



**NEW YORK CITY  
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

# **GILBOA DAM RECONSTRUCTION PROJECT**

## **Status Report**

**October 2007**

**CAT  
2007**

# GILBOA DAM RECONSTRUCTION PROJECT

PROJECT GOALS: Ensuring Public Safety  
Sustaining Public Water Supply



# GILBOA DAM RECONSTRUCTION PROJECT

## Interim Construction Phase

### Work Completed in 2006:

- Debris Barrier
- Siphons
- Notch
- Anchors
- Upgraded Instrumentation/  
Surveillance



Flows diverted through siphons and notch to allow preparation for anchor installation.

# GILBOA DAM RECONSTRUCTION PROJECT

## ON-GOING AND RECENTLY COMPLETED DESIGN ACTIVITIES

### ● Environmental Assessment

- Environmental Document Anticipated Release - December 2007
- Public Outreach
- Permit Coordination with DEC & USACE

### ● Surveys & Mapping

### ● Spillway Physical Modeling

### ● Subsurface Exploration & Testing

### ● Low-Level Outlet Investigations

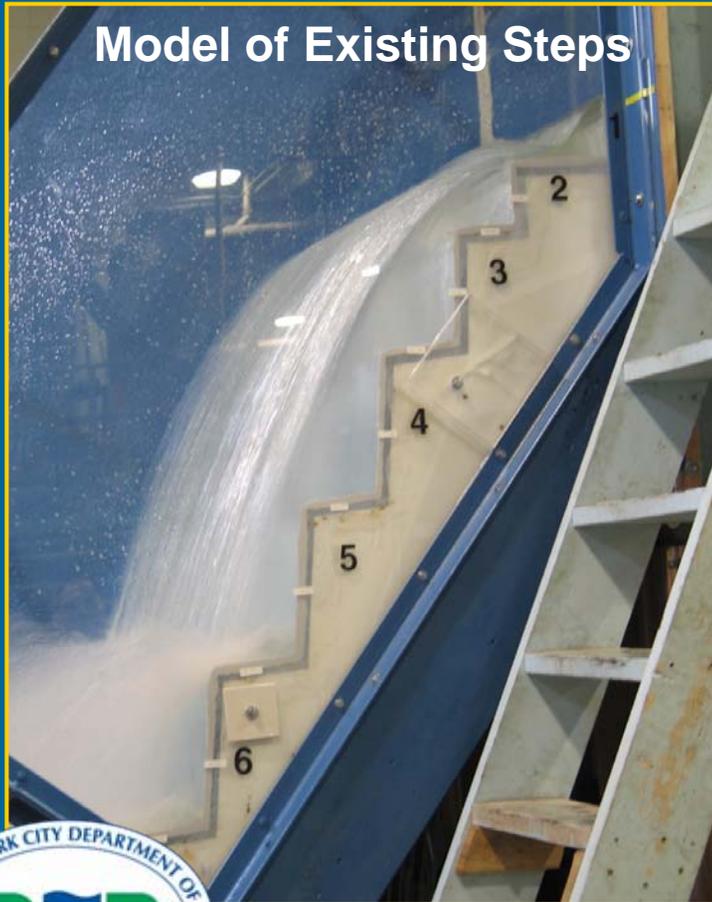
### ● Preliminary & Final Design



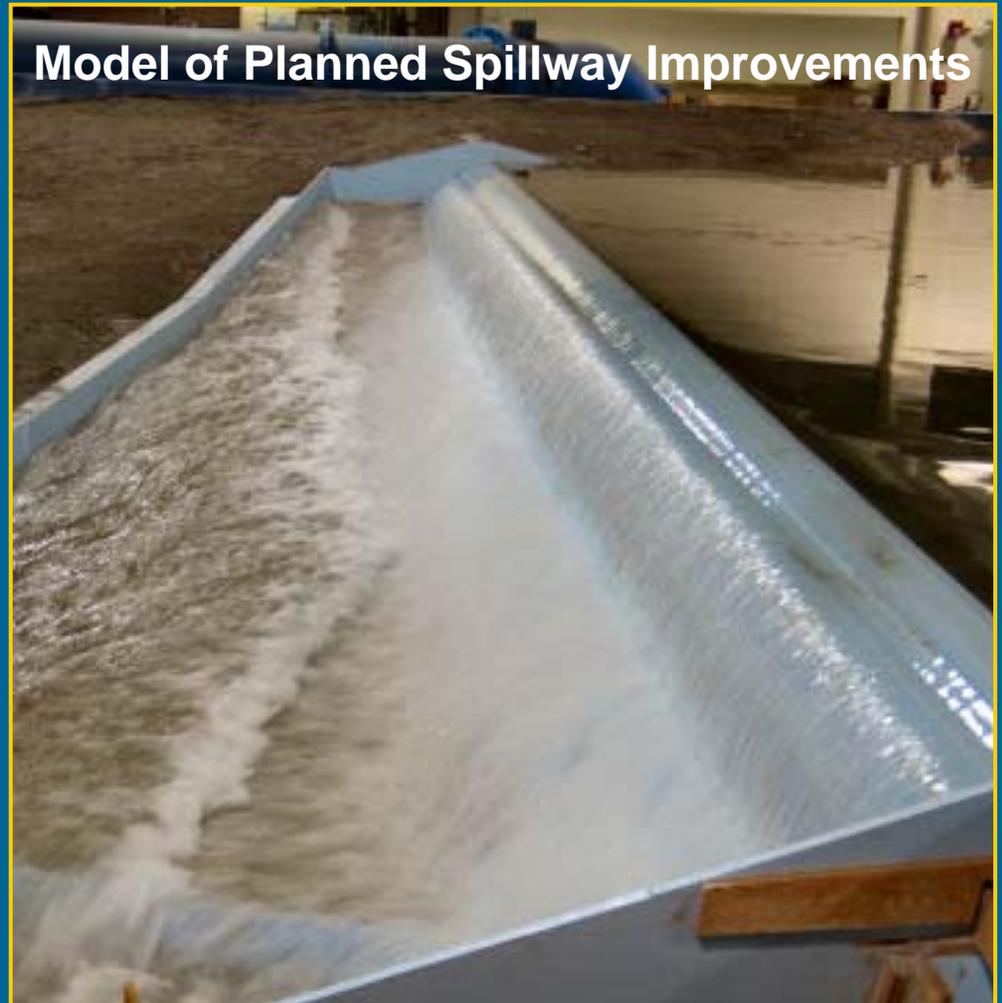
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## Spillway Modeling to Understand Complex Hydraulic Conditions

Model of Existing Steps

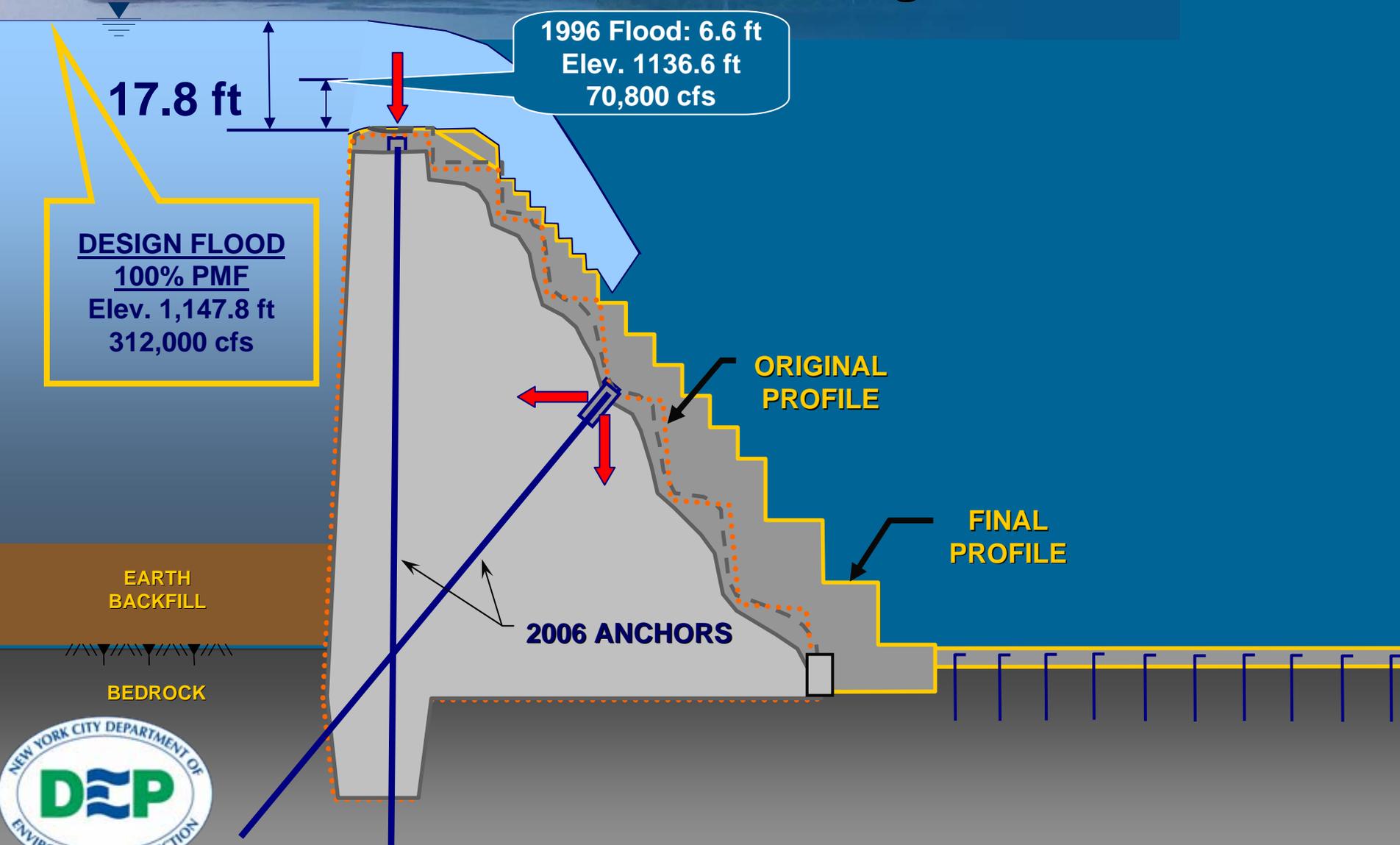


Model of Planned Spillway Improvements



# GILBOA DAM RECONSTRUCTION PROJECT

## 1996 Flood Flow vs. Final Design Flood Flow



# GILBOA DAM RECONSTRUCTION PROJECT

## ANTICIPATED PHASED APPROACH

- PHASE I – Site Preparation (CAT-212A)
- PHASE II – Gilboa Dam Reconstruction (CAT-212B)
- PHASE III – Shandaken Intake Improvements (CAT-212C)
- PHASE IV – Site Restoration (CAT-212D)

# GILBOA DAM RECONSTRUCTION PROJECT

## PHASE I SCOPE – SITE PREPARATION

### CAT-212A

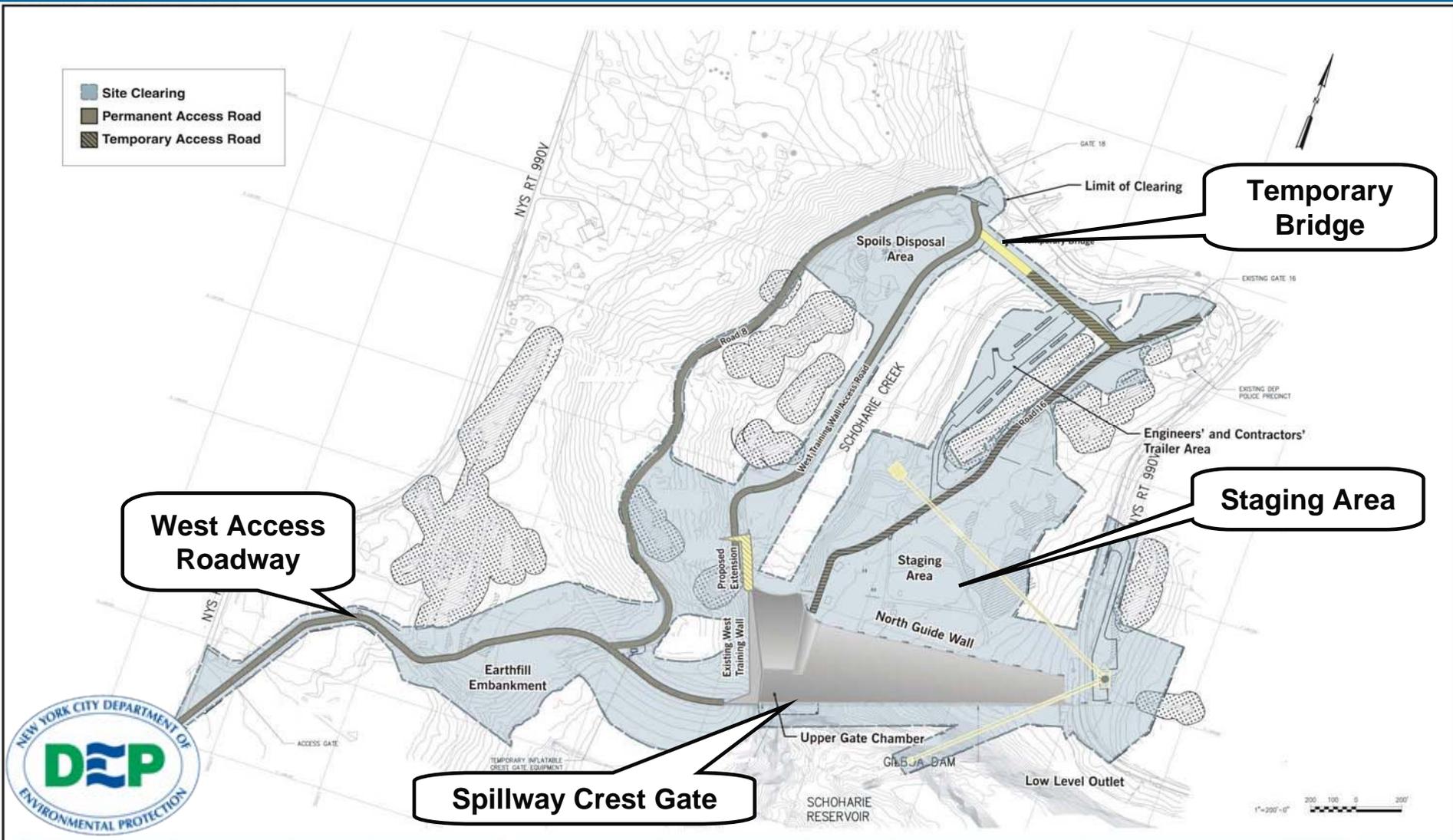
- **Site Clearing**
- **Grading & Drainage Improvements**
- **New (West) Access Road Construction**
- **Spillway Crest Gate Installation**
- **Site Utility Upgrade / Installation**
- **Construction Staging Area Development**



CAT  
211

# GILBOA DAM RECONSTRUCTION PROJECT

## Work Sites & Staging Areas



# GILBOA DAM RECONSTRUCTION PROJECT

## Location for New Gate Crest

Approximate Limits  
of Spillway Notch  
and Crest Gate



# GILBOA DAM RECONSTRUCTION PROJECT

## Proposed Crest Gate



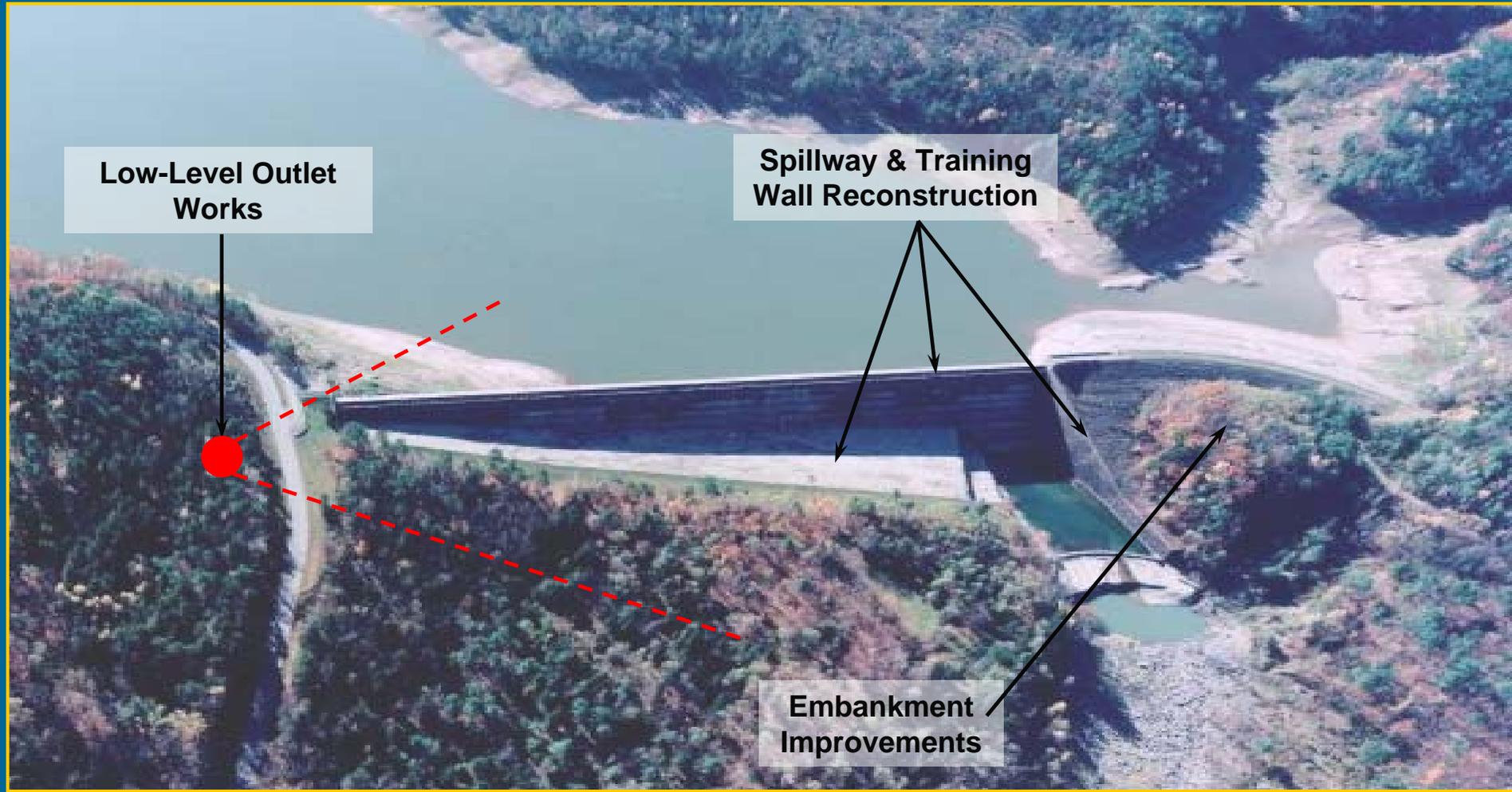
[www.nyc.gov/dep](http://www.nyc.gov/dep)

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# GILBOA DAM RECONSTRUCTION PROJECT

## PHASE II SCOPE – DAM RECONSTRUCTION CAT-212B

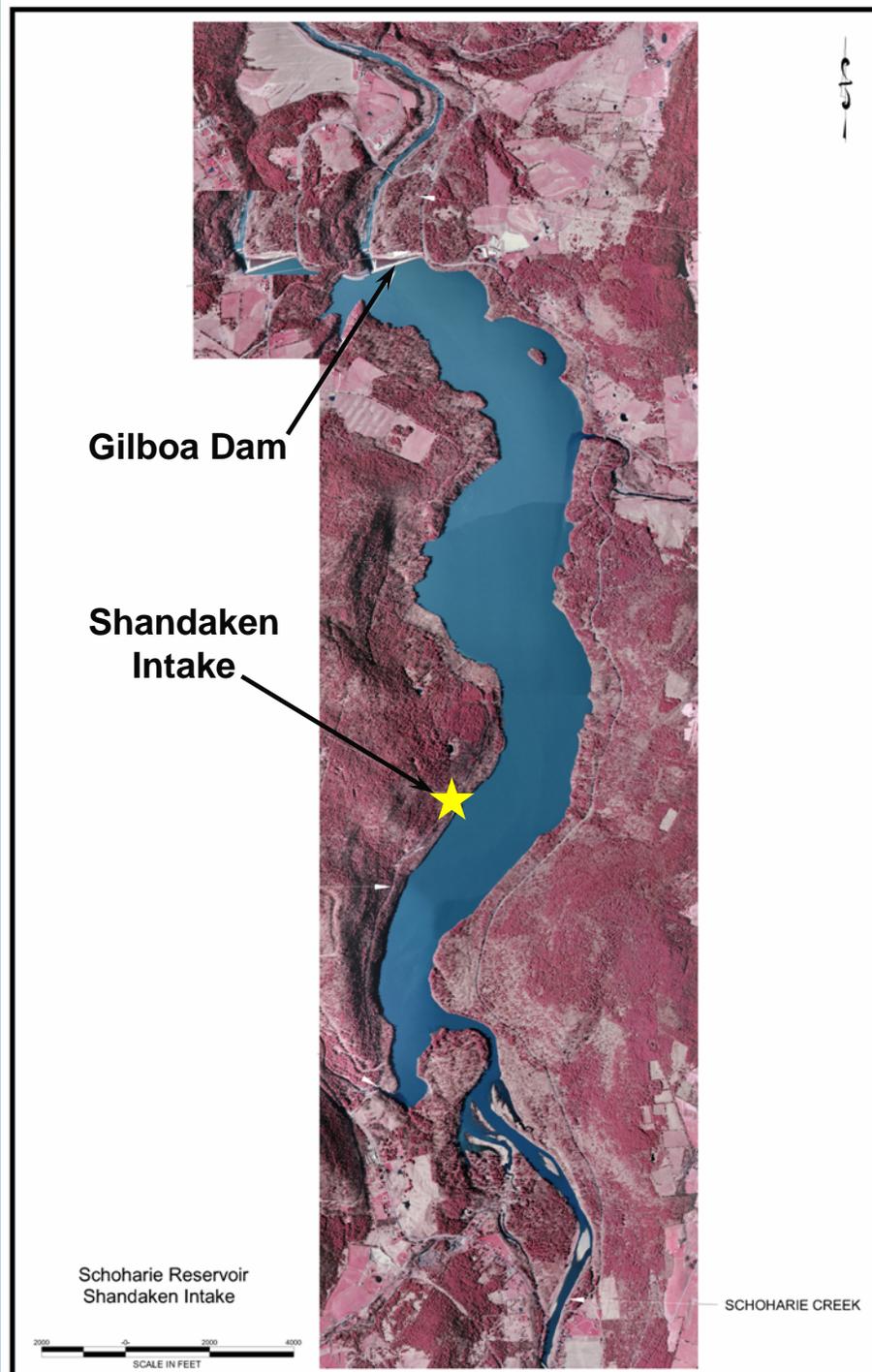


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## PHASE III SCOPE – SHANDAKEN INTAKE IMPROVEMENTS

### CAT-212C

- Intake Gate Repair / Replacement
- Utility Upgrades
- Access / Site Improvements
- Miscellaneous Architectural & Structural Upgrades



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## PHASE IV SCOPE – SITE RESTORATION CAT-212D

- Environmental Mitigation
- Site Restoration



# GILBOA DAM RECONSTRUCTION PROJECT

**CURRENT  
DESIGN  
ACTIVITIES**



# GILBOA DAM RECONSTRUCTION PROJECT

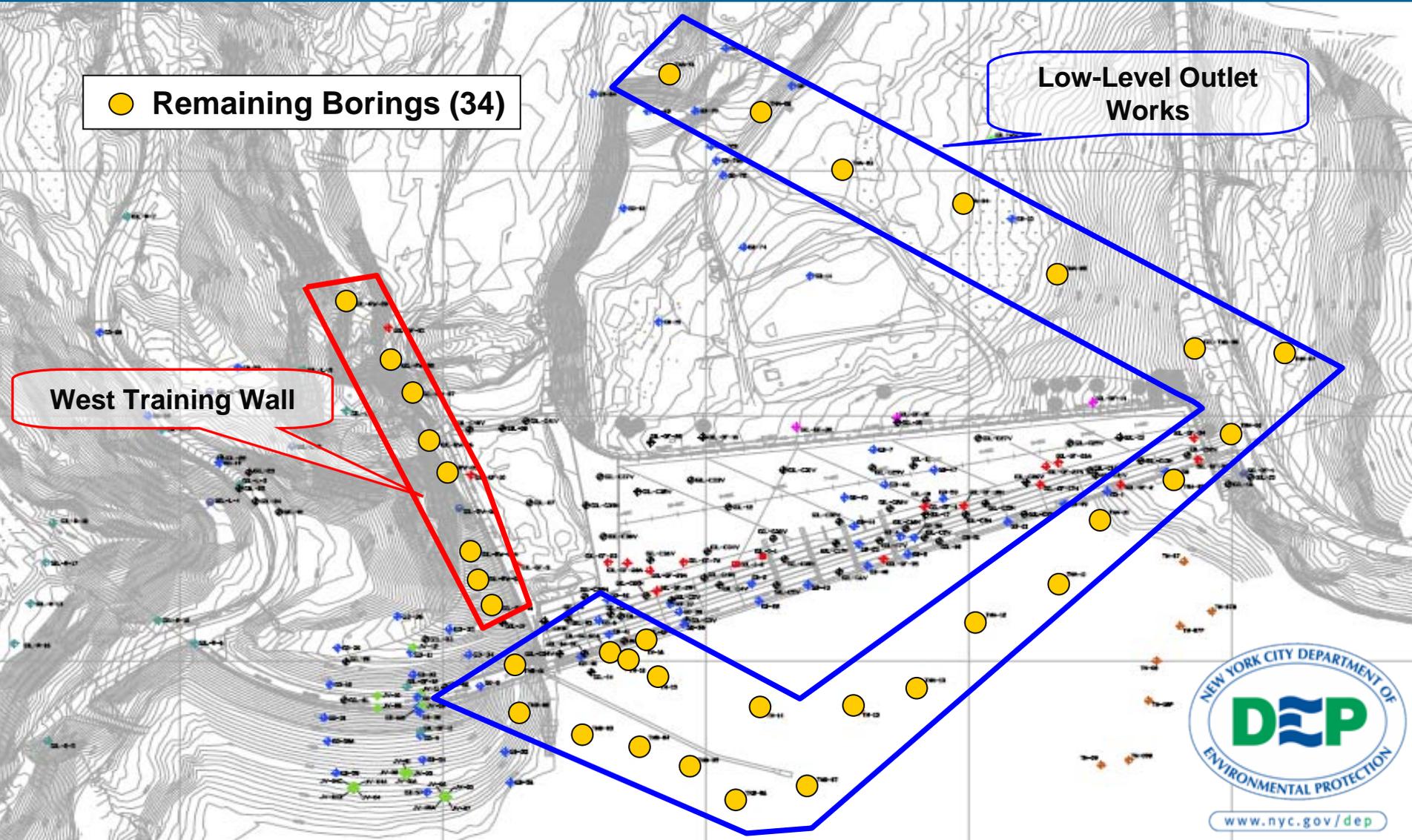
## SUBSURFACE EXPLORATION & TESTING

### Current Investigation Areas of Focus:

- West Abutment Area
- Embankment / Training Walls
- Low-Level Outlet Works

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## Boring Location Plan



# GILBOA DAM RECONSTRUCTION PROJECT

## Low-Level Outlet Works

### RECOMMENDED DESIGN CRITERIA

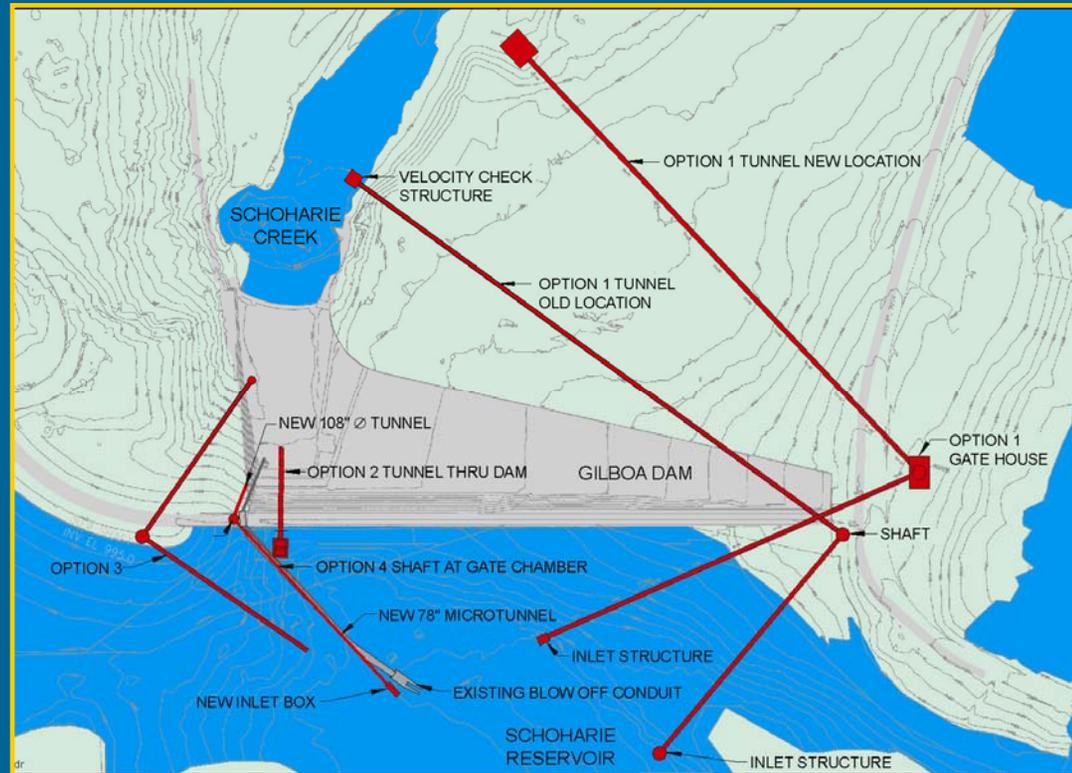
- Evacuate 90% of storage in 4 months or less under average inflow conditions (Corps of Engineers Criteria)
- Capacity to maintain the reservoir in a substantially dewatered state – Max headwater depth limited to 10% storage (EL 1052 feet)
- Invert elevation at or below Elev. 980-1000 feet
- No credit for use of Shandaken Intake to meet recommended design criteria
- Maximum daily drawdown rate in the range of 1-2 feet per day, except for extreme emergencies



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## Low-Level Outlet Alternatives

1. Tunnel through right abutment
  - A. Hard rock tunnel through right abutment
  - B. Alternative alignment based on initial borings
2. Tower adjacent to dam
  - A. Tunnel through dam
  - B. Tunnel under dam
3. Tunnel through left abutment – **rejected**
4. New shaft at existing gate chamber



# GILBOA DAM RECONSTRUCTION PROJECT

## POTENTIAL BENEFITS OF SNOWPACK MANAGEMENT

- **Benefits will vary depending on storm magnitude and spatial distribution.**
- **For a storm event comparable to the 1996 flood, a snowpack management program could potentially result in up to 144 fewer structures being flooded in the communities of Esperance, Schoharie, Middleburgh & Fulton.**

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## POTENTIAL BENEFITS OF SNOWPACK MANAGEMENT

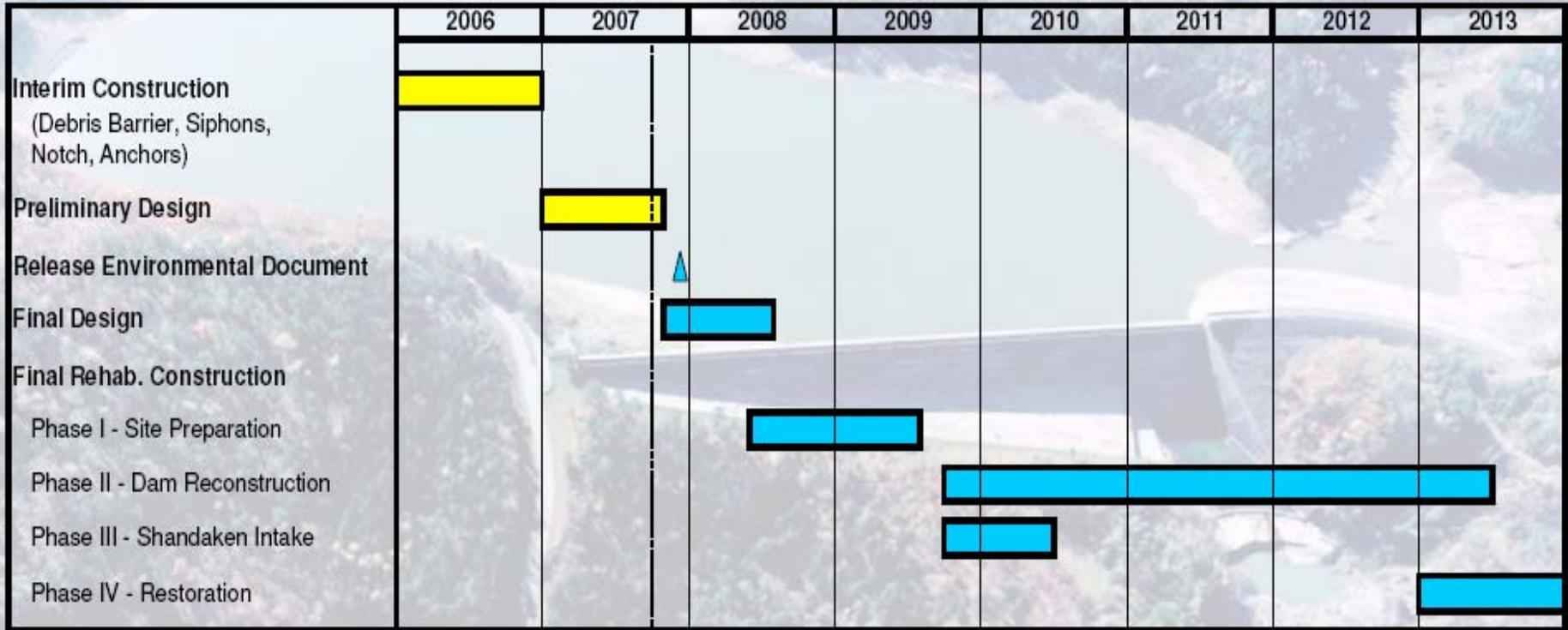
Peak Flow from Schoharie  
Reservoir (cfs)

Watershed Snow Depth (Inches)	Reservoir Drawdown Elevation (Feet)	Storm Rainfall (inches)	Without Snowpack Management	With Snowpack Management
20	1,111.6	4.5	56,260	44,490
40	1,093.1	4.5	92,430	64,310



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## Planned Project Schedule





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## Sedimentation Depth

