

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

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4.18. SOLID WASTE

4.18.1. Introduction

This section examines the production, management, and collection of current and future solid waste potentially generated at the proposed Catskill/Delaware UV Facility (UV Facility) at the Eastview Site. This site is located in the Towns of Mount Pleasant and Greenburgh, Westchester County, New York. A study area of one-mile surrounding the Eastview Site was utilized in conducting this analysis. The assessment also describes how solid waste is and would be managed in light of the *Solid Waste Management Plan, Westchester County Department of Environmental Facilities*¹. The methodology used to prepare this analysis is presented in **Section 3.18, Data Collection and Impact Methodologies, Solid Waste**.

4.18.2. Baseline Conditions

The New York State Solid Waste Management Act of 1988 (updated in 1999-2000)² and the New York State Department of Environmental Conservation (NYSDEC) Regulations (Official Compilation of Codes, Rules and Regulations of the State of New York, NYCRR, Part 360-15)³ establish a hierarchy of waste management techniques to minimize reliance on landfills by maximizing waste prevention and recycling. In fact, the State established a target goal of reducing waste by eight to ten percent, and having 40 percent of waste being recycled by 1997⁴. NYSDEC also maintains a comprehensive register of all permitted solid waste landfills within the State. According to the Active Solid Waste Facility Register⁵, there are no waste disposal facilities within the study area.

Westchester County's *Solid Waste Management Plan* is consistent with all state regulations and guidelines and focuses on waste reduction, recycling, and reuse. Under the State and County plans, the integrated solid waste management system has a goal of maximizing waste reduction, recycling, reuse, and energy recovery.

The Westchester County Department of Environmental Facilities, Division of Solid Waste serves as a resource for municipalities in the management of solid waste. The Westchester County Refuse Disposal District No. 1 consists of solid waste transfer stations (Brockway Place Transfer Station, South Columbus Avenue Station, Thruway Transfer Station); Charles Point Resource Recovery Plant (a waste-to-energy plant in Peekskill, NY); a fleet of tractors and transfer trailers for waste hauling and recyclable containers for hauling recyclable materials; a landfill at Sprout

¹Westchester Department of Environmental Facilities. 1996. <http://www.westchestergov.com/envfacil/SWMIntroText.htm>

²New York State Department of Environmental Conservation. 2000. New York State Solid Waste Management Plan: 1999-2000 Update. <http://www.dec.state.ny.us/website/dshm/prgmngnt/2kupdte.pdf>

³New York State Department of Environmental Conservation. November 24, 1999. Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York 6 NYCRR. <http://www.dec.state.ny.us/website/regs/360v.htm>.

⁴New York State Department of Environmental Conservation. 2002. <http://www.dec.state.ny.us/website/dshm/sldwaste/index.htm>

⁵New York State Department of Environmental Conservation. 2002. DEC Environmental Navigator. <http://www.dec.state.ny.us/website/imsmaps/decnav/viewer.htm?Title=DEC%20Environmental%20Navigator>

Brook solely permitted for disposal of ash residue from the Charles Point Facility; a Material Recovery Facility (MRF); and various equipment for organic yard waste processing and transport.

The Westchester County Refuse Disposal District No. 1 is responsible for the transportation and disposal of Municipally Collected Solid Waste (MSW); municipal solid waste removal is provided to residential properties only; commercial and industrial properties are required to contract private haulers. In District No.1, 36 of Westchester County's 44 municipalities have entered into an Inter-municipal Agreement⁶. Under the agreement, the municipalities collect Municipal Solid Waste (MSW) and have committed to reducing the amount of solid waste disposed. Commercial organizations are not part of the agreement, but organizations with more than 100 employees are required to establish a similar solid waste management plan. Since 1985, the 36 municipalities have sent their solid waste to the Charles Point Resource Recovery Facility; this represents approximately 90 percent of the County's population. The Charles Point Facility has a permitted throughput capacity of 710,000 tons per year. Municipally generated solid waste delivered to the facility amounted to 666,025 in 2002 with private carters and direct haul waste composing the remaining balance. The facility has recently completed a major retrofit to meet the new Federal Clean Air standards.

In 1992, Westchester County adopted a Source Separation Law that developed an integrated solid waste management plan to fulfill the County's responsibility as a New York State designated planning unit. Under this law, the Material Recovery Facility (MRF) was established. The MRF received commingled recyclables from 35 municipalities (each municipality is responsible for handling, transportation and disposition of solid waste including yard waste and leaves). At the MRF, operators separate various market items. This facility provides the County with a cost effective method of waste management.

4.18.2.1. Existing Conditions

4.18.2.1.1. Eastview Site

The Eastview Site is located in the Towns of Mount Pleasant and Greenburgh. No solid waste is generated from the site except for minimal household solid waste generated by the Hammond House on the north parcel (within the Town of Mount Pleasant).

Town of Mount Pleasant. In the Town of Mount Pleasant, municipal solid waste removal is provided to residential properties only. Commercial and industrial properties are required to contract a private hauler individually. Solid waste from the Town is typically transported to the Westchester County-operated Charles Point Resource Recovery Plant. As with solid waste, recycling services are only provided by the Town for residential properties and all other properties must contract individually. Recyclables from the Town are hauled to the County-operated Recycling Center in the City of Yonkers.⁷

⁶ Westchester County Department of Environmental Facilities. 2002. Solid Waste Management. <http://www.westchestergov.com/envfacil/SWMIntroText.htm>.

⁷ Information provided by Robert Guena, P.E. of the Town of Mount Pleasant Water and Sewer Districts, in a letter dated June 13, 2000.

Town of Greenburgh. Commercial and industrial properties within the Town of Greenburgh are permitted to use the Town solid waste removal system. This service is provided for a fee, which is dependent on the quantity of material removed. The solid waste removed from the Town of Greenburgh is transported to the Yonkers Transfer Station, which has a capacity of 1,000 tons per day. The Town of Greenburgh currently recycles pulp, co-mingled material, yard waste, and wood, not including construction debris.⁸

4.18.2.1.2. Study Area

As described in **Section 4.2, Land Use, Zoning, and Public Policy**, the Eastview Site is surrounded to the north, east, and west by the Westchester County Valhalla Campus (Grasslands Reservation). Grasslands Reservation is a large landscaped campus containing medical facilities, transportation and public safety facilities, and a correctional complex (the Westchester County Correctional Complex). The Cross Westchester Executive Park to the south and west and the Catskill Aqueduct and residences to the east border the City-owned parcel. The Cross Westchester Executive Park is a corporate campus of modern commercial and industrial buildings.

On average, commercial properties can generate approximately 13lbs/week/employee (based on a 40-hour, 5 day workweek). A residential property generates approximately 41 lbs/week of solid waste. The municipality would collect solid waste generated by residences in the study area, while commercial and industrial properties may be responsible for contracting with private haulers. Solid waste generated within the study area is transported to the Charles Point Resource Recovery Facility.

4.18.2.2. 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 facility. The anticipated peak year of construction is based on the peak number of workers.

For each year, two scenarios are assessed: one in which the NYCDEP Croton Water Treatment Plant project (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 north 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 project has been approved by the Town of Mount Pleasant and would be located in the southwest corner of the north parcel. The location of the Administration/Laboratory Building is less certain, however, as the Eastview Site is one of several properties currently being considered as a possible site, and no siting decision has been made. In addition to these projects, NYCDEP's Kensico-City Tunnel 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 to the extent to which information is available. They are all separate actions from the proposed facility and would undergo their own independent environmental reviews.

⁸ Per a telephone conversation with Rich Fon from the Town of Greenburgh Engineering Dept. on June 22, 2000.

4.18.2.2.1. Without Croton Project at Eastview Site

It is anticipated that a minimal increase in solid waste produced the Eastview Site through 2010 would result with the construction of the NYCDEP Police Precinct, Administration/Laboratory Building and the KCT projects. The precinct would be located on the southwest corner of the north parcel. It is likely that the Eastview Site would be a major staging area for the KCT. The NYCDEP would arrange for waste to be collected and disposed of through a private hauler.

The Hammond House, the sole residence on the site, would still be privately owned, and would generate approximately 41 lbs/week of household solid waste. This solid waste would continue to be collected by the municipality as a private residence. Residential neighborhoods commercial and business establishments within the study area would continue to have solid waste collected and disposed of as under existing conditions.

4.18.2.2.2. With Croton Project at Eastview Site

In addition to the projects identified above, the Croton project (an additional NYCDEP project) could be developed on the north parcel, depending on the outcome legal challenges to the preferred Mosholu Site. Should the Mosholu Site be determined not to be viable, the Croton project would move forward at the Eastview Site. If this occurs, both the Croton project and the proposed UV Facility would be under construction at the same time.

Worker created solid waste was calculated using the *CEQR Technical Manual* generation rates. The Croton project construction generated solid waste include worker generated solid waste, excavation and miscellaneous construction debris. This waste would be collected through an agreement between the City and private hauler. This waste would be handled by the existing solid waste system and would not result in a significant increase.

The maximum number of construction employees needed on-site has been determined to be 652, each generating approximately 13 lbs/week of solid waste. The total amount of solid waste generated would be 8,476 lbs/week (652 x 13 lbs/week). This volume of solid waste would be collected and transported off-site by a private hauler.

Approximately 577,000 cubic yards (cy) would make up the excavated material from the main treatment building, including the raw water pumping station. Of the 577,000 cy approximately 545,000 cy would be transported off-site for disposal and 30,000 would be stockpiled on-site for use as fill during construction activities.⁹

Other solid waste that would be generated as a by-product of construction would be highly variable in nature; it would include concrete forms, packaging, scraps of pipe, ductwork, sheetrock, electrical materials, and concrete block used for some interior walls. This amount of

⁹ Excavation quantities for a treated water connection to the future KCT to be determined based upon the location of the future KCT downtake structure.

waste would be added to the worker generated waste described above. The increase in solid waste generated from construction activities would be minimal.

By the anticipated year of operation, potential impacts associated with the Croton project would include worker-generated solid waste and residual waste from the Dissolved Air Flotation (DAF) process. Therefore, anticipated worker-generated solid waste would be approximately 595.4 lbs/seven-day week, which includes the 41 employees working the M-F shifts, as well as 12 employees working weekend off-shifts. In addition, the water treatment process would generate waste backwater from cleaning the filters. In turn, this backwater would be treated to form solids through settling, thickening and then dewatering creating dewatered sludge cake. Under average conditions the cake-like material would be generated at an average rate of 15,700 lbs/day in dry weight.

There are a total of 960 UV lamps for Croton (48 lamps per unit, 20 units; 16 duty, 4 standby). The Croton project lamps would contain a small amount of mercury, about 0.15 grams each lamp. Approximately 245 lamps would need to be replaced per year. The weekly quantity of mercury would generate 0.00156 lbs/wk (245 lamps, 5 lamps/week, 0.673 lamps/day x 0.15 grams x 7days/wk equals 0.706 grams/wk). These lamps would be hauled off-site to a USEPA Licensed Recycle Facility. This would be done under contract between City and the private hauler.

With the construction of the NYCDEP Police Precinct, Administration/Laboratory Building, and the KCT projects on the Eastview Site, the NYCDEP would arrange for waste to be collected and disposed through a private hauler. The additional waste would be transported to the Charles Point Resource Recovery Facility; this increase to the facility is anticipated to be minimal and would likely not result in a significant adverse impact.

4.18.3. Potential Impacts

4.18.3.1. Potential Project Impacts

Two scenarios from which to assess the proposed facility's potential impacts have been considered. Both include the NYCDEP Police Precinct, Administration/Laboratory Building, and KCT projects, but only one scenario includes the Croton project. The Croton project could be developed in the Town of Mount Pleasant as well, depending on the outcome of legal challenges to the preferred Mosholu Site. Should the Mosholu Site be determined not to be viable, the Croton project would move forward at the Eastview Site, and both the plant and the proposed UV Facility would be under construction at the same time.

4.18.3.1.1. Without Croton Project at Eastview Site

Potential impacts associated with the proposed facility include worker-generated solid waste (e.g., paper, food, cardboard, aluminum, plastic, etc.) and wastes generated as a by-product of the UV process (e.g. UV lamps, which contain a small amount of mercury; Citric Acid, and other food grade acid that could be used for the cleaning of the lamps).

Worker created solid waste was calculated using the *CEQR* Technical Manual generation rates. The total number of NYCDEP employees has been estimated to be approximately 31 (plant in service). Weekday employees, who work 40 hours in a 5-day work week, would each generate approximately 13 lbs/week of solid waste. Of the 31 employees, the administration staff (during a M-F, 9AM-5PM shift) consists of 4 employees that would generate total of 52 lbs/week. The maintenance staff consists of 10 employees that would be part-time dedicated (M-F) and would generate a total of 65 lbs/week (10 employees x 2.6 lbs/day/person x 2.5 days). The operations staff that includes, the day shift (7AM-3PM), afternoon shift (3PM-11PM) and night shift (11PM-7AM) are responsible for a 24 hour/7 day a week shift. The day shift includes 6 employees and would have a total solid waste amount of 109.2 lbs/week (6 x 2.6 lbs/day/person x 7days). The afternoon shift of 6 employees would have a total solid waste amount of 109.2 lbs/week (6 x 2.6 lbs/day/person x 7 days). The night shift that consists of 5 employees would generate 91 lbs/week of solid waste (5 x 2.6 lbs/day/person x 7 days). The total solid waste generated during the day shift (M-F) is 226.2 lbs/week. The solid waste generated during the off-shifts is 200 lbs/week. Therefore the anticipated worker-generated solid waste for the proposed facility would be approximately 426 lbs/week.

The solid waste generated from the proposed facility would be collected and disposed of through an agreement between the City and a private hauler and would not result in a significant impact to the existing handling and disposal system within the study area. Currently, the County facility operates within its existing permitted capacity. The addition of 426 lbs/wk to the existing waste stream from the Eastview Site would be considered an insignificant amount in comparison to the system's total capacity and, therefore, is not anticipated to result in a significant impact.

The proposed UV Facility would require the use of low pressure high output (LPHO) mercury lamps. The estimated total number of UV lamps to be contained in the facility is 9,408 lamps (168 lamps per unit x 56 units). As the useful life of a lamp diminishes, it would need to be replaced. According to the manufacturer's recommendations, the lamp life expectancy ranges between 10,000 and 12,000 hours. Therefore, each lamp should be changed roughly every 694 days (1.9 years)¹⁰. Approximately 13.6 lamps per day would be changed and generated as waste at the proposed facility (9,408 lamps/694 days). The lamps would contain a small amount of mercury, about 0.15 grams each. The weekly quantity of mercury generated would be 0.032 lbs/week (14 lamps/day x 0.15 grams Hg x 7 days/week equals 14.7 grams/week). Lamps containing mercury would be hauled off-site to a USEPA Licensed Recycle Facility. This would be done under contract between NYCDEP and a private hauler. A discussion concerning the mercury lamps is included in the Hazardous Materials analysis (see [Section 4.13, Hazardous Materials](#)).

The frequency of lamp cleaning is a function of the water quality and system operating conditions. A pilot study would be conducted to obtain the information needed to determine the actual anticipated lamp cleaning frequency for the Cat/Del UV system. Cleaning of UV lamps is a significant operation and maintenance issue, and its frequency is dependent on the fouling of the quartz sleeves (which surrounds the UV lamps and protect them from breakage). Fouling of the sleeves is a result of water quality effects such as precipitation of iron, calcium, aluminum,

¹⁰ 1.9 years was based on lamp life of 10,000 hours assuming approximately 60% flow on average = 10,000/0.6 = 16,700 hours = 1.9 years.

and manganese salts along with other inorganic and organic constituents. Although automatic lamp cleaning frequencies are typically based on manufacturer's recommendations to follow real work operating conditions, currently-industry information is insufficient to predict fouling based on water supply characteristics. The upcoming UV fouling pilot study would observe the impact of fouling and chemical cleaning under warm and cold conditions, and the results would be used to enhance the chemical cleaning system design criteria.

Lamp cleaning sleeves are typically cleaned either mechanically or chemically. A chemical bath cleaning system would be implemented for the proposed UV Facility. Each UV unit would be periodically taken off-line, and a food-grade (non-hazardous) acid such as citric or phosphoric acid (the latter is currently added to the water supply for corrosion control) would be circulated through the UV unit. Each chemical cleaning cycle would last up to approximately five hours per unit. A UV disinfection unit would be isolated and drained; chemical cleaning solution would then be added until the UV unit is filled with solution and the quartz sleeves are completely submerged. The UV unit would then be rinsed with plant water, to remove excess cleaning solution from the interior of the shell before it is returned into service. The rinse water would drain to a holding tank, where it would be neutralized prior to disposal (either through discharge to sewer or by hauling off-site).

UV units would be oriented such that the lamps from adjacent units can be accessed from the aisle between the units. Platforms would be provided so that operators can easily access the lamps for maintenance. UV lamps would be replaced periodically based on hours of operation and lamp aging. The typical life expectancy of each LPHO lamp is approximately 10,000 to 12,000 operating hours.

Concentrated chemical (phosphoric or citric acid) would be delivered and stored in two aboveground chemical bulk storage tanks. The concentrated chemical would be diluted with plant water through chemical educators, and would be delivered to four day tanks. During Final Design, the design criteria would be refined (after the fouling pilot study results have been evaluated). Since the cleaning frequency is presently difficult to predict based on raw water quality, a conservative cleaning philosophy has been used. The diluted cleaning solution in the day tanks would be replenished after four to six cleanings have been completed (about 8,400 gallons periodically). The entire proposed UV Facility would generate approximately 30,000 gallons of spent chemical cleaning solution per month. The waste volume would be temporarily stored in two 15,000-gallon underground storage tanks, each equipped with secondary containment and other appurtenances to prevent potential spills to the environment, in accordance with NYSDEC chemical bulk storage requirements.

Waste cleaning solution would be neutralized and intermittently discharged to the sanitary sewer or hauled off-site. If the spent acid is discharged to the sanitary sewer, an industrial pretreatment permit would be obtained from the Westchester County Department of Environmental Facilities (WCDEF). If the used acid is disposed of off-site, it would be transported to a licensed facility for proper disposal in accordance with Federal, State, and local requirements. This decision would be made at a later time, during the Final Design phase.

4.18.3.1.2. With Croton Project at Eastview Site

As noted above, the Croton project may be located on the Eastview Site in the Future Without the Project. The incremental solid waste effects from operation of the proposed facility would be the same in the Future With the Project regardless of whether the Croton project is operating on the Eastview Site. Therefore, no significant adverse impact is anticipated to the existing solid waste disposal system.

4.18.3.2. Potential Construction Impacts

The Future With the Project considers the anticipated peak year of construction (2008) for the proposed facility. For the peak year, two scenarios are assessed: one in which the 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 north parcel. Therefore, potential construction impacts have been assessed by comparing the Future With the Project conditions against the Future Without the Project conditions for the year 2008 for both of these scenarios.

4.18.3.2.1. Without Croton Project at Eastview Site

At the Eastview Site, the construction-generated solid waste would be produced from worker generated solid waste, excavation, and miscellaneous construction debris. The maximum number of construction employees needed on-site has been determined to be 480, each generating approximately 13 lbs/week of solid waste. Therefore, total amount of solid waste generated would be 6,240 lbs/week (480 x 13 lbs/week). This volume of solid waste would be collected and transported off-site by a private hauler.

Additional solid waste material would be generated as a byproduct of construction. This material would be highly variable in nature; it would include cardboard, wood, block, plastics, scrap steel and pipe wire. Construction debris would generate 40 cy/week and would be kept in a 40 cy dumpster on-site and disposed of by a private hauler once a week. Construction debris would total 10,400 cy over the 5-year construction schedule (40 cy x 52 weeks x 5).

It is anticipated that the solid waste produced by construction workers as well as construction debris would not result in a significant adverse impact on local or regional solid waste streams. Increases to the local solid waste collection system as a result of construction of other NYCDEP proposed projects at the Eastview Site are also anticipated to be minimal and would likely not result in a significant adverse impact on local or regional solid waste streams.

Excavated material at the Eastview Site would be as follows: . approximately 900,000 cy of material would be excavated during construction. Of the 900,000 cy of excavated material approximately 500,000 cy would be stored on-site in stockpile areas for use as backfill around the buildings and structures. Approximately 220,000 cy of excavated material would be used for filling of the Catskill and Delaware Aerators. Approximately 130,000 cy of rock and 50,000 cy of soil would be disposed of off-site.

4.18.3.2.2. With Croton Project at Eastview Site

As noted above, the Croton project may be located on the Eastview Site in the Future Without the Project. As the Croton project would occupy approximately 30 acres during construction, additional excavated material would be required to be hauled off-site, due to insufficient on-site storage area. However, the incremental solid waste effects from construction of the proposed facility would be the same in the Future With the Project regardless of whether the Croton project is under construction on the Eastview Site. Therefore, no significant adverse impact is anticipated to the existing solid waste disposal system.

4.18.4. 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 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](#), 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.

The Hammond House would generate minimal household solid waste. Approximately 41 lbs/week of household solid waste would be generated at the Eastview Site from this private residence. Discontinuance of the solid waste removal by the municipality would result from the relocation.