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Capital Improvement Program (CIP) Project Updates Wastewater Engineering

September 10, 2024 | Philip Kora, PE

Agenda

- CIP #: 212008 – Aeration Deck 1 and 2 Improvements
- CIP #: 211007 – PS#2 Bar Racks and Grit System Improvements
- CIP # 273001 – HS CSO Facility Improvements

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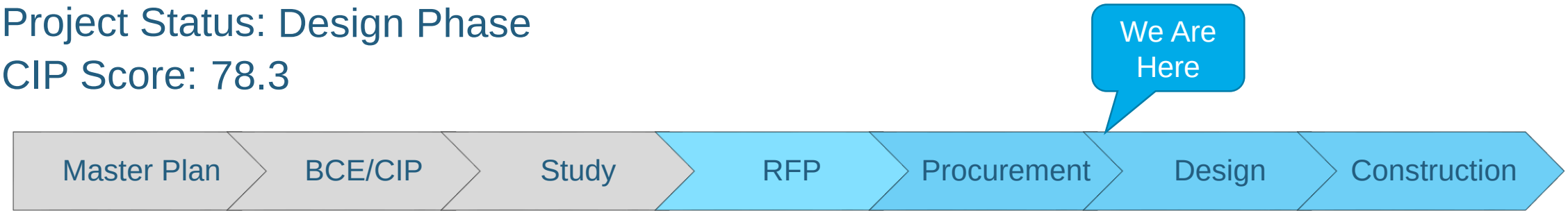
PS#2 = Pump Station # 2
HS CSO = Hubbell Southfield Combined Sewer Overflow

Wastewater CIP Project STATUS

CIP #: 212008 Aeration Deck 1 and 2 Improvements

Project Manager: Philip Kora
Project Delivery Method: Design-Build
Project Status: Design Phase
CIP Score: 78.3



Contract	Contractor	Contract Amount	Earned Value	% Complete	Start	End	% Elapsed Time
• 2102926 (Design Build)	• Kokosing Inc	• $210 million	• $7 Million	• 3%	• 4/8/2024	• 3/31/2030	• 6%

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BCE=Business Case Evaluation
RFP=Request for Proposal

Wastewater CIP Project INFO

CIP #: 212008 Aeration Deck 1 and 2 Improvements

- **Project Scope of Work/Goals**
  - Implement enhanced biological phosphorus removal (EBPR) to meet future NPDES total phosphorus limits and reduce ferric chloride use
  - Improve energy efficiency and oxygen consumption
  - Incorporate step feed process operating mode for increased wet weather capacity
  - Extend useful life of basins 1 and 2 by 30 years
- **Significance/Need/Background**
  - Existing equipment at end of service life and efficiency gains needed
  - Foaming issues and Existing level control weirs are not reliable
  - Higher capacity during wet weather events needed

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Wastewater CIP Project PHOTOS

CIP #: 212008 Aeration Deck 1 and 2 Improvements

Pre-Contract Photos (Basin 1)

Currently (Basin 1 Cell 2)

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Wastewater CIP Project PHOTOS

CIP #: 212008 Aeration Deck 1 and 2 Improvements

Pre-Contract Photos (Basin 1)

Currently (Basin 1 Cell 10)

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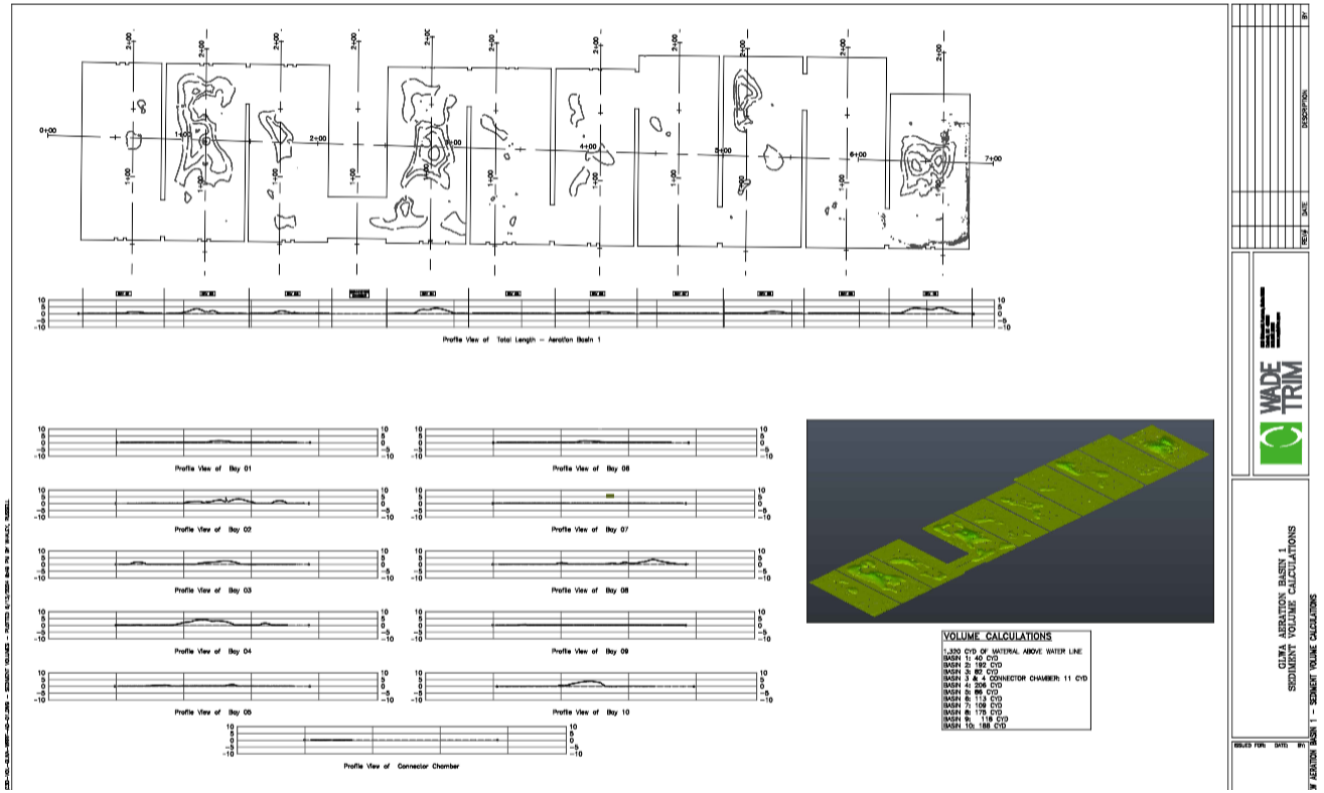
Wastewater CIP Project PHOTOS

CIP #: 212008 Aeration Deck 1 and 2 Improvements



Basin 1 Scan Results showing material buildup

Sludge Removal Job-To-Date Tracking						
UPDATED THROUGH:	8/13/2024					
	Estimated QTY (CY)			Job-To-Date % Removed	Removed QTY (CY)	Remaining QTY (CY)
	Solids	Sludge/Water	Combined Total			
PHASE 1: BASIN NO. 1						
Bay 1	40	48	88	100%	88	0
Bay 2	192	75	267	100%	267	0
Bay 3	82	150	232	100%	232	0
Bay 3-4 Connecting Tunnel	11	36	47	100%	47	0
Bay 4	206	126	332	100%	332	0
Bay 5	86	126	212	100%	212	0
Bay 6	113	99	212	100%	212	0
Bay 7	109	106	215	100%	215	0
Bay 8	175	80	255	100%	255	0
Bay 9	118	80	198	100%	198	0
Bay 10	188	42	230	82%	188	42
			Basin No. 1 Totals	2288	98%	2246	42

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Wastewater CIP Project STATUS

CIP #211007: Pump Station 2 Rack & Grit Improvements

Project Manager: Elizabeth Mann, PE
Delivery Method: Design-Bid-Build
Status: Moving from Request for Bid to Construction
CIP Score: 75.7

Today

Master Plan & BCE → RFP → Study → RFP → Design → RFB → Construction

BCE: Business Case Evaluation
Request for proposal
Request for proposal
Request for bid

Contract	Contractor	Contract Amount	Earned Value	% Complete	Start	End	% Elapsed Time
• 1904337 • 2300154	• Hazen • CCC	• $ 17.2 M • $225.0 M	• $9M • N/A	• 52% • N/A	• 10/20/20 • 10/2024	• 04/30/2030 • 04/2030	• 40% • N/A

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Wastewater CIP Project INFO

CIP #211007: PS2 Rack & Grit Improvements (PS2RG)

- **Scope of Work & Goals**
  - Replace the 8 existing bar screens with 10 finer bar screens for debris removal.
  - Install 8 stirred vortex units and 6 cyclone classifiers for grit removal.
  - Direct goal: Remove a higher percentage of inorganic solids.
  - Strategic goals: Improve system reliability and reduce maintenance costs.
- **Significance/Need/Background**
  - Benefits of better solids and grit removal: 1) reduced wear on primary sludge pumps and other equipment, 2) fewer process upsets from debris clogs, 3) improved quality and consistency of biosolids products.
  - Other impact: Informs upcoming CIP #211011, Pump Station 1 Screen & Grit.

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Wastewater CIP Project PHOTOS

CIP #211007: PS2 Rack & Grit Improvements

Existing Bar Screens (8 x ¾”)

Proposed Bar Screens (10 x ¼”)

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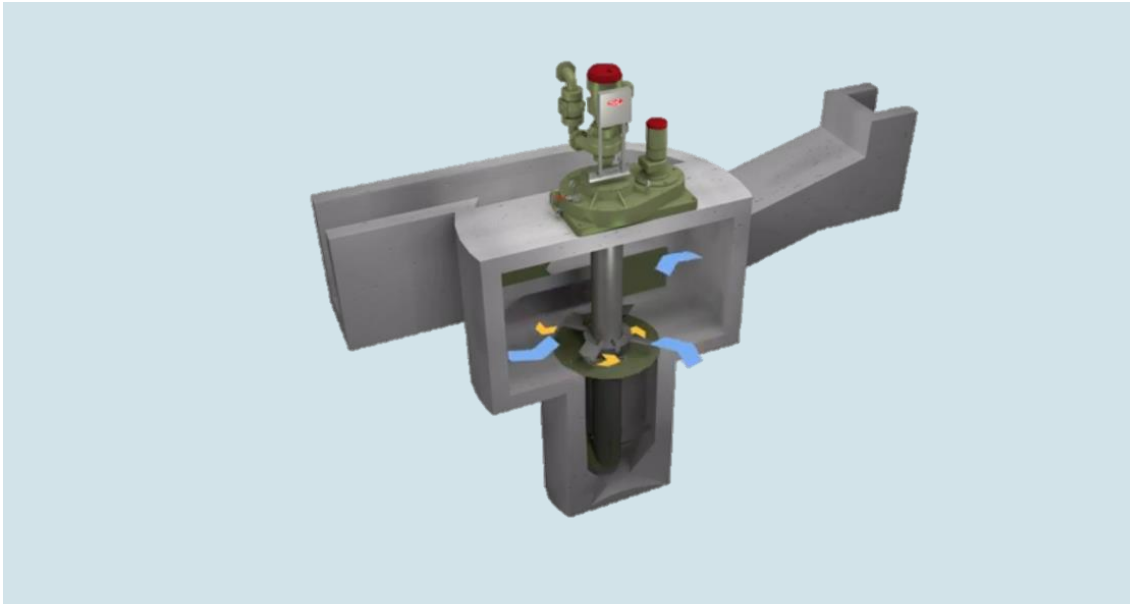
Wastewater CIP Project PHOTOS

CIP #211007: PS2 Rack & Grit Improvements

Existing Grit Chambers (1 of 8)

Prop. Vortex Collector (1 of 8)



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Wastewater CIP Project STATUS

CIP #: 273001 Hubbell Southfield (HS) CSO Facility Improvements

Project Manager: Kashmira Patel, PE, PMP
Project Delivery Method: Design-Bid-Build
Project Status: Design Phase
CIP Score: 75.7

We Are Here

Master Plan & BCE → **RFP** → **Study** → **RFP** → **Design** → **RFB** → **Construction**

BCE: Business Case Evaluation
Request for proposal
Request for proposal
Request for bid

Contract	Contractor	Contract Amount	Earned Value	% Complete	Start	End	% Elapsed Time
• 2103225	• Wade Trim	• $11,418,379	• $2,253,042	• 19.73%	• 09/25/2023	• 06/22/2030	• 12.55%

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Wastewater CIP Project INFO

CIP #273001 HS CSO Facility Improvements

- **Scope of Work & Goals**
  - Improve Flushing & Dewatering system with reduced maintenance efforts.
  - Improve Chemical Feed system with addition of chemical tank to meet high demands.
  - Improve Electrical and Instrumentation and controls system
  - Better operational reliability of the equipment and the facility & reduce maintenance cost.
- **Significance/Need/Background**
  - The existing flushing system is costly, inefficient and requires manual cleaning.
  - A larger event or back-to-back events results in chlorine demand to disinfect the flow.
  - Existing electrical and I&C equipment are at the end of their service life.

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Wastewater CIP Project PHOTOS

CIP #: 273001 HS CSO Facility Improvements

Existing Flushing System

Proposed Flushing System

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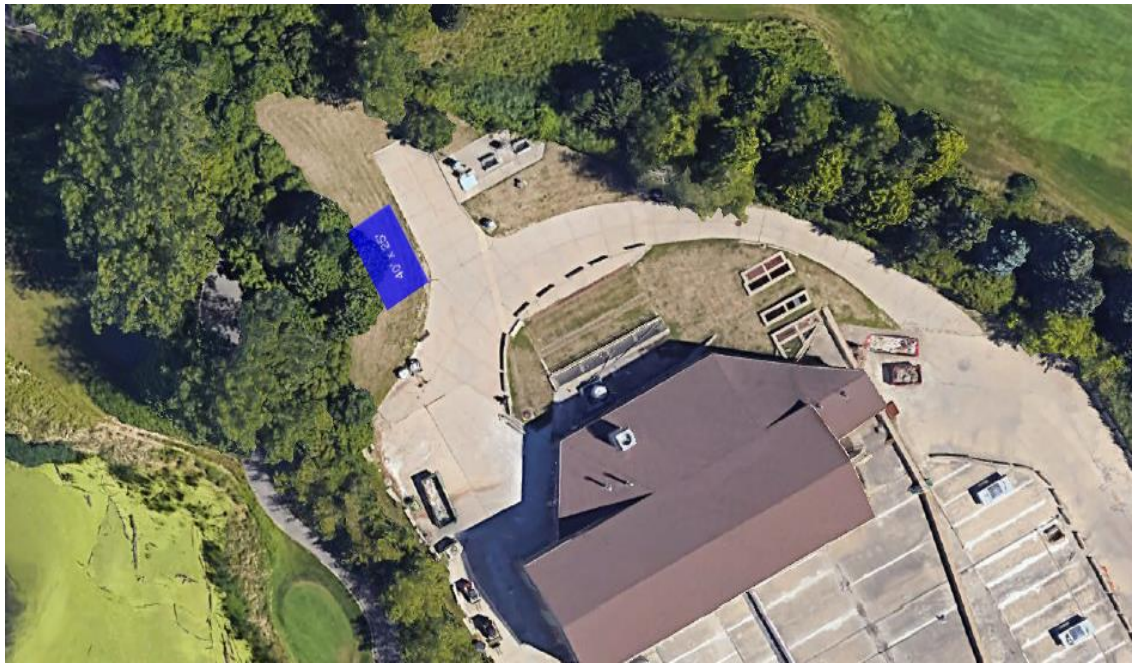
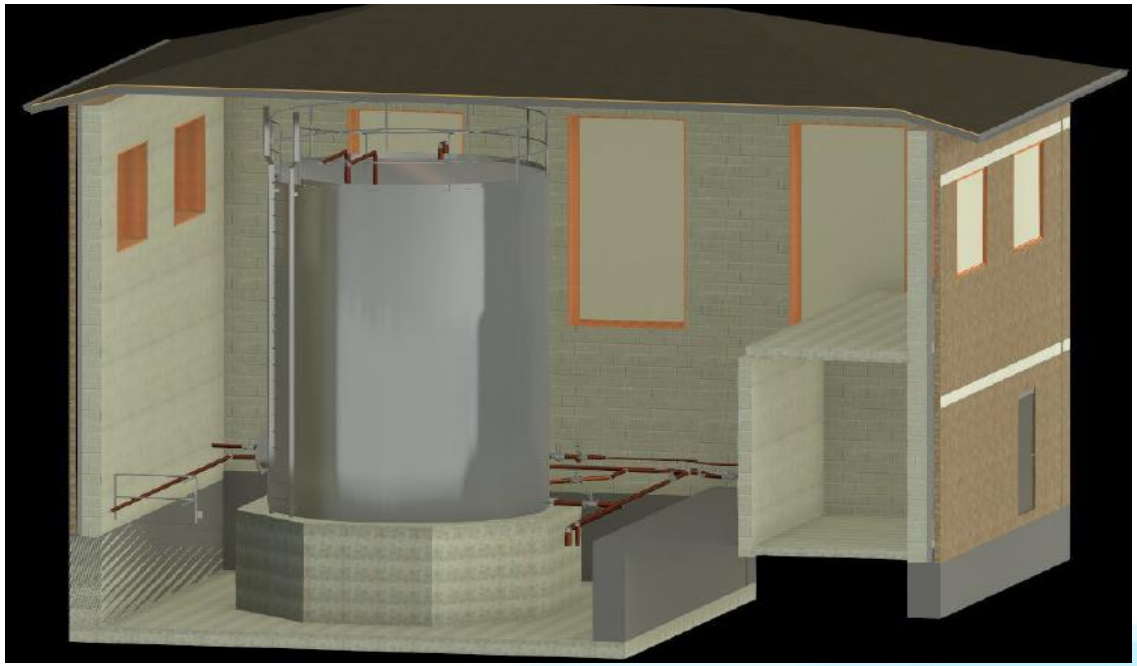
Wastewater CIP Project PHOTOS

CIP #: 273001 HS CSO Facility Improvements

Proposed New Bldg Location



Proposed New Chem Bldg



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Typical Wastewater CIP Delivery Challenges

- Weather related delays
- Operational restrictions in releasing the Equipment/processes for construction / isolation
- Equipment fabrication/ delivery (supply chain)
- Acquisition of land / easements
- Acquisition of permits
- SRF funding approval delay
- Design delays due to scope changes/additions
- Construction delays due to differing site conditions

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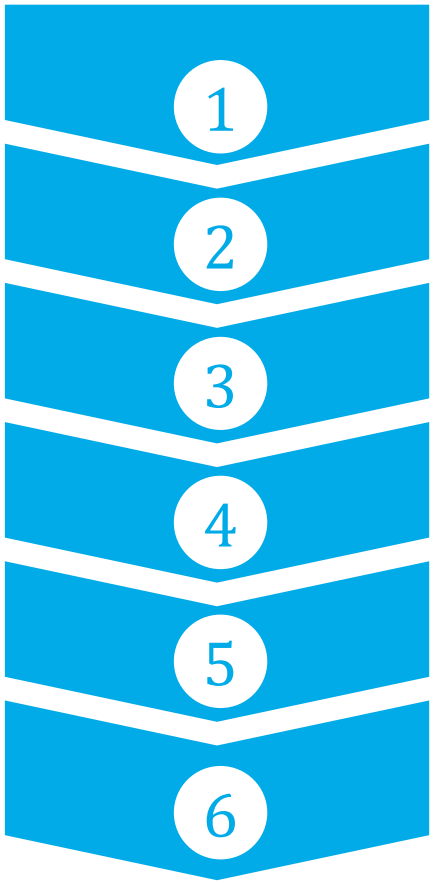
Process for choosing projects to submit in CIP



- Master Plan Review
- Discussions with Asset Management, Operations & Maintenance, Plant Managers
- Scope Development
- Schedule/budget Development
- Review with Director/CIP Team/Chief
- Resource Review

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Questions and Contact

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