



State of California – The Natural Resources Agency
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August 13, 2013

Ms. Heidi Luckenbach
City of Santa Cruz Water Department
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Dear Ms. Luckenbach:

Subject: Draft Environmental Impact Report for the City of Santa Cruz and Soquel Water District Regional Seawater Desalination Project, SCH #2010112038

The California Department of Fish and Wildlife (CDFW) has reviewed the City of Santa Cruz (City) and Soquel Water District (District) draft Environmental Impact Report (EIR) for the Regional Seawater Desalination Project (Project). The Project proposes to construct and operate a seawater reverse osmosis (SWRO) desalination plant and related facilities to provide up to 2.5 million gallons per day (mgd) of potable water. The Project would draw up to 6.3 mgd of seawater directly from the Pacific Ocean through 2 millimeter (mm) screens from 1 of 8 proposed intakes, and produce desalinated water at 1 of 3 approximately 4- to 8-acre desalination facility sites all of which are located within the Industrial Park Area. The Project would produce up to 3.8 mgd of brine that would be combined with treated wastewater before returning to the Pacific Ocean through the City's existing Waste Water Sewage Outfall. The purpose of the Project is to allow the District to reduce groundwater pumping in the Soquel-Aptos area to allow coastal groundwater levels to recover, as well as helping the City meet its potable water needs.

As Trustee for the state's fish and wildlife resources, CDFW has an obligation for the conservation, protection, and management of fish, wildlife, native plants, and their habitat for the benefit and use by the people of California. As a Responsible Agency, CDFW administers the California Endangered Species Act (CESA), the Lake and Streambed Alteration Agreement (LSAA) Program, the California Marine Life Protection Act (MLPA), and other provisions of the Fish and Game Code that provide protection to the state's fish and wildlife public trust resources. Pursuant to our jurisdiction, CDFW submits the following comments and recommendations on the draft EIR for the Project.

Draft EIR Revisions and Recirculation

CDFW recommends that the EIR for the Project be revised to address all CDFW comments and recommendations described below. CDFW also recommends the City and District evaluate whether the extent of these revisions warrants recirculation of the EIR prior to finalization and proceed accordingly.

State Listed Species and Fully Protected Species

The Project area includes suitable habitat for species listed under CESA. As stated in the draft EIR, the following species occur in the Project area: Guadalupe fur seal

(*Arctocephalus townsendi*) state and federal threatened, California clapper rail (*Rallus longirostris obsoletus*) state and federal endangered, marbled murrelet (*Brachyramphus marmoratus*) state endangered and federal threatened, California least tern (*Sterna antillarum browni*) state endangered and federal threatened, and coho salmon (*Oncorhynchus kisutch*), Central California Coast Evolutionarily Significant Unit (ESU) state and federal endangered. CDFW recommends the inclusion of the Xantus's murrelet (*Synthliboramphus hypoleucus*) in the draft EIR as a state threatened species that may occur in Monterey Bay. Recently, the Northeast Pacific population of the white shark (*Carcharodon carcharias*) was listed as a candidate for CESA status. All potential impacts to white sharks from the Project should be considered in the draft EIR, including the potential for impacts from noise during construction activities. Adverse impacts from the Project leading to take of CESA listed species would require take authorization from CDFW according to Fish and Game Code § 2081. In addition, full mitigation for the take of those species would be required. The EIR should address and evaluate any impacts that may occur to state and/or federally listed species.

Fully protected species may not be taken or possessed at any time and must be avoided by the Project. As mentioned in the draft EIR, the following Fully Protected species occur in the Project area: Guadalupe fur seal, Pacific right whale (*Eubalaena japonica*), brown pelican (*Pelecanus occidentalis*) and California least tern [Fish and Game Code § 4700(b) and § 3511(a)]. The Project should address any impacts that may occur to fully protected species. The draft EIR fails to mention the fully protected status of the southern sea otter (*Enhydra lutris*); the southern sea otter's fully protected status should be included in the draft EIR. The Project should address any impacts that may occur to the southern sea otter including, but not limited to, construction, noise, and habitat loss. The draft EIR should include the southern sea otter in the analysis of impacts with marine mammals. CDFW recommends consultation with CDFW prior to construction activities regarding potential effects to the southern sea otter and other fully protected species.

The draft EIR states that there is a low likelihood of occurrence for the brown pelican; CDFW disagrees and recommends that the draft EIR state that there is a high likelihood of occurrence for the brown pelican. Similarly, CDFW disagrees with the low likelihood of occurrence stated in the draft EIR for the marbled murrelet; CDFW recommends a moderate likelihood of occurrence.

Inland Environmental Concerns

Status of Agency Consultations

CDFW, in coordination with the National Marine Fisheries Service (NMFS), has been working with the City to develop instream flows to meet minimum requirements necessary to support all life stages of state and federally listed coho salmon and federally listed steelhead trout (*Oncorhynchus mykiss*). The City has agreed to assess adult migration, spawning, smolt outmigration and rearing as the primary life history stages for incorporation into an Effect Analysis and development of a Conservation Strategy for incorporation into a Habitat Conservation Plan (HCP). On September 18, 2012, CDFW provided the City with a modified Flow Proposal, (i.e. bypass flows for fish) which addressed impacts to instream resources and has continued to work with the City to evaluate the effects of the flow proposals at model-predicted 2010 demand of approximately 3,500 million gallons per year.

Through this analysis, CDFW staff has found several significant inaccuracies within the underlying data used to model the City's Tier 1/2/3 strategy as well as, the July 2012 Flow Proposal. Unfortunately, the Appendix C Technical Memorandum (Technical Memorandum) that evaluates "probable HCP flow requirements" in the draft EIR appears to rely upon analysis from an outdated April 2011 HCP Update that does not reflect significant changes that have been made in consultation with the Agencies.

In December 2012, CDFW informed the City that the "Tier 2/3" data input file (or data set) used within the Confluence™ program to evaluate the City's July 2012 flow proposal was incorrect. It had been discovered that when the separate Tier 2 and Tier 3 data sets were merged to create the Tier 2/3 data set, the wrong minimum flow requirements were carried over. This resulted in an overestimate of the amount of water available to meet demand and an inflation of the difference in shortages between the CDFW flow modifications and the City's July 2012 Flow Proposal. Since then, CDFW has spent a large amount of time reviewing the City's modeling data to ensure that modeling results accurately reflected the proposed flow regimes.

Once agreement was reached that the underlying data set used by the City was accurate, CDFW and NMFS (Agencies) began to review results of a limited number of scenarios produced by the Confluence™ model. The term "scenario" here meaning a combination of modifications to flow proposal input files and operational and infrastructure water supply constraints. Through that analysis, the Agencies determined that the Confluence model was underutilizing water stored in Loch Lomond Reservoir due to an overly conservative rule curve that was incorporated into modeling efforts. This resulted in an increase in predicted shortages. Specifically, operation of the reservoir was restricted by a rule curve developed under 1977 conditions that resulted in the reservoir ending peak water demand seasons with sometimes-significant volumes of unused storage. As such, the model was adjusted to use 1990-optimized rule curves for all years other than 1976 and 1977 which would continue to use the 1977 rule curve. The result of modifying these rule curves was increased utilization of the reservoir in most years and significant increases in critically-dry year reservoir production in all scenarios (between 200 and 300 million gallons). This increased reservoir production substantially improved the shortage profiles in all scenarios. In addition, CDFW has concerns that Confluence™ models the off-peak (November – April) season daily water demand each year as a constant and peak-season daily demand as a function of temperature and precipitation. To date, no goodness of fit tests that would measure accuracy of water demand modeling efforts have been presented to the Agencies.

Although the City has since updated the Tier 2/3 data set and modified rule curves for its discussion with the Agencies, it does not appear that the corrected data input files and Confluence™ model assumptions were used for the Appendix C Technical Memorandum analysis provided in the draft EIR. As such, it is unlikely that the information provided is accurate and CDFW recommends that the Technical Memorandum be revised to reflect the most recent flow proposals and modeling efforts. Without an accurate representation of the effects of the different flow proposals on the City's water supply, the analysis provided in the draft EIR may not be sufficient to support statements that the bypass flows in the HCP will have a significant impact on the City's water supply or that alternative infrastructure improvements are not sufficient to provide water reliability.

Lake or Streambed Alteration Agreement

The Project proposes to conduct work on or adjacent to Arana Creek at Brookwood Drive. For any activity that will divert or obstruct the natural flow, or change the bed, channel, or bank (which may include associated riparian resources to the edge of the riparian drip line) of a river or stream, or use material from a streambed, or deposit or dispose of debris, waste, or material containing crumbled, flaked or ground pavement where it may pass into any river, stream or lake, an LSAA, pursuant to Section 1600 et seq. of the Fish and Game Code may be necessary. To obtain information about the LSAA notification process, please access our website at <http://www.dfg.ca.gov/habcon/1600/>; or to request a notification package, contact the Bay Delta Regional Office at (707) 944-5500. CDFW recommends the Project applicant submit an LSAA notification for CDFW to evaluate whether the activity falls under the jurisdiction of Section 1600 et seq. Riparian setbacks for the Project should be developed in consultation with CDFW staff.

Mitigation for impacts to riparian habitat should require a “no net loss” policy. Any impacts to riparian resources (stream banks, riparian vegetation) should be replaced at a 2:1 ratio (restoration area to impacted area). For permanent impacts, the restoration area should be protected in perpetuity. Trees removed as a result of proposed work activities should be replaced at the following ratios (replacement trees to removed trees) to mitigate for permanent net loss of canopy cover: oaks 12:1, other native trees 3:1 and non-native trees 2:1 ratio. Replacement trees should be the same species as the removed trees and consist of 5-gallon saplings, stakes, or other suitable nursery stock and should be native species adapted to the lighting, soil and hydrological conditions at the replanting site. If replanting within the work area is unfeasible due to slope steepness or other physical constraints, replacement trees may be planted at an alternate location. Replace trees in like habitats. For example, if a tree is removed from a riparian corridor then replacement trees should occur in a riparian corridor.

Before project activities begin at a site where the San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), a species designated as a state Species of Special Concern, has been detected within or immediately adjacent to the Project footprint, a San Francisco dusky-footed woodrat relocation, mitigation and monitoring plan should be submitted and approved by CDFW prior to the start of Project activities at the site. In addition, pre-Project construction surveys for special-status species should occur within 48 hours before sites are disturbed. For projects where State or federally listed species are detected, CDFW and the appropriate federal agency (if applicable) should be consulted prior to commencement of project related activities.

Marine Environmental Concerns

Marine Protected Areas

The Natural Bridges State Marine Reserve (SMR) was designated as a part of the California MLPA Initiative process and is regulated through Fish and Game Code Section, 28 and Title 14, Section 632, CCR. The SMR is located within the vicinity of the Project area. In a SMR, the take of all living marine resources is prohibited, except under a permit or specific authorization for research, restoration or monitoring purposes. For this reason, CDFW

notes that the intake structure must be placed at the SI-9, SI-17, or SI-18 alternatives to avoid any incidental take that could occur at the Natural Bridges SMR.

Entrainment and Impingement

CDFW is concerned about the potential effects to marine resources from impingement and entrainment by the Project. CDFW prefers the method of drawing salt water from wells for desalination to avoid entrainment and impingement but recognizes that this Project has determined that wells are infeasible due to geological and space constraints. CDFW will require the use of screens for the protection of listed and special-status marine organisms. However, the draft EIR incorrectly cites CDFW's Fish Screening Criteria, 2013 for this Project. The Fish Screening Criteria is not designed for open ocean intakes, but rather for inland bays and rivers. CDFW appreciates the proposed use of 2 mm wedgewire screens for the Project and agrees that the low intake velocity coupled with the wedgewire screens will greatly reduce impingement and entrainment at this Project. However, CDFW remains concerned with the wedgewire screen technology as it has yet to be used beyond the testing phase on the California Coast. Additional monitoring and testing may address the following concerns CDFW has regarding fish screens:

- biofouling of the proposed wedgewire screens
- impingement and entrainment of organisms smaller than 2 mm
- maintenance of the screens

Prior to the construction of the proposed Project, CDFW recommends further analysis of the potential for using a 1 mm wedgewire screen along with an analysis of what the entrainment reduction may be for the smaller screen size. Additionally, CDFW recommends additional analysis of potential effects of entrainment using the Area of Production Foregone (APF) model. The APF model is representative of all species lost to entrainment and estimates the amount of habitat it would take to produce the organisms lost to entrainment. The APF is the product of the average annual proportional mortality and the estimated area of the water body that is habitat for the species' source population. Habitat Production Foregone (HPF) is an estimate of habitat area production that is lost to all entrained species on an annual basis. CDFW anticipates the need for mitigation for the entrainment of fish and invertebrates that are smaller than the screen size. Additionally, CDFW recommends waiting to certify the Final EIR until it has been reviewed for consistency with the State Water Resources Control Board's upcoming proposed Ocean Plan Amendment Desalination Policy.

Discharge Brine and Water Quality

The proposed desalination plant will be designed to create 2.5 mgd of desalinated water by taking in roughly 6.3 mgd of seawater and create roughly 3.8 mgd of brine wastes per day. The draft EIR indicates that the brine wastes will be comingled with treated effluent from the City's Waste Water Treatment Facility and then discharged to the ocean via an ocean outfall. The draft EIR for the Project details the use of water from the Waste Water Treatment Facility to bring the salinity of the brine back to or below that of ambient sea water prior to discharge, plus the use of effluent diffusers in the ocean. CDFW will review the monitoring plan for the proposed discharged brine to insure that the discharged effluent is fully mixed and is protective of marine resources.

Construction Impacts to the Marine Environment

CDFW is concerned about Project impacts to kelp and rocky substrate habitats, especially from construction activities. The draft EIR proposes an avoidance buffer of 100 feet from kelp beds. CDFW recommends the revised draft EIR clarify how the 100-foot buffer was chosen as the appropriate buffer distance. In addition, CDFW recommends that the City and District coordinate with CDFW on creating a protective buffer that also applies to all rocky substrate. For the protection of kelp beds and rocky substrate, CDFW prefers the SI-9, SI-17, and SI-18 Alternatives. CDFW recommends monitoring the rocky nearshore habitat adjacent to any Project construction activities before, during and after construction, and developing a comprehensive monitoring plan in coordination with CDFW for kelp, rocky substrate, fish, and invertebrates. Should impacts occur to kelp beds or rocky substrate, mitigation will be required.

In addition, CDFW is concerned about the short-term impacts from dredging activities. CDFW recommends using all best management practices (BMPs) for dredging, including the use of the clamshell bucket dredge and coordinating with CDFW prior to commencing dredging.

CDFW is also concerned about the sound levels generated by underwater construction activities. CDFW is a signatory agency to the Agreement in Principle for Interim Criteria for Injury to Fish from Pile Driving Activities, June 12, 2008. The agreed upon sound pressure levels are 206 dB peak and 187 dB accumulated sound exposure level (SEL). The draft EIR does not foresee the SEL levels exceeding the agreed upon criteria; however, CDFW recommends sound pressure level monitoring for the proposed work. CDFW appreciates the Mitigation Measure 5.2–4 and recommends coordination with CDFW in the creation of a hydroacoustic fish and marine mammal monitoring plan in the event that SEL's exceed those projected in the draft EIR.

Preferred Intake Alternative

CDFW recommends an intake alternative that is located in sandy habitat and as far from the Natural Bridges SMR as feasible; this would include the SI-9, SI-17, and SI-18 alternatives. Additionally, CDFW suggests further analysis of locating the intake in deeper water as this may have less of an impact on nearshore marine resources. The entrainment of larval and juvenile stages of various marine species should be less at deeper depths.

Draft EIR Alternatives Analysis

CDFW recognizes the City's significant efforts to date to evaluate both the City's water supply needs and adequate flows for fish; however, the results of those efforts have not been accurately reflected in the draft EIR. A complete alternative analysis requires an evaluation of a range of alternatives necessary to allow a reasoned choice by decision-makers when considering the merits of the project. Though the draft EIR does not need to consider every conceivable alternative to a project, it should consider a reasonable range of potentially feasible alternatives for informed decision making and public participation. Although the draft EIR states that a wide range of alternatives were screened to determine whether a given alternative should be evaluated in detail or eliminated from further consideration, it does not appear to thoroughly evaluate the alternatives recommended by CDFW or other potentially feasible alternatives that could increase water supply reliability in

the near-term. The draft EIR simply states that proposed alternatives would not have a significant impact on the size of drought curtailments but does not provide data to support that statement. Most alternatives appear to be summarily dismissed on an individual level without explanation of why and/or how they do not meet criteria for any type of in-depth analysis. Nor does the alternatives analysis examine any reasonably feasible combination of the alternatives that make common sense, and when implemented together, may have a synergistic effect on increased water supply. For example, CDFW recommends the draft EIR include further analysis on the potential of using treated waste water instead of desalinated water. The treated wastewater of up to 10 mgd is proposed to be combined with the brine water from the reverse osmosis process. CDFW suggests additional analysis of using that same treated waste water as a City water source and for potential recharging the aquifers for the District.

Potential Water Infrastructure Changes

On January 25, 2012, the Agencies provided a list of specific infrastructure changes that would minimize Project impacts to resources and maximize the effectiveness of water supply operations. The City has since evaluated the effect of these changes and resulting improvements in the City's water supply reliability and CDFW had requested that the City incorporate the results of the analysis into the draft EIR. The Technical Memorandum summarizes some of the infrastructure upgrades but does not accurately describe the results of the analysis. The analysis in the draft EIR should recognize that though in isolation some of the water supply infrastructure improvements are not sufficient, the combined result of the scenarios does provide significant improvement in water supply. For example, increasing the amount of water available at Loch Lomond alone is not significant until the ability to divert additional winter flow into storage at the reservoir has improved. The combination of these two factors does increase the amount of water supply significantly. To date, with the Agencies' suggested improvements to current water supply infrastructure combined with the CDFW Flow Proposal, which is still in development, the average worst peak season shortage for critically dry years is 17.6% and in dry years it is 1.4%. With the addition of reasonably feasible infrastructure improvements, the average worst peak season shortages will likely be further reduced.

Project Expansion

The draft EIR analyzes environmental impacts associated with a 2.5 mgd plant production. However, the desalination plant, as proposed, will be built to be able to expand capacity up to 4.5 mgd. CDFW recommends further discussion of the potential expansion of the Project to a 4.5 mgd plant. The draft EIR should clarify what size the proposed desalination plant would be and how the expansion process would take place in the future. In particular, CDFW would like clarification as to whether a second environmental review process would occur if expansion of the desalination facility becomes necessary.

Conclusions

CDFW appreciates the significant efforts to date by the City to collect information, work with the Agencies and evaluate effects and propose protective measures for instream fishery resources. However, the draft EIR does not appear to reflect the updated modeling runs or the analysis of alternatives that has been conducted to date. Further, the draft EIR does not

include an adequate analysis of Marine-related impacts or a discussion of all species that could be impacted by the proposed Project. As such, CDFW recommends that the analysis in the draft EIR be updated to include the corrected data and most recent modeling runs to evaluate the impacts of fish flows and effectiveness of alternatives. This corrected data should also be used to model actual improvements by the Project in order to accurately reflect its supposed benefits. Once the draft EIR is revised to include the updated analysis and addresses CDFWs remaining marine and terrestrial issues as outlined in this letter, CDFW recommends the City and District evaluate recirculation of the draft EIR for additional review.

CDFW appreciates the opportunity to review the draft EIR for the Project and remains available to discuss technical information needed to evaluate the effects of fish flows and potential alternatives. If you have questions or comments regarding this letter, please contact Ms. Corinne Gray, Senior Environmental Scientist (Specialist), at (707) 944-5526 or Corinne.Gray@Wildlife.ca.gov. To arrange for a discussion regarding Marine issues, please contact Mr. Eric Wilkins, Environmental Scientist, at (831) 649 -2813 or Eric.Wilkins@Wildlife.ca.gov.

Sincerely,



Scott Wilson
Acting Regional Manager
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