

# Headworks Rehabilitation at Plant No. 1, Project No. P1-105

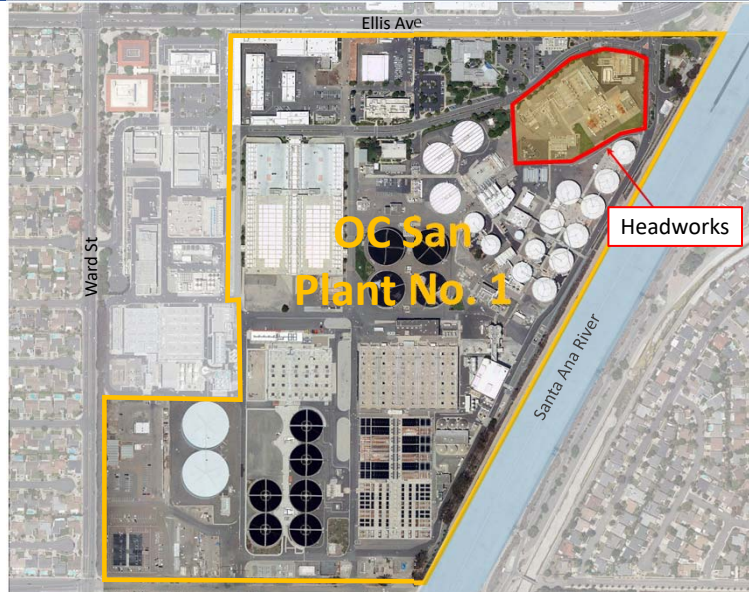
Construction Contract Award

Presented by:  
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Engineering  
Operations  
Committee  
March 3, 2021



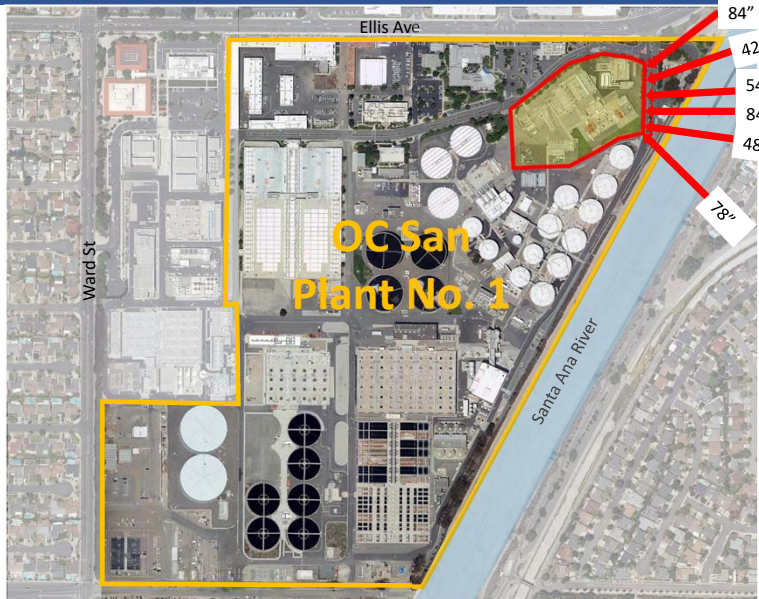
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## OC San Reclamation Plant No. 1 Headworks Facilities



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### OC San Reclamation Plant No. 1 Headworks Facilities



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### Plant No. 1 Receives About 116 MGD of Influent Daily



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### Preliminary Treatment (Headworks) Protects Subsequent Treatment Process

The diagram illustrates the preliminary treatment process. It starts with 'Influent' entering a 'Bar Screen' (labeled 'Suhap Iqdu| # Wuhdvp hqw#'). The flow then goes to a 'Grit Chamber' (labeled 'Sulp du| # Wuhdvp hqw#'). From there, it moves to a 'Grit Removal' stage (labeled 'Vhfrggdu| Wuhdvp hqw#') which is shown as a hopper. Finally, the 'Effluent' exits the system.

Bar Screen

Grit waste

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### Metering and Diversion Structure

The photograph shows a complex industrial piping system, likely a metering and diversion structure. It features numerous large, white pipes connected by various fittings and valves. The system is housed in a large, industrial-looking structure with metal walkways and railings. The lighting is bright, highlighting the intricate network of pipes.

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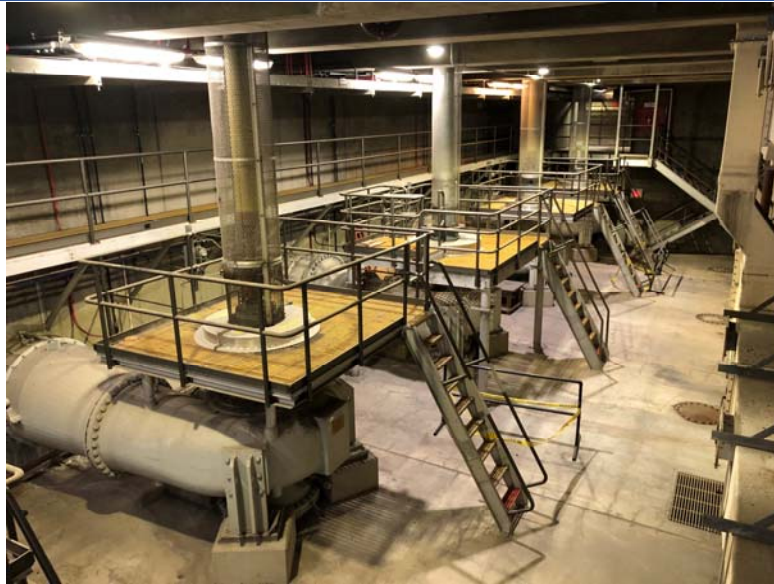
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## Bar Screen Facility



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## Main Sewage Pumps



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## Headworks Facilities are Aging



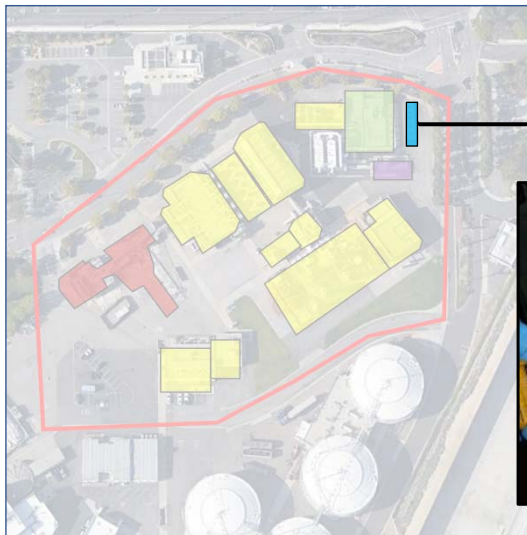
### Age of Facilities

- 22 years
- 29 years
- 34 years
- 49 years
- 63 years

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## Metering & Diversion Box Requires Replacement



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### 110 Hydraulic Gates Require Replacement

This slide illustrates the need for replacing 110 hydraulic gates. It features an aerial site map on the left with several yellow callouts indicating the locations of the gates. On the right, a technical cross-section diagram shows the internal structure of a gate, including the gate body, gate seals, and supporting framework. Below the diagram is a photograph of a heavily worn and rusted metal gate, showing significant structural degradation.

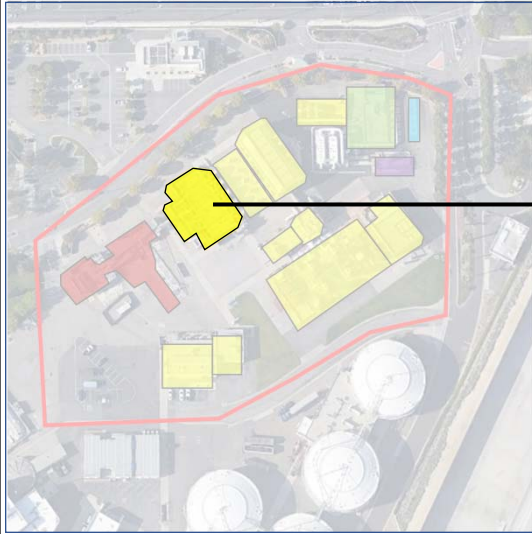
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### Existing Pumps Require Replacement

This slide illustrates the need for replacing existing pumps. It features an aerial site map on the left with several yellow callouts indicating the locations of the pumps. On the right, a photograph shows a close-up view of industrial pumps, likely centrifugal pumps, mounted on a metal structure. The pumps appear to be in a state of disrepair, consistent with the slide's title.

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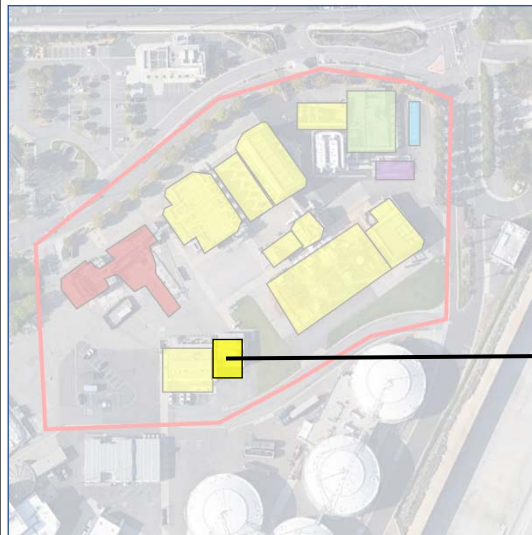
### Poor Grit Removal System Requires Upgrading



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### Electrical Power System Requires Replacement Due to Arc Flash Hazard and Poor Condition

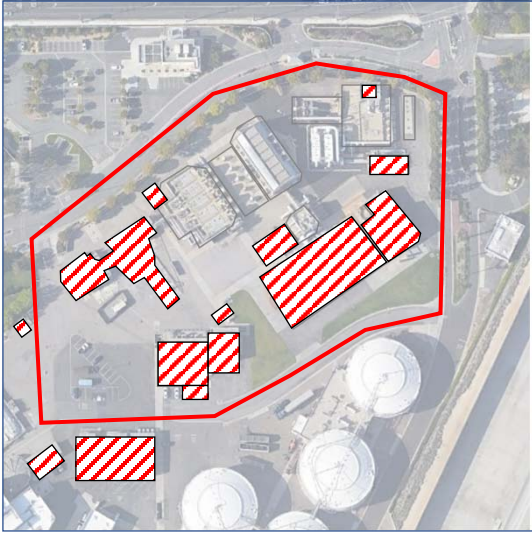



Not an OC San facility Photo

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## Demolition of Unused & Replaced Facilities

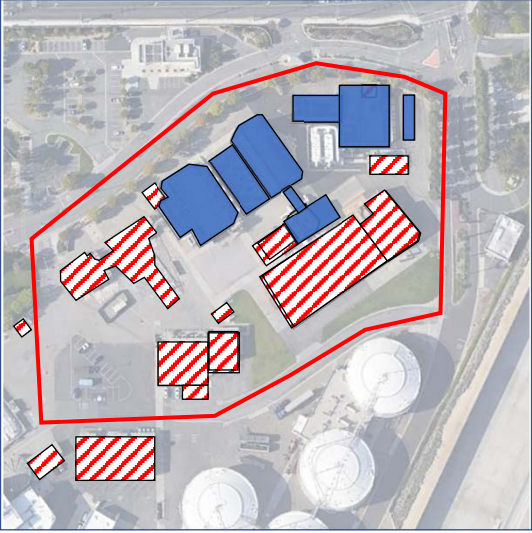




-  To be demolished
- Headworks 1
- Chlorine Building
- Hydrogen Peroxide
- Odor Control & Chemical System
- Electrical Buildings
- Office Trailers

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## Rehabilitation of Facilities



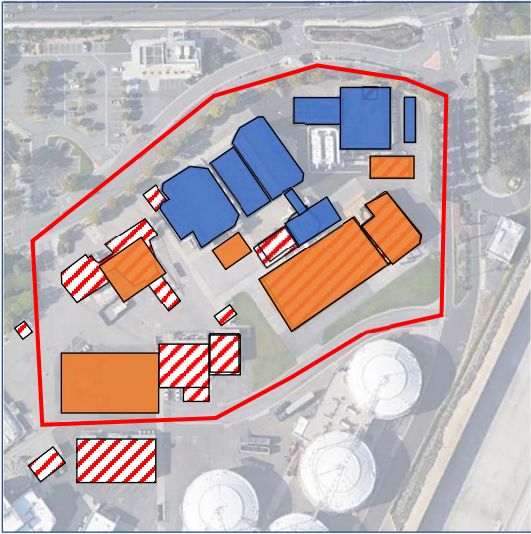
-  To be demolished
- Headworks 1
- Chlorine Building
- Hydrogen Peroxide
- Odor Control & Chemical System
- Electrical Buildings
- Office Trailers
-  To be rehabilitated
- M&D Structure
- Bar Screens
- Bin Loading
- Main Sewage PS
- Grit Basins
- Sunflower PS




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## Construction of New Structure



-  To be demolished
  - Headworks 1
  - Chlorine Building
  - Hydrogen Peroxide
  - Odor Control & Chemical System
  - Electrical Buildings
  - Office Trailers
-  To be rehabilitated
  - M&D Structure
  - Bar Screens
  - Bin Loading
  - Main Sewage PS
  - Grit Basins
  - Sunflower PS
-  New Structures
  - Grit pumping & handling
  - Odor control & chemical facilities
  - Electrical buildings

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## P1-105 is OC San's Biggest Construction Contract

Final Design Phase: 3.5 years  
Construction Duration: 6.5 years



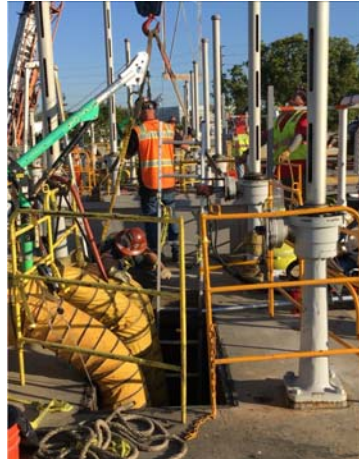
300 Specification Sections
2,000 sheets of Drawings

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## Construction Complexities

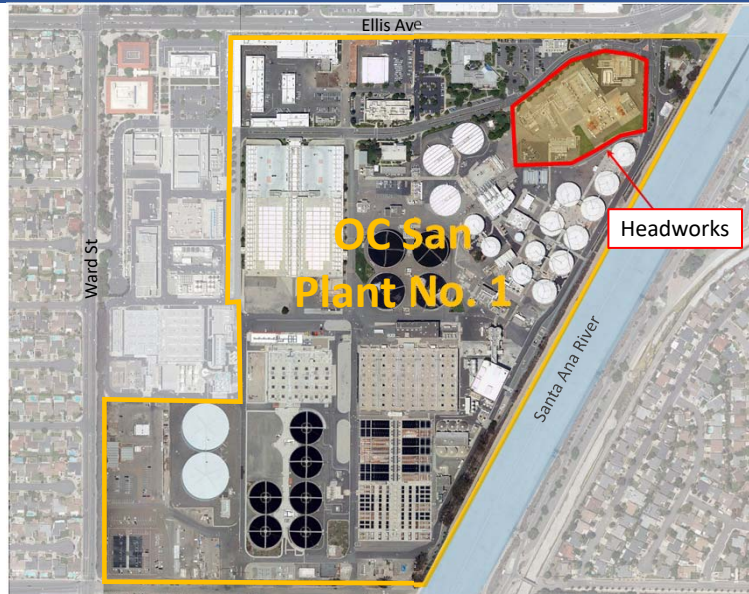
- Must maintain facilities during construction
- Work must be performed in prescribed sequence
  - Dry weather only activities (Apr 15 to Oct 15)
- Major shutdowns & flow diversions are required
- Rehab work involves unknown issues & unanticipated delays
- Extensive confined space entry work



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## Must Rehabilitate in Place




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## Bid Results

Bidder	Amount of Bid
<b>Engineer's Estimate</b>	<b>\$292,299,000</b>
★ Kiewit Infrastructure West Co.	\$222,330,000
J.F. Shea Construction, Inc.	\$259,506,000
Shimmick Construction Co., Inc.	\$276,611,500



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## Construction Contingency

Construction Cost	\$222,330,000
Contingency	\$8,893,200
% of Construction Cost	4%

Staff will report on progress & risks  
 midway through construction.

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## Recommendation: Construction Contract

- Receive and file Bid Tabulation and Recommendation for Headworks Rehabilitation at Plant No. 1, Project No. P1-105;
- Award a Construction Contract to Kiewit Infrastructure West Co. for Headworks Rehabilitation at Plant No. 1 for a total amount not to exceed \$222,330,000; and
- Approve a contingency of \$8,893,200 (4%).

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## Questions



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