



Inland Empire Utilities Agency

A MUNICIPAL WATER DISTRICT

AGENDA

SPECIAL WORKSHOP OF THE BOARD OF DIRECTORS

WEDNESDAY, MAY 11, 2016
8:30 A.M.

INLAND EMPIRE UTILITIES AGENCY*
AGENCY HEADQUARTERS
6075 KIMBALL AVENUE, BUILDING A
CHINO, CALIFORNIA 91708

CALL TO ORDER OF THE INLAND EMPIRE UTILITIES AGENCY BOARD OF DIRECTORS WORKSHOP MEETING

FLAG SALUTE

PUBLIC COMMENT

Members of the public may address the Board on any item that is within the jurisdiction of the Board; however, no action may be taken on any item not appearing on the agenda unless the action is otherwise authorized by Subdivision (b) of Section 54954.2 of the Government Code. Those persons wishing to address the Board on any matter, whether or not it appears on the agenda, are requested to complete and submit to the Board Secretary a "Request to Speak" form which are available on the table in the Board Room. Comments will be limited to five minutes per speaker. Thank you.

ADDITIONS TO THE AGENDA

In accordance with Section 54954.2 of the Government Code (Brown Act), additions to the agenda require two-thirds vote of the legislative body, or, if less than two-thirds of the members are present, a unanimous vote of those members present, that there is a need to take immediate action and that the need for action came to the attention of the local agency subsequent to the agenda being posted.

1. WORKSHOP

RP-1/RP-5 EXPANSION PRELIMINARY DESIGN REPORT (PDR)
WORKSHOP


Materials related to an item on this agenda submitted to the Agency, after distribution of the agenda packet, are available for public inspection at the Agency's office located at 6075 Kimball Avenue, Chino, California during normal business hours.

2. ADJOURN

*A Municipal Water District

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the Board Secretary (909) 993-1736, 48 hours prior to the scheduled meeting so that the Agency can make reasonable arrangements.

Declaration of Posting

Proofed by: 

I, April Woodruff, Board Secretary of the Inland Empire Utilities Agency*, A Municipal Water District, hereby certify that a copy of this agenda has been posted by 5:30 p.m. at the Agency's main office, 6075 Kimball Avenue, Building A, Chino, CA on Thursday, May 5, 2016.


April Woodruff

WORKSHOP

1

Date: May 11, 2016

To: The Honorable Board of Directors

From: *to* P. Joseph Grindstaff *W*
General Manager

Submitted by: Chris Berch *CB*
Executive Manager of Engineering/Assistant General Manager

Shaun J. Stone *SJS*
Manager of Engineering

Subject: RP-1/RP-5 Expansion Preliminary Design Report (PDR) Workshop

RECOMMENDATION

This is an informational item for the Board of Directors.

BACKGROUND

Beginning in June 2013, the Inland Empire Utilities Agency (Agency) started a planning initiative to update the Agency's Wastewater Facilities Master Plan (WFMP). As part of the WFMP, the Agency planned existing facility improvements to accommodate for population growth and optimization of the wastewater collection and wastewater treatment systems, as well as the recycled water system. The WFMP incorporated the wastewater flow projections developed by the Integrated Water Resources Plan (IRP) and operational knowledge of the existing treatment systems to develop a comprehensive facilities and operations plan. According to the WFMP, influent wastewater flows are projected to increase as a result of population growth in the service area. By the year 2060, influent flows at RP-1 are projected to increase as much as 20 percent and more than double at RP-5.

In addition, the United States Army Corps of Engineers (USACE) has begun a project to raise the Prado Dam Spillway, which will result in an increased high water service level behind the dam placing the RP-2 Solids Treatment Facility in a flood plain. Therefore, RP-2 must be decommissioned and a new Solids Treatment Facility must be constructed at RP-5 with sufficient capacity to treat existing and future service area flows.

The RP1/RP-5 Expansion PDR project will develop a consolidated PDR for the RP-1 Liquids & Solids Treatment System Expansion, RP-5 Liquids Treatment System Expansion, and RP-5 Solids Treatment Facility to size of the required treatment capacity expansions at each of the facilities,

determine the schedule for design and construction, and estimate the project costs (design, construction, internal labor, & contingency).

Included as attachments are the first five Technical Memorandums (TMs) for the RP-1 and RP-5 Expansion PDR project. Agency staff conducted the first of five major technical workshops on April 25th and April 26th, and will be sharing a summary presentation at the Board Workshop on May 11, 2016. This workshop will focus on the RP-5 Secondary Treatment Alternatives and the Decommissioning of Carbon Canyon Water Recycling Facility.

All five TMs from the first staff workshop are being attached for review and include:

- Decommissioning of CCWRF Preliminary TM 5-1-16
- Elimination of RP-1 Primary Effluent Equalization Preliminary TM 5-1-16
- Onsite Centrate Treatment Preliminary TM 5-1-16
- RP-5 Secondary System Alternatives Preliminary TM 5-1-16
- RP-5 Ultimate Expansion Preliminary TM 5-1-16

The RP-1/RP-5 Expansion PDR project is consistent with the IEUA business goal of *Wastewater Management Capacity*, namely that IEUA will maintain capacity within systems and facilities to meet essential service demands and to protect public health and environment.

PRIOR BOARD ACTION

On January 20, 2016, the Board of Directors approved the consulting engineering services contract award for the RP-1/RP-5 Expansion PDR to Parsons Water & Infrastructure Inc. for the not-to-exceed amount of \$2,431,598.

IMPACT ON BUDGET

None.

Attachments:

1. Decommissioning of CCWRF
<https://dl.dropbox.com/s/r62ad9atwcrdplg/16122%20Attach%201.%20Decommissioning%20of%20CCWRF%20Draft%20TM%204-20-16.pdf?dl=0>
2. Elimination of Primary Effluent Flow Equalization Draft TM
<https://dl.dropbox.com/s/h3ym26zfei8flx2/16122%20Attach%202.%20Elimination%20of%20Primary%20Effluent%20Flow%20Equalization%20Draft%20TM%204-20-16.pdf?dl=0>
3. Onsite Centrate Treatment and Offsite Recycle Flow Discharge Draft TM
<https://dl.dropbox.com/s/ujophz87hhd510r/16122%20Attach%203.%20Onsite%20Centrate%20Treatment%20and%20Offsite%20Recycle%20Flow%20Discharge%20Draft%20TM%204-20-16.pdf?dl=0>

4. RP-5 Liquids Treatment Alternative Technology, Secondary Treatment Draft TM
<https://dl.dropbox.com/s/hlavdo3xr5sikw5/16122%20Attach%204.%20RP-5%20Liquids%20Treatment%20Alternative%20Technology%2C%20Secondary%20Treatment%20Draft%20TM%204-20-16.pdf?dl=0>
5. Ultimate Expansion of RP-5 Draft TM
<https://dl.dropbox.com/s/p2hao0s1fbz4kpn/16122%20Attach%205.%20Ultimate%20Expansion%20of%20RP-5%20Draft%20TM%204-20-16.pdf?dl=0>
6. RP-1 & RP-5 Expansion PDR Board Workshop No. 1
<https://dl.dropbox.com/s/gowmfi72iuoceay/16122%20Attach%206.%20RP-1%20%26%20RP-5%20Expansion%20PDR%20Board%20Workshop%20No.%201.pptx?dl=0>

PJG:CB:SS:jm

RP-1 & RP-5 Expansion PDR Board Workshop No. 1

May 11th, 2016



Jason Marsailles, P.E.,
Senior Engineer

Shaun Stone, P.E.,
Manager of Engineering

Board Workshop No. 1 Objective

Facility Capacities & Expansion Sizing

- Secondary Treatment Alternatives: Conventional Activated Sludge (CAS) versus Membrane Bio-Reactor (MBR)
- Expansion Phasing: RP-1, CCWRF, RP-5
- Impacts to Cost and Budget



Technical Memoranda Relating to Facility Capacities & Expansion Sizing



Facility Flows & Expansion Phasing



Decommissioning of CCWRF

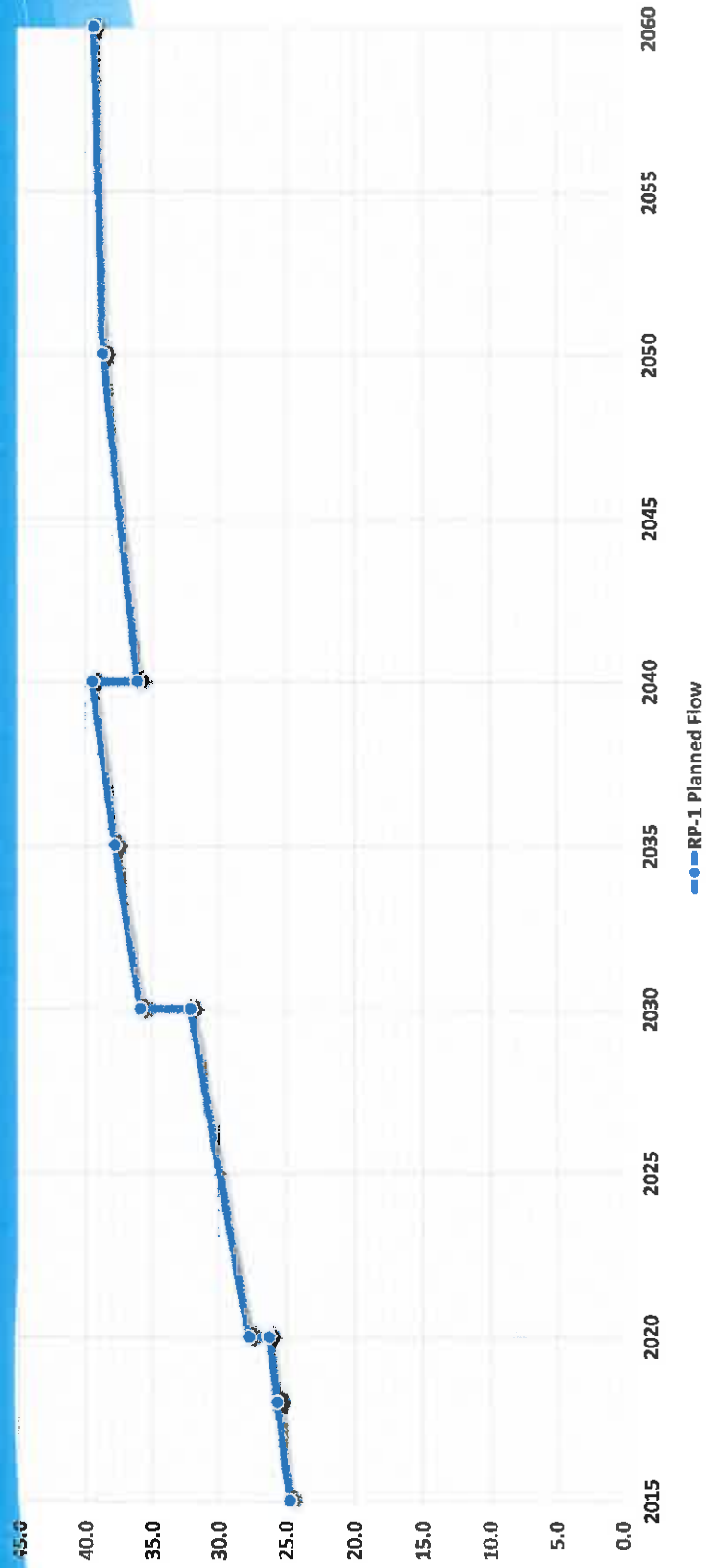


RP-5 Secondary Treatment System
Alternatives

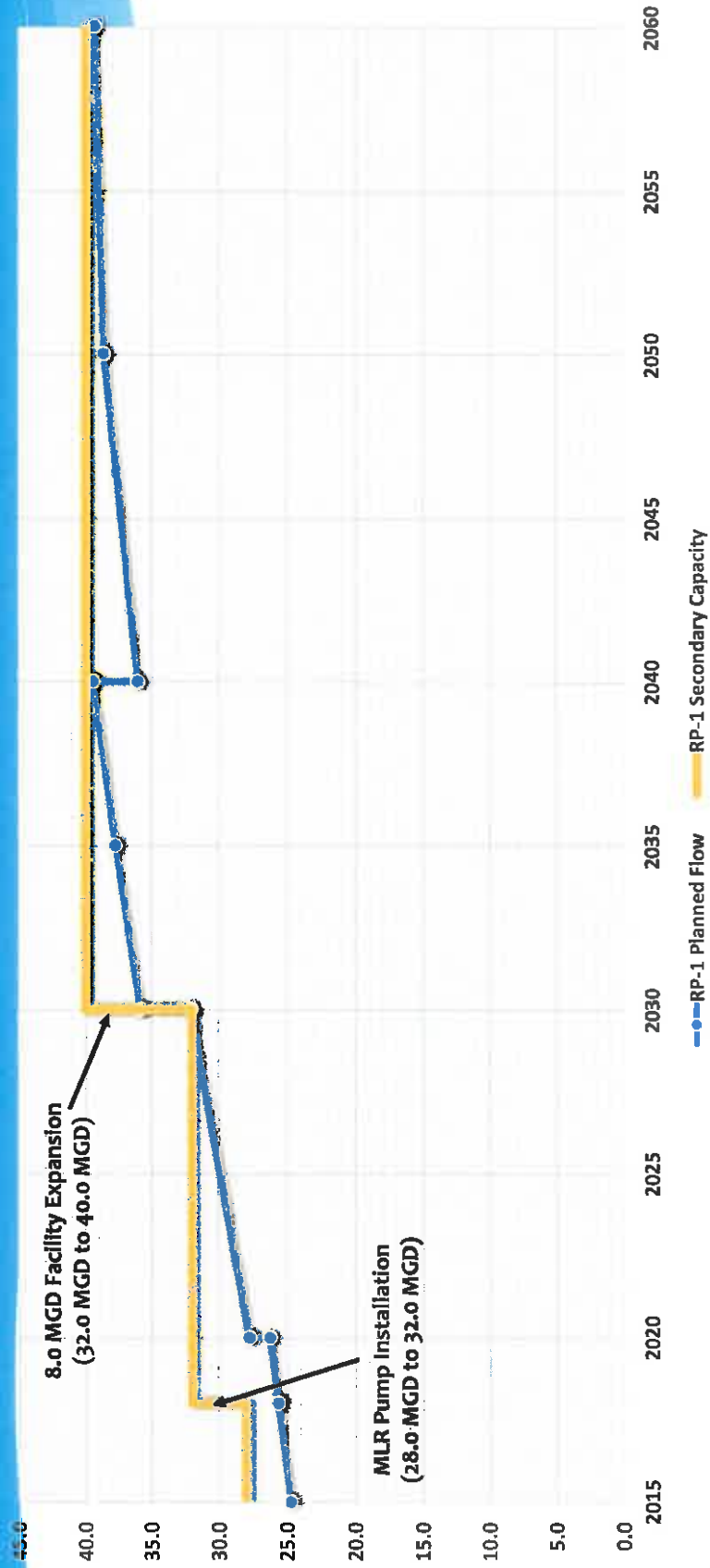
FACILITY FLOWS AND EXPANSION PHASING



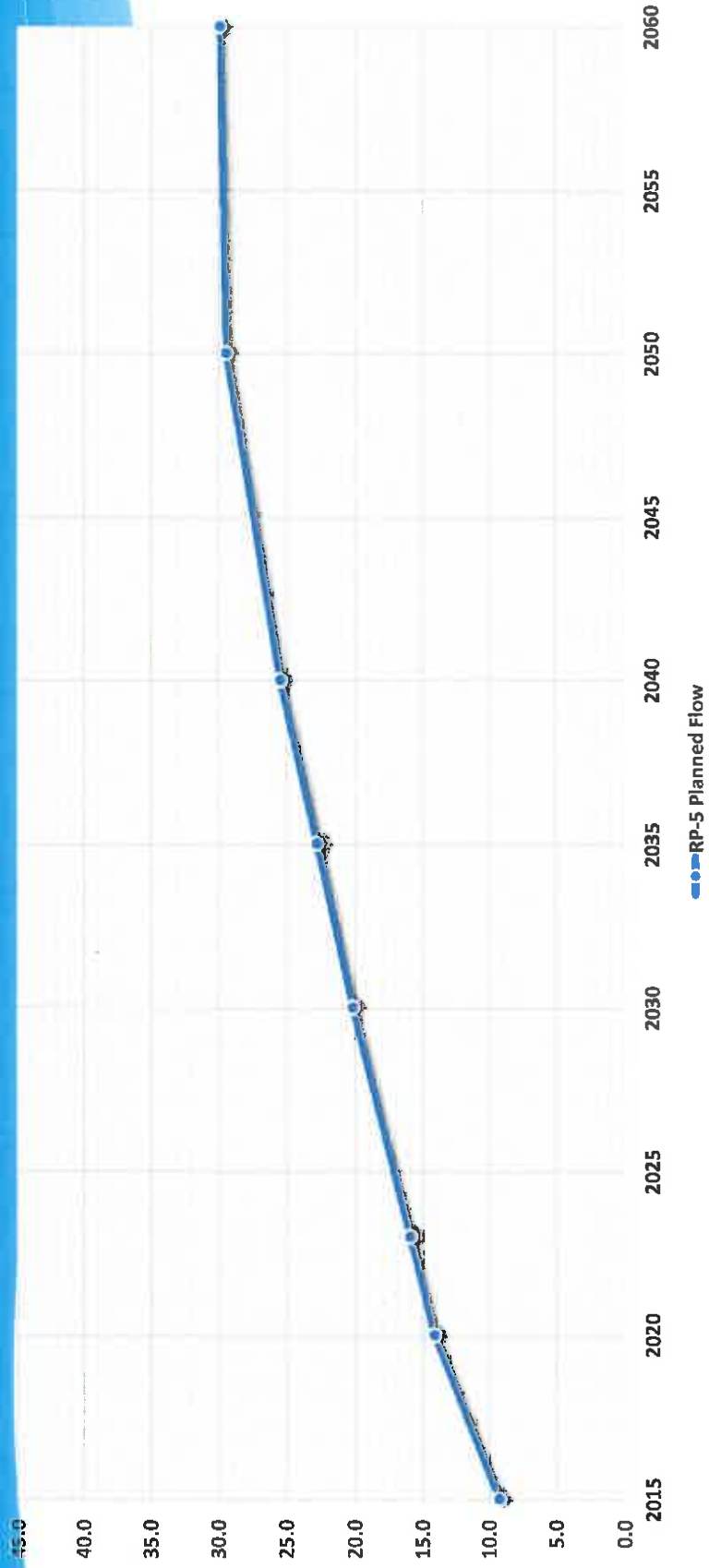
RP-1 Influent Flows & Treatment Capacity



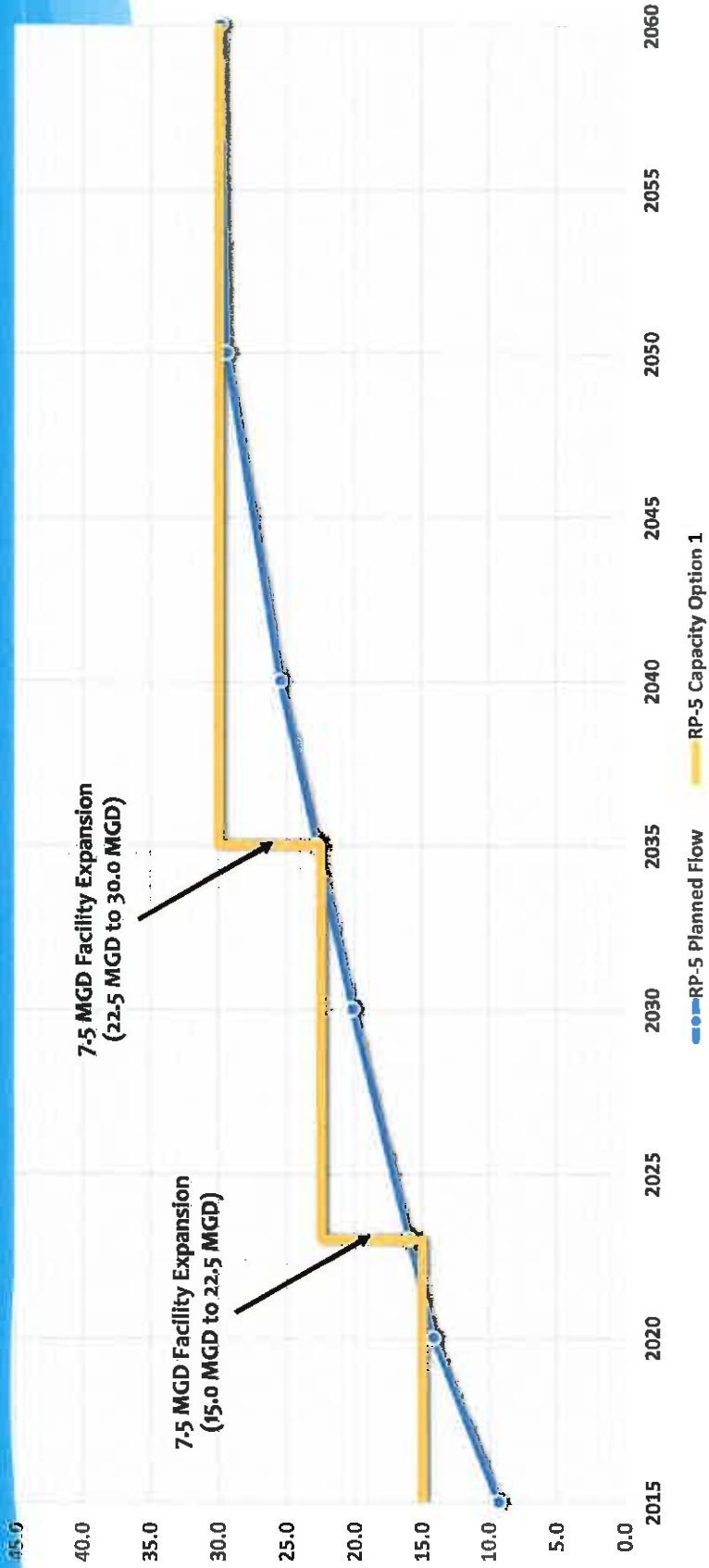
RP-1 Influent Flows & Treatment Capacity



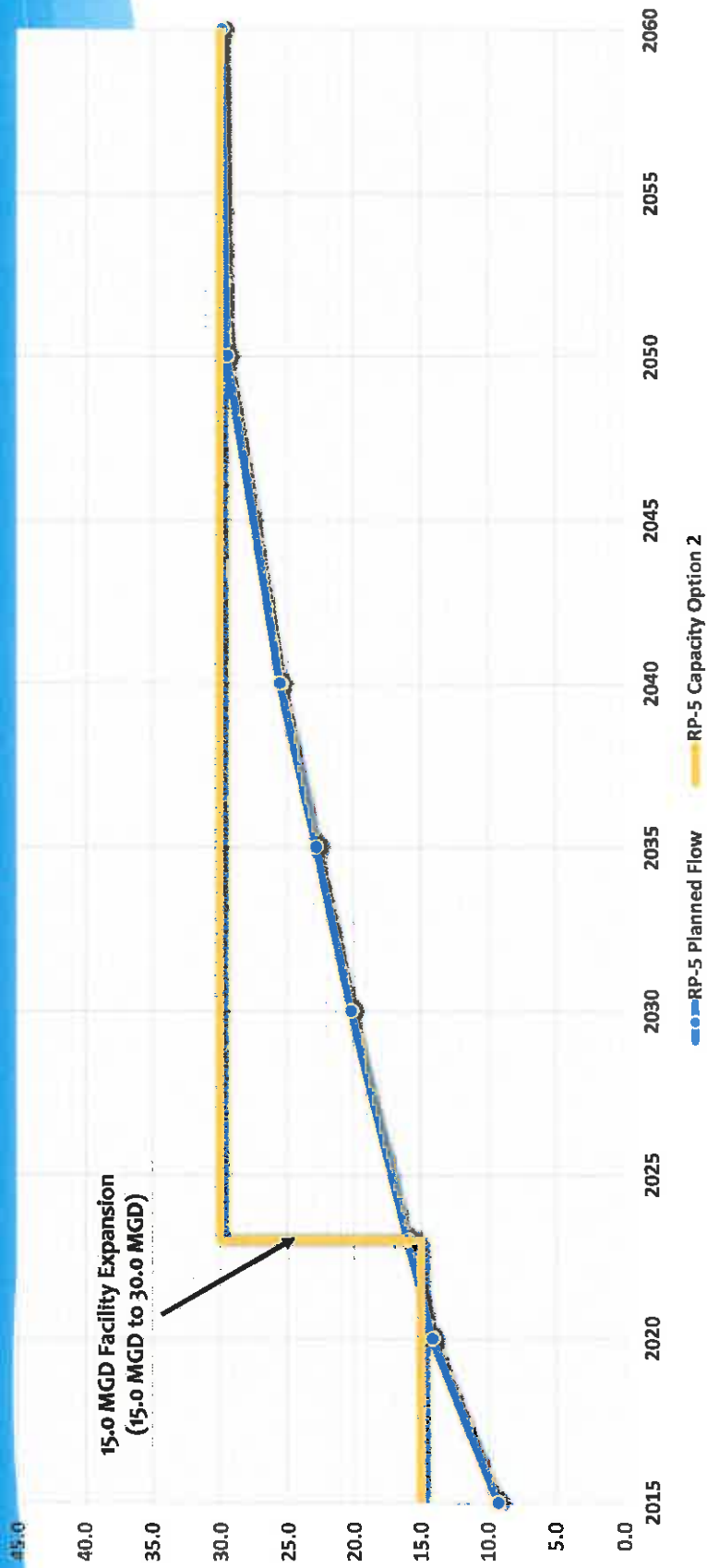
RP-5 Influent Flows & Treatment Capacity



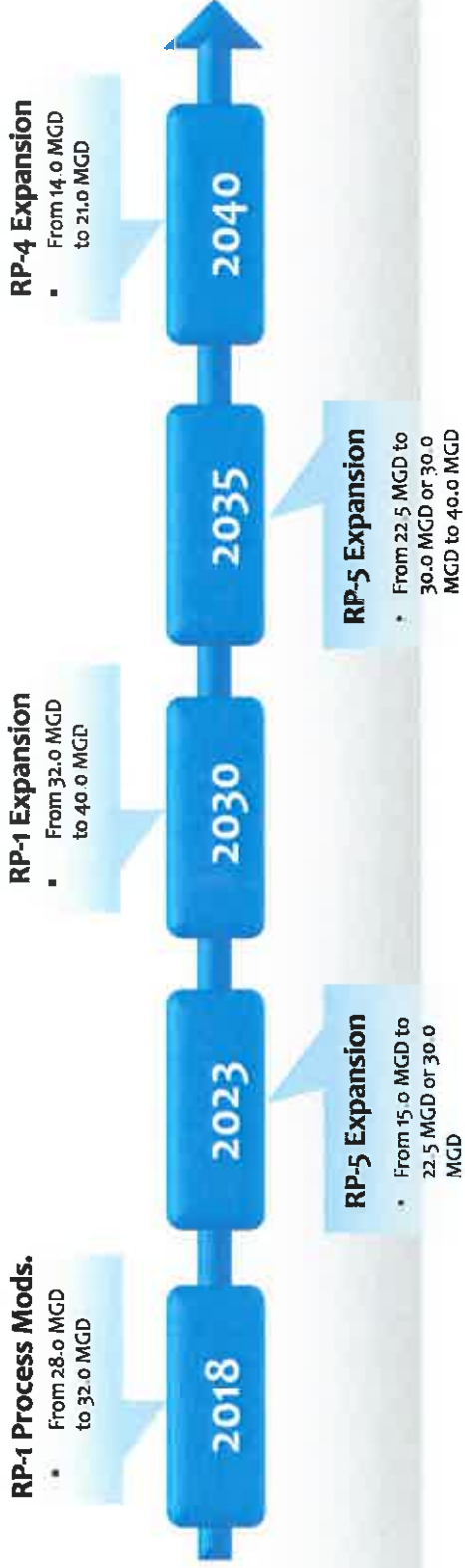
RP-5 Influent Flows & Treatment Capacity



RP-5 Influent Flows & Treatment Capacity



Agency Facility Expansion Phasing

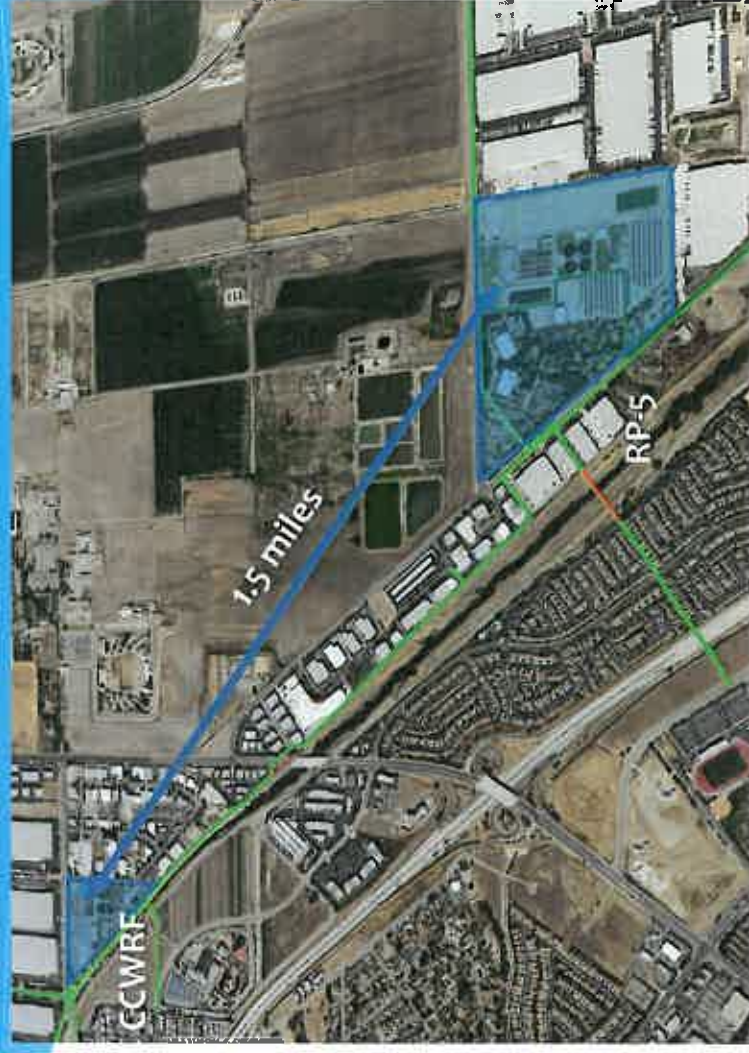


EVALUATION OF THE DECOMMISSIONING OF CCWRF



Decommissioning of CCWRF Alternatives

- Business Case Evaluation Included 3 Alternatives:
 - Alternative 1 – Operate CCWRF Indefinitely
 - Alternative 2 – Operate CCWRF Until 2033
 - Alternative 3 – Shutdown CCWRF after the Expansion of RP-5 (2023)



Proximity of RP-5 & CCWRF

Decommissioning of CCWRF Alternatives

- Business Case Evaluation Included 3 Alternatives:
 - Alternative 1 – Operate CCWRF Indefinitely
 - Alternative 2 – Operate CCWRF Until 2033
 - Alternative 3 – Shutdown CCWRF after the Expansion of RP-5 (2023)



CCWRF & Surrounding Vicinity

Business Case Evaluation (BCE)

Alternative	Description	Capital Cost	30-YR Cost
1	Operate CCWRF Indefinitely	\$83M	\$191M
2	Operate CCWRF Until 2033	\$145M	\$236M
3	Operate CCWRF Until 2023	\$135M	\$209M

Decommissioning of CCWRF Benefits versus Drawbacks

Alternative	Benefits	Drawbacks
Alternative 1: Operate CCWRF Indefinitely	<ul style="list-style-type: none"> • Lowest capital cost alternative • Facility meets future planned flows 	<ul style="list-style-type: none"> • Highest O&M cost
Alternative 2: Operate CCWRF Until 2033	<ul style="list-style-type: none"> • Defers decision to shutdown CCWRF • Centralized facilities • Improved water quality through MBR 	<ul style="list-style-type: none"> • Highest 30-yr cost (NPV) • Requires major facility rehab projects prior to shutdown • Congested RP-5 site layout • Sale of property (w/ easements)
Alternative 3: Shutdown CCWRF When RP-5 goes On-Line in 2023	<ul style="list-style-type: none"> • Lowest O&M alternative • Centralized facilities • Improved water quality through MBR 	<ul style="list-style-type: none"> • High capital cost alternative • Potential relocation of solar • Congested RP-5 site layout • Sale of property (w/ easements)

EVALUATION OF SECONDARY TREATMENT ALTERNATIVES



RP-5 Secondary Treatment Alternatives

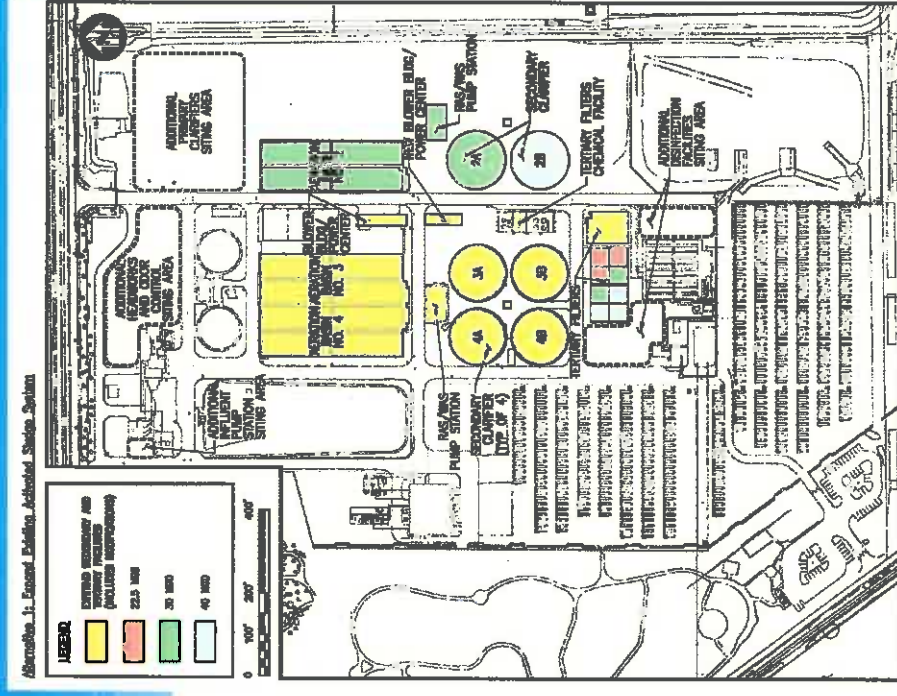
- **Alternative 1: Expand Existing Conventional Activated Sludge (CAS) System**
- **Alternative 2: Conversion of Existing CAS System to MBR System and Expand MBR to Meet Capacity Requirements**
- **Alternative 3: Maintain Existing CAS System and Construct New MBR Train for Expanded Capacity**



RP-5 Liquids Train

RP-5 Secondary Treatment Alternatives

- **Alternative 1: Expand Existing Conventional Activated Sludge (CAS) System**
- **Alternative 2: Conversion of Existing CAS System to MBR System and Expand MBR to Meet Capacity Requirements**
- **Alternative 3: Maintain Existing CAS System and Construct New MBR Train for Expanded Capacity**



Secondary Treatment Alternatives

Benefits versus Drawbacks

Alternative	Benefits	Drawbacks
Alternative 1: Expand Existing Activated Sludge System	<ul style="list-style-type: none"> Operational consistency – same as existing system 	<ul style="list-style-type: none"> Largest footprint RP-5 Solids Treatment Facility location Reduced compatibility with advanced treatment Potential relocation of RP-5 solar
Alternative 2: Retrofit Existing Activated Sludge System with MBR	<ul style="list-style-type: none"> Higher quality effluent Smallest footprint Better compatibility with advanced treatment (RO & AWT) Reduced cost for UV disinfection 	<ul style="list-style-type: none"> Complex construction sequencing
Alternative 3: New MBR System for Expanded Capacity	<ul style="list-style-type: none"> MBR portion of flow would have same benefits associated with Alternative 2 	<ul style="list-style-type: none"> Requires operation of two independent plants

Total Project Cost Comparison for Secondary Treatment Alternatives

Option	Phase I - 2023	Phase II - 2035	CCWRF Operation
Option 1	• 15.0 MGD to 22.5 MGD	• 22.5 MGD to 30 MGD	• Online
Option 2	• 15.0 MGD to 30.0 MGD	• No Required Expansion	• Online
Option 3	• 15.0 MGD to 30.0 MGD	• 30.0 MGD to 40.0 MGD	• Decommissioned

Alt.	Description	Option 1		Option 2		Option 3	
		2023	2035	2023	2035	2023	2035
1	Expand Existing CAS System	\$88M	\$100M	\$162M	---	\$162M	\$82M
2	Conversion to MBR	\$121M	\$54M	\$152M	---	\$152M	\$142M
3	Existing CAS System and New MBR Train	\$88M	\$126M	\$167M	---	\$167M	\$147M

Total Project Cost Comparison for Secondary Treatment Alternatives

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Option 1	• 15.0 MGD to 22.5 MGD	• 22.5 MGD to 30 MGD	• Online
Option 2	• 15.0 MGD to 30.0 MGD	• No Required Expansion	• Online
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3	Existing CAS System and New MBR Train	\$88M	\$126M	\$167M	---	\$167M	\$167M

Business Case Evaluation for Secondary Treatment Alternatives

Option	Phase I - 2023	Phase II - 2035	CCWRF Operation
Option 1	• 15.0 MGD to 22.5 MGD	• 22.5 MGD to 30 MGD	• Online
Option 2	• 15.0 MGD to 30.0 MGD	• No Required Expansion	• Online
Option 3	• 15.0 MGD to 30.0 MGD	• 30.0 MGD to 40.0 MGD	• Decommissioned

Alt.	Description	Option 1		Option 2		Option 3	
		Total Capital	30-YR Cost	Total Capital	30-YR Cost	Total Capital	30-YR Cost
1	Expand Existing CAS System	\$188M	\$323M	\$162M	\$282M	\$244M	\$390M
2	Conversion to MBR ²	\$175M	\$275M	\$152M	\$245M	\$255M	\$412M
3	Existing CAS System and New MBR Train ²	\$214M	\$345M	\$167M	\$278M	\$314M	\$453M

1. Business Case Evaluation completed at a 3% Escalation Rate and 2% Discount Rate.
2. Benefits included for avoided capital cost of microfiltration systems.

Size of RP-5 Expansion 22.5 MGD versus 30.0 MGD

Benefits of 22.5 MGD Expansion

- Lowest Phase I capital cost
- Consistent with Wastewater Facilities Master Plan
- Delays need for additional debt issuance

Benefits of 30.0 MGD Expansion

- Lowest 30-YR cost (NPV)
- Additional capacity at RP-5 to allow for operational flexibility
 - Flow diversions
 - Emergency Capacity
 - Enhanced effluent quality
- 7.5 MGD expansion at \$4 per gallon of capacity

Points For Discussion



Decommissioning of
CCWRF



RP-5 Secondary
Treatment Alternatives



Size of RP-5 Expansion

