



## **WWTP Upgrade and Expansion Project**

City Council Study Session  
March 5, 2018



# Purpose

Receive a progress update on the status of the Construction Manager at Risk contract for the wastewater treatment plant upgrade and expansion project. No action is requested at this time.

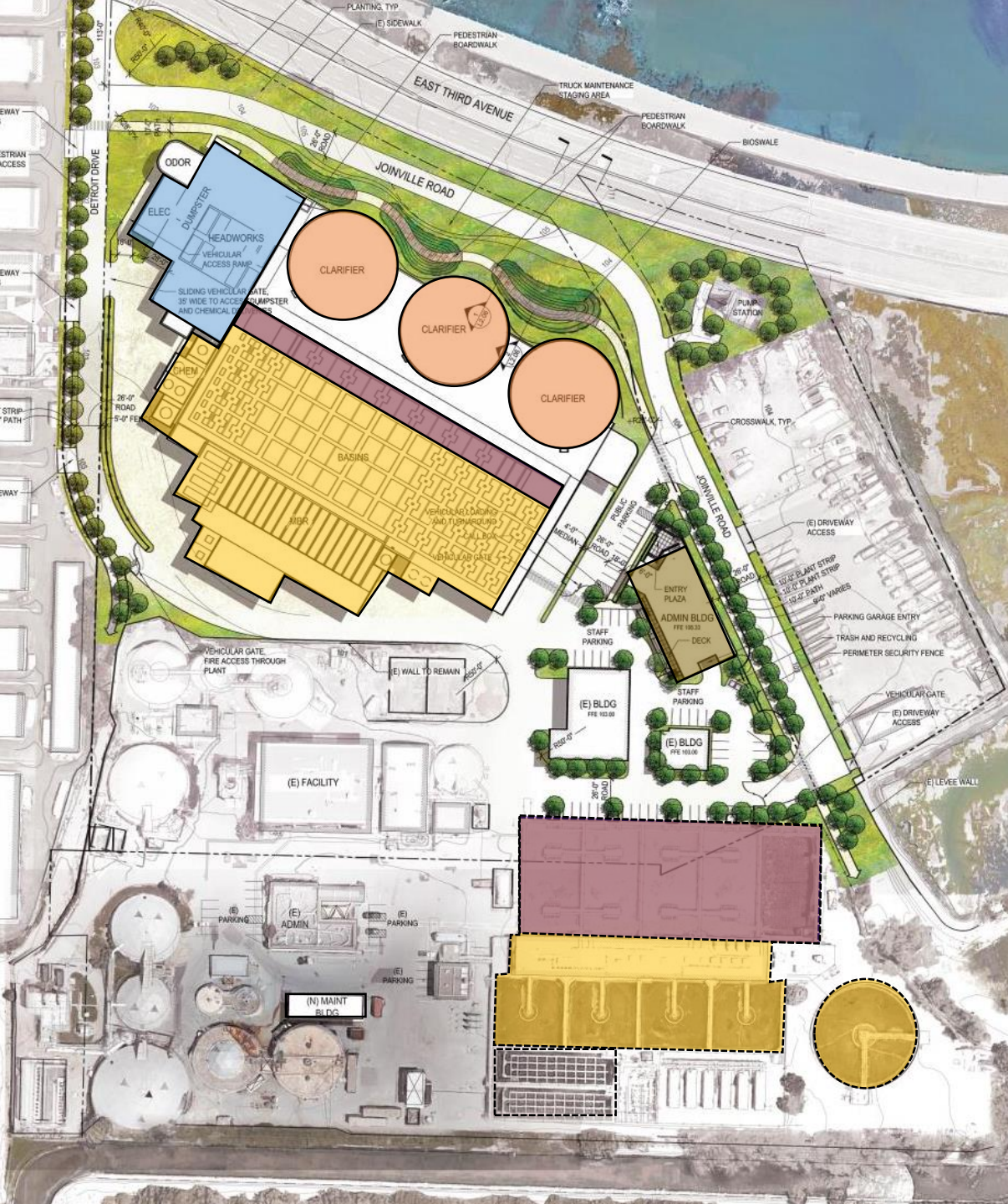


# Agenda

- Background on wastewater treatment plant upgrade and expansion project
- Construction delivery method
- Pre-construction activities
- Construction activities





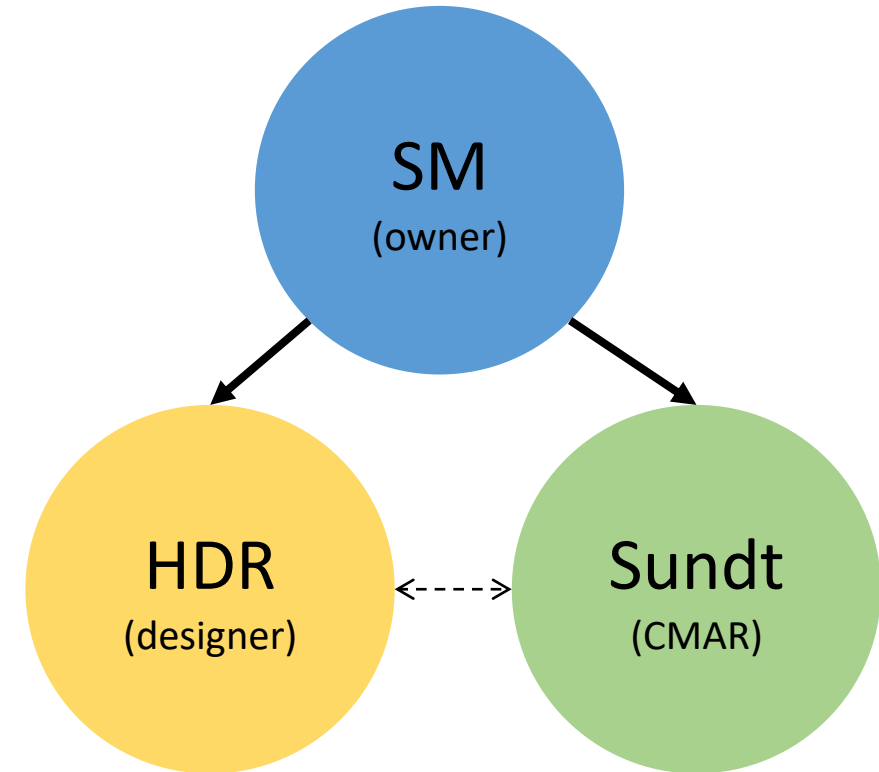


# WWTP Project

- Preliminary Treatment
- Primary Treatment
- Secondary Treatment for Normal Flow
- Secondary Treatment for Peak Wet Weather
- Ancillary facilities

# Construction Manager at Risk Delivery (CMAR)

- Council authorized CMAR delivery in May 2016
- Selected CMAR delivery to help with:
  - *Relationship (between all parties)*
  - *Qualifications*
  - *Cost certainty*
  - *Lock down a contractor*
- CMAR is delivered in two phases
  - *Phase I: pre-construction services (contracted and underway)*
  - *Phase II: construction services (negotiating contract)*



# CMAR – Phase 1

- Phase 1 contract authorized in January 2017
- Scope of services
  - *Constructability*
  - *Cost estimating*
  - *Value engineering*
  - *Supporting environmental and permitting activities*
  - *Design workshop participation*
- Teaming with designer to further refine costs





# Project Budget and Estimated Costs

Parameter	Value (Construction Only)	Description
<b>Baseline Budget</b>	\$335M	Planning Level Estimate
<b>30% Cost Estimate</b>	\$427M	Early Design Level Estimate
<b>Difference</b>	\$92M	+27% of the Budget Amount
<b>Value Engineering Opportunities</b>	\$39M	Brings +27% variance down to 16%



# Cost Risks

- Contract terms
- Progression of design
- Market conditions → • Market Conditions Reflected in 30% Estimate
  - Earthwork*
  - Concrete*
  - Electrical*
  - Labor*
- Scope changes
- Funding source





# Transition from Design to Construction

- Finalize construction costs by:
  - Soliciting costs from market*
  - Comparing designer and CMAR cost estimates*
- Finalize prime contract negotiations
  - Labor provisions*
  - Terms and conditions*
- Council Approval for each construction package (GMP)
  - GMP1:** *Fall 2018*
  - GMP2:** *Spring 2019*
  - GMP3:** *Summer 2019*



## CMAR – Phase 2

- Construction will be delivered in three phases or GMPs (guaranteed maximum price):
  - *Phase 1/GMP 1: mass excavation, demolition, and shoring of site*
  - *Phase 2/GMP 2: piles and underslab utilities*
  - *Phase 3/GMP 3: remainder of project*





# Existing Conditions





# GMP1

- Excavation
- Demolition





# GMP2

- Pile Driving
- Underslab utilities





# GMP3

- Remaining Construction





An aerial architectural rendering of a large-scale industrial or commercial development. The central feature is a long, low-profile building with a semi-circular section, possibly a warehouse or distribution center, with a red structural frame visible on its roof. To the left of this building are several large, white, dome-shaped structures, likely storage tanks or silos. The site is surrounded by extensive parking areas, some with individual parking spaces marked. In the foreground, a multi-lane highway or expressway runs diagonally across the frame. The background shows a dense residential neighborhood with houses and trees. The entire image has a semi-transparent white overlay in the center where the text is located.

# Questions and Feedback

# POCKET SLIDES

*(Use if additional detail is requested)*



# Example VE Items

VE Opportunity	Potential Direct Cost Savings	Potential Total Cost Savings
Reconfigure membrane tanks, electrical building, and equipment building	\$2,156,136	\$2,702,945
Eliminate building enclosure for the headworks equipment (provide screening in lieu)	\$1,951,920	\$2,446,939
Utilize removable roof panels in lieu of skylights in headworks building	\$129,402	\$162,219
Leave existing FEQ baffle walls in place. In lieu, core drill holes for wastewater flow.	\$671,177	\$841,392
Eliminate underground parking for Admin Building	\$1,604,122	\$2,010,937
Eliminate bridge crane from maintenance warehouse	\$102,710	\$128,758
Modify dual use clarifiers baffle material to fiberglass	\$1,013,990	\$1,271,144
Change mixer design in BNR to eliminate access walkway and handrail	\$461,776	\$578,885



# AACEI Estimating Standards

Estimate Class	Project Definition Range	End Usage	Expected Accuracy Range	Typical Estimating Contingency Range
Class 5	0% - 2%	Concept screening	-50% to +100%	30% - 35%
Class 4	1% - 15%	Study or feasibility	-30% to +50%	25% - 30%
Class 3	10% - 40%	Budget authorization, appropriation, funding, or control estimate	-20% to +30%	15% - 25%
Class 2	30% - 70%	Control estimate	-15% to +20%	10% - 15%
Class 1	65% - 100%	Check estimate	-10% to +15%	0% - 5%





# GMP 1 Project Scope Summary

## Site Prep, Perimeter Shoring, Mass Ex, Demo

- Existing Abandoned Facilities Demo Scope & Eductor Facility Relocation
- SWPPP and Dewatering Temporary Works (SWPPP Permit Required)
- Site Soil Decon
- Site Civil Demo (asphalt, curbs, parking lot lights, underground utility demo/relocations....)
- Site Logistics Plan & Improvements (Traffic Management Plan Required)
- Construction Trailer & Parking Lots Civil Plan (stormwater runoff, site grading....)
- Perimeter Shoring Wall
- Temporary Site Utilities (power, water, sewer, data) for Trailers and Construction Site.
- Mass Ex Scope (New Treatment Complex and Admin Building only) - includes excavation scope, preloading plan, and base lime conditioning
- Existing Site Stormwater Improvements



# GMP 2 Project Scope Summary

## Piles and Underslab Utilities

- Precast Pile Plan (New Treatment Complex, Tower Cranes, Admin Bldg)
- Under-Slab Utilities & Process Piping (New Treatment Complex only)



# GMP 3 Project Scope Summary

## Balance of Plant, Admin Bldg, Maintenance Warehouse

- New Treatment Complex (less scope covered in GMP-1)
- Site Utilities to New Treatment Complex
- Yard Process Piping and Piles
- CNG Facility Relocation
- New Admin Building/Bridge (Piles part of GMP-2)
- New Maintenance Warehouse Building
- Site Civil and Landscape Improvements (Asphalting, Parking lots, Streets, Landscaping, Sidewalks, Site Lighting..)
- EQ Basin Improvements
- Stormwater Retention Basin, Pump Station, and Underground Conveyance.
- Undefined Project scope on the existing site (i.e. new eductor facility, additional facility demo, yard asphalt repair..)



# CMAR versus Design-Bid-Build

CMAR	Design-Bid-Build
Contractor selected based on qualifications	Contractor selected based on low bid
Construction pricing happens in parallel with design	Design is completed before contractor is engaged
Constructability issues vetted during design	Constructability issues are addressed during construction
Negotiate Guaranteed Maximum Price (GMP) for construction	Bid price is starting construction price
Construction completed for GMP or less	Construction completed for bid price plus any change orders



# WWTP Project Progress

**2009** Cease and Desist Order issued

**2013** NPDES Permit – Elimination of Blending at the WWTP

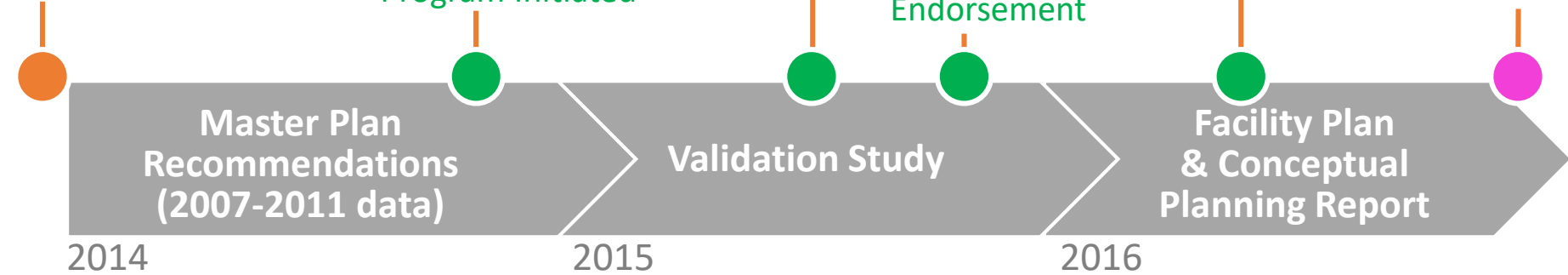
**October 2014**  
Clean Water Program Initiated

**August 2015**  
City Council selection of technology approach

RWQCB Endorsement

**June 2016**  
PEIR Approved

Design Notice to Proceed



**July 2017**  
Value Engineering Workshop

**October 2017**  
60% Design Start

**January 2017**  
CMAR Contract Issued

**September 2018**  
GMP1 Construction Start

**February 2019**  
GMP2 Construction Start

**June 2019**  
GMP3 Construction Start

