

**FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE
CATSKILL/DELAWARE UV FACILITY**

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4.13. HAZARDOUS MATERIALS

4.13.1. Introduction

This section evaluates whether the construction and operation of the proposed Catskill/Delaware Ultraviolet Light Disinfection Facility (UV Facility) could lead to increased exposure of people or the environment to hazardous materials. This section identifies and assesses the potential presence of hazardous materials on the Eastview Site and associated off-site facilities, which could migrate toward and ultimately affect the project site(s). The methodology used to prepare this analysis is presented in [Section 3.13, Data Collection and Impact Methodologies, Hazardous Materials](#).

4.13.2. Baseline Conditions

4.13.2.1. Existing Conditions

Possible hazardous material issues relating to the project site and the surrounding area are addressed in this section. They include activities that may have occurred at the site and caused the release of hazardous materials or wastes to the environment, creating soil and groundwater that may be exposed during the construction of the proposed facility. The analysis also includes potential releases of hazardous materials or wastes at properties near the project site, which could have resulted in contaminant migration to the site subsurface (e.g., groundwater). Potential releases of petroleum-related materials are also considered.

Hazardous materials and chemicals in the vicinity of the project site were identified using five methods described in the Data Collection and Impact Methodologies section. First, the property history of the Eastview Site and the study area were reviewed using available historical mapping material. Second, a records search was conducted with Federal, State and local agencies to identify hazardous materials issues over a broad study area that included the project site and properties within at least one-eighth mile of the site. Third, a site reconnaissance was performed to inspect the project site for any evidence of hazardous materials. Fourth, asbestos and lead paint surveys were conducted to determine if hazardous building materials were present in the on-site structures. Fifth, environmental sub-surface investigations were conducted to determine the potential for soil and/or groundwater contamination. Complete results from these investigations are described in the report *Phase I Environmental Site Assessment, Eastview Property, Mount Pleasant and Greenburgh, New York, (July 2004¹)* a copy of which is included as [Appendix F](#). This report also describes results from limited soil and groundwater sampling conducted at the project site. Pertinent results from the investigations are described below.

4.13.2.1.1. Eastview Site

Property History. Historic maps, aerial photographs and other records of the project site and surrounding areas were reviewed to determine if any past uses were indicative of the storage

¹ Additional fieldwork was conducted in October 2004. This report has not been reissued, but data from October 2004 is included in [Appendix F](#).

and/or use of hazardous materials, including petroleum products. The sources reviewed included: a historic Sanborn Fire Insurance Map from 1942; aerial photographs from 1953, 1965, 1974, 1989, and 1994; historic White Plains 7.5-minute topographic maps from 1938, 1967, 1979, and 1994; and tax records from the Towns of Mount Pleasant (north parcel) and Greenburgh (south parcel).

Fire Insurance Maps. A historic Sanborn Fire Insurance Map from 1942 identifies the north parcel as being owned by the City of New York, with the historic Hammond House located along Grasslands Road (Route 100C), and a second house located north of the Hammond House along the western side of an unpaved road (what is now known as Hammond House Road). An unpaved road is shown connecting the eastern-adjacent Westchester County Penitentiary and Work House to Hammond House Road. A portion of the Delaware Aqueduct traverses the eastern end of the property. The Catskill Aqueduct is shown east-adjacent to the property. The Sanborn Map does not show the Greenburgh parcel.

The land immediately to the north and east of the north parcel is identified as being owned by the Westchester County. Grasslands Hospital (now known as Westchester Medical Center) is depicted to the northeast.

Aerial Photographs. The 1953 photograph shows the project site as predominately cleared land, which appears to be farmed. Some wooded areas and scattered trees are also present across the site. The Hammond House is apparent at the intersection of Route 100C and Hammond House Road, and a second house is present along Hammond House Road, north of Hammond House. Delaware Aqueduct Shaft No. 19 and the associated access road are visible in the eastern portion of the property. Undeveloped land is present on the Greenburgh parcel and to the north and west of the north parcel. Residential buildings appear to be present to the west and south of the Greenburgh parcel. The Westchester Penitentiary is present to the east of the site, with access roads leading from the penitentiary to the subject site. Wooded land is present to the east, adjacent to the north parcel, with commercial development located further to the east.

The 1965 photograph indicates: a Con Edison transformer/substation constructed in the northeastern corner of the Greenburgh parcel near Route 100C; a large commercial building constructed northwest of the north parcel along Saw Mill River Road; and several of the existing Cross Westchester Executive Park buildings constructed south-adjacent to the Greenburgh parcel. The 1974 photograph appears similar to the 1965 photograph, with the small house along Hammond House Road obscured by trees or no longer present. Additional buildings were constructed within the Cross Westchester Executive Park, and several large buildings are present on the northern side of the north parcel. The subject site appears very similar to existing conditions in the 1989 aerial photograph, with the Westchester County Laboratories and Research building (County Laboratory) present to the north of the north parcel, and the Westchester County Fire Training Center present to the west of the north parcel. The Sprain Brook Parkway is present to the east of the property, and increased residential development is apparent to the east of the parkway. The 1994 aerial photograph appears similar to existing conditions, with no significant differences from the 1989 photograph.

Historic Topographic Maps. The 1938 topographic map shows the Eastview Site as undeveloped land except for the historic Hammond House and the second house located on the western side of Hammond House Road. Hammond House Road extends to the south of Route 100C and runs along the western perimeter of the Greenburgh parcel. Westchester Medical Center is identified northeast of the property and the Westchester Penitentiary and the Catskill Aqueduct are identified to the east. The Catskill Aqueduct is depicted traversing the eastern property line of the Greenburgh parcel. The Loeb Memorial Home is depicted to the west of the Greenburgh parcel, and residential development is depicted to the south.

The 1967 topographic map shows Shaft No. 19 and its access road in the eastern portion of the subject site. The County Laboratory building is depicted to the north of the site, along Hammond House Road. Hammond House Road is depicted traversing the property, with a portion unpaved. In addition, an unpaved road is shown connecting the Penitentiary property to Hammond House Road across the middle of the north parcel. The house located along the western side of Hammond House road is still shown on the map. There are no structures identified on the Greenburgh parcel.

The topographic map for 1979 indicates that the subject site remained relatively unchanged from 1967; however, several new buildings are present north, west, and south of the property. The 1994 map appears similar to the 1979 map, except the structure previously shown west of Hammond House Road is no longer present, indicating that it had been demolished. The 1994 map shows properties surrounding the subject site shaded red, indicating the area was densely populated. Individual structures are not identified, except for the Westchester Medical Center to the northeast.

Tax Records. According to the Town of Mount Pleasant Tax Assessor's office, the Mount Pleasant site is defined as Section 116-16, Block 1, Lot 2. The Hammond House, located in the southwestern section of parcel, is defined as Section 116-20, Block 1, Lot 1. However, according to the Town of Mount Pleasant Tax Assessor, the City of New York has owned the north parcel for over 50 years. According to the field property card for the Hammond House, the land that the structure is situated on has been owned by the City of New York, but the Hammond House itself has been owned by a private resident since June 1997. According to the assessment records for the Town of Greenburgh, the City of New York has owned the Greenburgh parcel since prior to 1950. The parcel is identified as Section 20, Block 20000, Lots 19, 20, and 21.

Summary. Review of the historic maps, aerial photographs, and tax records indicate that the project site has been owned by the City of New York since at least 1942, with a private residence (Hammond House) and a smaller house present on the north parcel since at least 1938 (with the smaller house demolished before 1994). The subject site has remained largely undeveloped throughout the documented history, containing only the Hammond House, small structures associated with access and sampling of the Catskill and Delaware Aqueducts, a Con Edison substation and transmission lines, and associated access roads. An aerial photograph from 1953 indicates that undeveloped portions of the site may have been farmed.

Westchester County Medical Center has been located northeast of the site, and the Westchester Penitentiary has been located east of the site, since at least 1938. The areas to the north, west,

and south of the site remained predominantly undeveloped until at least 1953. After 1953, Westchester County facilities were constructed to the north and west of the site, and the Cross Westchester Executive Park was constructed to the south.

Based on the historic uses indicated by this review, numerous properties surrounding the Eastview Site have been developed over the past thirty years, some of which could have stored and used hazardous materials. In particular, petroleum hydrocarbon fuels (e.g., diesel, fuel oil, gasoline), commonly used at commercial or institutional facilities, could have been stored in bulk containers such as underground or above ground tanks, making them susceptible to environmental release. The review did not indicate on-site manufacturing or industrial activities that would have resulted in release of hazardous materials; however, it is possible that pesticides and herbicides were used at the site since it appears to have been historically farmed.

On-Site Reconnaissance. The area of the potential construction slopes from east to west, from an elevation of approximately 380 to 320 ft Mean Sea Level (MSL). The Mine Brook flows from north to south through the center of the site toward a forested wetland system on the south-central portion. Groundwater contours constructed as part of the Water Resources analysis (see [Section 4.15, Water Resources](#)) indicate that in general, groundwater in the eastern and central portions of the site flows toward Mine Brook. A groundwater divide is present in the western portion of the site (to the west of Mine Brook). Groundwater west of the divide flows in a southwesterly direction toward the Saw Mill River; groundwater east of the divide flows toward Mine Brook. Many factors, including, but not limited to, underground utilities and other subsurface openings or obstructions, and current and past pumping of groundwater, can affect localized groundwater flow at the site and in the vicinity. Additional details concerning the groundwater conditions of the Eastview Site are presented in [Section 4.15, Water Resources](#).

The north parcel of the Eastview Site is primarily undeveloped with the exception of Shaft No. 19 of the Delaware Aqueduct, the Shaft No. 19 Sampling Building, the Hammond House, and various access roads. The Delaware Aqueduct lies beneath the southeastern portion of this portion and conveys water from the Kensico Reservoir in Valhalla to the Hillview Reservoir in Yonkers. Shaft No. 19 of the Delaware Aqueduct is an approximately 200 by 100 foot structure, situated predominantly below grade, located on the southeastern portion of the north parcel. The Shaft includes an uptake shaft, downtake shaft, forebay area, forebay connection channels, and bulkhead channels for possible future connections to a treatment plant. The Shaft No. 19 Sampling Building consists of a one-story brick building located adjacent to Shaft No. 19, where water samples are obtained from the Delaware Aqueduct. The Hammond House is a 2-story, privately-owned, dwelling. According to the Town of Mount Pleasant Building and Engineering Department, potable water is provided to Hammond House by an on-site well, and the house utilizes a subsurface septic system.

The south parcel of the Eastview Site is primarily undeveloped except for: a Con Edison-owned substation located in the northeastern portion of the parcel along Route 100C; the Catskill Aqueduct Connection Chamber (CCC), a small concrete-block pump house, and a larger brick laboratory building, all located along the eastern boundary of the parcel; and overhead electrical transmission lines that run above the Catskill Aqueduct. The existing CCC is an underground structure comprised of several extensions off the main Aqueduct, with the entrance covered by a

concrete slab at grade. A small concrete-block pump house is located next to the CCC, and a brick laboratory building is present several hundred feet to the north. The laboratory building is used to conduct water quality analyses of water samples collected from the Delaware and Catskill Aqueducts.

Polychlorinated biphenyls (PCBs) are sometimes associated with structures or mechanical equipment that may be present within the ancillary Shaft No. 19 and the existing CCC structures such as the CCC pump house, the laboratory building, and the Shaft No. 19 sampling building. In addition, mercury is sometimes used in water chemistry laboratory equipment and analytical methods, some of which may have been used in the CCC laboratory building. According to New York City Department of Environmental Protection (NYCDEP) personnel, the septic system associated with the CCC laboratory building has been found to contain mercury.

Visual observations during site reconnaissance did not indicate (e.g., staining, distressed vegetation, waste debris) that hazardous materials have affected surficial soils on the proposed site. However, hazardous materials may have been transported to the site subsurface from off-site sources via groundwater. An evaluation of potential off-site sources of hazardous materials is presented in [Section 4.13.2.1.1, Existing Conditions, Eastview Site](#).

Asbestos and Lead Paint Surveys. Asbestos and lead paint surveys of the structures on the Eastview Site, including Shaft No. 19, the Shaft No. 19 sampling building, the CCC laboratory building, and the CCC pump house, were conducted on March 18 and 25, 2004. The asbestos survey identified asbestos containing material (ACM) in the exterior window caulking and the exterior door caulking at the CCC laboratory building and exterior window caulking at the CCC pump house. The lead paint survey identified several painted components in the Shaft No. 19 water sampling building, the CCC laboratory building, and the CCC pump house, with detected lead concentrations ranging from -0.989 to 0.455 milligrams per square centimeter (mg/cm^2), 1.282 to 6.324 mg/cm^2 , and 0.702 to 4.812 mg/cm^2 , respectively.

It should be noted that the asbestos survey was conducted only in accessible areas of the on-site buildings; walls and ceilings were not disturbed, and roofing materials were not sampled because the integrity of the roof would have been compromised. Additional asbestos materials may exist in areas not accessible during the survey, including: underground piping insulation or materials; vapor barriers that could be present below ground or between layers of walls; electrical wiring and insulation; power supply transformers; and roofing materials. It should also be noted that the interior of the Shaft No. 19 structure was not accessed during the surveys, and therefore, materials inside of this structure were not sampled for asbestos or lead paint. Prior to the start of construction, the areas not surveyed on March 18 and March 25, 2004 would be surveyed and remediated as necessary.

Environmental Site Investigation.

Soil. As a part of the NYCDEP investigations, a total of 57 test borings were drilled throughout the Eastview Site in 1999. Seven additional test borings were drilled in 2001. These subsurface investigations were intended to provide visual classification of the subsurface materials for geotechnical testing; chemical testing was not performed on the soil samples.

However, observations documented on the test boring logs did not suggest the presence of hazardous materials (i.e., contaminants) in the soil at any locations or depths.

Between September 30 and October 24, 2003, 23 soil borings (B-101 through B-123) were advanced at the project site to evaluate the subsurface soil and bedrock conditions as part of the site geotechnical evaluation prior to construction of the UV Facility. The borings ranged in depth from 30 to 100 feet below ground surface (bgs). In October 2004, two additional borings (K-23B and K-24A) were advanced on the south parcel in the vicinity of the Catskill Laboratory Building and the CCC. The additional borings extended to 9.5 feet bgs (K-23B) and 12 feet bgs (K-24A). During drilling, split spoon samples were field screened for contamination to a depth of 30 feet bgs using direct observation (visual and olfactory) and ambient air sampling above the sample using an organic vapor meter (OVM).

Field observations during drilling activities provided no indication of potential contamination. Soil samples were collected from the interval just above the water table (approximately 5 to 10 ft below grade) at five boring locations (B-101, B-113, B-118, B-121, and B-123) to confirm these field observations (see [Figure 4.13-1](#)). Soil samples from two boring locations (K-23B and K-24A) were collected from the interval before encountering refusal (between 5 and 9 feet bgs). Four of the samples (from borings B-101, B-113, B-118, and B-123) were collected on the north parcel at points approximately coinciding with anticipated corners of the proposed UV Facility building. One of the soil samples (from boring B-121) was collected on the Greenburgh parcel at a point along the early route proposed at the time for the three water conduits leading from the UV Facility to the CCC. Two of the samples (from borings K-23B and K-24A) were collected to evaluate additional excavations associated with construction activities on the south parcel.

Soil samples were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs) by USEPA Method 8260, TCL semi-volatile organic compounds (SVOCs) by USEPA Method 8270, Target Analyte List (TAL) metals by USEPA Method 7000 series, and TCL pesticides and PCBs by USEPA Method 8080.

Analytical results from the soil samples are summarized in [Table 4.13.1](#). Complete laboratory analytical reports are included in [Appendix F](#). PCBs and pesticides were not detected in any of the seven soil samples collected at the site.

Two volatile organic compounds, acetone and methylene chloride, were detected in two samples (from K-23B and K-24A); however, these results were attributable to laboratory contamination, and possibly residual field equipment decontamination chemicals. The lab method blanks and the field blank both exhibited detectable concentrations at approximately the same concentrations. Therefore, the detected volatile organic compounds detected in the two soil samples from the site are likely not attributable to on-site operations and do not represent an environmental concern.

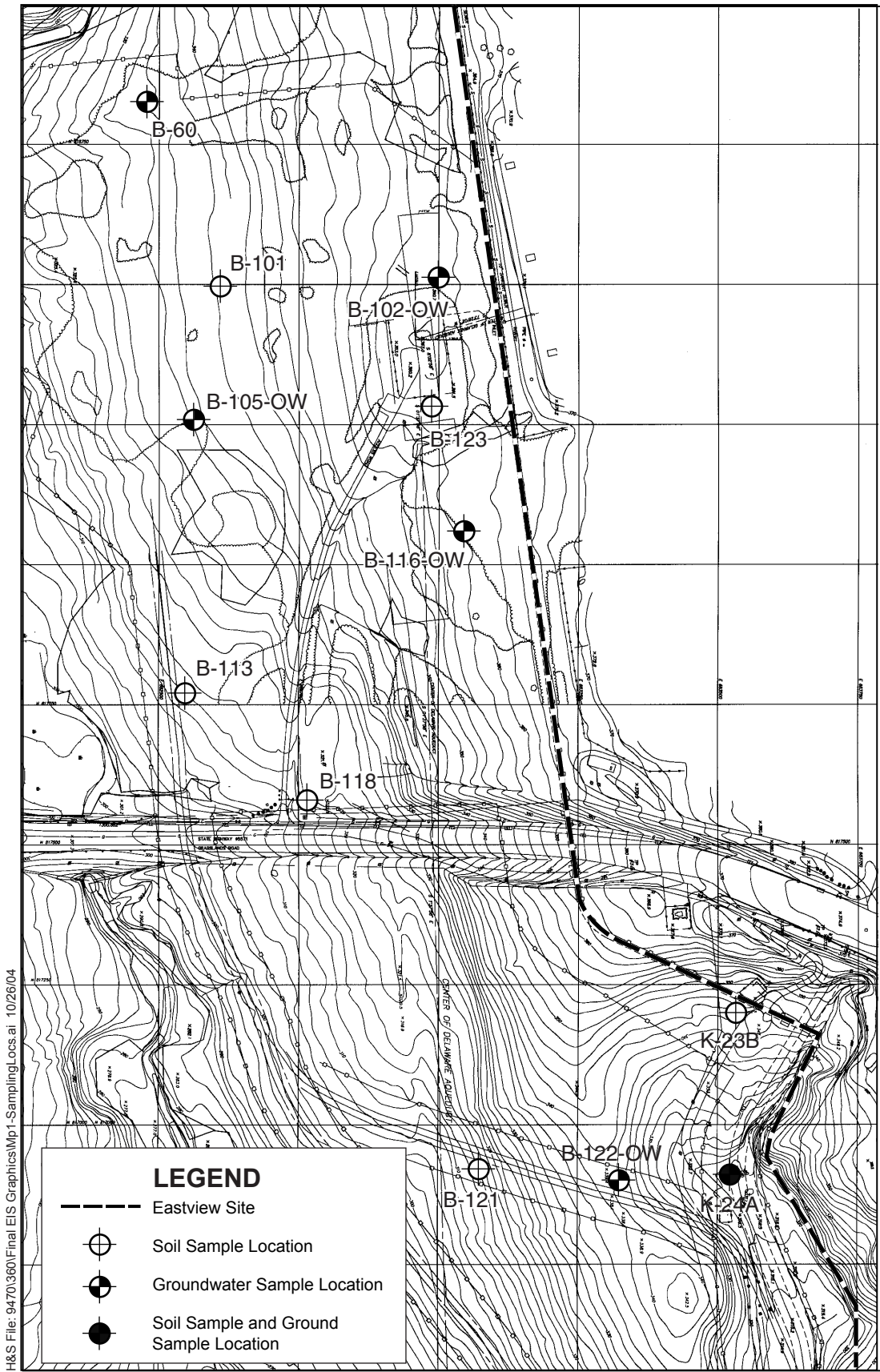
One SVOC, bis (2-ethylhexyl) phthalate, was detected in two samples (from B-113 and B-118), but at concentrations well below the Recommended Soil Cleanup Objective (RSCO) listed in *New York State Department of Environmental Conservation (NYSDEC) Technical and Administrative Guidance Memorandum (TAGM) #4046*. Phthalates, at the low concentrations reported, are commonly indicative of laboratory cross-contamination and/or artifacts of drilling

activities. Therefore, the bis (2-ethylhexyl) phthalate detected in the two soil samples from the site is likely not attributable to on-site operations and does not represent an environmental concern.

Zinc, chromium, copper, magnesium, and/or nickel were detected in four soil samples (from B-123, B-118, K-23B, and K-24A) at concentrations exceeding Eastern United States background concentrations listed in *NYSDEC TAGM #4046* (according to the TAGM, background concentrations can be used in lieu of established RSCOs for site assessment purposes). These metals are common to the geology of the area, and the detected concentrations are considered to be within normal ranges for the geology found at the site. Therefore, the detected metals are not anticipated to be a result of on-site operations and do not represent an environmental concern.

Groundwater. Groundwater samples were collected from on-site monitoring wells in May 2001. Three of the on-site wells were analyzed for metals (USEPA Method 7000 series), VOCs (USEPA Method 624), and pesticides (USEPA Method 608). Metals analyses were repeated for the three wells in August 2001. Results from the 2001 groundwater sampling indicated that all VOC and pesticide concentrations were below laboratory detection limits. Metals were detected in all of the groundwater samples, however, detected concentrations were below applicable Ambient Water Quality Standards and Guidance Values (AWQS/GVs) listed in *NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1*.

In January 2004, additional groundwater samples were collected from newly installed observation wells B-102-OW, B-105-OW, B-116-OW, and B-122-OW, and existing monitoring well B-60 to further characterize groundwater conditions for the proposed UV Facility project (see [Figure 4.13-1](#)). Wells B-102-OW, B-105-OW and B-116-OW, completed in bedrock, were sampled to investigate deep groundwater conditions in the northern portion of the site, where deeper excavation is planned. Wells B-122-OW, completed in the unconsolidated overburden, was sampled to investigate shallow groundwater conditions in the southern portion of the site, where shallower excavation is planned. Well B-60, also completed in the unconsolidated overburden, was sampled to provide additional information about groundwater in the northern portion of the site. In October 2004, a temporary well installed at boring K-24A was sampled to provide additional information in the south parcel. Groundwater samples were analyzed for TCL VOCs by USEPA Method 624, TCL SVOCs by USEPA Method 625, TAL metals by USEPA Method 7000 series, and TCL pesticides and PCBs by USEPA Method 608.



Soil and Groundwater Sampling Locations

TABLE 4.13-1. SOIL SAMPLE ANALYSIS FOR THE EASTVIEW SITE

	NYSDEC TAGM	Eastern USA	B101-6	B123-10	B113-6	B118-5	B121-5	S-FB	K-23B	K-24A	S-FB2	S-TB3	
PARAMETER	Criteria ¹	Background ²	Soil	Soil	Soil	Soil	Soil	Aqueous	Soil	Soil	Aqueous	Aqueous	
			Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	
Sample Date			10/13/2003	10/16/2003	10/16/2003	10/22/2003	10/23/2003	10/23/2003	10/24/2003	10/7/2004	10/7/2004	10/6/2004	10/7/2004
Sample Depth			6.0'	10.0'	6.0'	5.0'	5.0'	---	7.5'-9'	6'-8'	---	---	
Volatiles (ppb)													
Acetone	200	NA	ND (11)	ND (12)	ND (11)	ND (0.012)	ND (11)	ND (10)	5 (B)	5.3 (B)	2.6 (B)	ND (1.4)	
Methylene chloride	100	NA	ND (5.65)	ND (6.2)	ND (5.65)	ND (5.75)	ND (5.55)	ND (5)	0.31 (B)	0.38 (B)	2.8 (B)	0.99	
TOTAL TIC's			ND	ND	ND	ND	ND	ND	7 (JN)	6 (JN)	ND	NR	
Semivolatiles - (ppb)													
bis(2-Ethylhexyl)phthalate	50000	NA	ND (106)	ND (114)	295	674	ND (106)	ND (0.37)	ND(140) (J)	ND (160)	ND (1.6)	NR	
TOTAL TIC's			ND	ND	ND	498	ND	ND	180 (JN)	280 (JN)	ND	NR	
PCB's (ppb)													
None detected													
Pesticides (ppb)													
None detected													
Metals (ppm)													
Aluminum (Al)	SB	33,000	11,200	23,700	13,000	16,400	12,500	ND (1.00)	25600	15900	ND (18.2)	NR	
Arsenic (As)	7.5 or SB	3-12 ³	2.36	ND (1.24)	2.39	2.54	2.97	ND (0.100)	1.3 (B)	1.7 (B)	ND (1.9)	NR	
Barium (Ba)	300 or SB	15-600	106	253	70.4	84.0	67.0	ND (1.00)	358	195	ND (0.4) (E)	NR	
Beryllium (Be)	0.16 or SB	0-1.75	ND (0.563)	0.877	ND (0.565)	ND (0.577)	ND (0.555)	ND (0.050)	0.63	0.47	ND (0.3)	NR	
Cadmium (Cd)	1 or SB	0.1-1	0.354	0.426	ND (0.283)	ND (0.289)	ND (0.278)	ND (0.025)	ND (0.080)	ND (0.090) *	ND (0.4)	NR	
Calcium (Ca)	SB	130-35,000	2,160	4,690	2,580	2,730	1,460	ND (5.00)	974 *	7530 *	ND (90.4)	NR	
Chromium (Cr)	10 or SB	1.5-40 ³	16.0	50.8	20.9	24.3	16.0	ND (0.200)	74.5	30.9	ND (0.6)	NR	
Cobalt (Co)	30 or SB	2.5-60 ³	8.17	18.2	8.00	8.83	8.64	ND (0.200)	32.5	21	ND (2.5)	NR	

TABLE 4.13-1. SOIL SAMPLE ANALYSIS FOR THE EASTVIEW SITE

	NYSDEC TAGM	Eastern USA	B101-6	B123-10	B113-6	B118-5	B121-5	S-FB	K-23B	K-24A	S-FB2	S-TB3
PARAMETER	Criteria ¹	Background ²	Soil Conc.	Soil Conc.	Soil Conc.	Soil Conc.	Soil Conc.	Aqueous Conc.	Soil Conc.	Soil Conc.	Aqueous Conc.	Aqueous Conc.
Sample Date			10/13/2003	10/16/2003	10/16/2003	10/22/2003	10/23/2003	10/24/2003	10/7/2004	10/7/2004	10/6/2004	10/7/2004
Sample Depth			6.0'	10.0'	6.0'	5.0'	5.0'	---	7.5'-9'	6'-8'	---	---
Copper (Cu)	25 or SB	1-50	20.6	33.0	24.1	26.4	19.6	ND (0.200)	53 *	44.4 *	ND (1.6)	NR
Iron (Fe)	2000 or SB	2,000-550,000	18,600	41,100	20,400	23,000	21,200	ND (2.50)	40100	26500	ND (16.8)	NR
Lead (Pb)	SB ⁴	⁴	6.60	10.7	6.40	8.69	7.77	ND (0.050)	7.1 (N)	9.2 (N)	ND (1.1)	NR
Magnesium (Mg)	SB	100-5,000	3,750	8,930	4,580	6,490	4,070	ND (5.00)	10700 *	7650	ND (6.0)	NR
Manganese (Mn)	SB	50-5,000	776	662	477	509	608	ND (0.500)	478	306	ND (0.90)	NR
Nickel (Ni)	13 or SB	0.5-25	17.8	35.9	17.1	18.7	18	ND (0.100)	31	27.6	ND (1.7)	NR
Potassium (K)	SB	8,500-43,000 ³	1,840	8,610	1,870	3,120	1,470	ND (5.00)	16,000 (E)	8480 (E)	129	NR
Selenium (Se)			ND (2.25)	ND (2.49)	ND (2.26)	ND(2.31)	ND (2.22)	ND (0.2)	3 (BN)	3 (BN)	ND (8.7)	NR
Sodium (Na)	SB	6,000-8,000	171	294	174	196	ND (111)	ND (10.0)	ND(25.9)	ND(29.3)	680	NR
Thallium (Th)	SB	N/A	0.128	0.310	0.129	0.203	ND (0.111)	ND (0.01)	ND(0.56)	ND(0.63)	ND (3.3)	NR
Vanadium (V)	150 or SB	1-300	22.0	69.4	26.8	32.4	21.4	ND (0.200)	92.1	48.8	ND (2.3)	NR
Zinc (Zn)	20 or SB	9-50	43.0	93.7	49.2	64.2	47.6	ND (0.200)	95.5	78.4	ND (3.9)	NR

Notes:

This summary table lists only those compounds detected in at least one sample. The complete data packages are provided in [Appendix F](#).

- Antimony, Mercury, Selenium and Silver were not detected in any samples above the method detection limit

~ Sample not analyzed for

ND (0.200) - This compound was not detected above the method detection limit (0.200).

NA - Not applicable.

TABLE 4.13-1. SOIL SAMPLE ANALYSIS FOR THE EASTVIEW SITE

	NYSDEC TAGM	Eastern USA	B101-6	B123-10	B113-6	B118-5	B121-5	S-FB	K-23B	K-24A	S-FB2	S-TB3
PARAMETER	Criteria¹	Background²	Soil	Soil	Soil	Soil	Soil	Aqueous	Soil	Soil	Aqueous	Aqueous
			Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.
Sample Date			10/13/2003	10/16/2003	10/16/2003	10/22/2003	10/23/2003	10/24/2003	10/7/2004	10/7/2004	10/6/2004	10/7/2004
Sample Depth			6.0'	10.0'	6.0'	5.0'	5.0'	---	7.5'-9'	6'-8'	---	---

SB - Site Background.

¹ - Recommended Soil Cleanup Objective as defined in NYSDEC Technical and Administrative Guidance Memorandum #4046 Determination of Soil Cleanup Objectives and Cleanup Levels, January 24, 1994.

² - Source: NYSDEC Technical and Administrative Guidance Memorandum #4046, Table 4.

³ - New York State background.

⁴ - Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4-61 ppm.

Average background levels in metropolitan or suburban areas or near highways are much higher and typically range from 200-500 ppm.

Organic Qualifiers

B - Indicates that the analyte was found in both the sample and its associated laboratory blank. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

J - Indicates an estimated value. This qualifier is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data

indicates the presence of a compound that meets the identification criteria and the result is less than the specified detection limit but greater than zero.

N - Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

Inorganic Qualifiers

B - The reported value is less than the Contract Required Detection Limit (CRDL), but greater than the Instrument Detection Limit (IDL).

E - Indicates an estimated value because of the presence of interference.

N - Spiked sample recovery not within control limits.

* - Duplicate analysis not within control limits.

Analytical results from the 2004 groundwater sampling are summarized in [Table 4.13-2](#). Complete laboratory analytical data is included in [Appendix F](#). PCBs and pesticides were not detected in any of the six groundwater samples collected at the site.

Three volatile organic compounds, acetone, methylene chloride, and toluene, were detected in one of the samples (from K-24A), but below the respective NYSDEC AWQS/GVs. However, the detected acetone and methylene chloride results were likely attributable to laboratory contamination and possibly residual field equipment decontamination chemicals. The lab method blanks and the field blank both exhibited detectable concentrations of acetone and methylene chloride at approximately the same concentrations. Toluene was not detected in the field blank or trip blank; however, the concentration found in K-24A was very low (and below the AWQS/GV). The fact that visual and OVM readings of entire boring did not indicate any gross contamination at this location suggests that its presence is likely due to historic activities or manmade source at this location that is not of concern. In summary, the volatile organic compounds detected in the one groundwater sample from the site do not represent an environmental concern at the site.

The SVOCs bis (2-ethylhexyl) phthalate and di-n-butyl phthalate were detected in four samples, but at concentrations below the applicable NYSDEC AWQS/GVs. Therefore, the detected concentrations do not represent an environmental concern.

Metals, including iron, magnesium, manganese, and antimony, were detected in groundwater at concentrations exceeding the NYSDEC AWQS/GVs. Iron levels exceeded the NYSDEC class GA groundwater AWQS of 300 parts per billion (ppb) in all groundwater samples analyzed, with concentrations ranging from 697 ppb to 11,200 ppb. Manganese levels exceeded the GA groundwater AWQS of 300 ppb in four of the five wells sampled, with concentrations ranging from 1,100 ppb to 1,640 ppb. Magnesium was detected above the GA groundwater GV of 35,000 ppb in well B-102-OW only, at a concentration of 42,400 ppb. Antimony was detected above the GA groundwater AWQS of 3 ppb in the temporary well installed at K-24A only, at a concentration of 11.3 ppb. The groundwater samples were not filtered prior to analysis, and field notes indicated that groundwater exhibited high turbidity during well development. Therefore, it is possible that the detected concentrations are partly associated with sediment in the groundwater and do not represent true groundwater conditions. In addition, considering that the detected metals are naturally occurring at the site, their presence in groundwater does not represent an environmental concern.

Sodium was detected in well B-60 at a concentration of 58,100 ppb, exceeding the GA groundwater AWQS of 20,000. However, the sodium level observed in B-60 is considered an anomalous result; concentrations detected in the other wells sampled were at significantly lower concentrations. It is suspected that the concentrations observed in B-60 are attributable to use of a sodium bentonite seal in the construction of this well in 2001. As such, the sodium levels would be isolated to this well location.

TABLE 4.13-2. GROUNDWATER SAMPLING ANALYSIS FOR THE EASTVIEW SITE

	NYSDEC TAGM	B-102-OW	B-116-OW	B-105-OW	B-122-OW	B-60	GW-TB	GW-FB	K-24A	GW-FB1	TB-3
PARAMETER	Criteria¹	Ground water	Ground water	Ground water	Ground water	Ground water	Aqueous	Aqueous	Ground water	Aqueous	Aqueous
		Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.
Sample Date		1/19/2004	1/19/2004	1/19/2004	1/19/2004	1/19/2004	1/19/2004	1/19/2004	10/7/2004	10/6/2004	10/7/2004
Volatiles (ppb)											
Acetone	50	NA	NA	NA	NA	NA	NA	NA	1.8	3.1	ND (1.4)
Methylene chloride	5	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	0.47	0.94	0.96
Toluene	5	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	0.15	ND (0.11)	ND (0.11)
Semivolatiles - (ppb)											
bis(2-Ethylhexyl)phthalate	5	3.6 (J)	3.1 (J)	4 (J)	3.6 (J)	ND (10)	NR	ND (10)	ND (1.6)	ND (1.6)	NR
Di-n-butyl phthalate	50	ND (10)	1.1 (J)	5.7 (J)	6.9 (J)	ND (10)	NR	ND (10)	ND (1.6)	ND (1.6)	NR
TOTAL TIC's	NA	9 (JN)	10 (JN)	42 (JN)	12 (J)	ND	NR	7 (JN)	ND	ND	NR
PCB's (ppb)	None Detected										
Pesticides (ppb)	None Detected										
Metals (ppm)											
Aluminum (Al)	NA	608	2170	201	3370	13400	NR	ND (39)	916	ND (18.2)	NR
Antimony (Sb)	3	ND (5.5)	ND (5.5)	ND (5.5)	ND (5.5)	ND (5.5)	NR	ND (5.5)	11.3 **	ND (5.8) **	NR
Arsenic (As)	25	ND (5.9)	ND (5.9)	ND (5.9)	ND (5.9)	ND (5.9)	NR	ND (5.9)	3.3	ND (1.9)	NR
Barium (Ba)	1000	71.6 (B)	81.9 (B)	57.3 (B)	57.0 (B)	250	NR	ND (4.7)	91.2 (E)	ND (0.4) (E)	NR
Beryllium (Be)	3	0.75 (B)	0.25 (B)	ND (0.20)	0.47 (B)	0.96 (B)	NR	0.23 (B)	ND (0.4)	ND (0.3)	NR
Cadmium (Cd)	5	1.2 (B)	ND (0.30)	0.30	ND (0.3)	0.37 (B)	NR	ND (0.3)	0.73	ND (0.4)	NR
Calcium (Ca)	NA	95600	53600	21300	30100	64900	NR	478 (B)	145000	ND (90.4)	NR
Chromium (Cr)	50	3.7 (B)	6.2 (B)	1.9 (B)	7.6 (B)	5.4 (B)	NR	ND (0.7)	2	ND (0.6)	NR
Cobalt (Co)	NA	3.8 (B)	9.8 (B)	ND (1.1)	6.2 (B)	2.1 (B)	NR	ND (1.1)	ND (3.2)	ND (2.5)	NR

TABLE 4.13-2. GROUNDWATER SAMPLING ANALYSIS FOR THE EASTVIEW SITE

	NYSDEC TAGM	B-102-OW	B-116-OW	B-105-OW	B-122-OW	B-60	GW-TB	GW-FB	K-24A	GW-FB1	TB-3
PARAMETER	Criteria¹	Ground water	Ground water	Ground water	Ground water	Ground water	Aqueous	Aqueous	Ground water	Aqueous	Aqueous
		Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.
Sample Date		1/19/2004	1/19/2004	1/19/2004	1/19/2004	1/19/2004	1/19/2004	1/19/2004	10/7/2004	10/6/2004	10/7/2004
Copper (Cu)	200	5.8 (B)	8.1 (B)	2.9 (B)	9.1 (B)	2.0 (B)	NR	ND (1.7)	6.1	ND (1.6)	NR
Iron (Fe)	300	2400	3000	697	11200	8080	NR	ND (47)	1570	ND (16.8)	NR
Lead (Pb)	25	5	7.5	2.0 (B)	6.6	14.2	NR	2.7 (B)	5.6	1.9 (B)	NR
Magnesium (Mg)	35000	42400	26000	17000	11200	24900	NR	38.9 (B)	21800	ND (6.0)	NR
Manganese (Mn)	300	1340	1640	29.6	1100	1600	NR	2.1 (B)	249	ND (0.9) (E)	NR
Nickel (Ni)	100	2.7 (B)	10 (B)	ND (1.2)	13.0 (B)	0.9 (B)	NR	ND (1.2)	ND (1.7)	ND (1.7)	NR
Potassium (K)	NA	5650	4840 (B)	5050	4440	9080	NR	206 (B)	9540 (E)	130	NR
Sodium (Na)	20000	11400 (E)	10500 (E)	10300 (E)	6940 (E)	58100 (E)	NR (E)	1130 (E)	29000	805	NR
Thallium (Th)	0.5	ND (4.3)	ND (4.3)	ND (4.3)	ND (4.3)	ND (4.3)	NR	ND (4.3)	ND (2.8)	ND (3.3)	NR
Vanadium (V)	NA	1.3 (B)	4.1(B)	ND (1.0)	7.9 (B)	3.9 (B)	NR	ND (1.0)	3.4	ND (2.3)	NR
Zinc (Zn)	2000	34.8	23.1	13.1 (B)	54.3	53.4	NR	ND (2.9)	2	ND (3.9)	NR

TABLE 4.13-2. GROUNDWATER SAMPLING ANALYSIS FOR THE EASTVIEW SITE

	NYSDEC TAGM	B-102-OW	B-116-OW	B-105-OW	B-122-OW	B-60	GW-TB	GW-FB	K-24A	GW-FB1	TB-3
PARAMETER	Criteria¹	Ground water	Ground water	Ground water	Ground water	Ground water	Aqueous	Aqueous	Ground water	Aqueous	Aqueous
		Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.
Sample Date		1/19/2004	1/19/2004	1/19/2004	1/19/2004	1/19/2004	1/19/2004	1/19/2004	10/7/2004	10/6/2004	10/7/2004

Notes:

* NYSDEC TOGS 1.1.1 (June 1998): Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (used Class GA groundwater standards)

ND (0.200) - This compound was not detected above the method detection limit (0.200).

SB - Site Background.

NA - Not Available

~ Sample not analyzed for

* NYSDEC TOGS 1.1.1 (June 1998): Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations

Organic Qualifiers

B - Indicates that the analyte was found in both the sample and its associated laboratory blank. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

J - Indicates an estimated value. This qualifier is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data

indicates the presence of a compound that meets the identification criteria and the result is less than the specified detection limit but greater than zero.

N - Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

Inorganic Qualifiers

B - The reported value is less than the Contract Required Detection Limit (CRDL), but greater than the Instrument Detection Limit (IDL).

E - Indicates an estimated value because of the presence of interference.

N - Spiked sample recovery not within control limits.

* - Duplicate analysis not within control limits.

** - The groundwater samples, K-24A and GW-FB1, were re-analyzed for Antimony by an alternate method (GFAA) and a concentration of less than 1.3 ppb was reported for all samples.

There is no evidence that suggests the observed groundwater concentrations are the result of contamination from either on-site or off-site activities. The Phase I Environmental Site Assessment at the property did not identify previous on-site or off-site (see [Section 4.13.2.1.2, Existing Conditions, Study Area](#)) uses of the site for manufacturing, landfilling, or other commercial purposes that could have resulted in metals affecting groundwater at the project site.

4.13.2.1.2. Study Area

Records Search. This section summarizes findings of agency databases that were reviewed to identify facilities that generate, transport, store, or dispose of hazardous materials or wastes on or near the property, and sites having, or suspected of having, soil or groundwater contamination that may impact the property. These searches were conducted to evaluate past and present activities involving hazardous materials on the site and its environs, as described in [Section 3.13, Data Collection and Impact Methodologies, Hazardous Materials](#).

Environmental Data Resources (EDR) was used to conduct the database search. The EDR report, which provides detailed descriptions of each database, summaries of listed sites, and figures with locations and other pertinent information, is included in the Phase I Environmental Site Assessment report provided in [Appendix F](#). In addition, public information available from NYSDEC and USEPA was also searched to identify sites in the vicinity of the project site, which are known to have contamination. Copies of information obtained from NYSDEC and USEPA are also provided in the Phase I Environmental Site Assessment report in [Appendix F](#).

The IBM Corporation Eastview Research Facility (also known as the Landmark at Eastview office park), located approximately one-quarter mile west of the project site, was listed in the federal Corrective Action Report (CORRACTS) database. This database is a list of facilities that are found to have had hazardous waste releases and require RCRA corrective action activity, which can range from site investigations to remediation. The database report indicated that a remedial feasibility assessment of the site was completed in 1992, and that the area was assigned a medium corrective action priority. Based on its location, it is anticipated that any groundwater contamination present at this facility would migrate in a westerly direction, towards the Saw Mill River and not towards the Eastview Site. Therefore, any past or present releases at this facility are not anticipated to have affected the subject property.

The NYSDEC LTANKS database, an inventory of reported leaking storage tank incidents, identified five incidents located within a half-mile radius of the subject property. Four of the incidents occurred at the New York Medical College/Westchester County Medical Center, located north-adjacent to the subject site. Details on these incidents are as follows:

- *Spill# 9612928:* An incident occurred on January 31, 1997 involving the release of an unknown quantity of diesel from a 1,500-gallon underground storage tank. The leak was reported based on a failed tank tightness test. This case is still active, although corrective action has reportedly been conducted.
- *Spill# 9813996:* An incident occurred on February 8, 1998 involving the release of an unknown quantity of diesel from an underground storage tank. The leak was discovered

during tightness testing of the tank. Contaminated soil was removed from the site and the spill was closed by NYSDEC on February 22, 2000.

- *Spill# 9901612*: An incident occurred on May 11, 1999 involving the release of an unknown quantity of diesel from an underground storage tank. The leak was discovered during tightness testing of the tank. The contaminated soil was removed and samples were collected. The case was closed by NYSDEC on February 22, 2000.
- *Spill# 9814086*: An incident occurred February 19, 1999 involving the release of an unknown quantity of No. 2 fuel oil from an underground storage tank. The leak was discovered during tightness testing of the tank. This case has not been closed although reportedly corrective action has been taken. Approximately 50 tons of contaminated soil were removed from the site.

The releases at the New York Medical College/Westchester County Medical Center described above resulted in impacts to soil, however, groundwater reportedly was not affected. Although two of the incidents have not received closure from NYSDEC, corrective actions have been taken in all cases. Since groundwater was not affected, and corrective actions have been taken to remediate contamination at this facility, it is not anticipated that these incidents have affected the subject property.

Two releases (listed as one LTANKS site) occurred at the Heritage Corporation, located greater than one-quarter mile southeast of the subject property along Route 100C. The releases occurred on August 15 and 16, 1998, and were associated with tank test failures. Both of the cases have been closed by the NYSDEC and are not anticipated to have had an effect on soil or groundwater at the subject site.

The NYSDEC Spills database includes data collected on releases of petroleum products and other chemicals reported to NYSDEC. The EDR report identified four NY Spills at properties located within one-eighth mile of the Eastview Site, including: a January 30, 1990 spill at the Cross Westchester Executive Park located south-adjacent to the Eastview Site; a March 4, 1996 incident at the Westchester Medical Center, located to the northeast of the project site; and March 39, 1992 and May 13, 1998 incidents at the Westchester Penitentiary located east-adjacent to the project site. According to the database, each of these spills has been closed by the NYSDEC.

Review of public information available from NYSDEC identified an open spill case located at the adjacent Westchester Penitentiary property along the eastern property boundary. Spill No. 9111418 involving the release of an unknown quantity of waste oil was reported at the facility on January 22, 1992. Reportedly, the release was to land, and groundwater was not affected. However, because this case has not been closed, there is potential that this release may impact the Eastview Site.

Off-Site Reconnaissance. The New York Medical College substation is located immediately southeast of the north parcel, near Route 100C. Immediately to the northeast of this facility, Con Edison is currently constructing a much larger substation. A natural gas pipeline

owned by Con Edison and an underground cable owned by the MCI telecommunications company are located along the edge of Route 100C.

Westchester County Water District No. 3 provides water service to properties surrounding the north parcel. Consolidated Water District No. 1 provides water service to properties surrounding the south parcel. All of the surrounding properties are connected to the municipal sanitary sewer system, with the exception of the private residences along Taylor Road in Greenburgh, located directly east of the south parcel.

No evidence of contamination from drums, tanks, and/or illegally dumped or stored material was observed on accessible properties adjacent to the site. Inaccessible properties included the Westchester Penitentiary to the east, the Bee-Line Bus Facility to the west, and the Westchester County Department of Public Safety to the northwest.

4.13.2.2. Future Without the Project

The Future Without the Project considers the anticipated peak year of construction (2008) and the first full year of operation (2010) for the proposed UV Facility. For each year, two scenarios are assessed: one in which the NYCDEP Croton project is not located on the Eastview Site and another in which the Croton project is located on the site, specifically in the northwest corner of the south parcel. By the peak construction year, two additional NYCDEP projects could be located on the Eastview Site, namely a Police Precinct and possibly an Administration/Laboratory Building. The Police Precinct has been approved by the Town of Mount Pleasant and would be located in the southwest corner of the north parcel. The Administration/Laboratory Building is less certain; however, as the Eastview Site is one of several properties currently being evaluated for use as a possible site for that particular building.² In addition to these projects, NYCDEP's Kensico-City Tunnel (KCT) may be under construction at the Eastview Site starting in 2009. Therefore, the 2010 analysis year considers the possibility of this project. All of these NYCDEP projects are analyzed in this DEIS to the extent to which information is available. They are all separate actions from the proposed facility and would undergo their own separate environmental reviews.

4.13.2.2.1. Without Croton Project at Eastview Site

In the Future Without the Project, the Eastview Site could become more developed by the year 2008, with a new NYCDEP Police Precinct and possibly an Administration/Laboratory Building, in addition to the existing Hammond House, Shaft No. 19, the CCC, laboratory building, and Con Edison substation. By 2010, the Eastview Site could become a major staging area for the KCT project.

In the Future Without the Project, without the Croton project, the Croton project and the proposed UV Facility would not be constructed or operated at the site, and, therefore, hazardous materials would not be exposed during construction activities or used during water treatment operations. The Police Precinct and Administration/Laboratory Building would already have

² This depends on the results of a siting evaluation which is currently ongoing. The siting decision would be evaluated and discussed as part of a separate independent environmental review.

been constructed and there would be no impacts from hazardous materials in the year 2008. Hazardous Materials associated with any additional future NYCDEP projects on the Eastview Site would be surveyed and/or remediated, if necessary, as part of those projects.

4.13.2.2.2. With Croton Project at Eastview Site

In the Future Without the Project, but with the Croton project at the Eastview Site, the site would experience peak construction activities of the Croton project in 2008. The Police Precinct and Administration/Laboratory Building are anticipated to be completed on the site by that year. By 2010, it is anticipated that the Croton project would commence operations at the site and that the site could be a major staging area for the KCT project.

Construction of the Croton Project. During the construction of the Croton project, the contractor may introduce a variety of hazardous materials to the project site to support the construction activity. The specific types and quantities of hazardous materials stored and used on the construction site would depend on the nature and extent of activities being performed (e.g., excavation, foundation construction, tunneling). In general, various petroleum-related materials would be used to support the operation of vehicles and heavy equipment (e.g., diesel fuel, gasoline, lubricants, glycol) as well as hazardous materials used in the construction process itself (e.g., concrete release agents, adhesives, paints and coatings). Each contractor would provide Material Safety Data Sheets (MSDS) for the construction-related hazardous materials that they would introduce to the project site. In addition, these materials would be stored and handled in a manner that would prevent improper releases to the environment and/or exposure to site workers, according to applicable Federal, State and local regulations. These measures would be specified in a Construction Health and Safety Plan to be prepared by the contractor(s) in accordance with the hazardous materials contract specifications and OSHA regulations.

Based on the history of the Eastview Site and results from geotechnical studies and groundwater sampling conducted in connection with the Croton project, it is unlikely that soils contaminated with hazardous materials would be discovered during excavation and construction of the Croton project. Based on results from groundwater sampling, metals from naturally occurring sources were detected in groundwater at the Eastview Site; however, the detected concentrations were below applicable NYSDEC Ambient Water Quality Standards/Guidance Values (AWQS/GVs) in the area of the Croton project.

Operation of the Croton Project. Equipment and facilities would be used at the Croton project to store and feed the chemicals required to enhance filtration, to control corrosion, to prevent dental decay and to provide secondary disinfection. Water treatment chemicals to be stored and used at the Croton project on the Eastview Site are summarized below:

- Sulfuric Acid – For pH correction prior to coagulation; fed at first-stage rapid mixer.
- Coagulant – Alum (Aluminum Sulfate) / PACl (Polyaluminum Chloride) – For coagulation; fed at first-stage rapid mixer.
- Coagulant Aid Polymer – As coagulant; fed at second-stage rapid mixer.
- Filter Aid Polymer – As filtration aid; fed at second-stage flocculation tank.

- Sodium Hypochlorite –
 - Pre-Feed: Intermittent feed at first-stage rapid mix. This feed point is optional and would only be used at Croton project start-up or reactivating a flow train.
 - Intermediate: Pre-filtration for manganese removal; fed at the Dissolved Air Flotation baffle wall.
 - Post-Feed: Secondary and virus disinfection; fed at treated water discharge from the UV disinfection units.
- Hydrofluorosilicic Acid – To prevent dental decay; fed at treated water discharge from the UV disinfection units.
- Sodium Hydroxide – For pH adjustment; fed at treated water discharge from the UV disinfection units.
- Corrosion Inhibitor (Orthophosphate or Phosphoric Acid) – For corrosion control; fed at treated water discharge from the UV disinfection units.
- Ferric Chloride – For solids dewatering; fed at centrifuge.
- Residual Polymer – For solids dewatering; fed at centrifuge.

The Croton project would not generate any RCRA-regulated hazardous wastes. All of the chemicals discussed above would be consumed during the treatment process. Waste washwater and filter-to-waste would be created during the backwashing of the filters. The waste washwater would be treated on-site. Treatment of the waste washwater would produce two additional wastes: solids cake and liquid filtrate. The sludge would consist of iron coagulant, clay and other natural particles and organic matter. After the dewatering process, the sludge cake would be hauled to an off-site disposal facility and the liquid filtrate would be conveyed via sanitary sewer to the Yonkers Joint Treatment Plant. The liquid filtrate may contain traces of aluminum hydroxide. Both the solids cake and liquid filtrate would comply with all applicable pretreatment standards.

The Croton project would also involve the use of mercury, a chemical that would be present in small amounts in the UV disinfection lamps. On a weekly basis, the Croton project would generate 0.00264 pounds of mercury. Old lamps would be hauled off-site to a USEPA-licenses recycling facility. To prevent breakage and contamination of the water, each lamp would be protected by a glass (quartz) sleeve. In addition, workers would be trained in the proper handling of the lamps.

In addition, one 3,000-gallon underground storage tank would be utilized for the storage of diesel fuel for the emergency generators. The size of the fuel storage tank would be based on 24 hours of continuous full-load operation of one generator. All of hazardous materials from the Croton project would be stored and handled in a manner that would prevent improper releases to the environment and/or exposure to site workers, according to applicable Federal, State and local regulations. In addition, reporting under the Emergency Planning and Community Right-To-Know Act (EPCRA) would be completed for the storage and use of chemicals utilized at the Croton project.

4.13.3. Potential Impacts

4.13.3.1. Potential Project Impacts

The first full year of operation for the UV Facility would be 2010. Therefore, potential project impacts are assessed by comparing the Future With the Project conditions against the Future Without the Project conditions for the year 2010.

4.13.3.1.1. Without Croton Project at Eastview Site

Ultraviolet Lamps. The proposed UV Facility would require the use of approximately 10,000 low pressure high output (LPHO) mercury lamps. Each lamp would be protected by a glass (quartz) sleeve to protect it (the lamp) from breakage and to create a barrier between the water to be treated and the actual lamp surface. In case of accidental breakage due to either an external force (during installation or on-line usage) or internal force, the risk of mercury release would be reduced by the presence of the sleeve. The presence of a lamp sleeve also allows lamps to be replaced without having to drain the units. The quartz sleeves are often cleaned automatically, typically with a wiping mechanism and/or cleaning chemicals. However, if the sleeves cannot be cleaned with an automatic on-line mechanism, the UV units must be hydraulically isolated, drained, and the sleeves given a manual cleaning normally in place. This manual cleaning is generally performed with chemicals (detergents or mild acids) and/or ultrasonic baths.

The typical life expectancy of each LPHO lamp is two years; approximately 14 lamps are anticipated to be changed on a daily basis as part of routine maintenance. The protective glass sleeves would serve as a barrier to prevent potential breakage of the lamps and resulting release of mercury to the water being treated. Each lamp would contain a small amount of mercury (0.15 grams). Recent surveys of domestic and European water treatment facilities indicate that lamp breakage is rare and no events involved the breakage of more than a single lamp at any single time. The evaluation below outlines potential exposure scenarios based upon worst-case scenarios, and thus does not factor in controls that would prevent and mitigate potential exposures including rapid cleanup of spills and worker training.

Potential Mercury Release to Air. As part of routine maintenance, workers at the UV Facility would handle mercury lamps during cleaning and replacement of the lamps. When handling the lamps, they could potentially break during their removal from the disinfection unit or if dropped. In that case, workers could be exposed to mercury as a result of lamp breakage and the mercury could subsequently become airborne. The most stringent limit for mercury in the workplace is established by the American Conference of Governmental Industrial Hygienists (ACGIH) at a concentration of 0.025 milligrams per cubic meter. Based on the number of lamps being replaced daily, it is not anticipated that the hazardous levels of vapor would be released. Furthermore, should a breakage occur, appropriate measure would be taken to remediate all possible contamination. Workers would be trained in the proper handling of the lamps to prevent breakage and ensure prompt cleanup of any broken lamps and the associated mercury. Consequently, no potential significant impacts from mercury releases into the air are anticipated to occur.

Potential Dermal Exposure to Mercury. In the event of lamp breakage, there is potential dermal (skin) exposure to workers handling the lamps. Workers would be trained in the proper handling of the lamps to prevent breakage and ensure prompt cleanup of any broken lamps and the associated mercury. Consequently, no potential significant impacts from dermal exposure to mercury are anticipated to occur.

Potential Mercury Release to Drinking Water. At any given time, at least thirty-five (35) disinfection units, each rated at 40 million gallons per day, would be on-line disinfecting water at a rate of approximately 1 million gallons per minute. In rare circumstances, the protective glass sleeve and the lamp tube could break, causing the mercury within the lamp to be released to the water being treated. Under this scenario, the mercury would be diluted to below the maximum contaminant level (MCL) for mercury (2 parts per billion). Survey reports studying potential contamination from mercury lamps indicate that breakage occurs rarely and that multiple lamp breakage does not occur concurrently. However, to determine the effect of a catastrophic event, a worst-case scenario would be the breakage of all 168 lamps from a single disinfection unit. In this case, the mercury would be diluted to the MCL prior to consumption.

For both the typical and catastrophic breakage scenarios, the potential exposure to mercury above the MCL to consumers is not a concern. The worst-case scenario is also unprecedented, making its impact both slight and highly unlikely. Furthermore, the MCL for mercury is based upon long-term exposure to the contaminant over a period of years, and therefore, any potential release of mercury from lamp breakage would not pose a significant adverse impact.

Process-Related Chemicals and Bulk Storage. Equipment and facilities would be provided at the proposed UV Facility to store and feed the chemicals required to maintain the facility. The facilities would be designed in accordance with NYSDOH, NYSDEC, Westchester County Department of Health (WCDOH), and Westchester County Department of Environmental Facilities (WCDEF) requirements. Regulatory requirements encompass chemical storage capacity and secondary containment of chemicals to protect against potential spills. The bulk quantities of process-related chemicals to be stored and used at the proposed facility are summarized below.

Food Grade Acid for Cleaning of Lamps. Cleaning of UV lamps is a significant operation and maintenance issue, and its frequency is dependant on the fouling of the quartz sleeves. Fouling of sleeves is a result of water quality effects such as precipitation of iron, calcium, aluminum, and manganese salts along with other inorganic and organic constituents. A fouling pilot test program would be performed and evaluated for potential fouling effects based on Catskill and Delaware water supply characteristics. The lamps would be cleaned with a food-grade (non-hazardous) acid such as citric or phosphoric acid (phosphoric acid is currently added to the water supply for corrosion control), both of which can be discharged to the sewer with neutralization or hauled off-site for disposal.

Disposal of spent acid would be intermittent and is estimated to be approximately 30,000 gallons per month (this volume includes spent acid from the cleaning of lamps and the flushing of an acid storage tank). The acid would be stored in four 8,000-gallon above grade storage tanks

located inside the UV Facility, each equipped with secondary containment and other appurtenances to prevent potential spills to the environment in accordance with NYSDEC chemical bulk storage requirements. The acid in each tank would be reused approximately ten times before being disposed. If the used acid were discharged to the sanitary sewer (Saw Mill Valley Trunk Sewer to Yonkers Joint Treatment Plant), an industrial pretreatment permit would need to be obtained from the WCDEF. The used acid would first be neutralized with sodium hydroxide to adjust the pH to an acceptable range specified by the WCDEF. The proposed facility would also be required to perform monitoring and recordkeeping specified by the WCDEF. If the used acid were disposed off-site, it would be transported to a licensed facility for proper disposal in accordance with Federal, State, and local requirements.

Fuel Storage. Two 20,000-gallon underground storage tanks would be utilized for the storage of diesel fuel for the emergency generators. Two 20,000-gallon underground storage tanks would be utilized for the storage of fuel oil for the dual fuel boilers. The tanks would be equipped with secondary containment and other appurtenances to prevent potential spills to the environment in accordance with NYSDEC and WCDOH petroleum bulk storage requirements. A work permit and registration for the new storage tanks would be obtained from the WCDOH.

With respect to the underground fuel oil tanks for the boilers, NYCDEP would develop a Spill Prevention, Control, and Countermeasure (SPCC) Plan in accordance with the federal Oil Pollution Prevention regulations promulgated under the Clean Water Act (40 CFR Part 112). These regulations apply to underground tanks with storage capacity of greater than 1,320 gallons. The SPCC Plan would include such information as details of appropriate procedures and containment or diversionary structures used to prevent oil from reaching surface waters (e.g., Mine Brook).

Lead Acid Batteries. As part of the facility's backup power systems (uninterruptible power supplies or UPS), wet cell batteries would be utilized to allow for transition to the emergency generators in the event of an electrical service interruption. The battery system would be configured in eight sets containing 96 cells. The combined system would contain approximately 65,000 pounds of lead and 5,600 pounds of sulfuric acid. These materials are contained in the battery casings, but would also be situated within secondary containment to prevent potential spills to the environment. Used batteries would be transported to a properly licensed recycling facility at the end of their useful life.

Secondary Containment. All chemical storage tanks would be provided with secondary containment with the capacity to hold at least 110 percent of the largest single tank volume in the containment area. Incompatible chemicals would be stored in separate areas. No potentially significant adverse impacts are anticipated to occur from the transport, storage, or usage of chemicals used at the facility.

Trucks carrying chemicals to the facility would have to pass through a security checkpoint before arriving at the designated loading/unloading area. There would also be a chemical containment sump at the fill station that would be capable of holding a 110 percent of the volume of the truck's largest compartment delivering the chemicals. The chemicals can later be pumped out of the sump in the event of a spill during unloading. The chemicals used on-site are the same as

chemicals routinely trucked throughout the region for water treatment plants. None of these chemicals are flammable. The routine and safe transport of these chemicals is well established, and the transport of the required UV Facility chemicals would not pose a potential significant impact.

Process Laboratory Chemicals. The proposed facility would require a process laboratory for monitoring and controlling the disinfection process. The laboratory would be equipped to perform analysis for several water quality parameters. The laboratory would also process other samples for shipment to off-site laboratories for analysis. Several of these analyses use bench top analyzers, which would require a minimal amount of chemicals for sample preparation and instrument maintenance and calibration; the other analyses would be performed using colorimetric processes with commercially-prepared reagent packets. No potentially significant adverse impacts are anticipated to occur from the transport, storage, or usage of the process laboratory chemicals.

Emergency Planning and Community Right-to-Know Act. Under the Emergency Planning and Community Right-To-Know Act (EPCRA), established in 1986 as part of the Superfund Amendments and Reauthorization Act (SARA), there are three subtitles: Subtitle A for emergency planning; Subtitle B for specific hazardous chemical reporting requirements; and Subtitle C for how the public can gain access to information pertaining to chemical and/or hazardous materials quantities at a facility. Chemicals and/or hazardous materials that would be stored at the project site above their Threshold Reportable Quantities (TRQ) must be reported to NYSDEC and to local and State agencies, including local fire and police departments, the Westchester County Local Emergency Planning Committee, and the State Emergency Response Commission (SERC). This allows emergency personnel to determine the location and quantities of chemicals in the event of a release. The standard that is set for the limits of TRQs is determined by factoring in the potential risk and health factor to both human and ecological receptors. Ecological receptors include air, land, and water.

A Tier II Form must be submitted each year by March outlining and reporting quantities of hazardous materials used on-site. Material Safety Data Sheets (MSDS) would be submitted for each chemical in accordance with OSHA's Hazard Communication Standard (29 CFR Part 1910.1200). All hazardous materials containers would be labeled with the chemical name clearly visible (the side or top of the container). The proposed UV Facility would be in compliance with EPCRA.

Waste Disposal. The proposed UV Facility would not generate any RCRA-regulated hazardous wastes through normal operations. All of the chemicals discussed above would be consumed during facility operations. The spent acid from cleaning of the lamps would be neutralized and either discharged to the sanitary sewer or transported off-site for disposal at a licensed facility. Both used/broken lamps and used batteries would be transported to licensed recycling facilities.

4.13.3.1.2. With Croton Project at Eastview Site

Ultraviolet Lamps. The design and use of the LHPO mercury lamps at the proposed UV Facility would remain unchanged with the Croton project being present at the Eastview Site. As noted above, the Croton project would also use UV lamps for disinfection and would generate 0.00264 pounds of mercury per week. The proposed UV Facility would generate an additional 0.032 pounds of mercury per week at the Eastview Site. In either case, with or without the Croton project on the site, the proposed UV Facility would not have any significant impacts related to the use of mercury-containing UV lamps.

Process-Related Chemicals and Bulk Storage. The chemicals used at the Croton project and UV Facility are discussed in Sections 4.13.2.2.2, **Future Without the Project, With Croton Project at Eastview Site** and 4.13.3.1.1, **Potential Project Impacts, Without Croton Project at Eastview Site**, respectively. All chemical storage facilities would be designed in accordance with NYSDEC, NYSDOH, WCDOH, and WCDEF requirements. The routine and safe transport of these chemicals is well established, and the transport of the water treatment chemicals would not be a potential significant impact.

Process Laboratory Chemicals. The Croton project and the proposed UV Facility would each have a process laboratory for monitoring and controlling the respective projects' operations. No potentially significant impacts are anticipated to occur from the transport, storage, or usage of the process laboratory chemicals.

Emergency Planning and Community Right-to-Know Act. Irrespective of whether the Croton project were located at the Eastview Site or not, measures would be taken to ensure that the proposed UV Facility is in compliance with EPCRA.

Waste Disposal. Neither the Croton project nor the proposed UV Facility would generate any RCRA-regulated hazardous wastes through normal operations. Wastes generated would either be discharged to the sanitary sewer system or transported to a licensed recycling or disposal facility, as appropriate.

4.13.3.2. Potential Construction Impacts

The peak construction year for the proposed UV Facility would be 2008. Therefore, construction impacts are assessed by comparing the Future With the Project conditions against the Future Without the Project Conditions for the year 2008.

4.13.3.2.1. Without Croton Project at Eastview Site

Hazardous Materials Management During Construction. During the construction of the proposed facility, the contractor may introduce a variety of hazardous materials to the project site to support the construction activity. The specific types and quantities of hazardous materials stored and used on the construction site would depend on the nature and extent of activities being performed (e.g., excavation, foundation construction, tunneling). In general, various petroleum-related materials would be used to support the operation of vehicles and heavy equipment (e.g.,

diesel fuel, gasoline, lubricants, glycol) as well as hazardous materials used in the construction process itself (e.g., concrete release agents, adhesives, paints and coatings). Each contractor would provide Material Safety Data Sheets (MSDS) for the construction-related hazardous materials that they would introduce to the project site. In addition, these materials would be stored and handled in a manner that would prevent improper releases to the environment and/or exposure to site workers, according to applicable Federal, State and local regulations. These measures would be specified in a Construction Health and Safety Plan to be prepared by the contractor(s) in accordance with the hazardous materials contract specifications and OSHA regulations. All materials would be disposed of in accordance with Federal, State and local regulations.

Hazardous Materials Disturbed During Construction. The average surface elevation across the project site is approximately 346 ft MSL. Groundwater levels range from 4 ft to more than 40 ft below the existing ground surface, or 342 to 306 ft MSL. Construction of the UV Facility and associated structures would require excavation to depths ranging from 10 ft to 60 ft below existing grade. This excavation depth is below the observed water table in some locations; therefore, dewatering would be required during the potential excavation activities.

Based on the history of the site and results from on-site soil and groundwater sampling and geotechnical investigation for the proposed UV Facility, it is unlikely that soils contaminated with hazardous materials would be discovered during excavation and construction of the proposed UV Facility. Most of the significant spill sites in the study area are located hydraulically downgradient from the study site. Corrective action has been performed at most of the spill sites located upgradient from the site and/or the spills have been closed by the NYSDEC. A spill located at the Westchester Penitentiary, which is located upgradient from the study site and has not been closed by the NYSDEC, could have affected resources along the northeastern boundary of the site. However, elevated levels of petroleum-related contaminants were not detected during soil and groundwater testing conducted in the area of potential construction. Any materials detected would be disposed of in accordance with Federal, State and local regulations.

Since some potential structures would extend below the water table, groundwater management (i.e., dewatering, containment) would be necessary during construction of the proposed facility (see [Section 4.15, Water Resources](#)). At this time, it is anticipated that dewatered fluids would be discharged to the on-site stormwater system and ultimately to Mine Brook, requiring a State Pollutant Discharge Elimination System (SPDES) permit. As discussed above, metals, presumably from naturally occurring sources, are present in groundwater in the vicinity of the potential construction, including iron, manganese, magnesium, and antimony exceeding applicable NYSDEC AWQs. Pre-treatment of extracted groundwater may be required to remove these metals from the dewatering fluids prior to discharge. Such treatment would be conducted according to the requirements of the SPDES permit to prevent adverse effects to on-site surface water.

Asbestos and lead paint were identified in the Shaft No. 19 water sampling building, the CCC pump house, and the CCC laboratory building during hazardous materials surveys of the Eastview Site structures. If these materials are to be disturbed during construction activities,

they would be properly abated according to applicable regulations prior to commencing construction. Prior to construction, the areas where work would occur that have not been previously surveyed would be surveyed. If suspect building materials present in areas not accessed during the hazardous materials survey are to be disturbed, they would be sampled and properly abated, if required, prior to future construction activities.

Based on results from an Environmental Site Assessment and soil and groundwater testing, it does not appear that soil in the area of potential construction has been affected by hazardous materials or petroleum products. Although slightly elevated levels of naturally-occurring metals were detected in the on-site groundwater, dewatered fluids would be treated as warranted to prevent adverse impacts to the environment. Building materials containing lead and/or asbestos would be properly abated prior to commencing construction activities to prevent exposure to on-site workers and the environment. Therefore, no significant hazardous materials impacts would occur during construction in the Future With the Project.

4.13.3.2.2. With Croton Project at Eastview Site

Hazardous Materials Management During Construction. The overall quantity of hazardous materials introduced to the project site by the proposed UV Facility to support construction activities would not increase with the Croton project at the Eastview Site. Siting the Croton project at the Eastview Site would not have any incremental hazardous material impacts.

Hazardous Materials Disturbed During Construction. With the introduction of the proposed UV Facility to the Eastview Site with the Croton project, the amount of materials disturbed would be similar to the amount of the proposed UV Facility were on the site alone. Based on this analysis, no significant hazardous materials impacts would occur during construction in the Future With the Project even if the Croton project were built on the Eastview Site.

4.13.4. Potential Impacts of Relocating the Hammond House

NYCDEP may choose in the future to relocate the Hammond House from the Eastview Site to another location as part of the proposed UV Facility project due to security concerns associated with a private residence being located on the same site as critical components of the City's water system. As shown in [Section 7, Alternatives, Figure 7-8, Full Build-Out](#), which shows the NYCDEP's comprehensive long-term plan for the site, the Hammond House would be an isolated residential use surrounded by NYCDEP's water supply facilities.

A hazardous materials inspection of the private residence has not been conducted at this time. If the determination is made that the Hammond House needs to be relocated off-site, more information on the house itself would need to be acquired to better define the potential impacts. The Hammond House is an historic structure requiring "special handling" and site investigative activities.