5th Avenue Dam Removal & Lower Olentangy River Ecosystem Restoration Project
Presentation Overview

- Project Background
  - History
  - Project Partners
  - Project Phases
- Design Report
- Preliminary Design
- Permitting
- Final Design
- Construction
  - Mussel Rescue
  - Photos
- Questions & Discussion
History of 5th Avenue Dam

- 1935: Dam constructed
- 2002 – 2004: EPA issues consent decrees
- 2004 – 2006: City and EPA agree to remove dam
- 2006 – 2007: USACE feasibility study
- 2008 – 2011: Stantec completes engineering
- 2011: City receives OEPA WRRSP funding
- 2012: Environmental covenants signed & construction begins
Project Partners - $6.9M

- City of Columbus
- The Ohio State University
- Ohio Environmental Protection Agency
- Friends of the Lower Olentangy Watershed (FLOW)
Project Phases

- Phase 1 – Design Report (2009-10)
- Phase 2 – Design & Permitting (2010-11)
- Phase 3 – Construction (2012-14)
- Phase 4 – Monitoring (2014-19)
Phase 1 – Design Report

- Ecological Surveys
- H&H Modeling
- Sediment Management
- Hydrogeological Conditions
- Structural / Geotechnical Evaluations
Phase 1 – Ecological Surveys

- Qualitative Habitat Evaluation Index (QHEI)
  - Average Score Free Flowing Portions of River = 68.5 (Warm Water Habitat)
  - Average Score Area Impounded by Dam = 30.8 (Impaired)

- Freshwater Mussels
  - 11 species in Project Area
  - 3 Ohio Species of Concern
Phase 1 – H&H Modeling

- HEC-RAS (v 4.0.0) Model
  - Predicted Decrease in WSEs for all recurrence intervals
  - No CLOMR Required
Phase 1 – Sediment Management

- Channel bed predominantly sand with clean gravel and cobble
- Sediment deposition near left and right banks
- Recommended 2-stage lowering of dam
Phase 1 – Hydrogeological Conditions

- Sand and gravel aquifer beneath project area
- Dynamic relationship between groundwater and river stage

Phase 1 – Structural / Geotechnical Evaluations

- 12 geotechnical borings
- Structural evaluation of 9 bridges, 20 buildings, and multiple sewer outfalls
- Findings: Dam removal and lowering of normal water elevations will have no significant impact to structures
- Sewer outfalls to be incorporated into final design
Phase 1 – Future Conditions Renderings

Immediately after restoration

Five years after restoration

Twenty five years after restoration

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Phase 2 - Design

- Goals
  - Remove 5th Avenue Dam & Restore Olentangy River
  - Improve water quality & aquatic habitat
  - Must be aesthetically pleasing
  - No negative impacts to existing bridges, utilities, bikepath, sewer outfalls
  - No rise in base flood elevations
Phase 2 - Design

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Phase 2 - Design

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Phase 2 - Design

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Phase 2 – Permitting

- Floodplain Permit – City of Columbus
  - LOMR – FEMA (after construction)
- 404/401 – US Army Corps of Engineers / OEPA
  - NWP 27
  - US Fish & Wildlife
  - ODNR
  - OHPO
- ODOT ROW Permit
- ODNR Dam Safety
- Environmental Covenants (tied to funding through OEPA)
Phase 3 – Construction

- Dam Removal
  - Mussel Rescue
- Construction of NCD Structures
  - Constructed Riffle
  - Toe Wood
  - Live Branch Layering
- Landscaping
Phase 3 – Dam Removal

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August 29, 2012
Phase 3 – Dam Removal
Phase 3 – Dam Removal

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Phase 3 – Dam Removal

September 5, 2012

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2013 OWEA Watershed Workshop
Phase 3 – Mussel Rescue

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### Phase 3 – Mussel Rescue

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<th>Species Common Name</th>
<th>North Project Limit to Lane Bridge</th>
<th>Lane Bridge to Woody Hayes Bridge</th>
<th>Woody Hayes Bridge to Pedestrian Bridge</th>
<th>Pedestrian Bridge to Herrick Bridge South</th>
<th>King Ave Bridge to Dam</th>
<th>Directly Below Dam</th>
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Phase 3 – Constructed Riffle

5th Avenue Dam Removal & Olentangy River Ecosystem Restoration Project
2013 OWEA WATERSHED WORKSHOP

December 17, 2012
Phase 3 – Constructed Riffle
Phase 3 – Constructed Riffle

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December 17, 2012
Phase 3 – Constructed Riffle

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December 17, 2012
Phase 3 – Constructed Riffle

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January 2, 2013
Phase 3 – Toe Wood

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Phase 3 – Toe Wood

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Phase 3 – Toe Wood

December 31, 2012
Phase 3 – Live Branch Layering

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January 7, 2013
Phase 3 – Live Branch Layering

January 7, 2013

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Phase 3 – Live Branch Layering

January 7, 2013
Phase 3 – Live Branch Layering

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Phase 3 – Live Branch Layering

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January 10, 2013
Phase 3 – Live Branch Layering

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Phase 3 – Live Branch Layering

January 29, 2013
Phase 4 - Monitoring

5 years of post-construction monitoring required by USACE

- QHEI – Years 1, 3, 5
- IBI & ICI – Years 3, 5
- ORAM – Years 1, 3, 5
- Geomorphology Survey – Years 1, 5
- Floodplain & Wetland Plantings ≥ 80% Native Ohio, ≤ 5% Invasive Species at end of Year 5
Questions & Discussion

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March 28, 2013