



## **Summary of Morro Bay Draft Master Water Reclamation Plan (March 2017)**

The Draft Master Water Reclamation Plan (MWRP), paid in part by a State grant, was developed to consider recycled water opportunities in light of the adopted Community goals for the new WRF and to identify and evaluate the feasible recycled water projects. The MWRP used relevant information from previous reports and current hydrogeological studies and permitting evaluations; refreshed previous recycled water market assessments through outreach to the community and potential users; and developed updated cost opinions for the feasible alternatives.

Major components of the MWRP include the following:

- Review of existing and future water demands, wastewater flows and loadings, and proposed WRF treatment technology to achieve recycled water suitable for project alternatives
- Identification and investigation of recycled water opportunities in the community, determination of treatment requirements for reuse, and assessment of potential user requirements
- Analysis of project alternatives, including quantitative and qualitative benefits, facilities needed for each project, and comparative preliminary cost estimates
- Evaluation of recommended project for environmental considerations, and for potential legal and institutional issues
- Construction financing plan

### **Alternatives Analysis**

The recycled water opportunities include various methods of substituting recycled water for potable water where possible, including irrigation for parks, commercial reuse, and agricultural irrigation, and using recycled water to recharge the City's groundwater supply. Recycled water project alternatives were developed based on groupings of recycled water opportunities and water quality requirements. The City performed screening-level hydrogeological investigations to help determine feasibility of several of the alternatives.

The following five recycled water project alternatives were determined feasible and evaluated based on the community goals for the project:

- Alternative 0: No Recycled Water Project
- Alternative 1: Urban Reuse
- Alternative 2: Agricultural Exchange
- Alternative 3: Indirect Potable Reuse – East
- Alternative 4: Indirection Potable Reuse – West

Evaluation criteria included capital and operating costs, treatment requirements, pipeline lengths, regulatory requirements, legal or institutional issues, project schedule, and the potential to provide a water supply benefit to the City. The main conclusions are as follows:

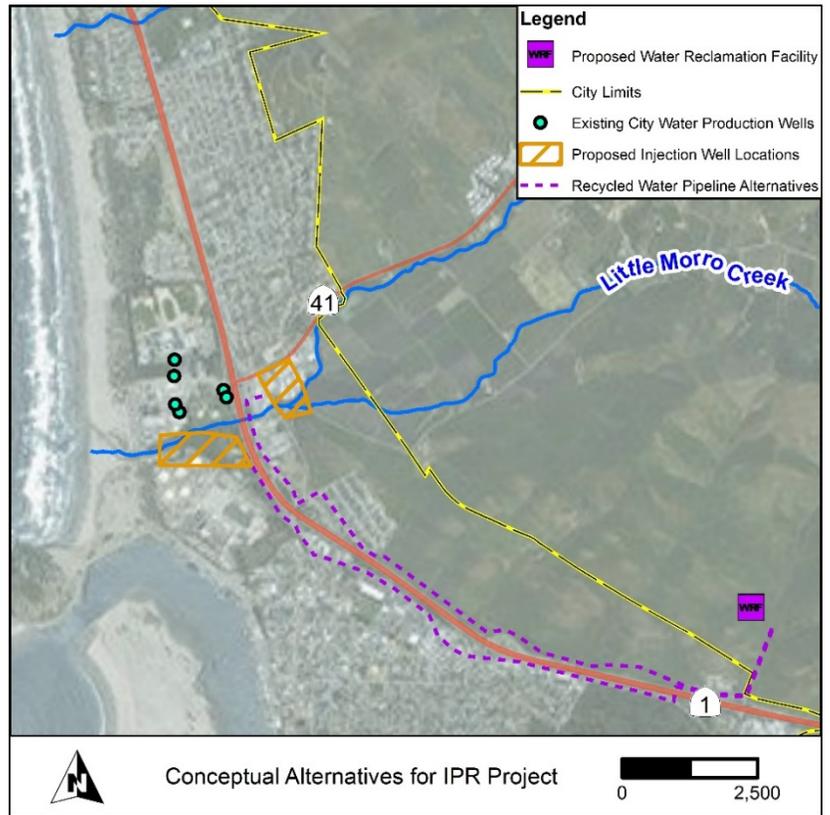
- The highest water supply benefit would be realized through indirect potable reuse (IPR) (Alternatives 3 and 4). Based on preliminary modeling, it appears Alternative 4 could support most or all of the City's current water demand with an estimated water supply benefit of over 1100 AFY.
- The least expensive alternative is no recycled water project (Alternative 0), which does not meet the Community project goals of producing reclaimed water and provides no water supply benefit, followed by urban reuse (Alternative 1), which could provide an estimated 45.4 AFY benefit.
- The capital costs for agricultural exchange (Alternative 2) and IPR (Alternatives 3 and 4) are similar, but IPR has significantly higher water supply benefit if a higher exchange rate is not possible for Alternative 2. Agricultural exchange relies on successful contract negotiations with landowners, adding some uncertainty.

### **Recommendations and Program Cost Estimates**

Based on the analyses presented in the Draft MWRP, the recommended recycled water project is IPR, Alternative 3 or 4, with the main difference consisting of the general locations for injection and extraction wells.

This alternative best fulfills the community project goals of producing reclaimed water and provides the highest and most reliable potential water supply benefit. Supplementing the potable water supply with highly treated recycled water will allow the City to reduce or eliminate reliance on imported water. A conceptual plan for two potential injection well areas and the corresponding recycled water pipeline alignments alternatives is shown to the right.

The City is planning to construct the new WRF within the next five years. If a recycled water project is pursued, significant savings could be realized by completing the construction at the same time. The estimated total program capital costs for Alternatives 0 through 4 are summarized in **Table 2**. The total program costs include the total cost for the WRF as presented in the Draft FMP<sup>1</sup>, plus additional estimated program costs including decommissioning of the existing WWTP, property acquisition for the WRF, permitting and environmental mitigation, construction management and estimated recycled water project costs as presented earlier in this section.



	<b>Alternative 0</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>
	<b>No Recycled Water Project (Secondary only)</b>	<b>Urban Reuse</b>	<b>Agricultural Exchange</b>	<b>IPR East</b>	<b>IPR West</b>
<b>Estimated Program Capital Cost Opinion</b>	<b>\$104,200,000</b>	<b>\$128,900,000</b>	<b>\$141,700,000</b>	<b>\$140,400,000</b>	<b>\$140,700,000</b>
Construction Contingency	\$19,320,000	\$24,040,000	\$26,370,000	\$26,220,000	\$26,290,000
<b>Total Program Capital Cost Opinion</b>	<b>\$123,520,000</b>	<b>\$152,940,000</b>	<b>\$167,570,000</b>	<b>\$166,620,000</b>	<b>\$166,990,000</b>

Notes:

- 1) Estimated Program Capital Cost Opinion includes engineering/design, procurement, construction management and project administration, permitting, monitoring, mitigation, existing WWTP demolition, property acquisition, the complete WRF Project (lift station, pipelines, and treatment plant), and recycled water components. Costs based on Draft FMP aside from construction contingency and engineering/design, which were estimated separately to include the entire project.
- 2) Cost assumptions for Alternative 0 are based on a WRF with secondary disinfection only. Alternative 0 does not fulfill the community project goals to produce tertiary disinfected wastewater or to produce reclaimed water.
- 3) Construction contingency consists of 25% of construction cost subtotal.

Alternative 0 (No Recycled Water Project) presents a WRF that produces secondary disinfected effluent which is discharged to the ocean for an estimated total program cost of approximately \$124 million. Alternatives 3 and 4, the recommended recycled water project, consist of a WRF and full IPR recycled water program for an estimated total cost of approximately \$167 million.

**Next Steps:** Rate study update; environmental review; consult with regulatory agencies; siting study, pilot study, updated modeling, water treatment plant optimization, and design. For more information: <http://morrobaywrf.com>

<sup>1</sup> The Draft Water Reclamation Facility Master Plan (FMP) prepared by Black & Veatch, dated November 2016, is available on the project website <http://morrobaywrf.com>