



**Carter H. Strickland, Jr.**  
**Commissioner**

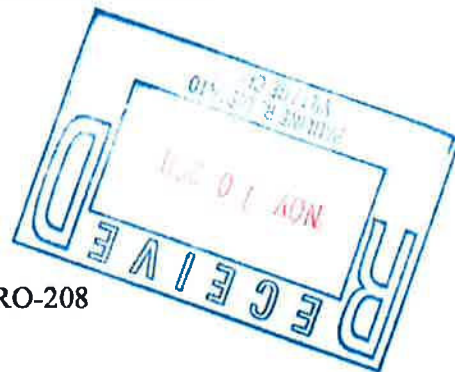
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October 31, 2011

Mayor Leo Wiegman  
Stanley H. Kellerhouse Municipal Building  
1 Van Wyck Street  
Croton-on-Hudson, NY 10520

Re: Reconstruction of New Croton Dam  
NYCDEP Construction Contract Number CRO-208  
Project Update



Dear Mayor Wiegman:

The New York City Department of Environmental Protection (DEP) has been planning to rehabilitate the New Croton Dam, as initially discussed at a DEP presentation to you and other members of the Village Board on June 16, 2008. The presentation provided an overview of the New Croton Dam Rehabilitation and Normal Pool Raise Project as it was envisioned at that time. In October 2010, DEP reduced the scope of the Project as discussed below. The purpose of this letter is to briefly describe the Project as it is now planned.

The New Croton Dam Rehabilitation and Normal Pool Restoration Project, as described in our presentation on June 16, 2008, comprised five major elements: dam rehabilitation, spillway rehabilitation and raise, low-level outlet works reconstruction, supporting site improvements, and tree clearing along the reservoir rim. These elements have been eliminated from the current project except for reconstruction of the low-level outlet works.

Following careful review of the construction schedule required for completing all of the components of the New Croton Dam rehabilitation as initially conceived, and in particular the potential for reliance on the Croton System over the next several years to supplement water supplies, DEP decided to give priority to those elements of the project considered essential. The low-level outlet works provide critical operational and safety functions, including management of state-mandated releases to the Croton River and capability to lower the reservoir level in the event of a dam safety emergency. These functions are currently limited by outdated and inoperable equipment. The elements of work eliminated from the June 2008 project description may be evaluated for implementation as a separate project in the future.

Please be assured that the DEP's decision to restrict the scope of the current project to reconstruction of the low-level outlet works reflects the current condition of the dam, which is safe and meets applicable standards for safe operation. In order to proceed with the outlet works restoration, DEP will obtain a Dam Safety Permit from the New York State Department of Environmental Conservation (NYSDEC) and other necessary permits and approvals.

Reconstruction of the low-level outlet works will be mostly confined to Gatehouse No. 2, which is comprised of the upper gate chamber and the lower valve chamber (see aerial photograph, Attachment 1, and the Site Plan, Attachment 2). The principal work planned for the upper gate chamber includes the following:

- Removing and replacing existing sluice gates with new electrically operated sluice gates
- Removing and replacing existing trashracks with new stainless steel trashracks
- Removing three 48-inch diameter balance valves
- Installing new metal platforms and ladders
- Installing new electric service, level sensors, interior lighting, alarms, and HVAC.

In addition to these improvements, which are all confined to the interior of the upper gate chamber, the existing concrete-and-asphalt roof will be removed and replaced with removable concrete panels that will allow access to the equipment located below.

Principal work planned for the interior of the lower valve chamber includes the following:

- Removing and replacing three (3) 48-inch diameter and three (3) 12-inch diameter pipelines and valves with new electrically operated valves
- Installing new strainers venturis, sleeve valves, steel platforms and new electric service, interior lighting, alarms, ventilation fans and ducts.

The work planned for the exterior of the lower valve chamber includes the following:

- Removing existing lower valve chamber roof and replacing with new removable concrete panels with structural steel beams;
- Installing ventilation opening and fan in roof;
- Installing ventilation opening and louver in wall;
- Removing and replacing railing around the lower valve chamber roof.
- Removing the block wall at the stairs to the valve chamber and replacing it with a gate.

The contractor will utilize an approximately 1,000-foot long by 100-foot wide staging area at the toe of the dam inside the Croton Gorge Park. A chain link fence around the perimeter of the staging area will be installed for the duration of the construction contract. A temporary chain link fence will also be installed along the entire crest of the Dam to create a six-foot wide walkway for pedestrian public access through the work

area. As requested by the NYS DEC Dam Safety group, all trees will be cleared within 30-feet of the downstream toe of the dam. The proposed tree clearing will occur between the south tower and the south abutment.

A narrative description of the project is provided in Attachment 3. We currently anticipate commencement of construction in September 2012, and substantial completion in September 2015.

The project is currently under review by the DEP Bureau of Environmental Planning and Analysis. The potential for impacts on rare species including the bald eagle would be reviewed by NYSDEC and the U.S. Fish and Wildlife Service. DEP is also coordinating with the New York State Historical Preservation Office on this project.

If you have any questions regarding the revised project plans, or would like DEP representatives to meet with you and other members of the Village Board, please feel free to call Paul Costa, P.E., Design Accountable Manager, at (718) 595-5470.

Sincerely,



Paul D. Smith, P.E.

Attachments: Aerial Photograph  
Site Plan  
Project Description

c: Paul Costa, Design Accountable Manager, BEDC  
Lisette Gomez, Associate Project Manager, BEDC  
Chuck Kanu, Construction Accountable Manager, BEDC  
Mark Page, Jr., Chief, BEPA  
Sangamithra Iyer, Project Manager, BEPA  
Mario Finis, Consultant Project Manager, MWH  
Charles M. Kahler, Consultant Assistant Project Manager, MWH  
John C. Cannon, Consultant Lead Environmental Scientist, MWH



## **PROJECT DESCRIPTION: RECONSTRUCTION OF NEW CROTON DAM OUTLET WORK**

### **Existing Facility Description**

The New Croton Dam (sometimes referred to as the Cornell Dam) is located on the Croton River, about three (3) miles upstream of its confluence with the Hudson River, near the Village of Croton-on-Hudson, about 35 miles north of New York City. The dam was designed by the Aqueduct Commission of the City of New York and has been owned and operated by the DEP since its completion in 1906. The dam impounds New Croton Reservoir which is the terminal reservoir in the Croton System.

The New Croton Dam is a 297-foot-tall, 1168-foot-long gravity dam, constructed of rubble masonry. The top of the dam is at El. 215.55 ft msl. The dam has a crest width of 20 feet and has a base width of 203 feet at the maximum section. New Croton Dam rises approximately 141 feet above Croton Gorge Park, which is a Westchester County public park situated on the fill on the downstream side of the dam. The New Croton Dam is considered a feat of American engineering and is a structure of historical significance. It has been listed on the National Register of Historic Places by the U.S. Department of the Interior, and the American Society of Civil Engineers has named it a National Historic Civil Engineering Landmark.

The project features include an ungated, side-channel spillway on the right abutment that extends upstream of the main axis of the dam. The spillway has a broad-crested, stepped weir, which has a fixed crest at El. 195.55 ft msl. The flashboards originally on the spillway crest were removed and a portion of the fixed crest was lowered to its current elevation in the 1950s. The spillway weir is 985 feet long and is partially curved in plan. The stepped spillway structure ranges in height from approximately 15 feet at the upstream end to nearly 150 feet where it turns south and joins the main dam. A stepped channel parallel to the spillway axis directs flow to the river channel downstream of the dam.

Three masonry structures are integral with the main dam: Gatehouse No. 1; the South Stairway Tower; and Gatehouse No. 2. Gatehouse No. 1 is used as a water quality lab and has the ability to direct flow into the New Croton Aqueduct. Gatehouse No. 2, located at the junction of the main dam and the spillway, houses the low-level outlet works (blow-off pipes) for the structure. The low-level outlet works are contained in two structures: the Upper Gate Chamber and the Lower Valve Chamber, which together comprise Gatehouse No. 2.

There are three ungated openings in the Upper Gate Chamber, which is located on the upstream side of the dam. Each opening has an invert at about El. 100 ft msl. Water flows through the ungated opening, through another ungated sluiceway, and into a vertical shaft, which is gated at the downstream end. The gates can be opened to allow water to flow through another sluiceway and into a vertical well contained within the upper gate chamber. A balancing valve in the bottom of the well regulates flow through the gatehouse and allows flow to pass to the Lower Valve Chamber.

The Lower Valve Chamber, which is situated on the downstream face of the dam, receives flow from the Upper Gate Chamber via three 48-inch conduits. Valves located within the Lower Valve Chamber allow water to be discharged to the Croton River below the dam through either 12-inch or 48-inch diameter lines. One of the twelve-inch lines in the Lower Valve Chamber connects to a six-inch line that directs flow to the fountain in the park (the fountain is currently not functional reportedly due to problems with the fountain drains).

Several ancillary structures can be found in the vicinity of the reservoir. These include a USGS gaging station several hundred yards downstream of the dam, a boat ramp on the north shore of the reservoir a few miles away off of State Rt. 129, and the Croton Lake Gatehouse on the shore opposite the boat ramp near the Old Croton Dam.

### **Proposed Rehabilitation Project**

The rehabilitation project has the current goals:

1. Extend the useful life of the dam for another 50 to 100 years.
2. Preserve the character of the historic structure for future generations.
3. Increase operational reliability by reconstructing the outlet works.
4. Provide better management of water inventory and releases.
5. Restore reservoir evacuation capability to enhance dam safety and public safety.

The purpose of the rehabilitation project is to rehabilitate the existing Gatehouse No. 2 at New Croton Dam to restore full operability of the low level outlet works. Operations at the site after the completion of the project will be the same or very similar to operations prior to implementation of the project. Therefore, there will be no major changes to the land use classification, zoning, or utility requirements of the dam site. No new buildings or structures are proposed as part of the rehabilitation project. No changes to the yard piping or efforts to restore operation of the fountain are currently included as part of the project.

Improvements will be made to the existing low-level outlet works. Divers' inspections of the Upper Gate Chamber conducted in 1982 revealed that the equipment is in very poor condition. All three gates were reported inoperable and will be replaced with new, electrically operated gates. The existing 48-inch balancing valves are in poor condition and will be removed. The cracks in the three trash rack and stop log shafts will be sealed. New platforms will be constructed using structural steel support members, with stainless steel checker plate covers over the openings. Trashracks and anchorages will be replaced with new equipment, fabricated from stainless steel. Level sensors will be installed in a floatwell in the reservoir and downstream of each of the trashracks to measure the water level in the reservoir and the head differential across the trashracks. Aluminum ladders will be provided where required. The roof of the upper gate chamber will be demolished, and a new roof consisting of removable concrete panels for equipment access, will be constructed.

The equipment in the Lower Valve Chamber will also be rehabilitated. The existing valves and piping in the chamber will be removed and replaced with three new 48-inch stainless steel pipelines, each with a new 20-inch or 18-inch diameter stainless steel bypass line. Each of the 48-inch lines will have a 48-inch ball valve. Two of the bypass lines will have 18-inch, electrically operated ball valves and the other bypass line will have a 20-inch, electrically operated ball valve. Beyond the ball valves, the 18-inch lines will each reduce to a 16-inch line with pressure reducing sleeve valves. The sleeve valves will be used to regulate flows for normal conservation flow releases. Flow-meters will be installed on all three bypass lines. The 20-inch line will not have a sleeve valve and will expand to a 30-inch line with a restrictor plate that will generate the required back pressure on the flow meter. The 12-inch lines within the valve chamber will also be removed and replaced with new stainless steel piping. New ball valves will be provided on these lines. Aluminum platforms and walkways will provide access to the equipment and operators within the lower valve chamber. The valve chamber roof and railing will also be demolished and replaced with removable concrete panels, supported by structural steel girders. Ornamental railings will be installed along the exterior perimeter of the valve chamber roof. The stairs to the valve chamber will be restored and a gate installed at the entrance, replacing the existing block wall.

Heating and ventilation will be provided in the Upper Gate Chamber and the Lower Valve Chamber. Heating and ventilation measures will include electric unit heaters, ventilation fans, and partitions walls to promote desired circulation patterns. As the structures are above ground, no dehumidifiers are needed.

Electric power, lighting, and instrumentation with future remote telemetry capabilities will be provided at the upper gate chamber and lower valve chamber. Power will be taken from a power distribution panel at the south abutment of the dam to be installed by others under CRO-504 (which is scheduled to be complete prior to the start of the CRO-208 contract). Cables will be routed in conduit installed in the existing drainage gallery beneath the dam crest, from the left abutment to Gatehouse No. 2 where they will connect to the normal side of a manual transfer switch. The emergency side will be connected to an outdoor receptacle located on the roof of Gatehouse No. 2 to allow for the connection of a portable generator. Service inside the gate chamber will be fed via a 480V-208/120V transformer and 208/120V panelboard. Spare conduit will be provided for the future installation of security cameras.

Provisions for zebra mussel control will consist of direct piping connections within the valve chamber; no truck discharge station will be provided.