Public Open House

NEW JERSEY WATER SUPPLY AUTHORITY
Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road
September 15, 2011
Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

Raritan Basin Water Supply System
Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

**Project Objective**
- Remove an estimated 270,000 cubic yards of sediment from the Canal in order to restore its flow capacity
- Remove and dispose of 45,000 cubic yards of sediment from the Authority’s stockpile site in Delaware Township, Hunterdon County, NJ

**Project Goals**
- Protect the historical integrity of the Canal
- Minimize environmental and social impacts
- Maintain technical quality
- Maintain water supply

**Critical Project Elements**
- Develop dredging plan acceptable to stakeholders
- Focused outreach to public officials and stakeholders
Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

Project Area
Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

**Mechanical Dredging (in the wet)**

- Conducted in the wet using hydraulic excavator operating from shallow-draft barge or flexi-float
- Hydraulic clamshell bucket to be used on dredge to minimize turbidity (1-3 cubic yard bucket)
- Dredge maneuvering with non-penetrative methods (anchors, guidelines, etc.)
- Dredged sediment to be placed into 10-20 cubic yard scows /20 cubic yard containers on flexi-floats
- Scows unloaded to trucks and transported to dewatering area for air-drying/stabilization
- Potential for multiple dredge units operating simultaneously
- Access concerns in shoreline areas
- Risks include impacts to Canal Road to construction vehicle traffic
- Projected construction cost: $30.9 to $35.4 million
- Dropped from further consideration due to risk and projected construction cost
Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

Hydraulic Dredging with Mechanical Dewatering

- Conducted in the wet using hydraulic cutterhead dredge
- Requires separate Submerged Aquatic Vegetation (SAV) / debris removal operations prior to dredging
- Dredge maneuvering with non-penetrative methods (anchors, guidelines, etc.)
- Booster pumps required to facilitate transport of dredged sediment through plastic pipeline to mechanical dewatering area
- Water generation significantly more than other investigated removal methods
- Requires extensive water treatment / water management operations
- Potential risk to water users due to use of polymers used for sediment dewatering
- Projected construction cost: $28.2 to $31.6 million
- Dropped from further consideration due to projected construction cost

New Jersey Water Supply Authority
Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

**Mechanical Excavation (in the dry)**

- Canal separated into reaches varying in manageable lengths, with each provided with access area and truck ramp
- Flow Bypassed through work area via portadam or other structure with piping to convey flow to the Millstone
- Low-ground pressure excavators and dozers used to excavate sediment
- Sediment within the dewatered canal section will be reworked/air dried prior to excavation
- Allows for higher degree of accuracy during removal (increased volume control)
- Requires intensive water management operations
- Risks include impacts to Canal Road and/or the towpath due to construction vehicle traffic and potential impacts to water users resulting from blended Canal/Millstone River water
- Projected construction cost: $21.7 to $24.5 million
Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

Hydraulic Dredging with Geobags

- Conducted in the wet using hydraulic cutterhead dredge
- Requires separate SAV and debris removal operations prior to dredging to prevent clogging
- Dredge maneuvering with non-penetrative methods (anchors, guidelines, etc.)
- Booster pumps required facilitate transport of dredged sediment through plastic pipeline to dewatering area
- Dredged sediment to be dewatered using geobags
- High comparative production rate
- Water generation significantly more than other investigated removal methods
- Requires extensive water treatment / water management operations
- Potential impacts on water treatment plant operations due to use of polymers for sediment dewatering
- Reduced operational risk
- Projected construction cost: $26.1 to $29.3 million
Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

Dredging Support Equipment

- **Silt Curtains**
  - Control suspended solids and turbidity in the water column
  - Fabricated of flexible, vinyl fabric and provided with anchors to secure curtain bottom
  - Skirt to extend to bottom surface of the Canal

- **Booster Pumps**
  - Required to convey dredged sediment through plastic pipeline to dewatering area
  - Located along the western shoreline to facilitate refueling and maintenance operations
  - Equipped with double wall fuel storage tanks
  - Provided with oil containment booms to provide envelope around each booster pump
**Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road**

**Geobag Staging Area**

- Approximately 6 acres in total area
- Includes:
  - Geobag laydown area
  - Drainage swale/containment dike
  - Return water/stormwater treatment
  - Polymer metering equipment
  - Contractor office
  - Truck loading area
  - Stabilization/mixing area
Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

Conceptual Traffic Routes
Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

Section 106 of the National Historic Preservation Act – Cultural Resources Investigations and SHPO Review
Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

Potentially Required Permits
- U.S. Army Corps of Engineers
- Delaware and Raritan Canal Commission
- NJ Department of Environmental Protection
  - Freshwater wetlands
  - Flood hazard area
  - No net loss reforestation
  - Water lowering
  - Fish stocking
  - NJPDES Water Quality Certification
  - Section 106 consultation
- Somerset-Union County Soil Conservation District
  - NJPDES Construction
  - Soil erosion and sediment control

Dredge Methodology

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Level II Environmental Information Document

- Key Environmental Issues
  - Public use
  - Surface water
  - Floodplains and riparian zones
  - Biotic (plant and animal communities)
  - Forest
  - Wetlands
  - Threatened and endangered species
  - Cultural resources
  - Impacts on water users
Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

Staging Area and Site Access Selection Process

- Wetlands and Transition Area
- Flood Hazard Area
- Riparian Zone
- Threatened and Endangered Species Habitat
Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

**Public Officials Briefings:**
- Rocky Hill
- Franklin Township
- Hillsborough
- South Brunswick
- Millstone Borough
- Somerset County
- Montgomery

**Coordination Meetings**
- NJDEP
- Governors Office
- D&R Canal State Park
- D&R Canal Commission
- D&R Canal interest groups briefing
- December 2010 Public Open House
## Dredging of the Delaware and Raritan Canal from Kingston to Amwell Road

### Tentative Project Schedule

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**New Jersey Water Supply Authority**
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View NJWSA Website for Continuing Project Updates

http://www.njwsa.org/html/canaldredging.html
Questions