

Monterey Peninsula Water Supply Project

Progress Report

January 31, 2015



California Coastal Commission Approves California American Water Test Slant Well

In a unanimous decision, the California Coastal Commission approved California American Water's application to construct a test slant well for its proposed desalination project during the Commission's November 12 meeting held in Half Moon Bay.

"This approval represents a tremendous step forward for the Monterey Peninsula Water Supply Project," said California American Water President Rob MacLean. "We now have the opportunity to study the feasibility of the preferred intake location and method, as selected by a broad group of stakeholders, and to confirm modeling work that supports that selection."

The Commission heard from dozens of supporters representing environmental, business, and community-based groups.

Speakers emphasized the need for progress on a water supply project for the Monterey Peninsula, given the state-imposed cutback schedule the community faces on its primary source of water, the Carmel River. Also discussed was the need to conduct research on sub-surface intakes, such as slant wells, since they are the preferred desalination intake method of state and federal regulators.

The test well project is a temporary project, permitted to collect up to two years of data. The well is designed to draw seawater through the sand, avoiding impacts to marine life. It will be constructed on an already disturbed area of the beach, which is within an active sand mine located in North Marina.

A week before the Coastal Commission decision, California American Water announced it had reached an agreement with the owner of the sand mine site, CEMEX, for access to the property. The agreement allows the water company access to portions of the cement producer's property in North Marina where intake wells for the Monterey Peninsula Water Supply Project seawater desalination facility are planned.

The agreement allows California American Water to drill and operate a test well on the CEMEX site and, if the results are positive, to later purchase the permanent easements needed to construct and operate intake wells. The agreement comes after months of extended talks between the two parties over the precise location of the test well and the terms of an agreement.

"We wish to thank CEMEX for their efforts in this matter. Securing the test-well site is a major step forward for this project," said Ian Crooks, California American Water's engineering manager. "We worked hard to gain access to this site, as the next best location is more than 5 miles further away, and would have resulted in approximately \$14 million in additional project costs. We are pleased to be able to move forward on this site and keep the project cost lower than it could have otherwise been," he added.

Once completed, the test well could run for up to two years with larger scale project permitting and design work taking place simultaneously.



PROGRESS ON THE MONTEREY PENINSULA WATER SUPPLY PROJECT: An Interview with California American Water Director of Engineering, Richard Svindland

Q: A lot of progress was made on the Monterey Peninsula Water Supply Project last year. Can you reflect back on what occurred in 2014?

Sure – and let’s break the project down into the major pieces of the test well, the desalination plant and the pipelines.

On the test well, we received the final permitting required from various agencies and the go ahead to start construction. Notification of the one-million-dollar grant from Department of Water Resources to help fund construction of the test well and the research project award from the WateReuse Foundation came as well. Finally, we secured the land for the test well, which is significant.

On the desal plant, first remember that we awarded the contract to design and build the plant to CDM Smith in December 2013. In the beginning of 2014, we engaged, with direction from the project’s public governance committee, in a value engineering process which we completed in August. We also brought the plant to the 60% design level. At this point, we’re waiting for release of the California Public Utilities Commission’s Environmental Impact Report to take design further because it’s possible the EIR could recommend some changes to the project.

On the pipeline, we spent the year working with staff at the various municipalities the pipeline will intersect to finalize preferred alignments.

Q: Do you consider the project to be on track?

We’re on track in terms of our overall four-year schedule to get the project done, but not in terms of meeting the deadlines imposed by the State Water Resources Control Board’s Cease and Desist Order. There have been three official delays in the California Public Utilities Commission’s review schedule, which, of course, California American Water does not lead. The environmental review process is being conducted independently by the CPUC, who have extended the schedule because they want to make sure they produce an environmental document that is as good as it can be.

Q: What major milestones can we look forward to in 2015?

In 2015 we should see the release of the draft EIR, completion of the test well, release of the final EIR and issuance of the Certificate of Public Convenience and Necessity, which is the CPUC’s authorization to construct.

Q: What is the best part of working on this project?

It’s satisfying to reach the milestones – to set the path and then obtain your goals. It’s also encouraging to see active participation from all the various agencies involved and the public. The community is definitely engaged in this project. It’s great too to be part of a team with diverse talents and to be able to draw on each other’s expertise to get things done. But I would have to say the most gratifying part is knowing we’re closer to a solution than we’ve ever been. Past projects have also obtained approvals, but to now have the test well under construction is huge.

Q: Is there anything else you’d like to add?

I’d like to extend my appreciation for all the work that all the agencies and cities we’ve engaged with have conducted on permitting and planning. It’s a major investment of time and staff resources to ensure a robust review process and to see that all the items are thoroughly vetted. I’d just like to say thanks.

Test Well Construction (A Photo Essay)

After securing permits from the California Coastal Commission, State Lands Commission and the Monterey Regional Water Pollution Control Agency, construction of California American Water's test slant well project began in mid-December.

The first step involved mobilization of equipment and crews prepared to use specialized equipment and drilling methods to accomplish the project within a limited timeframe.

Next, grading and site preparation work got underway, with drilling beginning shortly after Christmas.



Test Slant Well Selected for National Research Project

American Water (NYSE: AWK) has been awarded a research grant from the WateReuse Research Foundation to study the level of pathogen removal that occurs when ocean water is collected for desalination through sub-surface slant wells. The research will occur at the test slant well that is currently being constructed in Monterey County, California, by the company's subsidiary, California American Water.

The project is valued at approximately \$330,400, with \$200,000 being contributed by the WateReuse Research Foundation.

“This research is important to the entire water industry,” said American Water’s Dr. Zia Bukhari. “The effects of drought and climate change have increased interest in desalination as a technology for water supply. The science produced by this study will help define guidelines for water treatment when ocean water is collected through the environmentally-preferred approach of subsurface intakes.”

Slant wells, a type of subsurface intake, are drilled beneath the beach, at a diagonal angle, and extend under the ocean floor. These wells draw ocean water through layers of sand, thereby avoiding the impacts to marine life associated with traditional open ocean intakes. Drawing water through layers of sand also provides a first step in the purification of ocean water. The sand acts as a filter that can lessen the amount of bacteria removal required before and after the desalination process. The American Water research project proposes to look specifically at the question of human pathogens (e.g., bacteria, viruses, parasites) to see what level of treatment is achieved through the slant wells and further define what steps will need to be taken in addition to reverse osmosis to ensure pathogens are removed.

“Slant wells are known for their benefits to marine life,” said California American Water Director of Engineering, Rich Svindland. “But they may provide an additional benefit of pathogen reduction. If this proves to be the case, there could be significant savings in pre- and post-treatment costs for desalination projects that employ slant well technology. Because this question has yet to be studied, our findings will be extremely valuable for water resource managers and policy makers across the country.”

Slant wells are the favored technology of California permitting agencies including the State Water Resources Control Board and the California Coastal Commission. The Monterey Bay National Marine Sanctuary and the National Oceanic and Atmospheric Administration have issued guidelines for desalination projects within the sanctuary that direct any project proponent to pursue subsurface intakes where feasible. California American Water recently received a \$1 million grant from the California Department of Water Resources to help fund the installation of the test well.

The research project team will consist of Bukhari as the principal investigator, with American Water’s Dr. Patrick K. Jjemba and Trussell Technologies’ Elaine Howe as co-principal investigators.

CPUC Updates Project Schedule

In a ruling announced late last week, the California Public Utilities Commission extended the schedule for release of the Monterey Peninsula Water Supply Project draft Environmental Impact Report. The extension will move a final decision on the project by the commission from third quarter of this year to February 2016.

Administrative Law Judge Gary Weatherford wrote in reference to the recent hydrogeological data California American Water has gathered from boreholes and its new data now being gathered from the project test well, “Incorporation and analysis of this data, such as its use in modeling runs, is taking more time than allowed for in the current schedule.”

Weatherford also stated in the ruling that coordination with the Monterey Regional Water Pollution Control Agency’s Groundwater Replenishment Project necessitated the schedule update. Finally, he said the EIR must provide adequate information on the possible effects of the Monterey Peninsula Water Supply Project on groundwater.

“The State Water Resources Control Board has indicated that this is a topic that is important for the Commission to address and has given us some guidance on how to do so,” Weatherford wrote. “Commission staff has consulted with SWRCB on this issue, and it appears the potential value of the additional data and analysis that hopefully will become available outweighs the cost of the minor delay that is contemplated.”

California American Water Manager of External Affairs Catherine Stedman said in response to the ruling, “It indicates the CPUC is interested in ensuring their environmental analysis is thorough and includes adequate data. While no one likes to see delays, we support and appreciate the importance of a fully formed review.”



Borehole samples were drilled along the Monterey coast. The samples provide critical data needed for environmental and technical review.

About the Project

The Monterey Peninsula is facing a severe water supply problem. That's because the State Water Resources Control Board (SWRCB) has ordered California American Water to significantly reduce its pumping of water from the Carmel River. This order, coupled with pumping restrictions in other parts of the county, means that nearly 70% of the Monterey Peninsula community's historic water supply must be replaced.

The current project is comprised of three elements:

- ✓ **Desalination**
- ✓ **Aquifer Storage and Recovery (ASR)**
- ✓ **Groundwater Replenishment (GWR)**

This multi-faceted approach brings numerous advantages over a single-source solution. For one, it will enable California American Water to build a smaller desalination plant that will produce a smaller environmental footprint than a larger desalination plant. Secondly, this strategy will build in redundancy that allows the water system to continue to provide water if one component becomes temporarily unavailable.

Desalination

The Monterey Peninsula Water Supply Project consists of sub-surface slant intake wells, a desalination plant, and related facilities including source water pipelines, product water pipelines and brine disposal facilities. Depending on the availability of water from the GWR project, the desalination plant will be sized at either 9,750 acre-feet per year (afy) or 6,250 afy. One acre-foot is equal to one acre filled with a foot of water, which is typically more than enough water to support three families of four on the Monterey Peninsula for a year.

California American Water purchased a 46-acre parcel of land located off of Charles Benson Road in Marina as the site for the proposed desalination plant. California American Water has also secured access to and the ability to purchase permanent easements for locations to host its slant intake wells.

California American Water's project will use a series of slant wells located near the coastline in the North Marina area to draw ocean water. The slant wells will be up to 800 feet long. The final location, layout and configuration will be based on the results of the slant test well and groundwater modeling work.

In addition to the plant and its intake wells, other pipeline, storage and pump facilities will need to be constructed to ultimately deliver water to our customers.

Aquifer Storage and Recovery

California American Water will expand its current ASR project – a partnership with the Monterey Peninsula Water Management District – which captures excess winter flows from the Carmel River for storage in the Seaside Aquifer and withdraws water during the dry, summer months. Winter flows are considered excess only when they exceed what is needed to protect the river's threatened population of steelhead.

For the Monterey Peninsula Water Supply Project, the company plans to construct two additional ASR wells that will increase capacity of the program and allow the desalination plant to be smaller than would be needed without the wells.



Pure Water Monterey: A Groundwater Replenishment Project

The proposed Pure Water Monterey project, a partnership between the Monterey Regional Water Pollution Control Agency and the Monterey Peninsula Water Management District, recycles wastewater through an advanced treatment process. The resulting highly purified drinking water will be injected into the Seaside groundwater basin. A new advanced water treatment plant will be constructed for the project in addition to a number of supporting facilities.

Source water for this project will go through a three-step treatment and purification process of microfiltration, reverse osmosis and oxidation with ultraviolet light and hydrogen peroxide — all commonly used in numerous industries and food manufacturing.



Budget: Major Portions of the Project

Subsurface Intake System and Supply Return Facilities: \$51M (14% spent to date)

Desalination Plant: \$95M (5% spent to date)

Pipeline Facilities: \$131M (4% spent to date)

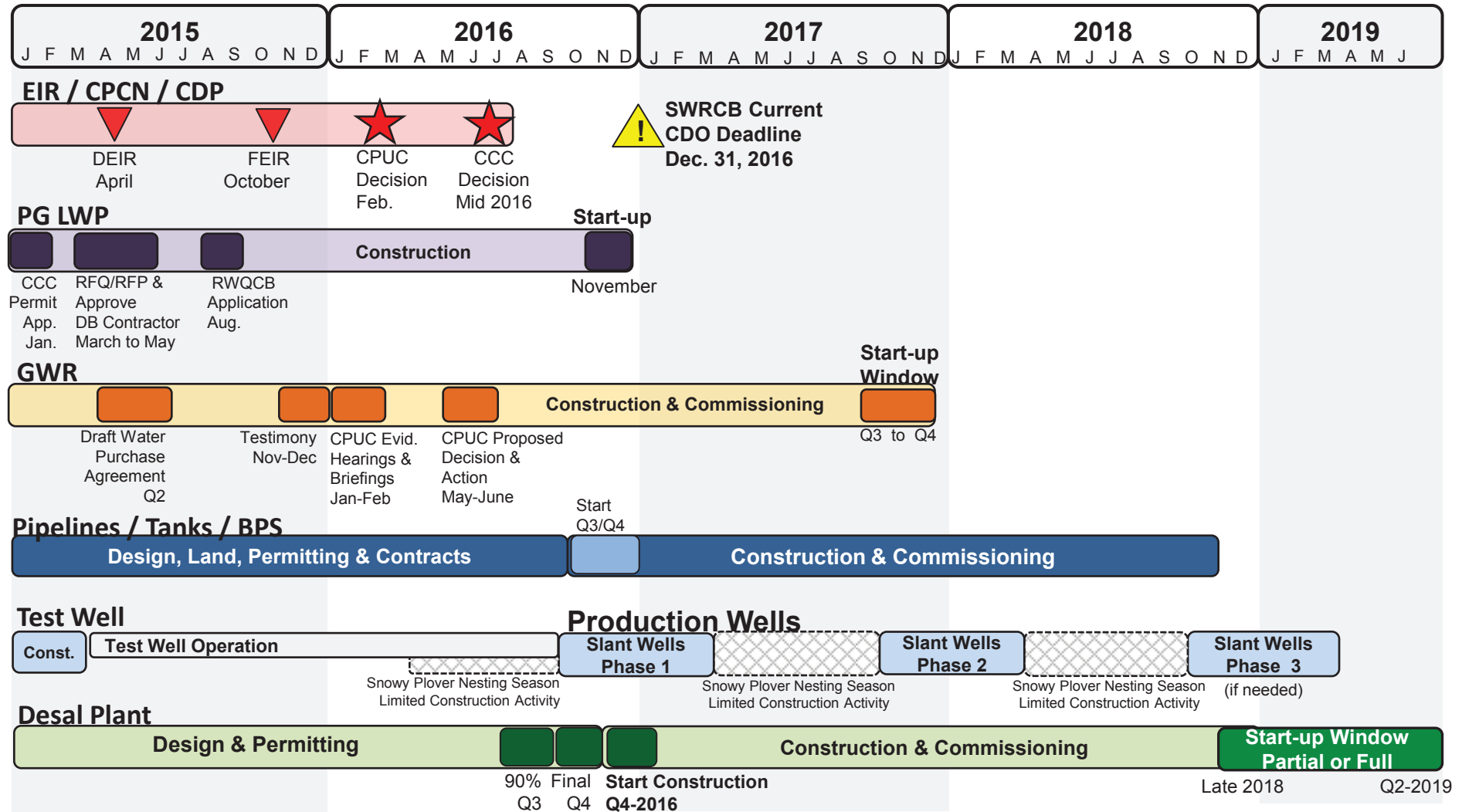
Pre-Construction Cost*: \$8M (100% spent to date)

NOTE: These figures are based on a 6.4 MGD desalination facility. Pre-construction costs are included in the \$277M project total. Further breakdown of the above components will occur after the CPUC issues a Certificate of Public Convenience and Necessity permit for the MPWSP.

** These figures include financing and some contingency costs and therefore differ from the capital costs listed in the settlement.*

Timeline

The desalination plant is expected to be completed in 2019. Below is a timeline chart depicting the major components of the project and their expected delivery dates.



Note: The schedule is based on the information and assumptions available at time of update and is accurate to +/-6 months.

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