

# Monterey Peninsula Water Supply Project

Progress Report

January 31, 2014



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AMERICAN WATER



## CDM Constructors Selected to Design and Build Monterey Desalination Facility

After a nine-month procurement process, California American Water selected CDM Constructors to design and build the desalination component of its \$277 million Monterey Peninsula Water Supply Project. CDM Constructors ranked highest of the four finalists on a combined business, technical and price evaluation. CDM Constructors submitted a proposal of \$86 million for the desalination facility portion of the project, which is consistent with earlier estimates from a consulting engineering firm. CDM Constructors' bid was the lowest of the four proposers, with other proposals ranging from \$90–110 million.

“All four firms had some great technical concepts and innovations, but CDM Constructors' proposal scored highest overall in our team's ranking criteria,” said California American Water's Vice President of Engineering Rich Svindland.

CDM Constructors is a wholly-owned, design-build and general construction subsidiary corporation of CDM Smith which was founded in 1947. CDM Smith's team brings proven technical expertise gained from other similar projects locally, nationally and throughout the world, including seven in California and more than 35 international desalination projects. Their projects involving advanced membrane treatment in California include two Monterey Peninsula successes – the Sand City desalination facility, which produces potable water from brackish groundwater, and the Pebble Beach Company's reclamation project, which irrigates golf courses with highly-treated recycled water.

“We're looking forward to being part of the Monterey Peninsula Water Supply Project team,” said Stephen Hickox, CDM Smith Chairman and CEO. “The project provides a forward-thinking and environmentally sensitive approach to solving a very serious water supply shortage. We understand the time constraints and have the capability to deliver the desalination project the Monterey Peninsula community needs.”

**“This is a major step toward solving the Monterey Peninsula's water supply issue. This procurement has brought the most reputable desalination experts in the world to the table to compete in what has been a professional and thorough process...”**

California American Water identified its preferred firm after short-listing responses to its Request for Qualifications, issuing a Request for Proposals to those firms and conducting formal interviews.

On December 11, the company submitted the statements of qualifications, proposals and reports regarding its findings along with a draft contract to the project's Governance Committee, which discussed the matter in public during a special meeting. The committee unanimously approved the selection of CDM adding three main conditions, including a requirement that the contractor and California American Water guarantee quality assurance oversight, commit to meeting Monterey County's 50% local hiring policy on every aspect of the project, and specify the actual savings of eliminating prefiltration treatment if it is not needed.

Carmel Mayor Jason Burnett, who represents the Monterey Peninsula mayors' water authority on the committee, called

the approval an “incredibly important decision for the future of water on the Peninsula.”

The Governance Committee is made up of representatives from the Monterey County Board of Supervisors, the Monterey Peninsula Regional Water Authority, the Monterey Peninsula Water Management District and California American Water. The committee was formed in early 2013 to provide an additional layer of public oversight and shares decision-making authority with

California American Water on several key aspects of the project.

“This is a major step toward solving the Monterey Peninsula’s water supply issue,” said California American Water’s President Rob MacLean. “This procurement has brought the most reputable desalination experts in the world to the table to compete in what has been a professional and thorough process, including open public review via the Governance Committee’s examination.”



## California American Water’s Ongoing Borehole Investigation Shows Promising Results for Desalination Project

**Data being collected from California American Water’s ongoing geotechnical borehole investigation shows promising results** for the subsurface slant wells it has proposed for the Monterey Peninsula Water Supply Project’s desalination plant. A work plan for the borehole and test well program is now available on the project website, [www.watersupplyproject.org](http://www.watersupplyproject.org). The plan is the result of numerous meetings and analysis by hydrogeologic experts assembled as part of the project’s settlement agreement.

Over the last four months, California American Water has drilled nine geotechnical boreholes in three areas along the Monterey coast in its study of preferred sites for a desalination plant subsurface intake. Borehole studies were conducted at Moss Landing, Potrero Road and further south down the coast at property owned by Cemex U.S., Inc.

Boreholes are used to collect deep soil samples to evaluate the geological and water quality aspects of subsurface soil layers. Two of the three sites – Potrero Road and Cemex properties – show highly favorable conditions for locating the subsurface

slant wells. The Cemex boreholes indicated an almost continuous layer of sands and gravels to a depth of 240 feet. The Potrero Road boreholes revealed a thick layer of clay at a depth of approximately 140 feet, indicating a separation between the proposed ocean intake zone above from the lower aquifers also known as an aquitard.

“The results thus far are very promising,” said California American Water Director of Engineering Rich Svindland. “At the northern site near Potrero Road, we have a nice, deep layer of sand filled with salt water with a well-formed aquitard below, which, if drawn from, would likely avoid impacts to the Salinas Basin. At the Cemex site we have a very thick sand layer below the ocean floor, which will work nicely for the subsurface, slant well sea water supply. Unfortunately, the Moss Landing sites have not been as promising. There we found intermittent clay layers mixed with silt and fine sand, without enough continuous sand layers to use any type of subsurface intake system efficiently.”

The results were welcomed by the Monterey County Farm Bureau, which has been working closely with California American Water in its goal to protect the Salinas River basin.

“We are encouraged by these borehole drilling results, particularly at the Potrero Road site, indicating that the Salinas River groundwater basin may not incur harm from the source water intakes,” said Norm Groot, Executive Director of the Monterey County Farm Bureau. “These results are an important part of the hydrogeologic testing and modeling that Cal-Am is performing at the request of Salinas Valley agricultural interests.”

Although Moss Landing was not one of California American Water’s preferred intake locations, the company had agreed to drill boreholes there as part of a settlement agreement to study alternative sites proposed by private developers.

“We agreed to study Moss Landing because we wanted to conclusively demonstrate to the community we have explored all options in our quest for the best potential sites for this project,” Svindland said. “Now that we have affirmed sufficient geological conditions, we will install a test slant well under the ocean floor to assure we have suitable water flow and quality for a fully operational desalination plant.”

At the same time the test slant well is constructed, additional onshore monitoring wells will be drilled in and around the test slant well site to monitor the well’s effects on surrounding groundwater aquifers. Data from the test slant well will provide detailed information on water quality conditions and flow rates at the site, which will be essential for the plant’s final design. The North Marina Groundwater Model will be updated using the new data from exploratory borings, monitoring well data and test slant well testing. The updated model will then be used to evaluate future basin conditions in response to full-scale project operations.

“The borehole study so far, appears to clearly address the question of whether we can engineer and build this without impacting the deeper aquifers,” said California American Water president Rob MacLean. “From the project’s outset, we have been focused on

the most expeditious path to regulatory approval and one that is most cost-effective for our customers. These results affirm what our initial studies had projected and should be welcome news to our customers and the area’s farming interests with whom we have worked very closely since we filed the project’s application.”

The Monterey Peninsula Water Supply Project, like all major water projects in California, faces potential legal and environmental challenges, which the project team is working diligently to address. One of the most significant obstacles is posed by agricultural interests over possible seawater intrusion into the Salinas Valley Aquifer, which is a major irrigation source for farmers. California American

Water’s preliminary modeling showed it could potentially draw from the seawater zone above these deeper aquifers. Data from the borehole sites confirmed the anticipated geological conditions on which these findings were based and now provides field data and scientific conclusions that support the company’s planned sites.

“The Salinas Valley Water Coalition is pleased that the technical team’s work plan has been completed consistent with the settlement agreement,” said Salinas Valley Water Coalition President Nancy Isakson. “The coalition relies on science and law as the foundation of their positions and we are pleased that our hydrologic consultants were part of the technical team preparing the work plan. This work plan is the basis by which the data and various hydro-investigations, including the test well results, will be analyzed in order for Cal-Am to prove no harm to the Salinas River Groundwater Basin and its water right holders. The borings to date appear to be encouraging, but they are one tool in the suite of tools to prove no harm and we look forward to the final report and analyses.”

The test well permit is pending review before the City of Marina. California American Water hopes to begin the construction of the well by December 2014.

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## About the Project

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**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 water supply must be replaced.

Since 2004, the company has pursued a multi-source solution to the Peninsula's water needs, which includes desalination. In 2010, the California Public Utilities Commission (CPUC), which regulates private utilities, approved a joint project with local Monterey County public agencies, termed the Regional Project, to solve the area's water shortage. However, California American Water withdrew from that project in January of 2012 because it faced serious legal and financial challenges that prevented it from advancing.

After examining 11 potential alternatives to the Regional Project in October 2011, California American Water filed an application for the Monterey Peninsula Water Supply Project.

**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, which will be less expensive and produce a smaller environmental footprint than a larger plant. Secondly, this strategy will build in redundancy, that enables the water system to continue to provide water should one component become temporarily unavailable.

### **Desalination**

The Monterey Peninsula Water Supply Project will consist of sub-surface slant intake wells, the 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 9.6 million gallons per day (mgd) or 6.4 mgd.

California American Water has secured 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 is also working to secure permanent easements for locations to situate its slant intake wells.

California American Water will be using a series of slant wells located west of the sand dunes in North Marina to draw ocean water. The slant wells will be approximately 700 to 800 feet in length and will feature several hundred feet of screen below the ocean floor and seaward of the mean high tide mark. The final layout and configuration will be based on the results of additional groundwater modeling that will be completed.

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



### Groundwater Replenishment

The proposed GWR project recycles wastewater through an advanced treatment process. The resulting highly purified drinking water will be injected into the Seaside groundwater basin. A new advanced wastewater treatment plant will be constructed for the project in addition to a number of supporting facilities. The project is expected to be online by the end of 2016.

Source water for this project will be put through an additional 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.

The first step in the treatment process is microfiltration, in which treated wastewater is pushed through a filter with highly fine pores. The second step is reverse osmosis, which pushes water through semi-permeable membranes under high pressure. Reverse osmosis is commonly used to remove salts from seawater for human consumption. The third stage of the proposed Advanced Water Treatment facility is an insurance step to remove any molecules that may have slipped through. This is done by oxidizing the water with hydrogen peroxide in the presence of ultraviolet light. Together, these break apart any chemical bonds that may be present. This three-step process ensures complete water disinfection and purity.

The resulting purified water would be pH-adjusted and piped to the aquifer recharge area in Seaside where it is planned to be either injected into the groundwater or deeper into the aquifer itself.

### Budget: Major Portions of the Project

**Subsurface Intake System and Supply Return Facilities:** \$51M (3% spent to date)

**Desalination Plant:** \$95M (3% spent to date)

**Pipeline Facilities:** \$131M (Approximately 3% spent to date)

**Pre-Construction Cost\*\*:** \$8M (Approximately 60% spent to date)

*\*\* Note 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.*

## Timeline

The Desalination Project is expected to be completed in the third quarter of 2018. Below is a timeline chart depicting the major components of the project and their expected delivery dates.

