG Route Variation to their properties and have stated that they prefer the original route to the variation. In particular, Mr. Robinson (January 9, 2006 and January 30, 2006) opposes the NYSEG Tioga-Broome Variation as it would cross his property in Maine, New York, and believes that there are several environmental constraints associated with the proposed path. The NYSEG Variation is being proposed to ensure the safe operation of the pipeline and the NYSEG powerline. Millennium has responded to Mr. Robinson's letters (February 1, 2006), stating that the environmental issues identified by Mr. Robinson, while important, can be mitigated by adherence to Millennium's Environmental Construction Standards (ECS).

NYSEG Delaware Variation MP 284.4 to MP 284.9

The proposed NYSEG Delaware Variation would be about 0.52 mile long, and would replace about 0.50 mile of the approved route. Both the NYSEG Delaware Variation and the approved route would parallel the NYSEG power line ROW for about 0.32 mile or for about 61.5 and 64 percent of their respective lengths.

The NYSEG Delaware Variation would be about 0.02 mile longer than the corresponding segment of the approved route. It would require about 0.9 more acres for construction. Both routes would be constructed within 50 feet of two residences, would cross the same number of wetlands and waterbodies, and would not cross any agricultural land. Forest impact would be increased along the NYSEG Delaware Variation compared to the approved route. The NYSEG Delaware Variation would require clearing about 1.5 more acres for construction than the approved route. About 0.2 fewer acres of forest would be maintained as open land within the permanent ROW along the variation.

NYSEG Route Variation Summary

In total, the NYSEG Route Variation would affect 199.1 acres in the CWA compared to 217.8 acres for the approved route. The impacts associated with the variation and the approved routes are similar, with the exception of impacts to forest areas. The variation would affect about 67.9 acres of forest within the construction workspace as compared to about 19.8 acres for the approved route. Forest areas within the permanent ROW would be about 37.3 acres and 9.6 acres, respectively.

As noted previously, the construction workspaces for the variation would include about 199.1 acres. The permanent ROW for the variation would include about 119.4 acres. The previously approved route would disturb about 217.8 acres within the CWA. The permanent ROW in this area would include about 116.7 acres. The variation would have six residences within 50 feet of the construction workspace, as compared to three for the approved route.

The proposed variation would have 39 stream crossings as compared with 33 for the approved route. Wetland crossings are slightly more numerous on the variation (64) than on the approved route (59). Impacts to agricultural lands in the construction workspaces would be similar, with about 34.00 acres affected by construction of the variation and about 36.36 acres for the certificate route.

When addressing the issue of moving the pipeline route from within the power line corridor to a largely abutting location, the impact of placing the pipeline on one side or the other of that corridor varies. In some instances the pipeline alignment may be moved or crossed from one side to the power line to the other to minimize impacts on certain resources, such as avoiding crossing residential properties or wetlands. However, avoiding these resources means that other resources such as forests may be affected instead, as in the case of the NYSEG Tioga-Broome Variation. For example, if the proposed alignment of the NYSEG Tioga-Broome Variation were shifted from the south to the north side of the power line approximate MP 233.5 near Lisle Road to reduce impacts on forests this change would mean that construction workspaces would probably be within 50 feet of two additional residences and another wetland area would be affected. The proposed alignment for the NYSEG Tioga-Broome Variation does cross over the power line ROW to avoid resources when it is feasible. But, the NYSEG power line corridor often directly abuts forest land in this area. Since the 55-foot buffer zone needs to be maintained, construction impact to forest would often be unavoidable.

Even though use of the NYSEG Chemung Variation and the NYSEG Tioga-Broome Variation would increase impacts on forest, we believe that the pipeline route alignment should be accomplished in a manner that would allow for the safety and reliability of both the power line and the pipeline. Therefore, **we recommend that:**

- **Millennium use the proposed NYSEG Chemung Variation (MP 198.0 to MP 203.6), the NYSEG Tioga-Broome Variation (MP 232.2 to MP 245.0), and the NYSEG Delaware Variation (MP 284.4 to MP 284.9) rather than the segment of the original, approved Millennium Pipeline Project route between these mileposts.**

Neversink River Crossing, MP 341.0

Millennium was required by environmental condition number 34 of the Interim Order to develop a contingency plan for the crossing of the Neversink River (MP 341.0) in consultation with the FWS, the NYSDEC, and The Nature Conservancy (TNC), in the event that the proposed bore construction technique for crossing this waterbody could not be completed. This consultation was required due to the presence of federally endangered species in the vicinity of this crossing; therefore minimizing disturbance to the streambed was desired. In 2005 Millennium entered into such discussions with the FWS, NYSNHP, and COE. Millennium had also been conducting detailed market and gas flow studies and determined that the existing 7.1-mile-long segment of Columbia's Line A-5 pipeline between Columbia's existing Huguenot and Middletown M&R Stations (between MPs 340.5 and 347.7) in Orange County, New York, was adequate for anticipated and design service demand as long as a short section of 10-inch-diameter pipe under Interstate-84 (MP 343.8 to MP 344.1) was replaced with 24-inch-diameter pipeline. Since use of the existing pipeline would avoid impacts to the endangered species in the Neversink River as well as satisfy current customers' service requirements, Millennium proposes to acquire this segment of pipeline from Columbia and to operate it as part of the Millennium system.

The alternative to the continued use of this segment of Line A-5 would be to install the 30-inch-diameter replacement pipeline instead. This would mean that between MPs 340.5 and 347.7 construction-related impacts to environmental resources within about 65 acres of land (assuming only a nominal 75-foot-wide construction ROW along 7.1 miles of pipeline) would not be avoided. Twelve waterbody crossings are located along this section of the pipeline route. These include three coldwater and nine warmwater fisheries. The warmwater fisheries include the Neversink River. Impacts to 30 wetlands would also be avoided. These include two Class II wetlands regulated by the New York State Department of Environmental Conservation (NYSDEC), UN-1 (Wetland W575) and OT-33 (Wetland W580). About 10.03 acres of wetland exist within the permanent ROW of this 7.1-mile-long pipeline section.

Because use of this 7.1-mile-long segment of Line A-5 would be adequate for the proposed transportation service, and because it would reduce project impacts to environmental resources and particularly to the Neversink River, **we recommend that:**

- **Millennium acquire from Columbia and continue to use the approximate 7.1-mile-long segment of 24-inch-diameter Line A-5 pipeline between MPs 340.5 and 347.7 rather than replace this segment with new 30-inch-diameter pipeline.**

Warwick Isle Route Variation MP 350.8 and MP 351.6

The Warwick Isle Route Variation would be located in the Town of Warwick, New York, between MP 350.8 and MP 351.6. The variation is necessary to avoid a proposed residential subdivision that was recently approved by the Town of Warwick (the Warwick Isle subdivision). This variation involves four new landowners, all of whom gave Millennium permission to survey their properties.

The proposed variation would be about 1.21 miles long and would be about 0.32 mile longer than the approved route. Construction would require about 1.14 more acres for workspace and the permanent ROW would require about 1.97 more acres. Both routes would cross the same two waterbodies and two wetlands, however the route along the variance would affect about 0.65 acre of wetlands compared to a slightly greater impact of 0.70 acre on the approved route. The Warwick Isle Route Variation would affect about 3.09 more acres of agricultural land during construction and the permanent ROW would occupy about 2.6 more acres within agricultural land compared to the approved route. Impact to forest land would be reduced by about 2.58 acres within construction workspaces and by about 1.4 acres within the permanent ROW by following the Warwick Isle Route Variation.

The Warwick Isle Route Variation would cross the black dirt region, which is an area of high agricultural importance. The unique character of the soils, construction impacts, and special construction and restoration techniques were addressed in sections 4.2 and 5.2 of the 2001 Millennium FEIS. Appendix E2 of that document was a copy of the Black Dirt Plan which was developed in consultation with the NYSDA&M. Millennium would use the Black Dirt Plan for construction within agricultural areas that would be crossed along the Warwick Isle Route Variation.

Since the Warwick Isle Route Variation was developed to avoid impacts to a planned residential development and since Millennium would use its Black Dirt Plan for construction in agricultural areas, we recommend that:

- **Millennium use the proposed Warwick Isle Route Variation (MP 350.8 and MP 351.6) rather than the segment of the original, approved Millennium Pipeline Project route between these mileposts.**

Columbia Line A-5 Replacement Project

Route Alternatives

We evaluated three route alternatives that would avoid construction through the Laurel Ridge community in Tuxedo Park, New York. We also compared construction of the proposed route across SR 17, the Metro North Railroad, the Ramapo River and Interstate 87, which would affect a planned residential community, to a route that would follow the existing Line A-5 pipeline across these features.

County Road 84 and Warwick Brook Road Alternative

The County Road 84 and Warwick Brook Road Alternative would replace a portion of the project between MPs 367.8 and 368.6. It would extend south from the Tuxedo/Central Hudson M&R station along the west side of County Road (CR) 84 through Columbia's proposed storage yard 97 for about 1,600 feet where it would cross over the east side of CR 84 just south of the storage yard. The alternative would cross to the east side of CR 84 to avoid forested wetlands and a waterbody that runs parallel to the road. The route on the east side of CR 84 would be within Sterling Forest ® State Park land for about 1,250 feet. The alternative route in this area would be through park forests with rocky terrain and minor side slope. The alternative would cross back to the west side of CR 84 to avoid a pond on the International Paper Research and Development Center Inc. (International Paper) property.

The alternative would again cross CR 84 just south of Warwick Brook Road, and would follow along the south side of Warwick Brook Road. This portion of the alternative would pass through forests, rocky terrain, side slopes, and a state-regulated wetland and its buffer zone. A stream, Warwick Brook, runs parallel to Warwick Brook Road and the alternative route would run between the stream and the road. This waterbody would be crossed near the water treatment plant before the alternative route crosses to the north side of Warwick Brook Road. Due to the presence of rock outcrops and boulders on the north side of Warwick Brook Road, the alternative route would probably need to be on the south side of the road in this area. About 400 feet north of the water treatment plant, the alternative would cross to the north side of Warwick Brook Road to Sterling Forest ® State Park forest land to avoid wetlands on the south side of the road. The route would then rejoin the proposed route near MP 398.6. Issues related to constructing this last portion of the alternative include bedrock, boulders, and side slopes.

Another issue related to this alternative is the visual impact of clearing forests along the alternative construction right-of-way next to both CR 84 and Warwick Brook Road. Tree clearing would occur on both privately owned land and Sterling Forest ® State Park land.

Columbia has indicated that it does not believe this route is feasible to construct, particularly because of issues related to topography and state-regulated wetlands.

Table 3.2.1.3-2 compares the area that would be affected by the proposed route and the County Road 84 and Warwick Brook Road Alternative.

We do not recommend using the County Road 84 and Warwick Brook Road Alternative. It would require about twice as much land and over five times as much tree clearing to construct compared to the corresponding proposed route. The alternative would be about 1.01 miles longer, would require 9.1 more acres for the construction right-of-way, would require about 6.1 more acres for the permanent right-of-way, and would require about 9.3 more acres of tree clearing. The tree clearing on both privately owned and Sterling Forest ® State Park land adjacent to CR 84 and Warwick Brook Road would have a visual impact on the area. Further, it would require construction parallel to Warwick Brook; therefore, NYSDEC water quality requirements may be difficult to achieve. The alternative would avoid construction within 50 feet of 5 residences. However, we have recommended the Sterling Forest ® State Park /Laurel Ridge Alternative which also avoids these residences.

Table 3.2.1.3-2
Comparison of the County Road 84 and Warwick Brook Road Alternative to the Proposed Route

Feature	Alternative Route	Proposed Route
Length (mi)	1.80	0.8
Construction right-of-way (ac)	16.4	7.3
Permanent right-of-way (ac)	10.9	4.8
Temporary Extra Workspaces	2.25	1.1
Residences within 50 feet of Construction Right-of-Way (number)	0	5
Waterbodies (no)	2	1
Wetlands (no)	1	1
Forest clearing (ac)	13.6	4.3
Parallel or adjacent to existing right-of-way (mi)	1.5	0.8

Route 17A/17 Alternative

The Route 17A/17 Alternative would begin at MP 367.8 and would end near MP 369.7 of the proposed project. It would extend northward from the Tuxedo/Central Hudson M&R Station through the Water Treatment Plant entry road. At this point it would cross CR 84 by road bore to avoid construction adjacent to Indian Kill Reservoir. It would continue northward along the east side of CR 84. It would still be adjacent to Indian Kill Reservoir for about 0.29 mile, although it would be on the opposite side of the road. Indian Kill Reservoir is a public drinking water supply and a state-regulated wetland with a buffer zone. Along this portion of the alternative, construction would affect forests, wetlands, a waterbody, and would encounter boulders and shallow bedrock.

Near the intersection of State Route (SR) 17A the alternative would turn northeast. It would pass between the Sterling Forest Volunteer Fire Station and the Sterling Forest LLC office building. The alternative would follow SR 17A staying to the south of the road embankment until Sylvan Way. Along this portion of the alternative, construction would encounter shallow bedrock, a waterbody (Indian Kill) and associated forested wetland, and a recreational park (a ballpark, playground, and tennis courts).

About 100 feet west of Sylvan Way, the alternative would cross to the north side of SR 17A and continue eastward along a ridge on the north side of SR 17A. Construction activities would encounter steep slopes, steep side hill areas, shallow bedrock, and boulders. Columbia anticipates that due to the large amount of rock and steep side hill areas, the construction ROW would have to be at least 100 feet wide in order to excavate the tiers, or terraces, that would be needed for safe construction workspace. The new construction ROW would be highly visible from the roadway since it would extend up and over the ridges adjacent to the highway. About 1,150 feet west of the southbound entrance ramp to Route 17, the alternative would cross to the south side of SR 17A adjacent to a powerline crossing. The alternative would follow the powerline to an open area west of the southbound entrance ramp. At this point, the alternative would turn south to follow the property line of a landscape and nursery business until intersecting the Line A-5 ROW south or Warwick Brook Road. Construction activities would encounter rocky terrain, a waterbody crossing (Indian Kill), and forested wetlands.

The highway median could not be used for constructing an alternative route because there is not adequate workspace and the median contains the highway drainage.

Table 3.2.1.3-3 compares impacts associated with constructing the State Route 17/17A Alternative and the proposed route.

The comparison table shows that many of the resources impacted by the proposed and the Route 17A/17 Alternative are similar. However, because the alternative would be about 0.51 mile longer than the proposed route it has greater land use requirements and impacts. About 4.63 acres more of forest clearing would be required to construct the alternative compared to the proposed route. The construction ROW would require about 2.15 more acres and the permanent ROW requirement would be about 2.91 acres greater. No residences would be within 50 feet of construction work areas, whereas 7 would be within 50 feet on the proposed route. The alternative route would affect two fewer waterbodies and two fewer wetlands. Four of the five waterbodies that would be crossed on the proposed route are intermittent and the fifth stream is Warwick Brook, which is perennial. The waterbodies that would be affected by the alternative route include two crossings of Indian Kill, a perennial waterbody with associated forested wetlands. Indian Kill would also be within the construction ROW along the portion of the route that would follow the south side of SR 17A. NYSDEC water quality requirements probably could not be met for activities near Indian Kill at this third location.

Table 3.2.1.3-3
Comparison of the State Route 17A/17 Alternative to the Proposed Route

Feature	Alternative Route	Proposed Route
Length (mi)	2.42	1.9
Construction right-of-way (ac)	26.6	24.5
Permanent right-of-way (ac)	14.7	11.8
Temporary Extra Workspaces	2.43	2.5
Residences within 50 feet of Construction Right-of-Way (no)	0	7
Waterbodies (no)	3	5
Wetlands (no)	1	3
Forest clearing (ac)	15.6	10.96
Parallel or adjacent to existing right-of-way (mi)	1.75	1.55

Although use of the Route 17A/17 Alternative would mean that the project would avoid constructing within 50 feet of seven residences, the impact on other resources including recreational and community resources (ball park, playground, tennis courts, fire station) and feasibility of construction do not recommend this alternative. We have, however, recommended the Sterling Forest ® State Park /Laurel Ridge Alternative.

Sterling Forest ® State Park /Laurel Ridge Alternative

The Sterling Forest ® State Park/Laurel Ridge Alternative would create new ROW in Sterling Forest ® State Park, but it would avoid the residences in the Laurel Ridge development. Figures 3.2.1.3-1 and 3.2.1.3-2 (inserted at the end of section 3) show the alternative route. The alternative would begin at the Tuxedo/Central Hudson M&R Station at MP 367.8 and would end at MP 368.5 of the proposed route. From the M&R station it would extend to the southeast crossing CR 84 by a road bore. Then it would enter land owned by Sterling Forest ® State Park

The alternative pipeline alignment would cross about 0.84 mile of the Sterling Forest ® State Park affecting about 10.4 acres including about 0.4 acres within additional workspaces. The permanent ROW would affect about 5.1 acres including about 1.1 acres within additional workspaces. The alternative would go around the southern boundary of the Laurel Ridge development and would be greater than 300 feet from any residence on Spice Bush Lane.

The Sterling Forest ® State Park/Laurel Ridge Alternative would mainly affect land within the Sterling Forest ® State Park and would mainly affect forested land. About 3,987 feet of park land would be crossed affecting about 9.0 acres during construction and creating about 4.4 acres of new permanent ROW within the park. The approved route would cross about 1,982 feet of the park affecting about 4.7 acres during construction and operation would affect about 2.2 acres on the existing pipeline easement.

Millennium has coordinated with the Palisades Interstate Parks Commission (PIPC) and the management of Sterling Forest ® State Park during development of the Sterling Forest ® State Park/Laurel Ridge Alternative. Millennium states that the parties have reached an agreement in principle for this alternative pipeline alignment within the park. Millennium is developing a PIPC Environmental Management and Construction Plan (EM&CP) which describes the environmental construction and mitigation procedures Millennium would use to minimize environmental impacts to the park. Millennium indicates that when the EM&CP is finalized it would file the plan with the FERC.

Along the approved route, forest land that would be affected is adjacent to the Line A-5 pipeline ROW. Open land that would be affected by the approved route is within the maintained Line A-5 ROW which varies from 35 to 40 feet in width. The approved route would affect residential land in the Laurel Ridge community since five residences would be within 50 feet of construction workspaces.

A small and similar amount of industrial/commercial land would be affected near MP 367.8 at the existing Central Hudson/Tuxedo M&R Station on both the approved and alternative routes.

Construction would encounter shallow bedrock, some glacial erratic boulders, and minor side slopes. The alternative would head northeastward after passing the southeast side of the development to rejoin the existing Line A-5 ROW. Columbia has indicated that the alternative route would be feasible to construct. The alternative route would follow a bench in the topography and would encounter manageable side hill areas.

The Sterling Forest ® State Park/Laurel Ridge Alternative would cross one waterbody. This waterbody would be crossed along the proposed route, too, but at a location farther upslope. At the alternative crossing, the waterbody may be perennial. The alternative route would not affect any wetlands. The proposed route would cross one palustrine emergent wetland located entirely within the Line A-5 ROW. Both the construction and permanent ROW, therefore, would affect about 0.14 acre of wetland along the proposed route.

Both the proposed route and the alternative route would be within areas that have been identified as potentially containing bog turtles, a federally-listed threatened and state-listed endangered species; and Indiana bats, a federally- and state-listed endangered. Since the Sterling Forest ® State Park/Laurel Ridge Alternative would not affect any wetlands, potential bog turtle habitat would not be affected. The Sterling Forest ® State Park/Laurel Ridge Alternative was included in Millennium's 2005 field survey and 2006 biological assessment. Both the proposed

route and the alternative are outside the area identified as the activity area for the Indiana bat. However, additional FWS consultation may be required.

Cultural resources investigations have been completed on both the proposed and alternative routes. No cultural resources were identified along the proposed route during Phase I investigations. The Phase I investigation along the alternative route was completed in March 2006, and the report is expected to be completed in July 2006. Millennium reports that no cultural resources were found and that it would recommend to the NYSHPO that no further cultural resources work be required. Millennium would file the NYSHPO comments regarding the Sterling Forest ® State Park/Laurel Ridge Alternative when they are received.

Table 3.2.1.3-4 compares the Sterling Forest ® State Park /Laurel Ridge Alternative to the previously approved route.

Table 3.2.1.3-4
Comparison of the Sterling Forest ® State Park /Laurel Ridge Alternative to the Previously Approved Route

Feature	Alternative Route	Approved Route
Length (miles)	0.84	0.7
Construction right-of-way (acres)	10.4	8.4
Permanent right-of-way (acres)	4.5	4.1
Temporary Extra Workspaces	0.4	1.1
Residences within 50 feet of Construction Right-of-Way (number)	0	5
Waterbodies (number)	1	1
Wetlands (number)	0	1
Forest clearing (acres)	6.8	1.6
Parallel or adjacent to existing right-of-way (miles)	0.04	0.7

The alternative route would be about 0.14 mile longer than the approved route. It would require about 2.0 more acres for the construction ROW and about 0.4 more acres for the permanent ROW; however, most of the permanent ROW along the alternative would be on new ROW whereas the proposed would affect the existing Line A-5 permanent ROW. The same waterbody would be crossed on both routes, but at different locations. No wetlands would be along the alternative route, but about 0.14 acre of wetlands would be affected along the approved route. The alternative route would have greater impacts on forests since it would require clearing new ROW through forest land within Sterling Forest ® State Park. It would require about 5.2 more acres of forest clearing than the proposed route. This would have less visual impact compared to the previous two alternatives discussed since it would be in a more remote location. The visual impact should be similar to that of the existing ROW for Line A-5. However, it would move the project outside the Laurel Ridge development thereby avoiding five residences. No new landowners would be affected.

The PIPC is working with Millennium to develop an EM&CP that would address general and site-specific construction and mitigation plans on PIPC-managed lands. The EM&CP could be applied along the Sterling Forest ® State Park /Laurel Ridge Alternative as well as in other project areas within Sterling Forest ® State Park and Harriman State Park. We believe that even though the Sterling Forest ® State Park/Laurel Ridge Alternative would require greater forest

clearing, it would have less impact on the residents in the Laurel Ridge development. Therefore, **we recommend that:**

- **Columbia/Millennium incorporate the Sterling Forest ® State Park/Laurel Ridge Alternative between Millennium MPs 367.8 and 368.5 of the Line A-5 Replacement Project portion of the Millennium Pipeline Project – Phase I. Columbia/Millennium should consult with the FWS to determine the need for any additional surveys for federally-listed threatened or endangered species, and with the SHPO to determine the need for additional cultural resource surveys along the Sterling Forest ® State Park/Laurel Ridge Alternative. Columbia/Millennium should file with the Secretary, for written review and approval by the Director of OEP, revised construction alignment sheets that show the modified route and workspaces, prior to construction in this area.**

Millennium has incorporated the Sterling Forest ® State Park/Laurel Ridge Alternative into its proposed route for the Phase I Project. Millennium's July 31, 2006 supplemental filing includes information about the land requirements and affected environment along this alternative and that updated information is included in sections 2 and 4 of this document.

Ramapo River HDD Variation

Sterling Forest LLC are the owners of a property that it plans to develop for residential use along the portion of the proposed ROW that deviates from the existing Line A-5 corridor to cross SR 17, the Metro-North railroad, the Ramapo River, and I-87 by HDD. This property is south and west of these features and the planned residential development would be called Sterling Place. As proposed by Columbia in the Line A-5 Replacement Project, the drill side of the HDD would be staged on the Sterling Forest LLC property. This property has been subdivided into lots and roads, and a development plan has been filed with the Town of Tuxedo. Construction of this housing project has not yet begun.

In the Line A-5 Replacement Project application (Docket No. CP05-19-000), Columbia proposed to place the pipeline route along or within planned roads and lot lines within the Sterling Forest LLC property to minimize the impact on individual lots. But, this would not be possible in all cases. On some lots, the pipeline would cut diagonally across a lot corner. Columbia's alignment sheets show that new permanent ROW would be within about 18 lots. If the pipeline were placed beneath some residential roads, then it would not be installed on up to five of these lots although the permanent ROW may extend onto these lots. Sterling Forest LLC commented that a route that doesn't deviate from the existing Line A-5 corridor would have less impact on the planned development. If the HDD were staged along the HDD Alternative, the drill site would be near the intersection of Warwick Brook Road and SR 17. The exit site would be to the east of I-87.

Millennium included this alignment within the proposed alignment for its Phase I Project in its August 1, 2005 amendment application (Docket No. CP98-150-006). But, Millennium has re-evaluated the HDD crossing plan and pipeline route proposed in those documents. In Millennium's May 3, 2006 amendment application (Docket No. CP98-150-008), it proposes an alternative route and location for the HDD crossing of SR 17, the Metro-North railroad, the Ramapo River, and I-87 that is closer to the Line A-5 corridor and the approved Millennium Pipeline Project route. This variation is called the Ramapo River HDD Variation and would be constructed between MPs 369.4 and 370.3.

The Ramapo River HDD Variation would be about 0.88 mile long. The route proposed for the Line A-5 Replacement Project is about 0.82 mile long and it would have replaced about 0.95 mile of the approved Millennium Pipeline Project route. The Ramapo River HDD Variation would be a minor change from the approved route to accommodate the HDD rather than using a series of bored crossings under the roads and railroad and a HDD crossing of the Ramapo River. Figures 3.2.1.3-1 and 3.2.1.3-3 (inserted at the end of section 3) show the route variation. The Ramapo River HDD Variation would be partially on new ROW, but would generally follow the existing Line A-5 ROW. Construction of the Ramapo River HDD Variation would disturb about 11.2 acres including about 6.2 acres for extra workspaces which would mainly be needed to accommodate the workspace for the HDD. The permanent ROW would be about 5.7 acres.

The alignment proposed in the Line A-5 Replacement Project and the Millennium Pipeline Project – Phase I Project applications (Proposed Route) would require about 15.8 acres for the construction ROW including about 7.0 acres for additional workspaces. The permanent ROW would require about 4.9 acres.

The approved pipeline route along Line A-5 (Approved Route) would require the disturbance of about 12.4 acres during construction including about 3.7 acres for additional workspace. The permanent ROW would require about 5.7 acres.

The Ramapo River HDD Variation would affect open, forest, and industrial/commercial land uses. About 2.3 acres of forested land would be affected during construction with about 1.5 acres affected permanently within the permanent ROW. Most of the land east of I-87 along this alternative alignment is open land that was previously disturbed by sand and gravel quarrying. Industrial/commercial land includes Warwick Brook Road, a commercial property at the intersection of Warwick Brook Road and SR 17. No residences would be within 50 feet of this alignment.

The alignment along the Proposed Route would affect open, forest, and residential land uses. Forest land would be mainly in the area between Warwick Brook Road and SR 17. About 4.4 acres of forest land would be affected by the construction ROW and about 0.5 acre would be affected permanently by the permanent ROW. The residential land affected would be within the proposed residential subdivision on property owned by Sterling Forest LLC. Construction impacts to the planned residential community would affect about 1.9 acres and the permanent ROW would affect about 0.2 acre.

The affected land use along the Approved Route would be forest, industrial/commercial, and open land. About 5.7 acres of forest land would be affect by the construction ROW and about 3.0 acres would be permanently affected by the permanent ROW. Commercial land includes the Warwick Brook Road property. Open land is mainly along the maintained Line A-5 pipeline corridor. No residences would be within 50 feet of the approved pipeline route in this area although the pipeline construction and permanent ROWs would affect about 0.1 acre of residential land.

The Ramapo River HDD Variation would cross about 1,936 feet of Harriman State Park, affecting about 7.4 acres during construction. About 2.2 acres of park land would be within the permanent pipeline ROW during operation. The alignment for the Proposed Route would cross about 1,749 feet of Harriman State Park, affecting about 7.4 acres during construction and about 2.0 acres during operation within the permanent ROW. The Approved Route would cross about 2,211 feet of Harriman State Park, affecting about 4.7 acres during construction and 2.6 acres along the permanent ROW.

The Ramapo River HDD Variation would cross four perennial waterbodies, but direct impact to them would be avoided by a successful HDD crossing. The other two waterbodies would be crossed using a dry ditch construction method. Also, one perennial waterbody would be crossed by the temporary use of an existing road as an access road (ARHDD 003).

The Proposed Route would cross five perennial waterbodies, two of which would be avoided by a successful HDD crossing. The remaining three waterbodies would be crossed by a dry-ditch construction method. Also two perennial waterbodies would be crossed by the temporary use of access road ARHDD 003.

The Approved Route would cross three perennial waterbodies, but one would be avoided by a successful HDD crossing and the remaining two waterbodies would be crossed by a dry-ditch construction method.

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.

The Proposed Route would temporarily affect about 1.46 acres of wetlands including about 0.52 acres along ARHDD 003. About 0.45 acre of wetlands would be within the permanent ROW during pipeline operation.

The Approved Route would cross four wetlands, but three would be avoided by a successful HDD crossing. This route would temporarily affect about 0.73 acres of wetlands during construction and about 0.69 acres of wetlands would be within the permanent ROW during pipeline operation.

All of these routes would be within areas that have been identified as potentially containing bog turtles, a federally-listed threatened and state-listed endangered species; and Indiana bats, a federally- and state-listed endangered. Millennium completed surveys for the bog turtle in all areas that would be affected by these routes. The surveys concluded that all but one wetland, Wetland W640 in Harriman State Park, fail to support suitable habitat for bog turtles and that bog turtles are unlikely to occur in Wetland W640 due to vegetative characteristics and topographic location. Millennium's Supplement to the Phase I Bog Turtle Habitat Assessment Report, filed July 31, 2006, concludes that this wetland may not be suitable bog turtle habitat. It is dominated by common reed (Phragmites australis), an invasive plant. Wetlands dominated by this species are often not used by bog turtles due to their lack of basking and nesting habitat. Further this wetland is near the summit of Pound Mountain and is probably inaccessible to bog turtles due to steep slopes and rocky terrain. FWS comment on this conclusion is pending. The proposed and alternative pipeline routes were included in Millennium's 2005 field survey and 2006 biological assessment for Indiana bats. The Ramapo River HDD Variation would affect less forested land, therefore, it would have less potential impact on Indiana bats. These routes are outside the area identified as the activity area for the Indiana bat. Additional FWS consultation may be required, but it appears that use of any of these route alternatives would have similar impacts on these species and that there may be less potential impact by using the Ramapo River HDD Variation since it would require less tree clearing.

Cultural resource investigations have been completed along the Approved Route and the Ramapo River HDD Variation. Along the Approved Route, four cultural resource sites were identified: one would be avoided, one was destroyed by new house construction, one was recommended for Phase II testing and equivalent work which was competed in 2001, and the fourth site was Harriman State Park. Millennium has developed a site-specific construction and mitigation plan for construction within Harriman State Park.

Cultural resource investigations along the Proposed Route identified five cultural resources within the construction workspace and along ARHDD 003. The NYSHPO recommended additional work at only one site, if it cannot be avoided. However, Millennium would fence the site and the access road would be covered with a mat. The NYSHPO concurred that this would eliminate the need for additional work and that the site would not be impacted.

Table 3.2.1.3-5 compares the Ramapo River HDD Variation to the corresponding segments of the Proposed Route and the Approved Route.

Table 3.2.1.3-5
Comparison of the Ramapo River HDD Variation and the Proposed Route to the Approved Route

Feature	Alternative Route	Proposed Route	Approved Route
Length (miles)	0.88	0.82	0.95
Construction right-of-way (acres)	11.2	15.8	12.4
Permanent right-of-way (acres)	5.3	4.9	5.7
Temporary Extra Workspaces b/	6.2	7.0	3.7
Residences within 50 feet of Construction Right-of-Way (number)	0	0 a/	0
Waterbodies (number)	4	5	3
Wetlands (number)	1	1	1
Forest clearing (acres)	2.3	4.4	5.7
Parallel or adjacent to existing right-of-way (miles)	0.5	0.00	0.9

a/ No existing residences, but the route would affect about 18 lots in a planned residential community.
b/ Temporary extra workspace amounts are included in the construction ROW amounts.

The Ramapo River HDD Variation would be about 0.06 mile longer and about 0.07 mile shorter than the Proposed and Approved Routes, respectively. It would require about 4.6 and 1.2 fewer acres for the construction ROW than the Proposed and Approved Routes. The Ramapo River HDD Variation would require about 0.4 more acre for the permanent ROW, and 0.4 fewer acre for the permanent ROW compared to the Proposed and Approved Routes, respectively. Waterbody impacts for all of the routes would be reduced by using an HDD crossing method. The greatest difference between is seen in the comparison of the impact to forested lands. The Ramapo River HDD Variation would require 2.1 and 3.4 fewer acres of forest clearing for construction compared to the Proposed and Approved Routes. Also, the Ramapo River HDD Variation would avoid construction through a planned residential development.

The Ramapo River HDD Variation would permanently affect slightly more land in Harriman State Park compared to the Proposed Route (0.2 acre more), but would permanently affect less land that than the Approved Route (0.4 acre less). Construction workspaces would affect about similar amounts of land for both the Ramapo River HDD Variation and the Proposed Route within the park, but they would affect more land compared to the Approved Route (about 2.7 acres more).

The Ramapo River HDD Variation would move the pipeline alignment from the planned residential development, would require less construction workspace, and would require less forest clearing. Although the workspace requirements for construction within Harriman State Park would be greater than the Approved Route, they would be similar to the Proposed Route; and Millennium has developed a site-specific construction and mitigation plan for construction within Harriman State Park. We believe that use of the Ramapo River HDD Variation rather than the Proposed Route or the Approved Route would reduce impacts to forests and the planned residential development. Environmental impacts to Harriman State Park would be minimized by implementing the site-specific construction and mitigation plan for construction. Therefore, **we recommend that:**

- **Columbia/Millennium incorporate the Ramapo River HDD Variation MPs 369.4 and 370.3 of the Line A-5 Replacement Project portion of the Millennium Pipeline Project - -Phase I Project. Columbia/Millennium should consult with the FWS to determine the need for any additional surveys for federally-listed threatened or endangered species, and with the SHPO to determine the need for additional cultural resource surveys along the Ramapo River HDD Variation. Columbia/Millennium shall file with the Secretary, for written review and approval by the Director of OEP, revised construction alignment sheets that show the modified route and workspaces, prior to construction in this area.**

Millennium has incorporated the Ramapo River HDD Variation into its proposed route for the Phase I Project. Millennium's July 31, 2006 supplemental filing includes information about the land requirements and affected environment along this alternative and that updated information is included in sections 2 and 4 of this document.

3.2.1.4 Alternatives Considered but Eliminated from Further Consideration

A number of potential major route alternatives and route variations were identified in Millennium's original approved Millennium Pipeline FEIS or in public comments on the project. Although we reviewed each of these alternatives and variations to determine if they were viable, we concluded for various reasons that they were either impractical or offered no significant environmental advantage over the proposed route.

Columbia has attempted to identify major route alternatives for the Line A-5 Replacement portion of the Millennium Phase I Project that would avoid the environmentally sensitive areas along this route, in particular Sterling Forest State Park, Harriman State Park, and Kakiat County Park. However, Columbia has existing points of delivery (PODs) on both ends and the middle of this relatively short pipeline segment. These PODs are situated such that it is impossible to access them with the replacement pipeline without crossing the parks. Thus, any major reroutes would involve construction along new ROW within these sensitive resources. Further, it is not possible to avoid Sterling Forest State Park in its entirety to the south, since it is contiguous with Ringwood State Park in New Jersey. A reroute to the north would require crossing the Appalachian Trail (possibly at two locations) and Harriman State Park on new ROW

to the PODs at the Sloatsburg and Ramapo M&R Stations. Thus, Columbia concludes that the current route along the existing Line A-5 ROW is preferable and would minimize the impacts associated with this replacement project.

3.2.1.5 Phase I Project Modifications

On July 31, 2006, Millennium filed a supplement which requested the inclusion of 194 modifications which it calls "variances", to the proposed Phase I Project. These include certain modifications to temporary workspaces (increases and decreases in size, removal, addition, and adjustments to location), identified by a number and "WS"; additions, deletions, or relocations of certain access roads, identified by a number and "AR"; change to the use or location of storage yards, identified by a number and "SY"; and certain pipeline centerline relocations (including the Sterling Forest ® State Park/Laurel Ridge Alternative and the Ramapo River HDD Variation), identified by a number and "CL". These changes were made at the request of affected landowners, at the request of state agencies, to avoid cultural resources, to avoid or minimize project impact on natural resources (rattlesnake dens, waterbodies, and wetlands), and to address issues related to construction. On August 31, 2006, Millennium filed supplemental information about this request. Appendix B1 identifies these modifications on revised topographic maps and in a table.

Millennium stated in its August 31, 2006 supplement that most of the landowners affected by the modifications concurred with the changes. However, Millennium identified 31 variances where at lest one landowner did not concur with the proposed modifications. Many of these landowners are opposed to the project in general. These are addressed below.

<u>MP 191.0 to 191.27, Variance 005B(CL), Sullivan and Chemung Counties, New York</u>

Since approval of the original Millennium Pipeline Project, a foreign pipeline was installed along the approved pipeline route. Millennium filed a variance to avoid this foreign pipeline by installing its pipeline 25 feet from the foreign pipeline and to provide a pipeline route to its proposed compressor station in its August 1, 2005 application. However, subsequent field work revealed that a perennial waterbody (SMEM-001) would run within the proposed workspace along the pipeline for about 850 feet starting near MP 191.0. Therefore, Millennium now proposes Variance 005B(CL) to avoid having this waterbody within the workspace. The variance would shift the pipeline about 75 feet to the north placing it about 25 feet from Columbia's existing Line A-5 instead of 25 feet from the foreign pipeline. One landowner does not support this change, but the other landowner affected by this change has concurred with the proposal. Both the certificated route and the variance are located on these properties as is the waterbody. Neither landowner has filed comments.

Table 3.2.1.5-1 compares the estimated impacts of the variance and the corresponding area of the Phase I Project. The variance would be about 30 feet shorter than the proposed Phase I route, and both routes would affect about the same amount of land during construction and operation. The same four waterbodies (two perennial and two intermittent, all coldwater fisheries) would be crossed by both routes. The variance would cross seven wetlands with a combined crossing length of about 625 feet and the originally route proposed in the application would cross six wetlands with a combined crossing length of about 572 feet; but the variance would require slightly less clearing in wetlands during construction and a similar amount of wetland would be in the permanent ROW. The variance would affect about 0.16 acre of mixed PSS/PFO wetland during construction and about 0.11 acre of this wetland type would be converted permanently to PSS due to operation of the project; but, no PFO wetland would be disturbed along the Phase I

route. About 2.2 more acres of forest would be cleared for the construction ROW along the variance and about 1.9 additional acres of forest would be maintained permanently as open land along the pipeline permanent ROW. The variance would affect about 2.2 fewer acres during construction and 1.7 fewer acres during operation of open land. While neither route would be within 50 feet of any residence, the variance would affect about 0.2 more acre of land used as residential yard areas.

Although the variance would affect more forest, forested wetland, and land used for residences, it would minimize impacts to water resources since the construction ROW would avoid overlapping 850 feet of a perennial waterbody. Restoration of this waterbody after construction would probably be challenging if the construction ROW were not moved. Therefore, we believe Variance 005B(CL) is reasonable.

Table 3.2.1.5-1
Comparison of Variance 005B(CL)
to the Corresponding Area on the Phase I Project

Feature	Alternative	Proposed
Crossing Length (feet)	1550	1580
Land Requirement		
Construction/Operation (acres)	13.9/8.0	13.9/8.0
Waterbodies (number)	4	4
Wetlands (number)	7	6
Crossing length (feet)	625	572
Construction/Operation (acres)	0.58/0.47	0.64/0.45
Land Use		
Agriculture	0.0	0.0
Construction/Operation (acres)		
Forest	8.4/4.2	6.2/2.3
Construction/Operation (acres)		
Open	5.0/3.7	7.2/5.4
Construction/Operation (acres)		
Industrial/Commercial	0.2/0.2	0.5/.02
Construction/Operation (acres)		
Residential	0.3/0.1	<0.1/0.0
Construction/Operation (acres)		
Residences within 50 feet of construction ROW (number)	0	0

MP 199.8, Variance 020(AR), Chemung County, New York

This variance would involve shifting the location of an access road that was certificated in the Interim Order. The reason for the modification is due to concerns raised a neighboring landowner about the location of the access road entrance directly across from his home. Part of the amended access road would be on property owned by Ms. S. Saitto. Ms. Saitto has filed comments against the Phase I Project. The other landowner affected by the variance has concurred with the change.

The total amount of land that would be temporarily affected along both the variation and the original access road would be similar, about 0.2 acre of agricultural land. No wetlands or waterbodies would be affected, and neither area would be within 50 feet of any residence. Since this modification would not significantly change project impact and moving the access road entrance would minimize impacts to a residence, we believe Variance 020(AR) is reasonable.

MP 206.4 to 206.76, Variance 029(CL), Chemung County, New York

This variance would shift the pipeline centerline from the south to the north side of Columbia's Line A-5 to avoid a new residence. The landowner built the residence about 30 feet south of the existing Columbia Line A-5. The certificated pipeline would have been constructed about 25 feet south of Line A-5. Construction of this residence included grading a relatively flat yard into the hillside where the certificated route was located. Grading extended approximately to Columbia's easement for Line A-5 and has created a steep cut slope. The variance would move the pipeline to the north side of Line A-5 and away from the newly cut slope to a more stable position. This would move the pipeline centerline to a location that would be about 85 feet away from the new home. The construction ROW would still overlap the existing Line A-5 ROW. The landowner who built the house, Mr. K. Seymore, has filed comments that he believes the pipeline centerline should be farther away from his residence. Three other landowners that would be affected by the variance have concurred with the change.

Table 3.2.1.5-2 compares the estimated impacts of the variance and the corresponding area of the Phase I Project. The variance would be about 100 feet longer than the proposed Phase I route. The variance would affect about 0.1 acre more during construction, but the land requirement for operation would be similar to the certificated route. The same intermittent, coldwater stream would be crossed by both routes. Both routes would cross two wetlands with a combined crossing length of about 697 feet. About 0.8 more acre of forest would be cleared for the construction ROW along the variance and about 0.5 more acres of forest would be maintained permanently as open land along the pipeline permanent ROW. The variance would affect about 0.2 fewer acres of open land during construction and operation. The variance would be within 50 of one less residence compared to the certificated route and would affect 0.5 fewer acres during construction and 0.3 fewer acres during operation of land used as residential area.

If the pipeline were moved farther to the north, the construction ROW would not overlap the existing permanent Line A-5 ROW. It would require more forest clearing since the open area over the Line A-5 ROW would not be used for workspace. Since the variance would move the construction ROW and pipeline centerline farther from the new residence, we believe Variance 029(CL) is reasonable.

Table 3.2.1.5-2
Comparison of Variance 0029(CL)
to the Corresponding Area on the Phase I Project

Feature	Alternative	Proposed
Crossing Length (feet)	1848	1748
Land Requirement		
Construction/Operation (acres)	5.0/2.6	4.9/2.6
Waterbodies (number)	1	1
Wetlands (number)	2	2
Crossing length (feet)	697	697
Construction/Operation (acres)	0.5/0.38	0.89/0.6
Land Use		
Agriculture	0.3/0.2	0.2/0.1
Construction/Operation (acres)		
Forest	3.1/1.2	2.3/0.7
Construction/Operation (acres)		
Open	1.2/1.0	1.4/1.2
Construction/Operation (acres)		
Industrial/Commercial	0.2/0.2	0.3/0.2
Construction/Operation (acres)		
Residential	0.0/0.0	0.5/0.3
Construction/Operation (acres)		
Open Water	0.1/0.1	0.1/0.1
Construction/Operation (acres)		
Residences within 50 feet of construction ROW (number)	0	1

MP 207.6, Variance 171(WS), Chemung County, New York

This variance is proposed at the request of a landowner to reduce the amount of extra workspace near the crossing of Staple Road. One landowner affected by the variance concurred with the change, but two landowners did not. These two landowners are generally opposed to the project.

The workspace modification would reduce the amount of clearing adjacent to Staple Road. Forest clearing would be reduced from about 0.3 acre to 0.2 acre and the use of open land would increase from less than 0.1 acre to about 0.2 acre. Since this modification would reduce clearing along Staple Road, we believe Variance 171(WS) is reasonable.

MP 219.6, Variance 185(AR), Tioga County, New York

The variance would delete an access road that was part of a workspace certificated for the Millennium Pipeline Project in 2001. One landowner concurred with this change and one landowner who is generally opposed to the project did not. Use of this access road would have required clearing about 0.7 acre of forest to allow the passage of equipment. Since the deletion of the use on the access road would reduce project impact on these properties, we believe Variance 185(AR) is reasonable.

MP 243.2, Variance 160, Part 33(WS), Broome County, New York

The modification listed under “Variance 160” resulted from Millennium’s review of the construction alignment sheets and the project footprint in the field. The variance would involve

shifting extra workspace required for the crossing of Cummings Road to a location directly adjacent to the east side of the road affecting. This would affect less than 0.01 acre of forest within this temporary workspace. The certificated area would also affect about the same amount of forest. The property owner is generally opposed to the project on his property. We believe this minor modification to the location of the temporary workspace would facilitate crossing the road and would not increase project impacts; therefore, we believe Variance 160, part 33(WS) is reasonable.

MP 243.7, Variance 160, Part 34 (WS), Broome County, New York

The variance would include extra workspace at the west end of wetland WBMC-207. This wetland was identified during field work in 2005. The variance would add less than 0.1 acre to temporary land requirements. The pipeline would follow the existing NYSRG powerline corridor across the Micha property which also contains pipeline rights-of-way for Columbia Line A-5 and Buckeye Pipeline. Millennium has worked with NYSEG to address the pipeline route adjacent to the powerline. NYSEG directed Millennium to move the pipeline to the outside edge of the powerline ROW so that it would be no closer than 55 feet to any structure. The proposed location is on the north side of the powerline ROW. The property owner is generally opposed to the project. Millennium states that it has conferred with the property owner about the modified workspace, but that he remains dissatisfied with the pipeline route through his property.

This wetland had not been identified previously, so the need for temporary extra workspace had not been known. The workspace would about 0.1 acre in size and would require about 0.1 acre of forest clearing. Extra workspace is typically needed at wetland crossing for staging to minimize the impact to the wetland. We believe Variance 160, Part 34(WS) is reasonable.

MP 253.2, Variance 160, Part 37(WS), Broome County, New York

The variance would reduce the workspace on the west side of wetland WOFF-047 by less than 0.1 acre. The affected landowner is generally opposed to the project. The proposed reduced workspace size would decrease forest clearing by about 0.1 acre. Since impacts would be reduced by using Variance 160, Part 37(WS), we believe it is reasonable.

MP 253.4, Variance 160, Part 38(WS), Broome County, New York

The variance would reduce the size of an extra workspace east of wetland WOFF-047 by less than 0.1 acre. The affected landowner is generally opposed to the project. The proposed reduced workspace size would decrease temporary impact to about 0.1 acre of open land. Since impacts would be reduced by using Variance 160, Part 38(WS), we believe it is reasonable.

MP 253.6 to MP 253.8, Variance 025(CL), Broome County, New York

The variance would shift the pipeline centerline to the north of Line A-5 near the existing Kirkwood M&R Station to avoid existing pipelines that enter and leave the station. Millennium indicates that most of the property owners affected by this modification have concurred with the proposal. However, two landowners do not concur. They are generally opposed to the project. Their properties are located at the western and eastern ends of the line change where it would tie back into the previously certificated route.

Table 3.2.1.5-3 compares the estimated impacts of the variance and the corresponding area of the Phase I Project. The variance would be about 277 feet longer than the proposed Phase I route. The variance would affect about 0.3 more acres during construction, and about 0.1 more acres during operation compared to the certificated route. The same perennial, coldwater stream (Stratton Mill Creek) would be crossed by both routes. Both routes would cross one wetland and would have a crossing length of about 42 feet. Similar amounts of forest clearing would be required for construction and maintenance of both routes. The variance would affect about 0.4 more acres of open land during construction, but a similar amount of land during operation. The variance would be within 50 of one less residence compared to the certificated route and would affect a similar amount of land in residential areas during construction and operation.

Table 3.2.1.5-3
Comparison of Variance 025(CL)
to the Corresponding Area on the Phase I Project

Feature	Alternative	Proposed
Crossing Length (feet)	898	620
Land Requirement		
Construction/Operation (acres)	2.6/1.2	2.3/1.1
Waterbodies (number)	1	1
Wetlands (number)	1	1
Crossing length (feet)	42	42
Construction/Operation (acres)	0.01/<0.01	0.01/<0.01
Land Use		
Agriculture	0.9/0.3	0.7/0.3
Construction/Operation (acres)		
Forest	0.1/<0.1	0.1/<0.1
Construction/Operation (acres)		
Open	1.5/0.6	1.1/0.6
Construction/Operation (acres)		
Industrial/Commercial	0.2/0.1	0.3/0.2
Construction/Operation (acres)		
Residential	<0.1/0.0	0.1/<0.1
Construction/Operation (acres)		
Open Water	0	0
Construction/Operation (acres)		
Residences within 50 feet of construction ROW (number)	0	1

The variance would avoid the existing pipelines entering and exiting the Kirkwood M&R Station and the line change would increase the distance between the pipeline centerline and a residence that would be within 50 feet of the certificated route. We believe that Variance 025(CL) is reasonable.

MP 272.5, Variance 160, Part 52(WS), Broome County, New York

The variance would add extra workspace to the west and east sides of intermittent waterbody SBMC-201 for use during its crossing. This waterbody was identified in survey work completed in 2005. The total amount of extra workspace would be about 0.1 acre and would require clearing a forested area. One of the landowners who would be affected by this modification is generally opposed to the project.

This waterbody had not been identified previously, so the need for the temporary extra workspaces had not been known. Extra workspaces are typically needed at waterbody crossings for staging and are not unusual. We believe Variance 160, Part 52(WS) is reasonable.

MP 280.8, Variance 178(WS), Chemung County, New York

The variance was developed as the result of a landowner suggestion about reducing extra workspace near the crossing of Roods Creek Road. The variance would decrease the amount of extra workspace by about 0.1 acre and would increase the separation between construction workspaces and an adjacent residence. The modification is opposed by one landowner who is generally opposed to the project and plans to build a house about 100 feet from the Millennium pipeline.

The extra workspace would require clearing less than 0.1 acre of forest and would mainly be constructed within about 0.1 acre of open land. Less than 0.1 acre of commercial/industrial land would also be affected temporarily. Project impact would be reduced by about 0.1 acre on the property of the landowner who generally objects to the project. Since Variance 178(WS) would reduce project impact on forests, we believe it is reasonable.

MP 285.1 to 285.6, Variance 160, Part 59(CL/WS), Delaware County, New York

The variance includes a small adjustment to the pipeline centerline where the Millennium pipeline would cross over Columbia's existing Line A-5 to minimize the risk of damaging Columbia's active pipeline during construction. Further, Millennium explains that review of its alignment showed that a half-mile-long portion of the project footprint southeast of this crossover had been incorrectly drawn on the alignment sheets. The Phase I Project would be located to the northeast of Columbia's Line A-5; however, it had been drawn with the 50-foot-wide working side of the construction ROW to the southwest over Columbia's active Line A-5 rather than to the northeast. Millennium indicates that most of the affected landowners concur with the change with only one exception. This landowner is generally opposed to the project.

Table 3.2.1.5-4 compares the estimated impacts of the variance and the corresponding area of the Phase I Project. Neither the variance nor the certificated route would affect any land used for agricultural or residences, and neither route would cross any waterbodies or wetlands. Both routes would require about the same amount of land for construction and operation. The variance would require about 0.1 acre less forest clearing for operation and would require about 0.1 more acre of clearing in open land.

This variance is a more accurate representation of the proposed Phase I Project and would affect resources similar to the project information filed August 1, 2005. We believe Variance 160, Part 59(CL/WS) is reasonable.

Table 3.2.1.5-4
Comparison of Variance 160, Part 59(CL/WS)
to the Corresponding Area on the Phase I Project

Feature	Alternative	Proposed
Crossing Length (miles)	0.5	0.5
Land Requirement		
Construction/Operation (acres)	6.4/3.8	6.4/3.9
Waterbodies (number)	0	0
Wetlands (number)	0	0
Crossing length (feet)	0	0
Construction/Operation (acres)	0	0
Land Use		
Agriculture	0	0
Construction/Operation (acres)		
Forest	3.3/1.1	3.2/1.3
Construction/Operation (acres)		
Open	2.8/2.4	2.9/2.4
Construction/Operation (acres)		
Industrial/Commercial	0.3/0.2	0.3/0.2
Construction/Operation (acres)		
Residential	0	0
Construction/Operation (acres)		
Open Water	0	0
Construction/Operation (acres)		
Residences within 50 feet of construction ROW (number)	0	0

MP 288.2, Variance 160, Part 60(WS), Delaware County, New York

The variance would add about 0.1 acre of extra workspace in an area of steep terrain. The affected landowner is generally opposed to the project. Creating the temporary extra workspace would require clearing about 0.1 acre of trees. Additional temporary workspaces are typically required in rugged terrain in order to install the pipeline safely. We believe that Variance 160, Part 60(WS) is reasonable.

MP 288.7, Variance 160, Part 61(WS), Delaware County, New York

The variance would add about 0.5 acre of extra workspace in an area of steep terrain. The affected landowner is generally opposed to the project. This area is near Variance 160, part 60(WS) and has similar rugged terrain. Additional temporary workspaces are typically required in rugged terrain in order to install the pipeline safely. We believe that Variance 160, Part 61(WS) is reasonable.

MP 299.6, Variance 160, Part 76(WS), Sullivan County, New York

The variance would add about 0.3 acre of extra workspace near a sharp bend in the pipeline ROW. The affected landowner is generally opposed to the project. The variance would require clearing an additional 0.3 acres of forest for the temporary workspace. Millennium would widen the nominal 75-foot-wide construction ROW by about 25 feet on each side of the ROW around the bend. This is also an area of rugged terrain and extra workspace is typically needed for safety. We believe that Variance 160, Part 76(WS) is reasonable.

MP 331.3 to 332.1, Variance 160, Part 91.1(CL/WS), Sullivan County, New York

Millennium has proposed the variance in response to recent, more accurate surveys in this area and a more accurate identification of the location of the existing Columbia Line A-5. This has resulted in adjustments to the Phase I Project centerline over a distance of about 3 miles. The adjustments are generally small, less than 35 feet. This variance, however, addresses about 0.9 mile of the 3-mile-long section. Millennium would install its pipeline by the lift and lay replacement of Columbia's Line A-5 in this area and would not require any additional construction workspaces.

Most of the property owners that would be affected by the variance concur with the change with the exception of the Hartwood Club. The Hartwood Club generally opposes the project. On July 31, 2006, the Harwood Club commented that it owns land in the Town of Deerpark, Orange County, New York and the Town of Forestburg, Sullivan County, New York, that be directly affected by the Phase I Project. The Hartwood Club states that it is a hunting and fishing club whose recreational activities may be directly affected by impacts on flora and fauna in the vicinity of the project from both the construction and operational phases of the proposed pipeline expansion. Millennium met with representatives of the Hartwood Club on August 24, 2006, to discuss project impacts on its property.

Table 3.2.1.5-5 compares the estimated impacts of the variance and the corresponding area of the Phase I Project. Temporary and permanent land requirements for both routes would be similar, but with the variance requiring about 0.1 more acre of land during construction. The variance would cross about 8 more feet of wetland (PEM), but would affect similar amounts of wetland during construction. During operation, about 0.1 acre of wetland would be within the permanent ROW. The variance would require about 1.3 more acres of forest clearing for construction and would change the land use of about 0.1 more acre of forest from forest to open within the permanent ROW during pipeline operation.

This variance was proposed to address refinements Millennium has made to its project footprint as a result of additional surveys and map review. We believe Variance 160, Part 91.1 is reasonable.

Table 3.2.1.5-5
Comparison of Variance 160, Part 91.1
to the Corresponding Area on the Phase I Project

Feature	Alternative	Proposed
Crossing Length (miles)	0.9	0.9
Land Requirement		
Construction/Operation (acres)	8.8/5.4	8.7/5.4
Waterbodies (number)	2	2
Wetlands (number)	2	1
Crossing length (feet)	72	64
Construction/Operation (acres)	0.01/0.01	0.01/0
Land Use		
Agriculture	0	0
Construction/Operation (acres)		
Forest	5.2/1.2	3.9/1.1
Construction/Operation (acres)		
Open	3.2/4	4.5/4.1
Construction/Operation (acres)		

Table 3.2.1.5-5
Comparison of Variance 160, Part 91.1
to the Corresponding Area on the Phase I Project

Feature	Alternative	Proposed
Industrial/Commercial Construction/Operation (acres)	0.4/0.2	0.3/0.2
Residential Construction/Operation (acres)	0	0
Open Water Construction/Operation (acres)	0	0
Residences within 50 feet of construction ROW (number)	0	0

MP 332.2 to 332.3, Variance 160, Part 92 (CL/WS), Sullivan County, New York

Millennium has proposed the variance in response to recent, more accurate surveys in this area and a more accurate identification of the location of the existing Columbia Line A-5. This has resulted in adjustments to the Phase I Project centerline over a distance of about 3 miles. The adjustments are generally small, less than 35 feet. This variance, however, addresses about 400 feet of the 3-mile-long section. Millennium would install its pipeline by the lift and lay replacement of Columbia's Line A-5 in this area. The variance would remove several extra workspaces that would have been used as staging areas for crossing wetland W551. Field work completed in 2005 showed that this wetland was about 600 feet southeast of the previously identified location, so the previously identified extra workspace locations would not be needed along this segment of the pipeline. See Variance 160, Part 93(CL/WS) for the information about the modified locations for these extra workspaces. The variance would be on property owned by the Hartwood Club (see additional information about the Harwood Club above).

Table 3.2.1.5-6 compares the estimated impacts of the variance and the corresponding area of the Phase I Project. Land requirements for construction of the variance would be reduced by about 0.5 acre compared to the route identified in the August 1, 2005 application. Construction in open land would be similar, but construction in forested areas would be reduced by about 0.5 acre. This variance was proposed to address refinements Millennium has made to its project footprint as a result of additional surveys and map review. Further, Variance 160, Part 92(CL/WS) would decrease project impact by about 0.5 acre; therefore, we believe it is reasonable.

Table 3.2.1.5-6
Comparison of Variance 160, Part 92
to the Corresponding Area on the Phase I Project

Feature	Alternative	Proposed
Crossing Length (feet)	400	400
Land Requirement		
Construction/Operation (acres)	0.8/0.5	1.3/0.5
Waterbodies (number)	0	0
Wetlands (number)	0	0
Crossing length (feet)	0	0
Construction/Operation (acres)	0	0
Land Use		
Agriculture	0	0
Construction/Operation (acres)		

Table 3.2.1.5-6
Comparison of Variance 160, Part 92
to the Corresponding Area on the Phase I Project

Feature	Alternative	Proposed
Forest Construction/Operation (acres)	0.4/0.1	0.9/0.1
Open Construction/Operation (acres)	0.4/0.4	0.4/0.4
Industrial/Commercial Construction/Operation (acres)	0	0
Residential Construction/Operation (acres)	0	0
Open Water Construction/Operation (acres)	0	0
Residences within 50 feet of construction ROW (number)	0	0

MP 332.3, Variance 160, Part 92.2(CL/WS), Sullivan County, New York

Millennium has proposed the variance in response to recent, more accurate surveys in this area and a more accurate identification of the location of the existing Columbia Line A-5. This has resulted in adjustments to the Phase I Project centerline over a distance of about 3 miles. The adjustments are generally small, less than 35 feet. This variance, however, addresses about 100 feet of the 3-mile-long section. Millennium would install its pipeline by the lift and lay replacement of Columbia's Line A-5 in this area. No additional workspace would be required for the variance. The variance would be on property owned by the Hartwood Club (see additional information about the Harwood Club above).

This variance addresses the shift of the construction ROW footprint only. About 0.2 acre during construction and about 0.1 acre during operation would be affected by both the variance and project as identified in the August 1, 2005 application. Both routes would affect similar resources. This variance was proposed to address refinements Millennium has made to its project footprint as a result of additional surveys and map review. We believe Variance 160, Part 91.1 is reasonable.

MP 332.3 to 332.4, Variance 160, Part 93(CL/WS), Sullivan County, New York

Millennium has proposed the variance in response to recent, more accurate surveys in this area and a more accurate identification of the location of the existing Columbia Line A-5. This has resulted in adjustments to the Phase I Project centerline over a distance of about 3 miles. The adjustments are generally small, less than 35 feet. This variance, however, addresses about 700 feet of the 3-mile-long section. Millennium would install its pipeline by the lift and lay replacement of Columbia's Line A-5 in this area. In addition to the centerline adjustment, Millennium proposes additional extra workspaces on the west and east sides of wetland W551.1 and near the Hartwood M&R Station. The variance would be on property owned by the Hartwood Club (see additional information about the Harwood Club above).

Table 3.2.1.5-7 compares the estimated impacts of the variance and the corresponding area of the Phase I Project. These additional extra workspaces would require about 0.7 acre of additional land during construction, but the land requirement for the permanent ROW would remain the same. The variance would require clearing about 0.7 more acre of forested land, and

about 0.1 more acre of forest would become part of the permanent ROW and would be maintained as open land. The same wetland (mixed PEM/PFO) would be crossed by both routes affecting similar amounts of wetland area.

This variance was proposed to address refinements Millennium has made to its project footprint as a result of additional surveys and map review. Extra workspaces are typically needed at wetland crossings for staging and are not unusual. We believe Variance 160, Part 93 is reasonable.

Table 3.2.1.5-7
Comparison of Variance 160, Part 93
to the Corresponding Area on the Phase I Project

Feature	Alternative	Proposed
Crossing Length (feet)	700	700
Land Requirement		
Construction/Operation (acres)	1.9/0.8	1.2/0.8
Waterbodies (number)	0	0
Wetlands (number)	1	1
Crossing length (feet)	98	98
Construction/Operation (acres)	0.06/0.06	0.06/0.06
Land Use		
Agriculture	0	0
Construction/Operation (acres)		
Forest	1.4/0.4	0.7/0.3
Construction/Operation (acres)		
Open	0.5/0.4	0.5/0.5
Construction/Operation (acres)		
Industrial/Commercial	0	<0.1
Construction/Operation (acres)		
Residential	0	0
Construction/Operation (acres)		
Open Water	0	0
Construction/Operation (acres)		
Residences within 50 feet of construction ROW (number)	0	0

MP 332.5, Variance 094(AR), Sullivan County, New York

Millennium proposes adding the existing access road to the Hartwood Club M&R Station to the Phase I Project to improve access during construction. The proposed access road would be on property owned by the Hartwood Club (see additional information about the Harwood Club above). This road would extend along the northeast side of the of the construction ROW. We believe the use of the existing road to the Hartwood club M&R Station as an access road during construction is reasonable.

MP 332.5 to 333.1, Variance 160, Part 93.1(CL/WS), Sullivan and Orange Counties, New York

Millennium has proposed the variance in response to recent, more accurate surveys in this area and a more accurate identification of the location of the existing Columbia Line A-5. This has resulted in adjustments to the Phase I Project centerline over a distance of about 3 miles. The adjustments are generally small, less than 35 feet. This variance, however, addresses about 0.6

mile of the 3-mile-long section. Millennium would install its pipeline by the lift and lay replacement of Columbia's Line A-5 in this area. No additional workspace would be required for construction of the variance. The variance would be on property owned by the Hartwood Club (see additional information about the Harwood Club above).

Table 3.2.1.5-8 compares the estimated impacts of the variance and the corresponding area of the Phase I Project. Land requirements for construction and operation of both routes would be similar. Both would cross the same perennial waterbody, Bush Kill, a coldwater fishery. Both routes would cross a wetland (mixed PEM/PFO), but construction of the variance would affect slightly more wetland area (about 0.01 acre more). Agricultural land use affected would increase by 0.2 acre for both construction and operation of the project along the variance. Forest land affected by construction and operation of the variance would increase by 0.4 acre. Open land affected by construction and operation of the variance would decrease by 0.7 acre and 0.6 acre, respectively.

This variance was proposed to address refinements Millennium has made to its project footprint as a result of additional surveys and map review. We believe Variance 160, Part 93.1 is reasonable.

Table 3.2.1.5-8
Comparison of Variance 160, Part 93.1
to the Corresponding Area on the Phase I Project

Feature	Alternative	Proposed
Crossing Length (miles)	0.6	0.6
Land Requirement		
Construction/Operation (acres)	5.9/3.5	5.9/3.5
Waterbodies (number)	1	1
Wetlands (number)	1	1
Crossing length (feet)	299	299
Construction/Operation (acres)	0.34/0.21	0.33/0.21
Land Use		
Agriculture	0.9/0.4	0.7/0.2
Construction/Operation (acres)		
Forest	3.0/1.4	2.6/1.0
Construction/Operation (acres)		
Open	1.9/1.6	2.6/2.2
Construction/Operation (acres)		
Industrial/Commercial	0.1/0.1	0.1/0.1
Construction/Operation (acres)		
Residential	0	0
Construction/Operation (acres)		
Open Water	0	0
Construction/Operation (acres)		
Residences within 50 feet of construction ROW (number)	0	0

MP 333.1, Variance 160, Part 94(WS), Orange County, New York

The variance would add extra workspace on the southeast side of wetland W552. The boundaries of this wetland were identified during field surveys completed in 2005. The variance would be partly located on land owned by the Harwood Club (see additional information about

the Harwood Club above). The variance would require about 0.3 acre for the workspace affecting about 0.3 acre of forest.

Extra workspaces are typically needed at wetland crossings for staging and are not unusual. We believe Variance 160, Part 93 is reasonable.

MP 333.5, Variance 160, Part 94.1(WS), Orange County, New York

The variance would adjust the location of the workspace on the northwest side of wetland W553. The workspace would be moved back from the edge of the wetland by about 50 feet, but no additional workspace area would be required. The variance would be on property owned by the Hartwood Club (see additional information about the Harwood Club above).

Extra workspaces are typically needed at wetland crossings for staging and are not unusual. Modifying the location of the workspace to set it back from the wetland boundary would be consistent with section VI.B.1.a. of our Procedures. We believe Variance 160, Part 94.1 is reasonable.

MP 333.6, Variance 160, Part 95(WS), Orange County, New York

The variance would add about 0.1 acre of workspace near a hunting cabin on property owned by the Hartwood Club (see additional information about the Harwood Club above). The cabin is on the southwest side (working side) of the construction ROW and the new workspace would be on the northeast side of the construction ROW. Millennium has reduced the width of the working side of the construction ROW by 25 feet near the cabin. Millennium explains that this workspace would be needed to make up for a similarly sized loss of workspace closer to the cabin. The cabin would be within 50 feet of construction workspaces.

The additional extra workspace would require clearing about 0.1 acre of forest. Although the use of this extra workspace would require clearing additional forest, Millennium has attempted to minimize construction impact near the cabin by reducing the construction ROW closest to it. Therefore, we believe that Variance 160, Part 95 is reasonable.

MP 333.9, Variance 066(AR), Orange County, New York

Millennium proposes adding this existing access road to the Phase I Project so it would avoid having to drive construction vehicles through wetlands W554. This wetland is a shrub-dominated bog with a floating bog mat. The proposed access road would be on property owned by the Hartwood Club (see additional information about the Harwood Club above).

This access road leaves from the northeast side of the construction ROW near MP 333.9 and returns to the ROW near MP 332.1 looping around wetland W554. It passes through forested and open areas, so it would affect about 0.3 acre of forest and about 0.2 acre of open land.

We believe that use of the access road would minimize impact to wetland W554, therefore we believe Variance 066(AR) is reasonable.

MP 334.1, Variance 160, Part 96(WS), Orange County, New York

The variance would add about 0.1 acre of extra workspace southeast of wetland W554. Millennium states that additional workspace would be needed because of the length of the

wetland crossing and the character of the wetland which is a bog with a floating mat. The variance would be on property owned by the Hartwood Club (see additional information about the Harwood Club above). This additional area would increase the size of the approved extra workspaces just to the southeast of the access road addressed above. Temporary use of this extra workspace would affect about 0.1 acre of open land and small amount of forest (less than 0.1 acre). We believe Variance 160, Part 96(WS) is reasonable.

MP 334.7, Variance 160, Part 97(WS), Orange County, New York

The variance would add about 0.7 acre of extra workspace southeast of wetland W555 along both sides of the construction ROW. Millennium states that additional workspace would be needed because of the length of the wetland crossing, the character of the wetland which is a bog with a floating mat, and steep terrain. The variance would be on property owned by the Hartwood Club (see additional information about the Harwood Club above) and Ben's Development Corporation. Ben's Development Corporation has indicated to Millennium that it plans to build a sub-division and generally opposes the project. Millennium explains that this property is to the south of the Hartwood Club. The pipeline centerline would be along the northern property line. At this time there is no development plan registered with the County clerk. However, the development would be to the south of the proposed pipeline alignment.

The proposed temporary extra workspace would affect an additional 0.7 acre of forest. The wetland W555 crossing would be about 740 feet long and its crossing is complicated by the adjacent steep terrain. The proposed extra workspaces would widen the construction ROW by about 50 feet (25 feet on each side) and would connect previously approved, disconnected extra workspaces into continuous extra workspaces along the nominal 75-foot-wide construction ROW for about 1,015 and 1,030 on the northeast and southwest sides of the ROW, respectively. We believe additional temporary extra workspace is reasonable due to the terrain and the long wetland crossing. Therefore, we believe Variance 160, Part 97(WS) is reasonable.

MP 335.1, Variance 160, Part 97.1(WS), Orange County, New York

The variance involves adjustments to the extra workspaces on each side of wetlands W556 and W557. The modification would move the extra workspaces away from the wetland boundaries to minimize impacts to the wetlands during construction. Further, the modification would include additional extra workspace between the two wetlands which are separated by a distance of about 850 feet. This additional extra workspace would be needed due to the lengths of the wetland crossings (wetland W556 would have a crossing length of 921 feet and wetland W557 would have a crossing length of 276 feet) and the character of the wetlands which are bogs with floating mats.The variance would be on property owned by the Hartwood Club (see additional information about the Harwood Club above) and Ben's Development Corporation (see additional information about Ben's Development above).

The variance would temporarily require about 1.9 acres for construction compared to 0.7 acre for the approved workspaces. This would affect about 0.8 more acres of forest and about 0.4 more acres of open land. The variance would setback extra workspaces 50 feet from wetland boundaries. This is consistent with section VI.B.1.a. of our Procedures. The proposed extra workspaces between wetlands W556 and W557 would widen the construction ROW by about 50 feet (25 feet on each side) and would connect previously approved, disconnected extra workspaces into continuous extra workspaces along the nominal 75-foot-wide construction ROW. We believe additional temporary extra workspace is reasonable due to the terrain and the long wetland crossings. Therefore, we believe Variance 160. Part 97(WS) is reasonable.

MP 352.2 to 352.3, Variance 081(CL), Orange County, New York

The variance would shift the pipeline centerline to address the concerns of the landowner about project impact to his property. The centerline would follow a property line more closely than originally proposed. Millennium states that landowner is generally opposed to the project.

Table 3.2.1.5-9 compares the estimated impacts of the variance and the corresponding area of the Phase I Project. Land requirements for construction would decrease by about 0.3 acre for the variance and the requirements for the permanent ROW would remain the same. The amount of forest clearing would decrease by about 0.3 acre and the permanent land use change from forest to open land along the permanent ROW would decrease by about 0.1 acre. Construction and operation on open land would remain the similar, as would construction in areas with commercial or industrial land use. In residential areas, construction workspaces would affect about 0.1 less acres, but the permanent ROW would affect a similar amount of land. While both routes would affect land in residential areas, neither route would be within 50 feet of a residence.

The variance would minimize construction impacts to forest and residential areas and would move the pipeline centerline to a location that would be closer to a property line. Variance 081(CL) has minimized project impacts by reducing the footprint of the construction ROW and by reducing construction workspaces in residential and forest areas. Therefore, we believe that Variance 081(CL) is reasonable.

Table 3.2.1.5-9
Comparison of Variance 081(CL)
to the Corresponding Area on the Phase I Project

Feature	Alternative	Proposed
Crossing Length (miles)	0.1	0.1
Land Requirement		
Construction/Operation (acres)	1.4/0.8	1.7/0.8
Waterbodies (number)	0	0
Wetlands (number)	0	0
Crossing length (feet)	0	0
Construction/Operation (acres)	0	0
Land Use		
Agriculture	0	0
Construction/Operation (acres)		
Forest	0.5/0.2	0.8/0.3
Construction/Operation (acres)		
Open	<0.1/0	<0.1/0
Construction/Operation (acres)		
Industrial/Commercial	0.1/0.1	0.1/<0.1
Construction/Operation (acres)		
Residential	0.8/0.5	0.9/0.5
Construction/Operation (acres)		
Open Water	0	0
Construction/Operation (acres)		
Residences within 50 feet of construction ROW (number)	0	0

MP 358.6 to 358.9, Variance 126(CL), Orange County, New York

Millennium has proposed this variance in response to landowner suggestions to move the pipeline route to more closely follow property boundaries. The variance would move the centerline north by about 20 feet from the location of the existing Columbia Line A-5 pipeline, the route certificated by the Commission in 2001. This would mean that rather than removing the old Columbia Line A-5 pipeline and installing the new Millennium pipeline by the lift and lay method, Line A-5 would be abandoned in place. Where the pipeline would be abandoned in place, the pipe would be emptied of all gas and cleaned using cleaning pigs to remove all foreign matter. The openings would then be capped and sealed before abandonment. This procedure would be consistent with the description in section 2.3.2.2. There would be no disturbance of the existing right-of-way, except in areas where the pipeline is capped. Millennium states that most of the landowners affected by this change have concurred with the modification with one exception. That landowner is generally opposed to the project.

Table 3.2.1.5-10 compares the estimated impacts of the variance and the corresponding area of the Phase I Project. About 0.2 more acre of land would be required for construction and about 0.1 more acre of land would be required within the permanent ROW for the variance. Both routes would cross 3 minor waterbodies (perennial, coldwater fisheries), and would cross one wetland (PEM/PFO) for a distance of 425 feet. The variance would have slightly less impact on this wetland since shifting the construction ROW would move it slightly out of some wetland areas. The variance would affect about 0.2 more acre of forest both by the construction and permanent ROW. Open land affected would be similar for both routes during construction, but operation would affect about 0.3 less acre. Both routes would affect similar amounts of residential land use during construction and operation, although the variance would move the pipeline centerline 20 feet farther from residences. No residence would be within 50 feet of either pipeline route.

Since landowners had requested moving the pipeline to a location that would coincide more with their property lines and since this would not increase (but would decrease slightly) the impact to wetlands, we believe Variance 126(CL) is reasonable.

Table 3.2.1.5-10
Comparison of Variance 126(CL)
to the Corresponding Area on the Phase I Project

Feature	Alternative	Proposed
Crossing Length (miles)	0.3	0.3
Land Requirement		
Construction/Operation (acres)	4.1/2.6	3.9/2.5
Waterbodies (number)	3	3
Wetlands (number)	1	1
Crossing length (feet)	425	425
Construction/Operation (acres)	1.04/0.56	1.14/0.75
Land Use		
Agriculture	0	0
Construction/Operation (acres)		
Forest	1.9/0.7	1.7/0.5
Construction/Operation (acres)		
Open	2.0/1.7	2.0/2.0
Construction/Operation (acres)		
Industrial/Commercial	<0.1/<0.1	<0.1/<0.1
Construction/Operation (acres)		

Table 3.2.1.5-10
Comparison of Variance 126(CL)
to the Corresponding Area on the Phase I Project

Feature	Alternative	Proposed
Residential Construction/Operation (acres)	0.2/0.1	0.2/0.1
Open Water Construction/Operation (acres)	0	0
Residences within 50 feet of construction ROW (number)	0	0

MP 367.4, Variance 108(AR), Orange County, New York

The variance modifies the location of an access road that was certificated by the Commission in 2001 for the Millennium Pipeline Project. Millennium now proposes to use an existing road in the area to access the ROW along the north shore of Indian Kill Reservoir. Access to this area would otherwise be difficult due to the steep terrain along the pipeline route. Millennium would need to install a temporary bridge across a tributary of Indian Kill along the access road. The temporary bridge would be installed at a location where there had been a bridge in the past and would be removed once construction is completed.Most of the affected landowners have concurred with the change except for one landowner who is generally opposed to the project.

Use of the access road would affect about 0.1 acre of forest and about 0.3 acre of open land. It would provide access from State Highway 210 and SR 17A to the pipeline ROW just north of Indian Kill Reservoir. This access road would facilitate the transportation of the equipment and materials needed for pipeline construction in this area of rugged terrain. We believe, therefore, that Variance 108(AR) is reasonable.

Conclusion

The route variances Millennium identified in its July 31, 2006 supplemental filing are proposed due to a combination of landowner requests, state agency requests, cultural resource avoidance, impact minimization to natural resources, and workspace refinement due to new survey data along the Millennium Pipeline route. We believe all of the proposed variances are reasonable and should be incorporated into the proposed route for the Millennium Pipeline Project – Phase I.

3.2.1.6 Aboveground Facility Alternatives

Alternative sites for the Millennium Phase I compression facilities were not considered because the approved route passed through the Corning Compressor Station site, which is already used for this purpose. The use of the existing Columbia property avoids impacts to other sites and is the most compatible with existing land use. The Columbia Line A-5 Replacement portion of the project would only involve modifications to existing aboveground facilities. Therefore, consideration of alternative sites is not applicable.

3.2.2 EMPIRE CONNECTOR PROJECT

3.2.2.1 System Alternatives

The Empire Connector Project would provide a link between the Dawn, Ontario, Canada, storage hub and the proposed Millennium Pipeline Project – Phase I. A system alternative to the Empire Connector Project that would meet the objective to deliver to the markets identified is described below.

A shorter 24-inch-diameter pipeline would begin at the similar starting point on the existing Empire State Pipeline, in Victor, New York, and would proceed about 25 miles to the southeast to interconnect with the Tennessee Gas Pipeline Company's (Tennessee) HC pipeline near Canandaigua, New York. The HC line would then be used to transport natural gas along a route of about 90 miles to a connection at Columbia's Line A-5 pipeline near Greenwood, New York. Transmission from this point east to Millennium's Phase I Project connection at Columbia's Corning Compressor Station would require replacement of the Line A-5 pipeline (currently a 12-inch-diameter pipeline) with a minimum 24-inch-diameter pipeline for a distance of about 33 miles.

The HC to A-5 system alternative is not viable for several reasons. First, although it would avoid about 54 miles of pipeline construction for the proposed Empire Connector Project, it would still require construction of 25 miles of new pipeline to connect the systems of Empire State Pipeline and Tennessee and about 33 miles of pipeline replacement of Columbia's Line A-5 to connect with Millennium's proposed Phase I Project facilities in Corning, New York. Therefore, this system alternative would require at least about 58 miles of pipeline construction. It is also possible that additional compressor facilities may be required on some or all of these pipeline systems since they operate at different pressures.

At this time there is no commercial agreement in place between the parties (Empire State Pipeline, Tennessee, or Columbia) to execute the system alternative, or shippers to utilize such a system alternative. In addition, the interposition of another pipeline (Tennessee) would raise rate-stacking issues that may call into question the commercial viability of gas transmission through the system alternative. Further, Tennessee has not indicated that it would be interested in developing this or a similar alternative; and, as mentioned above, it may require additional upstream or downstream facilities to make this system alternative feasible. Because this system alternative would be longer by at least 4 miles than the proposed Empire Connector Project and for the reasons identified above, we do not believe this system alternative is reasonable and it will not be evaluated further.

3.2.2.2 Major Route Alternatives

Empire's process of route selection during the pre-filing process was initiated by identifying potential route segment alternatives, conducting an analysis of environmental, cultural and property owner impact considerations along the alternatives, and using a selection process to eliminate alternatives as discussed within this section. Following the selection of the proposed primary route, further refinement on the basis of environmental, cultural and landowner considerations was conducted as addressed in section 3.2.2.3 (Route Variations), below.

The initial route analysis activities included an assessment of broad corridors within the Victor to Corning, New York area. The Victor area was generally constrained by the tie-in location to the existing Empire State Pipeline in a section with sufficient operating pressure and

capacity, upstream of a pressure reduction station where the existing Empire State Pipeline changes from a maximum allowable operating pressure (MAOP) of 1,440 psig to 1,000 psig MAOP. The Corning area location was constrained by the need to connect at the existing Columbia Corning Compressor Station, which would house Millennium's proposed compressor) for its Phase 1 Project. The broad corridor analysis utilized a combination of criteria:

- physical (route length, existing ROWs),
- geologic/topographic regional information,
- environmental (wetlands, soils, surface water bodies, fisheries, cover type), and
- human resources (land use, population densities, and cultural resources).

The corridor analysis weighed the above criteria and yielded several route segment alternatives for analysis. The route alternatives are defined and the rationale for creation of each set of segments is described below. These route alternatives were compared discretely and combinations of segments were analyzed to identify a primary route that avoided or minimized potential environmental, cultural and socioeconomic impacts. Further discussion about Empire's pre-filing segment (route alternative) analysis, along with critical criteria affecting the analysis and its selection of a preferred route is presented below. A regional overview map, figure 3.2.2.2-1 (inserted at the end of section 3), shows the relative location of the route alternative segments.

Route Alternatives A1, A2, and A3 (Primary)

The "A" segment alternatives were generated to provide various routes to traverse from northwestern to southeastern Victor, New York. This is an area that has already been well developed (residences and recreational resources) and has continuing development pressure. The area has variable topography, streams, and wetlands that were considered as part of the route analysis. There are also several existing or former utility and transportation ROWs that the segment alternatives sought to parallel. These include the New York State Thruway ROW, railroad ROW (both current and former), Rochester Gas & Electric (RG&E) and Niagara Mohawk (NiMo) powerline ROWs, and three existing pipeline routes that provide potential east-west ROWs south of Victor.

Route Alternative A1 was laid out to attempt the most direct (shortest) route from the start point to a location where an existing gas pipeline ROW corridor could be entered south of Victor. This alternative would follow the existing Empire State Pipeline ROW for about 1.4 miles then head cross-country avoiding where practicable residential areas to the east of the Village of Victor, and then join the ROW of Buckeye Pipeline south of Victor.

Route Alternative A2 would begin northwest of Victor and take a southerly cross-country route to a point southwest of the Town of Victor where it would join and maximize the use of the existing Mobil Pipeline and Tennessee ROWs.

Primary Route Segment A3 initially would follow the A1 route paralleling the existing Empire State Pipeline ROW, but then would follow a series of ROWs (NYS Thruway, NiMo, the former roadbed of Ontario Railroad) to reduce the amount of new cross-country construction that would be crossed before entering the Tennessee ROW southeast of Victor.

The three alternative route segments (A1, A2, and A3) were evaluated at the northern end of the project area proximate to the existing Empire State Pipeline, as shown on figure 3.2.2.2-2.

A summary of environmental factors Empire considered in evaluating these alternatives is included in table 3.2.2.2-1. Alternative route segment A3 was selected as the primary route for this segment based on input from the public outreach process and because it minimized or avoided potential impacts more than route alternatives A1 and A2.

Route alternative A2 relative to A3 (Primary) would be about 13,000 feet longer; would have four more perennial waterbody crossings including four more crossing of a significant fishery; and would require clearing about 3.6 more acres of forest for construction. Route Alternative A2 would also require construction in a densely developed land-use corridor northwest of Canandaigua (at Rt. 332) that consists of small and large businesses, commercial properties and car dealerships.

Route Alternative A1 relative to A3 (Primary) would be about 5,000 feet longer, and would have three more perennial waterbody crossings including one more crossing of a significant fishery. It would also be located along corridors with more residential areas (through Victor area) would require crossing densely developed land-use corridors east of Victor (along Victor-Manchester Road/Route 96) and northwest of Canandaigua (at State Route 332), which consists of small and large businesses, commercial property and car dealerships. It would also traverse or be adjacent to recreational land use areas that would be disturbed during construction (golf courses and hiking trails).

We concur that Route Alternative A3 is preferred over Route Alternatives A1 and A2 in this segment between CMP 11.6 and CMP 20.0, because it would be shorter and would avoid residential and commercial areas in and near Victor, New York.

Route Alternatives B (Primary) and C

These segment alternatives were selected to follow a former Penn Central railroad ROW (route alternative B) from the area southeast of Canandaigua, New York, and continue south-southeast into the broad corridor evaluated between Keuka and Seneca Lakes. A portion of the former rail bed along Route Alternative B is owned and occupied by Ontario Pathways, Inc., a non-profit rails-to-trails organization that has improved and operates the trail for recreational purposes. The C segment was developed to allow an alternative to the route paralleling the former rail bed at and downstream of Ontario Pathways.

The two Route Alternatives B and C were evaluated in the project area along the southern portion of Ontario County from CMP 20.0 to CMP 32.8, as shown on figure 3.2.2.2-3. A summary of environmental factors for consideration in evaluating these alternatives is included on table 3.2.2.2-2.

The route alternative B was selected as the primary route segment based on input from the public outreach process and because it minimized or avoided potential impacts more than route alternative C. The route alternative B was identified as the primary route because it would parallel existing ROWs including the former rail bed from about CMP 19.6 to CMP 25.8, which is owned and improved as a rail-to-trail path by Ontario Pathways, Inc., and the remainder of the former rail bed from CMP 25.8 to CMP 33.4, which is privately owned by multiple adjoining landowners. Comparatively, the route alternative C was conceived to provide an alternative to paralleling Ontario Pathways and remaining former rail bed segments through developed areas such as Stanley and Hall, New York.

Table 3.2.2.2-2
Comparison of Route Alternative Segments B and C
for the Empire Connector Project

Comparison Factor	Primary Segment B	Alternative Segment C
County	Ontario	
Mileposts	20.0 to 32.8	
Total length (mi)	12.3	12.5
Estimated land requirements		
Permanent ROW (ac)	75	76
Construction ROW (ac)	123	125
New ROW (mi)	3.6	12.5
Adjacent to existing ROW (mi)	8.7	0
Number of residences within 50 feet	2	5
Number of waterbody crossings	7	9
Number of Wetlands	2	4
Forested wetlands (ft)	330	375
Scrub-shrub wetlands (ft)	0	0
Emergent wetlands (ft)	0	114
Wetland complexes (ft)	0	75
Length of Forest crossed (ft)	7,300	6,900
Trail crossings	5 a/	1
Potential archaeological resource sites	0	1

a/ There are five crossings of a single trail, the Ontario Pathways trail.

Route Alternative C relative to B (Primary) would be about 1,000 feet shorter, but about 70 percent of Route Alternative B would be within or adjacent to existing ROW whereas none of Route Alternative C would follow existing ROWs. Route Alternative C would have greater impact on agricultural lands because moving it away from the rails to trails ROW and other ROW often moves it into actively cultivated agricultural land. Both routes would have similar wetland impacts, and Route Alternative C would cross two more perennial waterbodies.

Empire has met on several occasions with Ontario Pathways representatives to address issues related to crossing its ROW along the abandoned rail bed where it maintains its private trail, and consultation will continue in order to address and minimize potential impacts to the trail by project construction and operation.

We concur that Route Alternative B would be preferred over Route Alternative C in this segment between CMP 20.0 to CMP 32.8 primarily due to landowner and agency input and reduced impact on agricultural land use.

A short transition segment D follows southeast from MP 32.8 to MP 34.1 to the route alternative Segments EH, FI and EHI as described in the following papagraphs.

Route Alternatives EH, FI, and EHI (Primary)

These route segment alternatives were developed with the goal of paralleling existing ROW from southern Ontario County (southeast of Canandaigua, New York) to the terminus at Columbia's Corning Compressor station. In general these segments provide: 1) an upland route alternative that would follow the existing Columbia pipelines from Dundee, New York, to the terminus at Corning (the EH segment); 2) a lakeward route alternative that would parallel the NYSEG powerline ROW and pipeline ROW of NYSEG's Seneca Lake Storage as well as Texas Eastern Products Pipeline Company (TEPPCO) (the FI segment); 3) and a route alternative that would utilize a Fortuna Gas, Inc. (Fortuna) pipeline corridor to connect the other alternatives in order to optimize route characteristics (the EHI segment).

Other relatively short linking route segments exist between the alternative segments above and include segments designated as the combined southern ends of A1-A2-A3, segment D and segment G.

The route alternatives were evaluated in the southern half of the project area from CMP 34.1 to CMP 77.1, including combinations of segments E, F, G, H, and I, as shown on figure 3.2.2.2-4. A summary of environmental factors for consideration in evaluating these alternatives is included on table 3.2.2.2-3. The Route Alternative EHI was selected as the primary route in this segment based on comparison of resources and land use along the alternatives, input from the public outreach process, and because it minimized or avoided potential impacts more than route alternatives EH and FI.

All route alternatives (EHI, EH and FI) utilize exiting ROW. Route Alternative FI would parallel the NYSEG electric transmission corridor, NYSEG's Seneca Lake Storage lateral pipeline and TEPPCO corridors. Route Alternative EH would parallel a Columbia pipeline corridor. Route Alternative EHI would parallel Columbia, Fortuna, NYSEG, and TEPPCO pipeline corridors. Comparison of Route Alternatives FI and EH to Route Alternative EHI (Primary) reveals that while Route Alternative EHI would be longer than both Route Alternatives FI and EH by about 6,000 and 3,000 feet respectively, it would have less impact on other environmental resources and land use. Route Alternative FI would cross 36 and Route Alternative EH would cross four more perennial waterbodies than preferred Route Alternative EHI. While there would be no impact to forested wetlands along preferred Route Alternative EHI, there would be about 0.4 acre and 0.3 acre of impact to forested wetlands along Route Alternatives EH and FI, respectively. Route Alternative EHI would affect about 0.5 more acres of emergent wetlands than Route Alternative EH, but would affect about 0.7 fewer acres of emergent wetland than Route Alternative FI. Route Alternative FI would also affect about 0.2 acre of scrub-shrub wetlands; but preferred Route Alternative EHI would not affect any scrub-shrub wetlands. All of the route alternatives would affect forest and agricultural land with Route Alternative EH affecting the greatest areas of both land uses.

Route Alternative FI would cross Watkins Glen State Park and be located adjacent to Watkins Glen International Raceway. Neither one of the other route alternatives would cross this recreational area. Route Alternative FI would cross about 3 miles of vineyard potentially affecting at least 27.3 acres during construction (assuming a nominal 75-foot-wide ROW). Route Alternative EHI would not affect this type of land use. The construction workspace that would be needed for Route Alternative FI and Route Alternative EH would be within 50 feet of three and two more residences, respectively, than the preferred Route Alternative EHI.

Table 3.2.2.2-3
Comparison of Route Alternative Segments EHI, EH, and FI for the Empire Connector Project

Comparison Factor	Primary Segment EHI	Alternative Segment EH	Alternative Segment FI
County	Ontario		
Mileposts	34.1 to 77.1		
Total length (mi)	42.4	41.9	41.3
Estimated land requirements			
Permanent ROW (ac)	257	254	250
Construction ROW (ac)	424	418	413
New ROW (mi)	21.4	22.7	1.29
Adjacent to existing ROW (mi)	21.0	19.1	40.0
Number of residences within 50 feet	7	9	10
Number of waterbody crossings	25	29	61
Number of Wetlands crossed	8	7	7
Forested wetlands (ft)	0	240	160
Scrub-shrub wetlands (ft)	0	0	120
Emergent wetlands (ft)	555	235	980
Wetland complexes (ft)	330	680	80
Length of Forest crossed (ft)	18,350	22,600	3,850
Landfills, quarries, or golf courses	0	0	3
Vineyards	0	0	14
Potential archaeological resource sites	3	3	2

Since Route Alternative EHI would have less affect on water resources, vineyards, recreational areas, and residences than the other route alternatives, we concur that Route Alternative EHI should be used as the preferred route in this area between approximate mileposts CMP 34.1 and CMP 77.1

One additional segment G was evaluated as a potential connecting segment between route alternatives EH and FI. Segment G follows along an existing railroad ROW. However, G was rejected on the basis of the potential for more significant impacts at the additional stream crossings, vineyards and recreational land use areas located along route alternative FI.

Based on the above comparisons of the various major route alternatives, the primary route preferred for the Empire Connector Project comprises the combination of A3, A1-A2-A3, B, D, and EHI. These combined segments represent the best combination to avoid developed areas, waterbody and wetland crossings, vineyards, state park land, Watkins Glen International Speedway, as well as minimize steep terrain, and maximize parallels of existing ROW.

3.2.2.3 Route Variations

Following the route alternative evaluation and selection of the primary route for the Empire Connector Project, route variations were identified and evaluated. Areas for focused route variations were identified during public meetings, by input from concerned landowners, and through agency input. Route variations were incorporated at various stages of the Empire project routing and field survey during the pre-filing process and were incorporated into the proposed pipeline route.

Also developed during the pre-filing process was a variation that modified the pre-filing project route along the northernmost 1.2-mile-long segment. Rather than install a pipeline loop along this segment, Empire decided instead to replace 1.2 miles of the existing Empire State Pipeline and to move the existing pressure reduction station easterly to the end of this replaced section. This variation would allow a single pipeline occupation of the ROW since the old pipeline would be replaced using the lift-and-lay construction technique. The existing ROW for this 1.2-mile-long section of pipeline crosses an area that is relatively densely populated. By installing the new pipeline as a replacement rather than as a loop, the impact of construction along this corridor would be minimized and there would be no increase in the width of the permanent operating ROW.

We concur that the decision to replace rather than loop this 1.2-mile-long segment of the existing Empire State Pipeline would minimize project impact and would be preferable; and we appreciate Empire's accommodation of landowner requests to modify facility locations where they are feasible.

3.2.2.4 Aboveground Facility Alternatives

Proper operation of the Empire Connector pipeline would require additional compression of the natural gas in the existing Empire State Pipeline. Engineering studies were conducted by Empire to determine the appropriate hydraulic positioning for the compressor station on the existing Empire State Pipeline. The engineering study determined that a single compressor station could support the proposed project and should be placed between SMP 46 and SMP 48, near Oakfield, Genesee County, New York. The station would also be located adjacent to or within short distance from the existing pipeline. High voltage power lines traverse the area immediately north of the existing Empire State Pipeline. The size and configuration of the compressor station was determined based on the expected design operating scenarios for the Empire Connector.

Potential alternative locations for the compressor station were identified as follows (refer to Figure 3.2.2.4-1):

- Site 1: At milepost MP 47.0, north of the power line corridor, south of the Oak Orchard Game Preserve on partially fallow/partially tilled agricultural land.
- Site 2: At milepost MP 47.3, south of the existing power line corridor, in a low spot of agricultural land.
- Site 3: At MP 48.0, east of Fisher Road and south of the power line corridor on pastureland at an active Mennonite farm.
- Site 4: At MP 48.2, adjacent to the existing Empire pipeline, on currently hayed agricultural property, which is in foreclosure.

See table 3.2.2.5-1 for a comparison summary of the four sites. For each location the access road was anticipated to be constructed off of Lockport Road. Each property has a private residence located along Lockport Road. The owners of each property were approached to determine their willingness to sell a portion of their property to Empire to locate the compressor station. The owners of Site 1 demonstrated interest in selling a portion of their property.

The design and impact of the station would be generally similar for each location. The facility footprint, proximity to the existing line, soil type, the need for an access road and the temporary and permanent land requirements to construct the station would not be substantially different if detailed evaluations had been conducted. These details were compared in general but site-specific surveys were only performed for the alternative that was made available through landowner negotiations (Site 1). Further design, survey and landowner discussions are expected to make small modifications to the preliminary layout and location of the access road.

Alternative Site 1

Site 1 for the compressor station would be about 1,000 feet from the nearest residence. The location is currently fallow agricultural land. Previous site disturbances include the operation of a gravel pit south of the existing Empire State Pipeline. A dry tributary of Oak Orchard Creek would be crossed by the access road to the station. No wetlands were identified on the property. Previous archeological finds made during the investigation and siting of the existing Empire State Pipeline were located to the north and east of the area identified for the compressor station. The landowner was willing to negotiate an option for purchase on a portion of the property. The landowner wanted the compressor station located north of the power line corridor, which would partially obscure the visual impacts of the station to residences along Lockport Road due to natural topography. Once an option was secured on the property, a Phase 1 archeological study was conducted on the property. No cultural resource finds were identified on the selected site.

Alternative Site 2

The Site 2 location is clearly visible from Lockport Road and the neighboring residential properties. The potential noise impacts to residents in the area would be increased at this location. A tributary of Oak Orchard Creek flows across the eastern portion of the property. The landowner was willing to negotiate an option for purchase of a portion of the property. The landowner requested the compressor station be placed in a low area about 1,400 feet north of Lockport Road. The low area preferred by the landowner was wet, but was not determined through field evaluation to be a wetland. Previous archeological finds made during the investigation and siting of the existing Empire pipeline were located to the north and south of the existing pipeline corridor. No field surveys for cultural resource determination were conducted on the property.

Table 3.2.2.5-1
Comparison Summary of Alternative Site Locations for Empire's Oakfield Compressor Station a/

Comparison Factor	Site 1	Site 2	Site 3	Site 4
Site Location	At milepost MP 47.0, north of the power line corridor, south of the Oak Orchard Game Preserve on partially fallow/partially tilled agricultural land.	At milepost MP 47.3, south of the existing power line corridor, in a low spot of agricultural land.	At MP 48.0, east of Fisher Road and south of the power line corridor on pastureland at an active Mennonite farm.	At MP 48.2, adjacent to the existing Empire pipeline, on currently hayed agricultural property, which is in foreclosure.
Existing Residences	Residence along Lockport Road	Residence along Lockport Road	Residence along Lockport Road	Residence along Lockport Road
Environ-mental Impacts	A dry tributary of Oak Orchard Creek would be crossed by the access road to the station. No wetlands were identified on the property. No cultural resource finds were identified on the selected site.	Potential noise impacts to residents in the area would be increased at this location. A tributary of Oak Orchard Creek flows across the eastern portion of the property. The low area preferred by the landowner was wet, but was determined not to be a wetland. Previous archeological finds made during the siting of the existing Empire pipeline were located to the north and south of the existing pipeline corridor.	No wetlands or water bodies were identified on the property. Previous archeological finds made during the siting of the existing Empire pipeline were located to the north and south of the existing pipeline corridor.	No environmental features of significance were identified. Previous archeological finds made during the siting of the existing Empire pipeline were located to the north and south of the existing pipeline corridor.

a/ Site-specific surveys have only been performed for Site 1. Detailed evaluations have not been conducted for the other three sites.

Alternative Site 3

The Site 3 property has a slight rise in topography that could have been utilized to partially obscure the compressor station from view to the south, reducing the visual impacts from Lockport Road. The compressor station would be visible from Fisher Road, which borders to the west, however existing tree growth would partially screen the prospective location of the station. No wetlands or water bodies were identified on the property. Previous archeological finds made during the investigation and siting of the existing Empire pipeline were located to the north and south of the existing pipeline corridor with increasing frequency as the pipeline travels east. No field surveys for cultural resource determination were conducted on the property. The property owner, a Mennonite farmer, was not in favor of locating the station on his property and would not enter into negotiation for an option to purchase the property.

Alternative Site 4

The features of the Site 4 property were similar to Site 3, although the view from Fisher Road would be more obscured, reducing the visual impacts to the residences along Fisher Road. No environmental features of significance were identified. Previous archeological finds made during the investigation and siting of the existing Empire pipeline were located to the north and

south of the existing pipeline corridor with increasing frequency as the pipeline travels east. No field surveys for cultural resource determination were conducted on the property. The property is currently in foreclosure with a number of creditors and lien holders. The landowner was not in a position to negotiate an option for the property.

Empire proposes to use Alternative Site 1 as the preferred site, based on the above site analysis. We concur that Alternative Site 1 may be appropriate for the proposed use.

3.2.3 ALGONQUIN RAMAPO EXPANSION PROJECT

3.2.3.1 System Alternatives

A system alternative to the Ramapo Expansion Project would involve the transportation of the equivalent incremental volume of natural gas between Millennium's proposed Phase I Project at Ramapo, New York, and the proposed delivery points off the Algonquin pipeline system in Connecticut. There are several existing pipelines in the vicinity of the Algonquin system that could theoretically provide the proposed service. These include Iroquois' pipeline system in Connecticut that extends roughly north to south from the New York-Canadian border to terminus points on Long Island and in New York City. Iroquois is currently a party to the NE-07 Project and would take delivery of Con Edison's proposed 125,000 Dth/d from Algonquin at the proposed Brookfield interconnection for redelivery to the New York City market.

Millennium, in its original filing, proposed a direct connection from the vicinity of Ramapo, New York, that would have crossed the Hudson River at or near Haverstraw Bay then turned south through Westchester County with a terminus within the metropolitan New York City area. An alternative to its proposed Hudson River crossing was to use the existing Algonquin system to cross the Hudson River at Stony Point, New York. This alternative is embodied in Algonquin's project.

Algonquin is unaware of any other pipeline system that could reasonably render the same service sought by KeySpan and Con Edison through existing facilities that is not already a participant in the project.

The proposed Algonquin facilities were determined primarily by the contractual requirements of the service to be rendered by the proposed project. Determination of facilities and their location, detailed below, were further refined by considerations which include, but were not limited to: access, suction pressure, discharge pressure, available horsepower, contract pressures and flows, site availability/suitability and minimization of disturbance to local residents and businesses.

As part of any expansion proposal, Algonquin considered increasing capacity solely through the addition of compression. This is typically the most efficient way of meeting additional demand from the proposed and existing shippers. A system that has limited compression, as a general rule, can be readily expanded with the addition of compressor stations at strategic locations. Compressor stations are generally spaced at equivalent intervals subject to the needs expressed previously, such as flow characteristics of the pipeline system, availability or access to a particular site and customer requirements. Where the addition of compression is appropriate, it has the advantage of minimizing potential impacts otherwise associated with pipeline construction. Once an appropriate site is chosen, the impacts are generally limited to the immediate vicinity of the station site.

Algonquin is proposing the placement of the new compression equipment, wherever possible, at existing compressor stations. The placement of the proposed new Oxford Compressor Station would be roughly equidistant between the existing upstream station (Southeast, New York) and the existing downstream station (Cromwell, Connecticut) and represents the site that both maintains the existing services and provides for the proposed increased flows to KeySpan and Con Edison with the least amount of additional compression.

3.2.3.2 Major Route Alternatives

The Algonquin pipeline system in this area consists of a 26-inch-diameter mainline and a 30-inch-diameter loop line. Another option available in lieu of replacing the proposed 4.8 miles of existing 26-inch-diameter mainline with 42-inch-diameter pipeline and adding compression as proposed, would be to install a new third pipeline. This alternative would require the acquisition of additional permanent ROW parallel to the existing ROW or development of an entirely new greenfield corridor to accommodate the new loop section. In many areas this would be difficult due to the existing terrain, development, residences, public parklands and transportation corridors interspersed along sections of the pipeline corridor and current land use patterns in the area.

The siting and construction of a new looping project along either a greenfield route or paralleling an existing utility corridor would cause additional temporary and permanent environmental impacts greater than the temporary effects anticipated as part of the proposed pipeline replacement and therefore is not considered preferable.

3.2.3.3 Route Variations

No minor route variations were considered for the Algonquin Ramapo Expansion Project. Use of existing ROW for the pipeline replacement minimizes the amount of new impact related to construction. Much of the construction workspaces would be on previously disturbed land and on maintained open land within the existing pipeline ROW.

3.2.3.4 Replacement Alternatives

The replacement of a portion of the existing Algonquin 26-inch-diameter pipeline system with 42-inch-diameter pipe is being proposed in conjunction with the proposed compressor station additions to limit impact along the existing ROW. Algonquin also investigated looping the same section with 36-inch-diameter pipeline; however due to the narrow width of the existing ROW, Algonquin would have to acquire new ROW to install a third pipeline. Expansion of the ROW would require obtaining new permanent ROW and additional temporary workspace within Harriman State Park and Kakiat County Park. Flow studies identified an approximate length of 4.5 miles of pipe to be replaced. This length was increased to about 4.8 miles so that the pipeline segment would end at a suitable location for terminal facilities based on terrain, access, and location of existing structures.

From a hydraulic perspective, a single 42-inch-diameter pipeline has virtually the same carrying capacity as a combination of a 30-inch-diameter pipeline looped with a 36-inch-diameter pipe. Thus, Algonquin proposed replacing the existing 26-inch-diameter pipe in-situ with a 42-inch-diameter section and provide for the proposed new flows. Upon completion, the gas flow would be “crossed over” such that the existing 26-inch-diameter mainline would use the remaining 30-inch-diameter section and the 30-inch-diameter mainline loop would use the new 42-inch-diameter pipe. This has the effect of providing the existing 30-inch-diameter mainline

loop with the equivalent flow capacity that would be provided by an equivalent length of 36-inch-diameter loop. The 26-inch-diameter mainline benefits as well, since its diameter is effectively increased by flowing in the remaining 30-inch-diameter section for the entire length of the replacement.

Therefore, the removal and replacement of the existing 26-inch-diameter pipe with 42-inch-diameter pipe within the existing ROW is a preferred alternative to installing a 36-inch-diameter loop in a new ROW and achieves substantial minimization of the impacts on the environment and on the community surrounding the replacement section.

Algonquin evaluated removal and replacement of the existing 30-inch-diameter pipe, as an alternative to the lift and relay of the 26-inch-diameter pipe. The in-situ replacement of the 26-inch-diameter pipe was determined to be more beneficial because a greater increase in flow is realized from replacement of the smaller 26-inch-diameter line with the 42-inch-diameter pipeline. This is based on switching the flow from the existing 26-inch-diameter pipeline to the 30-inch-diameter loop within the replacement section and switching the flow from the existing 30-inch-diameter loop to the new 42-inch-diameter pipeline within the replacement section.

3.2.3.5 Alternatives Considered but Eliminated from Further Consideration

Tennessee has a 16-inch-diameter lateral that extends east to west roughly paralleling Interstate 95 and Interstate 91 through Connecticut. This line, however, is not large enough and operates at pressures too low to be reasonably considered as an alternative to Algonquin's proposed project.

3.2.3.6 Aboveground Facility Alternatives

The Ramapo Expansion Project would include work at eight existing aboveground facilities. Alternatives to these locations were not considered because modifying an existing facility instead of creating a new aboveground facility typically reduces short- and long-term impacts.

A number of homeowners in Brookfield, Connecticut, have expressed concern over Algonquin's proposed Brookfield M&R Station and Iroquois' proposed Brookfield Compressor Station. They are concerned about the proximity of residences and the Whisconier Middle School to these facilities and have asked that an alternative site be chosen. The Attorney General of Connecticut and other government representatives have expressed similar concerns, and asked that alternatives to the proposed Brookfield facilities be given serious consideration.

Oxford Compressor Station

Flow studies for the project indicate that additional compression would be required along the existing Algonquin system in the Oxford, Connecticut area to deliver the new volumes of gas proposed for the Ramapo Expansion Project. The optimum location for the additional horsepower, based on the flow dynamics of the pipeline, was originally identified as being between MP 128.8 and MP 131.6 on Algonquin's pipeline, or roughly east of the pipeline crossing of State Route 67 in Southbury and west of the Oxford Airport runway. Algonquin's initial studies indicated that the effectiveness and efficiency of new compression decreased rapidly outside of this area along the system. Therefore, Algonquin established these criteria to set the limits of its initial search for acceptable compressor station locations in the Oxford and Southbury, Connecticut area.

Further modeling based on placement of the new compression at various locations outside of the initially identified area has revealed that this area can be expanded by at least a mile further to the east or to MP 132.6. This reduces a significant limitation on the location of the new compressor station and makes potential sites located east of the airport runway more viable. As such, Algonquin has re-evaluated the potential sites located in or near the Woodruff Hill Industrial Park.

Algonquin initially evaluated six sites (Sites A-F) for siting the new Oxford Compressor Station in the Town of Oxford, Connecticut. Prospective sites along this section of the pipeline corridor were identified and evaluated according to the following additional criteria for an acceptable compressor station location: the need to meet optimum flow requirements, site size and configuration, proximity to existing Algonquin pipelines, impacts to nearby residences, impacts to natural and cultural resources, access to the site, access to existing facilities, and site specifics such as vegetation, the necessity for grading, or rock removal. The alternative site locations evaluated by Algonquin are depicted on figure 3.2.3.6-1. Site A was initially chosen as the preferred compressor station location based on the above siting criteria. However, Algonquin experienced some resistance from the current landowners regarding the acquisition of this site for use as a compressor station location. After Algonquin filed with the FERC its section 7(c) application for the Ramapo Expansion Project, Algonquin was requested to file a supplement that compared Site A with alternative Site F. See table 3.2.3.6-1 for a summary comparison of the two sites.

Site A

Site A is located on the north side of the Oxford Airport Road (Connecticut State Road 486), 0.5 miles west of the Oxford Airport along the existing Algonquin pipelines at MP 130.8. Locating the Oxford Compressor Station at Site A would be a non-conforming use in the Town of Oxford's Prime Corporate Zone. The property is about 216 acres in area, undeveloped, and characterized by a mixture of low, rolling hills and wetlands. Existing vegetation ranges from open fields and scrub-shrub areas to areas of mature woodlands and emergent, saturated wetlands. Algonquin has identified an estimated 20-acre portion of the property on which to install the new compressor station facilities. Algonquin's existing pipeline ROW crosses the property.

Algonquin would utilize existing roads to access the site with the exception of about 700 feet of new permanent access road that it would need to construct from a new entrance on Oxford Airport Road. Construction of the permanent access road would disturb about 0.09 acres of wetlands. There are no known public or private water supply wells located on or within 150 feet of the project site. Although this property is for sale, the owner of Site A has recently filed comments with the Commission during the pre filing process objecting to locating the facility on this site.

Table 3.2.3.6-1
Summary Comparison of Site A and Site F
for Oxford Compressor Station Location

Comparison Factor	Site A	Site F
Affected Land Use (acres):		
Property Size	216.5	29.5
Existing Facility	2.18	0
Forested	4.23	15.68
Upland Scrub-shrub	11.30	1.13
Wetlands	0.09	0
Land Affected Permanently by Operation	12.0	16.8
Other Factors:		
Land Affected by Construction	17.8	12.7
Conforming Zone Use	No	Yes
New Access Roads required (feet)	700	1,600
Public or Private Water Wells within 150 feet	0	0
Wetlands Permanently Impacted (acres)	0.09	0
Wetlands crossed (feet)	40	0
Watercourse Permanently Impacted (acres)	0	0.08 (intermittent watercourse)
Watercourse Crossing (feet)	0	1
Soil Erosion Potential	Not highly to Severe	Moderate to Severe
Revegetation Potential	Very Poor to Good	Very Poor to Good

Site B

Site B is located about 2,000 feet south of the existing Algonquin pipelines near MP 131.0 (this site is not along Algonquin's pipeline ROW) and 0.6 miles west of the Oxford Airport Runway. The site, an estimated 23 acres in area, is roughly triangular in shape and bounded by Donovan, Bala Ridge and Hurley Roads. The potential station facilities would be located on the relatively level eastern half of the site to avoid wetlands and uneven terrain to the west. Access would be off Bala Ridge Road, which connects to the Oxford Airport Road about 0.25 miles to the north. Existing vegetation is a mixture of mature trees and scrub-shrub associated with overgrown farm fields. Since this site is remote from the existing Algonquin pipelines, a new permanent ROW, about 100-200 feet wide by 2,000 feet long, would be required for the installation of the inlet and outlet pipeline connections to and from the station. Alternately, it may be preferable to change the current routing of the existing pipelines to pass through the potential station site. Either way, the installation of four large diameter pipes would be required (2 inlet pipes and 2 outlet pipes) from the current pipeline location to the potential station site. If the routing of the pipeline is changed, the various large valves, instrumentation and controls that that must be located where the station piping connects to the pipeline can be located on the station property, thus minimizing the amount of facilities to be installed and increasing the efficiency of station operations. Tie-in to the existing pipelines would be located adjacent to an existing meter station at Donovan Road. Wetland and topographic information was obtained primarily from a property data sheet and United States Geological Survey (USGS) mapping supplemented by limited field reconnaissance performed by Algonquin. Algonquin has not performed any other surveys at this site.

Site C

Site C is located along the existing Algonquin pipelines at MP 131.2 about 0.4 miles west of the Oxford Airport Runway. The site, an estimated 21 acres in area, is located between residential and commercial properties along Donovan and Christian Roads. The potential station facilities would be located on the northern portion of the property at the top of a rocky hill. Access would be off Christian Road, which connects to the Oxford Airport Road about 0.25 miles to the south. Existing vegetation is comprised mostly of mature trees with limited scrub-shrub and open fields in the southern half of the property. Tie-in to the existing Algonquin pipelines would be located near the base of the rocky slope in an attempt to avoid wetlands in this area. Wetland and topographic information was obtained primarily from USGS mapping supplemented by limited field reconnaissance performed by Algonquin. Algonquin has not performed any other surveys at this site.

Site D

Site D (Woodruff Hill Industrial Park #1, Town of Oxford) is located adjacent to the existing Algonquin pipelines at MP 132.0 about 0.4 miles east of the Oxford Airport Runway. The main portion of the site consists of a small (about 400 feet by 400 feet), wooded, relatively level upland area that is almost completely surrounded by wetlands. Access to the site would be from the existing Airport perimeter road on a new roadway that has been proposed for the industrial park. An approximate 800-foot-long drive would also be necessary from the industrial park road north into the site. It may be necessary to install some of the structures proposed for the station (such as office and storage buildings) along the driveway due to space limitations in the larger portion of the site near the pipelines. Although this site is outside of the initial search area identified by Algonquin flow studies, it has been included in the evaluation at the suggestion of Oxford Town Officials associated with the proposed town-owned industrial park. Wetland and

topographic information was obtained primarily from mapping of the industrial park provided by the Town of Oxford and supplemented by limited field reconnaissance performed by Algonquin. Algonquin has not performed any other surveys at this site.

Site E

Site E (Woodruff Hill Industrial Park #2, Towantic Energy Site) is located adjacent to the Algonquin pipelines at MP 132.4 about 0.75 miles east of the Oxford Airport runway (Runway 18/36) near the top of a large ridge at the intersection of the existing Algonquin pipelines and a high-voltage electric transmission line. The site is situated on the edge of a drumlin ridge (Woodruff Hill) and consists of a moderately level, mostly wooded area (about 20 acres) that slopes from north to south. The southern portion of the site has been maintained as farm field and in the northwest corner an area is maintained in scrub-shrub growth within a utility ROW. The remainder of the site is covered with an even-aged stand of hardwoods. An intermittent watercourse and a small wetland are located on a portion of the site. Access to the site would be from the existing Oxford Airport perimeter road on a new roadway that has been proposed for the industrial park. An approximate 600-foot-long drive would also be necessary from the industrial park road into the potential site. Review of the Towantic Energy, LLC Docket No. 192 indicates that primary access to the site would be from off of Prokop Road to the south via an existing unimproved road (Woodruff Hill Road) located to the west. Woodruff Road would be upgraded to provide adequate access to the site.

Although this site is outside of the initial search area identified by Algonquin flow studies, it has been included in the evaluation because of its location in the proposed industrial park. The property is currently owned by Towantic Energy, LLC (a division of Calpine) and is the site of a proposed power plant. As such, the availability of this property is uncertain. While permits for the site have been received, construction of the proposed power plant has been delayed, perhaps indefinitely. Calpine has recently filed for Chapter 11 bankruptcy in U. S. Bankruptcy Court in New York further complicating the possibility of locating the proposed compressor station on this site. Algonquin has reviewed the Connecticut Siting Council Docket No. 192, Towantic Energy, LLC, and information gathered during this review has been used by Algonquin to supplement the evaluation of Site E. Wetland and topographic information was obtained primarily from mapping of the industrial park provided by the Town and supplemented by limited field reconnaissance performed by Algonquin. Algonquin has not performed any other surveys at this site. Site E has been considered along with Site F as one of the main alternatives to Site A.

Site F

Site F (Woodruff Hill #3, East of a possible Towantic Energy Site) is located along the Algonquin pipelines at MP 132.5 about 0.85 miles east of the Oxford Airport runway at MP 132.5 abutting the east side of Site E. Locating the Oxford Compressor Station at Site F would be a conforming use in the Town of Oxford's Industrial Zone. The site consists mostly of a shallow valley between the ridge on Site E and the next ridgeline, which is also included on the eastern side of the site. A small, intermittent stream with limited associated wetlands bisects the valley. Although the site is part of the property associated with the industrial park (designated as future development), it was not included in the current plans for the park. The area Algonquin has identified (about 41 acres) is moderately level and mostly wooded. There are no known public or private water supply wells located on or within 150 feet of the project site. No wetlands are expected to be impacted by construction at the site, although one intermittent watercourse may be permanently impacted.

Station facilities would be located south of the existing pipelines either in the valley or on the adjacent ridge or both. Access to the site would be from the existing Oxford Airport perimeter road on a new roadway that has been proposed for the industrial park. An approximate 1,600-foot-long access drive, some of which would traverse steep slopes, would also be necessary from the industrial park road into the potential site. Although this site is outside of the initial search area identified by Algonquin flow studies, it has been included in the evaluation because of its location near the proposed industrial park.

Summary of Alternative Site Location Evaluation

The main disadvantage of Site B is that it not adjacent to Algonquin's pipeline and would require a new approximate 2,000-foot-long and 100- to 200-foot wide pipeline ROW for four pipelines to transport gas to and from the proposed compressor station. Therefore, in addition to the impact of construction within the footprint of the compressor station, there would be about 4.6 to 9.2 acres of additional impact to resources related to construction of the suction and discharge pipelines. Pipeline construction would require eight road crossings. Further, the Site B property has two residences nearby.

Site C is within a 21 acre property, but the configuration of the property and the amount of land that would be usable for the compressor station is limited due to the presence of rocky terrain and wetlands. Seven residences immediately abut this property. The main disadvantage of using this property would be that it doesn't have an adequate area for facility construction without possible permanent impacts to wetlands.

Site D is within a very small parcel of about 9.6 acres, and about 25 percent of this area is designated as "conservation restriction" land, so usable portions of the property may mean that the site is infeasible for a compressor station. Usable space is also constrained by wetlands.

Site E, or the Towantic Energy Site, may be suitable for construction of a compressor station. Its use for this purpose is complicated by ongoing bankruptcy proceedings. Therefore, its use for the proposed project is not reasonable.

In summary, we concur that use of alternative sites B, C, D, and E do not appear to be reasonable alternatives to the proposed project, and will not be considered further.

Site A was originally selected as the preferred site for the location of the proposed Oxford Compressor Station. However, as mentioned above, Algonquin received some objections by the landowner regarding the acquisition of Site A for use as a compressor station location. While, at the time we prepared the DSEIS Site A was the preferred site for the proposed Oxford Compressor Station, Algonquin subsequently filed a June 13, 2006 request with the Commission that Site F be considered the preferred alternative. This filing included a wetland delineation report, a phase I cultural resources survey, bog turtle habitat assessment (no potential habitat found), noise survey, and Connecticut Department of Environmental Protection (CTDEP) Minor New Source Review Air Permit Application.

For many of the resources evaluated, Site A and Site F have similar impacts (e.g. socioeconomics, cultural). See table 3.2.3.6-1 for a comparison of Site A and Site F. Both sites are located in relatively close proximity (less than 1.5 miles apart); therefore, similar geographic and soil type conditions are found at both locations. However, based on existing topographic conditions (e.g. slopes), it is expected that construction of Site F would require significantly more

excavation; the maximum amount of grade cut is estimated at 10 feet. Excavation would also be required at Site A, however the maximum amount of grade cut is estimated at 5 feet.

Site A is considered superior to Site F in terms of location, constructability, access, and residential and environmental impacts. However, Algonquin continues to receive resistance from the current landowners of Site A, making the purchase of Site A difficult, and may ultimately require consideration for condemnation. The Town of Oxford supports construction of the Oxford Compressor Station on Site F, as the town's industrial zone is the most desirable location for such a use, as expressed by representatives from the Town of Oxford.

On June 30, 2006, the Connecticut Siting Council (CSC) filed its Findings of Fact, and Opinion and Recommendations about Algonquin's Ramapo Expansion Project in Connecticut. The CSC found that Site F to be preferable and had several recommendations that are addressed in this document.

We concur that both alternative Sites A and F would be feasible for construction and operation of the proposed Oxford Compressor Station. Use of Site F would require a longer permanent access road, but its construction would not permanently affect a small (0.09 acre) wetland area. Most of the vegetation that would be affected by construction at Site A would be upland scrub-shrub (11.3 acres) compared to Site F (1.13 acres). Most of the vegetation that would be affected by construction at Site F would be forest (15.7 acres) compared to Site A (4.23 acres). More land would be required for operation of a compressor station at Site F (16.8 acres) compared to Site A (12.0 acres). About 0.5 acre of this difference may be attributed to the longer access road that would be needed at Site F (about 0.5 acres due to the longer road and assuming a 25-foot-wide road). Additional operational land requirements may be due to the more rugged grade at Site F.

Algonquin has requested that Site F be considered the preferred site for the Oxford CS. The Town of Oxford, Connecticut has commented that Site F is its preferred location for the compressor station. The Site A landowners have indicated that they may not be interested in selling the land to Algonquin. While construction of the compressor station at Site F would require more forest clearing and it would require more land for operation (due in part to the longer access road), there are fewer issues with the Site F landowners. Further, we believe the impact of the construction and operation of the compressor station at Site F would be minimized if Algonquin implements the construction and operational procedures it has filed in its application and supplements and as summarized in sections 4.11 and 4.12, including our recommendations. Therefore, **we recommend that:**

- **Algonquin use Site F for construction of the Oxford Compressor Station in Oxford, Connecticut.**

3.2.4 IROQUOIS MARKETACCESS PROJECT

3.2.4.1 System Alternatives

Iroquois conducted a system flow analysis of its system and determined that the overall optimal system design would add a compressor station adjacent to the existing Brookfield Sales Meter Station off High Meadow Road in Brookfield, Connecticut, and receive natural gas from Algonquin's pipeline system at this location. Although the purpose and need of the MarketAccess Project is different from that conducted for its Brookfield Expansion Project approved by the Commission on October 31, 2002, Iroquois states that the optimal system design

is still to construct a compression station and receive natural gas supplies from Algonquin's system at this location.

Alternatives to the proposed compressor station and the preferred location are generally consistent with those evaluated during the previous proceedings. No additional system alternatives are being proposed for the MarketAccess Project.

3.2.4.2 Aboveground Facility Alternatives

The primary factor driving the location of the proposed compressor station is the location of Iroquois' and Algonquin's existing pipeline systems. These pipeline systems parallel each other for about three miles; a compressor station located along this length would facilitate the natural gas delivery from Algonquin to Iroquois. Based on the engineering characteristics of the pipeline in the area, the proposed compressor station could be moved as much as three miles downstream of its proposed location without the need for constructing additional transmission pipeline and interconnecting facilities. Moving the compressor station substantially upstream of the proposed location would place it too close to the existing Dover Compressor Station.

The location of the proposed Brookfield Compressor Station is constrained by a number of factors related to the Iroquois system. Given the current system layout and the addition of the Eastchester Extension Project, locations upstream of the Brookfield site are not considered to be feasible alternatives due to the current physical properties of the pipeline system. For example, additional compression upstream of the Brookfield site could result in unacceptable natural gas temperatures. To provide a temperature buffer, coolers are also being proposed at the proposed Brookfield Compressor Station and existing Dover Compressor Station.

Five alternative sites were evaluated: four downstream and one upstream of the preferred Brookfield site. Figure 3.2.4.6-1 shows these five alternative sites on a USGS topographic quadrangle base. A comparison of evaluation factors for these five sites and the High Meadow Road site is provided in table 3.2.4.2-1.

The four downstream site alternatives are located within three miles of the preferred Brookfield location in the Town of Newtown, Connecticut. This three-mile-long section was evaluated for alternative sites because Iroquois' and Algonquin's pipeline system are co-located within the same ROW. The fifth site, which is referred to as the Vale Site Alternative, is located in Brookfield, Connecticut, and added for consideration based on comments received from Town of Brookfield officials. The Vale Site is not located along the 3 mile ROW segment where the Algonquin and Iroquois pipelines are co-located.

The following information is provided as historical background. In mid-April 2002, Iroquois met with Newtown's 1st Selectman and Community Development Director to discuss the Brookfield site and alternative sites in Newtown. The Newtown officials noted that all four alternative Newtown sites were located in a residential zone. They indicated that alternative sites 1, 2 and 3 would be very difficult to construct, as new subdivisions had been approved and new homes built. While not in favor of the project being located in Newtown, Site 4 was the only one they felt could be considered. They could not identify any additional sites along the 14,000-foot parallel alignment as it is all residentially zoned and there are no commercial areas in close proximity.

The Commission staff evaluated all reasonable alternatives in the Environmental Assessment prepared for CP02-31-000, the Brookfield Expansion Project. Issues related to

alternative compressor station sites, including the use of the Vale Alternative site, were addressed in the Commission's October 31, 2002 order in that proceeding. The Commission ruled in its Certificate that the Vale Site Alternative does not demonstrate an environmental benefit and would result in greater adverse environmental impact should an interconnection with the Algonquin system be required. In performing this evaluation, the Commission was aware of the "Carriage Homes on the Pond" subdivision of 24 homes that had been approved by the Town of Brookfield but not yet constructed; since that time, those homes have been constructed.

A number of Brookfield residents have voiced strong concerns about the proposed MarketAccess Project and the proximity of the proposed compressor station site to Whisconier Middle School and to homes similar to the comments filed for the Brookfield Expansion Project and addressed by the Commission in 2002. They have asked that the compressor station be located at a more suitable alternative site. In addition, Connecticut Governor Jodi Rell (January 25, 2006) and the state Attorney General of Connecticut Richard Blumenthal (February 9, 2006) have both expressed concerns about the project being located close to the middle school and residences, and have requested that a suitable alternative site be found. Connecticut State Representative David Scribner, Congresswoman Nancy Johnson, and State Senator Andrew Roraback (January 31, 2006) have expressed the same concerns and requested an alternative site.

Table 3.2.4.2-1
Comparison Summary of Alternative Site Locations for Iroquois' Brookfield Compressor Station a/

Comparison Factor	High Meadow Road Site	Vail Road Site (Alternative Site 5)	Alternative Site 1	Alternative Site 2	Alternative Site 3	Alternative Site 4
Site Size and Configuration	Approx. 68 acres.	Approx. 45 acres. One mile upstream/ west of preferred site.	Approx. 80 acres. 0.5 mile downstream/ east of preferred site.	Approx. 120 acres. One mile downstream/ east of preferred site. Lacks sufficient area to build due to new development.	Approx. two miles downstream/ east of preferred site.	Approx. 55 acres. Three miles downstream/ east of preferred site. Lacks sufficient area for compressor station outside of wetland.
Site Location	Town of Brookfield, CT. Property owned by Iroquois.	Town of Brookfield, CT. Zoned industrial.	Town of Newtown, CT. Zoned residential; subdivisions approved.	Town of Newtown, CT. Zoned residential; subdivisions approved, new construction started.	Town of Newtown, CT. Zoned residential; subdivisions approved.	Town of Newtown, CT. Zoned residential.
Existing Residences Environmental Impacts	2-3 residences within 600-800 feet of site. No wetlands or streams to be disturbed during construction.	10-11 residences within 600-800 feet of site. Additional pipeline loop could impact +4.5 wetland acres, and include two stream crossings	Existing residences observed adjacent to pipeline ROW. Large wetland complex and forested hillside. Part of site occurs in a CTDEP Natural Diversity Database Area.	75 acres converted to residential development. Undeveloped forest on approx. 25 acres. Part of site occurs in a CTDEP Natural Diversity Database Area.	Existing residences observed along the pipeline ROW. Undeveloped forest, stream, and wetland complex. Portion of land is adjacent to local wildlife preserve.	Nearby residences on Hanover road. Part of site is a wetland, with a beaver pond and perennial stream in the pipeline Row. Deep organic soils. Also mature forest.
Site Work	Relatively flat construction area, with previously disturbed and constructed sites.	Site has sufficient build able land. Much of site has been previously disturbed from possible former sand/gravel operation.	Sufficient build able land does not appear available due to wetland system and residential properties adjacent to the ROW.	Steepness and forest would require extensive tree clearing and grading.	Strong topographic relief; would likely require extensive grading and filling.	Undulating topography, forest, and bedrock outcrops. Would likely need extensive blasting, filling, grading.

a/ None of the five alternative sites have undergone detailed environmental and engineering investigations, such as groundwater surveys, geotechnical investigations, air emissions modeling, threatened and endangered species surveys, and cultural and historical resource studies at this time.

The four alternative sites in Newtown, Connecticut, have been recently field reviewed by Iroquois and its representatives to update information considered in the Commission's October 31, 2002 order. None of these sites have undergone detailed environmental and engineering investigations, such as groundwater surveys, geotechnical investigations, air emissions modeling, threatened and endangered species surveys, or cultural and historical resource studies. Iroquois sent correspondence to the FWS and the Connecticut Department of Environmental Protection (CTDEP) Natural Diversity Database on February 14, 2006 requesting rare species information for each of these four sites. The FWS responded March 15, 2006 indicating that no federally-listed or proposed, threatened or endangered species or critical habitat are known to occur at any of the alternative sites. No response has been received from the CTDEP to date.

As discussed below, Site 2, the largest of these alternative sites, is now largely developed and no longer available as a compressor station site. For the remaining sites, serious environmental issues and/or proximity to residences limit these options as reasonable alternatives. Thus, the optimal site for the compressor station in this corridor is still the proposed High Meadow Road site.

Site 1

Site 1 is located about 0.5 miles downstream (east) of the High Meadow Road site, and is about 80 acres in size. Connecticut Route 25 borders it to the east and Farrell Road to the west. This site was found to generally consist of a large wet meadow and bordering red maple swamp adjacent to a steep, forested hillside. Sufficient build able land does not appear available on this site given the expansive wetland system and presence of residential properties adjacent to the pipeline ROW.

Site 2

Site 2 is about 120 acres in size and located about one mile downstream (east) of the High Meadow Road location. The site is located between Route 25 and Butterfield Road. At the time of the previous review of the Brookfield Expansion Project for the October 31, 2002 order, about 75 acres of this site had been converted into a residential development. The remaining portion of the site on the eastern portion of the parcel (towards Butterfield Road) was primarily undeveloped forestland marked with strong topographic relief that would require extensive tree clearing and grading for any type of construction. This eastern portion is now being developed, and therefore there is not sufficient area for the construction of a compressor station at Site 2.

Site 3

Site 3 is located between Butterfield Road and Georges Hill Road, about two miles downstream (east) of the preferred location. This site is marked by strong topographic relief and would probably involve extensive grading and filling to allow construction of a compressor station. It is primarily undeveloped forest with a stream and wetland complex along the southeastern corner of Georges Hill Road, although relatively new homes are along the pipeline ROW in this area. A portion of the northern side of the site (near Georges Hill Road) lies adjacent to Newtown Forest Association Land, which is a local wildlife preserve. Iroquois discounted this alternative because the amount of developable area was considered too small to construct the required compressor station and because of the potential impacts to environmental resources.

Site 4

Site 4 is about 55 acres in size and located about three miles downstream (east) of the preferred location along the west side of Hanover Road. A railroad abuts a portion of the southern site boundary. A wetland complex dominates the eastern half of the site and the northwestern corner. During the field surveys, a beaver dam pond and a perennial stream were observed in the pipeline ROW; deep organic soils were also noted. The remainder of the site is characterized by undulating topography with mature forest habitat and bedrock outcrops. Even with grading and filling, there may not be enough acreage to construct the compressor station outside of the wetland area. Also, extensive blasting may be needed to contend with the outcrops and shallow bedrock, which could affect nearby residences along Hanover Road. Iroquois discounted this alternative because the amount of developable area was considered too small to construct the required compressor station and because of the potential impacts to environmental resources.

Site 5 – Vale Road Site

The Town of Brookfield identified the Vale Site Alternative for the Commission to consider during the review of the Brookfield Expansion Project in 2002. Town officials, state representatives, and local residents have commented in the pending MarketAccess Project proceeding that the Vale Site Alternative should be reviewed again. The Vale Site Alternative is located in an area that is zoned industrial, and is about one mile upstream from the proposed High Meadow Road site.

Iroquois provided additional environmental information about the impact of constructing a compressor station at the Vale Site Alternative and an interconnecting lateral pipeline, on April 18, 2006; some supplemental information is expected in May 2006. Much of the property on Vale Road has been previously disturbed by sand and gravel operations that occurred during the time period from about 1950 to the early 1980s. Vegetation consists of successional old-field and shrubland habitats. A mix of emergent and scrub-shrub wetlands are present in the interior of the site. The property contains several groundwater monitoring wells and debris piles. Iroquois' pipeline ROW lies within this property near its eastern boundary, but the Algonquin pipeline does not cross this property.

Iroquois has provided a preliminary possible layout for compressor station and related facilities at the Vale Site Alternative location. Most of the southern part of the property is occupied by a large wetland complex, so available upland for constructing the station appears to only be found within the more northern part of the property. We assumed that the compressor station facilities at either location would require about the same area, or about 7.0 acres. In addition to the compressor, storage, and utility/control buildings; gas coolers; and appurtenant facilities within this space, about 600 feet of suction and discharge pipelines would be constructed between the compressor building and the pipeline within a single ROW. Assuming a construction ROW width of 75 feet, about 1.0 acre of clearing would be required. Review of an aerial photo of the Vale Site shows that most of the land along this ROW would be forested.

If the Vale Site Alternative was used, Iroquois would need to construct a pipeline to connect the alternative site to the metering facilities at the existing High Meadow Road site in order to receive gas from Algonquin. The most likely pipeline route to connect these two locations would be adjacent to Iroquois' existing pipeline 50-foot-wide ROW. This additional 24-inch-diameter pipeline lateral would be about 1.25 miles in length. If a nominal construction ROW width of 75 feet is assumed along a 1.25-mile-long pipeline length, then the construction

workspace would be at least 11.4 acres in size. The construction workspace required for construction could possibly overlap the existing Iroquois Pipeline ROW. If all of the existing Iroquois 50-foot-wide ROW could be used for workspace, about 3.8 acres of new disturbance would be required to construct the lateral. However, additional workspace would probably be needed for waterbody crossings. Iroquois identified 15 landowners who would be affected directly by construction of the lateral pipeline. It's possible that blasting may be required to excavate a trench for pipeline installation since the depth to bedrock in this area is about 5 feet.

The lateral would cross six wetlands affecting about 4.0 acres (or more) of wetlands. Construction of the lateral would also involve four waterbody crossings, two of which are perennial and may affect fisheries resources. One of these perennial waterbodies is classified by the CTDEP as a Class A surface water. The Class A designation means that it is suitable for a public drinking water supply, and provides valuable fish and wildlife habitat as well as recreational opportunities. Construction of the lateral would require clearing about 3.5 acres of forest; while about 2.2 acres of this clearing would be in temporary workspace, recovery of this resource would be over 20 years and would be long-term to permanent. Construction of the lateral would affect about 0.95 acre of agricultural land. Preliminary review of the known cultural resources that might be present near the lateral and Vale Site Alternative locations discovered that two archeological sites may be affected by construction of the lateral. About 166 residences would be within a half mile of a compressor station built at the Vale Site Alternative.

Using the Vale Site Alternative would likely result in greater environmental impacts compared to the proposed High Meadow Road site. There would be no wetland or waterbody impacts associated with constructing or operating the compressor station at the High Meadow Road site. Construction of the lateral would affect about 4.0 acres of wetlands and four waterbodies. Fifteen landowners would be directly affected by construction of the lateral; and Iroquois would need to obtain new easements from them. Iroquois owns the High Meadow Road site, so no easements or property acquisition would be required for construction there. Construction of the lateral to the Vale Site Alternative would affect agricultural land, but the High Meadow Road site would not affect this type of land use. Construction of the Vale Site Alternative and lateral would require clearing about 1.8 more acres of forest than the proposed site. The total land requirement for the Vale Site Alternative would include land affected by construction of the station (estimated as similar to the proposed site at about 7.0 acres), the suction and discharge pipelines (about 1.0 acre), and the lateral (about 11.4 acres), or about 19.4 acres total. This is about 12.4 more acres of impact compared to construction of the facilities at the proposed High Meadow Road site.

The Vale Site Alternative is preferred by a number Brookfield residents and public officials who feel that the initially chosen site is too close to Whisconier Middle School and a number of private residences. The Commission's October 31, 2002 Order evaluated the Vale Road Alternative, acknowledged the filed concerns about the proposed site, and concluded that the Vale Site Alternative was not preferable to High Meadow Road. It concluded that the compressor station could be safely constructed and operated at the High Meadow Road site and found no conflicts or significant safety issues with location relative to the to the school.

We have received several comments about the proximity of the proposed compressor station site on High Meadow Road to residences. Within about 1,000 feet of the proposed compressor building on the High Meadow Road site there would be 2 or 3 residences including one that is presently under construction. Within about 1,000 feet of the possible compressor building at the Vale Road site, there would be at least 3 residences. However, the Brookfield first

selectman has commented that there would be 8 residences within 1,000 feet of the Vale Road site, and that neither site is supported.

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. The CSC also provided recommendations about the project, and these have been addressed in this document.

The comments that have been filed in the pending proceeding for the MarketAccess Project are similar to those filed and addressed in the Commission's October 31, 2002 Order. Construction impacts at the Vale Site Alternative would be greater than at the proposed site. We believe construction and operation of the Brookfield Compressor Station and related facilities at the proposed High Meadow Road site can be accomplished in a safe and reliable manner. Therefore, we do not recommend use of this alternative site.

Non-Internet Public

FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR THE NORTHEAST (NE)-07 PROJECT

Columbia Gas Transmission Corporation
Docket No. CP05-19-000, et al.
Figures 3.2.1.3-1, 3.2.1.3-2, and 3.2.1.3-3,
Pages: 3-66 to 3-68

Empire State Pipeline and Empire Pipeline, Inc.
Docket No. CP06-5-000 et al.
Figures 3.2.2.2-1, 3.2.2.2-2, 3.2.2.2-3, 3.2.2.2-4, and 3.2.2.4-1
Pages: 3-69 to 3-78

Algonquin Gas Transmission System, LLC
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Figure 3.2.3.6-1
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Iroquois Gas Transmission System, LP
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Figure 3.2.4.2-1
Page: 3-80

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