

Meeting with DRBC Staff Cannonsville Hydroelectric Project FERC No. P-13287



Cannonsville

- Introductions
- Status Update
- Project Layout
- Hydropower Intake and Release Locations
- Proposed Operating Regime
- Construction Schedule
- Siphon Operation During Construction
- Entrainment
- Benefits

- February 29, 2012: NYC filed License Application
- March 13, 2012: Federal Energy Regulatory Commission (FERC) issued notice soliciting additional study requests
 - Such requests are due 4/29/2012
- April 9, 2012: FERC issued notice accepting License Application
 - FERC requested that the City provide certain minor additional information (e.g., proof of service and publication, slightly revised maps and drawings, turbine ratings)

Cannonsville Status Update

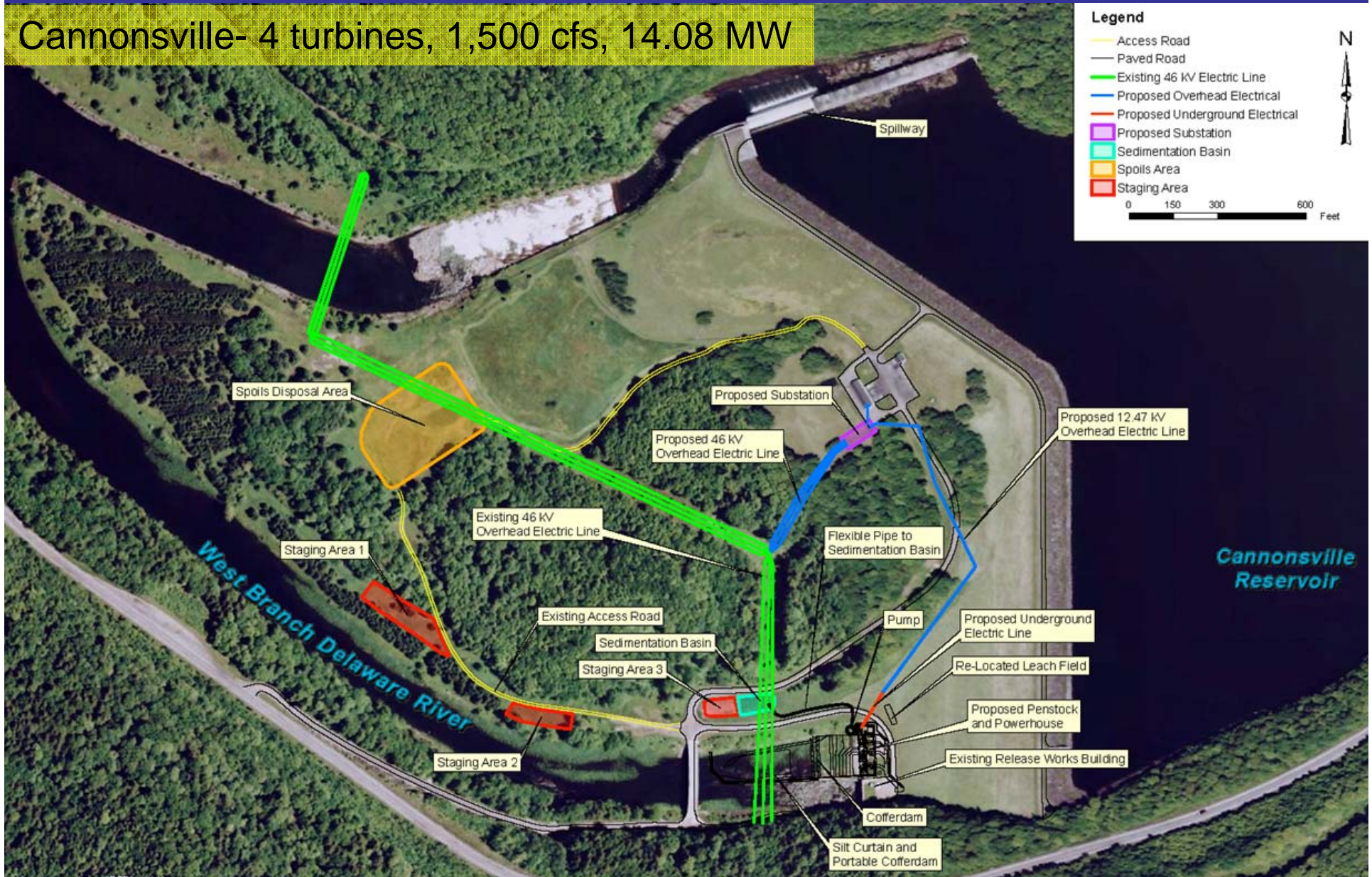
- FERC has not yet begun its environmental analysis of the Project
- FERC initially proposed the following schedule for the environmental analysis:



- FERC reserves the right to make adjustments as necessary to the schedule

Cannonsville Development

Cannonsville- 4 turbines, 1,500 cfs, 14.08 MW



Hydropower Design and Release Details

- The same intake location feeding the low-level release works will be used to feed the Cannonsville turbines
- The proposed powerhouse is located adjacent to the existing low-level release works, with hydropower discharges merging into a common tailrace with the existing low-level release works
- When the turbines are taken out of service for any reason, releases will be maintained via the existing low-level release works
- There will be no change in intake water temperature or supersaturation of nitrogen
- A new 46 kV overhead transmission line approximately 460 feet long will be constructed entirely on City-owned property following the path of an existing on-site power line and running from the new powerhouse to a new City-owned substation to be constructed in the vicinity of an existing service building
 - The substation will connect to an existing transmission line that traverses the site

New Powerhouse Rendering



- Modeling of turbine operation for the License Application is based on the current Flexible Flow Management Program with Operations Support Tool (FFMP-OST)
- The Project will be operated in accordance with the requirements of the applicable operating protocol agreed to by the parties to the 1954 Supreme Court Decree (Decree Parties)
 - Water available for generation at Cannonsville will be comprised of conservation releases, directed releases, and water that would otherwise spill to the extent that such releases are consistent with the discharge mitigation releases as established in the applicable operating protocol
 - The City does not propose to modify the magnitude, timing, frequency or duration of downstream flow releases as a result of hydropower operations

- All construction-related activities (including final design and equipment/material purchasing) are estimated to take approximately 44 months from start to finish
- Actual construction, including delivery, installation, turbine connection, and commissioning, is estimated to take approximately 21 months to complete
- Construction is anticipated to begin in 2016

- For a limited duration during construction (approximately three months), when the penstocks for the turbines are connected to the penstock for the low-level release works, conservation releases are expected to be made via temporary siphons
 - The City proposes to use two, 200 cfs siphons
 - To ensure proper operation of siphons, the Cannonsville Reservoir elevation will need to be maintained within 20 feet of the spillway crest during this period
- Siphon operation is proposed to be limited to the period between October 1 and December 31 to ensure maintenance of cold water releases
- The proposed siphon sizing is sufficient to ensure maintenance of aquatic resource protection releases

- Entrainment
 - Based on habitat/life history requirements, fish swimming speeds, and the deep water intake structure location, entrainment is expected to be low for all species
 - The risk of entrainment for alewives, as well as fry and juvenile fishes is minimal
- Mortality
 - Pressure differentials between the intake structures and release works cause fish mortality regardless of whether hydropower facilities are added
- Intake Protection
 - As agreed to by NYSDEC and USFWS, additional intake protection measures are not needed based on the assessment of entrainment and mortality

- The Project is estimated to produce approximately 42,000 MWH of electricity annually
- No final determinations have been made at this time regarding the ultimate disposition of any power and/or other related energy products to be produced by the Project
 - Any such disposition shall comply with all applicable laws, rules and regulations, including, but not limited to, the limitations imposed by the Chapter 734 of the Laws of 1905 of the State of New York (as codified in New York City Administrative Code § 24-364) relating to the City's use of electricity generated by the Project
- The City is continuing to investigate opportunities for public-private-partnerships with respect to the Project
 - No final determination have been made at this time

- The Project is essentially a zero variable cost generation resource
 - When operating and generating electricity, it will displace generation from higher-cost, fossil-fuel fired generation resources
- Project-related electricity generation is estimated to slightly reduce wholesale electricity prices in Upstate New York
 - Total annual estimated savings to Upstate New York of approximately \$10.1 million
- Project-related electricity generation is estimated to produce modest reductions in pollutant emissions from generation resources in New York
 - CO₂ emissions reductions of up to approximately 47,400 tons annually, depending on the type of fossil-fuel fired generation displaced
 - Equivalent to removing up to approximately 8,200 passenger vehicles from the road
- Local economic impact of the Project will primarily be generated through employment of local residents for part of the on-site construction-related work and through some use of local subcontracting
 - Total estimated direct, indirect and induced (*i.e.*, multiplier effect) economic benefits of the construction provide a one-time increase in the economic output in Delaware County of approximately \$4 million and approximately 16 full-time equivalent local jobs per year during the construction period