CSO Projects
33-2 Tank Brownfield Strategies
CSO Project Objectives
Environmentally & Financially Responsible

• Cleaner River faster.
  – Prioritize work that has a greater impact on pollutants.

• Implement cost-effective & innovative technologies.
  – Add “green” technologies.
  – Right-size existing projects.

• Holistic integration with other critical infrastructure.
  – Solve multiple problems.
  – Better streets, new water mains, better parks...
  – Remove stormwater from systems
CSO Control Facilities Plan

CSO Basins

- Interceptors
- Sanitary Sewer Mains
- Completed CSO Facility
- In Progress CSO Facility

<table>
<thead>
<tr>
<th>CSO Basins</th>
<th>i01</th>
<th>i02</th>
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Map showing the distribution of CSO basins with various volumes and markings indicating their status.
CSO Reduction History

![Bar charts showing reductions in outfalls, events, and volume over time.](image)
## CSO Tanks

**Status Overview Winter 2019**

<table>
<thead>
<tr>
<th>CSO Tanks Overview</th>
<th>TOTAL VOLUMES</th>
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<tbody>
<tr>
<td>Operating or Substantially Complete</td>
<td>12,411,300</td>
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<tr>
<td>Under Construction</td>
<td>4,250,000</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>16,661,300</strong></td>
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Basic Design of a CSO Tank

- DRY WEATHER FLOW CONVEYED BY COMBINED SEWER TRUNK LINE
- FLUSH CHAMBER
- FLUSH WAY
- FLUSH GATE
- DISCHARGE GATE
- SUMP
- DISCHARGE PIPE
- TANK OVERFLOW PIPE
- WEIR

DRY WEATHER FLOW CONVEYED BY COMBINED SEWER TRUNK LINE
Investigative Determinations
Pre-Construction

- Rock prevalent over entire site at various depths
  - Additional rock profiling completed
- Blasting considered viable
- Orientation to avoid rock excavation quantities
- Presence of ceramic at one boring should have raised a red flag
Excavation Progression
Ruh Roh...
Fun Fact!

Since 2013, the city has received almost $77 million dollars in low-interest loans from Ecology to build Combined Sewer Overflow (CSO) tanks that protect the Spokane River by preventing sewer overflows during storm events.
Some projects are hungrier than others.....
CSO 33-2 Funding

- Original engineer’s estimate and State Revolving Fund (SRF) loan award: $4,270,000
  - Construction - $3,838,697
  - Construction Management - $480,491

- Additional costs incurred due to unexpected contamination: $605,140
  - Rotate tank to keep foundation on rock and out of contamination
  - Subgrade drainage
  - Wall backfill
  - Revised odor ductwork

- Additional SRF funds offered (per WAC 173-98-520(5)(6)): $553,797
  - Bid overrun - $369,198
  - Change order allowance - $184,599
Remedial Action Grant

- Contamination discovered during excavation in 2014
- City entered into Ecology’s Voluntary Cleanup Program
  - Applied for a Remedial Action Grant and awarded $600,000

Deliverables:

- Remedial Investigation and Feasibility report to provide a better understanding about the extent of contamination at the site
- A clean site that the City can reuse both on the surface and below ground for a landscaped public green space, possible play field and/or public garden and the CSO control facility
Baker Tank to Dewater Site
Drain Pad
Boulder Pile
Fun, wet, waste
Burned Trash and Debris
Stacked Rock Wall Under Sprague
Look back to History
Stacked Rock Wall and ponded water
Historic Lakes Overlaid
Secure Bearing

*Rock is our friend, for once*
Rotate Tank Orientation
The Connection with Streets

- Plan requires a long-term commitment to eliminate stormwater as we rebuild streets
  - Mitigates risk (growth & climate change)
  - Reduces stormwater & wastewater system capacity requirements
  - Saves money

- Commitment becomes a cornerstone of our new Street funding strategy
Thank you!