

**STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION**

STAFF REPORT FOR REGULAR MEETING OF MAY 11-12, 2017

Prepared on April 5, 2017

ITEM NUMBER: 9

SUBJECT: City of Santa Barbara Presentation - Subsurface Intake Technologies and Potable Reuse Feasibility Studies

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This Action: Informational

SUMMARY

In 2015 the Central Coast Water Board amended the City's NPDES permit to allow operation of the City's desalination facility. The amended NPDES permit requires the City to use screens to reduce impingement and entrainment caused by the open ocean intake system, to fund a restoration project, and to evaluate the feasibility of subsurface intake and potable reuse options. As required by the amended permit, the City is providing this update on subsurface intake and potable reuse options evaluated through its work studies.

DISCUSSION

Background

The City owns and operates the Charles E. Meyer Desalination Facility, which is located adjacent to the City's El Estero Wastewater Treatment Plant (WWTP). The desalination facility was placed in standby mode in 1996 and had not been used since that time. Because of the extreme drought, the City has been working to place the desalination facility back into production to address the significant water shortage. On January 29, 2015, the Central Coast Water Board amended the City's NPDES permit to allow operation of the desalination facility. In adopting the amended NPDES permit, the Water Board found that the desalination facility was an "existing" facility per the State Water Board's Ocean Plan.

The "existing" facility designation, versus a "new" facility designation, is important because it determines design requirements. The existing desalination facility uses an open ocean intake system. Open ocean intake systems cause mortality of marine life through entrainment and impingement of organisms. Per the Ocean Plan, "new" facilities may be required to use more modern subsurface intake systems, which eliminate entrainment and impingement. Since this desalination facility is an existing system, the City is not required to install a more modern subsurface intake system. However, although the 2015 NPDES permit amendment designated the desalination facility as existing, the amendment also included additional requirements, including requiring the City to use screens to reduce impingement and entrainment caused by the open ocean intake system, to fund a restoration project, and to evaluate the feasibility of subsurface intake and potable reuse options.

Specifically, Provision VI.C.6.c.iii of the NPDES permit requires the City to submit a feasibility study work plan, analyzing “a range of alternatives, including subsurface intake and potable reuse options,” by August 31, 2015. As discussed at the January 27, 2017 Central Coast Water Board meeting, Water Board staff approved the City’s plan to evaluate such options on October 20, 2015. The permit amendment also required the City to report the results of these analyses and the Discharger’s intended implementation actions to the Central Coast Water Board, by June 30, 2017. The presentation by the City to the Central Coast Water Board satisfies the final requirement added to the amended permit.

Work Studies for Subsurface Intake Technologies and Potable Reuse Options

The City evaluated subsurface intake technology alternatives and project sites as well as potable reuse alternatives. As part of this staff report the City has provided abbreviated executive summaries of the Subsurface Intake Feasibility Study (see Attachment 1) and the Potable Reuse Feasibility Study (see Attachment 2). As discussed in the attachments, the work plans and work studies were reviewed through a public process with a technical advisory panel administered by the National Water Research Institute. Further information regarding the public process and the full detailed work studies for subsurface intake technologies and potable reuse options are available at the following link: <http://www.nwri-usa.org/santa-barbara-panel.htm>

The City evaluated six different subsurface intake technology alternatives; for each of these intake technologies the City considered potential project sites (East Beach, West Beach, Leadbetter Beach) based on their proximity to the City’s desalination plant and the existing intake pipeline and the availability of existing geotechnical data. The work study describes how all six subsurface intake alternatives went through technical evaluation to determine the maximum yields achievable at each project site. The City also evaluated several scenarios for direct and indirect potable reuse in the potable reuse feasibility workplan and study. Several of the scenarios incorporate the desalination facility reverse osmosis technology for further treatment of El Estero WWTP effluent.

At today’s meeting, the City will present the results of the studies and its intended actions. As summarized in Attachments 1 and 2, the City will discuss the technically feasible maximum yield from a variety of subsurface intake and potable reuse alternatives. Although it is the City’s choice whether to implement alternatives, the City will discuss whether the alternatives could, independently or combined, potentially replace the screened intake at the desalination facility. The City has stated that it will revisit water supply alternatives, including desalination and potable reuse, when decisions on future water needs (e.g., Lake Cachuma allocations) are known. The City has stated that the alternatives considered in these work studies will also support a future update to the City’s 2011 Long-Term Water Supply Plan. The City is also waiting on State Water Board development of permitting conditions for direct potable reuse before deciding whether to proceed further with these technologies. In the meantime the City has upgraded its non-potable waste water recycling facility and capacity at the El Estero WWTP and is working on a \$30 million treatment upgrade to the WWTP that could increase future recycling capability.

This item follows up on information provided at the January 26-27, 2017 Central Coast Water Board meeting held in Santa Barbara, which included a tour of the El Estero WWTP and recycling facility and an update on the status of the City’s desalination facility. For more background information regarding the status of the desalination facility, water treatment and recycling by the City, and work plan approval, please see items 1 and 16 at the following link to that meeting:

http://www.waterboards.ca.gov/centralcoast/board_info/agendas/2017/january/Agenda/agenda_jan_17.htm

CONCLUSION

On October 20, 2015, Water Board staff approved the City's plan to evaluate alternatives to its open ocean intake based on the desalination facility's permitted operational capacity. Since then the City of Santa Barbara has continued to work toward making its desalination facility operational and is now producing desalinated water. The City has completed its work studies for subsurface intake technologies and potable reuse options and is providing this progress update on these alternative studies as required by the January 29, 2015 amendment to the El Estero NPDES permit.

ATTACHMENTS

1. City's Abbreviated Executive Summary for the Subsurface Intake Feasibility Study
2. City's Abbreviated Executive Summary for the Potable Reuse Feasibility Study

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