



**CITY OF MORRO BAY  
WATER RECLAMATION FACILITY  
CITIZEN ADVISORY COMMITTEE (WRFCAC)  
AGENDA**

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*The City of Morro Bay provides essential public services and infrastructure to maintain a safe, clean and healthy place for residents and visitors to live, work and play.*

**July 5, 2017  
3:00 P.M. to 5:00 P.M.  
Morro Bay Veteran's Memorial Building  
209 Surf Street, Morro Bay, CA**

John Diodati  
Chairperson

Barbara Spagnola  
Vice Chairperson

Paul Donnelly

Ann Fullerton

Mary (Ginny) Garelick

Dale Guerra

Valerie Levulett

Richard Sadowski,  
Planning Commission

Stephen Shively,  
Public Works Advisory Board

ESTABLISH QUORUM AND CALL TO ORDER  
MOMENT OF SILENCE/PLEDGE OF ALLEGIANCE  
ANNOUNCEMENTS/PRESENTATIONS

**PUBLIC COMMENT PERIOD**

Members of the audience wishing to address the Board on City business matters other than scheduled items may do so at this time. To increase the effectiveness of the Public Comment Period, the following rules shall be followed:

- When recognized by the Chair, please come forward to the podium and state your name and address for the record. Board meetings are audio and video recorded and this information is voluntary and desired for the preparation of minutes.
- Comments are to be limited to three minutes.
- All remarks shall be addressed to the Board, as a whole, and not to any individual member thereof.
- The Board respectfully requests that you refrain from making slanderous, profane or personal remarks against any elected official, commission and/or staff.
- Please refrain from public displays or outbursts such as unsolicited applause, comments or cheering.
- Any disruptive activities that substantially interfere with the ability of the Board to carry out its meeting will not be permitted and offenders will be requested to leave the meeting.
- Your participation in Board meetings is welcome and your courtesy will be appreciated.

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the Public Works Department at (805) 772-6262. Notification 24 hours prior to the meeting will enable the City to make reasonable arrangements to ensure accessibility to this meeting.

**A. CONSENT CALENDAR**

A-1 Approval of minutes from the Water Reclamation Facility Citizen Advisory Committee meeting of April 4, 2017

**Staff Recommendation:** Approve minutes as submitted.

B. BUSINESS ITEMS

B-1 Report on Public Works Cost Review Workshop

**Recommendation:** Staff recommends WRFAC review, consider, and provide comments on the presentation of the Report on Public Works Cost Review Workshop.

C. COMMITTEE MEMBER CLOSING COMMENTS

D. ADJOURNMENT

Adjourn to the regular Water Reclamation Facility Citizen Advisory Committee meeting at the Morro Bay Veteran's Memorial Building, 209 Surf Street, on August 1, 2017, at 3:00 p.m.

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This agenda is subject to amendment up to 72 hours prior to the date and time set for the meeting. Please refer to the agenda posted at the Public Works Department, 955 Shasta Avenue, for any revisions or call the department at 772-6262 for further information.

Materials related to an item on this agenda are available for public inspection during normal business hours in the Public Works Department, at Mill's/ASAP, 495 Morro Bay Boulevard, or the Morro Bay Library, 695 Harbor, Morro Bay, CA 93442.

This agenda may be found on the Internet at: [www.morrobayca.gov/wrfcac](http://www.morrobayca.gov/wrfcac) or you can subscribe to Notify Me for email notification when the Agenda is posted on the City's website. To subscribe, go to [www.morrobay.ca.us/notifyme](http://www.morrobay.ca.us/notifyme) and follow the instructions.

Materials related to an item on this agenda submitted to the Committee after publication of the agenda packet are available for inspection at the Public Works Department during normal business hours or at the scheduled meeting.

MINUTES – WATER RECLAMATION FACILITY CITIZEN ADVISORY COMMITTEE (WRFCAC)  
REGULAR MEETING – APRIL 4, 2017  
VETERAN’S MEMORIAL BUILDING – 3:00 to 5:00 P.M.

PRESENT: Barbara Spagnola  
Valerie Levulett  
Richard Sadowski  
Mary (Ginny) Garelick  
John Diodati  
Steve Shively  
Paul Donnelly  
Dale Guerra

STAFF:	Rob Livick	Public Works Director
	Mike Nunley	WRF Program Manager
	Eileen Shields	Technical Engineer
	Joe Mueller	Utilities Division Manager
	Gina Gregory	Office Assistant

ESTABLISH QUORUM AND CALL TO ORDER  
The meeting was called to order at 3:04 p.m. and a quorum was present.

MOMENT OF SILENCE/PLEDGE OF ALLEGIENCE  
ANNOUNCEMENTS – None

Mike Nunley stated there are a number of citizen’s groups meeting in the community and wanted to let them know that he, his staff, and City staff are available to meet with them to address questions and concerns about the project. He also mentioned the City’s website [www.morrobaywrf.com](http://www.morrobaywrf.com) and the Deputy Program Manager, John Rickenbach, for community outreach.

Ginny Garelick stated the California Finance Coordinating Committee (CFCC) is holding a funding fair on April 5. providing opportunities to get information on currently available financing infrastructure, grants, loans and bond financing programs and options. There is an opportunity to join the meeting by conference call by logging into [www.cfcc.ca.gov](http://www.cfcc.ca.gov). The handbook is available for download and she found at least 7 potential funding programs the City of Morro Bay may want to look at.

John Diodati concurred with staff that meeting with Nunley & Associates is a great resource that is available and should be taken advantage of and hear directly from them.

PUBLIC COMMENT  
<https://youtu.be/itrHmmlqFkY?t=5m39s>

The public comment period was opened.

Meredith Bates, Morro Bay resident, is taking a renewed interest on the City’s water situation. She attended the last City Council meeting and was told that there were Executive Summaries available for the public and wanted to know where they could be found. She also voiced concern about an article in the newspaper regarding the 1 million gallons of treated sewage going back into the ocean and questioned how it impacts the environment. She asked for clarification on the Design, Bid, build process and would like to know more about the OneWater Policy.

The public comment period was closed.

Mike Nunley and Rob Livick responded to questions about the difference between design, bid, build and design, build, the Executive Summary, effluent discharge and the OneWater policy.

Richard Sadowski noted the 301H has been since the 1980’s. He stated the Cayucos Sanitary District and City invested in the plant and it’s operating better than it ever has since it began. He also mentioned the citizen created website [www.morrobaywrf.info](http://www.morrobaywrf.info) for more information.

A. CONSENT AGENDA

<https://youtu.be/itrHmmlgFkY?t=14m53s>

A-1 Approval of Minutes of March 15, 2017 Meeting

Ginny Garelick noted two corrections to the minutes: 1) it was Paul Donnelly that abstained from the vote on A-1, not Dale Guerra and 2) it was Paul Donnelly of the Environmental Sub-Committee had nothing to report, not Dale Guerra.

Richard Sadowski stated he wanted the minutes to include staff's response of forwarding his question to the City Manager of why the discussion of hiring a lobbyist at the City Council meeting did not come to the Committee. He also noted, in response to a public comment about where to find cost information, the website should make it clearer on where cost information is located.

The public comment period was opened, seeing none, the public comment period was closed.

MOTION: Steve Shively moved to approve Item A-1 with the corrections made by Ginny Garelick and Richard Sadowski. The motion was seconded by Ginny Garelick and carried 8-0-0 unanimously.

B. BUSINESS ITEMS

B-1 WRFCAC Sub-Committee Updates and Recommendations

<https://youtu.be/itrHmmlgFkY?t=18m8s>

The Engineering and Environmental Sub-Committees had no reports.

The Finance Sub-Committee met on March 24<sup>th</sup> to discuss the project and costs to date as well as potential future costs. The Sub-Committee feels it is time to have an independent third party review the costs to date and make recommendations if there is any way to significantly reduce these costs. The Sub-Committee drafted, for WRFCAC review, a recommendation to Council of the current WRF project costs as follows: approach hire an outside consultant with specific experience on large water infrastructure projects to complete the following activities:

- a. Review and audit total project costs to date
- b. Review the City's overall project approach to include specific alternatives for significantly lowering WRF project costs
- c. Develop new cost effective alternative options and articulate advantages and disadvantages of each option.
- d. Address whether the proposed costs are appropriate and reasonable for a water reclamation facility for a city the size of Morro Bay.
- e. Discuss whether all the studies being performed are required for the success of this project; and
- f. Include an executive summary and written conclusions in the final report.

Discussion, comments and questions continued amongst Committee members and staff. Committee members discussed providing staff an opportunity to provide information related to the items in question before hiring an outside consultant and requested a staff report to provide the following items. After review of the report, the Committee could then determine whether they felt an audit by an outside consultant is warranted.

- a. Historical project costs to date
- b. Explanation of the overall project approach
- c. Summary of the project alternatives that were reviewed, including with and without recycled water
- d. Comparison to similar projects/communities
- e. List of the WRF project studies and their purpose

MOTION: Dale Guerra moved to bring back at next month's meeting items A-F that was discussed and modified, to discuss, deliberate and provide direction to City Council on how to proceed if necessary. The motion was seconded by Steve Shively and carried 8-0-0 unanimously.

**MOTION:** Richard Sadowski moved to have the Finance Sub-Committee meet with the representatives from Cayucos Sanitary District (CSD) to discuss cost alternatives for a joint venture with Cayucos at the CSD proposed location to build their Waste Water Treatment Facility. The motion was seconded by Ginny Garelick. A Roll-Call vote was requested by Chairman Diodati. Rob Livick conducted the Roll-Call vote. The motion failed 2-6-0. (Commissioners Sadowski & Garelick voted yes, Commissioners Spagnola, Levulett, Donnelly, Shively, Guerra and Chairman Diodati voted no).

B-2 Program Status Update

<https://youtu.be/itrHmmlgFkY?t=47m23s>

Mike Nunley presented the staff report.

Discussion, comments and questions continued amongst committee members, staff, and consultants.

The public comment period was opened.

Robert Walker, Morro Bay resident, stated he has heard so much here-say on the project, and cautions people to be aware of that. He noted focus seems to be on Alternatives 3 & 4 and is concerned the additional \$166 per month per residence, would take out of the local economy about  $\frac{3}{4}$  of a million dollars a month. He feels the administrative costs of 12% seems high when compared to the Los Osos project at 6%. Mr. Walker suggested consideration of a hybrid system. With reduced demand at the existing plant, consider treating at the existing plant and upgrade later for groundwater injection. He feels this would be less objectionable to those not wanting it in their neighborhoods.

Chairman Diodati asked clarifying questions on Mr. Walker's comments.

Colby Crotzer, Morro Bay resident, thanked the Committee for giving their time to the City to contemplate this difficult and complex issue. His desire would be for Morro Bay to be a model like Arcata's reclamation with a ponding system. He also has a concern on the burdensome cost of the project on lower income and fixed income residents. He would like to see a quality reclamation system that would make the maximum use of our water to go towards being able to live here sustainably with the resources available to us. He would like to see a well thought out, comprehensive way that we treat our water and see that the needs of the economically challenged citizens and those on a fixed income as another component of that, to support them so it's not onerous to where they have to move away.

The public comment period was closed.

B-3 Master Water Reclamation Plan

<https://youtu.be/itrHmmlgFkY?t=1h5m15s>

Mike Nunley and Eileen Shields presented the staff report.

Discussion, comments and questions continued amongst committee members, staff, and consultants.

Chairman Diodati had to left the meeting at 3:49 PM, Vice Chair Spagnola took over for the remainder of the meeting.

**MOTION:** Steve Shively moved to continue the meeting beyond 5:00 PM. Ginny Garelick seconded and the motion carried 7-0-0 unanimously.

The public comment period was opened.

Larry Trudeaus, north Morro Bay resident, stated concern about the nitrates in the Chorro Creek and wanted to know if the new facility would be able to remove nitrates and if the water from the creek become useful for the City.

Rob Livick, Vice Chair Spagnola and Mike Nunley responded to the comments.

Discussion, comments and questions continued amongst committee members, staff, and consultants.

C. COMMITTEE MEMBER CLOSING COMMENTS

<https://youtu.be/itrHmmlgFkY?t=2h48m44s>

Richard Sadowski stated this project started in 2013 and is slated for completion in 2020. Taking the reclamation plant out of it, were looking at a \$120 million-dollar plant versus a \$20 million-dollar plant for Cayucos. They started in 2015 and are looking at completing it in 2018. He thinks it behooves us to look at this.

Barbara Spagnola responded that at the next meeting staff will be responding to some of those concerns as they are also part of the Finance Sub-Committee's recommendations on the comparison of the two plants.

Ginny Garelick gave a shout out to Rob Livick, saying he provided an excellent overview of the history of the plant, site selection process and the budget at the Council meeting. She liked the question and answer session with Councilmember McPherson who was concerned with misstatements and rumors. She suggested that those questions and answers be turned into a fact sheet to include as an insert in the City's water bills and make them available at various public locations.

ADJOURNMENT

The meeting adjourned at 5:54 p.m. The next Regular Meeting will be held on May 2, 2017 at 3:00p.m. at the Veteran's Memorial Building located at 209 Surf Street, Morro Bay, CA.



**AGENDA NO: B-1**  
**MEETING DATE: July 5, 2017**

# Staff Report

**DATE:** June 29, 2017

**TO:** Water Reclamation Facility Citizens Advisory Committee

**FROM:** Rob Livick, PE/PLS – Public Works Director/City Engineer  
Mike Nunley, PE – Water Reclamation Facility (WRF) Program Manager

**SUBJECT:** WRFAC Review and Comment on the “Report on Public Works Cost Review Workshop”

## RECOMMENDATION

Staff recommends WRFAC

1. Review and provide input for the City Council on the attached “Report on Public Works Cost Review Workshop” (Report).
2. Recommend to City Council they consider, based on recommendations from the peer review panel, investigating the possibility of using property at or near the existing wastewater treatment plant site for the new WRF.

## ALTERNATIVES

No alternatives are recommended.

## FISCAL IMPACT

No additional fiscal impact is proposed within this update. All work is proceeding within the City’s fiscal year budget for the Water Reclamation Facility.

## DISCUSSION

In summary, the attached report responds to City Council direction to explore ways to reduce project costs and rate impacts compared to what was presented in the draft Water Reclamation Facility Master Plan (FMP) and draft Master Water Reclamation Plan (MWRP). The Council directed staff to convene an expert panel of local government public works officials with recent experience in the planning construction and operations of such facilities, and have them critically review cost assumptions and methodologies contained in the City’s FMP and MWRP. The Council also directed staff to provide cost estimates on simplified versions of the project that eliminated or deferred some components.

The expert peer review panel consisted of:

- Matt Thompson, Wastewater Division Manager, City of Paso Robles
- John Waddell, Construction Division Manager and Project Manager for the Los Osos Wastewater Project, Public Works Department, San Luis Obispo County
- Russ Fleming, Utilities Manager, City of Pismo Beach
- Dave Hix, Utilities Department Deputy Director for Wastewater, City of San Luis Obispo

Prepared By:     MN    

Dept Review:     RL

The Panel's key opinions, recommendations and findings were as follows:

1. *The biggest contributor to cost at the South Bay Boulevard (SBB) site is the site itself. Pipeline and earthwork costs there are very high. The most effective way to reduce construction cost is to go back to near or on the existing WWTP site.*
2. *Reliance on State Water is a paramount problem facing the City. If the City wants to achieve water independence cost effectively, and in a timely manner, the most effective approach is to build a new compact plant at or near the current WWTP location. Developing a recycled water project will be cheaper and potentially more achievable than at the South Bay Boulevard site or any other relatively distant site. To do this, the City will need to work closely with the Coastal Commission and RWQCB, and gain buy-in from key community groups.*
3. *Due to the State's fiduciary responsibility, the high cost and rate and resultant controversy may impact the ability to receive low interest State Revolving Fund financing compared with less controversial projects. If the City had to rely on conventional municipal bond financing, the sewer rate would be even more unaffordable.*
4. *The cost estimates developed for the SBB site are reasonable as presented, and the underlying assumptions are appropriate, including for soft costs and contingency percentages, with a few minor changes recommended. Construction Management for the WRF might be reduced from 8% to about 6% of construction costs because of going to design-build. Design for the WRF might be reduced overall from 10% to 6 to 8% considering the design-build delivery concept, which needs less outside design. However, the 10% assumption for the design-bid-build component is appropriate.*
5. *Some cuts to the cost estimate for the SBB site could be made. These could include:*
  - a. *Depending on the secondary treatment process, the proposed equalization basin could be reduced. An oxidation ditch would not require as much equalization as an MBR or SBR system.*
  - b. *Because of its relatively isolated location, minimize odor control to the extent possible, focusing on the headworks.*
  - c. *Locate the WRF on the portion of the site that requires less grading—where the corporation yard had been planned.*
  - d. *Remove the septage receiving station and reduce the size of fire pump facility.*
  - e. *If the City does not intend to go to full tertiary treatment, consider going to an oxidization ditch with secondary clarifiers.*
  - f. *Reduce masonry and architectural details, since the site won't be that visible from the highway, but it still has to be made of durable low-maintenance materials.*
6. *If the City is eventually going to full reclamation, don't defer the development of onsite buildings and infrastructure related to recycled water. It will be much more expensive later on.*
7. *The proposed combined water/sewer rate of \$250/month seems untenable in the context of average Citywide household income of \$50K—about 6% of annual income, which is approximately double the EPA's affordable index. It is reasonable to expect a reduction will be required to make this project more palatable to the public.*

The report also explored reducing costs at the South Bay Boulevard site, based on the Council's direction, and incorporating the expert panel's recommendations on costing methodology and assumptions. Cost reductions included removing space for future public facilities, reduced odor control, Key findings are as follows:

<b>Table 1. Summary of Reported Cost Comparisons</b>			
	<b>Total Capital Cost Opinion</b>	<b>Comparative Capital Cost Savings to Recommended Project</b>	<b>Deferred Costs (for future recycled water)</b>
Alt. 1: Full Secondary WRF; defer tertiary treatment and recycled water	\$98.2 million	\$27.3 million	\$44.6 million
Alt. 2: Tertiary Disinfected WRF; defer recycled water	\$114.7 million	\$8.6 million	\$40.7 million
<i>Note: Costs shown are in 2017 dollars and include total program costs – construction costs, 25% construction contingency, and soft costs, including engineering/design, administration and construction management, and permitting, monitoring and mitigation</i>			

To address the Peer Review Panel's adamant recommendation to reconsider locating the new facility on or near the existing WWTP site, the team worked with Black & Veatch to estimate a rough cost savings potential for relocating the project adjacent to this location. Such a project would be based on similar assumptions as the one at the South Bay Boulevard site, and would be intended to meet community goals, including producing tertiary treated recycled water, and implementing the reclamation component (indirect potable reuse).

What follows is a very rough preliminary estimate, for comparison purposes only. If the City Council wishes to explore this option, a more detailed estimate can be provided.

Preliminary estimates indicate a **cost savings potential between \$38M to \$43M**, for a total project cost of approximately \$124M to \$129M, to construct the project on or near the existing WWTP site. This assumes a full advanced treatment facility on the existing WWTP property and a full indirect potable reuse reclamation program as described in the MWRP. Approximately 85% of the potential cost savings can be attributed to changes in the WRF costs (through tertiary treatment, but not including advanced treatment), and approximately 15% of the cost savings are associated with the recycled water project.

Table 2 provides a summary of the reviewed alternatives, the cost opinions, and the preliminary estimated rate impacts. The estimated rate impacts are rough, and based on a simplified comparison between rates for various alternatives previously analyzed. These estimated are provided for comparison purposes only. **Revisions to the City's Draft Financial and Rate Analysis for a New Water Reclamation Facility will be required to determine the rate impact.**

<b>Table 2. Comparison of Alternatives, Cost Opinions, and Preliminary Estimated Rate Impacts</b>				
	<b>MWRP Recommended Project "Alt 4" IPR</b>	<b>"June 2017 Alt. 1" Secondary Only</b>	<b>"June 2017 Alt. 2" Tertiary WRF, Defer RW</b>	<b>"June 2017, Preliminary" IPR at/near Existing WWTP</b>
Brief Description	<ul style="list-style-type: none"> <li>• MBR plus Advanced Treatment</li> <li>• UV disinfection</li> <li>• SBB site</li> <li>• Extensive odor control</li> <li>• IPR, recharge all treated effluent</li> <li>• Space for future facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Oxidation Ditch, Secondary Treatment</li> <li>• Chlorination</li> <li>• SBB site</li> <li>• Moderate odor control</li> <li>• Defer recycled water, discharge to ocean</li> <li>• Smaller admin building</li> <li>• Don't save space for future facilities</li> </ul>	<ul style="list-style-type: none"> <li>• MBR, tertiary treatment</li> <li>• Chlorination</li> <li>• SBB site</li> <li>• Moderate odor control</li> <li>• Defer recycled water, discharge to ocean</li> <li>• Smaller admin building</li> <li>• Don't save space for future facilities</li> </ul>	<ul style="list-style-type: none"> <li>• MBR plus Advanced Treatment</li> <li>• UV disinfection</li> <li>• At/Near Existing WWTP site</li> <li>• Extensive odor control</li> <li>• IPR, recharge all treated effluent</li> <li>• Smaller admin building</li> </ul>
<b>Estimated Program Cost (2017 \$)</b>				
Phase 1	\$167M	\$98.2M	\$114.7M	\$124M - \$129M
Phase 2 (recycled water)	Included in in Ph. 1	\$44.6M	\$40.7M	Included in Ph. 1
Total (Ph1 + Ph2)	\$167M	\$142.8M	\$155.4M	\$124M - \$129M
<b>Preliminary Estimated Water + Sewer Rate Impact (monthly, average residential)<sup>1</sup></b>				
Phase 1	\$91 increase \$241 total	\$35 – 40 increase \$185 – 190 total	\$48 – 53 increase \$198 – 203 total	\$50 – 60 increase \$200 – 210 total
Phase 2	NA	\$40 – 45 increase \$225 – 235 total	\$35 – 40 increase \$233 – 243 total	NA
Total (Ph1 + Ph2)	\$91 increase \$241 total	\$75 – 85 increase \$225 – 235 total	\$83 – 93 increase \$233 – 243 total	\$50 – 60 increase \$200 – 210 total
<i>Notes:</i>				
<sup>1</sup> <i>Estimated rate impact is based on a simplified comparison between alternatives, considers difference in capital cost opinions only, and does not take difference in operating and maintenance (O&amp;M) costs in to account. The O&amp;M costs for the alternatives at/near the existing WWTP are estimated to be significantly lower than the O&amp;M costs at the SBB site. <b>Revisions to the City's Draft Financial and Rate Analysis for a New Water Reclamation Facility will be required to determine the rate impact.</b></i>				

### **Recommendations and Next Steps**

1. The WRFCAC should review the report's recommendations, and provide additional input for City Council consideration
2. The City Council should consider the report's recommendations, including WRFCAC's input. Based on that, they should provide clear direction that could include, but not be limited to, one of these options:
  - a. Move forward at the South Bay Boulevard site based on the revised cost estimates provided in this report;
  - b. Refine the community's goals, and direct staff to modify the project accordingly at the SBB site;
  - c. Direct staff and the WRF program management team to provide a refined cost estimate for building the new WRF that meets community goals at or near the existing WWTP site. Depending on the outcome of this exercise, the City Council may want direct staff to take steps to clarify an appropriate site, and refine the draft FMP and MWRP to focus on that site, with the EIR focused on examining the impacts associated with building at such a site. This would include working with the RWQCB and Coastal Commission to determine whether a project at such a location is supportable.

### **ATTACHMENT**

*Report on Public Works Cost Review Workshop, MKN/JFR, June 29, 2017*

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# Report on Public Works Cost Review Workshop

*Peer Review Panel: June 7, 2017*



*Prepared for:*

**City of Morro Bay**  
595 Harbor Street  
Morro Bay, California 93442

*Prepared by:*

Michael K. Nunley and Associates  
P.O. Box 1604  
Arroyo Grande, CA 93421

*In association with:*

John F. Rickenbach Consulting

June 29, 2017

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## SECTION 1 PROJECT HISTORY

In 2013 and 2014, the City Council adopted a series of community goals for the new Water Reclamation Facility project, which were based on extensive community input resulting from public outreach. The central goal was to treat the wastewater, at a location that is in keeping with the Coastal Commission's 2013 denial, to tertiary standards, so that high quality water could be produced and reclaimed, in order to augment the City's existing water supplies. The intent of this and other key goals was to find a suitable site that minimized constraints, including potential land use conflicts, where such a facility could be built and operated cost-effectively.

In June 2016, after a lengthy public process, the City Council chose the South Bay Boulevard site as the focus for efforts related to planning the WRF. A draft Facilities Master Plan (FMP) that addressed adopted community goals was prepared for that site based on a series of technical workshops, and released in November 2016. A draft Master Water Reclamation Plan (MWRP) that addressed the most effective approach to water reuse was released in March 2017.

Following the release of these documents, the WRF program management team presented how the resulting cost estimates contained in those documents could translate into increased user rates. Both the City Council and many members of the general public expressed concern about the high project costs and their potential effect on user rates.

On April 25, 2017, the City Council explored this issue, seeking ways to reduce project costs, before committing to moving forward on the project described in the draft FMP and MWRP, including its analysis in the required Environmental Impact Report (EIR). As a result, the Council gave two key directions. The first was to explore two lower cost alternatives, including a project that met minimum permit requirements, and another that achieved tertiary disinfected treatment. The other direction was for City staff work to with other local public works departments, and convene a study session with key public works officials, for the purpose of reviewing the assumptions contained in the City's draft master planning documents. The effort was to provide an outside professional perspective on the City's project, its inherent assumptions, and methodologies used in developing the cost estimates. The intent was for such a review to be a candid assessment, based on the experience of these public works professionals. Their recommendations would then be presented in a report to the City Council, in order to help the Council potentially re-assess the overall project goals in the context of finding ways to reduce project costs.

## SECTION 2 TECHNICAL REVIEW PANEL

City Public Works Director Rob Livick worked with the WRF program management team to assemble a peer expert panel, with recent experience in the development and construction of a major municipal wastewater/water reclamation infrastructure project, for the review. The panel included:

- Matt Thompson, Wastewater Division Manager, City of Paso Robles
- John Waddell, PE, Construction Division Manager and Project Manager for the Los Osos Wastewater Project, Public Works Department, San Luis Obispo County
- Russ Fleming, Utilities Manager, City of Pismo Beach
- Dave Hix, Utilities Department Deputy Director for Wastewater, City of San Luis Obispo

### 2.1 Review Process

The review workshop occurred on June 7, 2017, lasting from 9 AM to 4 PM. The review process was facilitated by Rob Livick and the City's Program Management team, including John Rickenbach, Mike Nunley, and Eileen Shields. The City's Utilities Division Manager, Joe Mueller, attended and provided information on current operations as questions came up. In addition, Matt Thomas and Mari Garza-Bird from Black & Veatch, the firm that prepared the FMP, were also available to provide information and answer questions.

During the workshop, the City's team presented the draft FMP and MWRP, focusing on key issues related to cost, assumptions, and methodologies developed for the South Bay Boulevard site. It was a highly interactive and productive discussion, and the four expert panelists frequently provided observations and asked questions along the way. Many of their observations ranged beyond the issue of cost, but were relevant to the overall intent to improve the project. They also recommended reconsideration of reducing costs by moving the project to another location.

As a result of this discussion, the panel made several important recommendations, which are listed below.

### 2.2 Expert Panel Recommendations

1. *The biggest contributor to cost at the South Bay Boulevard (SBB) site is the site itself. Pipeline and earthwork costs there are very high. The most effective way to reduce construction cost is to go back to near or on the existing WWTP site.*
2. *Reliance on State Water is a paramount problem facing the City. If the City wants to achieve water independence cost effectively, and in a timely manner, the most effective approach is to build a new compact plant at or near the current WWTP location. Developing a recycled water project will be cheaper and potentially more achievable than at the South Bay Boulevard site or any other relatively distant site. To do this, the City will need to work closely with the Coastal Commission and RWQCB, and gain buy-in from key community groups.*

3. *Due to the State’s fiduciary responsibility, the high cost and rate and resultant controversy may impact the ability to receive low interest State Revolving Fund financing compared with less controversial projects. If the City had to rely on conventional municipal bond financing, the sewer rate would be even more unaffordable.*
4. *The cost estimates developed for the SBB site are reasonable as presented, and the underlying assumptions are appropriate, including for soft costs and contingency percentages, with a few minor changes recommended. Construction Management for the WRF might be reduced from 8% to about 6% of construction costs because of going to design-build. Design for the WRF might be reduced overall from 10% to 6-8% considering the design-build delivery concept, which needs less outside design. However, the 10% assumption for the design-bid-build component is appropriate.*
5. *Some cuts to the cost estimate for the SBB site could be made. These could include:*
  - a. *Depending on the secondary treatment process, the proposed equalization basin could be reduced. An oxidation ditch would not require as much equalization as an MBR or SBR system.*
  - b. *Because of its relatively isolated location, minimize odor control to the extent possible, focusing on the headworks.*
  - c. *Locate the WRF on the portion of the site that requires less grading—where the corporation yard had been planned.*
  - d. *Remove the septage receiving station and reduce the size of fire pump facility.*
  - e. *If the City does not intend to go to full tertiary treatment, consider going to an oxidization ditch with secondary clarifiers.*
  - f. *Reduce masonry and architectural details, since the site won’t be that visible from the highway, but it still has to be made of durable low-maintenance materials.*
6. *If the City is eventually going to full reclamation, don’t defer the development of onsite buildings and infrastructure related to recycled water. It will be much more expensive later on.*
7. *The proposed combined water/sewer rate of \$250/month seems untenable in the context of average Citywide household income of \$50K—about 6% of annual income, which is approximately double the EPA’s affordable index. It is reasonable to expect a reduction will be required to make this project more palatable to the public.*

### **2.3 Other Key Observations from Reviewers**

In developing their recommendations, the panel made many related observations and raised important points that the City Council may wish to consider as it moves forward on the project. These are grouped by topic and summarized below.

## Cost Estimates and Assumptions

1. All agree with the way B&V has put together the cost estimate for the WRF—seems like a reasonable approach. Won't get a drastically different number if someone else put it together.
2. Could you lower planning contingency percentage if you didn't have the lengthy pipelines and potential complications of running through town? Some did not think this was true. Overall, the 25% contingency seemed appropriate to the group.
3. Lifecycle costs will be an important factor in addition to capital costs.
4. Engineering and Admin estimate of 30% of construction cost is reasonable, and possibly even a bit low on projects of this type. The engineering/admin costs for Paso Robles Tertiary Treatment Facilities Project ended up to be about 32% of construction costs. Assumptions about soft costs seem appropriate.
5. Escalation assumptions of 2-3% per year are good.
2. Procurements and Preliminary engineering estimate of 4% is good.
3. Permitting/CEQA estimate of 1% of construction cost is good.
4. Construction Management at 8% is a little high; some think it can be reduced, especially for design-build. (One reviewer uses 7.5% for design-bid-build. Another thinks 8 – 10% for design-bid-build, but with a smaller team on design-build, it might be reduced to maybe 6% for DB portion of project)
5. Contingency of 25% seems right at this stage of planning.
6. Decommissioning cost estimate seems reasonable.
7. Design as 10% of construction costs seems a bit high (maybe 6-8%), considering part of the project is design-build.
8. Move the WRF to the area on the proposed site that will require less grading, which will save \$0.8M + 50% for soft costs and contingency. No reason not to do it, especially if there is no corp yard planned.
9. Odor Control cost seems high at \$4.8M for a relatively remote site, like the South Bay Boulevard site. Refine the cost in some fashion.

10. Remove the septage receiving station as there are no large septage generators within the City's service area, and Los Osos and the Paso Robles facilities are satisfying the County demand and reduce size of fire pump facility. Saves \$1M.
11. The overall estimating is reasonable—this is a complicated project with lots of technical studies and coastal permitting.
12. Some pieces of the existing WWTP (headworks screens) might be reusable if the WRF is built at the existing WWTP site, but the group does not recommend it unless the EQ basin is collocated with the lift station.
13. The City of SLO's project is \$140M, but they are building it more central to the city and reusing some existing facilities, so there's less to build. Paso's \$47M plant benefited from being able to reuse some facilities on a compact footprint, with a bidding climate during the recession. Los Osos ox ditch plant for Title 22 tertiary was \$48M.
14. One reviewer: "You've got a really good team on this project, and they made good cost estimates with reasonable assumptions to implement community direction. To really reduce costs, Council should redirect to a new site closer to the existing WWTP."

#### WRF Delivery Method, Project Components, Design Issues and Technology

1. Design-Build is the way you want to go to save costs. It's also the right way to go if you want to speed delivery and have the city maintain control of the project. That's true at either greenfield site or even at the existing WWTP site, since that would be a new plant and not an upgrade.
2. There are no new technologies that will be more effective than the ones that are typically used.
3. The proposed treatment trains look very complicated—can't we simplify this somehow? Some on the panel acknowledge the desire to reduce the footprint as much as possible.
4. Odors can be addressed at the site or any site. If the sewer flows a long way, could it increase odors?
5. Contaminants of Emerging Concern haven't been a big concern to the other communities, and state regulations are adequately addressing this concern.
6. Operations/Admin building at 11,500 SF consolidated PW facility (versus 7,000 SF for WRF only) seems reasonable, but only if general fund can pay the difference. Strip out masonry and make it out of metal.
7. Don't waste the money on a septic receiving station.

8. The corp yard is never going to happen, so why prepare the SBB site for something that will never happen?
9. All agree the IPR approach for recycled water is appropriate and makes sense as opposed to ag exchange.
10. All encouraged the City to pursue IPR, some stating that diversification of water supply should be a main goal for the community.

#### Project Siting Issues and Options Related to Cost

1. Get Regional Water Quality Control Board (RWQCB) on board to go back to (or near) the existing WWTP site. Emphasize that the proposed project will be too expensive otherwise... and SRF loan might not happen if the state senses there is political uncertainty and controversy in moving this forward at the high costs. Not economically viable. How is it a town of 10,000 has a \$165 million sewer plant?
2. Why bother building at SBB, because the lift station at the current site will be vulnerable...still have raw sewage going into the ocean if the lift station fails...what is gained by doing this?
3. SBB site is another Los Osos in the making. Re-evaluate.
4. Maybe easier to accomplish recycled water goals on or near the current WWTP site, because you'll have funds to do this earlier. Perhaps be able to get CCC support for that kind of project when balanced with other coastal concerns. Will need to get Council support for this.
5. If a new plant is built at or near the current WWTP site, it will require working with CCC to explore the idea of balancing these competing goals: *More important to have water independence through recycled water? Or move the plant off the coast? What conditions could CCC explore to allow for a new plant at the current WWTP site?*
6. If a new WRF is built at the current WWTP site, you'll also need to make sure such a plant is consistent with long-range master plans for the waterfront. Could have a tie in to future waterfront development to recycled water in a more timely manner.
7. Could do effective odor control on or near the current WWTP site.
8. Could get a very small footprint for 1 mgd plant on or near the current site—could use the rest of the site for other coastal uses.

9. Was there much homegrown opposition to the existing site in 2011-12? Is there still now? Need to explore this in depth... Because if there's not, the only real hurdle might be CCC.
10. Need to emphasize this will be a drought-proof water supply, which you can guarantee at or near the existing WWTP site...which you will not be able to accomplish at SBB because you may not ever see the water recycling component happen...
11. Did you explore co-locating equalization basin with lift station at the current WWTP site—since you're already considering the lift station there, and that will need CCC permitting? *B&V RESPONDS: Yes, this was considered, but there was a concern this could interfere with long-range reuse opportunities of the existing WWTP site.*
12. Is CMC now a feasible option if there is capacity in the plant because they are cutting the prison population? Not sure. *NUNLEY RESPONDS: There are constraints to doing this...a lot of pipeline...high TDS...cost...lack of desire from California Department of Corrections and Rehabilitation (CDCR) to participate...at least a year for CDCR to determine legality of connecting a new service... the recycled water would not benefit the city.*
13. Los Osos plant does not have capacity to handle Morro Bay wastewater. Not an option.

#### Logistics, Timing and Financing

1. If the project is very expensive, and does not have community acceptance for the cost/rates, not sure city will be able to answer the SRF application questions ensuring certainty that there will be a long-term revenue stream...so may not get the loan.
2. SRF loan might not happen if the state senses there is political uncertainty and controversy in moving this forward at the SBB site.
3. Need to have a recycled water component if you hope to get grant funding.
4. Setting rates in advance and then reverse engineering the plant to get there won't work. They ran into this problem on the Nacimiento project. They need to see what they are getting before they raise the rates.
5. Present a project at or near the current WWTP site as a water plant, not a sewer plant...and work with CCC to convince them, framing it this way: More important to have water independence? Or move the current plant off the coast? Is it worth the delay in keeping a substandard WWTP near the coast while other questions are resolved, or moving forward with a safer, more efficient plant that produces water? Show how new plant will address all the other CCC concerns.

6. Have the city set the time schedule for compliance and removal of the 301h waiver; don't let the RWQCB dictate the time.
7. Are you sure you're asking all the right questions? How (and where) can the community best accomplish its goals?
8. What kind of liability are you getting from the RWQCB in not moving this forward?  
*LIVICK RESPONDS: There is a letter from them saying we need to be done by 2021 per former Executive Officer Ken Harris...*
9. Don't go to conventional bond funding—it will kill you financially... Do whatever you can to ensure SRF financing – not only low interest, but not having to pay back until after construction helps reduce amount borrowed.
10. Cost of producing water includes the energy needed to produce it...and those costs will never go down.
11. Citizens are reasonably concerned if their combined sewer/water rates would go to \$250/month. That's 6% of the average median income in Morro Bay, which is \$50K per household. That's extremely high.
12. Recent sewer and water rate increases were critical to correct the revenue shortfalls in the water rate from long-time lack of steady rate increases. City should have done that much sooner. This will make additional increases, however reasonable they might be, politically difficult.
13. City demographics make moving a project forward anywhere very difficult, from three perspectives:
  - a. Many highly-educated retirees closely follow and actively influence the course of the project;
  - b. A relatively low average communitywide household income, and
  - c. A small population base that can't easily handle the spread of costs associated with a large capital project

## SECTION 3 REFINED COST OPINIONS

### 3.1 Originally Recommended WRF Project

The recommended WRF project presented in the Draft Master Water Reclamation Plan (MWRP) incorporated the membrane bioreactor (MBR) WRF option presented in the Draft Facility Master Plan (FMP) with an indirect potable reuse recycled water program. The project took into account the community goals, costs, and recommendations presented in the Draft FMP and MWRP. Major components of the project included:

- Tertiary Treatment<sup>1</sup> – Membrane Bioreactor process
- Disinfection – UV process
- Full advanced treatment<sup>2</sup>– Reverse osmosis and advanced oxidation
- Space for future public facilities
- Extensive odor control system
- Recycled water program – Indirect potable reuse
  - Recycled water pump station and storage tank
  - Recycled water piping
  - Groundwater injection wells
  - Groundwater monitoring wells

The total estimated program costs for the WRF and recycled water project as presented was \$167 million. A breakdown of the project costs is provided in Table 1.

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<sup>1</sup> A WRF with tertiary treatment includes primary, secondary, and tertiary treatment. Tertiary treatment consists of filtration.

<sup>2</sup> Advanced treatment includes reverse osmosis and advanced oxidation, and provides salts removal, additional pathogen and virus removal, and contaminants of emerging concern (CECs) destruction.

<b>Table 1: Cost Opinion: FMP/MWRP Recommended Project</b>	
<b>Cost Category</b>	<b>Estimated Cost (2017 \$MM)</b>
Influent Lift Station, Force Main, and Effluent Disposal	13.5
WRF Onsite Facilities	61.5
WRF Operations Facilities	12.5
<b>WRF Construction Cost Subtotal</b>	<b>87.5</b>
Engineering/Design (10%)	8.7
Procurement (4%)	3.5
Project Admin & CM (12%)	10.5
Permitting, Monitoring, and Mitigation (1%)	0.9
Existing WWTP Demolition	3.0
Property Acquisition (WRF)	0.3
Escalation (2.7%)	2.4
<b>WRF Capital Cost Opinion Subtotal</b>	<b>116.8</b>
Recycled Water Project Capital Construction Cost	18.1
Engineering/Admin/CM (30%)	5.3
<b>Recycled Water Capital Cost Opinion Subtotal</b>	<b>23.4</b>
<b>Subtotal Program Capital Cost Opinion (WRF + RW)</b>	<b>140.2</b>
Construction Contingency (25% WRF + RW)	26.4
<b>Total Program Capital Cost Opinion</b>	<b>166.6</b>
Notes:	
<ol style="list-style-type: none"> <li>1) Estimated WRF Capital Construction Cost includes the WRF Project (lift station, pipelines, and treatment plant) without any recycled water components, based on costs presented in the Draft FMP. WRF costs assume the MBR option from the Draft FMP.</li> <li>2) Based on estimates in the Draft FMP, the total program capital cost opinion would be approximately \$2M less with the SBR option.</li> <li>3) Recycled water project construction costs are based on Alternative 4, Indirect Potable Reuse as presented in the Draft MWRP.</li> <li>4) Construction contingency consists of 25% of WRF plus Recycled water construction cost subtotals.</li> </ol>	

### **3.2 Cost Opinions for Council-Directed Project Alternatives**

Per City Council direction, two main project alternatives were explored with the peer review panel. Preliminary opinions of probable cost for each alternative were prepared for the panel and costs were further refined using panel input. The first alternative explored was a Secondary Treated facility at the South Bay Boulevard site. The second alternative was a Tertiary Disinfected treatment facility at the South Bay Boulevard site at the lowest possible price.

Council also directed City staff to work with other public works departments, forming a Peer Review Panel to review the assumptions used in the City’s draft master planning documents.

The Peer Review Panel provided specific input on assumptions related to cost estimating categories and odor control savings. The Panel suggested that for Design Build (DB) projects

Engineering/Design could be closer to 8% of the construction costs than 10% as is typically used for Design Bid Build (DBB) projects. Similarly, Administration and Construction Management services could be estimated at 10% for DB projects instead of the 12% typically used for DBB projects. These changes to the estimating approach would incrementally reduce the overall cost estimate for WRF program costs, as the WRF facility itself is anticipated to be delivered as a DB pursuit, but it would not realize any savings for the influent lift station and force main project, which would be delivered by DBB. The Panel also noted that full odor control is costly and may not be needed for the South Bay Boulevard site, since it is some distance from the nearest neighbors who may be affected. Odor control costs could potentially be refined, and costs have been adjusted to consider an allowance for budgeting purposes.

#### Alternative 1: Full Secondary Treatment, defer tertiary treatment and recycled water

The first alternative assumes an oxidation ditch and secondary clarifiers as the treatment technology for Full Secondary Treatment, the minimum treatment level required to meet the permitting requirements for discharge to the ocean. Using this technology instead of a sequencing batch reactor as assumed in the Draft MWRP “Alternative 0, Secondary Only” option, allows for some potential cost savings mainly due to the ability to handle a larger range of flows (resulting in a smaller equalization basin). This alternative assumes construction of the treatment facility on the lowest portion of the originally proposed site plan from the FMP, as shown in the figure below. The FMP conceptual site plan included space reserved for potential future consolidated public works facilities, per community project goals.



**Figure 1: Conceptual Site Plan from the Draft FMP (Black and Veatch, 2016). The alternatives explored per Council direction included moving to the lower section of the site, enclosed in red.**

Major components of this alternative, the cost opinion, and description of changes from the MWRP recommended project are included in Tables 2 and 3 below.

<b>Table 2: Alternative 1 - Full Secondary WRF Cost Opinion</b>	
<b>Cost Category</b>	<b>Estimated Cost (2017 \$MM)</b>
Influent Lift Station, Force Main, and Effluent Disposal	13.5
WRF Onsite Facilities	38.4
WRF Operations Facilities	10.7
<b>Subtotal Construction Cost Opinion</b>	<b>62.6</b>
Construction Contingency (25%)	15.7
Engineering/Design (10% DBB, 8% DB))	5.3

<b>Table 2: Alternative 1 - Full Secondary WRF Cost Opinion</b>	
<b>Cost Category</b>	<b>Estimated Cost (2017 \$MM)</b>
Escalation (2.7%)	1.7
Procurement (4%)	2.5
Project Admin/CM (12% DBB, 10% DB)	6.5
Permitting, Monitoring, and Mitigation (1%)	0.6
Existing WWTP Demolition	3.0
Property Acquisition	0.3
<b>Total Phase 1 Capital Cost Opinion</b>	<b>98.2</b>

The main cost savings (for both alternatives) are due to reductions in project scope from the project recommended in the MWRP, including no space for future consolidated public works facilities or corporation yard, reduced odor control, removal or reduction of auxiliary facilities, and reduced level of treatment in the case of Alternative 1.

Possible savings based on the Peer Review Panel’s recommendation to reduce estimated Engineering/Design and Administration and Construction Management costs for the DB portions of the project were approximately \$2.0 million for Alternative 1 and \$2.4 million for Alternative 2.

Table 3 summarizes the main changes from the previously recommended project and the associated cost savings and estimated costs that can be deferred to a later phase. Cost savings and deferrals were identified by the program management team (based on Council direction) and by the Peer Review Panel in the June 7<sup>th</sup> meeting.

<b>Table 3: Alternative 1 - Full Secondary WRF: Changes from FMP/MWRP Recommended Project and Estimated Impact to Construction Costs</b>			
<b>Category</b>	<b>Description</b>	<b>Estimated Construction Cost Savings (2017 \$MM)</b>	<b>Estimated Deferred Construction Cost (2017 \$MM)</b>
Secondary Treatment	Oxidation Ditch/Secondary Clarifiers instead of MBR Reduced Equalization Basin Volume (3.3 MG to 1.5 MG)	12.42	
Disinfection	Defer UV Disinfection and use chlorine contact process instead Sufficient contact time in pipe for rapid mix tank, no contact basin needed		7.28
Full Advanced Treatment	Deferment of Microfiltration, Reverse Osmosis and Advanced Oxidation Process		12.69

<b>Table 3: Alternative 1 - Full Secondary WRF: Changes from FMP/MWRP Recommended Project and Estimated Impact to Construction Costs</b>			
<b>Category</b>	<b>Description</b>	<b>Estimated Construction Cost Savings (2017 \$MM)</b>	<b>Estimated Deferred Construction Cost (2017 \$MM)</b>
Future Public Facilities	No space allotted Reduced earthwork costs for site Smaller admin/operations building (Note any significant future construction will be more challenging)	2.3	
Auxiliary Facilities	Removed septage receiving station and remote operations facility. Reduced size and capacity of fire pump facility	1.64	
Odor Control System	Reduced from extensive to moderate	1.75	
Recycled Water Program	Deferment of recommended project recycled water program		9.64
<b>Total Estimated Construction Cost Savings</b>		<b>18.1</b>	
<i>Estimated Soft Costs</i>		4.7	
<i>Construction contingency (25%)</i>		4.5	
<b>Total Estimated Capital Cost Savings</b>		<b>27.3</b>	
<b>Total Estimated Deferred Construction Costs</b>			<b>29.6</b>
<i>Estimated Soft Costs</i>			7.6
<i>Construction contingency (25%)</i>			7.4
<b>Total Estimated Capital Cost Deferment</b>			<b>44.6</b>
Note: Estimated Soft Costs include: Engineering/design (8%), escalation (2.7%), procurement (4%), administration and construction management (10%), and permitting, monitoring, and mitigation (1%). Possible savings based on the Peer Review Panel's recommendation to reduce estimated Engineering/Design and Administration and Construction Management costs for the DB portions of the project represent approximately \$2.0 million.			

Deferred construction costs are not costs savings, and are estimated to increase over time with inflation (currently estimated at 2 to 3 percent per year), should the City move forward with increased treatment and/or a reclamation program at some time in the future.

Alternative 2: Tertiary Disinfected WRF, defer recycled water

The second alternative considered the recommended FMP treatment technology, MBR, with potential costs savings. The site planning assumes construction of the WRF at the lower portion of the South Bay Boulevard site as described for the first alternative. The equalization basin for this alternative did not change in size, but would be uncovered and with reduced odor control measures. A cost opinion is included below. Major components of the project alternative, and

description of changes from the MWRP recommended project are included in Tables 4 and 5 below.

<b>Table 4: Alternative 2 - Tertiary Disinfection WRF without Recycled Water Cost Opinion</b>	
<b>Cost Category</b>	<b>Estimated Cost (2017 \$MM)</b>
Influent Lift Station, Force Main, and Effluent Disposal	13.5
WRF Onsite Facilities	49.4
WRF Operations Facilities	10.7
<b>Subtotal Construction Cost Opinion</b>	<b>73.6</b>
Construction Contingency (25%)	18.4
Engineering/Design (10% DBB, 8% DB)	6.2
Escalation (2.7%)	2.0
Procurement (4%)	2.9
Project Admin/CM (12% DBB, 10% DB)	7.6
Permitting, Monitoring, and Mitigation (1%)	0.7
Existing WWTP Demolition	3.0
Property Acquisition	0.3
<b>Total Phase 1 Capital Cost Opinion</b>	<b>114.7</b>

Table 5 summarizes the main changes from the previously recommended design and the associated cost savings and estimated costs that can be deferred to a later phase. Cost savings and deferrals were identified by the program management team (based on Council direction) and by the Peer Review Panel in the June 7<sup>th</sup> meeting.

<b>Table 5: Alternative 2 – Tertiary Disinfected WRF without Recycled Water: Changes from FMP/MWRP Recommended Project and Estimated Impact to Construction Costs</b>			
<b>Category</b>	<b>Description</b>	<b>Estimated Construction Cost Savings (2017 \$MM)</b>	<b>Estimated Deferred Construction Cost (2017 \$MM)</b>
Tertiary Treatment	Membrane Bioreactor process No change to equalization basin	0	
Disinfection	Defer UV Disinfection and use chlorine contact process instead Sufficient contact time in pipe for rapid mix tank, no contact basin needed		7.28

<b>Table 5: Alternative 2 – Tertiary Disinfected WRF without Recycled Water: Changes from FMP/MWRP Recommended Project and Estimated Impact to Construction Costs</b>			
<b>Category</b>	<b>Description</b>	<b>Estimated Construction Cost Savings (2017 \$MM)</b>	<b>Estimated Deferred Construction Cost (2017 \$MM)</b>
Full Advanced Treatment	Deferment of Reverse Osmosis and Advanced Oxidation Process to recycled water program phase		10.08
Future Public Facilities	No space allotted Reduced earthwork costs for site Smaller admin/operations building Future construction will be on less constructible areas of the site	2.3	
Auxiliary Facilities	Removed septage receiving station and remote operations facility Reduced size and capacity of fire pump facility	1.64	
Odor Control System	Reduced from extensive to moderate	1.75	
Recycled Water Program	Deferment of recommended project recycled water program to later phase		9.64
<b>Total Estimated Construction Cost Savings</b>		<b>5.7</b>	
<i>Estimated Soft Costs</i>		<i>1.5</i>	
<i>Construction contingency (25%)</i>		<i>1.4</i>	
<b>Total Estimated Capital Cost Savings</b>		<b>8.6</b>	
<b>Total Estimated Deferred Construction Costs</b>			<b>27.0</b>
<i>Estimated Soft Costs</i>			<i>6.9</i>
<i>Construction contingency (25%)</i>			<i>6.8</i>
<b>Total Estimated Capital Cost Deferment</b>			<b>40.7</b>
Note: Estimated Soft Costs include: Engineering/design (8%), escalation (2.7%), procurement (4%), administration and construction management (10%), and permitting, monitoring, and mitigation (1%). Possible savings based on the Peer Review Panel’s recommendation to reduce estimated Engineering/Design and Administration and Construction Management costs for the DB portions of the project represent approximately \$2.4 million.			

Both alternatives result in a total cost savings for the treatment facilities over the previously recommended WRF project, generally due to reductions to the project scope. Since recycled water costs are deferred for both alternatives these costs will increase over time. No long-term savings can be realized from deferring the recommended recycled water project, if the City pursues recycled water at some point in the future.

## Rough Cost Opinion for Building the WRF at or near the Existing WWTP Site

To address the Peer Review Panel's adamant recommendation to reconsider locating the new facility on or near the existing WWTP site, the team worked with Black & Veatch to estimate a rough cost savings potential for relocating the project adjacent to this location. Such a project would be based on similar assumptions as the one at SBB, and would be intended to meet community goals, including producing tertiary treated recycled water, and implementing the reclamation component (indirect potable reuse). However, this is a very rough preliminary estimate, for comparison purposes only. If the City Council wishes to explore this option, a more detailed estimate can be provided.

Preliminary estimates indicate a **cost savings potential between \$38M and \$43M**, for a total program cost of approximately \$124M to \$129M, to construct the project on or near the existing WWTP site. The cost savings potential includes construction and soft costs consistent with the other alternatives presented. This assumes a full advanced treatment facility on the existing WWTP property and a full indirect potable reuse reclamation program as described in the MWRP. Approximately 85% of the potential cost savings can be attributed to changes in the WRF costs (through tertiary treatment, but not including advanced treatment), and approximately 15% of the cost savings are associated with the recycled water project. The cost savings are generally due to the following attributes:

- *Site work: substantial reductions in the amount of site work that would be required.*
- *Yard piping: smaller site would result in some reduced yard piping*
- *Wall thicknesses: several WRF structures doubled as retaining walls, due to terracing of the site, which would not be required here.*
- *Reduced access road length*
- *Reduced offsite piping lengths*
- *Removed septage receiving station*
- *Removed fire protection facility (City's water system pressure would be sufficient at existing site)*
- *Removed remote operations facility*

It should be noted that if the Council wishes to consider moving the new WRF to a location on or near the existing WWTP site, the FMP and MWRP would need to be modified, with cost estimates refined as a result. This concept would also need to be vetted with the California Coastal Commission and RWQCB, since these agencies have until now assumed that the project will be re-located away from the existing WWTP site. The program management team would initiate these discussions if Council provides direction to pursue this approach.

## SECTION 4 NEXT STEPS

1. The WRFAC should review the report's recommendations, and provide additional input for City Council consideration
2. The City Council should consider the report's recommendations, including WRFAC's input. Based on that, they should provide clear direction that could include, but not be limited to, one of these options:
  - a. Move forward at the South Bay Boulevard site based on the revised cost estimates provided in this report;
  - b. Refine the community's goals, and direct staff to modify the project accordingly at the SBB site;
  - c. Direct staff and the WRF program management team to provide a refined cost estimate for building the new WRF that meets community goals at or near the existing WWTP site. Depending on the outcome of this exercise, the City Council may want direct staff to take steps to clarify an appropriate site, and refine the draft FMP and MWRP to focus on that site, with the EIR focused on examining the impacts associated with building at such a site. This would include working with the RWQCB and Coastal Commission to determine whether a project at such a location is supportable.