

**FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR
THE CROTON WATER TREATMENT PLANT**

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8. OFF-SITE FACILITIES

8.1. NEW CROTON AQUEDUCT SHAFT SITES

8.1.1. Introduction

This section describes work associated with the construction and operation of the proposed Croton Water Treatment Plant at sites remote from the actual water treatment plant site. These sites include work on the New Croton Aqueduct (NCA) and at existing and future distribution connection in the vicinity of Jerome Park Reservoir.

If the proposed Croton water treatment plant were to be built at the Eastview Site and the New Croton Aqueduct (NCA) is chosen as the preferred means of long-term treated water conveyance, extensive work would be done on the NCA to allow this 115-year old conduit to convey pressurized water. This pressurization work would take place after the completion of the WTP, beginning in 2010. The proposed locations that would be used for construction staging areas and access point by workers and materials for this proposed rehabilitation work are NCA Shaft No. 9 (Village of Sleepy Hollow, NY), NCA, the proposed Eastview Croton Water Treatment Plant Site (Mount Pleasant), Shaft No. 14 (Village of Ardsley, NY), NCA Shaft No. 18 (City of Yonkers, NY), and Gate House No. 1 (Borough of the Bronx, NY). In addition to these construction sites, delivery of small materials, ventilation, and supply access could take place at Shafts 10, 11A, 11C, and 16. There would also be construction in the vicinity of the Jerome Park Reservoir for new Croton water distribution facilities and connections, which would occur between 2007 and 2011 for all water treatment plant sites as described in Section 8.2, Work Required Work at Jerome Park Reservoir for All Croton Water Treatment Plant Site Alternatives. In addition, work related to the treated water conveyance pressurization alternative for a water treatment plant at the Eastview Site would occur beginning in 2010. This section presents a description of the existing conditions at each proposed location, along with an analysis of future conditions at each location both with and without the proposed pressurization work.

The pressurization work would take place primarily in the NCA, below ground, except for a few thousand feet of cut and cover work at Shaft No. 18 in Yonkers where the NCA is actually above grade. Most of the potential environmental impacts therefore would be confined to the Shafts where workers and materials would gain access to the NCA. The sections that follow this introduction describe potential environmental impacts of the proposed pressurization work at each major access point.

There could be potential impacts to historical resources, water resources, and hazardous materials along the length of the aqueduct remote from the shafts. These potential impacts are described here and in the Water Resources section as described below.

The historic nature of the New Croton Aqueduct is characterized by the hand-laid brickwork that forms the tunnel liner except for the sections that were designed to hold pressurized water. The proposed pressurization of the remainder of the aqueduct below the proposed treated water connection south of Shaft No. 10 would involve covering the

brick liner with either cast-in-place concrete or steel liner plates. Both these actions would prevent future inspection of the historic brickwork and would potentially result in a significant adverse impact to the historic nature of these portions of the New Croton Aqueduct. This impact is described in the context of the existing historic resource in Section 5.12.

In addition to the potential for direct impacts due to the construction at the NCA access points, there is a possibility that the operation of the NCA under pressurized conditions could affect local groundwater conditions along the NCA alignment. Under current conditions, the NCA collects groundwater through weep holes in its perimeter from those areas where the aqueduct passes below the water table; with the pressurization these weep holes would be sealed. An estimate of the change in groundwater levels and an analysis of potential local impacts from a possible elevation of the local water table are presented in Section 5.15, Water Resources.

If the local water table would rise, as described above, there is the potential that existing contaminated soils and/or groundwater could be mobilized. This potential movement of groundwater could transport contaminants into previously uncontaminated areas. This potential impact is described in Section 5.13.

Irrespective of the final choice for the Croton Water Treatment Plant site, some “baseline” rehabilitation and maintenance of the NCA is necessary in order to structurally stabilize the 115-year old conduit and to minimize infiltration of groundwater and leakage of the Croton water to groundwater. This work would be completed before the start of the Croton WTP construction, conducted as part of a separate NYCDEP project and will not be described as part of this proposed project. The first phase of the Baseline Rehabilitation work was the subject of a separate coordinated environmental review for which the NYCDEP prepared a Negative Declaration on June 7, 2004. The second phase of the Baseline Rehabilitation work will also be subject to a separate coordinated environmental review based on the information gathered as part of the first phase.

In addition to the pressurization work associated with the Eastview Site alternative that would convey water through the NCA, work would be required at Gate House No. 1 if the Mosholu Site were selected. This work and its potential impacts are described in Section 8.5. The other water treatment plant site alternatives would not require any additional work at any of the shaft sites.

All of the proposed Croton project site alternatives and treated water conveyance alternatives require some work at and in the vicinity of Jerome Park Reservoir. This work is described in Section 8.2 and is summarized in Table 8.1.1-1. Table 8.1.1-1 also summarizes the type of work required at the NCA shaft access points. Finally, it is possible that potassium permanganate may have to be added to the raw water at either the Croton Lake Gate House (Eastview Site alternative) or at Gate House No. 5 at Jerome Park Reservoir after the proposed plant is in operation to control color-producing manganese in the water. This possibility is included in the following table and described in the project descriptions.

TABLE 8.1.1-1. OFF-SITE FACILITIES CROTON WTP WORK

Location	Eastview NCA	Eastview KCT	Mosholu	Harlem River
Croton Lake Gate House - Used to select the best quality water at the desired flow rate to enter the NCA for conveyance to the Croton WTP	Install Potassium permanganate equipment for intermittent treatment of iron and manganese.			
	Upgrade existing control system to communicate with the new control system at the WTP. 2009.		2010	
NCA Shaft No. 9 – Would convey water into Welker’s Brook, which flows into the Pocantico River in the event of an overflow in the NCA	Rehabilitate existing blow-off outlet at this Shaft.			
	Could receive more frequent blow-offs during operations.			
	2011-2015			
NCA Shaft No. 14 - Would allow water to flow from the NCA to Sprain Brook in the event of an overflow in the NCA	Overflow would be sealed. Would be modified to accommodate pressurized flow in the NCA.			
	2011-2015			
NCA Shaft No. 18 - Would allow water to flow from the NCA to Tibbett’s Brook in the event of an overflow in the NCA	Would be modified to accommodate pressurized flow in the NCA.			
	2011-2015			
Gate House No. 1 - Used to direct flow either to both basins of JPR via the NCBA or to Manhattan via the NCA	Would be modified to accommodate pressurized flow to the NCA.	Rehabilitate with worker safety improvements.	Rehabilitate with automatic sluice gates and worker safety improvements.	Rehabilitate with worker safety improvements.

TABLE 8.1.1-1. OFF-SITE FACILITIES CROTON WTP WORK

Location	Eastview NCA	Eastview KCT	Mosholu	Harlem River
	2011-2015		2009-2010	
Jerome Park Reservoir - Operates as a raw water reservoir for the Croton system	Emergency water supply		Add ramp in the south basin in the vicinity of Gate House No. 6. 2009-2010	
Gate House No. 7 - Interconnection to City Water Tunnel No. 1	Rehabilitate interior and exterior.	Seal pipe connections to the distribution system. The structure would not be used for this alternative.	Rehabilitate interior and exterior.	
	Refurbish and automate sluice gates in the west portal to the JPR.		Refurbish and automate sluice gates in the west portal to the JPR.	
	2011- 2014		2006-2007	
Mosholu Pumping Station - Lifts about 50 mgd of Croton water from JPR into Shaft No. 3 from where it can directly supply High Level service areas of the Bronx or be transmitted to other areas of the Bronx and Manhattan via City Tunnel No. 1	Remove pumps, piping, and motors, place off-line. 2011 - 2012			
Gate House No. 5 - Used to supply Shaft No. 21	Rehabilitate interior and exterior.	Seal pipe connections to distribution system. The structure would not be used for this alternative.	Rehabilitate interior and exterior.	
	Remove the corrosion inhibitor and chlorination equipment after the Croton WTP is completed.		Remove the corrosion inhibitor and chlorination equipment after the Croton WTP is completed.	
	Remove existing 16-inch diameter raw water pipe to the Demonstration Plant.		Remove existing 16-inch diameter raw water pipe to the Demonstration Plant.	
	Seal Chamber No. 22. Seal connections to Gate House		Seal Chamber No. 22 and refurbish and automate existing sluice gates.	

TABLE 8.1.1-1. OFF-SITE FACILITIES CROTON WTP WORK

Location	Eastview NCA	Eastview KCT	Mosholu	Harlem River
	Nos. 2 and 3 and refurbish existing sluice gates.		Install Potassium permanganate storage and mixing facilities.	
	2011 - 2014		2009-2010	
NCA Shaft No. 21 - Used as transfer conduit for water from the JPR into the NCA; provides Croton water to the Low Level service areas of the Manhattan distribution system	Connection from Shaft No. 21 to a new Shaft Chamber north of Gate House No. 5. Plug north of Shaft No. 21 for Low Level Service to Manhattan.	Seal pipe connections. The structure would not be used for this alternative.	Plug south of Shaft No. 21 to separate raw water from treated Low Level Service to Manhattan.	Continue to use to convey raw water from JPR southward to the WTP.
	Access point to NCA for construction crews and materials.			
	Rehabilitation and Upgrades.			
	2011-2014		2009-2010	
Gate House No. 6/Microtrainer Building - Connects the south basin of JPR to the Bronx Low Level service area	Gate House No. 6 would be taken offline and retained for Bureau of Water Supply use.			
	The Microtrainer building would be demolished.			
	2011-2014		2009-2010	
Gate House No. 3 - Used to supply Gate House No. 5 from South Basin	Minor structural rehabilitation.	Seal pipe connections. The structure would not be used for this alternative.	Minor structural rehabilitation.	
	Close two 48-inch diameter gate valves to the distribution system and connection to Gate House No. 5		Close two 48-inch diameter gate valves to the distribution system	
	2011-2014		2009-2010	

TABLE 8.1.1-1. OFF-SITE FACILITIES CROTON WTP WORK

Location	Eastview NCA	Eastview KCT	Mosholu	Harlem River
Gate House No. 2 - Used to drain JPR and supply Gate House No. 5 from North Basin	Provide a new overflow facility for the north basin of Jerome Park Reservoir: Extend the 30-inch diameter drain line from the dividing wall to Gate House No. 2.	Seal pipe connections. The structure would not be used for this alternative.	Provide a new overflow facility for the north basin of Jerome Park Reservoir: Extend the 30-inch diameter drain line from the dividing wall to Gate House No. 2.	
	Close 48-inch diameter gate valve to the distribution system and connection to Gate House No. 5.			
	2011-2014		2009-2010	
New Shaft Chamber - Would serve as a central point for distributing treated water to the High Level and Low Level services	Use raised bored construction to drill New Shaft Chamber using the new treated water tunnel from the NCA as access point.	The construction of the New Shaft Chamber would not occur for this proposed alternative.	Use raised bored construction to drill New Shaft Chamber using the new treated water tunnel from the WTP as access point.	
	2008-2011			
Flow Meter Chamber A - Would measure the flow from the new Shaft Chamber to the East Bronx and South Bronx Low Level service connections	Construct a new 48-inch diameter pipe from the proposed chamber to the existing Valve Chamber "C" to connect to the East Bronx Low Level service.	The construction of Flow Meter Chamber A would not occur for this proposed alternative.	Construct a new 48-inch diameter pipe from the proposed chamber to the existing Valve Chamber "C" to connect to the East Bronx Low Level service. Construct a second new 48-inch diameter pipe to an existing butterfly valve that connects to the South Bronx Low Level service just north of the dividing wall.	
	2008-2011			

TABLE 8.1.1-1. OFF-SITE FACILITIES CROTON WTP WORK

Location	Eastview NCA	Eastview KCT	Mosholu	Harlem River
Flow Meter Chamber B - Would measure the flow from the new Shaft Chamber to City Tunnel No. 1, Shaft No. 3	Construct two new 48-inch diameter pipes from the proposed chamber to the existing 48-inch pipes in Goulden Avenue going north.	The construction of Flow Meter Chamber B would not occur for this proposed alternative.	Construct two new 48-inch diameter pipes from the proposed chamber to the existing 48-inch pipes in Goulden Avenue going north.	
	2008-2011		2008-2011	
Flow Meter Chamber C - Would measure flow from the new Shaft Chamber to City Tunnel No. 1, Shaft No. 4 and City Tunnel No. 3, Shaft No. 4B	Construct underground concrete vault containing one 48-inch diameter and one 84-inch diameter Venturi meter.	The construction of Flow Meter Chamber C would not occur for this proposed alternative.	Construct underground concrete vault containing one 48-inch diameter and one 84-inch diameter Venturi meter on existing pipelines.	
	2008-2011		2008-2011	
Flow Meter Chamber D - Would measure the flow from the Shaft No. 21 to the South Bronx Low Level service connection	Construct underground concrete vault containing one 48-inch diameter Venturi meter and connect to existing 48-inch pipelines.	The construction of Flow Meter Chamber D would not occur for this proposed alternative.		
	2008-2011			

TABLE 8.1.1-1. OFF-SITE FACILITIES CROTON WTP WORK

Location	Eastview NCA	Eastview KCT	Mosholu	Harlem River
Valve Chamber A - Connects High Level service pipes to City Tunnel No. 1, Shaft No. 4 and City Tunnel No. 3, Shaft No. 4B	Remove the existing 48-inch diameter interconnection and butterfly valve between the 48-inch and 84-inch diameter pipes and replace with blind flanges. Close the existing 48-inch diameter butterfly valve located on north side of chamber and install blind flange. Remove a section of the 48-inch diameter pipe to install the connection from the new Shaft Chamber to the new Flow Meter Chamber B and construct a bulkhead upstream of the connection.	No work is proposed for Valve Chamber A for this site alternative.	Remove the existing 48-inch diameter interconnection and butterfly valve between the 48-inch and 84-inch diameter pipes and replace with blind flanges. Close the existing 48-inch diameter butterfly valve located on north side of chamber and install blind flange. Remove a section of the 48-inch diameter pipe to install the connection from the new Shaft Chamber to the new Flow Meter Chamber B and construct a bulkhead upstream of the connection.	
	2011-2014		2010	
Valve Chamber C - Contains connections from Gate House No. 5 to the Low Level service of the East Bronx	No work is proposed for Valve Chamber C; remove existing section of each of the 48-inch diameter pipes on the west side of the chamber and place a blind flange on each to separate the distribution system from Gate House No. 5.			
	2009 - 2010			
Jerome Pumping Station - Used to pump water to the Bronx Intermediate Level service area	Place off-line.		Place off-line. Would be used for NYCDEP staff offices	Place off-line.
	2010-2014			