

Memorandum

To: EPC-15-092, City of Barstow, The Soapmine Road Area Nitrate Remediation Project

Date: May 16, 2016

From: David Weightman
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Subject: Review of CEQA documents and findings for EPIC Project EPC-15-092 with Tomorrow Water dba BKT United

I am an Energy Generation System Specialist in the Research and Development Division, California Energy Commission, and am the Commission's Agreement Manager for proposed Agreement EPC-15-092 ("Agreement").

During the course of my work in developing the Agreement, including the Scope of Work for the Agreement, I have reviewed the City of Barstow's ("City") California Environmental Quality Act ("CEQA") documents for the Soapmine Road Area Nitrate Remediation Project ("Project"). The Project includes the construction and operation of a remediation system designed to treat nitrate-contaminated water in a floodplain aquifer underlying that portion of the City of Barstow commonly referred to as the Soapmine Road Area.

The City's CEQA documents for the project include: the 2012 Environmental Checklist, Initial Study, Mitigated Negative Declaration ("MND"), and Mitigation Monitoring Program ("MMP"); the City's 2013 Amended Mitigated Negative Declaration ("Amended MND"); and the City's 2013 Resolution No. 4736-2013, approving and adopting the Amended MND.

No significant adverse environmental impacts were noted by the 2012 Initial Study. However, the City prepared the MND and MMP to provide for Archeological monitoring, so that, in the event that construction activities uncovered any cultural resources, including human remains, that required care or conservation, impacts to cultural resources would be mitigated to a level below significance with the incorporated Mitigation Monitoring Program.

The 2013 Amended MND was completed to evaluate the City's expansion of the Project to add two additional extraction wells, based on discussions with the California Regional Water Quality Control Board, Lahontan Region. All other aspects of the Project are to remain exactly as described and evaluated in the 2012 environmental documents.

Part of the Project involves a demonstration of a novel Biofiltration system that claims the ability to remove nitrate, perchlorate and turbidity from groundwater contaminated with these compounds. The goal of this demonstration is to remove these contaminants and then to treat the water so that it meets California's Title 22 drinking water standards by implementing polishing and disinfecting steps to comply with the drinking water regulation.

With this system, a packed, floating media provides physical filtration while biofilm growing on the filtration media performs biological treatment, converting both nitrate and perchlorate into environmentally innocuous byproducts such as nitrogen gas and salt. This technology also uses less energy than a traditional fluidized reactor system (FBR), currently a common biological treatment system for contaminated water. The proposed biofilter system has a gravity-fed and floating media design which is used for both introduction of feed water and backwashing the filter without recirculation which minimizes the need for pumping. Because the floating media used in the system naturally packs the column during filtration, the media bed can be easily expanded and backwashed by gravity. These two features save energy over the FBR system. In addition, the semi-permanent media does not require regular replacement - as does granular activated carbon due to attrition, and as such, saves the energy required for media replacement.

Based on my review and consideration of the above documents, it is my independent and professional opinion that, since the above CEQA documents have been finalized, there have been no new project changes, and no new, additional, or increased significant environmental impacts have occurred. Furthermore, I have not identified any new information which would change the conclusions of the City's CEQA documents, or render those conclusions inadequate.

It is also my independent and professional opinion that the work to be performed under the proposed Agreement falls within the scope of the City's CEQA documents, and that the Agreement will not result in any new significant environmental impacts. Finally, I have not identified any new mitigation measures, within the Commission's authority, that would lessen or further mitigate the impacts of the Soapmine Road Area Nitrate Remediation Project.

The reasons for my conclusions are as follows:

The activities associated with the Agreement involve on-site fabrication of the biofilter system vessels, installing provision of electric power at the site, well boring, digging trenches, drilling, pump installation and laying pipe, and asphalt patching for street repair. The drinking water treatment system referred to as the post-treatment system will be on a mobile platform that will be removed from the site at the conclusion of the demonstration. All of the activities of the proposed Agreement have been evaluated by the City's Soapmine Road Area Nitrate Remediation Project CEQA documents identified above. The Scope of Work for the proposed Agreement has no omissions from, or conflicts with, the City's 2012 Initial Study/MND or the 2013 Amended MND.

Aesthetics:

The proposed Agreement will not have any impact on aesthetics, and will not change the impacts identified in the City's CEQA documents.

Agricultural Resources

The proposed Agreement will not have any impact on agricultural resources, and will not change the impacts identified in the City's CEQA documents.

Air Quality:

The proposed Agreement will not have any impact on air quality, and will not change the impacts identified in the City's CEQA documents.

Biological Resources:

The proposed Agreement will not have any impact on biological resources, and will not change the impacts identified in the City's CEQA documents.

Cultural Resources:

The proposed Agreement will not have any impact on cultural resources, and will not change the impacts identified in the City's CEQA documents.

Geology and Soils:

The proposed Agreement will not have any impact on geology and soils, and will not change the impacts identified in the City's CEQA documents.

Greenhouse Gas Emissions:

The proposed Agreement will not have any impact on greenhouse gas emissions and will not change the impacts identified in the City's CEQA documents.

Hazardous and Hazardous Materials:

The proposed Agreement will not have any impact on hazards and hazardous materials, and will not change the impacts identified in the City's CEQA documents.

Hydrology and Water Quality:

The proposed Agreement will not have any impact on hydrology and water quality, and will not change the impacts identified in the City's CEQA documents.

Land Use and Planning:

The proposed Agreement will not have any impact on land use and planning, and will not change the impacts identified in the City's CEQA documents.

Mineral Resources:

The proposed Agreement will not have any impact mineral resources, and will not change the impacts identified in the City's CEQA documents.

Noise:

The proposed Agreement will not have any impact on noise, and will not change the impacts identified in the City's CEQA documents.

Population and Housing:

The proposed Agreement will not have any impact on population and housing, and will not change the impacts identified in the City's CEQA documents.

Public Services:

The proposed Agreement will not have any impact on public services, and will not change the impacts identified in the City's CEQA documents.

Recreation:

The proposed Agreement will not have any impact on recreation, and will not change the impacts identified in the City's CEQA documents.

Transportation/Traffic:

The proposed Agreement will not have any impact on transportation and traffic, and will not change the impacts identified in the City's CEQA documents.

Utilities and Service Systems:

The proposed Agreement will not significantly impact total utilities and service systems, and will not change the impacts identified in the City's CEQA documents.