

Poseidon's Desalination Plant



# Opposition to the Brookfield-Poseidon Huntington Beach Seawater Desalination Project

Briefing Binder for the California Coastal Commission  
*Prepared by the Stop Poseidon Coalition [www.californiadesalfacts.org](http://www.californiadesalfacts.org)*



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# Tribal Justice and Consultation:

## *A Message from the Society of Native Nations*

Corporations should not be given more control over water rather control should be taken away from them to prevent further commodification of water. Water should be free to all as a true human right.

This page is dedicated to all the proposed projects to follow suit.... Projects like Poseidon that inspired this page to be written.

**Water is life. Water is a Human Right.**



## **SOCIETY OF NATIVE NATIONS** HONORING PAST AND FUTURE GENERATIONS

### **Society of Native Nations Tribal Consultation and Consent Policy 1-1-2022**

1. Tribal Consultation is an enhanced form of communication that emphasizes trust, respect, and shared responsibility but does not mean consent.
2. Consent is when a majority rule or consensus is established.
3. It is an open and free exchange of information and opinion among parties, leading to mutual understanding and comprehension. Consultation is integral to a deliberative process that effectively collaborates and makes informed decisions.
4. Tribal Officials – Elected or duly appointed Native American tribal officials or authorized intertribal organizations and liaisons.
5. Responsibility to Tribal sovereignty as established by specific statutes, treaties, executive orders, court decisions, regulations, policies, international laws, and norms.
6. Respect and support for the sovereignty of Tribes, which includes the inherent right of such Tribes to exercise self-determination, self-governance, and self-preservation.
7. Consultation and collaboration with Tribes early in the decision-making process are crucial to ensure that Tribal rights and concerns are considered early and timely.
8. Consultation Acknowledges the responsibility to inform Tribal communities about agency programs, projects, and services and will conduct appropriate outreach and continued educational initiatives when it involves Tribal and community implications.
9. Consultation is to understand and respect the cultural diversity of Native American Tribes and communities to ensure that formal communications are culturally appropriate so that relationships can be established.
10. Consultation is intended to facilitate effective collaboration and informed policymaking that further recognizes the importance of regular communication and collaboration with Tribes and communities, irrespective of whether specific regulatory or policy changes are being considered.
11. The consultation process includes a face-to-face meeting or telephone conference; those engaged in the consultation will select mutual meeting locations accessible to Tribal representatives and State or Government participants.
12. To promote and develop innovative consultation methods with Tribal understanding.
13. To remove institutional, procedural impediments that adversely affect working directly with tribal communities to accomplish the agreed goals collaboratively.
14. Protocols for said Tribal consultation will be dependent on the Tribal community directly impacted and engaged in the consultation process.


**Society of Native Nations** - Non-Profit 501(C)(3) Organization  
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# FACT SHEET:

## The Poseidon Desalination Project is Legally Inconsistent with the Huntington Beach Local Coastal Program and the California Coastal Act



Below is an abbreviated summary of the key legal arguments in opposition to approval of the Brookfield-Poseidon Huntington Beach Seawater Desalination Plant. The complete Legal Comment Letter, prepared by Chatten-Brown, Carstens and Minter, LLP, was submitted to your staff on February 11th, 2020 and is attached for your review as Attachment A in this Briefing Book.

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- ▶ **The Coastal Act authorizes and requires the Commission to consider “feasible less damaging alternatives” to the proposed 50 MGD facility and to impose the “maximum feasible mitigation available” to protect coastal resources.**
  - ◆ Under section 30233, the Commission must deny the CDPs given there are feasible water supply alternatives, including but not limited to, conservation, the Metropolitan Water District of Southern California’s Carson Regional Recycled Water Facility and the City of Los Angeles’ Operation NEXT water recycling project.
  - ◆ The Commission cannot proceed with the Project without considering feasible mitigation measures including alternative intake locations, slant wells, construction to critical infrastructure standards, and the inclusion of rooftop solar and battery storage to fully offset the Project’s energy consumption and electrical grid impacts.
  - ◆ Coastal Act section 30260 does not authorize the Project. Feasible and reliable water supplies are available outside the coastal zone, and the Commission cannot support findings that alternative locations are infeasible or more damaging, that rejection of the Project would adversely affect public welfare, or that Project impacts are mitigated to the maximum extent feasible.
  
- ▶ **The Commission has not yet fully analyzed and mitigated the environmental impacts of recent changes to the Project (such as the artificial reef and new grading plan) and changed circumstances (such as new delivery alternatives and cumulative impacts from several adjacent large developments), as required by the California Environmental Quality Act (CEQA).**
  
- ▶ **The Project must be constructed to Risk Category IV standards for critical infrastructure to satisfy Project and City objectives to serve as an emergency water supply.**



# FACT SHEET:

## The Poseidon Desalination Project is Legally Inconsistent with the Huntington Beach Local Coastal Program and the California Coastal Act

► **As proposed, the Poseidon Desalination Project is inconsistent with Coastal Act and Huntington Beach LCP policies, including, but not limited to:**

- ◆ The Project is not designed to avoid or mitigate impacts to onsite wetlands, and adjacent ESHA and fails to include adequate buffers to protect sensitive wildlife. (sections 30231, 30233, 30240, 30607.1; LCP Policies C7.2.6, I-C8(c), C1.1, C6.1.4, C6.1.20, C7.1.2, C7.1.3)
- ◆ Entrainment and impingement of marine species by Project intake structures and linear shearing caused by the discharge of Project brine will kill at least 5.4 billion marine organisms, in violation of LCP and Coastal Act requirements to maintain, enhance and restore marine resources and the biological productivity of coastal waters.
- ◆ The Project's sound walls and plan to raise the site's foundation by up to 16 feet will interfere with wetlands maintenance by prohibiting inland migration from sea level rise, violate LCP and Coastal Act prohibitions against coastal armoring, and will result in the desalination plant ultimately becoming an unserviceable island.
- ◆ The near-shore Project site and location in the Newport-Inglewood Fault Zone results in inconsistencies with policies aimed at protecting the community by avoiding seismic hazards, flooding, and tsunami risk.
- ◆ Exorbitantly expensive desalinated water violates the City's clear requirement to provide water "at maximized cost efficiency." (LCP Objective C.9.1)
- ◆ The Project's construction, brine discharge shearing, and intake mortality creates harm to local fish populations and would imperil recreation in Huntington Beach Surf City by reducing and eliminating safe opportunities for surfing, swimming, junior lifeguarding, and fishing, in violation of sections 30210, 30220, 30253(c), 30234.5 of the Coastal Act and LCP Goals C3, C7, C1, and C6.)
- ◆ The Project would vastly increase energy consumption and GHG emissions, without providing any realistic mitigation in violation of the Coastal Act section 30253(d).
- ◆ The Commission's Environmental Justice Policy requires consideration of alternatives to the Project to avoid disproportionately affecting disadvantaged and overburdened communities. As proposed, the Project will dramatically increase water costs, electrical generation, and associated air pollution

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# Brookfield

## FACT SHEET:

Poseidon Water is Owned by Brookfield Asset Management a \$650 Billion Foreign-Owned Corporation

### Poseidon has a long-standing history and strategy of claiming corporate poverty

when asked by regulators to comply with permit conditions that would decrease the damage its mega seawater desalination projects cause to California's marine life, ratepayers and environmental justice communities. As a result, it is critical that the Coastal Commission is well-informed about the project applicant, Poseidon Water, and its parent company, Brookfield Asset Management and that it reject assertions by the applicant that permit conditions they dislike will make the project 'economically infeasible.'<sup>1</sup> The Commission's responsibility is to ensure the project complies with the standards in the California Coastal Act and the Huntington Beach Local Coastal Program and that those standards are not weakened to maximize profitability for a deep-pocketed foreign private equity company or its subsidiaries.

### Who is Brookfield Asset Management?

1. Poseidon's owner is [Brookfield Asset Management](#), a \$650B, global private equity behemoth, who remained largely out of the public eye until it drew global media attention for bailing out former President Trump's son-in-law on 666 Fifth Avenue in New York City: [Brookfield Bails Out Kushners 666 Fifth Avenue](#). The Brookfield bailout funds were rumored to come from Qatar who at the time was Brookfield's second largest investor: [House Democrats Investigate Qatar Linked Bailout by Brookfield](#). The deal was made six months before Kushner would have had to come up with \$1.2 billion that was due on the mortgage. The terms of the deal were not released, but involved taking [a 99-year lease and paying the rent up front](#).

In January, 2017, Poseidon's Huntington Beach Project was selected for Trump's Top 50 Infrastructure Projects in the US: [Huntington Beach Desalinization Plant Makes Trump's Top 50](#).

2. The most comprehensive piece on Brookfield Asset Management is the May 2017 Forbes Cover Story: [Brookfield's Bruce Flatt: Billionaire Toll Collector of the 21st Century](#). Until the Forbes story appeared, it was difficult to find any in-depth information on Brookfield given the secretive nature of alternative asset companies that are not required to disclose many elements of their operations regardless of their size or global reach.

#### Some highlights from the Forbes story on what Brookfield controls globally include<sup>2</sup> :

- ◆ is the largest office landlord in downtown LA and London
- ◆ has 218 hydro-electric plants on 82 rivers in North and South America
- ◆ is the largest private owner of cell phone towers in France
- ◆ owns the electric power lines that serve 98% of the population in Chile
- ◆ owns 20% of the wind farm capacity in Ireland
- ◆ owns 36 ports in the U.K.
- ◆ owns 3,600 kilometers of toll roads in India

3. Given their global reach, it is not surprising that Brookfield has a reputation for playing hardball. A September 2015 article in the Sydney Morning Herald that examined their handling of domestic rail transport lines in Australia describes Brookfield business practices as "ruthless" in extracting profits: [Brookfield Ruthless in Extracting Profits](#)<sup>3</sup>.

4. And Brookfield is apparently not a fan of U.S. regulations because they interfere with the investor certainty the company prefers: Brookfield's CEO, Bruce Flatt has publicly criticized how U.S. regulations have affected his business: [Brookfield: Regulations Get in Way of Good Business in US](#).

<sup>1</sup> For example, during the final Santa Ana Regional Board hearings on April 23rd and April 29th, Poseidon repeatedly claimed that critical staff-recommended conditions would render the entire Poseidon project 'economically infeasible'. For confirmation, full transcripts of the final April 23rd and April 29th RB hearings are available for review.

<sup>2</sup> It should be noted that some of the assets listed in the Forbes article have since been sold. [See Infrastructure Investment article here](#).

<sup>3</sup> The link to the Sydney Morning Herald full article has been removed. A PDF of the article is available.



# Brookfield

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5. More recently, Brookfield had the distinction of being identified as the second largest private equity firm in the world, behind Carlyle, propping up aging oil and gas infrastructure while touting their investments in renewable energy. In an October 2021 report released by the Private Equity Stakeholder Project entitled [Private Equity Propels the Climate Crisis](#), researchers reported that investments by Brookfield and Oaktree Capital Management (majority controlled by Brookfield) in fossil fuels were almost double its renewable energy assets while claiming to be moving to a “net zero carbon economy.” Brookfield expanded its “budding oil and gas empire” in early 2021 with a \$6.8 billion hostile bid for Inter Pipeline’s oil sands infrastructure, winning shareholder approval in July. News stories like this one in the NYT entitled [Private Equity Funds, Sensing Profit in Tumult, Are Propping Up Oil](#) describe the secretive role that private equity is playing as the major fossil fuel producers shed assets in response to climate change and public opposition.

### Brookfield Took Control of Poseidon Water in December 2015

6. Brookfield quietly bought a controlling interest in Poseidon in December 2015. Despite a relentless public relations presence by Poseidon in Sacramento and Orange County, the acquisition went largely unannounced – no initial press releases were sent out. The first mention of the purchase was via a buried sentence in a lengthy Orange County Water District Agenda Report in February 2016: “Poseidon also reported at the meeting that a majority interest in Poseidon had been purchased by Brookfield Infrastructure Partners out of Canada.”

7. [Brookfield's Largest Ever \\$14B Offering Includes Poseidon](#) describes Brookfield’s \$14B offering (BIP III) that included 120 limited partners and was seeded with assets that included a controlling stake in Poseidon Water, a Brazilian transmission business, Peruvian toll roads, and renewable energy businesses. At the time, it was the largest infrastructure fund offering (and may still hold that place.) Documentation of how much Brookfield paid for Poseidon or how much they invested in it is unknown. (Note: Brookfield did sell the Carlsbad Desalination Plant three years later to foreign-based Aberdeen Standard for more than \$1 Billion)

8. Brookfield’s December 2015 purchase of Poseidon Water marked a significant step forward for Poseidon’s long-standing efforts in California to privatize seawater - a public trust resource - by turning it into a money-making, for-profit consumptive water supply commodity.

Brookfield’s acquisition took place in parallel with the SWRCB’s approval of the Ocean Plan Amendment which changed the standards for the construction of seawater desalination plants and placed a priority on requiring subsurface intakes in order to reduce marine life mortality.

After the acquisition, there was a noticeable uptick in questionable behavior, political pressure and lobbying and campaign expenditures by Poseidon to discredit the new Ocean Plan Amendment standards, to remove opponents from appointed and elected boards and to undermine the Coastal Commission’s remaining authority, including a failed attempt during the 2020 legislative session to have legislators exempt the Huntington Beach Seawater Desalination Project from the Coastal Act, the Porter Cologne Act and the California Environmental Quality Act.

9. In 2019, Brookfield [sold the Poseidon Carlsbad Plant to Aberdeen Standard](#) for more than \$1B dollars; Poseidon remains as the manager of the facility which has been plagued by reliability problems, a potentially expired permit for [wetlands restoration in South San Diego Bay](#) and unfulfilled marine life mitigation requirements as part of their initial Coastal Commission permit approved in 2007. The plant became operational in 2015.

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# FACT SHEET:

## Poseidon's Carlsbad Desalination Plant – A Cautionary Tale

### 1. Poseidon has continually delayed enacting their Marine Life Mitigation Plan for the Carlsbad Plant and has not yet begun mitigating marine life impacts even though plant operations began in 2015.

In its 2007 Coastal Development Permit (CDP) for the Carlsbad facility, the Coastal Commission required Poseidon to complete a Marine Life Mitigation Plan (MLMP) within two years. The Plan was approved in 2008 and the subject of a 2009 permit revocation hearing due to incorrect calculations provided by Poseidon.<sup>1</sup> However, Poseidon did not apply for a CDP to enact the MLMP until nearly ten years later. A permit was finally approved in 2019 for restoration of a 34.6 acre disturbed upland site and restoration/conversion of a 90.9 acre salt pond to tidal wetlands in South San Diego Bay. However, Poseidon has not yet begun the permitted mitigation work nor received any mitigation credit and appears to have missed key permit deadlines thus leading to further mitigation delays and potential need for enforcement action.<sup>2</sup> Six years have now passed since operations began without any mitigation.

Meanwhile, extensive impacts to coastal resources and marine life have been ongoing since 2015 entirely unmitigated. Further, roughly three and a half years after it bought Poseidon, Brookfield [sold the Carlsbad plant to Aberdeen Standard](#) in 2019, a foreign-based global investment company with \$532 Billion in assets under management. While Poseidon continues to manage the plant, it is unclear who is liable to ensure that the required mitigation for marine life impacts is finally initiated and completed.

### 2. GHG Plan Revocation Hearing (2010): The Coastal Commission found Poseidon intentionally provided inaccurate, erroneous or incomplete information to the Coastal Commission when stating that its Carlsbad facility would be carbon neutral.

In 2007, as part of its Coastal Development Permit (CDP) hearing for the Carlsbad plant, Poseidon testified that its project would be 'net carbon neutral,' claiming that it would fully mitigate the project's net greenhouse gas (GHG) emissions.

Poseidon's Energy Minimization and Greenhouse Gas Reduction Plan" (GHG Reduction Plan) contained an 'automatic credit' based on what Poseidon claimed would be a one-to-one reduction in State Water Project (SWP) imports from the Sacramento-San Joaquin Delta to San Diego. The Commission approved Poseidon's GHG Reduction Plan in 2008 and gave it an automatic credit for the claimed one-to-one reduction in State Water Project imports.

Coastal Commission staff later learned that a 2005 agreement between the California Department of Water Resources and the Metropolitan Water District (MWD) prohibited desalination projects from reducing MWD's State Water Project (SWP) entitlements. In addition, MWD's 2009 contractual agreement with the San Diego member agencies who agreed to buy Poseidon's water contained a guarantee that the desalinated water could not interfere with MWD's ability to import or use its full State Water Project entitlements. Poseidon had been aware of this

<sup>1</sup> California Coastal Commission Staff Report: R-E-06-012\3 Revocation Request – Poseidon Resources (Channelside) LLC – Carlsbad Desalination Facility. December 10, 2009. <https://documents.coastal.ca.gov/reports/2009/12/Th9a-12-2009.pdf>

<sup>2</sup> California Coastal Commission. Notice of Violation, Violation File No.: V-9-22-009 (Poseidon Resources Channelside L.P.) February 11, 2022. <https://california.surfrider.org/wp-content/uploads/2022/03/NOV-Ltr-to-Poseidon-Water-2-11-22.pdf>

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## Poseidon's Carlsbad Desalination Plant – A Cautionary Tale



information but did not share it with the Commission.<sup>3</sup> While the Commission did not revoke Poseidon's permit, it did find that Poseidon had **intentionally** provided inaccurate, erroneous or incomplete information regarding its Greenhouse Gas Plan.<sup>4</sup>

In 2013, when Poseidon submitted its permit application to the Coastal Commission for the proposed Huntington Beach desalination plant, it submitted an almost identical GHG Reduction Plan and again attempted to obtain an automatic credit based on a one-to-one reduction in State Water Project imports. That application was withdrawn and the 'automatic credit' has now been removed from the latest Huntington Beach GHG Reduction Plan

However, while Poseidon is no longer seeking an automatic credit for the Huntington Beach Project, it has refused to apply for a permit amendment to remove the automatic credit from its Carlsbad GHG Reduction Plan. In response to a 2018 CCC notice of nonconformity that asked Poseidon to formally remove the imported water automatic credits from the GHG Reduction Plan, Poseidon responded that they do not plan to take action to amend the GHG Reduction Plan as required, preferring to keep their options open.<sup>5</sup>

### 3. Poseidon's claim that the Carlsbad Plant is 'carbon neutral' is based on the purchase of controversial offsets known as renewable energy credits (RECs) that are based entirely out of state and consist of polluting biofuels.

Poorly understood in 2008 when the Poseidon Carlsbad GHG Reduction Plan was approved, Renewable Energy Credits (RECs) are now highly controversial as they enable polluters to continue to pollute at the source hurting vulnerable communities by investing in false solutions elsewhere. In the environmental justice world, it is well-known as "pay-to-poison."

The attached chart on the next page details the RECs that Poseidon has bought for its Carlsbad plant and demonstrates that every one was purchased for an out-of-state project and consists almost entirely of polluting landfill gas.<sup>6</sup>

The proposed GHG Plan that Poseidon submitted to the CCC for the Huntington Beach project is entirely based on purchasing the same kinds of controversial offsets and must be modified to require mitigation at the source.

### 4. San Diego is in an escalating water affordability crisis since Poseidon's operations began in Carlsbad.

Drinking water produced by the Poseidon Carlsbad desalination plant is very expensive, with an average price per acre-foot that is four to eight times higher than water from other sources. Estimates for plants proposed in California range from \$1,900 to more than \$3,000 per acre-foot.<sup>7</sup> But experience from Carlsbad suggests these cost estimates are optimistic, nor do they reflect increases from the predictable rise in energy costs. In 2013, Poseidon projected the cost of water from their Carlsbad plant to be a maximum of \$2,257.<sup>8</sup> Yet, for the last three years, the cost of Poseidon's desalinated water has hovered in the \$2800 per acre foot range. And, according to a December 2021 report prepared by economist Michael Hanemann, Poseidon's Carlsbad plant is a significant factor in the higher water rates in San Diego County<sup>9</sup> where water rates are 26% to 37% higher than that of the Metropolitan Water District of Southern California.<sup>10</sup>

<sup>3</sup> California Coastal Commission Staff Report: Addendum to R2-E-06-013 Revocation Request – Poseidon Resources (Channelside) LLC – Carlsbad Desalination Facility. February 9, 2011 <https://documents.coastal.ca.gov/reports/2010/2/W6a-2-2010.pdf>

<sup>4</sup> Ibid.

<sup>5</sup> Poseidon Greenhouse Gas Plan Comment Letter. October 4, 2018, <https://bit.ly/3ogKbHn>.

<sup>6</sup> <https://www.environmentalpollutioncenters.org/news/landfill-gas-pollution/>

<sup>7</sup> Pacific Institute. Issues for Desalination in California: Cost and Financing. November 2012. <https://pacinst.org/publication/costs-and-financing-of-seawater-desalination-in-california/>

<sup>8</sup> \$734 Million Carlsbad Desalination Project Financing Closes. San Diego County Water Authority, Dec 24, 2012. <https://carlsbaddesal.sdcwa.org/734-million-carlsbad-desalination-project-financing-closes/>

<sup>9</sup> San Diego Union Tribune San Diego water prices driven up by falling demand and costly projects, report says. February 12, 2022. <https://www.latimes.com/california/story/2022-02-12/water-cost-san-diego>

<sup>10</sup> Professor Michael Hanemann. Fallbrook PUD and Rainbow MWD Wholesaler Reorganization. December 31, 2021. <https://www.sdlafco.org/home/showpublisheddocument/6068/6377753881257000>



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## Poseidon's Carlsbad Desalination Plant – A Cautionary Tale



The cost of Poseidon's water in Huntington Beach will foreseeably be even higher given distribution costs, costs to protect the facility from sea level rise and other hazards, and the cost to re-treat the water if it is stored as groundwater.

### 5. Seawater desalination is not as reliable as Poseidon would like you to believe.

In 2016, the Carlsbad plant failed to deliver nearly 20 percent of the water that San Diego ordered from it. During the same period, there were 46 days when it delivered no water at all, according to business and regulatory filings by the plant's owner, Poseidon Water. In 2017, Poseidon only filled 70 percent of their promised allocation. During Q1 of 2019, the plant supply shortfalls were nearly 20%. In 2020, the plant operated at 40% capacity during the entire month of March. Then, due to a red tide algal bloom, operated on and off under a partial shutdown starting April 11 and shut down completely on April 25 through the entire month of May. Algal blooms are known to commonly foul the reverse osmosis membranes and blooms are expected to increase in frequency and severity as the climate changes and ocean temperatures rise. Additionally, the plant was plagued by chronic toxicity violations, likely attributable to chemical or polymer additives, for the first several years of operation which were only resolved after Poseidon lobbied the Regional Water Board to remove the testing location from its stand-alone permit issued in 2019.<sup>11</sup>

The October 2021 Huntington Beach Orange County oil spill and the multiple sheens detected in the following months underscored the vulnerability of the region's industrial facilities including desalination plants that are expected to continue to operate during emergencies. The Carlsbad plant was not shut down due to the oil spill because of its distance from the spill, but its vulnerability was evident by the deployment of two different oil spill booms in the Agua Hedionda Lagoon. The Huntington Beach facility would be much more vulnerable to reasonably foreseeable spills due to its proximity to aged offshore oil drilling operations off Long Beach.

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<sup>11</sup> This is described in detail in a letter by the Surfrider Foundation to the Santa Ana Regional Water Board on January 1, 2020 (pages 5-9)  
<https://california.surfrider.org/wp-content/uploads/2022/02/Surfrider-Huntington-Beach-WB-Comments.pdf>



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Source:	<a href="https://thereserve2.apx.com/myModule/rpt/myrpt.asp?r=206">https://thereserve2.apx.com/myModule/rpt/myrpt.asp?r=206</a>																
Vintage	Offset Credit Serial Numbers	Quantity of Offset Credits	Status Effective	Project ID	Project Name	Project Type	Protocol Version	Project Site Location	Project Site State	Project Site Country	Additional Certification(s)	CORSIA Eligible	Account Holder	Retirement Reason	Retirement Reason Details		
2012	CAR-1-US-502-4-335-MI-2012-1045-30001 to 43415	13,415	05/27/2016	CAR502	Central Sanitary Landfill	Landfill Gas Capture/Combustion	Version 2.1	Pierson	MICHIGAN	US		No	<a href="#">Poseidon Resources (Channelside) LP</a>	Compliance Requirements	GHG 2016		
2012	CAR-1-US-502-4-335-MI-2012-1334-23101 to 23633	533	05/27/2016	CAR502	Central Sanitary Landfill	Landfill Gas Capture/Combustion	Version 2.1	Pierson	MICHIGAN	US		No	<a href="#">Poseidon Resources (Channelside) LP</a>	Compliance Requirements	GHG 2016		
2012	CAR-1-US-512-4-332-TX-2012-1528-121 to 288	168	05/27/2016	CAR512	Rio Grande Valley Landfill	Landfill Gas Capture/Combustion	Version 2.1	Donna	TEXAS	US		No	<a href="#">Poseidon Resources (Channelside) LP</a>	Compliance Requirements	GHG 2016		
2012	CAR-1-US-512-4-332-TX-2012-1356-4345 to 21537	17,193	05/27/2016	CAR512	Rio Grande Valley Landfill	Landfill Gas Capture/Combustion	Version 2.1	Donna	TEXAS	US		No	<a href="#">Poseidon Resources (Channelside) LP</a>	Compliance Requirements	GHG 2016		
2011	CAR-1-US-764-4-371-IA-2011-520-1 to 3696	3,696	05/27/2016	CAR764	Cedar Rapids Linn County Solid Waste Agency Landfill Gas Project	Landfill Gas Capture/Combustion	Version 3.0	Linn County	IOWA	US		No	<a href="#">Poseidon Resources (Channelside) LP</a>	Compliance Requirements	GHG 2016		
2011	CAR-1-US-764-4-371-IA-2011-1087-1 to 26153	26,153	05/27/2016	CAR764	Cedar Rapids Linn County Solid Waste Agency Landfill Gas Project	Landfill Gas Capture/Combustion	Version 3.0	Linn County	IOWA	US		No	<a href="#">Poseidon Resources (Channelside) LP</a>	Compliance Requirements	GHG 2016		
2011	CAR-1-US-878-4-659-NE-2011-1359-1 to 16890	16,890	05/27/2016	CAR878	Bluff Road Landfill	Landfill Gas Capture/Combustion	Version 3.0	Lincoln	NEBRASKA	US		No	<a href="#">Poseidon Resources (Channelside) LP</a>	Compliance Requirements	GHG 2016		
2008	CAR-1-US-424-4-289-NY-2008-214-1 to 96084	96,084	07/05/2017	CAR424	Chautauqua County	Landfill Gas Capture/Combustion	Version 2.0	Elery, New York	NEW YORK	US		No	<a href="#">Poseidon Resources (Channelside) LP</a>	Environmental Benefit	GHG 2017		
2009	CAR-1-US-403-4-963-AL-2009-218-1 to 3917	3,917	03/26/2020	CAR403	Black Warrior Solid Waste Facility	Landfill Gas Capture/Combustion	Version 2.0	Coker	ALABAMA	US		No	<a href="#">Poseidon Resources (Channelside) LP</a>	Compliance Requirements	GHG 2019		
2009	CAR-1-US-403-4-963-AL-2009-222-1 to 23733	23,733	03/26/2020	CAR403	Black Warrior Solid Waste Facility	Landfill Gas Capture/Combustion	Version 2.0	Coker	ALABAMA	US		No	<a href="#">Poseidon Resources (Channelside) LP</a>	Compliance Requirements	GHG 2019		
2009	CAR-1-US-459-4-206-OK-2009-357-1 to 16808	16,808	03/26/2020	CAR459	American Environmental Landfill (AEL)	Landfill Gas Capture/Combustion	Version 2.1	Sand Springs (Osage County) near Tulsa	OKLAHOMA	US		No	<a href="#">Poseidon Resources (Channelside) LP</a>	Compliance Requirements	GHG 2019		
2010	CAR-1-US-459-4-206-OK-2010-463-201 to 27031	26,831	03/26/2020	CAR459	American Environmental Landfill (AEL)	Landfill Gas Capture/Combustion	Version 2.1	Sand Springs (Osage County) near Tulsa	OKLAHOMA	US		No	<a href="#">Poseidon Resources (Channelside) LP</a>	Compliance Requirements	GHG 2019		
2009	CAR-1-US-403-4-963-AL-2009-262-1 to 40621	40,621	03/26/2020	CAR403	Black Warrior Solid Waste Facility	Landfill Gas Capture/Combustion	Version 2.0	Coker	ALABAMA	US		No	<a href="#">Poseidon Resources (Channelside) LP</a>	Compliance Requirements	GHG Plan		
2010	CAR-1-US-540-4-350-KY-2010-490-1 to 4866	4,866	03/26/2020	CAR540	Hardin County Landfill	Landfill Gas Capture/Combustion	Version 3.0	Elizabethtown, KY	KENTUCKY	US		No	<a href="#">Poseidon Resources (Channelside) LP</a>	Compliance Requirements	GHG Plan		
2009	CAR-1-US-560-4-341-VA-2009-483-1 to 19539	19,539	03/26/2020	CAR560	New River Landfill Gas Methane Destruction Project	Landfill Gas Capture/Combustion	Version 2.1	Dublin, Virginia	VIRGINIA	US		No	<a href="#">Poseidon Resources (Channelside) LP</a>	Compliance Requirements	GHG Plan		
2008	CAR-1-US-560-4-341-VA-2008-484-1 to 10647	10,647	03/26/2020	CAR560	New River Landfill Gas Methane Destruction Project	Landfill Gas Capture/Combustion	Version 2.1	Dublin, Virginia	VIRGINIA	US		No	<a href="#">Poseidon Resources (Channelside) LP</a>	Compliance Requirements	GHG Plan		



# FACT SHEET:

## Lack of Need and Alternatives to the Poseidon Huntington Beach Seawater Desalination Project

### Poseidon's Huntington Beach Seawater Desalination Project is Not Needed; More Cost-Effective and Environmentally Sound Alternatives Are Available

Poseidon Water and the Orange County Water District (OCWD) have been asking the Coastal Commission to approve the Poseidon Huntington Beach Seawater Desalination Project despite the fact that it is not needed and better alternatives exist. (However, on March 31st, 2022, in an article entitled, [Cost of Poseidon desalinated water gets renewed scrutiny](#), the Orange County Register reported that the Orange County Water District was re-examining its support for the project based on increased costs: "Asked by the moderator if the district supported the project, Markus [OCWD's General Manager] said, "We don't know yet.")

### The Huntington Beach Seawater Desalination Project is not needed

OCWD manages Orange County's extensive groundwater basin that provides water supplies to its member agencies. OCWD has not been able to secure any agreements from these water districts and cities to actually purchase the very expensive water the Poseidon project would produce (other than a very small amount of water at a discounted rate to the City of Huntington Beach). In testimony before the Santa Ana Regional Water Quality Control Board, OCWD officials admitted they don't have buyers for the water and that they would use the expensive Poseidon water to replace significantly less expensive water they currently buy from the Municipal Water District of Orange County (MWDOC).

Water from Poseidon's current plant in Carlsbad costs approximately \$2800 per acre foot which is a fair estimate of the cost of water that would come from the Huntington Beach facility. That water would be used to replace water that OCWD currently buys from MWDOC for about \$799 per acre foot – less than one-third of the cost of Poseidon water.

MWDOC adopted its most recent state-required "Urban Water Management Plan" in June 2021. The plan confirms that the "water supplies available to the MWDOC service area are projected to meet full-service demands based on the findings by MET (Metropolitan Water District of Southern California) in its 2020 UWMP starting 2021 through 2045 during normal years, single dry year, and five consecutively dry years" (See Attachment B, MWDOC 2020 UWMP, Executive Summary, page 3). MWDOC did not count on any water from the Poseidon Huntington Beach project in reaching this conclusion.

MWDOC wholesales water it buys from the MET to OCWD and other agencies. Over the past few decades, MET has made a series of smart water storage investments including constructing the off-stream Diamond Valley Reservoir and storing significant amounts of water in various groundwater basins. As indicated above, this additional storage capacity enabled MET to conclude in its 2020 Urban Water Management Plan that it has sufficient supplies to meet Southern California water demands through 2045 even during significant drought events. As indicated above, MET did not include any water from the Poseidon desalination project in reaching this conclusion. (See Attachment C, MET 2020 UWMP, Executive Summary, pages 6-7)



# FACT SHEET:

## Lack of Need and Alternatives to the Poseidon Huntington Beach Seawater Desalination Project

### Better Alternatives Exist to Supplement Orange County's Water Supplies

Furthermore, there are more cost-effective alternatives available to meet future water needs. In February 2019, MWDOC adopted its "Orange County Water Reliability Study," which evaluated future water supply demands and alternatives to help meet Orange County's future water needs. MWDOC's independent analysis of six water supply alternatives including the Poseidon Huntington Beach project showed that:

#### For the Orange County Basin *(essentially OCWD's service area including northern and central Orange County):*

- ◆ "Need for additional water supplies is fairly small (and) OCWD has a number of pending projects that would provide significant supplies to meet the remaining gaps, or they can utilize demand curtailment at the level of 10% about once every 20 years to close the remaining gaps." *(See [2018 Orange County Reliability Study](#), Appendix F: Final Powerpoint Presentation, slide #49)*
- ◆ Poseidon Huntington Beach was the least cost effective of the alternatives reviewed. *(See Attachment D, MWDOC 2018 Orange County Water Reliability Study, page 5-9, Table 5-4)*
- ◆ The Metropolitan Water District of Southern California's Carson Regional Recycled Water Project would likely be the "least cost" alternative for increasing water supplies for this portion of Orange County. *(See Attachment D, MWDOC 2018 Orange County Water Reliability Study, page 7-3)*
- ◆ The Poseidon Huntington Beach project poses the most significant financial risk of the alternatives studied. *(See Attachment D, MWDOC 2018 Orange County Water Reliability Study, page 5-16)*

*(Note: The Orange County Basin is a very significant groundwater resource)*

#### For Southern Orange County:

- ◆ Although Southern Orange County does not have robust groundwater resources, MWDOC's report also shows that Poseidon is not a cost-effective way to meet this area's future water needs.
- ◆ MWDOC study concludes that the "San Juan Watershed Project and Doheny *(desalination)* project provide cost-effective annual supplies and emergency supplies" that can meet south Orange County's water needs.
- ◆ In contrast to the Poseidon project, the Doheny project would use subsurface water intake technologies minimizing the environmental damage that would be caused by the project.

**And of course, water conservation is the least expensive way to meet future water needs.**

# FACT SHEET:

## Lack of Need and Alternatives to the Poseidon Huntington Beach Seawater Desalination Project

### Major Water Recycling Projects Also Provide Better Alternatives

Water recycling facilities under consideration by MET and the City of Los Angeles' Department of Water and Power could add more than 400,000 acre-feet of dependable capacity to Southern California's annual water supply – about eight times the amount of water the Poseidon project would provide while reducing pollution discharged to coastal waters.

MET's Carson Regional Recycled Water Project could provide 168,000 additional acre-feet of water for the Southern California region that includes Orange County. Water from the Carson project could be piped to Orange County meeting any potential need for additional water supplies. However, approval of the Poseidon project could divert needed funding away from more cost-effective and environmentally compatible projects like Carson. MWD is now seeking state funding to advance the design and planning for the Carson facility.

The City of Los Angeles' "Operation Next" recycled water project at the Hyperion facility could expand the area's annual water supply by 243,000 acre-feet while also decreasing the discharge of pollution to coastal waters. This facility could help meet a significant portion of the City of Los Angeles' water needs freeing up other imported water that could be used in Orange County.

Together, the Carson and Operation Next projects are projected to create more than 59,000 jobs.

### Conclusion:

**The bottom line is that the Poseidon project is not needed, the need for additional water supplies in Orange County is relatively small, conservation and existing MWD and MET capacity can meet those needs through 2045, and any future increased water demands can largely be addressed through conservation and several more cost-effective and environmentally compatible water supply alternatives.**

*For more information on this Fact Sheet, contact Ray Hiemstra at [ray@coastkeeper.org](mailto:ray@coastkeeper.org)*



# FACT SHEET:

## Sea Level Rise, Tsunami and Groundwater Rise place the Poseidon Desalination Plant at Significant Risk during its 50-Year Operating Life

### 1. Poseidon chose the proposed Huntington Beach site over 20 years ago before the risks of Sea Level Rise, Tsunami and Groundwater Rise were well-documented.

Poseidon Water, based in Stamford, Connecticut, came to California over 20 years ago to develop desalination plants after a failed effort in Tampa Bay, Florida.<sup>1</sup> When it came to selecting sites, Poseidon focused on co-locating its proposed desalination plants with older power plants in Carlsbad and Huntington Beach in order to use the intake and discharge pipes that the power plants utilized for once-through cooling (OTC) during electricity generation. In 2001, Poseidon signed a private property lease with AES, the terms and conditions of which have never been made public. Once-Through-Cooling was phased out by the State Water Resources Control Board in 2010<sup>2</sup> due to extensive damage to marine life. While Poseidon would still use the AES's 70 year old intake and discharge pipes, they are now considered a standalone facility and must be permitted as such.

### 2. Since Poseidon committed to the AES site, numerous studies and models have documented the extreme vulnerability of the Huntington Beach site to Sea Level Rise, Tsunami and Groundwater rise, yet Poseidon has refused to consider other less vulnerable locations.

As far back as 2011, the United States Geologic Service (USGS) released the first iteration of its Coastal Storm Modeling System (CoSMoS).<sup>3</sup> In collaboration with leading scientists world-wide, the USGS designed the Coastal Storm Modeling System (CoSMoS) to assess the coastal impacts of climate change for the California coast, including the combination of sea level rise, storms, and coastal change.

On February 15th, 2022, the National Oceanic and Atmospheric Administration (NOAA), USGS and NASA released the 2022 Sea Level Rise Technical Report<sup>4</sup> that details the most up-to-date sea level rise projections available for all U.S. states and territories. In speaking with the Los Angeles Times, USGS's leading researcher on CoSMoS warned of what was ahead for some of the most vulnerable communities in Southern California saying:

*"In California, the effects could be acute: Daily overland flooding from 1 foot of sea level rise equates to about \$15 billion worth of properties at risk and would affect about 38,000 people, said Patrick Barnard, a USGS research geologist who worked on the report.*

*The daily emergence of groundwater pushed up by the rising seas could also expose an additional 350,000 people and \$100 billion worth of properties, he said.*

*"There's definitely a lot of low-lying communities that have seasonal or annual high tide flooding today," Barnard said. Venice, Seal Beach, Newport and parts of Huntington Beach are all examples. "They're already sort of on that knife edge, and another foot of sea level rise is going to increase the frequency of flooding of those communities."<sup>5</sup>*

<sup>1</sup> <https://www.water-technology.net/projects/tampa/>

<sup>2</sup> [https://www.world-nuclear-news.org/RS-California\\_moves\\_to\\_ban\\_once\\_through\\_cooling-0605105.html](https://www.world-nuclear-news.org/RS-California_moves_to_ban_once_through_cooling-0605105.html)

<sup>3</sup> <https://www.usgs.gov/centers/pcmssc/science/cosmos-10-southern-california>

<sup>4</sup> <https://oceanservice.noaa.gov/hazards/sealevelrise/sealevelrise-tech-report.html#>

<sup>5</sup> <https://www.latimes.com/california/story/2022-02-16/rising-sea-levels-pose-perilous-threat-to-california-coast-study-raises-new-alarms>



# FACT SHEET:

## Sea Level Rise, Tsunami and Groundwater Rise place the Poseidon Desalination Plant at Significant Risk during its 50-Year Operating Life

And even the City of Huntington Beach's own Sea Level Rise Vulnerability Assessment (SLRVA) released in 2021 identifies alarming vulnerability to rising seas and groundwater city-wide, especially in the Huntington Beach Wetlands Area, where Poseidon proposes to build its mega seawater desalination facility. The proposed site is within historic low-lying wetlands.<sup>6</sup>

### 3. Expert studies prepared by Dr. Revell of Integral Consulting from 2018-2022 document the significant vulnerability of the Proposed Huntington Beach Plant to numerous coastal hazards.

#### a. The Island Effect

**The facility may become an inaccessible island before 2030 due to routine flooding of the surrounding area.** An independent analysis completed by Dr. David Revell states that the facility's isolation will become routine during high tide events of 5.3 MHHW and greater with one foot of SLR.<sup>7</sup> This portion of California's coast experiences high tides of 5.3 MHHW over 200 times per year, thus we can expect the facility to be inaccessible during high tides a majority of the year as early as 2030 when those tides occur along with one foot of sea level rise.

**Nearby roads would need to be elevated to avoid chronic flood events.**<sup>8</sup> The City's Vulnerability Assessment does not provide a cost estimate or plan to avoid the routine flooding associated with 1 foot of sea level rise during high tide events. In other words, these plans are not currently underway by the City, thus are unlikely to be resolved by the time the impacts would be felt.<sup>9</sup>

**Even under existing conditions, there is reasonable potential that portions of Edison Drive could be flooded during certain king tides.** By 2050, all of Edison Avenue is likely to be flooded during daily high tides with water depths of over 2 feet. This greatly reduces the ability to maintain this critical facility or even access the facility which is of particular concern in the case of an emergency either from a storm event or another oil spill.<sup>10</sup>

**The City of Huntington Beach's Sea Level Rise Vulnerability Assessment (SLRVA) verifies Dr. Revell's findings.** The SLRVA shows significant storm flood hazard projections with 4.9 feet of sea level rise bordering Huntington Beach Channel (adjacent to the proposed Project). The SLRVA also predicts widespread high tide inundation in the proposed Project area with 6.6 feet of sea level rise and widespread non-storm flooding with 10 feet of rise, or by the end of the century under an extreme rise scenario.<sup>11</sup>

**The island effect and impaired access routes could jeopardize employee safety, if they need to evacuate due to a tsunami warning.** The Moffat and Nichol sea level rise analysis states that employees would need to evacuate the site in case of a tsunami warning – or any other reason.<sup>12</sup> During evacuation events or episodic flood events, such as tsunami warnings, the plant may be unable to deliver emergency water supplies as promised. Impaired access could jeopardize essential services such as electricity, fire and emergency response service and water and sewer services by 2030 or earlier depending on groundwater rise levels.

<sup>6</sup> NOAA. Survey Conducted by U.S. Coast Survey. 1874 Survey T-Street [Figure 1] in report by Dr. David Revell, Huntington Beach Desalination Review of Sea Level Rise Hazards. December 14, 2018. [https://california.surfrider.org/wp-content/uploads/2022/02/Huntington\\_Hazards\\_FINAL\\_Small.pdf](https://california.surfrider.org/wp-content/uploads/2022/02/Huntington_Hazards_FINAL_Small.pdf) (page 6).

<sup>7</sup> Revell 2018.

<sup>8</sup> Ibid.

<sup>9</sup> Ibid.

<sup>10</sup> Dr. David Revell. Technical Memorandum: Sea level rise concerns for the proposed Poseidon desal project. January 28, 2022.

[https://california.surfrider.org/wp-content/uploads/2022/02/Comment\\_Letter\\_on\\_Poseidon\\_02022022-Final.pdf](https://california.surfrider.org/wp-content/uploads/2022/02/Comment_Letter_on_Poseidon_02022022-Final.pdf)

<sup>11</sup> City of Huntington Beach Final Sea Level Rise Vulnerability Assessment. May 2021.

<https://www.huntingtonbeachca.gov/government/departments/planning/major/files/Sea-Level-Rise-Vulnerability-Assessment-May-26-2021.pdf>. (p 26)

<sup>12</sup> Moffat and Nichol. Huntington Beach Desalination Project Tsunami Flood Assessment. August 2020. CDP Application.

# FACT SHEET:

## Sea Level Rise, Tsunami and Groundwater Rise place the Poseidon Desalination Plant at Significant Risk during its 50-Year Operating Life

### b. Flood Risk and Groundwater Rise

The proposed site is vulnerable to flood events that could impact the proposed Project:

- ◆ Devastating flooding with a FEMA 500-year fluvial flood event are possible at present day.<sup>13</sup>
- ◆ Widespread flooding and overtopping of the Huntington Beach Channel during king tides with 4.9 ft of sea level rise.<sup>14</sup>
- ◆ Portions of the facility at lower elevations will flood with just 2.9 ft of sea level rise and a king tide or 6.6 ft of rise and a 100-year storm.
- ◆ On site flooding to the lower elevation portion of the facility may occur with a 100-year fluvial storm plus 5 ft of sea level rise at high tides.<sup>16</sup>

FEMA, the US Army Corps of Engineers, and the State of California have established that planning and siting for “critical facilities,” including water facilities such as the proposed Project, be based on avoiding risks from a 500-year flood event.<sup>17</sup> The facility has a 1 in 16 chance (6.25% annual chance) of experiencing a 500-year event between 2020 and 2050. Risks from flood damage include loss of water supply, contamination of the facility’s water and water delivery system, and costs associated with providing measures to protect or remediate the site.<sup>18</sup> The emergency water supply storage tank, which Poseidon refers to as the “product water storage tank”, would have an elevation of 10ft NAVD 88, significantly lower than the RO processing building (14ft) and the filter substation and electrical building (16ft).<sup>19</sup> Poseidon claims they can “easily” design the tank to withstand flooding of short duration. Poseidon’s seawater influent pump station, product water pump, and other structures would be subject to flooding much earlier than the elevated portion of the facility and those risks are not adequately addressed.

Importantly, these flood risks may affect the site earlier than projected due to uncertainties with groundwater rise and sea level rise interaction. Poseidon’s sea level rise analysis does not attempt to analyze the interaction between sea level rise and groundwater rise on site but instead concludes those risks will be evaluated based on monitoring data from adjacent sites.<sup>20</sup> This is extremely concerning because the groundwater rise at those sites may or may not have the same sea level rise interaction as the proposed Project site. Additionally, Poseidon failed to consider USGS MODFLOW groundwater rise data that was released in an online viewer in August 2020.

According to Dr. Revell, with 3.3 ft of sea level rise most of the site could have groundwater at or very near the surface and will likely experience daylighting during king tides or high-water events. With 6.6 ft of sea level rise, the site becomes a manmade island. Under this scenario, “the entire access to the site would likely be underwater during daily high tides.”<sup>21</sup>

<sup>13</sup> Revell 2018.

<sup>14</sup> City of Huntington Beach 2021.

<sup>15</sup> Moffat and Nichol 2020.

<sup>16</sup> Moffat and Nichol 2020.

<sup>17</sup> State of California, Natural Resources Agency, Department of Water Resources, US Army Corps of Engineers. California’s Flood Future: Recommendations for Managing the State’s Flood Risk. November 2013. [https://cawaterlibrary.net/wp-content/uploads/2017/05/California\\_Flood\\_Future.pdf](https://cawaterlibrary.net/wp-content/uploads/2017/05/California_Flood_Future.pdf)

<sup>18</sup> Revell 2018.

<sup>19</sup> Moffat and Nichol 2020.

<sup>20</sup> Moffat and Nichol 2020. (p.31)

<sup>21</sup> Revell 2021.



# FACT SHEET:

## Sea Level Rise, Tsunami and Groundwater Rise place the Poseidon Desalination Plant at Significant Risk during its 50-Year Operating Life

### c. Tsunami

The proposed site is situated well within the 2009 California Geological Survey Tsunami Hazard Zone which extends two miles inland from shore, and within the City's designated Tsunami Runup Zone, which extends about one mile inland from the shore.<sup>22</sup> Dr. Revell concludes, "the project site is within the Tsunami Wave Runup Zone and would remain inside the hazard zone regardless of the proposed facility grading plan."<sup>23</sup>

Poseidon's analysis concludes that tsunami inundation could reach 3 ft of depth in some portions of the site and evacuation of the facility would be necessary under a tsunami warning.<sup>24</sup> The risk of inundation would increase as sea levels rise, however, Poseidon's sea level rise analysis only considers the worst case tsunami in combination with 3.3 ft of sea level rise but does not consider higher sea level rise scenarios.<sup>25</sup> Since the worst case tsunami, combined with 3.3 feet of sea level rise, would reach an elevation of 13 NAVD 88, it is likely that additional sea level rise would jeopardize the entire facility which lies at 14-16 NAVD 88 in elevation.

### d. Risks to Distribution Network, Beach Nourishment, Closed Barrier Beach and Flood Control Channel

**The proposed Poseidon project must rely on various artificial flood defenses to avoid present and future hazard risks, but Poseidon has no authority to implement or execute these expensive management actions or public works projects.** These defenses include the existing maintained beaches resulting from upcoast Army Corps operations, Orange County Flood Control District maintenance of the existing flood control channel, and outlet beach management of the Talbert Channel into the future. Poseidon neither controls or contributes financially to the long-term maintenance and management costs of these resources. The flood control channel outlet maintenance permit, for example, expires in 2023.

**The existing pipeline water distribution network has not been fully evaluated for its increasing exposure to sea level rise and coastal hazards,** nor has an operations and maintenance program been put forth for consideration as to the long-term efficacy of this critical infrastructure which proposes to provide important water supply to the communities in Orange County.<sup>26</sup>

Dr. Revell concluded that "Analysis is needed to determine adaptation modifications that would be needed for existing stormwater management controls, pump stations, tide gates, stormwater conveyance channels, etc., to maintain access and public services to the proposed site. This network may be exposed to additional hazards and vulnerabilities threatening the surrounding community in the future."<sup>27</sup>

### 4. The proposed Huntington Beach site is a known 'Brownfield' adjacent to the ASCON Superfund site. Rising sea levels and flooding could result in cascading impacts.

Poseidon's sea level rise report states that it will deal with potential flooding of the lower elevation portion of the facility by designing the emergency water storage tank to withstand flooding. This is particularly alarming given that the site is a designated Resource Conservation and Recovery Act (RCRA) site with known contaminants that may be corrosive, ignitable, reactive, and toxic, and these are not acknowledged or taken into account by Poseidon.<sup>28</sup> Poseidon does not address risks to intake pumps and other ancillary but vital portions of the project and the project's reliability, especially as an emergency water supply.

<sup>22</sup> Revell 2018.

<sup>23</sup> Ibid.

<sup>24</sup> Moffat and Nichol 2020.

<sup>25</sup> Moffat and Nichol. Huntington Beach Desalination Project Tsunami Flood Assessment. August 2020. CDP Application.

<sup>26</sup> Revell 2018.

<sup>27</sup> Ibid.

<sup>28</sup> Department of Toxic Substances Control. CalEnviroStor. Accessed February 15, 2022. [https://www.envirostor.dtsc.ca.gov/public/map?global\\_id=60001194](https://www.envirostor.dtsc.ca.gov/public/map?global_id=60001194)



# FACT SHEET:

## Sea Level Rise, Tsunami and Groundwater Rise place the Poseidon Desalination Plant at Significant Risk during its 50-Year Operating Life

The on-site contamination is likely to jeopardize the health and safety of workers who would have to work at a toxic site, especially given that sea level rise and groundwater rise could mobilize the contamination. According to CalEnviroStore, the Brookfield/Poseidon Huntington Beach site is a hazardous waste site as per the RCRA Laws and Regulations.

In the surrounding area, groundwater daylight flooding may exacerbate the island effect. Daylighting occurs at present day due to the high groundwater table at this location which is historically low-lying wetlands. According to Dr. Revell, the isolation may become routine even before one foot of sea level rise due to groundwater rise. Daylighting will likely be more common in the rainy season when groundwater levels are at their highest and additional tidal elevations reduce the land to sea conveyance.<sup>29</sup>

Additionally, Dr. Revell and Poseidon's analysis both point out that increased groundwater levels in the future may create additional buoyancy forces on underground structures or increase liquefaction potential. Poseidon's analysis recommends monitoring groundwater at nearby sites but does not analyze or design for this risk under existing conditions or future rise scenarios.

### 5. Placing Critical Water Supply Infrastructure in a vulnerable location is a maladaptive response to Climate Change.

The Poseidon project proposes to locate critical water supply infrastructure in a vulnerable location while relying on the existing distribution pipeline network that has not been adequately analyzed for exposure to sea level rise and coastal hazards. The definition of *maladaptation* is actions that may lead to increased risk of adverse climate-related outcomes, including via increased GHG emissions, increased vulnerability to climate change, or diminished welfare, now or in the future.<sup>30</sup> This project encourages existing and future redevelopment to remain and occur in vulnerable low-lying areas.<sup>31</sup>

Desalination is the most energy intensive form of water supply and the most recent Intergovernmental Panel on Climate Change report calls desalination "maladaptive" - meaning it would exacerbate the climate crisis.<sup>32</sup> Poseidon claims their plant would be carbon neutral but reliance on controversial carbon offsets presents environmental justice concerns.<sup>33</sup>

### 6. Poseidon refuses to comply with Coastal Commission and Ocean Protection Guidance to analyze Critical Infrastructure to the extreme H++ Scenario.

As discussed in the Critical Infrastructure Fact Sheet, the proposed facility would be considered "critical infrastructure" according to guidance from the Ocean Protection Council and California Coastal Commission. Thus, Poseidon has a responsibility to plan for extreme sea level rise and the Commission has a duty to hold them to the highest building standards and careful site evaluation.

<sup>29</sup> Revell 2018.

<sup>30</sup> IPCC AR15 2018

<sup>31</sup> Revell 2022

<sup>32</sup> Intergovernmental Panel on Climate Change. SPECIAL REPORT: GLOBAL WARMING OF 1.5 °C: Strengthening and implementing the global response. Chapter 4. <https://www.ipcc.ch/sr15/chapter/chapter-4/>

<sup>33</sup> <https://www.greenbiz.com/article/can-californias-cap-and-trade-address-environmental-justice>

# FACT SHEET:

## Sea Level Rise, Tsunami and Groundwater Rise place the Poseidon Desalination Plant at Significant Risk during its 50-Year Operating Life

State agencies have committed to planning for 3.5 feet of sea level rise by 2050,<sup>34</sup> 5.0 feet by 2070 and 9.9 feet by 2100. The proposed Plant design life is approximately 50 years, which would correlate to a 2070 - 2100 planning horizon.<sup>36</sup> Poseidon's sea level rise analysis does not evaluate levels beyond 6.6 feet of rise, which may be exceeded depending on when construction begins.

Sea level rise estimates have only gotten more dire over time. Recent news from the Thwaites Glacier reinforces the importance of planning for rapid sea level rise in the coming decades.<sup>37</sup> The Georgia Institute of Technology recently released a report that found, "Warm seawater that's seeping under certain glaciers could eventually lead to sea level rise that's double that of existing estimates".<sup>38</sup>

The City of Huntington Beach Local Coastal Program (LCP) and the Coastal Act prohibit new development that would be subject to coastal hazards and requires new development to be located in "areas with adequate public services, and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources." [See Legal Comment Letter, policy C1.1.1].

<sup>34</sup> Ocean Protection Council. Making California's Coast Resilient to Sea Level Rise: Principles for Aligned State Action. 2020.

[https://www.opc.ca.gov/webmaster/\\_media\\_library/2021/01/State-SLR-Principles-Doc\\_Oct2020.pdf](https://www.opc.ca.gov/webmaster/_media_library/2021/01/State-SLR-Principles-Doc_Oct2020.pdf)

<sup>35</sup> Ocean Protection Council. California Sea Level Rise Guidance, 2018. [https://opc.ca.gov/webmaster/ftp/pdf/agenda\\_items/20180314/Item3\\_Exhibit-A\\_OPC\\_SLR\\_Guidance-rd3.pdf](https://opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf)

<sup>36</sup> Moffat and Nichol. Huntington Beach Desalination Project Sea Level Rise Analysis. Poseidon Application. 2020.

<sup>37</sup> Science. Ice shelf holding back keystone Antarctic glacier within years of failure: Breakup of the Thwaites eastern shelf will ramp up sea level rise. December 13, 2022

<https://www.science.org/content/article/ice-shelf-holding-back-keystone-antarctic-glacier-within-years-failure>

<sup>38</sup> Science Daily. "Seawater seep may be speeding glacier melt, sea level rise". February 10, 2022.

[https://california.surfrider.org/wp-content/uploads/2022/02/Seawater-seep-may-be-speeding-glacier-m...of-existing-estimates\\_ScienceDaily.pdf](https://california.surfrider.org/wp-content/uploads/2022/02/Seawater-seep-may-be-speeding-glacier-m...of-existing-estimates_ScienceDaily.pdf)



# FACT SHEET:

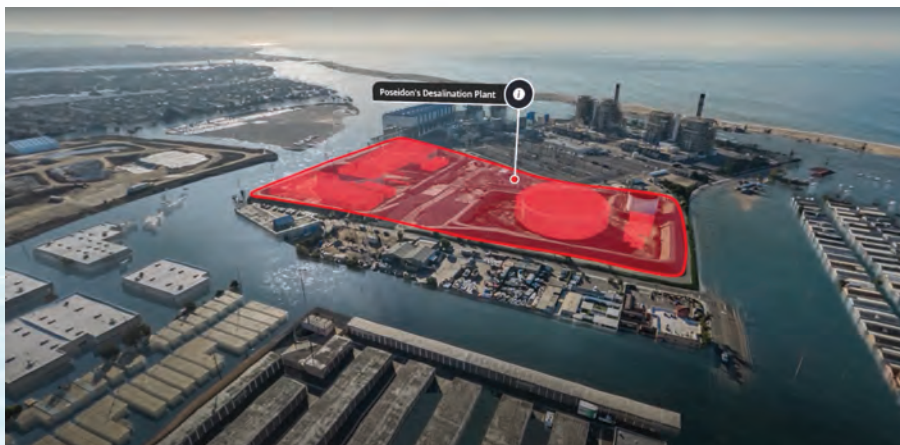
## Sea Level Rise Simulations and Scenarios at the Site of the Proposed Poseidon Seawater Desalination Plant

### 1. Flat Models vs. Virtual Simulations: Virtual simulations were created to better understand the projected impacts of sea level rise (SLR), tsunami, storms and flooding at the site of the proposed Poseidon Huntington Beach Seawater Desalination Plant.

While it has been known for years based on the CoSMoS 3.0 modeling that the proposed site was highly vulnerable to SLR (and other hazards), flat mapping models were unable to convey with the same intensity what those scenarios would look like in real time.

In an effort to translate the data contained in those flat models into an experience that would enable the public and regulatory agencies to better understand how those impacts will actually affect the site and the surrounding area, the California Coastal Protection Network (CCPN) commissioned Virtual Planet in 2020 to produce a science-based virtual simulation to illustrate the impacts of SLR, tsunami, storms and flooding at the site of the proposed Huntington Beach Seawater Desalination Plant. Virtual Planet is well-known for its immersive solutions that are designed to accurately communicate climate change through virtual reality to advise agencies, local governments and the public in sea level rise planning.

CCPN, Orange County Coastkeeper and the Surfrider Foundation then produced a film,<sup>1</sup> *In Harm's Way*, to demonstrate the catastrophic impact extreme weather and the climate crisis will have on the proposed location of the Brookfield-Poseidon desalination plant and the surrounding areas within the next 20 to 50 years. The simulation can be viewed at the link below and is available in English and Spanish. Additional tools including a 360 degree version and an interactive app that allows the viewer to view the surrounding area and to alternate the various scenarios in order to compare site impacts at different time periods up to 50 years from now. The tools have been made available for public use on the website California Desal Facts on the Climate Crisis page. ([This Simulation is best viewed on Google Chrome. The Simulation may not work on Safari or older systems like Windows 7.](#))



<sup>1</sup> Virtual Planet produced the simulation based on the best available science – including CoSMoS 3.0 sea-level rise projections developed by the United States Geological Survey (USGS) that have been previously used in multiple studies in this area. The views or opinions expressed during the film do not necessarily represent those of Virtual Planet Technologies or its employees.

# FACT SHEET:

## Sea Level Rise Simulations and Scenarios at the Site of the Proposed Poseidon Seawater Desalination Plant

### 2. The use of best available science and modeling was key to developing the simulations.

Virtual Planet uses the best available science and latest SLR models, including CoSMoS 3.0, to accurately depict how the proposed site is projected to be affected during the 50-year operating life of the desalination plant:

#### a. Sea Level Rise scenarios included in the simulation:

The simulation depicts Huntington Beach under 4.1, 4.9 and 6.6 feet of sea level rise during a wave event using the latest modeling available in CoSMoS produced by the U.S. Geological Survey.<sup>2</sup> These scenarios are depicted in the figures below.

### 4.1 ft of Sea Level Rise combined with a 100-year storm



### 4.9 ft of Sea Level Rise combined with a 100-year storm



### 6.6 ft of Sea Level Rise combined with a 100-year storm



<sup>2</sup> "Barnard, P.L., Erikson, L.H., Foxgrover, A.C., Limber, P.W., O'Neill, A.C., and Vitousek, S., 2018, Coastal Storm Modeling System (CoSMoS) for Southern California, v3.0, Phase 2 (ver. 1g, May 2018): U.S. Geological Survey data release, <https://doi.org/10.5066/F7T151Q4>."



# FACT SHEET:

## Sea Level Rise Simulations and Scenarios at the Site of the Proposed Poseidon Seawater Desalination Plant

### b. Earthquake Faults Data:

The film depicts potentially active geologic faults near and through the proposed site.

This data comes from the City of Huntington Beach and is depicted in the figure to the right.<sup>3</sup>

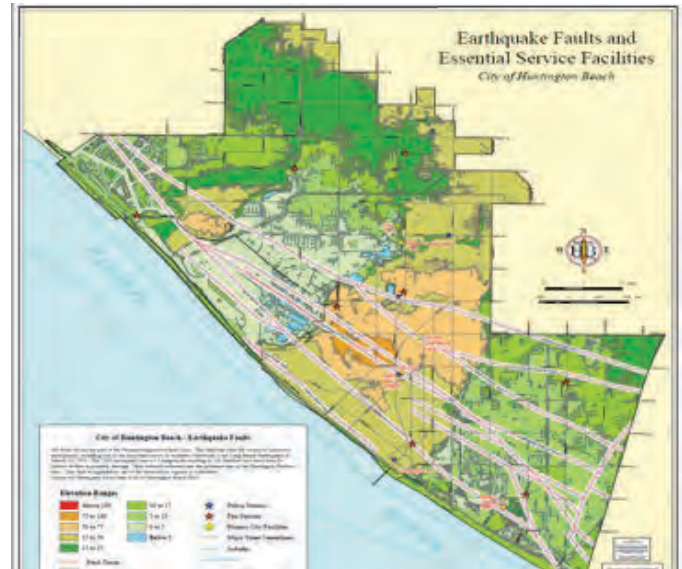
### c. Groundwater Table and additional Data:

The film refers to the potential for flooding sooner than projected and modeled due to the unusually high groundwater table in this low-lying, historic wetlands location. This is described in an independent report produced by Coastal Engineer, Dr. David Revell<sup>4</sup>.

### d. Orange County Flood Control District

The film mentions that this location is dependent on the Orange County Flood Control District maintenance of the Huntington Beach Channel and the barrier beach maintenance, as described in detail in Dr. Revell's report<sup>5</sup>. The film also mentions that the Orange County Flood Control District is facing a 90-year backlog of permits and does not yet have plans for adapting to sea level rise. This is stated in multiple reports and presentations by the agency:

- ◆ Presentation on the state of Orange County's Infrastructure, American Society of Civil Engineers, Orange County Branch. -- see page 15 of the presentation on this link: <https://www.slideshare.net/asceoc/the-state-of-orange-countys-infrastructure-2016-report-card>
- ◆ The County's Comprehensive Economic Strategy report: <https://www.occommunityservices.org/sites/cid/files/import/data/files/91219.pdf>
- ◆ The 90-year lag remains unimproved over time, this was even noted at the 2011 Orange County City Infrastructure Summit, Association of California Cities (see at 1:26 in the video at this link): [http://www.asceoc.org/newsletter/article/city\\_infrastructure\\_summit](http://www.asceoc.org/newsletter/article/city_infrastructure_summit)
- ◆ This is also described in the 2016 Orange County Infrastructure Report Card. <https://www.ocbc.org/wp-content/uploads/2011/02/2016OCIRC.pdf>



<sup>3</sup> City of Huntington Beach Information Services Department: [http://www.huntingtonbeachca.gov/about/maps/faults\\_and\\_facilities.pdf](http://www.huntingtonbeachca.gov/about/maps/faults_and_facilities.pdf)

<sup>4</sup> Revell, D., "Huntington Beach Desalination Review of Sea Level Rise Hazards", 2018. [https://documents.coastal.ca.gov/assets/upcoming-projects/poseidon-huntington-beach/Huntington\\_Hazards\\_FINAL\\_Small.pdf](https://documents.coastal.ca.gov/assets/upcoming-projects/poseidon-huntington-beach/Huntington_Hazards_FINAL_Small.pdf)

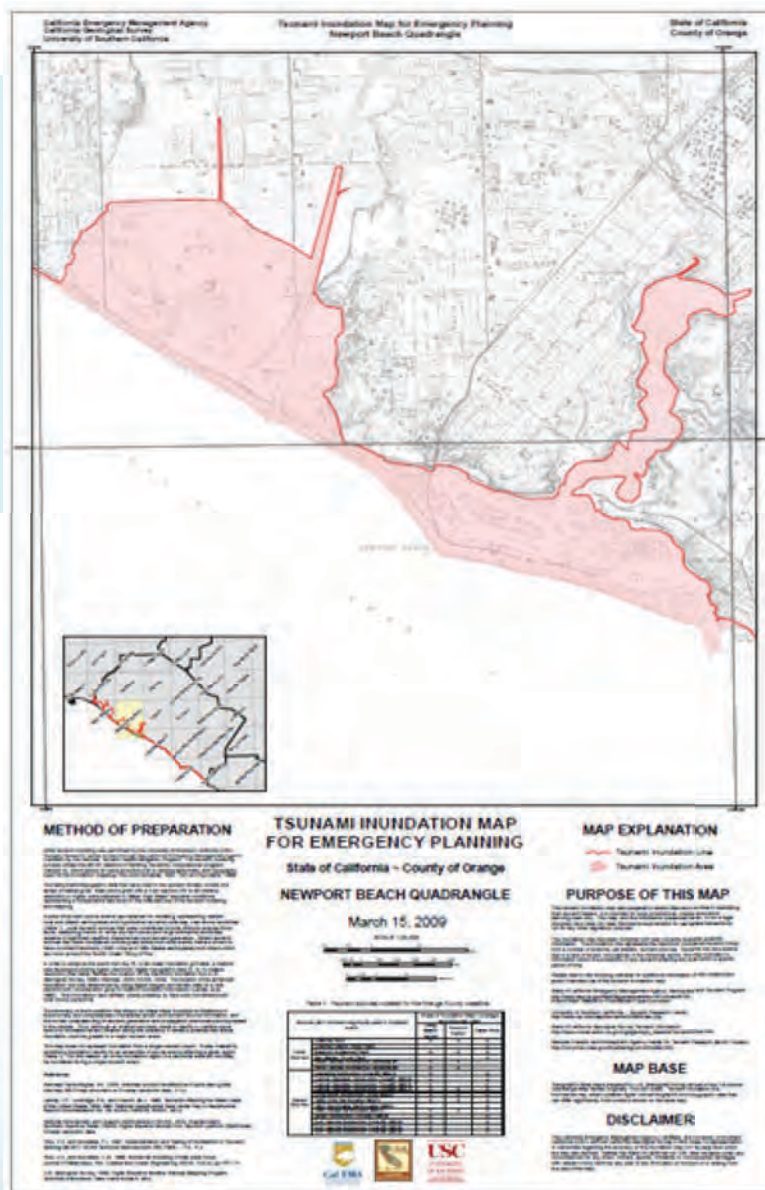
<sup>5</sup> Ibid.

# FACT SHEET:

## Sea Level Rise Simulations and Scenarios at the Site of the Proposed Poseidon Seawater Desalination Plant

### e. Tsunami:

The film depicts the designated tsunami risk flood depth and velocity for this location as described by the California Emergency Management Agency; California Geological Survey; and University of Southern California.<sup>6</sup>



<sup>6</sup> Tsunami Inundation Map for Emergency Planning Seal Beach Quadrangle prepared by California Emergency Management Agency; California Geological Survey; and University of Southern California. <https://www.conservation.ca.gov/cgs/tsunami/maps>





# FACT SHEET:

## Seismic Risks to the Poseidon Plant

### 1. Recent seismic modeling shows the site for the proposed Poseidon Huntington Beach Seawater Desalination Plant to be vulnerable to significant earthquake risk.

The Great Southern California ShakeOut earthquake simulation for Huntington Beach<sup>1</sup> is based on a magnitude 7.8 scenario earthquake on the San Andreas fault in southern California. This portion of the San Andreas fault has been identified as the most likely source of a very large earthquake in California (Working Group on California Earthquake Probabilities<sup>2</sup>). As part of the earthquake drill, computer simulations of the ground shaking from this scenario earthquake were constructed through a collaborative effort between the USGS and the Southern California Earthquake Center. These computer simulations capture the shaking at length scales larger than about 300 ft. and provide detailed pictures of the shaking for this scenario earthquake. The simulation demonstrates that Huntington Beach would experience 'severe' and 'extreme' shaking in the vicinity of the proposed plant and would reach level X Shaking Intensity on the MMI scale. It should be noted that there are other faults, including the active Newport Inglewood Fault that are closer to the proposed plant that could cause similar seismic impacts.

### 2. Poseidon has not adequately investigated the seismic risks at the project site. Additional investigation should be required before any coastal development permit is granted.

An independent report on the seismic risks at the Poseidon site was completed in 2020 by Lettis Engineering.<sup>3</sup> This report documents a "desktop" assessment of the Newport-Inglewood fault zone and the potentially active fault strands proximal to the proposed Poseidon Seawater Desalination Project site in Huntington Beach, California. The report is based on published scientific literature, maps, and available consultant reports. The purpose of the study was to summarize existing information on the Newport-Inglewood fault zone and the geology, location, and activity of local faults that may impact the proposed Poseidon project, if such information is known. The report concludes the following:

- ◆ The South Branch fault at the site is not the principal active strand of the Newport- Inglewood fault zone. The principal active strand is located about 0.6 km (.37 of a mile) east of the site and projects offshore near the mouth of the Santa Ana River. The largest surface displacements from future earthquake ruptures on the Newport-Inglewood fault zone are expected on the principal active fault strand, with relatively minor displacements expected on other secondary strands.
- ◆ Data do not exist to adequately assess whether the South Branch fault on the site itself has ruptured in the Holocene Epoch (past 11,700 years) and would be considered an active fault by the California Geological Survey (CGS). This fault strand has not yet met the criteria of "sufficiently active and well defined" to be included in an Alquist-Priolo Earthquake Fault Zone (APEFZ) by the CGS.
- ◆ Past studies at the Poseidon site by GeoLogic (2002), Ninyo & Moore (2011), and Geosyntec Consultants, Inc. (2013) have consistently concluded an "absence of evidence" for the presence of Holocene faulting on site. However, the subsurface exploration methods employed do not definitively preclude the presence of minor secondary Holocene fault activity at the site.
- ◆ Although there is no information that directly implicates the "South Branch" fault on the site as being active, there are no data that demonstrably preclude Holocene activity.

### 3. In view of the Lettis Report's conclusions, Orange County Coastkeeper believes that before receiving a permit to proceed with construction, Poseidon should be required to conduct additional subsurface investigations to evaluate for the presence or absence of Holocene active faults.

*For more information, contact Ray Hiemstra at [ray@coastkeeper.org](mailto:ray@coastkeeper.org).*

<sup>1</sup> <https://earthquake.usgs.gov/education/shakingsimulations/shakeout/>

<sup>2</sup> <https://pubs.usgs.gov/fs/2008/3027/>

<sup>3</sup> Assessment of the Newport-Inglewood Fault Zone AES Electrical Generation Facility, Poseidon Desalination Project Lettis Engineering 2020





# FACT SHEET:

## Poseidon's Huntington Beach Seawater Desalination Plant Qualifies as Critical Infrastructure

### 1. While Poseidon lobbies on one hand for what it says is a 'critically-needed' facility, it refuses to build its proposed plant to Risk Category IV "critical infrastructure" standards<sup>1</sup> or meaningfully incorporate extreme sea level rise (SLR) and coastal and geologic hazards into its siting and design analyses.

Recently released information concerning the Thwaites Glacier in Antarctica has prompted scientists to warn that newly discovered fracturing may lead to significant loss of the glacier in three to ten years and result in two to ten additional feet of sea level rise within the century.<sup>2</sup> Additionally, the Georgia Institute of Technology recently released a report that found, "Warm seawater that's seeping under certain glaciers could eventually lead to sea level rise that's double that of existing estimates."<sup>3</sup> Based on these new findings, it is anticipated that SLR and related coastal hazards will increase at a more rapid pace than initially anticipated in currently available SLR modeling scenarios. Given that currently accepted models like CoSMos do not yet account for groundwater rise, it is essential that coastal development - especially new critical infrastructure - be built to the most protective standards to ensure operating performance over the life of the proposed facility which in Poseidon's case is 50 years to 2075 - 2080.

### 2. The Ocean Protection Council's (OPC) 2018 State of California Sea Level Rise Guidance already calls for application of the H++ scenario to high consequence projects which Poseidon has refused to supply.

OPC's State sea level rise guidance already requires consideration of the extreme sea level rise scenario, known as H++ for high consequence projects with a lifespan beyond 2050 that would result in significant consequences if damaged.<sup>4</sup>

The proposed Project is intended to be a drought resilient local water supply, able to supply water in the event of an emergency, which renders it a high consequence project under the Ocean Protection Council's (OPC) 2018 State of California Sea- Level Rise Guidance and thereby subject to heightened SLR projections. OPC guidance states:

"For high consequence projects with a design life beyond 2050 that have little to no adaptive capacity, would be irreversibly destroyed or significantly costly to relocate/repair, or would have considerable public health, public safety, or environmental impacts should this level of sea-level rise occur, the H++ extreme scenario should be included in planning and adaptation strategies." (OPC p. 24).

"For highly vulnerable or critical assets that have a lifespan beyond 2050 and would result in significant consequences if damaged, the H++ scenario (extreme risk aversion projection) should also be included in planning analyses." (p. 25)

"We further recommend incorporating the H++ scenario in planning and adaptation strategies for projects that could result in threats to public health and safety, natural resources and critical infrastructure, should extreme sea-level rise occur. (p. 32)"<sup>5</sup>

<sup>1</sup> International Building Code Table 1604.5, Risk Category of Buildings and Other Structures, <https://www.fandr.com/wp-content/uploads/2020/07/Speaking-in-Code-August-2020.pdf>.

<sup>2</sup> Science. Ice shelf holding back keystone Antarctic glacier within years of failure: Breakup of the Thwaites eastern shelf will ramp up sea level rise. December 13, 2021 <https://www.science.org/content/article/ice-shelf-holding-back-keystone-antarctic-glacier-within-years-failure>

<sup>3</sup> Science Daily. "Seawater seep may be speeding glacier melt, sea level rise". February 10, 2022.

<sup>4</sup> [https://california.surfrider.org/wp-content/uploads/2022/02/Seawater-seep-may-be-speeding-glacier-m...of-existing-estimates\\_-ScienceDaily.pdf](https://california.surfrider.org/wp-content/uploads/2022/02/Seawater-seep-may-be-speeding-glacier-m...of-existing-estimates_-ScienceDaily.pdf)

<sup>5</sup> Ocean Protection Council. California Sea Level Rise Guidance, 2018 [https://opc.ca.gov/webmaster/ftp/pdf/agenda\\_items/20180314/Item3\\_Exhibit-A\\_OPC\\_SLR\\_Guidance-rd3.pdf](https://opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf) (see, e.g., p. 24, 25, and 32).

<sup>6</sup> *Id.*





# FACT SHEET:

## Poseidon's Huntington Beach Seawater Desalination Plant Qualifies as Critical Infrastructure

### 3. The California Coastal Commission's recent Critical Infrastructure Guidance (2021) states that desalination facilities are generally considered critical infrastructure.

In November 2021, in recognition of Poseidon's letters to staff that deliberately misinterpreted the intent of the guidance by claiming that the proposed project was not 'critical infrastructure', the Commission voted to specifically amend the Critical Infrastructure Guidance by clarifying that 'desalination facilities are generally considered critical infrastructure where they are integrated with other water systems, provide needed or emergency water, or have the potential to cause environmental or social impacts if damaged by future hazards.' <sup>6</sup> All of those conditions clearly apply to the Poseidon project.

In addition, the Coastal Commission's own sea level rise guidance recommends using the H++ scenario for any projects that have a low tolerance for risk, such as large power plants, major airports and roads, wastewater treatment plants, and hazardous waste and toxic storage sites. <sup>7</sup>

Specifically, Coastal Commission sea level rise guidance recommends "evaluating the expected impacts to critical infrastructure that would be caused by approximately 10 feet of sea level rise by 2100 (using what is known as the extreme risk or "H++" scenario)."<sup>8</sup> In May 2020, the Commission previously adopted "Principles for Aligned State Action (State SLR Principles)" which recommend planning to address "a minimum of 3.5 feet of sea level rise in the next 30 years."<sup>9</sup>

### 4. Poseidon's has repeatedly tried to avoid being correctly characterized as critical infrastructure in order to evade analyzing the H++ sea level rise scenario.

In correspondence with the Coastal Commission staff, Poseidon refused to consider critical infrastructure guidance or standards in the siting and design of the proposed Project. In a letter dated September 20, 2021, Poseidon responded to Coastal Commission staff's Notice of Incomplete Letter calling for a critical infrastructure analysis by stating:

"Finally, neither the proposed Project, nor any feature of the individual Project structures (e.g., the product water storage tank) are considered "critical" for the purposes of tsunami flood evaluation."<sup>10</sup>

In a comment letter dated 9/23/21 on the Commission's Draft SLR Guidance and in an effort to misrepresent the intent of that Guidance, Poseidon indicated that they "concurred" that "seawater desalination facilities that supplement other drinking water supplies are not "critical facilities' for the purpose of flood hazard analysis and design....."<sup>11</sup>

And again, in correspondence with Regional Water Board staff in a letter dated February 4, 2019, Poseidon refuted the need to consider to consider extreme sea level rise by stating:

"The Project is not a "critical facility" for purposes of hazard planning and an evaluation of the H++ sea level rise scenario (a scenario with no assigned probability of occurrence) is not required."<sup>12</sup>

<sup>6</sup> California Coastal Commission. Sea Level Rise: Coastal Planning Adaptation Guidance for Critical Infrastructure, 2021. <https://coastal.ca.gov/climate/slr/vulnerability-adaptation/infrastructure/>

<sup>7</sup> Ibid.

<sup>8</sup> California Coastal Commission. Sea Level Rise Policy Guidance, 2018. [https://documents.coastal.ca.gov/assets/slr/guidance/2018/0\\_Full\\_2018AdoptedSLRGuidanceUpdate.pdf](https://documents.coastal.ca.gov/assets/slr/guidance/2018/0_Full_2018AdoptedSLRGuidanceUpdate.pdf)

<sup>9</sup> California Coastal Commission. Briefing and consideration of adopting "Making California's Coast Resilient to Sea Level Rise: Principles for Aligned State Action". Item W6g, May 1, 2020.

<https://documents.coastal.ca.gov/reports/2020/5/W6g/w6g-5-2020-report.pdf>

<sup>10</sup> Poseidon Water. Response to Notice of Incomplete ("NOI") Coastal Development Permit Application No. 9-21-0488 for the Huntington Beach Desalination Project. September 20, 2021.

<https://california.surfrider.org/wp-content/uploads/2022/02/Surfrider-Huntington-Beach-WB-Comments.pdf>

<sup>11</sup> Comment letter on Draft Sea Level Rise Guidance from Poseidon Resources to the Coastal Commission, 9/23/2021, p.2

<sup>12</sup> Poseidon Water. Appendix 00000 – State Water Resources Control Board Resolution No. 2017-012 Compliance Condition and Response to Surfrider Foundation Sea Level Rise Report. February 4, 2019.

<https://california.surfrider.org/wp-content/uploads/2022/02/Appendix-00000-Letter-response-to-Surfrider-SLR-Report-2019.02.04-FIN....pdf>



# FACT SHEET:

## Poseidon's Huntington Beach Seawater Desalination Plant Qualifies as Critical Infrastructure

### 5. What exactly is Critical Infrastructure and why it applies to Poseidon's Proposed Plant in Huntington Beach

Critical facilities are those necessary for health and safety. Because residents rely on these facilities to provide necessities such as water, critical facilities are constructed according to more stringent building standards. This ensures that the facilities needed to support health and safety remain operational at all times, including during emergency situations.

In specific, Risk Category IV buildings are “buildings that are considered to be essential in that their continuous use is needed, particularly in response to disasters,” including “water storage facilities and pump structures required to maintain water pressure for fire suppression” as well as “facilities required for emergency response.”<sup>13</sup>

Despite Poseidon's assertions that it need only meet design and building standards applicable to a “community facility,”<sup>14</sup> local planning agencies define “critical infrastructure” to clearly include water facilities and public serving infrastructure:

- ◆ The Orange County Local Hazards Mitigation Plan (LHMP) identifies “critical facilities and infrastructure” as being public or private, and as being “facilities critical to government response and recovery activities (i.e., life safety and property and environmental protection) include 911 centers, emergency operations centers police and fire stations, public works facilities, communications centers, sewer and water facilities...” [emphasis added].<sup>15</sup>
- ◆ The Municipal Water District of Orange County's (MWDOC) LHMP describes critical facilities as “public infrastructure used to provide potable water to the public and maintain wastewater services, necessary to maintain public health and safety.”<sup>16</sup>  
(Note: The MWDOC Plan incorporates the facilities owned by OCWD, including its pump stations, reservoirs, water storage tanks, water treatment plants, and potable water pipelines, all of which are considered “critical facilities.” *With OCWD's involvement in the Poseidon project, including reliance on its water supply and proposed ownership/management of Poseidon's water distribution pipeline, at least part, if not all of Poseidon's project would be considered a “critical facility.”*)
- ◆ The Orange County Water District (OCWD) states on its website that, “Ocean desalination is the kind of critical investment in water reliability that OCWD has been making for more than 80 years and deserves careful consideration”.<sup>17</sup>
- ◆ The City of Huntington Beach's 2010 EIR for the project required Poseidon to develop measures to “ensure continuous facility operations and water delivery under earthquake emergency conditions.”<sup>18</sup>
- ◆ The City's 2010 approval of Poseidon's CDP recognized the critical nature of the proposed facility, with the CDP findings stating that Poseidon was expected to provide a water supply during declared emergencies.<sup>19</sup> The local permit findings includes a Water Purchase Agreement through which the City would receive certain volumes of emergency water supply.

<sup>13</sup> International Building Code. Chapter 16: Structural Design. 1604.5 Risk Category. <https://codes.iccsafe.org/content/IBC2018/chapter-16-structural-design>

<sup>14</sup> Moffat and Nichol. 2020 Huntington Beach Desalination Project Sea Level Rise Analysis.

<sup>15</sup> City of Huntington Beach. Draft Local Hazard Mitigation Plan. Pg. 80

<sup>16</sup> MWDOC, Orange County Regional Water and Wastewater Hazard Mitigation Plan.

<sup>17</sup> Orange County Water District. Ocean Desalination: About the Project. <https://california.surfrider.org/wp-content/uploads/2022/02/About-the-project--OCWD-1.pdf>

<sup>18</sup> City of Huntington Beach. Seawater Desalination Facility Final Subsequent Environmental Impact Report. Section 4.2 – Geology, Soils, and Seismicity, page 4.2-11. <https://www.huntingtonbeachca.gov/government/departments/planning/major/poseidon.cfm>

<sup>19</sup> City of Huntington Beach. CUP 02-04 and CDP 02-06. <https://www.huntingtonbeachca.gov/government/departments/planning/major/poseidon.cfm>





# FACT SHEET:

## Poseidon's Huntington Beach Seawater Desalination Plant Qualifies as Critical Infrastructure

### 6. Poseidon Considers its Carlsbad Seawater Desalination Facility to be Critical Infrastructure and Emergency Water Supply

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It is undisputed that the Poseidon's Carlsbad Desalination Facility is considered critical infrastructure and Poseidon refers to it as such. Therefore, its proposed Huntington Beach Desalination also qualifies as critical infrastructure.

Poseidon's Carlsbad facility is considered a key emergency water supply in the San Diego County Water Authority Water Shortage Contingency Plan, published in May 2021. It states:

"The completion of the Lewis Carlsbad Desalination Plant allows the Water Authority to deliver treated water supply to member agencies during emergency events. This results in a commensurate decrease in emergency storage that needs to be maintained in [Emergency Storage Project] reservoirs."<sup>20</sup>

The San Diego County Water Authority lists the Carlsbad facility as a critical local water supply source in its 2019-2023 Business Plan.<sup>21</sup> It states:

- ◆ "Local water resources developed and managed by the Water Authority and its member agencies are critical to the success of the region's water supply diversification program [...] Local resources include recycled water, groundwater, surface water, potable reuse, and seawater desalination."
- ◆ "Commercial operation of the Claude "Bud" Lewis Carlsbad Desalination Plant in December 2015 represents a significant local water supply accomplishment."
- ◆ "The Water Authority operates critical infrastructure to ensure a safe and reliable water supply for the region. Security and emergency response efforts support the need for physical and cybersecurity, business continuity, and emergency preparedness. This focus area emphasizes the protection of critical facilities and the operations control system against risks and vulnerabilities from all potential threats, such as terrorism and cyber-threats."

In its own press release on March 18, 2020, Poseidon described the Carlsbad Facility as critical infrastructure. The headline and article state:

- ◆ "Carlsbad Desalination Plant Staff Take Extraordinary Step to Shelter in Place to Ensure Operational Continuity at Critical Facility"
- ◆ "The team members, each of whom have voluntarily agreed to shelter in place, will be charged with ensuring continued water supply production and overseeing this critical regional facility, which has provided San Diego County with more than 62 billion gallons of high-quality drinking water in its 4.5 years of operation."<sup>22</sup>

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**For further information about this Fact Sheet, contact Susan Jordan at [sjordan@coastaladvocates.com](mailto:sjordan@coastaladvocates.com) and Mandy Sackett at [msackett@surfrider.org](mailto:msackett@surfrider.org)**

<sup>20</sup> San Diego County Water Authority. 2021 Water Shortage Contingency Plan. <https://www.sdcwa.org/wp-content/uploads/2021/08/SDCWA-WSCP-05272021-rev-July-2021-1.pdf>

<sup>21</sup> 2019-2023 Business Plan, San Diego County Water Authority. October 2018.

<sup>22</sup> CISION News Wire. Carlsbad Desalination Plant Staff Take Extraordinary Step to Shelter in Place to Ensure Operational Continuity at Critical Facility. Poseidon Water. March 18, 2020. <https://california.surfrider.org/wp-content/uploads/2022/02/Carlsbad-Desalination-Plant-Staff-Take-Extraordinary-Step-to-Shelter-in-Place-to-Ensure-Operational-2.pdf>



# FACT SHEET:

## Poseidon Huntington Beach Desalination Plant's 'Pay-to-Poison' Greenhouse Gas Mitigation Plan

**1. In 2017, when the State Lands Commission voted to approve a lease amendment for the proposed Huntington Beach Desalination Plant, Controller Yee directed Poseidon to modify its GHG Minimization Plan<sup>1</sup> (aka Climate Change Action Plan). Despite Yee's direction, Poseidon submitted the same plan to the Santa Ana Regional Water Control Board in 2019 and to this Commission in July of 2021.**

Four years ago, when the State Lands Commission heard the proposed Huntington Beach Desalination Plant, Controller Yee, supported by then Lt. Governor Gavin Newsom, expressed significant concerns with Poseidon's proposed greenhouse (GHG) reduction plan and insisted that it be truly 'carbon neutral.'

Yee pointed out, on the record, that she was concerned that by the time the plant was built it would be out of date with the State's climate goals. Given this, she pointed to then ongoing discussions between Southern California Edison (SCE), Poseidon and others, called on Poseidon to go further by developing either a new technology or other tools to help them meet their obligation to be 100 percent GHG emission free and indicated that she was waiting for an update on that progression. Controller Yee stated that she believed there were additional options out there to strengthen the plan and that she wanted to see "movement" from Poseidon in this arena. She was very clear that she did not want Poseidon to just 'write a check' to fulfill their obligations.<sup>2</sup>

It has been over four years since the SLC hearing but instead of revising the plan as Yee instructed, Poseidon submitted the same plan to the Santa Ana Regional Water Quality Control Board in 2019 and to the Coastal Commission in July of 2021. This outdated plan is insufficient to meet California's climate change goals and must be revised and conditioned to mitigate its emissions locally.

**2. Poseidon's longstanding claim that the proposed Huntington Beach desalination plant would be 'carbon neutral' was based entirely on the purchase of controversial offsets known as renewable energy credits (RECs). The Commission must reject that 'pay to poison' approach that Poseidon submitted in its application and require Poseidon to mitigate its GHG emissions locally and not through the purchase of RECs.**

Poorly understood in 2008 when the Poseidon Carlsbad GHG Reduction Plan was approved by this Commission, RECs are now highly controversial as they enable polluters to continue to pollute at the source hurting vulnerable communities by investing in false solutions elsewhere. In the environmental justice world, it is well-known as "pay-to-pollute" or "pay-to-poison."<sup>3</sup> Recent studies have found that "California's carbon market could be hurting the state's chances of meeting its ambitious climate goals, while at the same time exacerbating pollution in already overburdened communities."<sup>4</sup> The RECs that Poseidon has bought for its Carlsbad plant were purchased entirely from out-of-state projects and consist almost entirely of polluting landfill gas. Poseidon should not be allowed to rely on the same controversial offsets for the proposed Huntington Beach Desalination Plant and must be required to mitigate its GHG emissions at the source.

<sup>1</sup> Poseidon Resources Huntington Beach Desalination Plant ENERGY MINIMIZATION AND GREENHOUSE GAS REDUCTION PLAN

<sup>2</sup> The full discussion of Poseidon's GHG plan during the State Lands Commission (SLC) hearing can be found starting on page 316 line 15 of the SLC Meeting Transcript.

<sup>3</sup> Paying to Pollute NOVEMBER 2017 Food & Water Watch Greenaction for Health and Environmental Justice The Environmental Injustice of Pollution Trading

<sup>4</sup> <https://insideclimateneews.org/news/25022022/why-do-environmental-justice-advocates-oppose-carbon-markets-look-at-california-they-say/>



# FACT SHEET:

## Poseidon Huntington Beach Desalination Plant's 'Pay-to-Poison' Greenhouse Gas Mitigation Plan



**3. Suddenly, less than a month before the scheduled March 17th hearing, Poseidon announced that they were signing an MOU with the Orange County Power Authority (OCPA) and that they were going to be 'the first desalination plant in the Western Hemisphere to be powered with 100% renewable energy.' This assertion is false; nothing in the MOU requires Poseidon to purchase 100% renewable energy to power the plant.**

In July 2021, Poseidon submitted the same outdated GHG Reduction Plan to the Coastal Commission that it had submitted to the State Lands Commission in 2017 and the Regional Water Board in 2019. The Plan Poseidon submitted to the Commission relies on controversial pay-to-poison offsets (RECs) and is the only GHG Minimization Plan before the Commission at this time (3/31/22).

As described by the California Coastal Protection Network (CCPN) in a Powerpoint presentation to the Coastal Commission on March 11th, 2022 contains no requirement for Poseidon to purchase 100% renewable energy. It is a non-binding agreement wherein Poseidon agrees to meet at least monthly with the OCPA behind closed doors, due to a mutual non-disclosure agreement, to jointly investigate the 'economic feasibility' of a 100% renewable energy product. Should the CCC deny the project, the MOU expires immediately.

It should also be noted that the OCPA has no proven track record and has been the subject of intense criticism for:

- ◆ Lack of transparency and failure to follow best practices;<sup>5</sup>
- ◆ Mismanagement of finances and reportedly subject to a Resource Adequacy Proceeding by the California Public Utilities Commission;<sup>6</sup>
- ◆ Hiring an Orange County long-time political consultant, Brian Probolsky, with no energy sector experience<sup>7</sup> to run the agency. Probolsky's brother, Adam, is Poseidon's pollster;<sup>8</sup>
- ◆ Backtracking on its commitment to offer cleaner, less expensive electricity than what SCE currently offers.<sup>9</sup>

**4. There are better options than controversial 'pay-to-poison' offset credits or a vague, non-binding MOU to ensure that the plant will be truly carbon neutral. The Commission should require that Poseidon's GHG emissions be mitigated at the source.**

In 2022, Powers Engineering reviewed Poseidon's proposed GHG Minimization Plan<sup>10</sup> (aka Climate Change Plan) and concluded that:

- ◆ The proposed desalination plant will emit 68,745 metric tons per year (75,620 tons per year) of carbon dioxide in the first year of operation.
- ◆ The approach Poseidon has proposed to achieve carbon neutrality, the purchase of offset credits, will not address the local grid reliability impacts of adding the continuous 30.34 MW of load from the desalination plant in the Los Angeles Basin. That is the same amount of energy needed to power nearly 40,000 homes and could affect those who use life-sustaining equipment.

<sup>5</sup> <https://voiceofoc.org/2022/01/oc-clean-power-agencys-first-year-sees-an-executive-resignation-transparency-concerns/>


<sup>6</sup> <https://voiceofoc.org/2021/11/is-orange-countys-new-green-energy-agency-facing-questions-from-state-regulators/>

<sup>7</sup> <https://irvinecommunitynewsandviews.org/more-problems-for-irvine-at-the-orange-county-power-authority/>

<sup>8</sup> <https://www.surfcityvoice.com/bogus-desal-poll-promotes-poseidon-project/>

<sup>9</sup> <https://voiceofoc.org/2022/01/oc-residents-face-electricity-price-hike-after-clean-power-agency-picks-preliminary-rates/>

<sup>10</sup> Assessment of Energy Intensity and Greenhouse Emission Mitigation of Proposed Poseidon Huntington Beach Desalination Plant



# FACT SHEET:

## Poseidon Huntington Beach Desalination Plant's 'Pay-to-Poison' Greenhouse Gas Mitigation Plan

- ◆ The cost of carbon credits is likely to be substantially higher than the \$10 metric ton price that is assumed by Poseidon as an economically reasonable offset cost ceiling. By way of comparison, the California Air Resources Board cap-and-trade allowance cost ceiling for 2022 is \$72.29 per metric ton.
- ◆ Battery storage is now a primary grid reliability resource in California. Southern California Edison, the utility serving Huntington Beach, projects that it will have at least 2,800 MW of battery storage under contract by 2023.
- ◆ 30 MW of battery storage should be developed by Poseidon in Huntington Beach to offset the grid reliability impacts of the desalination plant.
- ◆ 150 MW of local solar power should be developed by Poseidon in Huntington Beach on commercial and industrial rooftops and parking lots to fully mitigate the carbon footprint of desalination plant operations.
- ◆ The annualized cost of 30 MW of battery storage and 150 MW of rooftop and parking lot solar in Huntington Beach will be less than 3 percent of Poseidon's projected gross annual income of about \$160 million per year.

### 5. Poseidon must not receive a permit for the proposed Huntington Beach Desalination Plant until it amends its Carlsbad permit and removes the false 'automatic credit' from its Carlsbad GHG Minimization Plan.

In 2007, as part of its Coastal Development Permit (CDP) hearing for the Carlsbad plant, Poseidon testified that its project would be 'net carbon neutral,' claiming that it would fully mitigate the project's net GHG emissions. Included in Poseidon's "Energy Minimization and Greenhouse Gas Reduction Plan" (GHG Reduction Plan) was an 'automatic credit' based on what Poseidon claimed would be a one-to-one reduction in State Water Project imports from the Sacramento-San Joaquin Delta to San Diego. The Commission approved Poseidon's GHG Reduction Plan in 2008 and gave it an automatic credit for the claimed one-to-one reduction in State Water Project imports.

However, Coastal Commission staff later learned that a 2005 agreement between the California Department of Water Resources and the Metropolitan Water District (MWD) prohibited desalination projects from reducing the MWD's State Water Project entitlements. In addition, staff learned that MWD's 2009 contractual agreement with the San Diego member agencies who agreed to buy Poseidon's water contained a guarantee that the desalinated water could not interfere with MWD's ability to import or use its full State Water Project entitlements.

Poseidon knew that there would be no one-to-one reduction in State Water Project imports and deliberately misled the Commission and the public.<sup>11</sup> During a 2010 Permit Revocation Hearing, the Commission declined to revoke Poseidon's permit, but found that Poseidon had intentionally provided inaccurate, erroneous or incomplete information in the course of seeking its permit.<sup>12</sup>

While Poseidon is no longer seeking a fake 'automatic credit' for the Huntington Beach Desalination Project, it has refused to apply for a permit amendment to remove the automatic credit from its Carlsbad GHG Reduction Plan. In response to a 2018 CCC Notice of Nonconformity that asked Poseidon to formally remove the imported water offsets credits from the Carlsbad GHG Reduction Plan, Poseidon responded that they do not plan to take action to amend the Carlsbad GHG Reduction Plan as required, preferring to keep their options open.<sup>13</sup>

<sup>11</sup> California Coastal Commission Staff Report: Addendum to R2-E-06-013 Revocation Request – Poseidon Resources (Channelside) LLC – Carlsbad Desalination Facility. February 9, 2010. <https://documents.coastal.ca.gov/reports/2010/2/W6a-2-2010.pdf>

<sup>12</sup> Ibid.

<sup>13</sup> Poseidon Greenhouse Gas Plan Comment Letter. October 4, 2018, <https://bit.ly/3ogKbHn>.





# FACT SHEET:

## Environmental Justice Impacts of the Proposed Poseidon Huntington Beach Desalination Plant

### 1. The Environmental Justice Communities and Sensitive Populations at Risk from the Poseidon Project are Many.

The Project service area is all of North Orange County and is therefore the Zone of Risk for the Project. Environmental Justice Communities, Sensitive Populations, and Tribal Communities throughout North OC are in the Zone of Risk as are hundreds of schools, senior living facilities, YMCAs, and other critical Environmental Justice institutions.

### 2. Poseidon's Project Application Fails on Numerous Procedural Environmental Justice Grounds.

The California Coastal Commission (CCC) has extensive authority under its Environmental Justice policy to deny the Coastal Development Permits for Poseidon's proposed project;<sup>1</sup> denial is required given the project applicant's failures to engage Environmental Justice Communities throughout the process. The Project applicant has failed its procedural obligations under California state law and the Coastal Commission's Environmental Justice policy for meaningful public participation, Tribal consultation, and transparency.<sup>2</sup>

### 3. Poseidon's Project Application Fails on Numerous Substantive Environmental Justice Grounds.

Like the Carlsbad Desal Plant, the Project will increase water costs to all North OC ratepayers and small businesses.<sup>3</sup> The Greenhouse Gas Emissions (GHGs), toxic emissions, and other releases resulting from the demolition, construction, and operations of the Project will inevitably be borne disproportionately by Environmental Justice Communities. Plastic waste resulting from Project operations will harm Environmental Justice Communities the most: Poseidon's proposed project will employ 16,000 plastic membranes as part of its operations, requiring routine replacement, membranes that are not recycled material, or recyclable, meaning they will enter the waste stream. The Project's proposed site itself is a brownfield, presenting serious hazards to all surrounding neighborhoods, communities, and facilities, including the beach itself, throughout demolition, construction, and operations. Finally, Poseidon's proposed project site presents major risks to Environmental Justice Communities due to its vulnerable location which is subject to inevitable extreme weather, natural disasters, and climate change-induced sea-level rise.

<sup>1</sup> California Coastal Act Section 30604(h) ("When acting on a coastal development permit, the issuing agency, or the commission on appeal, may consider environmental justice, or the equitable distribution of environmental benefits throughout the state.")

<sup>2</sup> There are Federal (EO 13166) and California (California Civil Rights Act, Bilingual Services Act) regulations governing the translation of documents for government funded projects and programs; Applicant has failed to translate documents. Relevant CCC policies include the CCC Environmental Justice Policy (acknowledging the "critical need to communicate consistently, clearly, and appropriately with environmental justice groups and underserved communities.") and the CCC Tribal Consultation Policy (defining "consultation" to mean "the meaningful and timely process of seeking, discussing, and considering carefully the views of Tribes . . ." and noting that "[c]onsultation should not be viewed as a 'one-time, one-meeting activity,' but rather an iterative process.")

<sup>3</sup> San Diego County Water Authority Board Meeting Documents September 26, 2019, San Diego County Water Authority at 45 (2019) (reporting that in 2018/2019 water from the Carlsbad Desalination Plant had an average unit cost of \$2,685 per acre-foot); Analyzing Southern California Supply Investments from a Human Right to Water Perspective: The Proposed Poseidon Ocean Water Desalination Plant in Orange County, UCLA Luskin Center for Innovation at 1-2 (2019) (concluding that "all available reputable sources . . . show the upfront unit cost of water from the [Poseidon] agreement to be substantially more expensive than the unit cost of all other local supply options" and that there is "no evidence to reasonably project that Agreement Water will be cost competitive with any incremental supply investments for the next several decades.")

# FACT SHEET:

## Environmental Justice Impacts of the Proposed Poseidon Huntington Beach Desalination Plant

### 4. The Project Would Violate the Human Right to Water.

AB 685 established the human right to access clean, safe, and affordable water as a policy priority for California.<sup>4</sup> To promote that priority, agencies should “[g]ive preference to policies that advance AB 685 and refrain from taking actions that adversely impact the human right to water (HRW)...”<sup>5</sup>

Importantly, the statute lays out a process for relevant agencies to engage in in order to advance the state’s policy goals—agencies must consider the human right to water in their decision making.<sup>6</sup>

To meet its obligation to “consider” the human right to water impacts of permitting the Project, the Commission should (1) note any impacts of its action on the human right to water, (2) give preference to decisions that advance the human right to water policy, and (3) refrain from making decisions that run contrary to the human right to water policy.

For-profit capture of water resources to be sold at higher prices to the public erodes the Human Right to Water.<sup>7</sup>

### 5. The Project Application Fails on Substantive and Procedural CEQA Grounds.

The Project application fails on substantive CEQA grounds.<sup>8</sup> Significant and material changes to the Project plan since the 2010 FSEIR require a new CEQA review and a review that is not done in a piecemeal fashion or completed after the CCC issues a permit. The cumulative impacts analysis in the Project application are inadequate, faulty, and deeply understate the vast hazards that the Project presents to communities in North OC.

The Project application fails on many procedural CEQA grounds. Environmental Justice Communities were not consulted in the appropriate manner including failure to translate application submissions and records. Environmental Justice Communities were never able to evaluate the entire Project plan because the entire plan, including the distribution pipelines and other major components has never been submitted in its entirety to the public or any regulatory agency.

### 6. The Project Violates the California Coastal Act.

Section 21080.5(d)(2)(A) of CEQA prohibits approval of a proposed development if there are feasible alternatives or feasible mitigation measures available that would substantially lessen any significant impacts that the activity may have on the environment.<sup>9</sup> The Project fails to satisfy CEQA requirements.

The Coastal Act supports equitable access to coastal zones and preservation of natural spaces; this Project does Neither.<sup>10</sup>

<sup>4</sup> California Assembly Bill No. 685 (2012) (declaring that “every human being as the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.”)

<sup>5</sup> University of California, Berkeley School of Law, International Human Rights Law Clinic, The Human Right to Water Bill in California: An Implementation Framework for State Agencies, 2, 6 (May 2013)

<sup>6</sup> Supra note 4 (declaring that “all relevant state agencies . . . shall consider this state policy when revising, adopting, or establishing policies, regulations, and grant criteria when those policies, regulations, and criteria are pertinent to the uses of water described in this section.”)

<sup>7</sup> See Analyzing Southern California Supply Investments from a Human Right to Water Perspective: The Proposed Poseidon Ocean Water Desalination Plant in Orange County, UCLA Luskin Center for Innovation at 1-2 (2019) (finding that “While potential positive HRW benefits from desalinated ocean water can occur in certain contexts, we find that no such benefits can be plausibly realized by the Poseidon agreement in Orange County. Nearly all of the county’s households are connected to community water systems which already provide high-quality, reliable water service and thus would not see supply improvement from ocean desalination. . . The only plausible impact of Agreement Water on disadvantaged households in the county will be a decrease in affordability due to higher system rates” and concluding that “the Poseidon agreement will likely make drinking water for disadvantaged households in Orange County moderately to severely less affordable. It would yield no offsetting HRW benefits as compared to the continued pursuit of alternative local water supplies and demand management options which have historically proven to be more efficient and affordable.”)

<sup>8</sup> See California Environmental Quality Act (CEQA), Cal.Pub.Res.Code Section 21000 et seq.

<sup>9</sup> Cal.Pub.Res.Code Section 21080.5(d)(2)(a) (requiring that “an activity will not be approved or adopted as proposed if there are feasible alternatives or feasible mitigation measures available that would substantially lessen any significant adverse effect that the activity may have on the environment.”)

<sup>10</sup> See California Coastal Act, Cal.Pub.Res.Code Sections 30000-30900 (Section 30210: “maximum access . . . and recreational opportunities shall be provided for all the people consistent with public safety needs



# FACT SHEET:

## Environmental Justice Impacts of the Proposed Poseidon Huntington Beach Desalination Plant

### 7. The Project Application Fails on NEPA Grounds.<sup>11</sup>

Poseidon applied for and was approved for a \$585 million Water Infrastructure Finance and Innovation Act (WIFIA) loan, which would require trigger NEPA review. A federal environmental review under NEPA is not satisfied by any CEQA review, which the Project has also not completed. CCC cannot grant Coastal Development Permits with a NEPA environmental review pending and incomplete.

### 8. The Project Is Unnecessary.

Given increases in efficiency and decoupling of population growth and water use, the Project is entirely unnecessary.<sup>12</sup> Conservation, efficiency, and recycling are far better policies for the planet, EJ Communities, and all ratepayers than fossil-fuel run, energy-intensive desalination plants using antiquated technology.

### 9. Better Alternatives Are Available.

Many superior alternatives would far better serve the community of North OC and pose far less environmental and environmental justice risks.

*For more information on this Fact Sheet, contact Andrea León-Grossmann of Azul at [andrea@azul.org](mailto:andrea@azul.org) and Scott Wilson Badenoch, Jr. Senior Mysun Foundation Clinical Fellow - UC Irvine School of Law, Environmental Law Clinic at [sbadenoc.clinic@law.uci.edu](mailto:sbadenoc.clinic@law.uci.edu)*

<sup>11</sup> See National Environmental Policy Act (NEPA) (42 U.S.C. Sections 4321 et seq.)

<sup>12</sup> See 2018 Orange County Water Reliability Study, CDM Smith, Inc. at 5-9 (concluding that "While the Poseidon Desalination Project for OC Basin could provide system reliability benefits, it is not needed for this purpose as there is sufficient local groundwater that can be used if [Metropolitan Water District of Southern California] water was interrupted for 60 days or more.")



# FACT SHEET:

## Marine Life Mortality: Entrainment, Brine and Feasible Alternatives

### 1. The proposed project would kill an enormous amount of marine life and cannot be approved as it is not the least environmentally damaging alternative.

The proposed project would require significant dredging and fill in coastal waters for project construction, which triggers the application of Coastal Act section 30233. This policy prohibits the Commission from approving an application where there are feasible less environmentally damaging alternatives. Among a list of “environmental damages” and Coastal Act violations,<sup>1</sup> Poseidon’s proposed project would result in enormous and unnecessary marine life mortality and pollution, violating the Coastal Act’s marine life protection provisions. A plethora of less environmentally damaging alternatives do exist, including less impactful size, sites and intake design. Therefore, the application for Coastal Development Permit(s) must be denied.

### 2. Poseidon’s proposed seawater intake design will perpetuate the use of open ocean intakes, which are now banned for power plants.

Poseidon first proposed a 50 million gallon a day facility co-located with the AES-Huntington power plant in 1998. Since then, the State Water Resources Control Board adopted regulations to discontinue use of “once through cooling” by coastal power plants to help rebuild marine life populations. In order to comply with these regulations, the AES - Huntington Beach power plant will stop withdrawing seawater for cooling in 2023 and marine life populations could begin to rebuild -- after decades of mortality from entrainment and impingement. However, rather than the State finally realizing the benefits from marine life population restoration, Poseidon proposes to continue the damage for the next 50 years.

According to the Santa Ana Regional Water Control Board, the facility would result in 108 million larvae entrained annually (or 296,000 larvae entrained daily) associated with the facility’s intake alone,<sup>2</sup> when there are clearly feasible alternatives to avoid the damage. And the brine disposal not only adds a new source of pollution to coastal waters, it also significantly adds to marine life mortality from entrainment in the pressurized discharge plume.

To attempt to address the extensive marine life mortality due to entrainment, Poseidon proposes to install 1mm slot wedgewire screens on the existing intake. However, these screens have been shown to, at best, minimize entrainment by less than 1 percent.<sup>3</sup>

<sup>1</sup> For example: excessive energy demand and GHG emissions, sea level rise protective devices, ESHA buffers, etc.

<sup>2</sup> Santa Ana Regional Water Quality Control Board Presentation, 2020, Summary of Comments and Responses, Impact to Planktonic Organisms. Slide available on request.

<sup>3</sup> Santa Ana Regional Water Quality Control Board, Response to Comments - Poseidon Huntington Beach Desalination Facility Order R8-2020-0005, pg. 8; available at [https://www.waterboards.ca.gov/santaana/board\\_decisions/adopted\\_orders/orders/2021/r8-2021-0011.pdf](https://www.waterboards.ca.gov/santaana/board_decisions/adopted_orders/orders/2021/r8-2021-0011.pdf)



# FACT SHEET:

## Marine Life Mortality: Entrainment, Brine and Feasible Alternatives



### 3. Poseidon's project is not consistent with the Coastal Act because less environmentally damaging alternatives exist.

When considering alternatives to the proposed project, the Coastal Act requires more than simply “minimizing the intake and mortality of marine life”, the standard used by the Regional Water Quality Control Board. The Commission must choose an alternative to “restore” marine life populations where feasible (Coastal Act 30230) and “restore” water quality where feasible (Coastal Act 30231).<sup>4</sup> There are several “feasible” alternatives to the project that would meet the objective of supplying a “local drought-proof supply of water to Orange County” while also meeting the mandate to restore marine life populations and coastal water quality.

#### 3a. The ‘No Project’ alternative is feasible.

Given that marine life mortality is proportional to the amount of water produced by a desalination project, and Coastal Act Sections 30230 and 30231’s mandates, it is important to consider whether desalination is actually needed in the region, and if so, how much. In 1998, Poseidon proposed a 50 million gallon per day (mgd) seawater desalination facility to meet purported future demands. However, since then, water demand in the Orange County region has remained relatively flat, and the Orange County Water District has developed the Groundwater Replenishment System (GWRS) that currently supplies 100 mgd of potable water for groundwater replenishment – twice the volume Poseidon was proposing. The GWRS is on track to expand by another 30 mgd soon. Whatever future demand Poseidon predicted in 1998 has failed to materialize, and official records show that trend continuing.

Further, the State Department of Water Resources requires water purveyors to prepare Urban Water Management Plans (UWMP) every five years to ensure reliable future supplies to meet predicted demand in the subsequent 25-year planning horizon. The local water wholesale agency serving Orange County, Municipal Water District of Orange County (MWDOC), published their 2020 UWMP in Spring of 2021. MWDOC determined that there were ample future supplies to meet predicted demand until 2045 without the inclusion of the Poseidon proposal, even under the worst drought conditions mandated for consideration in the UWMP.

MWDOC, like most responsible water managers, is extremely risk averse when predicting reliable future demand and water supplies. The conclusions in the 2020 UWMP were, in large part, the result of the agency’s exhaustive and data-rich “2018 Water Reliability Study” which found the Poseidon proposal the least attractive among several alternatives.

Simply put, there is no need for the Poseidon project as proposed. Nonetheless, below are examples of ‘project’ alternatives that avoid dredge and fill in open coastal waters, and the damage to marine resources that would result from permitting the proposed facility.

<sup>4</sup> Coastal Act Section 30230 provides: “Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes” (emphasis added).

Coastal Act Section 30231 provides: “The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.” (emphasis added)

# FACT SHEET:

## Marine Life Mortality: Entrainment, Brine and Feasible Alternatives



### 3b. The “Carson Project” is a feasible alternative.

The Metropolitan Water District of Southern California (MWD) is currently operating a pilot facility and finalizing plans for a full-scale potable reuse project that would be located at the LA County Wastewater Treatment Plant in Carson (“Carson Project”), nearby Orange County. Much like the GWRS in Orange County, the “Carson Project” would purify wastewater to drinking standards for recharging groundwater basins. This process completely avoids the need for an ocean water intake and the associated marine life mortality and will benefit marine water quality through decreased wastewater effluent discharge.

The most recent MWD “White Paper” shows that, of the 160 mgd produced, 60 mgd could be delivered to Orange County.<sup>5</sup> And recent project plans show that, if the State finalizes regulations for Direct Potable Reuse, the Carson Project product water could be delivered to Orange County without the need for intermittent groundwater recharge.

The Orange County Water District, the partner agency in the Poseidon proposal, has yet to finalize a system to deliver the product water from the proposed Poseidon facility, but the options considered include injecting the water into the groundwater basin. Clearly, the 60 mgd delivery of potable water from the Carson Project to Orange County for groundwater replenishment is a feasible alternative to purchasing the 50 mgd from Poseidon.

Importantly, purchasing water from the Carson Project is a “feasible alternative” that is consistent with the Coastal Act mandate to “restore” marine life populations in accordance with Coastal Act 30230 by completely avoiding the use of an open ocean intake and the associated entrainment and impingement. And by minimizing the wastewater effluent discharged to the ocean, this alternative would “feasibly restore” biological productivity and ocean water quality appropriate to maintain optimum populations of marine organisms in accordance with Coastal Act 30231 rather than adding pollution and additional marine life mortality from the discharge of brine and other pollutants (these impacts are described further in subsection 4).

### 3c. Outdoor water conservation is a feasible alternative.

Nearly 50% of water used in the region is for outdoor use, primarily landscape irrigation. Much of the reason cumulative water demand in the region has remained relatively flat, despite significant population growth, is the result of programs to reduce outdoor water use – much like those incentivized by MWDOC.<sup>6</sup>

And studies show that residential and municipal “nature based” efforts to reduce polluted runoff reaching the ocean have multiple benefits, including recharging local groundwater levels.<sup>7</sup>

Clearly these alternatives provide future opportunities for regional water reliability and are consistent with Coastal Act policies to “restore” marine life populations as well as “restore” ocean water quality for optimum marine organism populations where feasible.

<sup>5</sup> See: <https://www.mwdh2o.com/media/17015/whitepaperno2.pdf>, at Attachment 1, pg. 14 of 76

<sup>6</sup> See e.g.: <https://www.mwdoc.com/save-water/rebates/residential-rebates/>

<sup>7</sup> See e.g.: <https://safecleanwaterla.org/about/vision-mission-goals/>



# FACT SHEET:

## Marine Life Mortality: Entrainment, Brine and Feasible Alternatives



### 3d. A smaller desalination facility that uses a subsurface seawater intake is a feasible alternative.

As noted above, a smaller facility, more appropriately sized to meet regional needs would inherently reduce marine life impacts. A smaller sized facility would also be compatible with subsurface intakes that eliminate intake and mortality of marine life. Subsurface intakes also: eliminate the need for in-plant pre-filtration, which significantly reduces chemical use and discharge impacts; decreases energy demand and the carbon footprint, and; reduces operation costs.

The Independent Science and Technical Advisory Panel (ISTAP) relied on information from the Orange County Water District (OCWD), Poseidon's partner, and erred in finding "slant wells" are not technically feasible because they would withdraw freshwater mixed with the seawater withdrawal. Since then, independent studies conducted by HydroFocus, the experts used to analyze slant well feasibility for the Cal-Am Monterey proposed seawater desalination facility, show that slant wells are technically feasible, particularly for a smaller facility. And modification to OCWD's operation of the Talbert Gap seawater intrusion barrier could reduce the freshwater drawn into the slant wells – reducing the costs of slant well operation. But because the ISTAP erred in finding slant wells technically infeasible, this optional intake technology for eliminating marine life mortality was not considered in their Phase 2 economic analyses. And the Regional Board simply repeated the errors made by ISTAP. Ironically, OCWD is now studying a new seawater intrusion barrier in the basin just north of the Talbert Gap that would utilize wells similar to what the HydroFocus studies recommended.<sup>8</sup>

An economic feasibility study should be required in order to fully evaluate this alternative. The relatively minor marginal cost of replacing freshwater withdrawn in slant wells would not render a desalination facility economically unviable.

A smaller desalination facility using subsurface intake wells would "restore" marine life populations by completely eliminating marine life mortality associated with the project's intake. Further, a lower volume of discharged brine and pre-filtration chemicals would also help minimize water quality degradation and biological productivity impacts.

### 3e. Alternative sites would reduce marine life impacts associated with the intake design and are feasible.

Poseidon's own alternatives analysis for the best available project site determined two locations to be less impactful to marine life. Poseidon could reduce its entrainment by 27 to 29 million larvae. Two sites (U2 and D2) demonstrated less marine life mortality than Poseidon's predetermined site E. After a protracted dispute with Poseidon over the best available site for the open ocean intake, the Regional Board hired a third-party consultant, Dr. Peter Raimondi, a well-known expert in Empirical Transport Model (ETM)/Area of Production Foregone (APF) analyses, to analyze the open ocean intake sites.<sup>9</sup> Dr. Raimondi's analysis indicated that stations D2 and U2 had lower or comparable total entrainment as compared to Poseidon's site.<sup>10</sup>

Only through Public Records Act requests, has it come to light that the reason the alternative intake sites D2/U2 were deemed infeasible was because Poseidon claimed the time to revise its permits would cut into profits.<sup>11</sup> Poseidon has not proven through a robust, credible and well documented analysis that the loss in profits due to obtaining revised permits for the moved open ocean intake would be sufficiently severe as to render it impractical to proceed with the project. Therefore, Poseidon's use of site Station E, when sites Station U2 and D2 demonstrated less marine life mortality, is illegal.

<sup>8</sup> See: <https://www.ocwd.com/media/10290/ocwd-seawater-intrusion-webinar-presentation-master-deck.pdf> at slide 27

<sup>9</sup> Order at G-5 and G-6. See also Dr. Peter Raimondi, Approaches for the Assessment of Potential Intake Locations with Respect to Entrainment, Proposed Huntington Beach Desalination Plant (March 5, 2019) [hereinafter Raimondi Report].

<sup>10</sup> Order G-24.

<sup>11</sup> Scott Maloni (Poseidon Water), "RE: question" email (March 9, 2020).

# FACT SHEET:

## Marine Life Mortality: Entrainment, Brine and Feasible Alternatives



### 3f. A smaller intake screen size is a feasible alternative that would also greatly reduce marine life mortality.

Intake screens smaller than 1.0 mm have been used all over the United States. For example, the 25 MGD Tampa Bay seawater desalination plant – formerly Poseidon Water’s project before ownership was transitioned to the City of Tampa Bay due to Poseidon Water’s inability to meet performance standards<sup>12</sup> – is co-located with the Big Bend Power Plant and uses the power plant’s ocean-derived cooling water as the desalination source water.<sup>13</sup> The Big Bend Power Plant withdraws 1.4 billion gallons per day using a 0.5 mm *fine mesh screen*.<sup>14</sup> According to the Water Board’s report, “0.5 mm traveling water screens used in conjunction with a fish return system reduced impingement and entrainment of fish eggs and larvae by over 80 percent.”<sup>15</sup>

### 4. The proposed plant’s ocean discharge will also unnecessarily degrade water quality and kill marine life.

The desalination of seawater to make drinking water produces hyper-saline brine mixed with chemicals used to reduce clogging and clean desalination pre-filtration systems and membranes. Regardless of the method of disposal, brine discharges degrade water quality and impact habitat. However, by utilizing the best available technology, such as co-mingling brine with wastewater, water quality and habitat impacts can be minimized. Importantly, the above-mentioned alternatives would further reduce or eliminate marine life impacts associated with brine discharges. For example, facilities that use subsurface intakes need less and sometimes no chemical additives to remove solids to reduce membrane fouling and fewer cleaning chemicals, thereby reducing water pollution.<sup>16</sup>

## Conclusion

The Commission must deny the CDPs because there are clearly alternatives that avoid marine life impacts and construction related dredge and fill. Those alternatives are feasible and the alternatives are consistent with Coastal Act policies to restore marine life populations and water quality.

For more information on this Fact Sheet, please contact Mandy Sackett at [msackett@surfrider.org](mailto:msackett@surfrider.org), Joe Geever at [geeverjoe@gmail.com](mailto:geeverjoe@gmail.com), and Sean Bothwell at [sbothwell@cacoastkeeper.org](mailto:sbothwell@cacoastkeeper.org).

<sup>12</sup> <https://www.water-technology.net/projects/tampa/>; <https://corpwatch.org/article/us-wave-desalination-proposals>; <https://www.enr.com/articles/31538-tampa-bay-water-reaches-settlement-with-desalination-plant-contractor>.

<sup>13</sup> State Water Resources Control Board, Final Staff Report Including the Final Substitute Environmental Documentation addressing DESALINATION FACILITY INTAKES, BRINE DISCHARGES, AND THE INCORPORATION OF OTHER NON-SUBSTANTIVE CHANGES, p. 69 (May 6, 2015) [Hereinafter OPA SED], available at [https://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/resolutions/2015/rs2015\\_0033\\_sr\\_apx.pdf](https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2015/rs2015_0033_sr_apx.pdf).

<sup>14</sup> Id; (AldenLabs 2014).

<sup>15</sup> Id; (AldenLabs 2014; WateReuse 2011a; U.S. EPA 2011).

<sup>16</sup> Missimer, T.M., et.al., Subsurface intakes for seawater reverse osmosis facilities: Capacity limitation, water quality improvement, and ecofiscalnomics. Elsevier Desalination 322 (2013) 37–51.





# FACT SHEET:

## Impacts to Marine Protected Areas

### 1. Since 2012, California has maintained one of the world's largest science-based network of marine protected areas (MPAs), facilitated by the landmark Marine Life Protection Act (MLPA).<sup>1</sup>

Stretching from Oregon to the US/Mexico border, this network of 124 protected areas safeguards California's iconic habitats and productive fisheries. The State of California invested more than \$16 million in MPA monitoring projects from 2007 to 2018 alone, which has translated in some cases to more than a doubling of profit to regional fisheries.<sup>2</sup>

The MPA network is widely celebrated as a successful approach to maintaining California's biodiversity and fisheries.<sup>3</sup> Hundreds of participants at the Department of Fish and Wildlife's Decadal Management Review meetings in late 2021 expressed overwhelming interest in supporting ongoing management of the network. Targeted species across the state have increased in abundance and size since the network was established due to its connectivity-driven approach to management.<sup>4</sup>

### 2. Mega-Seawater Desalination plant operations like the proposed Poseidon Huntington Beach Desalination plant threaten the basic science and intent behind MPAs.

California's MPAs were founded on size and spacing guidelines based on typical larval dispersal distances and fishery species population dynamics in order to optimize conservation and economic outcomes. Open ocean intakes and brine discharge associated with desalination plants drastically compromise this approach by entraining species in their larval stages. Desalination plants sited outside, but adjacent to MPA boundaries have the potential to reduce larval connectivity between protected areas by removing larvae from the ecosystem. This is highly likely to compromise the effectiveness of the broader MPA network because these areas were explicitly designed to function as an interconnected system.

### 3. Nine marine protected areas exist within 25 miles of the proposed Poseidon Huntington Beach Seawater Desalination Plant and would be subject to adverse impacts over the 50-year operating life of the facility.

MPAs are classified by their levels of protection of biodiversity, with State Marine Reserves (SMRs) constituting the highest level of protection by prohibiting the removal of all living marine resources within their boundaries. Rooted in the MLPA goal to "sustain, conserve, and protect marine life populations," and to "ensure that the state's MPAs are, managed to the extent possible, as a network," MPA Guidelines were developed by a Science Advisory Team and include a recommendation to place MPAs within 31 to 62 miles of one another in order to facilitate larval dispersal and contribute to the replenishment of fished populations.<sup>5</sup>

Poseidon's proposed desalination facility would be within 15 miles of the Laguna Beach State Marine Reserve and 50 miles from Point Dume Marine Reserve – both highly protected areas. Poseidon's desalination plant will intake approximately 106 million gallons of ocean water per day which, according to the Santa Ana Regional Water Quality

<sup>1</sup> Marine Life Protection Act, as amended July 2004, Fish and Game Code Sections 2850-2863, available at [http://www.dfg.ca.gov/marine/pdfs/mlpa\\_language.pdf](http://www.dfg.ca.gov/marine/pdfs/mlpa_language.pdf)

<sup>2</sup> Samantha Murray, Tyler T. Hee, A rising tide: California's ongoing commitment to monitoring, managing and enforcing its marine protected areas, Ocean & Coastal Management, Volume 182, 2019, 104920, ISSN 0964-5691

<sup>3</sup> Marine Protected Area Decadal Management Review Community Meetings: Key Themes Summary, January, 2022

<sup>4</sup> Samantha Murray, Tyler T. Hee, A rising tide: California's ongoing commitment to monitoring, managing and enforcing its marine protected areas, Ocean & Coastal Management, Volume 182, 2019, 104920, ISSN 0964-5691

<sup>5</sup> California Marine Life Protection Act Master Plan for Marine Protected Areas, revised draft January 2008, available at <http://www.dfg.ca.gov/marine/pdfs/revisedmp0108.pdf>



# FACT SHEET:

## Impacts to Marine Protected Areas

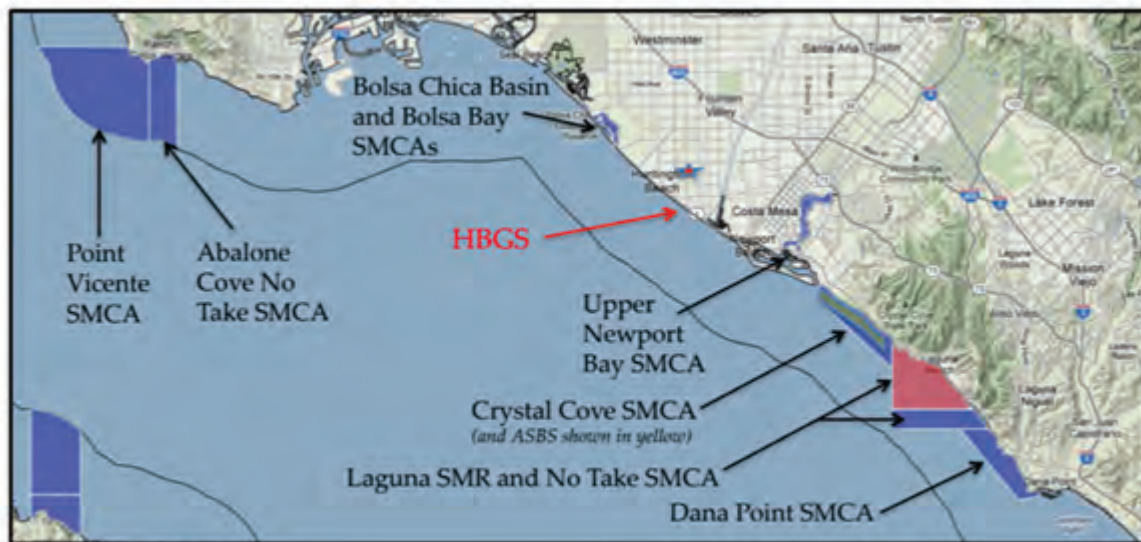


Image credit: NRDC

Control Board, puts 108 million organisms at risk of entrainment for every year during the 50-year operating life of the facility (this is likely an underestimate as numbers are based on outdated and underestimated intake volumes). All of these constitute individuals from potentially targeted species which cannot reach maturity and contribute to connectivity of California's MPA network.

#### 4. The Coastal Commission Can Protect MPAs by Adhering to the Coastal Act

The Coastal Act safeguards MPAs and ecological connectivity. Coastal Act Section 30230 states that: "Marine resources shall be maintained, enhanced, and, where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes."

Coastal Act Section 30231 also states that:

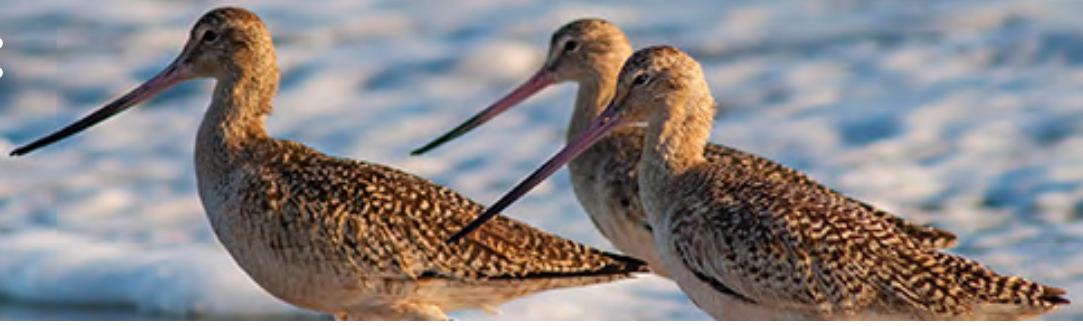
"the biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of wastewater discharges and entrainment..."

Although designated under separate statute (MLPA), MPAs are designed to address similar ecosystem and species protection goals as Coastal Act Sections 30230 and 30231. Both seek to sustain the biological productivity of coastal waters and to protect natural diversity and abundance of marine life. The Commission must safeguard healthy populations of all species and provide special protection to MPAs (which constitute areas of special biological or economic significance per Coastal Act Section 30230) by acting on the basic scientific principles that maintain the integrity of the MPA network.



# FACT SHEET:

## Impacts to Marine Protected Areas



### 5. The Commission recently found PG&E's proposed seismic survey and offshore activities near Diablo Canyon to be inconsistent with Section 30230 of the Coastal Act due to potential for impacts to nearby MPAs.

Staff outlined this key Coastal Act consideration in the decision's adopted findings which reads:

"Section 30230 of the Coastal Act requires, in part, that special protection be given to areas and species of special biological significance. Given the collaborative stakeholder process and detailed scientific evaluation that informed the designation of the Point Buchon State Marine Reserve, Point Buchon Marine Conservation Area, and White Rock State Marine Conservation Area all three of these MPAs are considered to support areas and species of special biological significance. The Commission must therefore find that the proposed project provides all three areas with special protection. Given all of the project's expected impacts, described above, the proposed use of high-energy air guns in the nearshore and offshore waters adjacent to the Point Buchon MPAs clearly does not provide these areas with special protection. The Commission therefore finds that the proposed project is inconsistent with Section 30230 of the Coastal Act."<sup>6</sup>

The proposed project will impact nine MPAs near Huntington Beach with potential population level effects and is therefore inconsistent with the Coastal Act.

*For more information on the Fact Sheet, please contact Laura Walsh at [lwalsh@surfrider.org](mailto:lwalsh@surfrider.org) and Mandy Sackett at [msackett@surfrider.org](mailto:msackett@surfrider.org)*

<sup>6</sup> Adopted Findings on Combined Consistency Certification and Coastal Development Permit Application E-12-005, 2013, California Coastal Commission, available <https://www.coastal.ca.gov/meetings/mtg-mm13-1.html>



# FACT SHEET:

## Mitigation for Extensive Marine Life Mortality resulting from the Operation of the Proposed Poseidon Huntington Beach Desalination Plant

### 1. The Regional Board's approved Mitigation Plan for Poseidon's Huntington Beach Desalination Plant is inadequate to address the extensive marine life mortality the plant will incur over its 50 year operating life.

The facility would utilize the existing AES-Huntington power plant open ocean intake pipeline, which is now banned for "once through cooling" by coastal power plants due to their significant adverse impacts to marine life. Poseidon's ocean intake would result in 108 million larvae entrained annually for the next 50 years and its discharge would create a highly toxic and saline 100-meter brine mixing zone hostile to marine life. The brine mixing zone would result in 23.43 acres worth of marine life killed annually in the context of wetlands productivity, also known as the area of productivity foregone (APF).

The Regional Board failed to adequately determine the Best Available Mitigation to minimize the intake and mortality of all forms of marine life. Under the Ocean Plan Amendment, mitigation shall be accomplished through expansion, restoration or creation of one or more of the following: kelp beds, estuaries, coastal wetlands, natural reefs, MPAs, or other projects that will fully mitigate for intake and mortality of all forms of marine life associated with the facility. In violation of that mandate, the Regional Board authorized 25 percent of Poseidon's mitigation to come from preservation through the dredging of the Bolsa Chica inlet. Notably, Coastal Commission staff warned the Regional Board in 2020 and 2021 that the mitigation credit for the dredging of the Bolsa Chica inlet had already been applied to a prior Coastal Development Permit and was not available. Staff also pointed out that preservation of habitat would not satisfy the level of mitigation required to address adverse impacts over the 50-year operating life of the facility.<sup>1,2</sup>

### 2. The project's substantial loss of marine life incurred each year of its operating life is equal to 423 acres of lost ocean productivity. The Regional Board's Mitigation Plan required Poseidon to provide 100.4 mitigation credits each year for project impacts. For the reasons described below, this results in a significant shortfall in mitigation to address adverse impacts to marine life.

There are four main mitigation shortfalls that the Coastal Commission staff has identified.<sup>3</sup>

- ◆ **Shortfall due to difference between Regional Board and CCC calculations for Bolsa Chica and Palos Verdes: Deficit of approximately 50 credits each year** (due to reliance on restoration rather than creating new wetlands).
- ◆ **Shortfall due to Poseidon's insistence on delaying mitigation for at least five to seven years after plant operations begin: Deficit of approximately 380 credits each year after first five years of facility operations** (this shortfall could be significantly worse, if Poseidon delays its mitigation even further or if its mitigation is not successful every year of its project life).

<sup>1</sup> California Coastal Commission Comments on Santa Ana Regional Water Board's Tentative Order, No. R8-2020-0005 Waste Discharge Requirements, NPDES No. CA8000403 for proposed Poseidon Resources (Surfside)

<sup>2</sup> L.L.C. Huntington Beach Desalination Facility, January 21, 2020, page 2.

<sup>3</sup> California Coastal Commission Comments on Poseidon Resources Tentative Order Revisions (#R8-2021-0011, NPDES No. CA8000403, March 12, 2021, page 3.

California Coastal Commission Staff Memorandum on Poseidon Mitigation Credit Shortfall, March 2022. <https://california.surfrider.org/wp-content/uploads/2022/03/Mitigation-credit-shortfall-memo-March-2022.pptx>



# FACT SHEET:

## Mitigation for Extensive Marine Life Mortality resulting from the Operation of the Proposed Poseidon Huntington Beach Desalination Plant

- ◆ Shortfall due to lack of mitigation for an existing Coastal Act violation on the property involving unpermitted disturbance of wetlands at the project site: Deficit of at least 14 acres (see Coastal Commission staff notice of violation).<sup>4</sup>
- ◆ Shortfall due to loss of function at Bolsa Chica within the next ten to twenty years due to climate change: Deficit of approximately 50 credits per year after one or two decades.

### 3. Poseidon's proposed Mitigation Plan as approved by the Regional Board relies on stale data collected 17 years ago; A request from the Regional Board for Poseidon to provide updated data was rejected by Poseidon. The Coastal Commission must base its mitigation on an updated baseline survey that accurately assesses species and number of organisms affected every year.

Mitigation calculations are based on replacing the biological production (marine life) lost to entrainment by producing new, equivalent habitat, restoration that replaces the lost production, or other projects deemed equivalent. The State Water Resources Control Board's (SWRCB) Expert Panel recommended that "since there is a lack of entrainment data at California desalination facilities, it would be beneficial to require that studies are performed."<sup>5</sup>

The Regional Board's mitigation calculation is unsupported by substantial evidence due to the reliance on flawed 17-year-old data. The Desalination Amendment states:

"Independent baseline studies of the existing marine system should be conducted in the area that could be affected by a new or expanded industrial facility using seawater in advance of the carrying out of the development."<sup>6</sup>

No independent baseline study was conducted by Poseidon Water. Furthermore, the Desalination Amendment requires that the "ETM/APF analysis *shall be representative of the entrained species* collected using the 335 micron net."<sup>7</sup> Instead, the Regional Board allowed Poseidon to rely on the "entrainment study for the Huntington Beach Generating Station, which was conducted in 2003-2004."<sup>8</sup>

The Huntington Beach Generating Station's entrainment study was conducted 17 years ago and is not representative of the current entrained species. The entrainment study was also conducted while the AES Generating Station was in operation – and had been in operation - entraining marine life for decades. That is not the baseline in which Poseidon will be operating. Poseidon will be intaking marine life only after the AES Generating Station has stopped intaking seawater and entraining species. Therefore, the baseline analysis should account for habitat that is not impacted by the once-through cooling operations of the Generating Station. In addition, marine protected areas established in the past ten years may have increased productivity in this area.

As a result, it is likely that the Regional Board's assessment that the Plant would entrain 108 million marine life organisms annually is, at best, an understatement.

<sup>4</sup> Notice of Violation to AES Power Plant regarding Wetlands Impacts <https://california.surfrider.org/wp-content/uploads/2022/04/NOV-Letter-to-AES-10.28.14.pdf>

<sup>5</sup> Notice of Violation to City of Huntington beach regarding AES Powerplant Wetlands Impacts <https://california.surfrider.org/wp-content/uploads/2022/04/Letter-to-City-of-HB-re-AES-10.28.14.pdf>

<sup>6</sup> State Water Resources Control Board, Desalination Plant Entrainment Impacts and Mitigation, Expert Report (October 2013); available at [https://www.waterboards.ca.gov/water\\_issues/programs/ocean/desalination/docs/erp\\_final.pdf](https://www.waterboards.ca.gov/water_issues/programs/ocean/desalination/docs/erp_final.pdf).

<sup>7</sup> Cal. Wat. Code § 13142.5(d).

<sup>8</sup> Order at G-60.

<sup>9</sup> *Id.*

# FACT SHEET:

## Mitigation for Extensive Marine Life Mortality resulting from the Operation of the Proposed Poseidon Huntington Beach Desalination Plant



### **4. The Palos Verdes Offshore Reef Mitigation Project Suffers from the Fatal Flaw of Being Located in the Red Zone for DDT Contamination and is unsuitable as Mitigation for Poseidon's proposed Desalination Plant.**

The Regional Board's authorization of the Palos Verdes Offshore Reef mitigation project suffers from the fatal flaw of being located in the red zone for DDT contamination, making many of the fish the reef would produce too toxic for human consumption and the mitigation unsuitable for replacing the significant impacts to marine life from the Poseidon Plant. The red zone is located between the Santa Monica Pier and the Seal Beach Pier and includes "do not eat" warnings for five fish species and "one fish per week" warnings on seven other species. The "do not eat" species include popular sportfish such as Barred Sand Bass and Barracuda along with Black and White Croaker and Topsmelt. The "one per week" list includes most of the popular sportfish including Halibut, Kelp Bass, Rockfish and Sculpin along with Sargo and Guitarfish<sup>9</sup>. There are also too many unknown impacts including how the creation of this project could disturb and resuspend toxins in the seafloor, into the ocean.

The issue of DDT contamination was brought up in comments to Poseidon Water by the Regional Board: "There are several site constraints – e.g., sediment contamination, presence or absence of underlying rock substrate, etc. – that will limit the amount and location of additional reef placement and that will require additional review and permitting."<sup>10</sup> Poseidon Water responded by saying these issues had been covered during a State Lands Commission (SLC) Lease hearing on a much smaller 31.5-acre restoration in the area and that "The proposed Project site is not located in the Palos Verdes Superfund Site, which is about 2 kilometers away."<sup>11</sup> However, the proposed Poseidon Water restoration project is three times the size of the restoration the SLC reviewed and within the DDT red zone for fish contamination. The area outside the existing artificial reef footprint was never examined by the SLC or tested for contaminants. Without a proper analysis of the Palos Verdes Offshore Reef mitigation project, the Regional Board was not justified in permitting Poseidon Water to use the Reef as mitigation for their 50-year impacts. It would similarly exceed the Commission's authority to permit such a Mitigation Project, particularly where there are ample alternative projects to negate the need for mitigation while restoring marine life populations in compliance with Coastal Act 30233 and 30230.

### **5. The Regional Board failed to independently assess a range of feasible mitigation alternatives to address the extensive marine life mortality Poseidon's proposed desalination plant would cause; the Coastal Commission must fully mitigate any unavoidable impacts of the project.**

The Regional Water Board failed to comply with the requirements and process articulated in the Desalination Amendment within the Ocean Plan. The Regional Water Board was obligated under the Water Code to only permit ocean desalination facilities when such facilities use the best available site, design, technology, and mitigation measures feasible to minimize the intake and mortality of all forms of marine life.

Poseidon never proposed a range of feasible mitigation alternatives – instead always insisting that dredging the Bolsa Chica inlet was sufficient. When the Regional Board Members pushed back and requested additional mitigation, instead of developing a range of potential mitigation, Poseidon insisted upon an artificial reef in a known DDT zone. The Regional Board never adequately analyzed other mitigation projects.

If the Regional Board had followed the law and analyzed a range of feasible mitigation alternatives then at least two feasible mitigation alternatives would have been considered and likely required. First, Poseidon failed to consider mitigating their project by re-engineering the Bolsa Chica Wetlands to address sea level rise by restoring the wetlands to a full tidal standard instead of only a muted tidal standard.

<sup>9</sup> See <http://www.pvsfish.org/fishing/what-fish-are-safe-eat>.

<sup>10</sup> Santa Ana Regional Water Quality Control Board, COMMENTS ON POSEIDON WATER'S SUPPLEMENTAL MITIGATION DOCUMENTS FOR THE PROPOSED HUNTINGTON BEACH DESALINATION PROJECT, pg 5. (Nov. 18, 2020);

<sup>11</sup> Poseidon Surfside, Response to Regional Board's November 18, 2020 letter regarding Supplemental Mitigation documents, pg. 8 (Nov. 24, 2020)



# FACT SHEET:

## Mitigation for Extensive Marine Life Mortality resulting from the Operation of the Proposed Poseidon Huntington Beach Desalination Plant



Second, Poseidon failed to propose an artificial reef closer to the facility's impacts, including the Offshore Huntington Flats site. Locating a new artificial reef at the Offshore Huntington Flats site would have been a more ideal location for replacing the marine life lost due to Poseidon's operations, and it would have avoided the Palos Verdes DDT site. But to save cost, Poseidon never seriously considered either feasible mitigation project. And because the Regional Board did not follow the law by first analyzing a range of feasible mitigation projects, Poseidon was able to get away with less-than-best available mitigation.

### 6. Poseidon has Failed to Conduct the Required CEQA Analysis for its Proposed Mitigation

The Regional Board was required to conduct – yet failed to do – a CEQA analysis for Poseidon's mitigation projects. The Regional Board's conditional approval of the Palos Verdes artificial reef project – as well as the other "mitigation projects" critical to its finding of compliance with the Water Code section 13142.5(b) – without required environmental review violates CEQA.

As the California Supreme Court has reiterated, in order for CEQA review to "serve as an input into the decision making process," it must be completed before a project gains the kind of "bureaucratic and financial momentum" that provides "a strong incentive to ignore environmental concerns that could be dealt with more easily at an early stage of the project."<sup>12</sup> Indeed, "at a minimum an EIR must be performed before a project is approved, for "[i]f postapproval environmental review were allowed, EIR's would likely become nothing more than post hoc rationalizations to support action already taken."<sup>13</sup>

Here, there is no question that the Regional Board has committed to going forward with, and actually "approved", a CEQA-triggering "project." Indeed, the Regional Board's CEQA Addendum and Notice of Determination make that fact unmistakably clear. The Regional Board's decision to defer environmental review of the artificial reef project – again, a project that is considered by the Board as necessary to comply with the Ocean Plan Amendment – does not satisfy any of the threshold criteria for deferring the study of mitigation measures and thus constitutes an abuse of discretion.

The fact that the Regional Board came up with the hastily conceptualized artificial reef project at the eleventh-hour and then rushed to approve the project without studying its environmental effects or effectiveness – especially when it had other similar projects cited in the Discharger's Memo describing the artificial reef project to draw upon – violates the most fundamental tenets of CEQA.

The Regional Water Board violated CEQA by failing to prepare a subsequent or supplemental EIR, as required by Public Resources Code section 21166, in connection with issuance of Poseidon's Order. The Board's action violated CEQA because it required certain new mitigation requirements, the impacts of which were not evaluated and disclosed to the public in any CEQA-compliant document. By failing to evaluate and disclose these impacts and alternatives in a subsequent or supplemental EIR and deferring the requisite analysis to another agency or a future administrative process, the Santa Ana Regional Water Board illegally piecemealed and segmented the CEQA process.

The Commission must now fill the role of completing CEQA review of this change, as well as numerous other changes and changed circumstances surrounding the project before approving a coastal development permit for the project.

<sup>12</sup> CEQA Guidelines § 15378(c); *Save Tara v. City of W. Hollywood*, 45 Cal. 4th 116, 129, n.8 (2008)

<sup>13</sup> *Id.* (quoting *Laurel Heights Improvement Assn. v. Regents of University of California*, 47 Cal.3d 376, 394 (1988))

# FACT SHEET:

## Mitigation for Extensive Marine Life Mortality resulting from the Operation of the Proposed Poseidon Huntington Beach Desalination Plant

- 7. After insisting on the record to the Regional Board that other mitigation projects were 'infeasible', Poseidon submitted a last minute offer of four different mitigation alternatives to Commission staff just weeks before the agendized March 17th hearing.**

Despite insisting to the Regional Board that additional alternative mitigation proposals were 'infeasible', and just weeks before the scheduled March hearing, Poseidon proposed that the Commission consider some of them as additional mitigation thereby altering the Regional Board's approved plan. Included in Poseidon's latest 'Hail Mary' mitigation proposal<sup>14</sup> are:

- ◆ Newland Marsh
- ◆ Southern Los Cerritos Wetlands
- ◆ Upper Los Cerritos Wetlands Mitigation Bank
- ◆ Pond 20 Mitigation Bank

Then, on the evening of February 22nd, Poseidon requested a postponement of their hearing from March 17th to May 2020 followed by a press release in which Poseidon attempted to blame staff for the postponement and described their project as 'over-mitigated.'<sup>15</sup>

- 8. In considering mitigation for the proposed Huntington Beach Desalination plant, the Coastal Commission must remember that none of the mitigation it required at the Carlsbad facility has been initiated or completed; meanwhile adverse impacts to marine species continue unabated. Any additional mitigation that the Commission requires must be subject to careful environmental review and enforceable deadlines for completion with stiff penalties for failure to perform.**

As our *Carlsbad Experience – A Cautionary Tale* Fact Sheet details, Poseidon has not initiated the Marine Life Mitigation Plan it approved for the Carlsbad Plant in 2008 and is in violation of their 2019 permit for missing key deadlines including failure to begin construction.<sup>16</sup> The Commission must anticipate that the bad behavior Poseidon has demonstrated at the Carlsbad Plant will be replicated without air-tight monitoring and automatic penalties for failing to perform mitigation within the required time frame.

*For more information on this Fact Sheet, please contact Sean Bothwell at [sbothwell@cacoastkeeper.org](mailto:sbothwell@cacoastkeeper.org), Mandy Sackett at [msackett@surfrider.org](mailto:msackett@surfrider.org), Joe Geever at [geeverjoe@gmail.com](mailto:geeverjoe@gmail.com) and Susan Jordan at [sjordan@coastaladvocates.com](mailto:sjordan@coastaladvocates.com).*

<sup>14</sup> Letter from Poseidon Water to the California Coastal Commission, Marine Life Mitigation for the Huntington Beach Desalination Project, February 11th, 2022

<sup>15</sup> Poseidon Water Wave Lengths, 'Breaking News' Volume 4, No. 3, February 2022

<sup>16</sup> California Coastal Commission. Notice of Violation, Violation File No.: V-9-22-009 (Poseidon Resources Channelside L.P.) February 11, 2022.

<https://california.surfrider.org/wp-content/uploads/2022/03/NOV-Ltr-to-Poseidon-Water-2-11-22.pdf>



# **Draft CCC Memo on Mitigation Shortfall**

## **March 15th 2022**



CALIFORNIA  
**DESAL FACTS**

# DRAFT Poseidon mitigation credit shortfall

Poseidon required by Regional Board to provide 100.4 mitigation credits for each year of project impacts. Currently, four types of mitigation shortfall:

- **Shortfall due to difference between Regional Board and CCC calculations for Bolsa Chica and Palos Verdes:** Almost 50 credits each year (see Slide 2).
- **Shortfall due to delay between impacts and mitigation:** Deficit of almost 380 credits each year after first five years of facility operations (Note: assumes that Poseidon meets its proposed schedule and that all mitigation required by Regional Board is fully successful - see Slide 3).
- **Shortfall due to lack of mitigation for direct/indirect wetland impacts at project site:** At least 14 acres.
- **Shortfall due to loss of function at Bolsa Chica due to climate change:** Up to ~50 credits per year after one or two decades.



# DRAFT Comparing Regional Board credits with potential CCC credits

Site:	Acres of mitigation proposed:	Regional Board credits:	Potential CCC credits:
Inlet dredging		28	10
Fieldstone site	Up to 6	Up to 4.5	Up to 4.2
Oil pads/roads	Up to 1.2	Up to 1.2	Up to 0.84
Channel enhancements:	Up to:	Up to:	Up to:
• West MTB:	25	0.71	5.0
• Center MTB:	38	4.03	7.6
• East MTB:	62	10.3	12.4
Intertidal shelf:	Up to 23	Up to 10.5	Up to 13.8
Bolsa Chica subtotal:		59.24	53.84
Palos Verdes reef	Up to 41.3	Up to 41.3	0
Total credits:		Up to 100.54	Up to 53.84

Draft CCC credits based on prior calculation of credits awarded by CCC at Bolsa Chica.

**DRAFT Poseidon Huntington Beach - mitigation shortfall**

**Assumptions:**

- \* Based on Regional Board's determination that Poseidon's facility operations will result in need for 100.5 mitigation credits each year.
- \* Poseidon starts Bolsa Chica inlet dredging two years before starting facility operations (Year 1 below), per Regional Board requirement.
- \* Poseidon gets all other mitigation permits three years after starting operations (Year 5 below).
- \* Poseidon completes work at all mitigation sites two years later (Year 7).
- \* All mitigation sites are fully successful two years later (Year 9) and continue to be fully successful for project life.

**Result: Starting at Year 5 of operations, Poseidon would have an annual mitigation deficit of 379 credits that would last beyond the end of the facility's 50-year operating life.**

Year:	Event:	Annual marine life impact (credits needed each year):	Mitigation credits for dredging Bolsa Chica inlet:	Mitigation credits for all other Bolsa Chica mitigation projects:	Mitigation credits for Palos Verdes artificial reef:	Sum of each year's impacts (-) and credits (+):	Cumulative impacts versus cumulative credits:
1	Receive all required permits, purchase agreement, completes financing, starts facility construction, and starts Bolsa Chica inlet dredging.	0	28	0	0	28	28
2	2nd year of facility construction	0	28	0	0	28	56
3	Start of desal operations	-100.5	28	0	0	-72.5	-16.5
4		-100.5	28	0	0	-72.5	-89
5	Obtain mitigation permits, start mitigation construction	-100.5	28	0	0	-72.5	-161.5
6		-100.5	28	0	0	-72.5	-234
7	Complete all mitigation construction	-100.5	28	0	0	-72.5	-306.5
8		-100.5	28	0	0	-72.5	-379
9	All mitigation fully successful	-100.5	28	31.2	41.3	0	-379
10	Continued operations and successful mitigation	-100.5	28	31.2	41.3	0	-379
11		-100.5	28	31.2	41.3	0	-379
12		-100.5	28	31.2	41.3	0	-379
13	<b>Total impacts and credits after 10 years operation</b>	<b>-1005</b>					<b>-379</b>

**Note:** This 379 credit deficit would continue throughout remaining life of project. The deficit would be even greater if any of the mitigation sites are not fully successful during any given year (likely) and/or if the Commission assigns fewer credits than the Board for any of these mitigation options (likely).



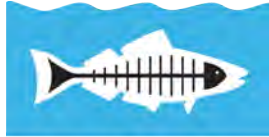


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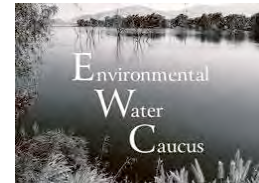
# NGO Opposition Letter



RESIDENTS FOR RESPONSIBLE DESALINATION



Heal the Bay





*Letter to Governor Newsom, et al.*

*Re: Brookfield/Poseidon Huntington Beach Desalination Project – OPPOSE*

April 10, 2019

The Honorable Gavin Newsom  
Governor, State of California  
c/o State Capitol, Suite 1173  
Sacramento, CA 95814

E. Joaquin Esquivel, Chair  
State Water Resources Control Board  
1001 I Street, 24<sup>th</sup> Floor  
Sacramento, CA 95814

Dayna Bochco, Chair  
California Coastal Commission  
45 Fremont Street #2000  
San Francisco, CA 94105

Eleni Kounalakis, Chair  
California State Lands Commission  
100 Howe Avenue, Suite 100-South  
Sacramento, CA 95825

William Ruh, Chair  
California Regional Water Quality Control  
Board  
Santa Ana Region  
3737 Main Street, Suite 500  
Riverside, California 92501-334

**RE: Brookfield/Poseidon Huntington Beach Desalination Project – OPPOSE**

Dear Governor Newsom and Honorable Chairpersons:

We write in opposition to the Brookfield/Poseidon Huntington Beach seawater desalination facility as currently proposed (Project). Our organizations and our hundreds of thousands of members are dedicated to advancing freshwater sustainability, consumer protection, environmental justice, and coastal and marine conservation in California. Upcoming decisions regarding the Project are of precedential importance as California considers how to make its water supply more safe, resilient, equitable, and cost-effective into our collective long-term future. We oppose the Project as proposed because it is not consistent with these goals, and instead would:

- (1) Impose significant and unnecessary costs on Orange County water districts and ratepayers;
- (2) Set back California's efforts to advance climate-smart water policy;
- (3) Fail to alleviate reliance upon, or impacts to, freshwater ecosystems, including the Bay-Delta; and
- (4) Fail to comply with California law and regulations that govern seawater desalination facilities.<sup>1</sup>

We should be clear that we remain open to the use of seawater desalination as a “last resort” element of a well-planned local or regional water supply portfolio that prioritizes investment in multi-benefit, cost-effective, climate-smart supplies. As explained

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<sup>1</sup> Detailed information in support of these arguments is available in a separate Appendix.

by Stanford’s Water in the West Program, sustainable seawater desalination projects are those that “are smaller; that provide supply to meet a specific, clear local demand; that are located away from sensitive and valuable marine areas; and that are powered by renewable energy sources.”<sup>2</sup> For example, the proposed Monterey Peninsula Water Supply Project,<sup>3</sup> which includes a modestly-sized desalination facility as part of a portfolio of investments, follows many of the recommendations our organizations have put forth, such as prioritizing lower-impact water resources, seeking to “right-size” the facility, and using subsurface intakes in order to comply with the State Water Board’s Ocean Plan Desalination Amendment.

By contrast, large-scale seawater desalination facilities in California will have significant economic, energy, and opportunity costs that rarely justify their benefits. It would be far too easy for an expensive and inefficient large-scale facility to become a stranded asset – or, worse, an inescapable long-term liability – for local water districts and communities at the expense of more affordable, resilient, and environmentally sound alternatives.

We also reiterate our support for a rigorous regulatory process that ensures seawater desalination facilities are sited, scaled, and designed to meet demonstrated needs and to incorporate “best available” technologies that avoid or minimize adverse impacts on California’s productive coastal and marine ecosystems. At minimum, proposed facilities must comply with the State Water Resources Control Board’s 2015 regulations governing seawater desalination facilities and brine disposal (“Desalination Policy”). They should also use innovative designs and technologies, such as the use of renewable energy to power 100% of their operations; variable production schedules that allow facilities to take advantage of less expensive electricity rates at certain times of day; and sub-surface intakes to minimize marine life impacts, in contrast to open ocean intakes, the use of which is contrary to long-standing California policy and barred from use in other contexts.

After reviewing permit application materials and other documents associated with the proposed Project, as well as claims made by the Project’s agents and lobbyists, we believe the Project is not compatible with the common-sense approaches, policies, and regulations that California has established to guide its water investments and, more specifically, to guide the introduction of seawater desalination into the state’s water supply portfolio.

For these reasons, we urge you to deny the Project as proposed pursuant to your respective authorities. California should be showing the United States and the world how it will champion innovative water solutions, rather than enabling the Project’s proponent to lock Californians into long-term dependence on a project that is more costly than the alternatives and based on the use of outdated, harmful, and unsustainable technology.

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<sup>2</sup> Leon Szeptycki, et al., *Marine and Coastal Impacts of Ocean Desalination in California* (Water in the West, Center for Ocean Solutions, Monterey Bay Aquarium, The Nature Conservancy, May 2016), available at <http://stanford.io/2axdXE7>.

<sup>3</sup> See Monterey Peninsula Water Supply Project, <https://www.watersupplyproject.org/>.



*Letter to Governor Newsom, et al.*

*Re: Brookfield/Poseidon Huntington Beach Desalination Project – OPPOSE*

Sincerely,

Sean Bothwell  
Executive Director  
California Coastkeeper Alliance

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Leslie Tamminen  
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*Letter to Governor Newsom, et al.*

*Re: Brookfield/Poseidon Huntington Beach Desalination Project – OPPOSE*

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February 11, 2022

Via Electronic Mail [Tom.Luster@coastal.ca.gov](mailto:Tom.Luster@coastal.ca.gov)  
[HuntingtonBeachDesalComments@coastal.ca.gov](mailto:HuntingtonBeachDesalComments@coastal.ca.gov)

Mr. Tom Luster  
Senior Environmental Scientist  
California Coastal Commission  
455 Market Street, Suite 300  
San Francisco, CA 94105

Re: Poseidon Resources, LLC; Seawater Desalination Project at Huntington Beach; Application for Coastal Development Permit; Appeal of Coastal Development Permit; 21730 Newland Street, Huntington Beach

Dear Mr. Luster and Honorable Commissioners:

We submit these comments to you on behalf of California Coastal Protection Network, California Coastkeeper Alliance, the Orange County Coastkeeper and the Surfrider Foundation concerning the Commission's review of the coastal development permits ("CDPs") sought by Poseidon Resources, Inc. for the Seawater Desalination Project at Huntington Beach ("Project").

If approved and constructed, the massive Poseidon Project will become the second-largest marine predator along California's 1,100-mile coastline.<sup>1</sup> The Project's open-water intakes will kill 108 million<sup>2</sup> fish larvae, eggs, and invertebrates each year, with dramatic impacts to miles of coastline that include Marine Protected Areas (MPAs). Its brine will pollute the habitat of surviving wildlife by increasing salinity and other chemical pollutants. The energy-intensive desalination process will result in greenhouse

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<sup>1</sup> The current largest marine predator, the Diablo Canyon Power Plant in San Luis Obispo County, will be taken offline in 2025. (<https://www.slocounty.ca.gov/Departments/Planning-Building/Department-News-Announcements/Diablo-Canyon-Nuclear-Power-Plant-Decommissioning.aspx>.)

<sup>2</sup> This number was presented in the Power Point presentations given during at the Santa Ana Regional Water Quality Control Board proceedings.



Mr. Tom Luster  
California Coastal Commission  
February 11, 2022  
Page 2

gases that exacerbate sea-level rise and coastal hazards while adding the electrical load equivalent of 38,732 homes to the grid.<sup>3</sup> The Poseidon Project is also unnecessary, considering North Orange County's demonstrated water demand, and unnecessarily expensive when compared to other methods of ensuring sustainable water supplies, such as conservation, recycling, or stormwater capture. Designed only as a "community facility" instead of International Building Code Risk Category IV<sup>4</sup> "critical infrastructure," the Project cannot even ensure its availability as an emergency water supply. On behalf of thousands of California resident members who treasure California's coastal resources, we urge you to reject this harmful Project, once and for all.

The Project was first considered by the Commission in 2006 and again in November 2010 pursuant to appeals of the CDP issued by the City of Huntington Beach. In response, the Commission adopted findings of Substantial Issue concerning the Project's compliance with Huntington Beach Local Coastal Program ("LCP") policies related to protection of marine life, water quality, protection of environmentally sensitive habitat areas ("ESHA"), energy use, public services, protection against seismic events and liquefaction, and whether the Project met LCP mitigation requirements. Yet, 15 years since the first appeal was filed and the Commission found substantial issues, Poseidon has failed to remedy the problems.

In November of 2013, Commission Staff prepared a detailed staff report.<sup>5</sup> The Report determined that, as initially proposed, the Poseidon Project violated numerous provisions of the Coastal Act and the LCP. In addition to the magnitude of impacts to marine wildlife, the Staff Report found that the high salinity of effluent discharge would harm coastal waters and marine life populations. Further, the Staff Report found the Project site is subject to a multitude of significant coastal and geological hazards, including floods, tsunamis, surface fault rupture, ground movement, and liquefaction. Accordingly, Staff recommended approval of the Project only if strictly conditioned not to harm marine life through intakes or effluent; if reconfigured with a 100-foot buffer from wetlands and other mitigation to prevent noise effects on endangered, threatened and sensitive species; and if redesigned to address and withstand known and anticipated

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<sup>3</sup> Powers Engineering, Assessment of Energy Intensity and Greenhouse Emissions of Proposed Poseidon Huntington Beach Desalination Plant – 2022 Update Report, January 19, 2022 p. 13, [https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022\\_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf](https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf).

<sup>4</sup> See, International Building Code Table 1604.5, Risk Category of Buildings and Other Structures, <https://www.fandr.com/wp-content/uploads/2020/07/Speaking-in-Code-August-2020.pdf>.

<sup>5</sup> Attachment 1, Coastal Commission Staff Report, Appeal No. A-5-HNB-10-225, November 2013.

coastal and geological hazards. Poseidon withdrew its application for a retained jurisdiction CDP and requested another postponement of the appeals.

On June 29, 2021, Commission Staff sent Poseidon a list of questions and areas of remaining concern and asked Poseidon to address them before deeming the application complete. Staff posed additional questions and concerns to Poseidon on August 4, 2021, and again on October 7, 2021. At that time Staff identified a “way forward,” despite Poseidon’s repeated failure to provide information necessary to evaluate the Project’s consistency with the Coastal Act and the Huntington Beach LCP and the site’s open wetlands violation.

While Poseidon publicly claims that its project has been held up by unnecessary bureaucratic red tape, it is Poseidon’s own refusal to comply with the law that is at fault. Unfortunately, our review of the CDP application for the Huntington Beach Desalination Plant reveals that Poseidon has failed to adequately modify its Project in response to concerns the Commission raised eight years ago. Nor has Poseidon removed concerns raised as recently as 2021. The Project is still too large for the demonstrated water demand, and the Applicant has failed to incorporate feasible alternatives and mitigation measures to reduce the Project’s enormous environmental footprint. If approved, the current iteration of the Poseidon Project would violate the California Coastal Act and be inconsistent with the Huntington Beach Certified LCP. Further, of importance to both public safety and consistency with the Coastal Act and the LCP, Poseidon does not propose to construct the desalination facility to Risk Category IV “critical infrastructure” standards, even though the Project is intended to supply water in the event of an emergency, which renders it critical infrastructure under the Ocean Protection Council’s 2018 *State of California Sea- Level Rise Guidance*, and thereby subject to heightened Sea Level Rise projections.

We urge the Commission to deny the Project’s CDPs.

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**I. The Coastal Commission Can and Must Use its Authority to Analyze Less Damaging Alternatives and to Impose the Maximum Feasible Mitigation Available.**

Coastal Act section 30233 only allows dredging and filling in coastal waters “*where there is no feasible less environmentally damaging alternative.*” This requirement to consider alternatives to the proposed project is also mandated under CEQA, as discussed in Section II below.

**a. The Commission Retains Authority to Consider Alternatives to Regional Board Decisions.**

Before discussing alternatives to the project, it is critical to understand that the Commission is not bound by the Santa Ana Regional Water Quality Control Board’s prior issuance of the Water Code § 13142.5(b) determination (13142.5 Determination). Regardless of the Regional Board’s primary responsibility over water quality, the Commission retains authority to require an alternative to the project under Coastal Act section 30233 to ensure the full enforcement of marine life protections articulated in Coastal Act section 30230. Further, any alternatives required could bring the project into compliance with section 30231

Chapter 5, section 30412 states:

(a) In addition to Section 13142.5 of the Water Code, this section shall apply to the commission and the State Water Resources Control Board and the California regional water quality control boards.

(b) The State Water Resources Control Board and the California regional water quality control boards are the state agencies with primary responsibility for the coordination and control of *water quality*. The State Water Resources Control Board has primary responsibility for the administration of *water rights* pursuant to applicable law. The commission shall assure that proposed development and local coastal programs shall not frustrate this section. The commission shall not, except as provided in subdivision (c), modify, adopt conditions, or take any action *in conflict* with any determination by the State Water Resources Control Board or any California regional water quality

control board in *matters relating to water quality or the administration of water rights*.

*Except as provided in this section, nothing herein shall be interpreted in any way either as prohibiting or limiting the commission, local government, or port governing body from exercising the regulatory controls over development pursuant to this division in a manner necessary to carry out this division.*

(emphasis added). This delegation of authority to the Regional Board is limited to decisions concerning water quality and water rights but does not include decisions regarding marine life protection. Therefore, the Regional Board's "Section 13142.5(b) Determination" is outside the scope of Coastal Act section 30412.

First, subsection 30412 (a) provides that this section is inclusive of Water Code section 13142.5. But, aside from subsection (b), Water Code section 13142.5 regulates water quality. Coastal Act Section 30412(b) clearly articulates that the Coastal Commission shall not take any action "in conflict" with any determination by the Regional Board in "matters relating to water quality or the administration of water rights." But the Regional Board's "Section 13142.5(b) Determination" does not necessarily regulate water quality because it applies only to the seawater intake.

Water Code Section 13142.5(b) states:

For each new or expanded coastal powerplant or other industrial installation using seawater for cooling, heating, or industrial processing, the best available site, design, technology, and mitigation measures feasible shall be used to minimize the intake and mortality of all forms of marine life.

Coastal Act Section 30412 should not be read to eliminate the Commission's authority to Protect coastal resources by requiring alternatives. The Commission has authority to require modifications to what the Regional Board found was the best site for the facility, the best design (size), the best technology (subsurface intakes), or even consider and incorporate the best mitigation.

Additionally, the policy objectives in Coastal Act Section 30230 differ from the objective of Water Code Section 13142.5(b). The Water Code merely seeks to ensure "[minimization of] the intake and mortality of all forms of marine life." In contrast, Coastal Act 30230 mandates: "Marine resources shall be **maintained, enhanced**, and, where feasible, **restored**." We disagree that the Regional Board adequately enforced



Water Code section 13142.5(b). Regardless of the Regional Board decision, however, alternatives for meeting regional water reliability are available that do more than just minimize intake and mortality – the alternatives discussed below are proven and feasible ways to enhance and restore marine resources.

Finally, regarding the best technology to minimize intake and mortality, the Regional Board concluded Poseidon had provided an “identified need” for 50 million gallons of water per day (mgd). The record clearly shows that alternatives are available to ensure a reliable supply for predicted demand. Again, Coastal Act Section 30412 does not prohibit reconsideration of the “need” for 50 mgd, nor findings by the Commission that alternatives not only ensure a reliable supply to meet demands into the foreseeable future, but that those alternatives are mandated under Section 30233.

Below we document several alternatives that would “feasibly restore marine life populations” in compliance with Section 30230 rather than continue the destruction of marine life through surface screened intakes. These alternatives would also make significant improvements to ocean water quality in furtherance of Coastal Act Section 30231.

**b. The Coastal Act Requires the Commission to Consider Less Damaging Alternatives to the Project.**

The Coastal Act requires heightened protections where projects include dredge and fill in coastal waters, as proposed here.

Coastal Act Section 30233, subdivision (a) prohibits filling or dredging when less damaging alternatives exist. Specifically, the section provides, the filling or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, **“where there is no feasible less environmentally damaging alternative**, and where feasible mitigation measures have been provided to minimize adverse environmental effects.” As a preliminary matter, the Commission must utilize any feasible, less environmentally damaging alternatives to the Poseidon Project.

Section 30260 provides for the accommodation of certain developments “where new or expanded coastal-dependent industrial facilities cannot feasibly be accommodated consistent with other policies of this division.” However, this section is limited to specific types of development, none of which apply to the Project. Moreover, in order to permit the Project under this section, the Commission must make and support findings that: “(1) alternative locations are infeasible or more environmentally damaging; (2) to do otherwise would adversely affect the public welfare; and (3) adverse environmental

effects are mitigated to the maximum extent feasible.” Both sections require the Commission to incorporate all feasible mitigation if it determines alternatives are infeasible.

The Coastal Act defines “feasible” as “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.” (Coastal Act Section 30108.) Findings about feasibility must be supported. The Commission cannot simply take Poseidon at its word that a proposed alternative or mitigation measure is infeasible, without independent evidentiary support.

Finally, the Commission must keep any “public welfare” determination made under section 30260 separate from its determination about whether a particular alternative or mitigation is feasible. Even if the Commission finds the Project important to public welfare, this does not mean Poseidon is not fully capable of bearing or passing on to its consumers the full cost of appropriate alternatives or mitigation. Passing the public welfare test cannot enable mitigation avoidance.

The Project requires a dredge and fill permit to modify the existing AES intake and discharge structures, and to construct the artificial reef required to “minimize intake and mortality” as part of the Regional Board’s 13142.5(b) determination, as well as to grade on-site historical wetlands. Yet, all of the Project’s planned dredge and fill, and the resulting environmental impacts, could be avoided or dramatically minimized with feasible alternatives. These alternatives include conservation, acquiring water from the Metropolitan Water District’s proposed wastewater recycling plant in Carson, and through construction and operation of a smaller desalination facility, tailored to supply the amount of water actually needed to satisfy demand, where slant wells may be feasible. Thus, the Commission has not only the authority but the responsibility to analyze and require feasible, less environmentally damaging alternatives. Sections 30233 and 30260 of the Act require rejection of the Poseidon Project, as proposed.

**i. The Region’s Water Needs Could Be Satisfied Through Conservation or Through Construction of a Smaller Facility.**

Poseidon’s application seeks CDPs for a 50 mgd facility, but Poseidon has never demonstrated a local need for 50 mgd of desalinated water. Since around 2000, when Poseidon first proposed the project, water demand in Orange County has remained relatively flat. The Orange County Water District has successfully completed a wastewater recycling facility – the Groundwater Replenishment System (GWRS). GWRS currently supplies a local drought-proof supply of approximately 100 million mgd – twice the volume Poseidon proposes. Further, the GWRS is on track to expand

production by an additional approximate 30 mgd. The predicted shortfall for which Poseidon proposed a 50 mgd facility has not materialized.

Looking forward, the Metropolitan Water District of Orange County's 2018 Water Reliability Study demonstrated that "the need for additional water supplies for the OC Basin is fairly small," and occurs once in 20 years.<sup>6</sup> The Study concluded that a 10 percent water cutback would fill the supply gap. The Study further compared eight water reliability supply alternatives for filling a ten percent supply gap, including the Poseidon Project. The Study found that alternatives better met the District's needs. Further, the 2020 Metropolitan Water District of Orange County Urban Water Management Plan (UWMP), drafted prior to and only published after the Regional Board's conditional approval of the Project, further concluded that the region had sufficient water supplies and discussed plans to continue increasing supplies through conservation and recycling.<sup>7</sup> While seawater desalination is considered, the Plan notably does not state a need for the Poseidon Project to conclude there will be water supply reliability for the foreseeable future.

This is relevant to the Commission's review because Poseidon has never provided a good faith analysis of conservation, of recycled wastewater, or of a smaller desalination facility designed to meet the region's actual shortfall between water supply and water demand. Water conservation would require no construction, dredge, or fill in the coastal zone, and would fully eliminate impacts to ESHA, coastal wetlands, frontline communities, recreation, and marine life. It would require no armoring or fill that would later become an island. Conservation and wastewater recycling would also be significantly less impactful from a greenhouse gas standpoint.<sup>8</sup> Finally, these alternatives would have direct benefits to ocean water quality from outdoor water conservation programs that reduce polluted runoff, as well as wastewater recycling benefits of significantly limiting wastewater treatment plant effluent discharge to the ocean – all benefits required under Coastal Act Section 30231.

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<sup>6</sup> <https://www.mwdoc.com/wp-content/uploads/2019/01/OC-Water-Reliability-Study-2018-Briefing-December-12-Revision.pdf>.

<sup>7</sup> MWDOC 2020 Urban Water Management Plan, [https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/MWDOC-2020-UWMP\\_2021.06.02.pdf](https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/MWDOC-2020-UWMP_2021.06.02.pdf)

<sup>8</sup> Powers Engineering, Assessment of Energy Intensity and Greenhouse Emissions of Proposed Poseidon Huntington Beach Desalination Plant – 2022 Update Report, January 19, 2022 pp. 9-10, [https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022\\_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf](https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf).



Compared to the Project, a smaller desalination facility would reduce construction impacts, such as dredge and fill, and associated impacts to wetlands, ESHA, and beach access. Importantly, the proposed surface intake with wedgewire screens would only reduce entrainment by one percent or less than a similar volume from continued use of the now-outlawed cooling water intake.<sup>9</sup> A facility producing less than 50 mgd would need to process far less water through its intakes, thereby reducing the facility's impact on marine life through entrainment and impingement. A smaller facility could potentially avoid entrainment and impingement altogether by feasibly incorporating slant wells or other subsurface intake technology. Less desalination would also mean less brine: a smaller facility would discharge less hypersaline brine into coastal waters, thereby reducing water quality, marine life, and recreational impacts. Operation of a smaller facility would also limit the electricity demand of the desalination facility, thereby reducing its greenhouse impacts and contribution to future sea-level rise that endangers coastal resources. Importantly, subsurface intakes would significantly reduce energy demand because the natural filtration eliminates the need for costly and energy intensive in-plant pre-filtration.

**ii. The Carson Project Is a Feasible Alternative that Would Reduce Project Impacts.**

The Metropolitan Water District (MWD) is currently planning a Potable Reuse project on the site of the Los Angeles County Wastewater Treatment Plant (WWTP) in Carson ("Carson Project"). The Carson project would provide approximately 150 mgd, or approximately 160,000 acre feet per year (afy) for regional distribution.<sup>10</sup> The most recent 2020 MWD "White Paper" shows approximately 60 mgd could be "feasibly" delivered to Orange County for groundwater basin recharge – more water than the 50 mgd Poseidon Project would produce.<sup>11</sup> The Carson project would meet OCWD's claimed need for a drought-proof supply of potable water.

Importantly for Coastal Act section 30233 compliance, the Carson Project could feasibly deliver recharge water for the Orange County Basin while eliminating dredge and fill around the proposed Poseidon Project's intake and discharge structures. Because it would eliminate intake and mortality of marine life, it would eliminate dredge and fill at the site of the proposed artificial reef mitigation project. The Carson Project would

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<sup>9</sup> Santa Ana Regional Water Quality Control Board Staff Report, July 30, 2020, p. 11, [https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/Regional%20Board%20Poseidon\\_Staff\\_Report\\_July\\_30,2020.pdf](https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/Regional%20Board%20Poseidon_Staff_Report_July_30,2020.pdf).

<sup>10</sup> See, <https://www.eenews.net/articles/could-la-water-recycling-be-a-miracle-for-parched-west/>.

<sup>11</sup> See, Attachment 4, Regional Recycled Water Program: Institutional and Financial Considerations, White Paper 2, October 13, 2020, p. 12.

further improve ocean habitat through reduced ocean discharges from the Carson WWTP. For these reasons, the Carson Project is a feasible alternative that is consistent with Coastal Act sections 30230 and 30231.

Coastal Act Section 30231 provides, “The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health *shall be maintained and, where feasible, restored* through, among other means, *minimizing adverse effects of waste water discharges and entrainment*, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.” (emphasis added.) In contrast to the proposed desalination facility, the Carson Project will feasibly “restore” water quality for both marine life and human health by “minimizing adverse effects of wastewater discharges and entrainment.” Likewise, in contrast to the proposed project, the “Carson Project” complies with the Coastal Act Section 30230 mandate that “Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.” The Commission should note that the existing cooling water intake will be discontinued in 2023, which would help “restore” marine life populations – if not for the proposed plan to re-purpose the structures for Poseidon’s continued use.

The Commission must review the Carson Project as a less-damaging alternative water supply to the Project. Only after the Commission has determined that there are no “less environmentally damaging alternatives,” may it move to the next step of the inquiry, conditioning the Project on minimizing the impacts of dredge and fill through mitigation. Less damaging and feasible alternatives to the Project exist, and we urge the Commission to deny the CDPs for this harmful Project.

### **iii. A Smaller Desalination Facility is Feasible.**

Achieving reliable water supplies into the foreseeable future does not require the Poseidon proposed 50 mgd project. Further, although we disagree with the analyses and conclusions in the Regional Board’s “13142.5(b) Determination” regarding “identified need” and the feasibility of slant well intake technology, the heightened standards for marine life protection in Coastal Act section 30230 mandate a different analysis and conclusion by the Commission. A smaller desalination facility sited and designed to use

subsurface wells for withdrawing source water is feasible and must be required under the Coastal Act policies.

The Regional Board staff analyses concluded that slant wells were “technically infeasible.”<sup>12</sup> This was based on the ISTAP Phase 2 report.<sup>13</sup> But these conclusions were based on information supplied by the Orange County Water District (OCWD), Poseidon’s partner in the proposed “public-private-partnership” (PPP) proposal. OCWD claimed that withdrawal of more than 1,000 afy of freshwater into the slant wells was unacceptable.<sup>14</sup> Closer scrutiny shows that OCWD’s objection to freshwater withdrawal into slant wells was primarily based on the cost of replacing that water.<sup>15</sup> OCWD’s conclusion regarding freshwater withdrawal was: “Not only would this interfere with the operation and benefits of OCWD’s Talbert Seawater Barrier, the volume of extracted groundwater would need to be accounted for in OCWD’s annual water budget, meaning it would need to be balanced by some combination of increased replenishment water or reduced pumping – which would be a substantial financial impact to OCWD and its ratepayers.”<sup>16</sup> While the record shows that OCWD was primarily concerned about the “cost” of freshwater withdrawal, neither the ISTAP nor the Regional Board conducted the analysis necessary to support a conclusion of economic feasibility.

Importantly, a report provided by HydroFocus, the hydrogeologist experts who conducted the CalAm-Monterey slant well analyses, found that the reports prepared by Geosyntec for Poseidon needed to be calibrated with physical data for reliability.<sup>17</sup> Further, the HydroFocus 2 report showed that if OCWD modified the volume of water injected into the Talbert Gap seawater intrusion barrier, and added slant wells for seawater desalination source water, the volume of freshwater withdrawn could be significantly reduced.<sup>18</sup> On behalf of Poseidon, Geosyntec responded that the HydroFocus modeling showed the freshwater withdrawal would still exceed the 1000 afy economic threshold asserted by OCWD. Again, importantly, neither ISTAP nor the Regional Board conducted an economic feasibility analysis. It should be noted that subsurface intakes can significantly reduce energy demand because they source water filtration that is needed from expensive and energy intensive in-plant pre-filtration

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<sup>12</sup> Attachment 5, Santa Ana Regional Water Quality Control Board, Poseidon Staff Report, July 30, 2020, p. 4.

<sup>13</sup> Ibid.

<sup>14</sup> Attachment 6, Letter from OCWD to Regional Board, May 18, 2018.

<sup>15</sup> Attachment 6, p. 2.

<sup>16</sup> Ibid.

<sup>17</sup> See Attachment 7, HydroFocus Report, March 10, 2020.

<sup>18</sup> Ibid.



systems – and this benefit translates to both construction and operation costs associated with screened surface intakes.

Further, the Geosyntec response to the 2020 HydroFocus Report<sup>19</sup> concluded that a 25 mgd seawater intake through slant wells would withdraw 1120 afy of freshwater – a small marginal increase above the OCWD self-determined 1000 afy threshold. A 25 mgd seawater intake volume could produce approximately 12 mgd of potable water, only approximately 120 afy over OCWD’s arbitrary 1000 afy threshold.

Given that the 2020 MWDOC UWMP concludes water demand in the foreseeable future can be reliably met without the 50 mgd proposed facility, a 12 mgd facility is a feasible alternative.

Finally, OCWD is conducting a study to plan construction of a new seawater intrusion barrier in the Sunset Gap just north of the proposed Poseidon facility. The situation in Sunset Gap is similar to the seawater intrusion barrier in the Talbert Gap studied by HydroFocus: seawater intrusion is threatening nearby freshwater production wells. The wells constructed for this barrier could provide a reliable, drought-proof water sources.

The OCWD study includes a combination of injection wells inland of the planned barrier as well as extraction wells seaward of the planned barrier – similar to the HydroFocus 2 simulations.<sup>20</sup> OCWD plans to extract 3 mgd seaward of the proposed barrier in combination with injection 13 mgd of fresh water inland of the barrier.<sup>21</sup> Mr. Herndon from OCWD noted that the extracted water could be desalted if the salinity was low enough to make it economically feasible. He also noted that an alternative plan could be to rely solely on extraction wells in lieu of any inland injection wells -- but he did not indicate what volume would be extracted. Clearly, the water extracted from the proposed wells would be equal to or less saline than water extracted from the screened surface intake Poseidon proposes, and consequently more economically feasible.

This new study, not considered by the Regional Board “13142.5(b) Determination,” is substantiating evidence that the HydroFocus 2 report should be given substantial weight in determining the economic feasibility of alternative sized facilities utilizing subsurface intakes. Further, this study introduces a potential new site for a

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<sup>19</sup> Attachment 8, Appendix GGGGGG, Geosyntec Response to HydroFocus Report, Attachment Table 1.

<sup>20</sup> See: Seawater Intrusion Control in Orange County - Do We Need Another Barrier? (12/14/21) at <https://www.ocwd.com/news-events/events/water-webinars/>

<sup>21</sup> Id at Slide 27

desalination facility that may provide a more economical solution because it would provide source water for desalination as a by-product of seawater intrusion protection.

Finally, in regard to the “economic feasibility” analysis that has yet to be conducted, the Commission must consider the context of a proposed desalination facility with construction costs at approximately \$1.3 billion. It is difficult to imagine the additional cost of 1,000 acre feet of water per year would render the project “economically infeasible.”

For example, OCWD quoted a replacement cost of \$445 per acre foot. An annual cost would be \$445,000 per year). The annual revenue from Project water sales would be, at a conservative minimum, \$102 million ( $\$2,000 \text{ ac/ft} \times 56,000 \text{ ac/ft/yr} = \$102,000,000$  per year). Therefore, the marginal cost for replacing the freshwater withdrawn at  $\$445,000 / \$102,000,000$  would be less than half of one percent of Poseidon’s annual revenue. Poseidon would need to show that a minor cost escalation of less than one percent would “render the project unviable.”

Coastal Act Section 30233 mandates alternatives to the proposed project. A smaller desalination facility utilizing subsurface intakes is clearly a feasible alternative.

**c. The Commission Has The Duty and Authority to Impose the Maximum Feasible Mitigation Available to Protect Coastal Resources.**

The Coastal Commission retains jurisdiction and is obligated to impose the “maximum feasible mitigation available” on the Project to ensure its consistency to protect coastal resources, wildlife, and public safety, consistent with the Coastal Act and the Huntington Beach certified LCP. (Section 30260.) As proposed, the Project fails to incorporate all feasible mitigation measures to minimize its well-documented adverse effects, in violation of Coastal Act section 30233 and section 30260.

The Commission’s feasibility standard is a high bar, and it cannot be overcome simply because a proposed mitigation measure or technology is not cheap or easy. On the contrary, innovation can and should be expected of projects that will impose great environmental cost. An alternative or mitigation is not infeasible unless there is “evidence that the additional costs or lost profitability are sufficiently severe as to render it impractical to proceed with the project.” (*Citizens of Goleta Valley, supra*, 197 Cal.App.3d 1167, 1181; *Uphold Our Heritage v. Town of Woodside* (2007) 147 Cal.App.4th 587, 599.) The Coastal Act defines “feasible” in the same way as the California Environmental Quality Act (CEQA), “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic,

environmental, social, and technological factors.” (*Compare* Coastal Act Section 30108 with Pub. Resources Code § 21061.1.) Thus, CEQA case law is instructive on this issue. “[I]f the project can be economically successful with mitigation, then CEQA requires that mitigation...” (*Uphold our Heritage, supra*, 147 Cal.App. 4th at 600.) In short, the Commission should not “authorize an agency to proceed with a project that will have significant, unmitigated effects on the environment...unless the measures necessary to mitigate those effects are *truly* infeasible.” (*City of Marina v. Board of Trustees of the California State University* (2006) 39 Cal.4th 341, 368, emphasis added.) Under this standard, each potential mitigation measure is analyzed individually.

Outside the CEQA context, courts have applied more stringent definitions of feasibility. Regarding a water safety regulation claimed infeasible by industry, the Court of Appeal held, “A standard is not infeasible simply because it is financially burdensome or even because it threatens the survival of some companies within an industry [citation]. A standard is economically feasible if the costs it imposes do not ‘threaten massive dislocation to or imperil the existence of, the industry.’” (*California Manufacturers & Technology Assn. v. State Water Resources Control Bd.* (2021) 64 Cal.App.5th 266, 282-283.)

Poseidon has not demonstrated the infeasibility of Project alternatives and mitigation measures, including, but not limited to, the Carson Project, a smaller project, alternative intake locations, and slant wells. While Poseidon makes these claims, these claims do not supply substantial evidence necessary to support Commission findings. The Commission should obtain or conduct an independent economic feasibility analysis and not simply take Poseidon at its word.

During Regional Board proceedings, two alternative intake locations were identified that would reduce marine life mortality.<sup>22</sup> However, Poseidon claimed that the time it would take to relocate intakes to new locations, and the time it would take to receive permits for the changes, would cut into its profits. The very idea that a Project could be made infeasible solely because permitting agencies follow California law is absurd. Even if this absurd notion were accepted, case law is clear that reduced profits do not render a project infeasible. (*City of Marina, supra*, 39 Cal. 4th at 368, emphasis added.)

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<sup>22</sup> Santa Ana Regional Water Quality Control Board, Attachment G – Narrowing Sites, November 21, 2019, p. G1-44 and p. G1-57, <https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/Attachment%20G.1%20Narrowing%20of%20Sites%20Parts%201%20to%203.pdf>.



The Project also fails to include slant wells, which have been deemed feasible for other proposed desalination plants. When other similar projects implement particular mitigation measures, it is evidence that those measures are feasible. (*Western States Petroleum Association v. Southern California Air Quality Management District* (2006) 136 Cal.App.4th 1012, 1020 [no evidence showing that refineries could not make the same air pollution control changes one refinery made or that the cost of such changes would be prohibitive].) Poseidon has claimed slant wells to be infeasible, but the record shows that the determination of infeasibility rests on primarily economic concerns, and there are no economic feasibility analyses included. It also relies on the independent scientific technical advisory panel (ISTAP) for this conclusion<sup>23</sup>, but, notably, ***the ISTAP failed to analyze the economic feasibility of slant wells, and the process was never completed.*** Commission staff had recommended that Poseidon fund a third phase, but this phase never occurred. “Infeasible” means that the Project cannot be completed, not that it might be marginally less profitable and not that an applicant has not bothered to study a mitigation measure for a project. Unlike the Poseidon Project, the proponents of both the Cal-Am and Doheny desalination proposals studied the feasibility of slant wells and calibrated the computer modeling with test wells – a critical step missing in this CDP application.<sup>24</sup>

The CalAm and Doheny tests demonstrate that slant wells are feasible, in particular for a desalination facility that is actually designed to meet the area’s water demand.<sup>25</sup> Despite Poseidon’s claim that OCWD needs 50 mgd, the 2020 Urban Water Management Plan for the Municipal Water District of Orange County recently determined that rare demand shortfalls can be more feasibly met with alternatives to the Project.<sup>26</sup> A smaller facility designed to produce only what OCWD needs could feasibly supply seawater through slant well intakes, thereby avoiding the massive entrapment and entrainment impacts of open water intakes, as well as the maintenance concerns posed by wedgewire screens.

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<sup>23</sup> Phase 2 Report: Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach, California, ISTAP, August 2015, [https://documents.coastal.ca.gov/assets/press-releases/huntington-beach-desal/CCC-Poseidon\\_ISTAP\\_Draft\\_Phase\\_2\\_Report\\_for\\_Public\\_Review\\_8-14-15.pdf](https://documents.coastal.ca.gov/assets/press-releases/huntington-beach-desal/CCC-Poseidon_ISTAP_Draft_Phase_2_Report_for_Public_Review_8-14-15.pdf)

<sup>24</sup> Staff Report for Cal-Am Desalination Project, September 2020, p. 114 fn. 116, <https://documents.coastal.ca.gov/reports/2020/9/Th3a&4a/Th3a&4a%20Staff%20Report.pdf>.

<sup>25</sup> Staff Report for Cal-Am Desalination Project, September 2020, p. 114 fn. 116, <https://documents.coastal.ca.gov/reports/2020/9/Th3a&4a/Th3a&4a%20Staff%20Report.pdf>.

<sup>26</sup> The Municipal Water District of Orange County (MWDOC) 2020 UMWP and 2018 Reliability Study demonstrate the projected need for water can be met with alternatives. The Regional Board relied on the 2015 Urban Water Management Plan in determining the region’s water “need” for 56,000 afy.

As proposed, the mitigation incorporated into the Project is insufficient. For example, the State Water Resources Control Board acknowledges that the wedgewire screens would reduce entrainment of marine organisms by a *single percent*, or less.<sup>27</sup> This abysmal performance assumes that the wedgewire screens do not experience the same unexpected maintenance issues experienced at the Carlsbad Desalination Plant.

Other Project mitigation itself will harm wildlife. The Project will incorporate linear brine diffusers on the outfall, which themselves cause marine life mortality through shear.<sup>28</sup> In the turbulent mixing zone of a diffuser, entrained eggs, larvae and juvenile adults suffer both *impact mortality* from direct contact with the high velocity core of a diffuser jet and *turbulent shear mortality* along the edges of the turbulent mixing zone. Marine eggs, larvae, soft shelled veligers, and juvenile adults are particularly vulnerable to becoming distorted or ripped apart, particularly when the size of the affected organisms is comparable to the Kolmogorov turbulent mixing lengths.<sup>29</sup> Outfall systems can be designed to try to reduce shearing impacts on larger organisms, but the size-specific nature of shear mortality may limit these mortality reductions to larger juvenile and adult organisms. While it was previously thought that the use of linear diffusers on outfalls would reduce marine life mortality of a desalination plant by reducing entrainment caused by plant intakes, more study is needed. Linear diffusers increase the size of the turbulent mixing zone, where shear mortality occurs, shear mortality rates in and along the edge of the turbulent mixing zone are very high, and mitigation of impacts to eggs larvae, and juvenile organisms may not be possible.<sup>30</sup>

Proposed Project mitigation is also speculative. Wetland mitigation sites at Bolsa Chica will likely go underwater during the life of the Project. A recent study evaluating the sustainability of the Bolsa Chica Lowlands Restoration Project concluded, “In the long term (2060 to 2100), placement or redistribution of sediment appears to be the only remediation measure available to provide coastal salt marsh habitat under projected

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<sup>27</sup> Santa Ana Regional Water Quality Control Board Staff Report, July 30, 2020, p. 11, [https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/Regional%20Board%20Poseidon\\_Staff\\_Report\\_July\\_30,2020.pdf](https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/Regional%20Board%20Poseidon_Staff_Report_July_30,2020.pdf).

<sup>28</sup> Even documents produced in support of desalination facilities describe shear mortality. See, e.g., Dilution Issues Related to Use of High Velocity Diffusers in Ocean Desalination Plants: Remedial Approach Applied to the West Basin Municipal Water District Master Plan for Sea Water Desalination Plants in Santa Monica Bay, pp. 9-15, available at <https://www.westbasin.org/wp-content/uploads/2020/07/Brine-Diffuser-Study.pdf>.

<sup>29</sup> Id., pp. 9-15.

<sup>30</sup> Id., p. 36 [“It is not possible to both minimize jet velocity and shearing rate, while simultaneously making the Komogorov turbulent mixing lengths small relative to *all* resident water column species and life phases.]

increases in sea levels.”<sup>31</sup> The wetlands are unable to migrate inland because they are surrounded by urban development.<sup>32</sup> Figure 4-4 of the attached report shows substantial inundation of Bolsa Chica in 2060 and near-total inundation in 2100 under even minimum anticipated levels of sea level rise.

Moreover, if the Commission is inclined to approve the Project, it must be conditioned on being designed and constructed to Risk Category IV Critical Infrastructure standards. As proposed, the Project will be subject to sea-level rise, coastal flooding, and tsunami, all while being built along an active and dangerous fault line. Unless constructed to withstand geologic, coastal, and seismic hazards *while continuing to operate safely at full capacity*, the Project would run counter to several Coastal Act and LCP policies.

Poseidon has not disclosed the basis for any of its infeasibility claims, and its conclusions about slant wells are based on a *lack* of study. Thus, neither the public nor the decisionmakers can confirm whether any of the proffered alternatives or mitigation measures are truly economically infeasible. The few datasets that are cited regarding alternative locations and intakes are woefully out-of-date and, in some instances, have been superseded by studies demonstrating feasibility. Consequently, the Commission currently lacks substantial evidence supporting any infeasibility findings it makes on Poseidon’s behalf. The Commission must also remember that, even if it is able to find that a particular mitigation measure is infeasible, it does not mean that all mitigation is infeasible. It just means that other mitigation must be incorporated for that impact. Poseidon should not be allowed to claim that “maximum feasible mitigation” means “no mitigation.” Nor should Poseidon be allowed to claim under section 30260 that, because water supports the public welfare, the Project is exempt from mitigation. This is especially true, here, where mitigation costs can be passed on to end users, and where the Project is seeking public funding.<sup>33</sup> Given the gravity of the consequences of these determinations, the Coastal Commission cannot be expected to rely on Poseidon’s unsupported assertions. An independent and thorough feasibility analysis must be conducted.

Finally, we note that Poseidon has known about the environmental groups’ concerns and mitigation proposals for well over a decade by this point. Management failure on the part of a project proponent to properly anticipate and budget for these costs

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<sup>31</sup> Attachment 3, Bolsa Chica Lowland Restoration Project, Sustainable Alternatives Study Analysis, December 2021, p. ES-7.

<sup>32</sup> Id. p. 46.

<sup>33</sup> <https://voiceofoc.org/2021/12/will-poseidons-hb-desal-plant-take-state-money-away-from-low-income-housing/>



in its financial calculations and product delivery contracts is not a reason to assert that mitigation is economically infeasible. Mitigation for project impacts is as easily anticipated as any other cost of doing business on a major project, and management decisions solely in the interests of Poseidon's business plan should not provide a basis to pass the Project's enormous environmental costs on to the public or to future generations.

Regardless of the Regional Board's findings on this issue, the Commission must require conformance with the Coastal Act, require all feasible mitigation of environmental impacts, and select less-damaging alternatives.

## **II. The Commission Has the Authority and the Duty to Analyze the Environmental Impacts of the Project, and Recent Project Changes, Under CEQA.**

The Coastal Commission derives its authority under CEQA to review the CDPs from at least two sources. First, the Coastal Commission's program for reviewing and granting CDPs is a certified regulatory program that serves as a "functional equivalent" of CEQA. (Pub. Resources Code § 21080.5 (c); 14 CCR § 15251(c).) The Commission's administrative regulations require CDP application approvals to be supported by a finding that the application, as modified by any conditions of approval, is consistent with any applicable requirements of CEQA. (Section 13096.)

Second, the Commission is a responsible agency for the Project under CEQA, although the City of Huntington Beach and the State Lands Commission have served as the lead agencies for environmental impact report (EIR) preparation. (14 CCR § 15381.) Because the Commission must take discretionary action regarding the Poseidon Project's CDPs, it must comply with CEQA. While CEQA permits a responsible agency to rely on a lead agency's CEQA document, the Commission complies with CEQA "by considering the EIR or negative declaration prepared by the Lead Agency and by reaching its own conclusions on whether and how to approve the project involved." (14 CCR § 15096(a).) The Commission retains responsibility for mitigating or avoiding the direct or indirect environmental impacts of the portions of the project that approves. (14 CCR § 15096(g)(1).)

CEQA's primary purpose is to ensure that the environmental consequences of an action are disclosed to the public and to agency decisionmakers before that action is taken. Put another way:

The CEQA process is intended to be a careful examination, fully open to the public, of the environmental consequences of a given project, covering the entire

project, from start to finish. This examination is intended to provide the fullest information reasonably available upon which the decision makers and the public they serve can rely in determining whether or not to start the project at all, not merely to decide whether to finish it. The EIR is intended to furnish both the road map and the environmental price tag for a project, so that the decision maker and the public both know, before the journey begins, just where the journey will lead, and how much they-and the environment-will have to give up in order to take that journey.”

(*Natural Resources Defense Council v. City of Los Angeles* (2002) 103 Cal.App.4th 268, 271.) CEQA further contains a substantive mandate that a project’s adverse environmental impacts must be avoided or reduced to the extent feasible through the incorporation of project alternatives or mitigation measures. (Pub. Resources Code § 21002.) For this reason, it is imperative that alternatives and mitigation measures not be foreclosed prior to project approval. (*Save Tara v. City of West Hollywood* (2008) 45 Cal.4th 116, 138.) Environmental review must occur prior to project approval.

**a. CEQA Requires Environmental Review of Project Changes, Including the Marine Life Mitigation Plan and the Artificial Reef.**

Although we dispute the adequacy of the Poseidon Project’s CEQA review, we acknowledge that environmental impacts for *portions* of the Project have been certified. However, no environmental review has been conducted for the Marine Life Mitigation Plan portion of the Project, which will include the construction of an artificial reef near Palos Verdes, which we have reason to believe is in relatively close proximity to DDT contamination,<sup>34</sup> among other impactful activities. Sinking debris into the ocean will undoubtedly have environmental impacts, and these impacts must be disclosed, analyzed, and fully mitigated before the Commission may approve portions of the Project reliant on the Marine Life Mitigation Plan. The reef will require transporting large quantities of quarried rock from Catalina Island, which will generate greenhouse gas and air pollution-attributable impacts from both quarrying and barge transport. There will also be cumulative impacts from the dredge and fill for the intake and discharge locations, combined with the exact same kind of activity at the artificial reef site. Environmental

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<sup>34</sup> See, e.g., <https://www.latimes.com/projects/la-coast-ddt-dumping-ground/>, <https://www.theguardian.com/environment/2021/apr/29/californias-legacy-of-ddt-waste-underwater-dump-site-uncovers-a-toxic-history>, and <https://www.smithsonianmag.com/smart-news/deep-sea-robots-kick-start-ddt-ocean-floor-clean-south-californian-coast-180977237/> (extent of dumping much larger than initially understood).

review has not been conducted for changes to the discharge structures imposed by the Santa Ana Regional Water Quality Control Board, either. That review was a narrowly focused Addendum that did not consider the direct or cumulative impacts from the artificial reef construction that they mandated as part of the “13142.5(b) Determination.”

It appears that some future review of the Marine Life Mitigation Plan may be contemplated, later, by the State Lands Commission, after Poseidon applies for the lease needed to construct the reef, but “CEQA’s informational purpose ‘is not satisfied by simply stating information will be provided in the future.’” (*Vineyard Area Citizens v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 440-41.) The information must be disclosed and evaluated, now, before approvals provide momentum that forecloses feasible alternatives or mitigation measures that may have fewer environmental risks. Approval of the Project without a thorough, *prior*, analysis of project components such as the artificial reef violates CEQA.

CEQA requires environmental review to evaluate the “whole of a project” and not simply its constituent parts when determining whether it will have a significant environmental effect. (CEQA Guidelines § 15003(h).) Separating the Marine Life Mitigation Plan and the changes to the Project discharge structures from the rest of the Project results in impermissible segmentation.

CEQA also requires that environmental documents evaluate mitigation measures – both the adverse environmental impacts caused *by* mitigation and the efficacy *of* that mitigation. (14 CCR § 15126.4; *San Joaquin Raptor Rescue Center v. County of Merced* (2007) 149 Cal.App.4th 645.) Here, neither has occurred, leaving the Commission in a precarious position. The Commission has not received any information about the reef’s potential environmental consequences, so it cannot make a decision about whether to approve the reef or how to condition it so that it complies with the Coastal Act. The same goes for other portions of the Marine Life Mitigation Plan. The Commission also lacks information of the efficacy of the Marine Life Mitigation Plan as mitigation for the Poseidon Project’s harm to marine organisms. Similarly, the Commission does not have before it environmental review of the changes to the discharge structures. Given the enormous potential of discharge shear to cause mortality of marine organisms, this information is critical. The Commission cannot determine whether the Project will actually offset its environmental harms or whether more mitigation is needed. Nor can it support its findings on these issues, as required.

While CEQA permits reliance on prior EIRs, this reliance does not extend to changes to a Project that occur between EIR certification and the grant of a new discretionary approval, when those changes and their impacts were not analyzed in the certified EIR. (Pub. Resources Code § 21166.) Subsequent or supplemental



environmental review must occur when changes to a Project necessitate revisions to the EIR for it to retain relevance and accuracy. (14 CCR §§ 15162, 15163.) In particular, CEQA requires preparation of subsequent environmental review when:

- (1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
- (2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
- (3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:
  - (A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
  - (B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;
  - (C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
  - (D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

(14 CCR § 15162 (a).)

Substantial changes have been incorporated into the Project, the circumstances under which the Project is being evaluated have changed, and new information of

substantial importance has been developed since the Project's last relevant environmental review. In particular, the Project now proposes mass grading on a toxic site to remove existing berms to build the foundation 14 to 16 feet higher – above the level where coastal flooding is expected in the near-term. This change has significant environmental implications related to air quality and construction, hazards and toxics, air quality, water quality, and environmental justice. As Commission staff found in 2013:

Based on limited sampling at the site, there are known and expected soil and groundwater contaminants that Poseidon will need to remediate. Although sampling has not yet been conducted beneath the storage tanks, which cover a substantial area of the project footprint, Poseidon proposes to implement a Remedial Action Plan (RAP) that includes excavation and removal of up to about 18,000 cubic yards of soil (a worst-case estimate) containing petroleum and possibly other contaminants.<sup>35</sup>

The site is toxic, and doubling the expected quantity of grading will have environmental impacts that have not yet been studied. This alone requires supplemental environmental analysis. As soil sampling has not yet occurred, the extent of contamination is unknown, and the measures needed to remediate the expected contamination have not yet been identified. Remediation may require removal and disposal of contaminated soil, coupled with import of soil needed to raise the Project's base elevation. The Project leans on deferred analysis and deferred mitigation. CEQA provides the Commission with authority to analyze and mitigate these impacts to air quality, coastal access and traffic, hazards, water quality, and biological resources now, not later.

Further, northern Orange County's water demand has decreased over time, and much more is known about the shear mortality impacts of linear brine diffusers, the Project's impacts on marine organism mortality, and the local near-term impacts of climate change. Alternatives – such as reliance on conservation measures, a smaller project, and the Carson Project – are now feasible. Finally, mitigation measures such as slant wells have proven feasible at other sites. The conditions for subsequent environmental review – whether through the Commission's CDP process or otherwise – are met. Since certification of the 2010 SEIR, additional changes to the Project, circumstances, and substantial new information include, but are not limited to:

- Orange County Water District (OCWD) has announced expansion of the Groundwater Replenishment System to add 30 million more gallons per day to local water supplies as an alternative.

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<sup>35</sup> Attachment 1, 2013 Staff Report, p. 26.

- OCWD has taken responsibility for developing a system to deliver the Poseidon product water. OCWD has added 5 new alternative delivery options to the 2 options considered in the 2010 SEIR. These new delivery options include using the Poseidon water to recharge the groundwater basin.<sup>36</sup> Irvine Ranch Water District found that introduction of the Poseidon product water can have adverse impacts on water quality in the groundwater basin, and alternatives were preferable.<sup>37</sup> However, OCWD does not plan to prepare CEQA review of the new alternatives until **after all discretionary approvals are complete. Further, as explained below, these new delivery options have not been considered nor found consistent with LCP Policy C6.1.1 mandating protection of basin water quality.**
  
- An investigation by the Irvine Ranch Water District (IRWD) quantified significant water quality impacts to the regional groundwater basin caused by injecting Poseidon's water that has not been analyzed in compliance with the CEQA. IRWD's expert report demonstrated that avoiding boron exceedances in the groundwater aquifer will require subjecting 80 to 100 percent of the Poseidon Project to a second pass reverse osmosis treatment process. According to the investigations, "these second pass treatment requirements will significantly increase the flow rates through the seawater intake and brine discharge facilities proposed by Poseidon."<sup>38</sup> The Regional Board never analyzed the foreseeable increased flow rates through Poseidon Water's seawater intake and brine discharge facilities that will be needed to avoid the identified significant impacts to water quality.
  
- Three major demolition and development projects will occur on properties adjacent to the project site either concurrently or consecutively with the proposed Poseidon project: AES power station demolition and re-power project; Ascon Toxic Waste Site remediation, Magnolia Tank Farm demolition and multi-use development. The 2010 SEIR does not include cumulative impacts analyses for these new projects.

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<sup>36</sup> Attachment 10, OCWD Workshop 3: Distribution of Poseidon Resources Ocean Desalinated Water, July 2, 2016.

<sup>37</sup> Attachment 9, Irvine Ranch Water District Letter to OCWD, July 6, 2016.

<sup>38</sup> Irvine Ranch Water District, Comments on the NPDES Permit Renewal for Proposed Huntington Beach Desalination Project, pg. 2 (Dec. 4, 2019); *available at* [https://www.irwd.com/images/pdf/about-us/Desalination/12\\_4\\_19\\_irwd\\_letter\\_to\\_rwqcb.pdf](https://www.irwd.com/images/pdf/about-us/Desalination/12_4_19_irwd_letter_to_rwqcb.pdf).



- Proposed landside refinements to the Project involve the addition of an emergency generator, revisions to the original grading plan and layout, and revisions to the electrical substation component of the Project.
- The Project would now involve fiber optic cables and a conduit, requiring thousands of feet of previously undisclosed trenching, plus new overhead poles.
- Removal and replacement of hardware to accommodate upgraded substations, installing underground duct banks, trenching and installing would occur.
- The updated grading plan proposes the removal of the exterior berms on the site. The majority of soils from the removal of the berm will be retained onsite and used to raise the elevation of the site from the 2010 design elevation of approximately 11 feet to between 14 and 16 feet (NAVD88).
- Initial site grading would take approximately 4 months, with 5,200 total construction worker and haul trips, and a maximum of 60 one-way truck trips per day. The haul trucks were assumed to have a capacity of 14 CY; grading refinements would require an additional 6,400 CY of export; result in 10 - 21 days of additional grading that will have air quality, coastal access, and environmental justice impacts, among others.
- The extent of potential DDT contamination near the Palos Verdes shelf, in relatively close proximity to the proposed artificial reef mitigation project is now understood to be much greater than initially understood.<sup>39</sup>

These items were not analyzed in the State Lands Commission addendum to the CEQA review.

The Regional Board made significant changes to the project to meet the new requirements in the Ocean Plan Amendment by adding “projects” to “mitigate” intake and mortality. Additional environmental review of the Marine Life Mitigation Plan and other as-yet unreviewed Project components is necessary before the Commission may

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<sup>39</sup> See, e.g., <https://www.latimes.com/projects/la-coast-ddt-dumping-ground/>, <https://www.theguardian.com/environment/2021/apr/29/californias-legacy-of-ddt-waste-underwater-dump-site-uncovers-a-toxic-history>, and <https://www.smithsonianmag.com/smart-news/deep-sea-robots-kick-start-ddt-ocean-floor-clean-south-californian-coast-180977237/>

grant approvals for the Project. If the Commission wishes to undertake this analysis, it must analyze the Marine Life Mitigation Plan projects for environmental impacts and propose alternatives and mitigation measures to eliminate any adverse environmental impacts it finds.

**b. CEQA Requires the Commission to Analyze and Incorporate Feasible Alternatives and Mitigation Measures.**

Section 13096 of the Commission’s administrative regulations requires Commission approval of CDP applications to be supported by a finding showing the application, as modified by any conditions of approval, to be consistent with any applicable requirements of CEQA. CEQA prohibits approval of developments when there are feasible alternatives or feasible mitigation measures available that would substantially lessen any significant environmental impacts of the Project. Thus, the Commission cannot find that the Poseidon Project is consistent with the Coastal Act unless it is also consistent with CEQA.

While the Commission is governed by its certified regulatory process, CEQA principles remain relevant. One of [an EIR’s] major functions . . . is to ensure that ***all reasonable alternatives*** to proposed projects are thoroughly assessed by the responsible official.” (*Laurel Heights Improvement Ass’n. v. Regents of the University of California* (1988) 47 Cal.3d 376, 400.) Further, “Under CEQA, the public agency bears the burden of affirmatively *demonstrating* that...the agency’s approval of the proposed project followed meaningful consideration of alternatives and mitigation measures.” (*Mountain Lion Foundation v. Fish and Game Commission* (1997) 16 Cal.4th 105, 134, emphasis added.) The Commission can and must analyze the relative environmental impacts of providing water through conservation, through a smaller project, and through use of the Carson indirect potable reuse project.

CEQA differs from the National Environmental Policy Act (NEPA) in its substantive mandate. Under this mandate, a less damaging feasible alternative or mitigation measure ***must*** be adopted by the lead agency unless the lead agency can demonstrate that the mitigation is “truly infeasible.” (*City of Marina v. Board of Trustees of the California State University* (2006) 39 Cal.4th 341, 368; see also Pub. Resources Code § 21002 [“public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects”].) Notably, CEQA requires agencies to evaluate offsite alternatives when they are feasible, will achieve reasonable project objectives, and “significant effects of the project would be avoided or lessened by putting the project in another location.” (14 CCR § 15126.6(f)(2)(A); (See, for example, *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553 [upholding EIR

in part because of adequate analysis of an off-site alternative] and *Save Round Valley Alliance v. County of Inyo* (2007) 157 Cal.App.4th 1437 [EIR found inadequate for failure to assess an offsite alternative that would have reduced impacts].) This is particularly relevant to the Commission’s consideration of the Carson potable reuse project as a water supply alternative for the region.

Ultimately, the Commission cannot support, with the requisite substantial evidence, findings that there are no feasible alternatives or mitigation measures available which would substantially lessen the significant adverse impacts the Poseidon Desalination Project would have on the environment. On the contrary, feasible alternatives and mitigation measures exist in the form of increased water conservation, a smaller plant, and the Carson potable reuse project. The Commission cannot find the Project consistent with CEQA and, consequently, cannot find that it is consistent with the Coastal Act. The CDPs must be denied.

### **III. As Proposed, the Poseidon Project Fails to Satisfy Standards for Risk Category IV Critical Infrastructure Necessary to Ensure Emergency Function.**

It is hard to overstate the importance of ensuring that the facility is designed and constructed to remain safe and operable in the event of an emergency. The Poseidon Project would provide fresh water, and fresh water is necessary for life, not to mention public safety and fire suppression. The Project would construct important water infrastructure on the Huntington Beach coast, along the active Newport-Inglewood fault. Thus, the desalination plant would be subject to seismic hazards, as well as threats from sea level rise, flooding, and tsunamis. If constructed, it must meet International Building Code Risk Category IV standards.<sup>40</sup>

Scientists have determined that the Newport-Inglewood fault is capable of generating magnitude 7.5 earthquakes. Even smaller earthquakes may damage water treatment facilities and conveyance systems. The Environmental Protection Agency warns, “For a drinking water system, an earthquake can cause hundreds ... even thousands ... of breaks in water pipelines, ruptures in storage and process tanks and the collapse of buildings. This can cause a loss of water system pressure, contamination and

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<sup>40</sup> See, International Building Code Table 1604.5, Risk Category of Buildings and Other Structures, <https://www.fandr.com/wp-content/uploads/2020/07/Speaking-in-Code-August-2020.pdf>.



drinking water service disruptions...”<sup>41</sup> Earthquakes also frequently cause fires that require water for suppression. It is crucial that the Project be designed to withstand seismic damage and continue operation during and after these types of events.

The State of California has recently found, “Sea level rise poses a significant threat to the state’s infrastructure located within and near the coast.”<sup>42</sup> Specifically, the Ocean Protection Council and the California Coastal Commission have issued guidance that recommends “evaluating the expected impacts to critical infrastructure that would be caused by approximately 10 feet of sea level rise by 2100 (using what is known as the extreme risk or “H++” scenario).”<sup>43</sup> In May 2020, the agency further adopted “Principles for Aligned State Action (State SLR Principles)” which recommend planning to address “a minimum of 3.5 feet of sea level rise in the next 30 years.”<sup>44</sup> The expected impacts of sea level rise are compounded by the threat of a tsunami event at the site. While rare, Southern California has experienced several tsunamis in the last decade, most recently in January 2022. The 2011 tsunami event caused an estimated \$100 million worth of damage to California harbors.<sup>45</sup> Even the smaller 2022 event caused significant damage in some California harbors. The Project must be designed to withstand damage from sea level rise, coastal flooding, and tsunami – and continue operating.

The likelihood of continued Project operation, and the ability to maintain public safety in the event of an emergency, is much greater when infrastructure is designed to meet Risk Category IV standards. Table 1604.5 of the International Building Code assigns buildings risk categories, each of which triggers certain design and building standards related to earthquake, flood, wind loads, and other risks. One explanation of the Risk Categories explains:

The value of the importance factor generally increases with the importance of the facility. Structures assigned greater importance factors must be designed for larger forces. The result is a more robust structure that would be less likely to sustain damage under the same conditions than a structure with a lower importance factor.

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<sup>41</sup> EARTHQUAKE RESILIENCE GUIDE for Water and Wastewater Utilities, Environmental Protection Agency, March 2018, <https://www.epa.gov/sites/default/files/2018-02/documents/180112-earthquakeresiliencguide.pdf>, p. 1.

<sup>42</sup> “Sea-Level Rise Guidance for Critical Infrastructure” August 2021 Public Review Draft, Page vii, [https://documents.coastal.ca.gov/assets/slr/SLR%20Guidance\\_Critical%20Infrastructure\\_8.16.21\\_FINAL\\_FullPDF.pdf](https://documents.coastal.ca.gov/assets/slr/SLR%20Guidance_Critical%20Infrastructure_8.16.21_FINAL_FullPDF.pdf).

<sup>43</sup> Ibid.

<sup>44</sup> Ibid.

<sup>45</sup> <https://www.latimes.com/california/story/2022-01-22/the-tsunami-that-battered-santa-cruz-highlights-the-threat-facing-californias-coast>

The intent is to enhance a structure's performance based on its use or need to remain in operation during and after a disaster.<sup>46</sup>

In particular, Risk Category IV buildings are “buildings that are considered to be essential in that their continuous use is needed, particularly in response to disasters,” including “water storage facilities and pump structures required to maintain water pressure for fire suppression” as well as “facilities required for emergency response.” This definition clearly includes the Project, which is being treated as an essential water supply and backup supply, and which would provide the City's only reservoir shoreward of the Newport-Inglewood Fault Zone.

Poseidon claims that the Project would provide a “community facility” and that it need only meet design and building standards applicable to a “community facility.” In reality, according to Poseidon, the City of Huntington Beach, and the Orange County Water District's own documents, plans, and agreements, the Project is intended to be a critical facility.<sup>47</sup> Critical facilities are those necessary for health and safety. Because residents rely on these facilities to provide necessities such as water, critical facilities are constructed according to more stringent building standards. This ensures that the facilities needed to support health and safety remain operational at all times, including during emergency situations. The availability of potable water is especially important. Not only is it vital to sustain life at all times, but water supplies are critical during periods of emergency response. As discussed above, the Project site is located near portions of the Newport-Inglewood Fault, which is capable of up to a magnitude 7.5 earthquake. In 1933, the magnitude 6.4 Long Beach Earthquake ruptured approximately nine miles of the Newport-Inglewood Fault south of Huntington Beach, levelling thousands of buildings and killing 120 people. Fires erupted from broken gas lines, and thousands of people were left without water service. Disruption of water supplies impedes fire response.

Decades of documents prove that the Poseidon Project is intended to be a critical facility. The City of Huntington Beach's 2010 environmental impact report states that the Poseidon facility will provide an emergency water supply.<sup>48</sup> The City required Poseidon to enter into a water purchase agreement that allows the City to purchase up to seven million gallons per day during declared water emergencies. (CCC 2013 Staff

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<sup>46</sup> See, International Building Code Table 1604.5, Risk Category of Buildings and Other Structures, <https://www.fandr.com/wp-content/uploads/2020/07/Speaking-in-Code-August-2020.pdf>.

<sup>47</sup> Huntington Beach Desalination Project Sea Level Rise Analysis, Poseidon, pp. 6, 13.

<sup>48</sup> Huntington Beach SEIR, e.g., p. 6-40, [https://www.huntingtonbeachca.gov/files/users/planning/Sec06\\_Alternatives.pdf](https://www.huntingtonbeachca.gov/files/users/planning/Sec06_Alternatives.pdf).

Report p. 27.) The Project will also construct a 10-million-gallon reservoir onsite to be integrated into the City’s water system. (CCC 2013 Staff Report p. 27.) Notably, at one point, the stated purpose of the reservoir was to provide a water supply shoreward of the Newport-Inglewood Fault in the event seismic activity severs access to water supplies inland of the fault. The City of Huntington Beach’s CDP approvals and environmental findings further characterize the Project as an emergency supply. The Santa Ana Water Board also specifically found that the Poseidon Facility’s water is needed water supply and must be integrated into the rest of the existing water system. While we disagree that 50 mgd is actually needed, the Board’s reliance on this water supply, and its approval of this supply in lieu of less impactful alternatives, means that the community will become reliant on this supply and therefore renders it “critical.” Thus, this is exactly the type of critical facility that must remain operational in the emergency situation that would arise after an earthquake or a tsunami. This requires that the facility be designed to meet heightened standards including the Ocean Protection Council’s sea level rise scenarios and Risk Category IV “critical facility” standards.

It is undisputed that the Carlsbad Desalination Plant *is* considered a critical facility.<sup>49</sup> Similarly, the desalination plant proposed for Huntington Beach is not a mere community facility, but a critical one. That the Project would be constructed in a location vulnerable to documented geological and coastal hazards, including, but not limited to earthquake, flooding, sea level rise, and tsunami, makes it even more crucial that the facility is built to meet critical infrastructure standards. Allowing the facility to proceed without meeting critical infrastructure requirements would be inconsistent with approvals granted by the Santa Ana Water Board, entitlements granted by the City of Huntington Beach, past practice with other nearby desalination plants, and common sense. A Project that proceeds according to mere “community facility” standards would endanger the public. As discussed below, designing and constructing the Project to standards below Risk Category IV Critical Infrastructure not only defeats the purpose of the Project and wastes public funds, but violates both the Coastal Act and the Huntington Beach certified LCP.

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<sup>49</sup> See SDCWA’s 2019-2023 Business Plan and Fact Sheet – Overview [n.d.]. identifies the facility as a critical local water resource; 2 2017 San Diego County Multi-Jurisdictional Hazard Mitigation Plan, and as defined in the County’s April 2013 Integrated Floodplain Management Planning [defining a “critical facility” as including both public and private potable water facilities]; Poseidon March 18, 2020 press release, “Carlsbad Desalination Plant Staff Take Extraordinary Step to Shelter in Place to Ensure Operational Continuity at Critical Facility” [facility manager describing [Project as a “critical regional facility”]



#### **IV. The Poseidon Project is Inconsistent with the Huntington Beach Certified LCP and the California Coastal Act.**

The Commission must ensure strict adherence to the Coastal Act. California “courts are enjoined to construe the statute liberally” because “The highest priority must be given to environmental consideration in interpreting the statute.” (*Bolsa Chica Land Trust v. Superior Court* (1999) 71 Cal.App.4th 493, 506.) As proposed, Poseidon’s Huntington Beach Desalination Project violates Coastal Act policies related to the protection of and mitigation of impacts to wetlands and ESHA, marine life, recreation and coastal access, coastal armoring, community safety, aesthetics, and environmental justice. Coastal Act section 30233 grants the Commission authority to find that conservation, the Carson Project, or a combination of the Carson Project and a downsized desalination facility operating with slant wells are feasible and less environmentally damaging alternatives to the Project. In particular the Carson Project is consistent with Coastal Act policies to “enhance and restore” marine resources (Section 30230) and “maintain optimum populations of marine organisms” (Section 30231) by improving ocean habitat through reduced ocean discharges from the Carson Wastewater Treatment Plant. The CDP must be denied pursuant to the Commission’s retained jurisdiction.

The existence of feasible, less environmentally damaging alternatives precludes the need to impose mitigation measures because the Commission may deny the Project CDPs as proposed. However, if the Commission finds alternatives infeasible, it can and must impose the maximum mitigation available to avoid and reduce the Project’s myriad environmental impacts.

Further, the Huntington Beach Certified LCP lays out specific requirements for coastal development occurring within the City’s coastal jurisdiction. Many of these LCP policies are similar to Coastal Act policies or outright replicate them. The Poseidon Project is inconsistent with a number of LCP policies, including those related to the protection of wildlife, wetlands, and ESHA, tsunami and coastal flooding, community safety, and recreation. These inconsistencies provide the Commission with yet another ground for rejecting this harmful project.

##### **a. The Commission Should Resolve Open Enforcement Actions Prior to Considering the Project’s CDPs.**

The Project site has an open violation of the Coastal Act for destruction of wetlands in blatant disregard of the Act.<sup>50</sup> Although the City’s environmental review has not disclosed the presence of wetlands on the site, the Commission’s biologist determined

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<sup>50</sup> Attachment 1, 2013 Staff Report, pp. 61-65.

that there were approximately 3.5 acres of wetlands within the project site and there remain an additional approximately 0.5 acres on the east side of the project site that may be impacted by the Project.<sup>51</sup> Prior to development of the AES plant, the Project site was part of the tidal marsh, dune habitat, and floodplain of the Santa Ana River. Despite disturbance, wetlands have reemerged and reappeared throughout the area, due in part to “the area’s relatively high groundwater table, the continued presence of hydric soils beneath much of the area, anthropogenically influenced topography and hydrology in some areas, and the presence of nearby wetland vegetation that provides an ongoing seed source.”<sup>52</sup> This is what occurred onsite, wherein disuse of the site’s storage tanks and containment areas after the mid-1990s permitted reemergence of wetlands that the Commission documented in site visits and photographs taken in 2009. Sometime prior to 2012, and without obtaining a permit, these wetlands were disked, and all vegetation was removed. While subject to Commission enforcement action, the Project site’s unpermitted removal of wetlands has never been resolved or remediated. This open violation should have been resolved prior to the consideration of an application that would impose additional impacts on coastal resources and wetlands. Instead, we are concerned that this violation will be swept under the proverbial rug and permitted after-the-fact. Approval of Poseidon’s application for CDPs on a site with an open enforcement action, prior to the resolution of these violations, will incentivize future disregard of the Act. In addition to requiring full restoration of the past destruction, we ask the Commission to levy fines for the unpermitted wetlands destruction as authorized by SB 433.

**b. The Project is Not Designed to Avoid, Minimize, or Remediate Impacts to On-site Wetlands and ESHA.**

**i. The Project’s Dredge and Fill of Wetlands Violates the Coastal Act and Numerous LCP Policies.**

The Coastal Act provides robust protection of wetlands. The overarching principle is contained in Section 30231, which requires, “The biological productivity and the quality of coastal waters, streams, wetlands, estuaries... appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored...” (See also, Sections 30240, 30607.1.) This principle is implemented, in part, through Section 30233, which limits “[t]he diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes.” Such dredge and fill are only permitted (1) “where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize

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<sup>51</sup> Id. at p. 61.

<sup>52</sup> Ibid.

adverse environmental effects” and (2) for facilities enumerated in Section 30322. The Commission cannot make findings to support allowing the Project pursuant to this section.

The Project would involve dredge and fill to retrofit the existing intakes for Poseidon’s use, to place the linear brine diffusers on the outfalls, to construct the artificial reef provided but not studied in the Marine Life Mitigation Plan, and for continued maintenance of the Project. As currently proposed, these activities would violate the Coastal Act. Conservation, the Carson Project, and a smaller facility present feasible, less environmentally damaging alternatives that have never been studied or evaluated in good faith. Likely feasible mitigation measures also exist in the form of slant wells, which the ISTAP process never truly analyzed for economic feasibility. Moreover, the Project is not one of the enumerated facility types eligible under section 30233. Of the options, the Project could only be considered “New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.” But a water source is not coastal-*dependent* by nature. Water is available through other means including conservation, the Carson Project, and continued Metropolitan Water District imports, all without implicating the coast. Section 30233(a)(4) provides for “Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines,” but the Project is not an “incidental” public use. “Incidental” means “accompanying but not a major part of something” per the Oxford English Dictionary. Yet the existing intake and outfall structures are the entire reason the Project is being proposed, despite the existence of cheaper and less environmentally damaging alternative water sources. Retrofitting the intakes and outfalls and extending their use for decades is also more than mere “maintenance.” On the other hand, the structures are not *even* incidental to the AES power plant operation. State and federal laws require the AES power plant intakes and outfalls to be decommissioned to eliminate their adverse effects on marine life, and the AES plant is being modified to no longer need them.

Approval of the current Poseidon Project would also violate various LCP policies designed to ensure protection of wetlands. Violated provisions of the LCP include, but are not limited to:

- LCP Policy C6.1.4 states, “The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain organisms and for the protection of human health shall be maintained and, **where feasible, restored.**”
- LCP Policy C6.1.20 requires Poseidon to “Limit diking dredging, and filling of coastal waters, wetlands, and estuaries to the specific activities outlined in Policy



30233 and 30607.1 of the Coastal Act” and “Conduct any diking dredging and filling activities in a manner consistent with Section 30233 and 30607.1 of the Coastal Act.”

- LCP Policy C7.2.6 states, “Prohibit fill in any wetland areas for the purpose of road construction, except for roads allowed pursuant to Section 30233 of the Coastal Act or when required to serve uses allowed in wetlands pursuant to and consistent with Sections 30260-30264 of the Coastal Act for coastal dependent and energy uses.”
- Finally, LCP Policy I-C 8(c), states, “For proposed projects within the Coastal Zone, utilize the development review/environmental review process to accomplish the following: ... Permit resource dependent and incidental public service related land uses within wetlands and environmentally sensitive habitat areas only if consistent with the following Coastal Act policies: Section 30233 and Section 30240.”
- LCP Policy C1.1 requires the Commission to “[e]nsure that adverse impacts associated with coastal zone development are mitigated or minimized to the greatest extent feasible.”

As re-iterated in the Commission’s June 29, 2021 letter, the Commission’s 2013 Staff Report identified several acres of on-site wetlands—already previously adversely affected—that the Poseidon Project would permanently fill. Poseidon is responsible for ensuring adequate mitigation of impacts to the on-site and adjacent wetlands. In June 2021, the Commission requested further information regarding the Project’s treatment of previous adverse effects on, and proposed fill of, Coastal Act wetlands within the project footprint and its proposed mitigation approach. (p. 3.) Since that request, Poseidon has not offered any further on-site project design changes or additional mitigation for impacts to on-site wetlands.

In violating Coastal Act sections 30233 and 30240 (discussed below), the proposed Project also runs afoul of LCP Policy I-C 8(c). The CDP must be denied for failing to conform to the Huntington Beach certified LCP’s clear policies.

## **ii. The Project Fails to Protect ESHA.**

The Coastal Act’s protections for ESHA are paramount. Section 30240 provides that environmentally sensitive habitat areas (ESHA) “**shall be protected** against any significant disruption of habitat values,” and development adjacent to ESHA “shall be

sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.” The courts have been clear: “The Coastal Act does not permit destruction of an environmentally sensitive habitat area [ESHA] simply because the destruction is mitigated offsite.” (*Bolsa Chica Land Trust v. Superior Court* (1999) 71 Cal.App.4th 493, 499.) Where the Project will adversely impact wetlands and ESHA, the Project must be modified to eliminate those impacts, an alternative must be chosen, or the CDPs must be denied.

The Huntington Beach LCP protects ESHA via LCP Policy C7.1.2, which provides, “Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values...” Further, LCP Policy C7.1.3, requires that “Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.”

The Commission has identified tidally influenced wetlands and associated ESHA “just outside” the Project footprint. (Commission June 2021 letter, p. 3.) The Project, as proposed, will have significant indirect impacts on adjacent wetlands and ESHAs during Project construction and operations. (Commission 2013 Staff Report, p. 66, Commission August 2021 Notice of Incomplete CDP Application). Unless avoided or fully mitigated, the Project’s approval would violate the Coastal Act and LCP provisions requiring ESHA protection. When the Commission requested further information about how Poseidon will address direct and indirect impacts to ESHA in June 2021, Poseidon failed to respond – it made no Project changes and has failed to provide any new evidence that the Project will alleviate impacts to ESHA raised by Commission Staff. The CDP should be denied.

In its Consistency Analysis, Poseidon claims that the City’s 2010 SEIR did not identify ESHA on or near the Project site that would be impacted by the proposed Project; therefore, it concluded, the Project is consistent with Section 30240. (p. 7.) This “analysis” fails to meaningfully address or remedy the Commission’s concerns, especially those detailed in the Commission’s 2013 Staff Report. The Commission is required to enforce Coastal Act protections of adjacent ESHA, and its prior declaration of ESHA cannot be ignored. The City of Huntington Beach’s dismissal of the Commission’s photographs and evidence of ESHA does not mean ESHA does not exist.

The Commission has already found, the “SEIR did not fully describe the important habitat values of the adjacent ESHA/wetland areas to the approximately two dozen sensitive species known or presumed to use that habitat, and did not adequately evaluate.

. . dewatering, noise, and the required buffer. . .” (p. 66.) Furthermore, CEQA does not require the Commission to abdicate its protection of coastal resources to the City and rely wholly on the City’s analysis of environmental impacts. On the contrary, CEQA authorizes the Commission to provide additional analysis in its evaluation of CDPs, the functional equivalent of a CEQA document, and to require additional mitigation as appropriate. (14 CCR § 15096(g)(1).)

Further, Poseidon’s claims that the Project’s location within an existing industrial facility “avoids and minimizes” potential impacts to nearby coastal resources (July 2021 Letter p. 6), does not address the Commission’s concerns nor provide information about on-site improvements to address these impacts. Rather, Poseidon admits it is not proposing any changes to the project design, layout, or operations to address direct or indirect noise/vibration impacts to adjacent wetlands and sensitive receptors. (*Ibid*, Exhibit A p. 2.) For example, Poseidon refused to provide the requested Sound Mitigation Plan requested by Commission staff *now*, deferring its preparation until *after* project approval. The location within an industrial facility further fails to address the entrainment and impingement impacts to public trust marine resources, which would be better minimized through operation of a smaller-capacity facility.

The Commission was aware that the Project would be sited on an existing industrial facility when it detailed the Project’s construction and operation impacts in its 2013 Staff Report and when it requested information about how Poseidon will address these impacts in its June 2021 letter. Instead of detailing how the Project will minimize the construction and operational impacts, however, Poseidon points to findings and measures from the 2010 SEIR and CDP. Its failure to adequately address impacts to adjacent ESHA violates Coastal Act Section 30240.

Poseidon is not proposing any on-site or operational changes in response to the Commission’s recently raised concerns over the on-site wetlands and indirect impacts to adjacent wetlands and ESHAs, including the Project’s lack of the required buffers. The Commission’s 2013 Staff Report requires Poseidon to provide “for Executive Director review and approval, a delineation of all ESHA and wetland areas within 200 feet of the project footprint conducted by a qualified biologist approved by the Executive Director. The approved delineation shall serve as the basis for the 100-foot setback.” (p. 10.) Based on the correspondence between Poseidon and the Commission, Poseidon has not completed this review to identify nearby ESHA, instead pointing to the City’s 2010 SEIR finding that no wetlands exist within 100 feet of the project site.

The 2013 Staff Report cautioned that “[e]levating the facility or its components would also likely increase noise levels at the adjacent wetlands and ESHA during project operations, thereby adversely affecting listed special status species. Elevating would also



require additional electricity to pump water to the higher elevations, which would increase the project's indirect greenhouse gas emissions.” (p. 85.) Poseidon now proposes to increase the Project's finished floor elevations to 14-16 ft due to hazard risks—this will exacerbate the impacts on surrounding ESHA.

Not only does the Project fail to prevent adverse impacts to ESHA, but the Applicant denies the very existence of ESHA. The CDPs should be denied.

### **iii. Mitigation for Dredge and Fill Impacts is Insufficient.**

The Commission must ensure adequate mitigation of project impacts to coastal resources, especially where a Project requires dredge and fill development. Here, the Project will require Poseidon to construct and retrofit the Project's intakes and outfalls and grading and fill to raise the foundation of the proposed desalination plant above projected sea level rise, flood, and tsunami danger. The Project will require additional dredge and fill-related activities associated with construction of the artificial reef. Under the Coastal Act Section 30607.1, any permitted dike and fill development must require the following mitigation, **at a minimum**: “either acquisition of equivalent areas **of equal or greater biological productivity** or opening up equivalent areas to tidal action” where there are appropriate restoration sites available. The Project, as proposed, does not ensure adequate mitigation for the planned filling of on-site wetlands, or the indirect impacts to adjacent wetlands. Proposed mitigation is insufficient in size and is unlikely to exist in the future. Moreover, the Coastal Act prohibits destruction of ESHA.

The Project's failure to provide adequate buffers further exacerbates impacts on adjacent wetlands. Yet, Poseidon has failed to provide any new mitigation measures or Project design changes to address the Project's direct and indirect impacts to on-site and adjacent wetlands. The Commission typically requires a wetland mitigation ratio of 4:1. (June 2021 letter, p. 3.) Poseidon has not demonstrated that it will provide the required mitigation. In its August 2021 Notice of Incomplete CDP Application, the Commission raised concerns over Poseidon's planned mitigation in Bolsa Chica. Poseidon has already received mitigation credit at Bolsa Chica, and the Bolsa Chica wetlands will be heavily impacted by sea level rise and unlikely to provide long-term mitigation for wetlands impacted at the Project site. (*Id.*, p. 2.) Instead of addressing these concerns, in its September 20, 2021 response to the Commission, Poseidon questioned whether on-site wetlands even exist and labeled the concerns over sea level rise impacts on Bolsa Chica as “speculative.” Yet, a recent study of the Bolsa Chica Lowland Restoration Project recently found that, without intervention, the majority of the wetlands will be inundated

by sea level rise between 2060 and 2100.<sup>53</sup> The Project is inconsistent with section 30607.1 of the Coastal Act, and the CDPs should be denied.

**c. The Project Does Not Contain Buffers to Protect Wetlands and ESHA.**

The Project fails to include a Coastal Act and LCP-compliant ESHA and wetland buffer and should be denied on that ground, alone. The Project is located among sensitive coastal resources and ESHA, as Commission Staff has repeatedly found.

Coastal Act section 30231 provides for the protection of the biological productivity of wetlands through “maintaining natural vegetation buffer areas that protect riparian habitats.” Section 30240 subd. (b) requires the Applicant to design development “to prevent impacts which would significantly degrade [ESHA]” such that it “shall be compatible with the continuance of those habitat...areas.” Similarly, the certified LCP requires “that new development contiguous to wetlands or environmentally sensitive habitat areas include buffer zones” that “shall be a minimum of one hundred feet setback from the landward edge of the wetland.” (LCP Policy C 7.1.4.) Larger buffers may be required “if substantial development or significantly increased human impacts are anticipated.” (*Ibid.*) The LCP contains a detailed explanation of factors that justify requiring a larger wetland or ESHA buffer. These factors include:

- Biological significance of adjacent lands: The buffer should be sufficiently wide to protect the functional relationship between the wetlands and the adjacent upland.
- Sensitivity of species to disturbance: The buffer should be sufficiently wide to ensure that the most sensitive species will not be disturbed significantly by permitted development, based on habitat requirements of both resident and migratory species and the short- and long-term adaptability of various species to human disturbance.
- Use existing cultural features to locate buffer zones: The buffer zones should be continuous with the environmentally sensitive habitat areas and make use of existing features such as roads, dikes, irrigation canal, and flood control channels where feasible.

All of these factors justify a larger buffer than 100 feet. The Project site is located in the wetlands and dune complex located at the mouth of the Santa Ana River, adjacent

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<sup>53</sup> Attachment 3, Bolsa Chica Lowland Restoration Project, Sustainable Alternatives Study Analysis, December 2021, Fig. 4-4.

to Magnolia Marsh, Commission-determined ESHA, and proximate to the Bolsa Chica and other productive wetlands along the Pacific Flyway. The immediate area provides habitat for 23 listed and sensitive species, including the burrowing owl (Species of Special Concern), western snowy plover (federally threatened), Belding's Savannah Sparrow (state endangered), California brown pelican (Species of Special Concern), and California least tern (federally endangered).<sup>54</sup> The California Department of Fish and Wildlife recommends a 300-foot buffer to protect passerine species, and a 500-foot buffer is typically recommended to prevent impacts to raptor species. Even so, the Project currently fails to contain buffers at all. Poseidon's July 7, 2021 letter to the Commission accompanying its application claims that buffers are not needed because the City did not designate ESHA in its SEIR. Again, the Commission has deemed locations on- and off-site to be ESHA, regardless of whether the City did so in the past. Poseidon's claim that the adjoining land does not contain ESHA lacks support. The Commission is the agency charged with designating ESHA, and the Commission has specifically found areas on and off-site to be ESHA. The Project fails to contain LCP-required buffers, and the CDP should be rejected on those grounds.

**d. The Project Violates LCP Policies Designed to Protect Marine Life.**

The Project's entrainment of 108 million organisms each year, or *5.4 billion*<sup>55</sup> organisms during its operating life, will lead to violations of Coastal Act and LCP policies that have not been resolved or adequately mitigated. Section 30230 of the Coastal Act requires:

Marine resources shall be maintained, enhanced, and **where feasible, restored**. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Section 30231 similarly provides:

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, **where feasible, restored** through, among other means,

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<sup>54</sup> Attachment 1, 2013 Staff Report, p. 67.

<sup>55</sup> This is likely an underestimate, based on aging datasets.



**minimizing adverse effects of waste water discharges and  
entrainment...**

The LCP provides similar protection. Goal C6 of the LCP is to “Prevent the degradation of marine resources in the Coastal Zone from activities associated with an urban environment.” Objective C.6.1 is to “Promote measures to mitigate the adverse impacts of human activities on marine organisms and the marine environment through regulation of new development, monitoring of existing development, and retrofitting necessary and feasible.” This policy provides wide latitude for conditioning the Poseidon Project to limit harm to marine life. The LCP implements this goal through policies that include, but are not limited to:

- Policy C6.1.1 requires, “that new development include mitigation measures to enhance water quality, if feasible; and, at a minimum, prevent the degradation of water quality of groundwater basins, wetlands, and surface water.
- Policy C6.1.2 echoes the Coastal Act: “Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance.
- Policy C6.1.3 states, “Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.
- Policy C6.1.4 also reproduces the Coastal Act: “The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain organisms and for the protection of human health shall be maintained and, **where feasible, restored.**”
- Policy C 6.1.19 addresses the Project with specificity: “Prior to approval of any new or expanded seawater pumping facilities, require the provision of maximum feasible mitigation measures to minimize damage to marine organisms due to entrainment in accordance with State and Federal law.

The Project fails to maintain the biological productivity of wetlands and coastal waters and will cause significant adverse effects to marine life and water quality through intake, discharge, and construction. (See, Staff Report 2013, pp. 32-37.) An estimated 108 million organisms will be killed during each year of operation. As Coastal Commission staff found in 2013:

The source water areas of species entrained in this intake extend up to about 100 miles of the Shoreline. The Areas of Production Foregone calculated for the sampled species range from about seven acres to about 350 acres, with an average of about 110 acres. For example, the APF for queenfish, with a source water extending along about 53 miles of shoreline, is about 164 acres, while the source water distance and APF for the California halibut are 19 miles and 23.7 acres, respectively. The various source water areas encompass at least nine State Marine Conservation Areas (SMCAs) or State Marine Reserves (SMRs) established pursuant to California’s Marine Life Protection Act Initiative – those within 50 miles upcoast or downcoast of the intake include Bolsa Bay SMCA, Bolsa Chica Basin SMCA (“no take”), Upper Newport Bay SMCA, Crystal Cove SMCA, Laguna Beach SMR, Laguna Beach SMCA (“no take”), and Dana Point SMCA.<sup>56</sup>

Thus, the Project will adversely affect not only the waters nearest the plant, but it will harm State Marine Conservation Areas and State Marine Reserves. Additional marine life will be killed by brine diffusion. The Project presents a clear conflict with the policies of the Coastal Act and LCP that protect marine life.

While Poseidon claims that the use of wedgewire screens will reduce the wildlife impacts of the intakes, there is no evidence that the screens will restore, or even *maintain* biological productivity. The coastal power plant on the site is set to discontinue use of its “once through cooling” (OTC) system in 2 years. Without the Poseidon project repurposing the intake and discharge conduits, marine life would experience “restoration” benefits. A one percent reduction in mortality from the use of wedgewire screens is insufficient to maintain benefits from the State enforcing regulations to discontinue OTC systems to “restore” marine life populations – especially where alternatives are available, as is the case here. Further, the Commission recently raised concerns with the maintenance and performance of wedgewire screens in response to reports of difficulties at the Carlsbad facility. As of October 2021, the Commission stated it did not have the “necessary information” about maintenance of the proposed intake system. The Commission cannot approve a project without assurance of compliance with the LCP policies and Coastal Act. We request that the Commission disclose how it will move forward despite this information.

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<sup>56</sup> Attachment 1, 2013 Staff Report, p. 33.

The Project incorporates linear brine diffusers on outfall pipes. While wildlife advocates initially believed this approach would reduce overall entrainment mortality as compared to in-plant brine dilution, it is now better understood that linear brine diffusers themselves cause marine life mortality through shear.<sup>57</sup> These are impacts from Project mitigation that themselves need to be analyzed and mitigated.

Alternatives including conservation, a smaller facility, or use of the Carson Project would avoid or entirely eliminate sources of entrainment or brine and diffuser shear and should be adopted instead. In violation of the Coastal Act and the Huntington Beach LCP, as currently proposed, the Project does not contain the maximum mitigation available to avoid devastating impacts to marine resources. Further, the Applicant has not conducted slant well feasibility studies that include test wells to validate computer modeling as occurred with the proposed Cal-Am and Doheny projects and was recommended here<sup>58</sup>, nor has there been an economic feasibility analysis conducted by ISTAP nor the Regional Board.

The Coastal Act and LCP call for “restoration” of marine life populations, habitat and water quality where feasible. Water conservation, recycled water from the “Carson Project” and/or a desalination facility using subsurface intakes are feasible alternatives and mandatory.

**e. The Project Violates LCP Policies Designed to Avoid the Adverse Effects of Coastal Armoring.**

The Commission’s June 2021 letter specifically asked whether Poseidon’s submittal will assure that its solution for tsunami and sea level rise risks “will not include shoreline protective devices (which the LCP prohibits at this location.)” (p. 5.) Sea walls interfere with natural sand deposition processes and accelerate beach erosion. By armoring the coast, they also prevent beaches and wetlands from migrating inland as sea-level rises. Coastal Act section 30253 prohibits developments that “in any way require the construction of protective devices...” This section has been broadly construed to prohibit not only sea walls, but elevated project platforms that are themselves protective devices.<sup>59</sup>

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<sup>57</sup> Dilution Issues Related to Use of High Velocity Diffusers in Ocean Desalination Plants, pp. 9-15.

<sup>58</sup> See, HydroFocus Reports (1&2).

<sup>59</sup> Staff Report for Application No. 5-18-0788, February 2021, <https://documents.coastal.ca.gov/reports/2021/2/Th14a/th14a-2-2021-report.pdf>.



LCP Coastal Element Hazards Section C10.1.19 seeks to avoid beach loss by requiring that development “shall be conditioned to prohibit a shoreline protective device.” LCP Policy C1.1.9 states, “New development shall be designed to assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area ***or in any way require the construction of a protective device.***” (emphasis added.) As the City of Huntington Beach, which advertises itself as “Surf City USA” is heavily dependent on beach tourism, this prohibition on sea walls is echoed in Policy C10.1.14. This policy states, “During major redevelopment or initial construction, require specific measures to be taken ...to prevent or reduce damage of flooding and the risks upon human safety. Development shall, to the maximum extent feasible...(a) Avoid the use of protective devices; (b) Avoid encroachments into the floodplain, and (c) Remove any encroachments into the floodplain to restore the natural width of the floodplain.”

Even so, in direct contravention of Coastal Act section 30253, LCP Policy C.10.1.9, and LCP Policy C10.1.14, the Project contains what it calls a “sound wall” that abuts the tidal wetlands of Magnolia Marsh. Regardless of what Poseidon calls it, the “sound wall” will provide protection to the project from flood and tsunami risks. Poseidon’s claim that it is not, in fact, a protective device, is a distinction without a difference. More detail is needed regarding its design and function, especially under future flood scenarios. Poseidon claims that the sound wall is exempt from Policy C.10.1.9’s and Coastal Act section 30235 and 30253(b)’s prohibition on protective devices because it is located along Magnolia Marsh and not within the tsunami run-up zone. Again, the wall is being relied upon to reduce coastal flooding hazards so that Poseidon can then claim no such hazards exist. Even along Magnolia Marsh, the wall will prevent wetlands from migrating inland and will contribute to the island effect. Wetland managers are trying to prevent, not exacerbate, the loss of wetlands due to coastal and near-coastal armoring. These losses are already expected at the Bolsa Chica wetlands located just north of the Project site. There, a recent study noted, “Rising sea levels pose a risk to habitats...because the [Bolsa Chica Lowland Restoration Project] site is surrounded by urban development, preventing the inland migration of habitat.”<sup>60</sup> Moreover, section 30253(b) prohibits not just protective devices, but any development that will “create [or] contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area.”<sup>61</sup> The Project will contribute to erosion and destruction of the site and surrounding area, including wetlands, and cannot be approved.

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<sup>60</sup> Attachment 3, Bolsa Chica Lowland Restoration Project, Sustainable Alternatives Study Analysis, December 2021, p. 46.

<sup>61</sup> Similarly, Chapter 222.04 FP2 of the Huntington Beach Municipal Code prohibits development that will allow flood waters to be diverted onto adjacent properties.

The Project further proposes mass grading to remove existing berms and raise the foundation *14 to 16 feet*, thereby attempting to elevate the Project above sea level rise and tsunami hazards. This grading also serves as a form of shoreline armoring, as the Project builds what will eventually become an island to avoid foreseeable impacts due to its coastal location. This is twice the height of the 7-foot plinth the Commission found was an impermissible shoreline protective device at the proposed Belmont Pool.<sup>62</sup> The proposed pool was ultimately moved further inland. Experts agree that near-coast armoring will prevent beach and wetland migration at the Project site.

Dr. David Revell states in his memorandum that the proposed project would be maladaptive to sea level rise:

[...] this proposed project discourages longer term adaptation planning by the City of Huntington Beach and the County of Orange to avoid future coastal hazards, by keeping critical infrastructure in a hazardous area.

[...]

From public trust doctrine principles, it is also in the City/County's best interest to proactively plan for adapting critical infrastructure well in advance of adverse sea-level rise impacts. Impairments to, losses of functionality of, and pollution events from the Poseidon Plant that negatively affect the coastal environment and public recreational resources would be in violation of the public trust doctrine and state and federal environmental laws.<sup>63</sup>

The proposed Project is sited in a sea level rise hazard zone as designated by the City of Huntington Beach Sea Level Rise Vulnerability Assessment (SLRVA) for the Huntington Beach Wetlands Subarea.<sup>64</sup> The SLRVA describes the site as historic tidelands that are low-lying with a high groundwater table, which may result in earlier than predicted flooding for the site and surrounding area as sea levels rise.<sup>65</sup> Notably, the SLRVA describes widespread groundwater emergence for the Huntington Beach Wetlands Subarea:

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<sup>62</sup> Staff Report for Application No. 5-18-0788, February 2021, <https://documents.coastal.ca.gov/reports/2021/2/Th14a/th14a-2-2021-report.pdf>.

<sup>63</sup>[https://law.ucla.edu/sites/default/files/PDFs/Publications/Emmett%20Institute/\\_CEN\\_EMM\\_PUB%20Combatting%20Sea-Level%20Rise.pdf](https://law.ucla.edu/sites/default/files/PDFs/Publications/Emmett%20Institute/_CEN_EMM_PUB%20Combatting%20Sea-Level%20Rise.pdf)

<sup>64</sup> City of Huntington Beach Final Sea Level Rise Vulnerability Assessment. May 2021. <https://huntingtonbeachca.gov/government/departments/planning/major/files/Sea-Level-Rise-Vulnerability-Assessment-May-26-2021.pdf>

<sup>65</sup> Ibid.

Hazard area projections become more widespread with 3.3ft SLR, extending inland in areas between the Huntington Beach Channel and Talbert Channel. Hazard area projections continue to extend landward in these areas under 4.9ft and 6.6ft SLR scenarios, also becoming more widespread in areas south of Talbert Channel. (p.32)

Dr. David Revell describes the “island effect” as such:

While the proposed project as revised and described in the Moffat & Nichol report says the site elevation will be graded to 14-16 feet, access to the site and the feasibility of existing distribution infrastructure is not considered. While this grading increase will improve site resilience to sea level rise to some of the coastal hazards, this increased grading further contributes to “an island effect” in which the facility will become more and more inaccessible as sea level rises, with routine flooding as early as 2030 during higher tides.<sup>66</sup>

***The facility may become an inaccessible island before 2030 due to routine flooding of the surrounding area.*** Simple analyses show that the facility’s isolation will become routine during high tide events of 5.3 MHHW and greater with one foot of SLR. This portion of California’s coast experiences high tides of 5.3 MHHW over 200 times per year, thus the proposed facility could become inaccessible during high tides a majority of the year as early as 2030 when those tides occur along with one foot of sea level rise. Groundwater daylight flooding occurs in many adjacent areas under present day conditions. [...] By 2050, all of Edison Avenue is likely to be flooded during daily high tides with water depths of over 2 feet. This greatly reduces the ability to maintain this critical facility or even access the facility which is particularly of concern in the case of an emergency either from a storm event or another oil spill.<sup>67</sup>

The key finding here is that the Project site will ultimately become an island surrounded by lower lying areas. It will not be serviceable in terms of access, water, power, and the burden on the City and taxpayers to maintain.<sup>68</sup> LCP policy C1.1.1 requires that new

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<sup>66</sup> Dr. David Revell, Integral Consulting. Memorandum: Sea level rise concerns for the proposed Poseidon desal project. February 2, 2022. [https://california.surfrider.org/wp-content/uploads/2022/02/Comment\\_letter\\_on-Poseidon\\_02022022-Final.pdf](https://california.surfrider.org/wp-content/uploads/2022/02/Comment_letter_on-Poseidon_02022022-Final.pdf)

<sup>67</sup> Dr. David Revell, Integral Consulting. Memorandum: Sea level rise concerns for the proposed Poseidon desal project. February 2, 2022. [https://california.surfrider.org/wp-content/uploads/2022/02/Comment\\_letter\\_on-Poseidon\\_02022022-Final.pdf](https://california.surfrider.org/wp-content/uploads/2022/02/Comment_letter_on-Poseidon_02022022-Final.pdf)

<sup>68</sup> Dr. David Revell. Technical Memorandum: Huntington Beach Desalination Review of Sea Level Rise Hazards. December 14, 2018. [https://california.surfrider.org/wp-content/uploads/2022/02/Huntington\\_Hazards\\_FINAL\\_Small.pdf](https://california.surfrider.org/wp-content/uploads/2022/02/Huntington_Hazards_FINAL_Small.pdf)

development “be located in areas with adequate public services, and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources.” The LCP does not permit construction of critical facilities where roads and bridges will not allow continuing access.

The Commission addressed the burden of maintaining an infrastructure island at the Morro Bay Wastewater Treatment Plant, which was ultimately relocated inland.<sup>69</sup> In February 2022, the Commission considered a condition requiring demolition of a development when it is reached by the mean high tide line and implicates the public trust.<sup>70</sup> The Commission must assess the Project’s future impacts on public trust resources. The Project should be rejected for attempting to shoehorn a prohibited protective device into the facility.

Poseidon may rely on the Project’s location near Magnolia Marsh to allege that the sound wall and its raised platform do not currently abut the ocean. However, the Coastal Commission considers areas that are tidally influenced to be “shoreline.” The Project site is undoubtedly tidally influenced. In a memorandum dated April 27, 2021, Dr. David Revell concluded that additional shoreline armoring should be anticipated for tidally influenced portions of the proposed Project site:

[...] changes to the flood control channel or enhanced protection to the berm along the triangle wetland site may constitute shoreline armoring because it is tidally influenced. Thus, given the existing site configuration exposure to tides, reliance on the Orange County Flood Control District, and the elevations across the site, that additional shoreline armoring and or alterations to existing shoreline hardening should be anticipated.<sup>71</sup>

In addition, in a January 28, 2022 memorandum, Dr. Revell elaborates on the defenses the proposed Project would rely on for protection from sea level rise related hazards:

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<sup>69</sup> Staff Report for Morro Bay Wastewater Treatment Plant, CDP Application Number A-3-MRB-11-00, January 2013, pp. 4, 33, 46,  
<https://documents.coastal.ca.gov/reports/2013/1/Th23b-1-2013.pdf>.

<sup>70</sup> See, Special Condition 2C <https://documents.coastal.ca.gov/reports/2022/2/W11d/W11d-2-2022-report.pdf>

<sup>71</sup> Dr. David Revell, Integral Consulting. Memorandum: Response to Poseidon’s comment letter from 2/4/2019 [https://california.surfrider.org/wp-content/uploads/2022/02/Comment\\_letter\\_to-Poseidon\\_04272021\\_Integral-FINAL.pdf](https://california.surfrider.org/wp-content/uploads/2022/02/Comment_letter_to-Poseidon_04272021_Integral-FINAL.pdf)



The proposed Poseidon project must rely on various artificial flood defenses to avoid hazards at the facility. These defenses include the existing maintained beaches resulting from upcoast Army Corps operations, Orange County Flood Control District maintenance of the existing flood control channel, and outlet beach management of the Talbert Channel into the future. Poseidon has no authority to implement or execute these expensive management actions or public works projects – \_which involve extensive permitting processes and careful management of impacts on Endangered Species Act listed species. Nor are they contributing financially to the long term maintenance and management costs of these resources. The flood control channel outlet maintenance permit, for example, expires in 2023.<sup>72</sup>

In order to claim the desalination plant will not be at risk due to sea level rise, coastal flooding, and tsunami, the Project must elevate 14 to 16 feet above ground level and construct a “sound wall,” in violation of Coastal Act section 30253 and the Huntington Beach LCP. As a result, the Project will ultimately become an island of infrastructure and increasingly difficult to maintain. The Project’s protective devices will prevent the inland migration of wetlands as sea levels rise. The CDPs should be denied.

**f. The Project Would Not Be Designed and Sited to Avoid Seismic Hazards and Community Harm.**

The Project site’s seismic hazards are well-documented and include the Newport-Inglewood Fault, now understood to be capable of generating up to a magnitude 7.5 earthquake. Section 30253 of the Coastal Act requires new development to both “Minimize risks to life and property in areas of high geologic, flood, and fire hazard” and “Assure stability and structural integrity.” The certified LCP also contains several policies aimed at ensuring the safety and integrity of development. As proposed, the Poseidon Project remains inconsistent with these policies and must be denied.

- LCP Policy C1.1.9 states development must “Minimize risks to life and property in areas of high geologic, flood...and fire hazard through siting and design to avoid the hazard. New development shall be designed to assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of a protective device.”

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<sup>72</sup> Dr. David Revell, Integral Consulting. Memorandum: Sea level rise concerns for the proposed Poseidon desal project. February 2, 2022. [https://california.surfrider.org/wp-content/uploads/2022/02/Comment\\_letter\\_on-Poseidon\\_02022022-Final.pdf](https://california.surfrider.org/wp-content/uploads/2022/02/Comment_letter_on-Poseidon_02022022-Final.pdf)

- LCP Policy I-C 20 requires authorities to “Enforce and implement the policies of the Environmental Hazards Element of the General Plan...” Huntington Beach’s Environmental Hazards Element, in turn, requires that structures be designed to preserve integrity in light of geologic and seismic events.

These policies are intended to protect life and property, and also to encourage the construction of resilient facilities in areas of known hazard. While Poseidon has provided updated seismic studies to the Commission, as of last fall, Poseidon had not analyzed the impact of a fault rupture on the South Branch, nearest to the Project. Furthermore, these studies do not show that the facility would be designed as Risk Category IV “critical infrastructure” that could be relied on to remain safe and functional in the event of a foreseeable large earthquake on the Newport-Inglewood Fault. Risk Category IV buildings are those that must remain in continuous operation in the event of an emergency and therefore must be built to withstand greater seismic and other forces to ensure that emergency function. Instead, the Project is proposed as a “community facility” that need not withstand such an earthquake and maintain continuous operation. Yet, the Project includes construction of a 10-million-gallon reservoir tank intended to provide the City of Huntington Beach with an emergency water supply located on the shoreward side of the fault in the event of an emergency.<sup>73</sup> The placement of a mere “community facility” in an area of hazard, charged with providing critical services, is inconsistent with these policies of the LCP.

Moreover, if damaged, destroyed, or merely rendered nonoperational by a large earthquake because it was not designed to the critical infrastructure standard, the Project would risk life and property, a further inconsistency with these policies. The Project site contains large electrical generation units and would itself be connected to the AES power plant. The Project would also connect a toxic site to the local potable water system and groundwater. If a seismic event damages storage containers for RCRA hazardous wastes, they could be conveyed into the water supply. Flood or tsunami waters could dissolve toxic chemicals in onsite soils, also contaminating the water supply. In any case, the failure to design the Project to Risk Category IV standards conflicts with LCP Objective C8.4, “Minimize the safety and aesthetic impacts of resource production facilities on nonresource production land uses.”

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<sup>73</sup> See, [https://www.huntingtonbeachca.gov/business/economic-development/redevelopment/southeast\\_coast\\_projects.cfm](https://www.huntingtonbeachca.gov/business/economic-development/redevelopment/southeast_coast_projects.cfm).

**g. The Project Does Not Comply with Coastal Act and LCP Policies Directed at Avoiding Tsunami and Flood Hazards.**

Recent scientific projections and guidance for adaptation to sea level rise and tsunami risk demonstrates higher projections for expected sea level rise and tsunami runup elevation. The State’s most recent guidance recommends planning for expected tsunami runup elevation between 12 and 15 feet plus predicted sea level rise of 3.5 feet by 2050, and up to 13.8 feet by 2120.<sup>74</sup> The January 2022 and 2011 tsunami events caused millions of dollars of damage to coastal California infrastructure.<sup>75</sup>

The Poseidon Project violates Coastal Act and LCP policies aimed at preventing tsunami and flood hazards. For example, contrary to State guidance recommending planning for 3.5 feet of sea level rise by 2050, Poseidon’s analysis looks at a 3.5-foot rise over 50 years. And, although the Project’s application materials admit that neighboring communities will be flooded under certain conditions in the future, it claims no risks to the Project over the next 100 years. The analysis is deficient and fails to adequately prepare for future conditions, as required by Coastal Act sections 30001.5(f) and LCP section C10.1.19.

Coastal Act section 30001.5(f) enunciates a statewide policy goal of anticipating, assessing, planning for, and, to the extent feasible, “avoid, minimize, and mitigate the adverse environmental and economic effects of sea level rise within the coastal zone.” Section 30270 of the Act mandates, “The commission shall take into account the effects of sea level rise in coastal resources planning and management policies and activities in order to identify, assess, and, to the extent feasible, avoid and mitigate the adverse effects of sea level rise.” The Project, on the other hand, will contribute to coastal armoring and the island effect, preventing inland migration of coastal wetlands as sea level rises, and exacerbating the adverse environmental effects of sea level rise within the coastal zone. The placement of new key infrastructure in a seismic and flood danger zone is poor planning that fails to act on any realistic anticipation or assessment of sea level rise at the Project site. Since feasible alternatives exist, the Commission should reject the CDPs.

Similarly, in order to protect life and property, LCP Coastal Element Hazards Policy C10.1.19 provides, “Development permitted in tsunami and seiche susceptible

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<sup>74</sup> 2020 California Natural Resources Agency’s “Making California’s Coast Resilient to Sea Level Rise: Principles for Aligned State Action,”

[https://www.opc.ca.gov/webmaster/\\_media\\_library/2021/01/State-SLR-Principles-Doc\\_Oct2020.pdf](https://www.opc.ca.gov/webmaster/_media_library/2021/01/State-SLR-Principles-Doc_Oct2020.pdf).

<sup>75</sup> <https://www.latimes.com/california/story/2022-01-22/the-tsunami-that-battered-santa-cruz-highlights-the-threat-facing-californias-coast>

areas shall be designed and sited to minimize this hazard...” The Policy further provides, “Identify tsunami and seiche susceptible areas, and require that specific measures be taken by the developer, builder or property owner during major redevelopment or initial construction, to prevent or reduce damage from these hazards and the risks upon human safety.” LCP Policy C1.1.9 states development must “Minimize risks to life and property in areas of high geologic, flood...and fire hazard through siting and design to avoid the hazard. New development shall be designed to assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of a protective device.”

The 2018 update of the Ocean Protection Council’s 2018 *State of California Sea-Level Rise Guidance* document recommends that Project analysis include the following:

For high consequence projects with a design life beyond 2050 that have little to no adaptive capacity, would be irreversibly destroyed or significantly costly to relocate/repair, or would have considerable public health, public safety, or environmental impacts should this level of sea-level rise occur, the ***H++ extreme scenario should be included in planning and adaptation strategies (e.g. coastal power plant)***.<sup>76</sup>

The Sea Level Rise Guidance further provides for use of the H++ planning scenario (extreme risk aversion projection) for “highly vulnerable or critical assets that have a lifespan beyond 2050 and would result in significant consequences if damaged.”<sup>77</sup> Finally, the Guidance recommends incorporating the H++ scenario for projects that could result in threats to public health and safety, natural resources and critical infrastructure, should extreme sea-level rise occur.<sup>78</sup>

Where seawater desalination is truly needed (i.e., as a supply option of last resort), or where a Regional Water Board has deemed a project needed and approved it, such that it is pursued instead of or before less impactful and less expensive alternatives, it logically follows that the project be considered a “high consequence project” with public health and safety depending on that project’s water. This is particularly so where a project is approved on the understanding that it will provide emergency water supplies. Such a project, with people depending on its water for their health and safety, has a clear low tolerance for risk. Desalination facilities would also be significantly

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<sup>76</sup> 2018 update of the Ocean Protection Council’s 2018 *State of California Sea- Level Rise Guidance*, p. 24.

<sup>77</sup> Id. p. 25.

<sup>78</sup> Id. p. 32.



costly to relocate or repair. Accordingly, desalination projects are plainly subject to the H++ scenario under the State's Sea Level Rise Guidance. Poseidon's use of a 3.5-foot sea level rise over 50 years is insufficient to demonstrate that it has been designed and sited to avoid hazards in compliance with the certified LCP or the Coastal Act.

The Commission requested more information on Poseidon's plans to avoid encroachments into the floodplain and to remove existing encroachments where feasible. As with its deficient sea level rise planning, Poseidon has not demonstrated the Project's compliance with floodplain policies of the LCP or the Act, and the CDPs should be denied.

**h. The Project Does Not Comply with Coastal Act and LCP Policies Protecting Visual Resources.**

Section 30251 of the Coastal Act is clear, "The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance." Therefore, "development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to *restore and enhance* visual quality in visually degraded areas."

The Huntington Beach LCP incorporates the Coastal Act with Goal C4, "Preserve and, where feasible, enhance and restore the aesthetic resources of the City's coastal zone..." Objective C4.1 speaks to providing "opportunities within the Coastal Zone for open space as a visual and aesthetic resource." The LCP implements this objective with several policies aimed at protecting public views. Policy C 4.1.1 echoes the Coastal Act's proclamation that "The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance" and provides that "Permitted development shall be sited and designed to protect public views to and along the ocean and scenic coastal areas." Objective C.4.2 further speaks to promoting "the protection of the Coastal Zone's visual and aesthetic resources through design review and development requirements." More specifically, Policy C.4.2.2 speaks to the "massing, height, and orientation of new development" and *requires* that such development "be designed to protect public coastal views." Policy C.4.2.3 applies the preservation of public view corridors to "views of the sea and the wetlands" through strict application planning efforts.

LCP visual resource protection policies apply explicitly to industrial facilities, as well. Policy C.4.7.5 requires that "review of new and/or expansions of existing industrial and utility facilities" ensures the resulting facilities will not visually impair the City's coastal corridors. Objective C.8.4 is to "Minimize the safety and aesthetic impacts of

resource production facilities on nonresource production land uses.” Policy C.8.4.2 implicates the Project site and requires “any power plant expansion or alteration proposals to include adequate buffer and screening measures.”

The Project would do nothing to restore or enhance the Project site’s visual qualities. Instead, contrary to the Coastal Act, the Project would alter landforms by building up the site’s foundation and place an additional industrial facility in the midst of a coastal wetland and dune complex. The Project would become yet another dominant industrial feature to a coastal corridor, next to ESHA and wetlands at Magnolia Marsh. In short, the Project’s expansion of industrial facilities in and next to coastal wetlands and without adequate buffers would detract from and not enhance the aesthetic quality of coastal views, in violation of both Coastal Act section 30251 and multiple objectives and policies of the certified LCP.

**i. The Project Violates LCP Policies Requiring Cost-Efficient Water Systems.**

Huntington Beach’s LCP requires that the City “Provide and maintain water, sewer, and drainage systems that adequately serve planned land uses at a maximized cost efficiency.” (Objective C.9.1.) Desalinated water is notoriously expensive – more than *twice* the cost of imported water and \$500 per acre foot more than indirect potable reuse.<sup>79</sup> Accordingly, the Project’s water would maximize cost inefficiency, in direct contravention of the City’s LCP.

**j. The Project Violates LCP Policies Directed at Protecting Recreation and Coastal Access.**

The foundation of the California Coastal Act is the preservation of public access to the state’s revered coastline. Unfortunately, through construction disruptions, brine discharge, and marine life mortality, the Project would harm recreational access and opportunities in Huntington Beach and may ultimately deter visitors from surfing, swimming, and otherwise recreating nearby.

The Coastal Act derives its protection of public access from the California Constitution. Section 30210 states, “In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people...” Section 30211 prohibits development from interfering “with the public’s right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.”

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<sup>79</sup> See, <https://www.eenews.net/articles/could-la-water-recycling-be-a-miracle-for-parched-west/>.

Section 30220 protects areas suited for water-oriented recreational activities. Section 30253 subd. (e) requires that new development “protect...popular visitor destination points for recreational uses.” Section 30234.5 provides, “The economic, commercial, and recreational importance of fishing activities shall be recognized and protected.”

Likewise, the Huntington Beach LCP is protective of coastal access and recreation. Goal C3 is to “Provide a variety of recreational and visitor commercial serving uses.” Objective C 3.1 is to “Preserve, protect and enhance, where feasible, existing public recreation sites in the Coastal Zone.” Policy C 3.2.1 is to encourage “facilities, programs and services that increase and enhance public recreational opportunities.” Objective C3.4 is to “Encourage and protect water oriented recreational activities that cannot readily be provided at inland water areas.”

Policy C7.1.3, requires that “Development in areas adjacent to ...parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those ... recreation areas.” LCP Policy C1.1.6 regulates construction in the coastal zone that might affect recreation. Policy C2.6.6 discusses promoting public access to coastal wetlands. Additional provisions encourage public boating and fishing.

Huntington Beach is not only popular for coastal recreation, but recreation is integral to the local economy. The calls itself “Surf City,” and is home to the U.S. Open of surfing. Huntington Beach is also a very popular beach and swimming destination for worldwide visitors and locals alike. The Junior Lifeguard program is located at Huntington Beach and meets near the Project site.<sup>80</sup> The area is also utilized by recreational fishermen, given the proximity to harbors and moorings for watercraft.

The Project would adversely affect coastal access and recreation, contrary to the Coastal Act and LCP. The Commission recognized the potential for Project construction to impede beach access through traffic and parking in 2013.<sup>81</sup> These considerations remain. The Project’s brine discharge into the Pacific Ocean will also alter salinity with potentially harmful impacts to swimmers, surfers, and Junior Lifeguards. The LCP specifically calls out continuation of the Junior Lifeguard program in Policy I-C.16-F. Interest in a wide swath of the coast for recreational fishing will also diminish if fish populations decline due to entrainment mortality, brine exposure mortality, or shear mortality caused by the Project’s linear brine diffusers. The Commission’s 2013 Staff Report specifically noted California halibut as a species entrained by the intakes.<sup>82</sup>

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<sup>80</sup> See, <http://hsbjg.com/huntington-beach-jgs/> .

<sup>81</sup> Attachment 1, 2013 Staff Report, pp. 113-115.

<sup>82</sup> 2013 staff report, p. 33

Ocean swimming, surfing, lifeguarding, and fishing are not easily replicable inland. These coastal-dependent recreational uses must be protected.

The adverse impacts of brine discharges must be minimized, or the CDPs must be denied. Unless the Project's capacity is strictly tailored to actual, demonstrated capacity (i.e., demand that exceeds supply), those brine impacts haven't been minimized, and will harm Huntington Beach's surfing, swimming, and fishing opportunities."

Additional public access impacts may occur during construction because the Project site's soils are likely extremely toxic. Hydrocarbon tanks sat on the site for decades, leading Commission Staff to acknowledge the near certainty of contamination.<sup>83</sup> Safe public access to the beach will not likely be possible while toxic soils are being moved and removed during mass grading. The Applicant has not analyzed this impact, provided a remediation plan, or disclosed how access will be affected during construction.

Unless very carefully conditioned to avoid construction and brine impacts, the Project will conflict with Coastal Act and LCP policies concerning public access and recreation. The Project should be rejected.

**k. The Project Would Vastly Increase Energy Consumption and Greenhouse Gas Emissions, in Violation of the Coastal Act and the LCP.**

It is undisputed that climate change poses an existential threat to the livelihoods of Californians and to the coast itself. Associated sea level rise and coastal erosion further erode opportunities for recreation and habitat for Californians and the state's unique and sensitive wildlife. It is also undisputed that climate change is caused by greenhouse gas emissions, such as those the Project would emit. Accordingly, section 30253(d) of the Coastal Act provides that the Project must minimize energy consumption. Coastal Act policies aimed at protecting coastal resources, recreation, and marine life further support minimizing energy use. Instead, in direct violation of the Coastal Act, the Project's electricity demand would be indirectly responsible for 68,745 metric tons per year of carbon dioxide (CO<sub>2</sub>) emissions.<sup>84</sup> Further, Poseidon's proffered "Energy Minimization and Greenhouse Gas Reduction Plan" will not actually prevent its high energy

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<sup>83</sup> 2013 Staff Report, p. 26.

<sup>84</sup> Powers Engineering, Assessment of Energy Intensity and Greenhouse Emissions of Proposed Poseidon Huntington Beach Desalination Plant – 2022 Update Report, January 19, 2022 p. 1, [https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022\\_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf](https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf).



consumption or its creation of greenhouse gas emissions. The Project would be a net contributor to climate change. Given the feasibility and availability of water supply alternatives that would not impact the coastal zone, this, alone, justifies rejecting the Project's CDPs.

The Project violates section 30253(d) in several ways. First, the Project is not sized to meet the actual water demand of the area. A smaller plant would use less energy. Second, less energy-intensive alternatives are available. Recent trends in water demand have led to reductions in greenhouse gas emissions.<sup>85</sup> The Project would reverse these trends, without justification. Desalinated water is four times more energy intensive – and therefore has four times the carbon footprint – of available alternatives, such as the purified recycled water the Carson Project would produce.<sup>86</sup> The Carson indirect potable reuse project will occur regardless of the Commission's decision on Poseidon and has offered 60 mgd to OCWD that will be produced through less-carbon-intensive recycling processes. Third, the Project fails to incorporate renewable energy to reduce or eliminate its greenhouse gas footprint onsite and instead proposes an upfront payment to acquire offsets. This is putting the cart before the horse as the incorporation of renewable energy is completely feasible.<sup>87</sup> If approved, the Project must incorporate demonstrably feasible renewable energy sources including 150 megawatts of rooftop solar within Huntington Beach.<sup>88</sup> Fourth, Poseidon's alleged off-site mitigation through purchased offsets fails to ensure greenhouse gas reductions as claimed. Even though offset credits are its only proposal for reducing greenhouse gas emissions, Poseidon drastically underestimates the

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<sup>85</sup> See, The Future of California's Water-Energy-Climate Nexus, Pacific Institute, [https://pacinst.org/wp-content/uploads/2021/09/Water-Energy-Report\\_Sept-2021.pdf](https://pacinst.org/wp-content/uploads/2021/09/Water-Energy-Report_Sept-2021.pdf).

<sup>86</sup> Powers Engineering, Assessment of Energy Intensity and Greenhouse Emissions of Proposed Poseidon Huntington Beach Desalination Plant – 2022 Update Report, January 19, 2022 pp. 9-10, [https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022\\_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf](https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf).

<sup>87</sup> The annualized cost of 150 MW rooftop and parking lot solar and 30 MW of battery storage will be less than three percent of Poseidon's projected gross annual revenue. See, Powers Engineering, Assessment of Energy Intensity and Greenhouse Emissions of Proposed Poseidon Huntington Beach Desalination Plant – 2022 Update Report, January 19, 2022 p. 21, [https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022\\_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf](https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf).

<sup>88</sup> Powers Engineering, Assessment of Energy Intensity and Greenhouse Emissions of Proposed Poseidon Huntington Beach Desalination Plant – 2022 Update Report, January 19, 2022 p. 18, [https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022\\_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf](https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf).

cost of these offset credits. Poseidon estimates paying a ceiling cost of \$10 per metric ton, far lower than the California Air Resources Board’s 2021 cap-and-trade allowance settlement price of \$28.26, and 2022 ceiling of \$72.29.<sup>89</sup> In addition to this *present* undervaluation of the cost of carbon, Poseidon’s proposed offset plan assumes a static price of carbon, despite the fact that the price of carbon offsets will only continue to increase each year as Poseidon continues to inefficiently consume energy and create greenhouse gases.<sup>90</sup>

Further, Poseidon provides no assurances or enforceable performance standards to ensure the validity of the purchased “offsets,” and allows the purchase of offsets—including international offsets—from the Climate Registry (TCR), the Climate Action Reserve (CAR) or any other registry “in the event that sufficient offsets are not available. . . at a price that is reasonably equivalent to the price for offsets in the broader domestic market.”<sup>91</sup> Poseidon’s Plan allows the Planning Director to choose any different registry, without providing adequate performance standards.<sup>92</sup> A Court of Appeal recently overturned an agency’s reliance on some of the same voluntary registries and improper discretion, and detailed the reasons why voluntary registries do not actually ensure greenhouse gas emission reductions. (*Golden Door Properties, LLC v. County of San Diego* (2020) 50 Cal.App.5th 467, 510-518 [expressing concerns with international offsets in particular].)

Adding the final nail on the coffin, Poseidon allows itself to not even purchase offsets at all. Its GHG Reduction Plan provides an escape hatch to put funds in escrow at \$10.00 per metric ton if offsets are “economically infeasible,” which likely means costing over \$10 (this “contingency” option also lacks any performance standards).<sup>93</sup> Offsets cost more than \$10 and only will continue to increase. Poseidon’s plan does not fully

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<sup>89</sup> Powers Engineering, Assessment of Energy Intensity and Greenhouse Emissions of Proposed Poseidon Huntington Beach Desalination Plant – 2022 Update Report, January 19, 2022 pp. 15-17, [https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022\\_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf](https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf).

<sup>90</sup> Carbon Offset Prices Could Increase Fifty-Fold by 2050, <https://about.bnef.com/blog/carbon-offset-prices-could-increase-fifty-fold-by-2050/>; Summary of California-Quebec Joint Auction Settlement Prices and Results (November 2021), [https://ww2.arb.ca.gov/sites/default/files/2020-08/results\\_summary.pdf](https://ww2.arb.ca.gov/sites/default/files/2020-08/results_summary.pdf) [Advance Auction Settlement Price (i.e cost to purchase future credit) of \$34.01].)

<sup>91</sup> Huntington Beach Seawater Desalination Project Energy Minimization and Greenhouse Gas Reduction Plan (February 27, 2017), p. 5, 14, 16. Further, the Annual “True-Up” Process should not occur outside of public review.

<sup>92</sup> *Ibid.* at p. 16.

<sup>93</sup> *Ibid.* at p. 17-18.

reduce its inefficient energy consumption as claimed.<sup>94</sup> The Commission must enforce section 30253(d) and require direct on-site reductions, especially considering Poseidon's faulty claimed off-site reduction plan.

Nothing precludes the Commission from using its authority to require the Project to directly reduce its greenhouse gas impacts. Reducing the Project's energy-use would produce co-benefits<sup>95</sup> including the reduction of other pollutant emissions at the Project site and the reduction of pollution associated with the generation of the Project's electricity source. Electrical generation often occurs in communities already facing higher pollution burdens. Thus, reducing Project electricity use will have environmental justice benefits.<sup>96</sup> If the Commission chooses to allow the purchase of offsets, at all, it must require the purchase of in-state offsets pursuant to legally adequate performance standards and protocols.

The availability of feasible, less carbon-intensive water sources justifies entirely rejecting the CDPs for the Project. However, if the Commission considers approving a desalination project at the site, it must size the Project to the minimum size necessary and condition the Project to offset all of its energy use with the installation of local renewables.

The Project's electrical demand will also destabilize the electrical grid, in violation. Powers Engineering estimates that the Project will add a continuous 30.34-megawatt load to the electrical grid, the equivalent of 38,732 homes, thereby jeopardizing the grid's reliability.<sup>97</sup> The Project's enormous electrical load would be offset if

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<sup>94</sup> Powers Engineering, Assessment of Energy Intensity and Greenhouse Emissions of Proposed Poseidon Huntington Beach Desalination Plant – 2022 Update Report, January 19, 2022 p. 15, [https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022\\_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf](https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf).

<sup>95</sup> Co-benefits of mitigating global greenhouse gas emissions for future air quality and human health, <https://www.nature.com/articles/nclimate2009>; Public health co-benefits of greenhouse gas emissions reduction: A systematic review, <https://www.sciencedirect.com/science/article/abs/pii/S0048969718302341>.

<sup>96</sup> Health Cobenefits of Achieving Sustainable Net-Zero Greenhouse Gas Emissions in California, <https://www.osti.gov/servlets/purl/1734873>.

<sup>97</sup> Powers Engineering, Assessment of Energy Intensity and Greenhouse Emissions of Proposed Poseidon Huntington Beach Desalination Plant – 2022 Update Report, January 19, 2022 p. 13, [https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022\\_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf](https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf).

Poseidon developed 30 megawatts of battery storage in Huntington Beach and must be included as a condition of the Project if approved.

Requiring the inclusion of battery storage and solar energy would also bring the Project into conformity with Huntington Beach LCP policies encouraging solar and the incorporation of new energy technologies. Policy C.8.2.1 supports, the “application of new energy technologies so long as public health, safety and welfare are not jeopardized and environmental impacts are mitigated to the maximum extent possible.” If anything, a combination of renewable solar energy and battery storage technology would improve the public health, safety and welfare. Policy C.8.3.1 explicitly “Promote[s] the use of solar energy and encourage[s] energy conservation.” An energy-intensive desalination plant discourages energy conservation and would be in conflict with the LCP absent strong conditions about renewable energy.

In 2017, with the support of Governor Newsom, members of the State Lands Commission called on Poseidon to make the Project 100 percent greenhouse gas emission-free, and to do it through technology, innovation, or any means outside of merely writing a check.<sup>98</sup> Given the Governor’s leadership on climate change, it is disappointing that Poseidon has done little more than rename its offset plan a “Climate Change Action Plan” and submit it to the Santa Ana Regional Water Quality Control Board in 2019 and to the Commission last summer. Expert reports demonstrate that far more can be done to reduce or even eliminate the Project’s greenhouse gas emissions, and the Coastal Act requires no less.

#### **I. The Project Would Adversely Impact Groundwater Basin Water Quality.**

LCP Policy C6.1.1 mandates protection of water quality in the groundwater basin. OCWD is proposing delivery systems that would use Poseidon water for groundwater recharge.<sup>99</sup> However, the Irvine Ranch Water District determined that introducing Poseidon water to the basin would degrade water quality.<sup>100</sup> Thus, the Project violates LCP protections for groundwater quality and must be denied.

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<sup>98</sup> Transcript, State Lands Commission Meeting, October 19, 2017, p. 316, ln. 5, [https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/10-19-2017\\_Transcripts.pdf](https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/10-19-2017_Transcripts.pdf).

<sup>99</sup> Attachment 10.

<sup>100</sup> Attachment 9.



**m. Coastal Act Section 30260 Does Not Authorize the Project.**

Claims have been made that the Project can be authorized subject to Section 30260 of the Coastal Act, but the Commission cannot make the three requisite findings. This section provides, “Coastal-dependent industrial facilities shall be encouraged to locate or expand within existing sites and shall be permitted reasonable long-term growth where consistent with this division.”

Preliminarily, there is no reason why a water source need be coastal dependent. Section 30101 defines coastal dependent as a “development or use which requires a site on, or adjacent to, the sea to be able to function at all.” If a project aims can be satisfied at a location that is not on or adjacent to the sea, even if it is not an applicant’s particular proposal, then the project is not a coastal-dependent industrial use and should not qualify for the possible exemption from full mitigation provided in Section 30260. Development of a water source is not coastal dependent. We discuss several non-coastal alternatives. Further, the evidence in the Project record argues against this water source. Available alternatives such as water conservation and reliance on the Carson project eliminate the need for the Project, and with it, all of the Project’s adverse impacts on coastal resources. Section 30260 was not intended to apply to developments like the Project. Instead, this provision of the Coastal Act exists for two reasons – (1) California’s past reliance on water to cool electrical power plants; and (2) the need for federal approval of the state’s program under the Coastal Zone Management Act, which, at that time, was contingent on continued coastal oil production.<sup>101</sup>

Section 30260 next requires that an industrial facility subject to its terms be “consistent with this division.” The Poseidon Project is inconsistent with Coastal Act policies concerning marine life, wetlands, ESHA, greenhouse gases, coastal hazards, seismic hazards, and more. The Project is inconsistent with the Act. Section 30260 continues:

However, where new or expanded coastal-dependent industrial facilities cannot feasibly be accommodated consistent with other policies of this division, they may nonetheless be permitted in accordance with this section and Sections 30261 and 30262 if (1) alternative locations are infeasible or more environmentally damaging; (2) to do otherwise would adversely affect the public welfare; and (3) adverse environmental effects are mitigated to the maximum extent feasible.

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<sup>101</sup> 16 U.S.C. Section 1451 *et. seq.* See, 16 U.S.C. Section 1455 (d) (8); see also *American Petroleum Institute v. Knecht* (1978) 456 F. Supp. 889, affirmed. (1979) 609 F. 2<sup>nd</sup> 1306.

The Commission cannot make any of the required findings, and it certainly cannot support them with substantial evidence, as required. First, as discussed at length above, alternative water sources located elsewhere are available and are less environmentally damaging. Conservation of water to increase supply brings net environmental benefits, as would the Carson Project.

Second, reliance on an alternative to the Poseidon Project would not adversely affect the public welfare. The test requires more than a finding that, on balance, a project as proposed is in the interest of the public. It requires that the Coastal Commission find that there would be a detriment to the public welfare were the Coastal Commission to deny a permit for the project proposal. If anything, denial of the CDPs would drastically reduce ratepayer costs, reduce greenhouse gases that contribute to sea level rise and drought (and water scarcity), and eliminate a burden on the electrical system. Preventing the deaths of 108 million marine organisms each year is another great public benefit.<sup>102</sup>

Third, as also discussed above, the Commission cannot find that the Project's adverse environmental effects are mitigated to the maximum extent feasible. The Project includes no ESHA buffers, greenhouse gas mitigation is weak, wedgewire screens will reduce entrainment impacts by a maximum of one percent, and linear brine diffusers cause shear mortality to marine organisms.

Commission staff recently applied this test to the CalAm Desalination proposal, and found that the Project did not satisfy the requirements for approval pursuant to section 30250. The staff recommendation was that, because the project did not meet either of the first two tests of that section ("alternative locations," and "public welfare"), there was no need to determine whether it met the "mitigated to the maximum extent feasible" test.<sup>103</sup>

Ultimately, Commission approval under Section 30260 is entirely discretionary. The section provides that the Commission *may permit*, rather than *shall permit* a Project once effects are mitigated to the maximum extent feasible. The Commission can and must impose far more mitigation for the Project and must do so before it may consider authorizing the Project pursuant to section 30260.

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<sup>102</sup> Even if the Commission does find that the public welfare would be adversely affected by denial of the Project, this does not affect Poseidon's mitigation obligations. There is no reason that Poseidon cannot bear or pass to its customers the cost of full mitigation.

<sup>103</sup> Staff Report for Cal-Am Desalination Project, September 2020, <https://documents.coastal.ca.gov/reports/2020/9/Th3a&4a/Th3a&4a%20Staff%20Report.pdf>

## V. Environmental Justice Requires the Commission to Deny the CDPs.

The Project implicates critical environmental justice and tribal consultation requirements. Recognizing the serious harms wrought by environmental racism, the Commission has taken a laudable stand in favor of environmental justice. Government Code section 65040.12 defines environmental justice as “the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.” Since the signing of AB 2616 (Burke) (Ch. 578, Stats. 2016), the Coastal Commission has had authority to specifically consider environmental justice when making permit decisions, and it has done so to great effect.<sup>104</sup> Coastal Act section 30604(h) now provides, “When acting on a coastal development permit, the issuing agency, or the Commission on appeal, may consider environmental justice, or the equitable distribution of environmental benefits throughout the state.”<sup>105</sup>

In March 2019, the Commission unanimously adopted an Environmental Justice Policy to guide implementation of this authority<sup>106</sup>. The Commission’s policy provides:

- “Commission staff shall consider, when applicable, whether and how proposed development will positively or negatively affect marginalized communities, and will be fully transparent in that analysis in staff reports and presentations.”
- “Where project impacts to disadvantaged or overburdened communities are identified, and where otherwise consistent under the Coastal Act, civil rights and environmental justice laws, the *Commission staff shall propose permit conditions to avoid or mitigate those impacts to underserved communities to the maximum extent feasible* while protecting coastal resources.
- “If viable alternatives are available, consider those in permitting decisions.”

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<sup>104</sup> Staff Report for Cal-Am Desalination Project, September 2020, pp. 86-101, <https://documents.coastal.ca.gov/reports/2020/9/Th3a&4a/Th3a&4a%20Staff%20Report.pdf>; see also Staff Report for Application No. 5-18-0788, February 2021, <https://documents.coastal.ca.gov/reports/2021/2/Th14a/th14a-2-2021-report.pdf>. [conditioning pool on outreach and development of a plan to enhance recreation and coastal access for underserved communities in Long Beach.]

<sup>105</sup> Section 30107.3 (a) of the Coastal Act, defines “environmental justice” as “the fair treatment and meaningful involvement of people of all races, cultures, incomes and national origins, with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.”

<sup>106</sup> California Coastal Commission Environmental Justice Policy, March 2019, [https://documents.coastal.ca.gov/assets/env-justice/CCC\\_EJ\\_Policy\\_FINAL.pdf](https://documents.coastal.ca.gov/assets/env-justice/CCC_EJ_Policy_FINAL.pdf).

The Commission, therefore, has a duty to conduct robust analysis of the Project and its environmental justice implications. In light of the Commission’s specific environmental justice policies, it cannot simply rely on another agency’s analysis of this issue. (See, for example, *Friends of Buckingham v. State Air Pollution Control Bd.* (4th Cir. 2020) 947 F.3<sup>rd</sup> 86 [NEPA requires an agency to conduct its own environmental justice analysis].) The Commission prepared an evaluation of the environmental justice-related impacts of another project, the Cal-Am Desalination proposal, in its September 2020 Staff Report.<sup>107</sup> The Commission can and must prepare an analysis of the Poseidon Project, which will have significant impacts on disadvantaged communities throughout the region.

The Project will disproportionately affect disadvantaged or overburdened communities in several ways. The high cost of project water<sup>108</sup> will have the greatest impact on those least able to afford it. The Commission analyzed ratepayer costs in September of 2020 during its consideration of the Cal-Am Desalination Project.<sup>109</sup> The Project will also require very large amounts of energy, energy produced through polluting processes. The Project will also reduce free recreational opportunities during construction and as its greenhouse gas emissions exacerbate sea level rise and beach loss and as its beach armoring prevents beach and wetland migration inland. The loss of free recreational opportunities hits disadvantaged communities the hardest.

The Huntington Beach LCP further implicates environmental justice considerations of water cost. Section I-C 18 of the LCP requires implementation of “the programs and policies contained in the Public Facilities and Services Element of the General Plan to the extent that these programs and policies are not inconsistent with the City’s Local Coastal Program.” Goal PSI-6B of the City’s General Plan is to “Ensure that the costs of water and wastewater infrastructure improvements are borne by those

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<sup>107</sup> Staff Report for Cal-Am Desalination Project, September 2020, pp. 86-101,

<https://documents.coastal.ca.gov/reports/2020/9/Th3a&4a/Th3a&4a%20Staff%20Report.pdf>.

<sup>108</sup> <https://www.dailybreeze.com/2021/07/31/west-basin-reveals-costs-of-desalination-as-public-meeting-set-for-monday/>;

<https://www.desertsun.com/story/news/environment/2016/10/14/desalination-costliest-california-water-solution-study-finds/91973414/>

<sup>109</sup> See, Staff Report for Cal-Am Desalination Project, September 2020, pp. 8-9, 92-96, 113-114, 134,

<https://documents.coastal.ca.gov/reports/2020/9/Th3a&4a/Th3a&4a%20Staff%20Report.pdf>

[“Water from Cal- Am’s proposed Project could significantly raise water rates for low-income ratepayers in Seaside and other low-income ratepayers throughout the service area.”]



who benefit, through adequate fees and charges or the construction of improvements.”<sup>110</sup>  
The Commission must conduct a robust analysis to determine whether the Project is consistent with LCP Section I-C 18.

The Environmental Justice Policy requires the Commission to consider viable alternatives to projects, such as this one, that will adversely affect disadvantaged and overburdened communities. Viable alternatives exist in the form of conservation, the Carson Project, and in a smaller plant used for emergency purposes only, sized to meet the area’s demonstrated need. Supplying water through conservation is both cost- and energy-efficient and has environmental justice benefits. The Carson Project’s less expensive water supply<sup>111</sup> would avoid the Poseidon Project’s water bill increases for lower-income residents, construction and recreation impacts that might have disproportionate impacts, and greenhouse gas emissions that contribute to sea level rise. A smaller plant would require less dredge and fill, use less energy, and also avoid some of the contributions to climate change and sea level rise. The Commission should use its Environmental Justice Policy authority to recommend viable alternatives to the Project.

Alternatively, the Commission must condition the Project to avoid or mitigate these impacts to the maximum extent feasible. This means that the Project must limit cost increases to end-users, drastically reduce energy consumption, greenhouse gas production, and prohibit reductions in beach access or brine-related recreational impacts. If not conditioned to avoid these impacts, we urge the Commission to deny the Project CDPs.

We also note that the Project must comply with AB 52 and the Commission’s Tribal Consultation Policy. We ask the Commission to thoroughly analyze the Project for potential impacts to tribal cultural resources and traditional cultural landscapes.

The Project further implicates the environmental justice definitions contained in SB 115, SB 535, AB 1550, SB 1000, and AB 1628.

## **VI. Executive Order N-82-20 Requires State Agencies to Preserve Lands and Coastal Waters to Limit Climate Change, Protect Biodiversity, and Increase Climate Resilience.**

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<sup>110</sup> <https://www.huntingtonbeachca.gov/files/users/planning/Public-Services-and-Infrastructure.pdf>

<sup>111</sup> See, <https://www.eenews.net/articles/could-la-water-recycling-be-a-miracle-for-parched-west/> [Carson water cost of \$1,800/af v. desalination water cost of \$2,300/af or more].

On October 7, 2020, Governor Newsom issued Executive Order N-82-20, which enlisted all state agencies – including the Coastal Commission – to preserve thirty percent of California’s coastal waters to fight climate change, protect California’s astonishing biodiversity, and increase the State’s climate resilience. As discussed above and throughout a decade of documents submitted to the Commission, the Poseidon Project’s desalination process is inherently energy-intensive. The Project would generate 68,745 metric tons per year of carbon dioxide (CO<sub>2</sub>) emissions that would accelerate climate change.<sup>112</sup> Even if the proposed offsets are reliable, verifiable, and otherwise enforceable, these offsets would not prevent or minimize the emissions of greenhouse gases due to the Project. The desalination facility’s intakes would kill billions of marine organisms during the facility’s lifetime, thereby reducing the productivity and biodiversity of Orange County’s remaining coastal wetlands and nearby Marine Protected Areas. Finally, although only constructed to “community facility” standards, the facility is intended to provide critical infrastructure services in a coastal area subject to geological and increasing sea level-rise hazards. Thus, the Poseidon Project threatens to accelerate climate change, diminish biodiversity, and increase climate vulnerability by contributing to sea level rise. In addition to the Coastal Act and LCP provisions discussed above, approval of the CDPs by the Coastal Commission would violate Executive Order N-82-20.

## **VII. Conclusion**

We thank you for your consideration of these comments and urge you to reject Poseidon’s application for CDPs for the Huntington Beach Desalination Plant on a site with open violations of wetlands protection policies. The Project cannot be approved until it is brought into conformity with the California Coastal Act, the Huntington Beach certified LCP, and regulations intended to safeguard critical and emergency infrastructure such as that surrounding water supply, environmental justice and Tribal consultation policies, and Poseidon has not demonstrated that such conformity is possible. The continuing recovery of this important marine estuary, the supremacy of Huntington Beach’s certified LCP, and the safety and security of the region’s people depend on the Commission’s willingness to see the Poseidon Project for what it is, permission to build the largest marine predator in California.

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<sup>112</sup> Powers Engineering, Assessment of Energy Intensity and Greenhouse Emissions of Proposed Poseidon Huntington Beach Desalination Plant – 2022 Update Report, January 19, 2022 p. 1, [https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022\\_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf](https://documents.coastal.ca.gov/assets/upcoming-projects/environmental-coalition/2022_Powers%20Engineering%20Review%20of%20Poseidon%20HB%20GHG%20reduction%20strategy.pdf).

Mr. Tom Luster  
California Coastal Commission  
February 11, 2022  
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Sincerely,

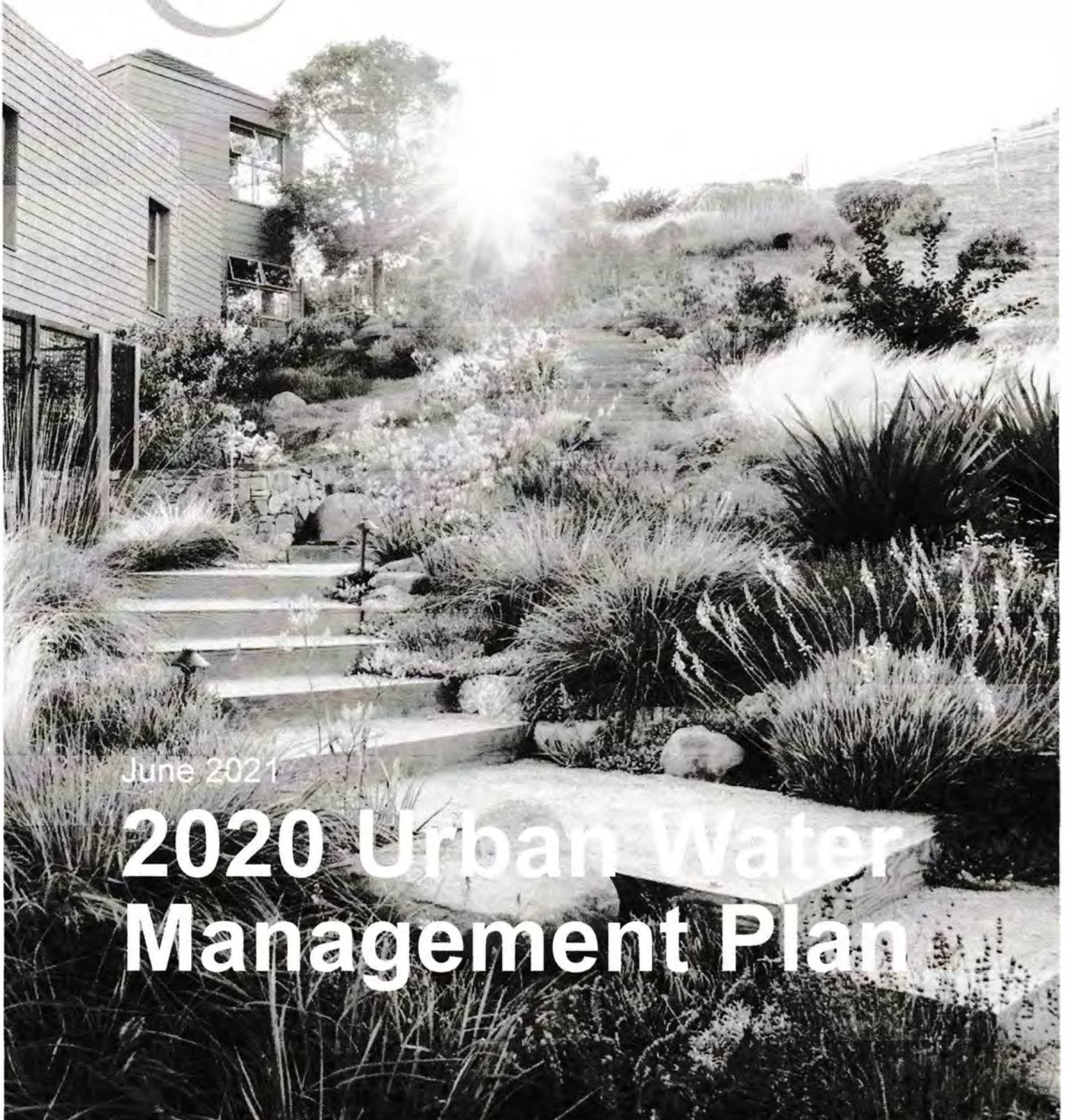


Michelle N. Black, on behalf of California Coastal  
Protection Network, California (and/or OC)  
Coastkeeper, and the Surfrider Foundation

Attachments:

1. Coastal Commission Staff Report, Appeal No. A-5-HNB-10-225, November 2013.
2. Appellant Comment Letter, November 3, 2013.
3. Bolsa Chica Lowland Restoration Project, Sustainable Alternatives Study Analysis, December 2021, prepared by Anchor QEA, LLC.
4. Regional Recycled Water Program: Institutional and Financial Considerations, White Paper 2, October 13, 2020, p. 12.
5. Santa Ana Regional Water Quality Control Board, Poseidon Staff Report, July 30, 2020, p. 4.
6. Letter from OCWD to Regional Board, May 18, 2018.
7. HydroFocus Report, March 10, 2020.
8. Appendix GGGGGG, Geosyntec Response to HydroFocus Report, Attachment Table 1.
9. Letter from Irvine Ranch Water District to OCWD, July 6, 2016.
10. OCWD Water Delivery Study, July 2016.





June 2021

# 2020 Urban Water Management Plan



## EXECUTIVE SUMMARY

### INTRODUCTION AND UWMP OVERVIEW

The Municipal Water District of Orange County (MWDOC) prepared this 2020 Urban Water Management Plan (UWMP) to submit to the California Department of Water Resources (DWR) to satisfy the UWMP Act of 1983 (UWMP Act or Act) and subsequent California Water Code (Water Code) requirements. MWDOC is a wholesale water supplier that provides water to 28 retail water suppliers in Orange County using imported water supplies obtained from its regional wholesaler, Metropolitan Water District of Southern California (MET).

UWMPs are comprehensive documents that present an evaluation of a water supplier's reliability over a long-term (20-25 year) horizon. This 2020 UWMP provides an assessment of the present and future water supply sources and demands within the MWDOC's service area. It presents an update to the 2015 UWMP on the MWDOC's water resource needs, water use efficiency programs, water reliability assessment and strategies to mitigate water shortage conditions. It also presents a new 2020 Water Shortage Contingency Plan (WSCP) designed to prepare for and respond to water shortages. This 2020 UWMP contains all elements to meet compliance of the new requirements of the Act as amended since 2015.

### UWMP PREPARATION

MWDOC coordinated the preparation of this 2020 UWMP with other key entities, including MET (regional wholesaler for Southern California and the direct supplier of imported water to MWDOC), Orange County Water District (OCWD) (Orange County Groundwater Basin [OC Basin] manager and provider of recycled water in north Orange County), and retail water suppliers in Orange County which include MWDOC's 28 member agencies and the three cities which are direct members of MET – Anaheim, Fullerton, and Santa Ana. MWDOC also coordinated with other entities which provided valuable data for the analyses prepared in this UWMP, such as the Center for Demographic Research (CDR) at California State University Fullerton for population projections.

### SYSTEM DESCRIPTION

MWDOC was formed by Orange County voters in 1951 under the Municipal Water District Act of 1911 to provide imported water to inland areas of Orange County. Governed by an elected seven-member Board of Directors, MWDOC is MET's third largest member agency based on assessed valuation. Today, MWDOC manages all of Orange County's imported water supply except for water imported to the cities of Anaheim, Fullerton, and Santa Ana. MWDOC is committed to ensuring water reliability for more than 2.34 million residents in its 600-square-mile service area. Although MWDOC does not own water facilities and does not have jurisdiction over local supplies, it works to ensure the delivery of reliable water supplies to the region. MWDOC focuses on sound planning and appropriate investments in water supply, water use efficiency, regional delivery infrastructure, and emergency preparedness.

## WATER USE CHARACTERIZATION

MWDOC is the wholesale provider of treated and untreated imported water from MET for municipal and industrial (M&I) uses (i.e., direct uses) and non-M&I (indirect uses e.g., groundwater recharge) within its service area.

MWDOC's service area M&I water use has consistently exceeded 400,000 acre-feet per year (AFY) until recently. Since fiscal year (FY) 2013-14, as a result of drought, retail water usage (including recycled water) began to trend downward. FY 2015-16 was the first year that water use in the MWDOC's service area dropped below 400,000 AF due to large-scale water efficiency efforts undertaken by MWDOC and member agencies.

### 25-year Water Use Projection

MWDOC's total service area water demands are expected to gradually increase between now and 2023 due to projected growth in M&I demands. The bulk of the increases between 2023 and 2025 are due to indirect imported demands for groundwater replenishment returning in those years 2024 and 2025. The current regulatory impacts of PFAS in the OC Basin has reduced the need for purchasing any imported groundwater replenishment water, due to reductions in groundwater pumping expected to last until 2023. Over the next 25 years, total water demands within the MWDOC service area are projected to increase by about 17% from approximately 428,000 acre-feet (AF) in 2020 to approximately 501,000 AF by 2045. This demand projection considers such factors as current and future demographics, future conservation measures, and ground and surface water needs.

## CONSERVATION TARGET COMPLIANCE

MWDOC in collaboration with all its retail member agencies as well as the Cities of Anaheim, Fullerton, and Santa Ana, created the Orange County 20x2020 Regional Alliance to assist retail agencies in complying with the requirements of Water Conservation Act of 2009, also known as SBx7-7 (Senate Bill 7 as part of the Seventh Extraordinary Session). Signed into law on February 3, 2010, it requires the State of California to reduce urban water use by 20% by 2020.

Retail water suppliers are required to comply with SBx7-7 individually or as a region in collaboration with other retail water suppliers, in order to be eligible for water related state grants and loans. As a wholesale water supplier, MWDOC is not required to establish a baseline or set targets for daily per capita water use itself. Orange County, as a region, had a 2020 target water use of 159 gallons per capita per day (GPCD). The actual water use in 2020 was 109 GPCD which is well below its target. This is indicative of the collective efforts of MWDOC and retail agencies in reducing water use in the region.

## WATER SUPPLY CHARACTERIZATION

Imported water from MET accounts for about 33% of MWDOC's service area water use. The other 67% is from various other sources, including groundwater from the OC Basin, groundwater from other smaller groundwater basins such as the Main San Gabriel Basin, and recycled water. The Orange County Sanitation District (OC San) and South Orange County Wastewater Authority (SOCWA) are the wastewater providers of North county and South county agencies, respectively. A few MWDOC member agencies produce their own recycled water.

## WATER SERVICE RELIABILITY AND DROUGHT RISK ASSESSMENT



Every urban water supplier is required to assess the reliability of their water service to its customers under a normal year, a single dry year, and multiple dry water years. The water service reliability assessment compares projected supply to projected demand for three long-term hydrological conditions: a normal year, a single dry year, and a drought period lasting five consecutive years. MWDOC as an imported water provider relies on its wholesaler's water reliability assessments which concluded that it will be able to meet MWDOC's service area demands for imported water under normal, single-dry, and five-year consecutive dry conditions over the next 25 years (2020 – 2045).

Overall, MWDOC's service area depends on a combination of imported and local supplies to meet its service area water demands. MWDOC has taken numerous steps to ensure its member agencies have adequate supplies. Development of numerous local sources augment the reliability of the imported water system. The water supplies available to the MWDOC service area are projected to meet full-service demands based on the findings by MET in its 2020 UWMP starting 2021 through 2045 during normal years, single dry year, and five consecutively dry years.

### WATER SHORTAGE CONTINGENCY PLANNING

Water shortage contingency planning is a strategic planning process that MWDOC engages to prepare for and respond to water shortages. A water shortage, when water supply available is insufficient to meet the normally expected customer water use at a given point in time, may occur due to a number of reasons, such as water supply quality changes, climate change, drought, and catastrophic events (e.g., earthquake). The MWDOC WSCP provides a water supply availability assessment and structured steps designed to respond to actual conditions. This level of detailed planning and preparation will help maintain reliable supplies and reduce the impacts of supply interruptions.

The WSCP serves as the operating manual that MWDOC will use to prevent catastrophic service disruptions through proactive, rather than reactive, mitigation of water shortages. The WSCP contains the processes and procedures that will be deployed when shortage conditions arise so that the MWDOC governing body, its staff, and its retail agencies can easily identify and efficiently implement pre-determined steps to mitigate a water shortage to the level appropriate to the degree of water shortfall anticipated.

### DEMAND MANAGEMENT MEASURES

MWDOC has demonstrated its commitment to water use efficiency through multi-faceted and holistic water use efficiency programs. As a wholesaler, MWDOC facilitates implementation of DMM throughout Orange County. MWDOC's efforts focus on the following three areas: Regional Program Implementation, Local Program Assistance, and Research and Evaluation. MWDOC develops, obtains funding for, and implements regional water savings programs on behalf of all retail water agencies in Orange County. This approach minimizes confusion to consumers by providing the same programs with the same participation guidelines, maintains a consistent message to the public to use water efficiently, and provides support to retail water agencies by acting as program administrators for the region. MWDOC provides assistance on a variety of local programs including, but not limited to Water Loss Control and Management Program, Public Outreach, and Choice K-12 School Programs.

- Sliding scale incentive up to \$340 per AF for a 25-year agreement term, depending on the unit cost of seawater produced compared to the cost of MET supplies.
- Sliding scale incentive up to \$475 per AF for a 15-year agreement term, depending on the unit cost of seawater produced compared to the cost of MET supplies.
- Fixed incentive up to \$305 per AF for a 25-year agreement term.

Developing local supplies within MET's service area is part of their IRP goal of improving water supply reliability in the region. Creating new local supplies reduce pressure on imported supplies from the SWP and Colorado River.

On May 6th, 2015, the SWRCB approved an amendment to the state's Water Quality Control Plan for the Ocean Waters of California (California Ocean Plan) to address effects associated with the construction and operation of seawater desalination facilities (Desalination Amendment). The amendment supports the use of ocean water as a reliable supplement to traditional water supplies while protecting marine life and water quality. The California Ocean Plan now formally acknowledges seawater desalination as a beneficial use of the Pacific Ocean and the Desalination Amendment provides a uniform, consistent process for permitting seawater desalination facilities statewide.

If the following projects are developed, MET's imported water deliveries to Orange County could be reduced. These projects include the Huntington Beach Seawater Desalination Project and the Doheny Desalination Project.

## **6.7.1 Ocean Water Desalination**

### **6.7.1.1 Huntington Beach Seawater Desalination Plant**

Poseidon Resources LLC (Poseidon), a private company, is developing the Huntington Beach Seawater Desalination Project to be co-located at the AES Power Plant in the City of Huntington Beach along Pacific Coast Highway and Newland Street. The proposed project would produce up to 50 MGD (56,000 AFY) of drinking water to provide approximately 10 percent of Orange County's water supply needs.

Over the past several years, Poseidon has been working with OCWD on the general terms and conditions for selling the water to OCWD. Three general distribution options have been discussed with the agencies in Orange County. The northern option proposes the water be distributed to the northern agencies closer to the plant within OCWD's service area with the possibility of recharging/injecting a portion of the product water into the OC Basin. The southern option builds on the northern option by delivering a portion of the product water through the existing OC-44 pipeline for conveyance to the south Orange County water agencies. A third option is also being explored that includes all of the product water to be recharged into the OC Basin. Currently, a combination of these options could be pursued.

The Huntington Beach Seawater Desalination project plant capacity of 56,000 AFY would be the single largest source of new, local drinking water available to the region. In addition to offsetting imported demand, water from this project could provide OCWD with management flexibility in the OC Basin by augmenting supplies into the Talbert Seawater Barrier to prevent seawater intrusion.



In May 2015, OCWD and Poseidon entered into a non-binding Term Sheet that provided the overall partner structure in order to advance the project. Based on the initial Term Sheet, which was updated in 2018, Poseidon would be responsible for permitting, financing, design, construction, and operations of the treatment plant while OCWD would purchase the production volume, assuming the product water quality and quantity meet specific contract parameters and criteria. Furthermore, OCWD would then distribute the water in Orange County using one of the proposed distribution options described above.

Currently, the project is in the regulatory permit approval process with the Regional Water Quality Control Board and the California Coastal Commission. Once all of the required permits are approved, Poseidon will then work with OCWD and interested member agencies in developing a plan to distribute the water. Subsequent to the regulatory permit approval process, and agreement with interested parties, Poseidon estimates that the project could be online as early as 2027.

Under guidance provided by DWR, the Huntington Beach Seawater Desalination Plant's projected water supplies are not considered in either Table 4-1 or Table 6-2 due to its current status within the criteria established by State guidelines (DWR, 2020c).

#### 6.7.1.2 Doheny Desalination Plant

SCWD is proposing to develop an ocean water desalination facility in Dana Point. SCWD intends to construct a facility with an initial capacity of up to 5 million gallons per day (MGD). The initial up to 5 MGD capacity would be available for SCWD and potential partnering water agencies to provide a high quality, locally-controlled, drought-proof water supply. The desalination facility would also provide emergency backup water supplies, should an earthquake, system shutdown, or other event disrupt the delivery of imported water to the area. The Project would consist of a subsurface slant well intake system (constructed within Doheny Beach State Park), raw (sea) water conveyance to the desalination facility site (located on SCWD owned property), a seawater reverse osmosis (SWRO) desalination facility, brine disposal through an existing wastewater ocean outfall, solids handling facilities, storage, and potable water conveyance interties to adjacent local and regional distribution infrastructure.

The Doheny Ocean Desalination Project has been determined as the best water supply option to meet reliability needs of SCWD and south Orange County. SCWD is pursuing the Project to ensure it meets the water use needs of its customers and the region by providing a drought-proof potable water supply, which diversifies SCWD's supply portfolio and protects against long-term imported water emergency outages and supply shortfalls that could have significant impact to our coastal communities, public health, and local economy. Phase I of the Project (aka, the "Local" Project) will provide SCWD and the region with up to 5 MGD of critical potable water supply that, together with recycled water, groundwater, and conservation, will provide the majority of SCWD's water supply through local reliable sources. An up to 15 MGD capacity project has been identified as a potential future "regional" project that could be phased incrementally, depending on regional needs.

On June 27, 2019, SCWD certified the final EIR and approved the Project. The Final EIR included considerable additional information provided at the request of the Coastal Commission and the Regional Board, including an updated coastal hazard analysis, updated brine discharge modeling, and updated groundwater modeling, updated hydrology analysis. The approval of the Project also included a commitment to 100 percent carbon neutrality through a 100 percent offset of emissions through the expansion of Project mitigation and use of renewable energy sources. SCWD is currently in the

permitting process and finalizing additional due diligence studies. If implemented, SCWD anticipates an online date of 2025.

Under guidance provided by DWR, the Doheny Seawater Desalination Project's projected water supplies are not considered in either Table 4-1 or Table 6-2 due to its current status within the criteria established by State guidelines (DWR, 2020c).

### **6.7.2 Groundwater Desalination**

In an effort to improve groundwater production, MET provides financial incentives to local agencies to treat brackish groundwater which has been impaired from either natural causes or from agricultural drainage. Through MET's LRP, the goal is to increase usage of groundwater storage within the region for firm local production, conjunctive use storage, and drought supply. In MWDOC's service area, five groundwater recovery brackish water projects have LRP contracts with MET.

**MWRF Expansion** - The MWRF, owned and operated by Mesa Water, pumps colored water from a deep colored water aquifer and removes the color MF. Due to increased color and bromide in the source water, Mesa Water upgraded the facility to include Nano filtration membrane treatment. In 2012, the MWRF's capacity was increased from 5.8 MGD to 8.6 MGD.

**SCWD Capistrano Beach GRF Expansion** - SCWD constructed a 1 MGD GRF that came online in FY 2007-08 in Dana Point. SCWD plans to expand the GRF with the addition of new wells. Treating in excess of 1,300 AFY will require expansion of the GRF and agreement with SJBA or confirmation of water rights from the SWRCB.

**Garden Grove Nitrate Blending Project** - The Garden Grove Nitrate Blending Project was active during the years of 1990 to 2005. The project is located at the Lampson Reservoir site, where groundwater pumped from two wells is blended in order to meet the maximum contaminant level (MCL) for nitrate. The blending project was shut down in 2005, but the City retrofitted Well 28 with a variable frequency drive and reinstated the blending operation.

**San Juan Desalter GWRP Expansion** - The City of San Juan Capistrano has operated the GWRP since about 2005. A number of issues have impacted the reliability of production from the facility including iron bacteria in the wells, the discovery of a plume of Methyl Tert-Butyl Ether (MTBE) that required a reduction in production in half to about 2 MGD or less since the spring of 2008 until the responsible party contributed to provide Granular Activated Carbon (GAC) Filter for removal of the MTBE to allow increased production. The drought then struck, reducing the amount of water that could be pumped from the San Juan groundwater basin, requiring a large reduction in production from the groundwater basin in 2014, 2015, and initially in 2016.

**Tustin Nitrate Removal Project** - The Tustin Nitrate Removal Project consists of two groundwater treatment facilities that are allowed above the BPP and the charges are BEA-exempt. The first facility is the Main Street Treatment Plant, operating since 1989 to reduce nitrate levels from the groundwater produced by Wells No. 3 and 4 by blending untreated groundwater with treatment plant product water which undergoes RO and ion exchange treatment processes. The second facility is the Tustin Seventeenth Street Desalter, operating since 1996 to reduce high nitrate and TDS concentration from groundwater produced by Wells No. 2 and 4 and the Newport well using RO (OCWD, 2015 Groundwater Management Plan, June 2015).

# 2020

## URBAN WATER MANAGEMENT PLAN

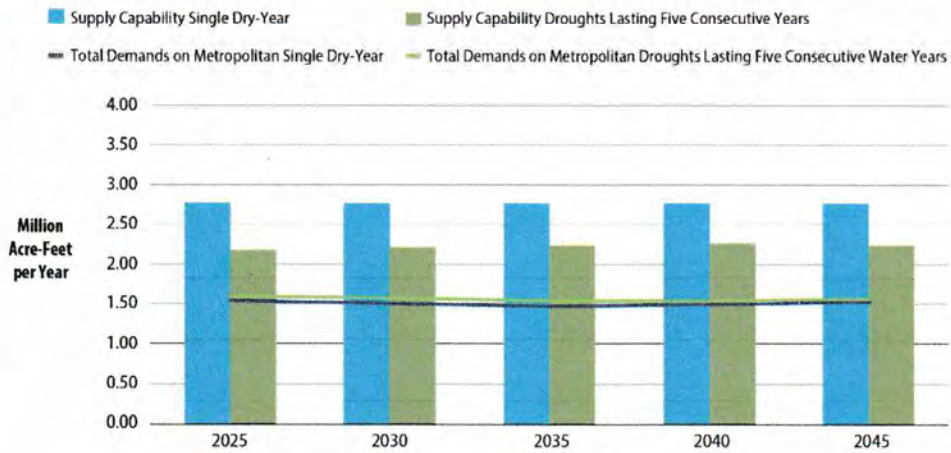
### **JUNE 2021**

WATER  TOMORROW  
Planning for the Future



*THE METROPOLITAN WATER DISTRICT  
OF SOUTHERN CALIFORNIA*

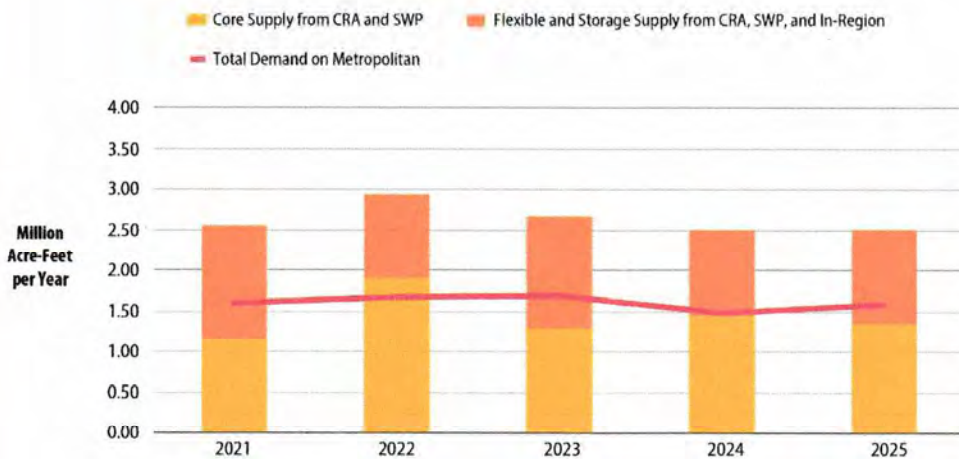
**Figure ES -1 Supply Capabilities under Single Dry-Year and Droughts Lasting Five Consecutive Years**



**Notes:**

1. Supply capabilities are derived using the simulated median storage level going into each of five-year increments based on the balances of supplies and demands. Under the median storage condition, there is an estimated 50 percent probability that storage levels would be higher than the assumption used, and a 50 percent probability that storage levels would be lower than the assumption used.
2. Under some conditions, Metropolitan may choose to implement the WSAP in order to preserve storage reserves for a future year, instead of using the full supply capability. This can result in impacts at the retail level even under conditions where there may be adequate supply capabilities to meet firm demands.
3. All storage capability figures shown in the 2020 UWMP reflect actual storage program conveyance constraints.
4. Total demands on Metropolitan illustrated in the figure includes delivery obligations associated with Exchange with SDCWA.

**Figure ES -2 Drought Risk Assessment for 2021-2025**



**Notes:**

1. Drought risk assessment for 2021-2025 is based on historic 1988 to 1992 conditions (driest five consecutive year historic sequence for Metropolitan's water supply).
2. Shortfall from core supplies may be met through supply augmentation actions by exercising Metropolitan's flexible supplies and storage from CRA, SWP, and In-Region.
3. As of January 2021, Metropolitan has 3.2 MAF of dry-years supplies that may be utilized to meet shortfall from core supplies.
4. Metropolitan may also implement demand reduction and operational flexibility as part of its shortage response actions, if needed.
5. Total Demand on Metropolitan illustrated in the figure includes delivery obligations associated with Exchange with SDCWA.



# Executive Summary and Simple Lay Description of 2020 UWMP Findings

Metropolitan's 2020 Urban Water Management Plan (UWMP) has been prepared in compliance with the California Water Code (CWC)<sup>1</sup>. This Executive Summary satisfies the requirement of CWC Section 10630.5 to include a simple lay description of information necessary to provide a general understanding of the plan, including a description of Metropolitan's reliable water, as well as its needs, strategies, and potential challenges for the foreseeable future.

This plan provides an assessment of Metropolitan's water service reliability, describes and evaluates sources of water supply, efficient uses of water, demand management measures, implementation strategy and schedule, and other relevant information and programs. In addition to the water reliability assessments, the plan includes an evaluation of frequent and severe periods of droughts, as described in the Drought Risk Assessment, and the preparation and adoption of the Water Shortage Contingency Plan (WSCP).

Metropolitan's 2020 UWMP was developed as part of the 2020 Integrated Water Resources Plan (IRP) planning process and provides a representation of Metropolitan's planning elements reported under the conditions required by the Act. The IRP represents Metropolitan's comprehensive planning process and will serve as Metropolitan's blueprint for long-term water reliability, including key supply development and water use efficiency goals. Together, these plans serve as the reliability roadmap for the region. The planning process involved extensive coordination with Southern California's water agencies, municipal service providers, and public planning agencies. Metropolitan's Board of Directors provided oversight throughout the ongoing process for the development of the 2020 IRP that informed the preparation of the 2020 UWMP. Metropolitan's outreach efforts sought to engage the general public, businesses, environmental organizations, diverse communities, cities, counties, and other stakeholders with an interest in the future of Southern California's water supplies. The information included in the 2020 UWMP represents the most current and available planning projections of supply capability and demand forecasts developed through a collaborative process with the member agencies.

As with Metropolitan's previous plans, the 2020 UWMP does not explicitly discuss specific activities undertaken by its member agencies unless they relate to one of Metropolitan's water demand or supply management programs. Presumably, each member agency will discuss these activities in its UWMP.

## **Factors Considered for Metropolitan's Water Reliability Assessments for the UWMP**

The Act requires reporting agencies to describe their water service reliability under the conditions associated with a normal water year, single dry-year, and droughts lasting at least five consecutive water years, with projected information in five-year increments for 20 years. The factors used to evaluate Metropolitan's supply and demand balance for the 2020 UWMP are

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<sup>1</sup> This UWMP complies with the Urban Water Management Planning Act (Act), which was added by Statute 1983, Chapter 1009, became effective on January 1, 1984, and currently includes CWC Sections 10610 through 10657; and with CWC Section 10608.36 which was added by SB X7-7 in 2009.



presented below. Some of the considerations and resulting projections may change as Metropolitan's planning progresses. These changes may be reflected in future updates of the UWMP. Metropolitan and its member agencies have engaged in a comprehensive regional planning process called the IRP since the 1990s. In its 2020 IRP process, Metropolitan and its member agencies are using a scenario planning approach to identify and account for the broad range of uncertainty that the region faces in its water supplies and demands. Instead of focusing on a target for future water supply needs based on a single projected outcome of supplies and demands, this approach encouraged broader thinking and discussion of possible future conditions for local and imported water supply and retail demand, and the policy implications for Metropolitan and its service area. Adaptive management during implementation will allow flexibility in how the region prepares for the supply and demand conditions as they evolve through the future. The scenario planning in the 2020 IRP started with identifying the major drivers of change that impact water supply and demand for the region, understanding how they interact, and then assessing the potential scale of impact in the future. Data sources and quantification methods were identified that could be used for quantitative and qualitative analysis of the drivers and their impact on water supplies and demands. The detailed analyses of future local and imported water supplies; economic growth, demographics and water demands; and changing hydrology were incorporated into the UWMP. The IRP planning effort and policy discussions continued into 2021.

#### *Hydrologic Conditions and Reporting Period*

The 2020 UWMP presents Metropolitan's water reliability assessments from 2025 through 2045. As specified in the Act, there are three water-year types that must be included in the water service reliability assessment for the UWMP. To simulate hydrologic conditions for the required reliability assessments, Metropolitan assumed the following:

- Normal Year. The average of historic years 1922 to 2017 most closely represents the water supply conditions that Metropolitan considers available during a normal water year.
- Single Dry Year. The conditions for the year 1977 represent the lowest total water supply available to Metropolitan.
- Five-Consecutive-Year Drought. The five consecutive years of 1988 to 1992 represent the driest five-consecutive year historical sequence for Metropolitan's water supply. This five-year sequence is used to complete both Metropolitan's water service reliability and drought risk assessments.

Metropolitan developed and evaluated estimates of future demands and supplies from local sources and from Metropolitan sources based on a record of 96 years (1922-2017) of historic hydrology. Supply and demand analyses for the single dry year and droughts lasting at least five consecutive water years were based on conditions affecting the watershed and supplies from the SWP, as this supply availability fluctuates the most among Metropolitan's sources of supply. Using the same 96-year period of the SWP supply availability, 1977 is determined to be the single driest year and 1988-92 is the driest 5-year historical sequence that represents the lowest water supply available for SWP supplies to Metropolitan. In addition, staff analysis of the 8-river index, an indicator of river flow and runoff in the SWP watershed, indicated that 1977 is the single driest year and 1988-92 is the lowest 5 consecutive dry years from 1922 through 2017. The 8-river index is used by DWR and other water agencies as an estimate of the unimpaired runoff (or natural water production) of the Sacramento and San Joaquin River basins, which are sources of water for the SWP.

## **Demand Projections**

Within Metropolitan's service area, retail water demands can be met with local supplies or imported supplies. In the UWMP, Metropolitan's supply reliability assessments focus on the future demands for Metropolitan's imported and other supplies. The expected firm demand on Metropolitan is the difference between total demands, adjusted for conservation, and projected total local supplies. Thus, in order to project the regional need for water, Metropolitan starts with a projection of total demand including retail Municipal and Industrial (M&I), retail agricultural, seawater barrier, and replenishment demands, determines the adjustments from total conservation, and subtracts the total local supplies that are available to meet a portion of those demands.

### *Total Demands*

Demographic growth is a major driver of the current and future retail M&I water demand. Metropolitan updates its retail M&I projection periodically based on the release of official regional demographic and economic projections, and in the 2020 IRP, alternative demographic projections are being evaluated. The projections of retail M&I water demands used in the 2020 UWMP are based on demographic data and projections taken from the following reports:

- Southern California Association of Governments (SCAG) Connect SoCal: The 2020-2045 Regional Transportation Plan/Sustainable Community Strategy (May 2020)
- San Diego Association of Governments (SANDAG) San Diego Forward: The 2019 Federal Regional Transportation Plan (October 2019)

The SCAG and SANDAG regional growth forecasts are the core assumptions for the retail M&I demand forecasts for the UWMP assessments. These forecasts drive the estimating equations of the retail demand forecasting in Metropolitan's Econometric Demand Model (MWD-EDM). Both SCAG and SANDAG prepare demographic forecasts based on land use data for their respective regions through extensive processes that emphasize input from local planners and are done in coordination with local or regional land use authorities, incorporating essential information to reflect anticipated future populations and land uses. SCAG's and SANDAG's projections undergo extensive local review, incorporate zoning information from city and county general plans, and are supported by Environmental Impact Reports.

Retail agricultural demands consist of retail level water use for irrigating crops. Metropolitan's member agencies estimate agricultural water use based on many factors, including farm acreage, crop types, historical water use, and land use conversion. Each member agency estimates its agricultural demands differently, depending on availability of information. Metropolitan relies on member agencies' estimates of agricultural demands for the 2020 UWMP.

Metropolitan also includes in its assessment of total demands the local groundwater requirements for seawater barrier and groundwater basin replenishment. Seawater barrier demands represent the amount of water needed to hold back seawater intrusion into the coastal groundwater basins. Replenishment demands represent the amount of water that member agencies plan to use to replenish the groundwater basins and augment natural replenishment from precipitation. Metropolitan relies on member agencies' and groundwater management agencies' projections for these demands, as well as projections of local supplies that are also used to meet these demands.

### *Total Conservation*

Projected regional water demand is adjusted to account for water conserved by best management practices from active, code-based, and price-effect conservation. Active



conservation levels are derived by calculating water savings from all active program device-based savings installed to date. Code-based conservation levels are derived by calculating water savings from devices covered by existing water conservation ordinances and plumbing codes, including the state Model Water Efficient Landscape Ordinance, with replacement and new construction rates driven by demographic growth consistent with SCAG and SANDAG land use and transportation plans used to derive retail demand. Price-effect conservation is derived by calculating water savings by retail customers attributable to the effect of changes in the real (inflation adjusted) price of water.

#### *Total Local Supplies*

Projections of local supplies are based on information gathered from Metropolitan's annual local production surveys and communications between Metropolitan and member agency staff. The projections include groundwater and surface water production, recycled water and recovery of contaminated or degraded groundwater (funded under the Metropolitan's Local Resources Program, as well as local agency funded programs), and seawater desalination. The local supply projections presented in demand tables for the 2020 UWMP are consistent with the local supply projections reported in member agencies' UWMPs, with one variation being the Colorado River water SDCWA exchanges with Metropolitan for deliveries of blended Metropolitan water.

The total local supplies presented in the 2020 UWMP also include projections of Los Angeles Aqueduct deliveries from the Los Angeles Department of Water and Power (LADWP).

#### **Water Use Reduction Achievement in 2020**

On November 10, 2009, the state Legislature passed Senate Bill 7 as part of the Seventh Extraordinary Session, referred to as SB X7-7 or the Water Conservation Act of 2009. This law is the water conservation component to the historic Delta legislative package, and seeks to achieve a 20 percent statewide reduction in urban per capita water use in California by December 31, 2020. According to CWC Section 10608.36, wholesale agencies are required to include in their UWMPs an assessment of present and proposed future measures, programs, and policies that would help achieve the water use reductions required under SB X7-7. Urban wholesale water suppliers are not required to comply with the target-setting and reporting requirements of SB X7-7.

As a wholesale water agency, Metropolitan is not required to establish or report on an urban water use reduction target. However, Metropolitan's regional conservation programs and local resource programs are designed to assist member agencies and retail water suppliers in the service area to comply with SB X7-7. Therefore, Metropolitan monitors the progress of its service area. Also, in compliance with SB X7-7, Metropolitan assesses its actions, programs, and policies to help achieve the water use reductions required by SB X7-7.

Based on an analysis of population, demand, and the methodologies for setting targets described in the legislation, Metropolitan's baseline per capita water use is 182 GPCD, and the 2020 reduction target is 146 GPCD. From 2011 to 2014, there was a slight increase in per capita water use explained in part by continued economic recovery and drier weather as compared to previous years. With mandatory restrictions from the state and implementation of Metropolitan's Water Supply Allocation Plan, Metropolitan's 2015 UWMP reported an interim water use reduction achievement of 131 gallons per capita per day (GPCD), which is a 28 percent reduction from the baseline. Over the last five years, Metropolitan continued to provide support for retail agency water use reduction efforts through technical assistance, legislation, code and standards updates, and financial incentives where needed to increase water use efficiency. Based on best available data as of January 2021, Metropolitan estimates



a 2019 per capita water use of 121 GPCD, well exceeding Metropolitan's 2020 water use target of 146 GPCD with a 34 percent reduction from the baseline.

### **Supply Capabilities**

The 2020 UWMP reports on Metropolitan's water reliability and identifies projected supplies to meet the long-term demand within its service area. For the 2020 UWMP reliability assessments, Metropolitan's supply capabilities are evaluated using the following assumptions for its imported supplies:

#### *Colorado River Supplies*

Colorado River supplies include Metropolitan's basic Colorado River apportionment, along with supplies that result from existing and committed programs, including those from the IID-MWD Conservation Program, the implementation of the Quantification Settlement Agreement (QSA) and related agreements, and the exchange agreement with SDCWA. The QSA established the baseline water use for each of the agreement parties and facilitates the transfer of water from agricultural agencies to urban uses. Since the QSA, additional programs have been implemented to increase Metropolitan's supplies. These include the PVID Land Management, Crop Rotation, and Water Supply Program, as well as the Lower Colorado River Water Supply Project. The 2007 Interim Guidelines provided for the coordinated operation of Lake Powell and Lake Mead, as well as the Intentionally Created Surplus (ICS) program that allows Metropolitan to store water in Lake Mead. These stored supplies can be used to supply additional water to ensure that, when needed, Metropolitan can deliver up to Metropolitan's Colorado River Aqueduct (CRA) capacity of 1.25 MAF.

In light of declining reservoir levels, the Lower Basin Drought Contingency Plan (DCP) was signed in 2019. This agreement incentivizes storage in Lake Mead and requires certain volumes of water be stored in Lake Mead under certain Lake Mead elevation levels through 2026. Metropolitan is to store certain volumes of water in Lake Mead as DCP ICS once Lake Mead is below elevation 1,045 feet. This agreement also increases Metropolitan's flexibility to take delivery of water stored as ICS at Lake Mead elevations below 1,075 feet. The goal of this agreement is to keep Lake Mead above critical elevations, and overall, it increases Metropolitan's flexibility to store water in Lake Mead in greater volumes and to take delivery of stored water to fill the CRA as needed.

Projections for Colorado River supplies for the 2020 UWMP are based on the United States Bureau of Reclamation's (USBR) Colorado River Simulation System (CRSS) modeling developed in January 2021, which is the latest available at the time of production of this plan. USBR modeling is used to estimate Metropolitan's basic apportionment and the availability of QSA and other related programs.

#### *State Water Project Supplies*

State Water Project (SWP) supplies are estimated using the 2019 SWP Delivery Capability Report distributed by the California Department of Water Resources (DWR) in August 2020. The 2019 Delivery Capability Report presents the current DWR estimate of the amount of water deliveries for current (2020) conditions and conditions 20 years in the future under DWR's set of stated assumptions. These estimates incorporate restrictions on SWP and Central Valley Project (CVP) operations in accordance with water quality objectives established by the State Water Resources Control Board, the biological opinions of the U.S. Fish and Wildlife Service and National Marine Fisheries Service issued on October 21, 2019, and the Incidental Take Permit issued by the California Department of Fish and Wildlife on March 31, 2020. In addition, these estimates incorporate amendments to the Coordinated Operations Agreement between the Central

Valley Project and the State Water Project made in 2018. Under the 2019 Delivery Capability Report, the delivery estimates for the SWP for 2019 conditions as percentage of Table A amounts are 7 percent, equivalent to 134 TAF for Metropolitan, under a single dry-year (1977) condition and 58 percent, equivalent to 1.1 MAF for Metropolitan, under the long-term average condition.

In dry, below-normal conditions, Metropolitan has increased the supplies received from the California Aqueduct by developing flexible Central Valley/SWP storage and transfer programs. Over the years, under the pumping restrictions of the SWP, Metropolitan has collaborated with the other contractors to develop numerous voluntary Central Valley/SWP storage and transfer programs. The goal of these storage/transfer programs is to develop additional dry-year supplies that can be conveyed through the California Aqueduct during dry hydrologic conditions and regulatory restrictions.

### *Storage*

A key component of Metropolitan's water supply capability is the amount of water in Metropolitan's storage facilities. Storage is a major component of Metropolitan's dry-year and emergency resource management strategy. Metropolitan's likelihood of having adequate supply capability to meet projected demands, without implementing the Water Supply Allocation Plan (WSAP), depends on its storage resources. Metropolitan's WSCP also underscores the importance of storage as it is identified as one of potential shortage response actions at various water shortage levels.

In developing the supply capabilities for the 2020 UWMP, Metropolitan assumed the current (2020) storage levels at the start of simulation and used the median storage levels going into each of the five-year increments based on the balances of supplies and demands. Under the median storage condition, there is an estimated 50 percent probability that storage levels would be higher than the assumption used, and a 50 percent probability that storage levels would be lower than the assumption used. All storage capability figures shown in the 2020 UWMP reflect actual storage program conveyance constraints. It is important to note that under some conditions, Metropolitan may choose to implement the WSAP in order to preserve storage reserves for a future year, instead of using the full supply capability. This can result in impacts at the retail level even under conditions where there may be adequate supply capabilities to meet demands.

### ***Findings of the 2020 Urban Water Management Plan***

The 2020 UWMP provides an assessment and summary of Metropolitan's water service reliability outlook through 2045 under the assumptions and cited sources of information described above. As a reporting document, the UWMP will be updated every five years to reflect changes in water demand and supply projections.

The 2020 UWMP satisfies all the content and process requirements mandated by the Act, including the required collaboration for its planning initiatives and report preparation. It should be noted that Metropolitan's primary planning venue is its IRP and that the scenario planning approach within its 2020 IRP is intended to extend Metropolitan's planning beyond single scenario outcomes like that shown within this UWMP. The key findings of Metropolitan's 2020 UWMP are as follows:

#### *Water Service Reliability and Projected Water Supplies*

- Metropolitan has completed its water service reliability assessment, under the stated UWM assumptions and conditions required by the Act, and determined that it has supply capabilities sufficient to meet expected demands from 2025 through 2045 under a single dry-

year condition and a period of drought lasting five consecutive water years, as presented in Figure ES-1, as well as in a normal water year hydrologic condition.

- Metropolitan has evaluated its water shortage risk, under the stated UWMP assumptions and conditions required by the Act, and determined that it has supply capabilities sufficient for a drought period that lasts five consecutive water years based on the driest five-year historic sequence for Metropolitan's water supply. This Drought Risk Assessment was completed starting from the year following when the assessment is conducted (2021 through 2025) and is presented in Figure ES-2.
- Metropolitan has plans for supply implementation and continued development of a diversified resource portfolio including programs in the Colorado River, SWP, Central Valley storage and transfers programs, local resource projects, and in-region storage that enables the region to meet its water supply needs.
- Metropolitan has developed comprehensive plans for stages of actions it would undertake to address frequent and severe periods of droughts; six standard water shortage levels corresponding to progressive ranges of up to 10, 20, 30, 40, and 50 percent shortages and greater than 50 percent shortage; and a catastrophic interruption in water supplies through its Water Shortage Contingency Plan, Water Surplus and Drought Management Plan (WSDM Plan)<sup>2</sup>, and Water Supply Allocation Plan (WSAP)<sup>3</sup>.
- Metropolitan continues to invest in measures that will help improve the region's water use efficiency over time.
- Metropolitan continues to plan for emergency and catastrophic scenarios, recently revising an Emergency Storage Objective to manage against potential interruption in water supplies resulting from catastrophic occurrences within the Southern California region, including seismic events along the San Andreas fault, and Seismic Risk Assessment and Mitigation Plan to assess the vulnerability of Metropolitan's water system and mitigate those vulnerabilities. In addition, Metropolitan is working with the State on the Delta Risk Management Strategy to reduce the impacts of a seismic event in the Delta that would cause levee failure and disruption of SWP deliveries.
- Metropolitan has and will continue to regard water quality with paramount importance to water supply reliability. Metropolitan owns and operates five water treatment plants, three of which are among the 10 largest in the world. Metropolitan is a national leader in providing safe drinking water that meets increasingly stringent standards, testing for over 400 constituents and performing nearly 200,000 water quality tests annually on samples gathered throughout its distribution system. Metropolitan's Water Quality Laboratory analyzes these samples to ensure that Metropolitan's delivered water meets or surpasses all state and federal drinking water standards. Because treatment to remove specific contaminants can be more costly than measures to protect water at the source, Metropolitan also actively supports improved watershed protection programs for its source waters in the Colorado River and State Water Project.

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<sup>2</sup> The WSDM plan is a coordinated plan used to direct Metropolitan's resource operations to help attain the region's reliability goal recognizing the interdependence of surplus and shortage actions. The WSCP is consistent with the WSDM Plan. See Attachment A in Appendix 4.

<sup>3</sup> The WSAP is intended as an equitable approach for encouraging water use efficiency and minimizing regional impacts in times of shortage consistent with the principles and considerations approved by the Board through the WSDM Plan. See Attachment B in Appendix 4.

### *Challenges Ahead and Strategies for Managing Reliability Risks*

- Metropolitan faces a number of challenges in providing adequate, reliable, and high-quality supplemental water supplies for southern California: The Colorado River Basin has historically experienced large swings in annual hydrologic conditions; however, these swings have largely been buffered through a large volume of storage.
- Dramatic swings in annual hydrologic conditions have impacted water supplies available from the State Water Project (SWP) over the last decade. Metropolitan's efforts in building dry-year storage reserves, water banking and transfers have helped manage the wide swings in SWP allocations.
- With approximately 30 percent of Southern California's water supply transported across the Bay-Delta, its declining ecosystem has led to reduction in water supply deliveries. Operational constraints will likely continue until a long-term solution to the problems in the Bay-Delta is identified and implemented.
- Approximately half of the region's water supplies come from resources controlled or operated by local water agencies. These resources include water extracted from local groundwater basins, catchment of local surface water, non-Metropolitan imported water supplied through the Los Angeles Aqueduct, and Colorado River water exchanged for Metropolitan supplies.
- Water quality challenges, such as algae toxins, per- and polyfluoroalkyl substances (PFAS), and the identification of constituents of emerging concern, have a significant impact on the region's water supply conditions and underscore the importance of flexible and adaptive regional planning strategies.

Metropolitan continues to address these water supply challenges through a variety of actions that will maintain water reliability within its service area. Metropolitan's proactive measures include:

- **Continuing water conservation** by expanding outreach, adding devices, and increasing incentives to residents,
- **Increasing local resources** by providing incentives for on-site recycled water hook-up and the Local Resources Program (LRP),
- **Augmenting water supplies** through water transfers and exchanges,
- **Improving return capability of storage programs** to effectively take delivery of water when needed,
- **Maintaining dry year and emergency storage for the region** to remain reliable during periods of low supply and emergencies,
- **Modifying Metropolitan's distribution system** to enhance operational flexibility and efficient delivery of Colorado River, State Water Project, and in-region supplies within Metropolitan's service area,
- **Implementing shortage response actions** under the Water Shortage Contingency Plan and elements of the Water Surplus and Drought Management Plan and Water Supply Allocation Plan to distribute the limited imported supplies and preserve storage reserves, and
- **Responding to water quality concerns** by protecting the quality of the source water, developing water management programs that maintain and enhance water quality, and changing water treatment protocols or blending.





## 2018 Orange County Water Reliability Study

Report Prepared for:  
Municipal Water District of Orange County

Report Prepared by:  
CDM Smith, Inc

Final  
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## 7.1 Findings and Recommendations for the OC Basin

The need for additional water supplies for the OC Basin is fairly small, meaning the OC Basin performs well under the scenarios evaluated. Without any new investments, the OC Basin may utilize demand curtailment at the level of 10 percent about once every 20 years to meet supply gaps. Alternatively, the study noted that there are a number of projects available to OCWD that can help meet supply gaps, including:

- Santa Ana River Conservation and Conjunctive Use Program (SARCCUP)
- Purchase and Development of Additional Replenishment Basins
- West Orange County Well Field Project
- Prado Dam Operations and Silt Removal
- GWRS RO Brine Recovery
- Captured Urban Runoff and Shallow Groundwater for GWRS
- Chino Basin Water Bank
- Purchase of Upstream Santa Ana River Water for the OCWD Basin
- Cadiz Project

While the Study did not evaluate the cost-effectiveness of these options to the OC Basin, we believe these projects would provide more than sufficient supplies to meet the remaining gaps within the OC Basin and that these projects should be fully analyzed and implemented, if proven to be cost-effective.

The Study also did not evaluate the Peters Canyon Water Treatment Plant being studied by EOCWD at this time. MWDOD has agreed to evaluate supplies EOCWD could produce at the treatment plant and convey to the EOCF#2, where these supplies can be provided to SOC. This will occur after the publication of this report concurrent with completing the work with IRWD on the SOC Regional Interconnection and the pump-in to the EOCF#2 and is expected to be completed in the first quarter of calendar year 2019.



### MWDOC's Recommendations for the OC Basin:

- Because the study indicated only a small supply reliability gap for the OC Basin, OCWD should evaluate all of the available supply options before they move forward with future investments.
- The Carson IPR project by MET may be the next least-cost supply available to the OC Basin, pending the final terms and conditions. MWDOC and OCWD should work together to fully evaluate the opportunities this project provides to the OC Basin.
- OCWD is pursuing the SARCCUP Project which could provide significant benefits in the form of extraordinary supplies (drought protection) for the OC Basin. If not fully needed by the OC Basin, the utilization of the supplies by others in OC should be evaluated. MWDOC and OCWD should work together on this effort.
- The study indicated minimal system (emergency) supply needs for the OC Basin, but recommends that all retail agencies review their needs for backup generators for emergency response throughout Orange County.

## 7.2 Findings and Recommendations for SOC

The study noted that SOC is short of emergency supplies today by 20 to 27.5 MGD (which can be met through a combination of local projects and emergency projects such as the IRWD SOC Emergency Interconnection and the pump-in to the EOCF#2). The emergency needs is the major driver of the need for new local projects in SOC. It is suggested that SOC may want to add a contingency amount on top of their emergency needs to build flexibility into the system.

Additional non-emergency water supply reliability needs to deal with droughts and water allocations by MET are also needed by SOC. This need can be met by:

- SOC investing in additional local projects
- Changes to MET's WSAP to provide a larger allocation credit for local supply development
- SOC investing in "extraordinary" supplies, either from the IRWD Strand Ranch, SARCCUP or from another source
- MET having a higher reliability

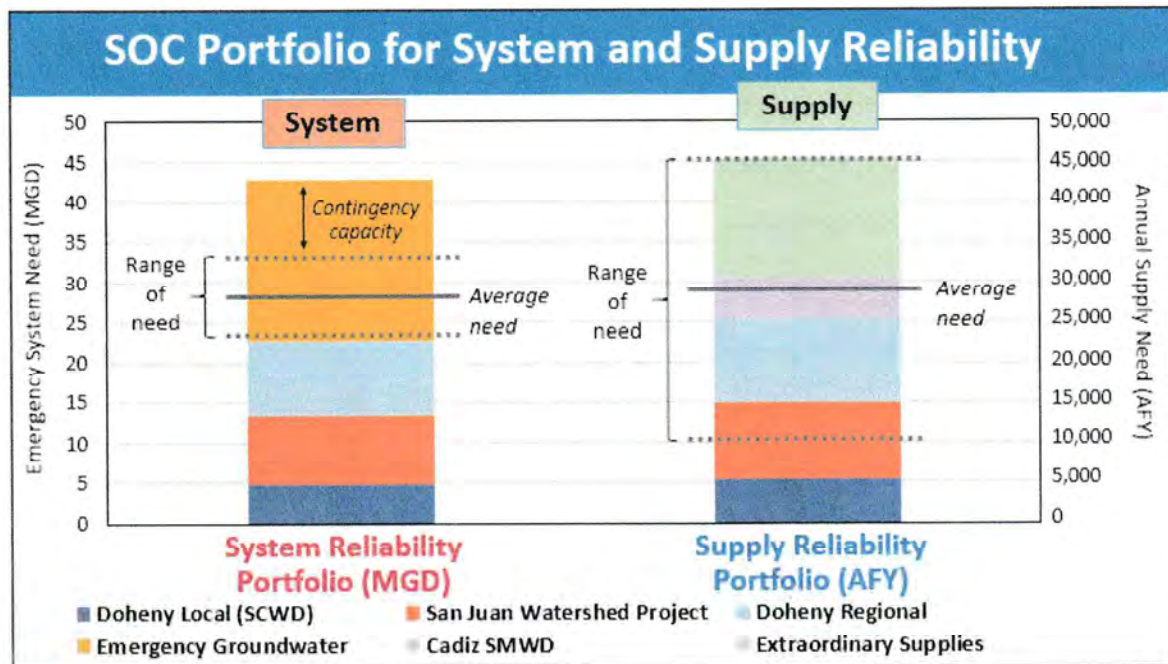
### MWDOC's Recommendations for SOC:

- The study analysis indicates that the San Juan Watershed Project and the Doheny Project both provide cost-effective annual supplies and emergency supplies as shown in **Table 7-1**. These two projects should make up the core reliability improvement strategy for SOC, and should be augmented by other projects evaluated in this study, such as the emergency use of groundwater for system outages, Cadiz water banking and extraordinary supplies. **Figure 7-1** demonstrates how SOC can meet both its system and supply reliability needs.
- Additional study is recommended to determine the appropriate timing and sizing of phases of the Doheny and San Juan Watershed Projects, to better understand system integration

issues with water quality and stranding of assets, operational issues during winter months and operational issues to enable water to be moved through various pipelines in SOC to deal with emergency situations.

**Table 7-1. Combined Benefits of the Doheny and San Juan Projects**

SOC Analysis of Supply & System Needs		
Project	SYSTEM Peak Supply in MGD	SUPPLY Maximum Supply in AFY
Doheny Full Size	14.25	15,963
San Juan Watershed	8.50	9,480
<b>Total</b>	<b>22.75</b>	<b>25,443</b>



**Figure 7-1. Portfolio Recommendation for SOC**



**Table 5-4. Cost Summary for Orange County Water Projects**

Water Project	Capital Cost in Initial Year (\$M)	Annual O&M Cost in Initial Year (\$M)	Total Unit Cost in Initial Year (\$/AF)	Total Unit Cost in Year 2050 (\$/AF)
Poseidon Desalination – OC Basin <sup>(1)(5)</sup>	\$1,041.1	\$34.9	\$2,197	\$3,519
Poseidon Desalination – SOC <sup>(1)(5)</sup>	\$433.4	\$15.7	\$2,132	\$3,485
Doheny Desalination – SCWD <sup>(1)(2)</sup>	\$107.2	\$6.2	\$1,622	\$3,225
Doheny Desalination – Regional <sup>(1)</sup>	\$133.1	\$13.9	\$1,712	\$3,296
San Juan Watershed Project <sup>(1)</sup>	\$148.5	\$10.3	\$1,521	\$3,257
Cadiz Water Bank – SMWD <sup>(3)</sup>	NA	NA	\$1,276	\$3,236
Cadiz Water Bank – Retail <sup>(3)</sup>	NA	NA	\$1,652	\$3,710
Strand Ranch Water Banking – Pilot <sup>(3)</sup>	NA	NA	\$1,971	NA
Expanded SOC Emergency Water <sup>(4)</sup>	\$15.0	\$3.0	NA	NA

(1) Capital costs assumed to be financed at financing terms provided by project sponsors. Annual debt payments included in total unit costs. Eligible projects are assumed to get maximum LRP funding from MET, which is reflected in the total unit costs.

(2) Capital cost for project reduced by \$10 million of secured state grant monies.

(3) Costs for water banking projects are based on terms which have fixed costs that are paid to recover capital cost or reserve the water supply, and variable costs that are paid when water is taken (including MET wheeling costs and MET/local water treatment); these costs are shown as a total unit cost. Note that SMWD gets a discounted cost for Cadiz Water Bank; and that Strand Ranch Water Banking is only a pilot program from 2019 to 2025 (with water assumed to be taken in years 2024 and 2025, with a 14% probability of need in those years).

(4) Project only provides system reliability benefits during an unplanned outage, and thus making it impossible to calculate a unit cost in \$/AF. Cost shown is for a capacity of 9.7 MGD and assumes first unplanned outage in year 2023 for O&M cost.

(5) Costs reflect a discount that Poseidon provides to City of Huntington Beach for locating treatment plant in its City. The stream of payments for the discounted water purchases are counted as revenue towards the Poseidon Project, with the remaining Poseidon costs spread over the remaining 52,640 AFY production from the plant.

### 5.3 Evaluation of Projects for System Reliability in SOC

Using the System Reliability EM as defined in Section 5-2, five projects that provide system reliability benefits for SOC were compared. **Table 5-5** presents the EM for each planning scenario, along with an average EM. Also shown on this table is a ranking score of 1 to 5, with a score of 1 being assigned to the project with the best EM, and a 5 being assigned to the project with the worst EM. Positive numbers are the best and smaller negative numbers are next best.

**Table 5-5. Comparison of Projects Providing System Reliability Benefits to SOC**

Project	Max Capacity (MGD)	EM <sup>(1)</sup> 1A	EM <sup>(1)</sup> 1B	EM <sup>(1)</sup> 2A	EM <sup>(1)</sup> 2B	Average EM	Project Ranking Score <sup>(2)</sup>
Doheny Desal – SCWD	4.75	-\$5.9	-\$2.8	-\$5.6	-\$1.0	-\$3.8	4
Doheny Desal – Regional	9.50	-\$3.0	<b>\$0.3</b>	-\$2.7	<b>\$2.3</b>	-\$0.8	<b>1</b>
San Juan Watershed Project	8.50	-\$5.1	-\$2.3	-\$4.9	-\$0.6	-\$3.2	3
Poseidon Desal – SOC	14.25	-\$10.3	-\$7.0	-\$10.0	-\$5.0	-\$8.1	5
Expanded SOC Emergency <sup>(3)</sup>	9.70	-\$2.3	-\$2.3	-\$2.3	-\$2.4	-\$2.3	2

- 1) Represents avoided discounted MET water purchases for different water rate scenarios LESS discounted project costs, DIVIDED by emergency capacity (MGD) = \$/MGD. Positive numbers indicate that project is cheaper than purchasing MET water over the life of project. Negative numbers indicate that project is more expensive than purchasing MET water.
- 2) Ranking is based on average EM between four scenarios, converted to a rank score from 1 (best) to 5 (worst).
- 3) This project is scalable to fill remaining system reliability need.

As shown on Table 5-5, Doheny Desalination Regional has the best ranked score, followed by Expanded SOC Emergency Water, San Juan Watershed Project, Doheny Desalination SCWD, and finally Poseidon Desalination SOC. It should be noted that the Doheny Desalination SCWD project includes certain elements designed for regional expansion—meaning that it is foundational to the incremental cost that Doheny Desalination Regional project adds. Note that the regional Doheny project cannot be done as presented here in this study without the SCWD project being done first.

## 5.4 Evaluation of Projects for Supply Reliability in SOC and OC Basin

Using the Supply Reliability EM as defined in Section 5.2, eight projects that provide supply reliability benefits for SOC and OC Basin were compared. For Scenario 1A (minimal climate change and low-cost MET investments) **Table 5-6** presents: (1) the present value project costs; (2) present value avoided MET purchases; (3) the net present value; (4) the Supply Reliability EM; and (5) project ranking score, where the higher the EM score the better a project ranks.

As shown in Table 5-6, the best ranked water supply project is the Cadiz Water Bank – SMWD with an EM of 1.0, followed closely by the Doheny Desalination – Regional with an EM of 0.98. The worst ranked water supply project is Poseidon Desalination – OC Basin with an EM of 0.77.

**Table 5-7** presents the same information as Table 5-6 but for Scenario 2B (significant climate change and high-cost MET investments). Under this scenario, the best ranked projects are the Strand Ranch Water Bank – Pilot with an EM of 1.22 and Doheny Desalination – Regional with an EM of 1.21. The worst ranked project is Poseidon Desalination – OC Basin with an EM of 0.93.

**Table 5-6. Comparison of Projects Providing Water Supply Benefits for Scenario 1A**

Project	Project Cost <sup>(1)</sup> (\$M)	Avoided MET Purchase <sup>(2)</sup> (\$M)	Net Present Value <sup>(3)</sup> (\$M)	Evaluation Metric <sup>(4)</sup>	Project Ranking Score
Cadiz Water Bank – SMWD	\$163.1	\$163.4	\$0.3	1.00	1
Cadiz Water Bank – Retail	\$197.5	\$163.4	-\$34.1	0.83	6
San Juan Watershed Project	\$300.0	\$274.2	-\$25.8	0.91	3
Doheny Desal – SCWD	\$185.8	\$169.5	-\$16.3	0.91	4
Doheny Desal – Regional	\$305.1	\$298.8	-\$6.4	0.98	2
Poseidon Desal – SOC	\$633.4	\$495.4	-\$138.0	0.78	7
Poseidon Desal – OC Basin	\$1,485.8	\$1,088.9	-\$396.9	0.73	8
Strand Ranch Water Bank – Pilot	\$1.5	\$1.3	-\$0.2	0.84	5

1) Capital and O&M costs over life of project, discounted to present value terms.

2) Average of avoided MET water purchases + allocation surcharge (when shortages exist) and avoided MET purchases when shortages do not exist, discounted to present value terms.

3) Avoided discounted MET water purchases LESS discounted project cost.

4) Avoided discounted MET water purchases DIVIDED by discounted project cost.

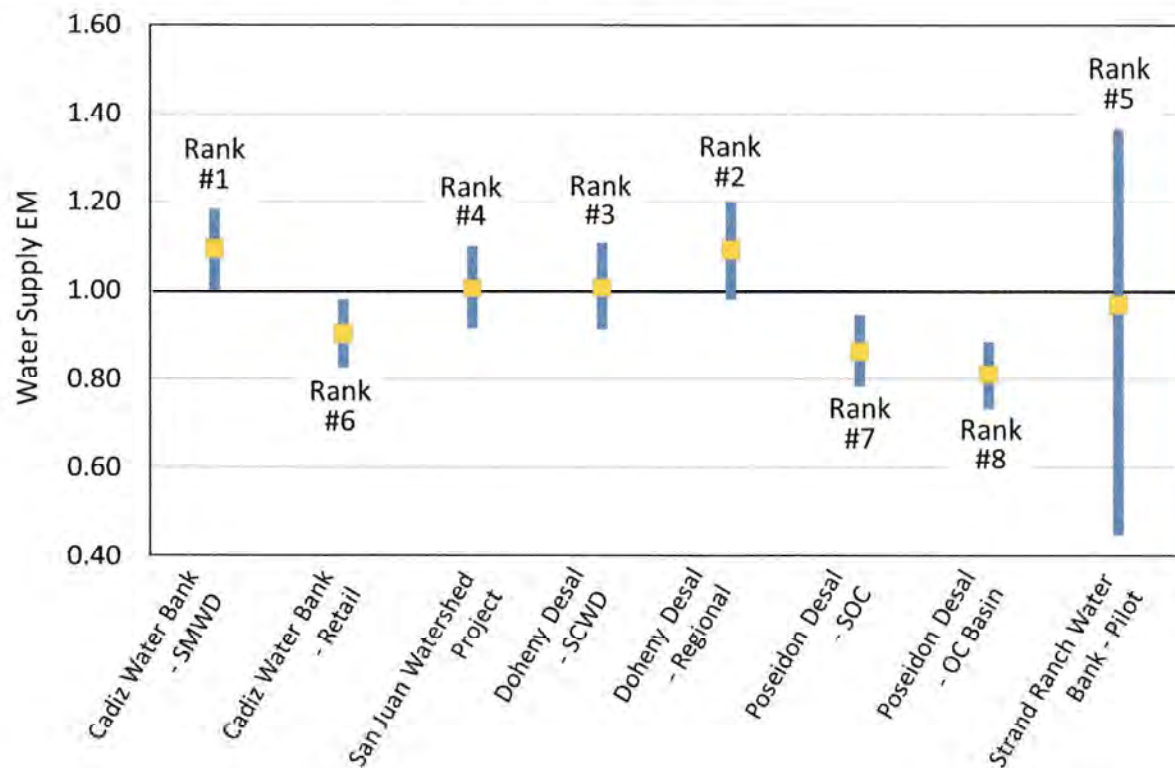


**Table 5-7. Comparison of Projects Providing Water Supply Benefits for Scenario 2B**

Project	Project Cost <sup>(1)</sup> (\$M)	Avoided MET Purchase <sup>(2)</sup> (\$M)	Net Present Value <sup>(3)</sup> (\$M)	Evaluation Metric <sup>(4)</sup>	Project Ranking Score
Cadiz Water Bank – SMWD	\$165.1	\$195.3	\$30.2	1.18	3
Cadiz Water Bank – Retail	\$199.5	\$195.3	-\$4.2	0.98	6
San Juan Watershed Project	\$300.0	\$329.9	\$29.9	1.10	5
Doheny Desal – SCWD	\$185.8	\$205.6	\$19.8	1.11	4
Doheny Desal – Regional	\$305.1	\$312.8	\$7.7	1.21	2
Poseidon Desal – SOC	\$633.4	\$599.1	-\$34.2	0.95	7
Poseidon Desal – OC Basin	\$1,485.8	\$1,316.2	-\$169.6	0.89	8
Strand Ranch Water Bank – Pilot	\$2.9	\$3.5	\$0.6	1.22	1

- 1) Capital and O&M costs over life of project, discounted to present value terms.
- 2) Average of avoided MET water purchases + allocation surcharge (when shortages exist) and avoided MET purchases when shortages do not exist, discounted to present value terms.
- 3) Avoided discounted MET water purchases LESS discounted project cost.
- 4) Avoided discounted MET water purchases DIVIDED by discounted project cost.

**Figure 5-4** shows the range in Supply Reliability EM for the four planning scenarios, as well as an average EM. When all planning scenarios are considered, a final project ranking is established based first on the average EM (shown as yellow square), and secondly on the range of EM for the scenarios (as shown as the blue bar). The smaller the length of the blue bar on Figure 5-4 means the more consistent it performs from a cost-benefit perspective.



**Figure 5-4. Range and Average Supply Reliability EM and Project Ranking**



**Table 5-8** presents this information in a slightly different way, in which supply projects are ranked for each scenario using Net Present Value (NPV) and Supply Reliability EM. The NPV represents the difference between present value avoided MET water purchases and present value project costs. If the NPV is positive, it means the project is more cost-effective than MET water; whereas if the NPV is negative, it means that the project is not as cost-effective as purchasing MET water. Project rankings are shown for both the EM and NPV for all scenarios, as well as an overall average ranked score.

**Table 5-8. Ranking Supply Projects Based on EM and NPV**

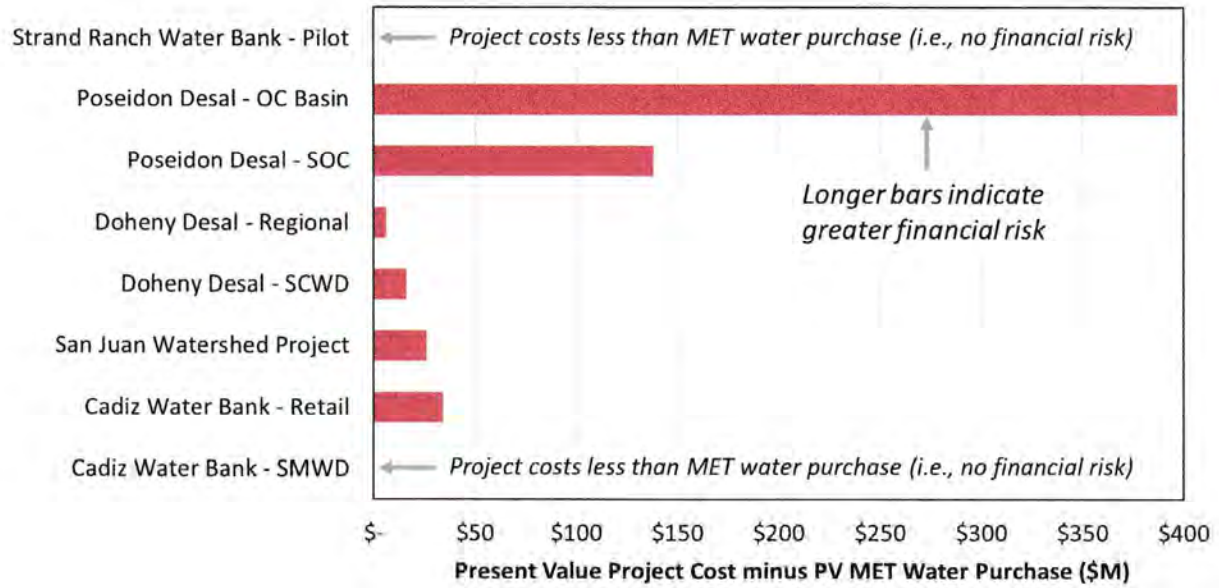
Project	SC 1A		SC 1B		SC 2A		SC 2B		Average Rank
	EM	NPV	EM	NPV	EM	NPV	EM	NPV	
Cadiz Water Bank - SMWD	1	1	1	2	3	2	3	2	1.9
Cadiz Water Bank - Retail	6	6	5	6	6	6	6	6	5.9
San Juan Watershed Project	3	5	3	5	5	3	5	3	4.0
Doheny - SCWD	4	4	4	4	4	4	4	4	4.0
Doheny - Regional	2	3	2	1	2	1	2	1	1.8
Poseidon - SOC	7	7	6	7	7	7	7	7	6.9
Poseidon - OC Basin	8	8	7	8	8	8	8	8	7.9
Strand Ranch Water Bank - Pilot	5	2	8	3	1	5	1	5	3.8

1 = Top Ranked Project; 8 = Bottom Ranked Project

When both the EM and NPV are used, the final project rankings for water supply reliability are:

- 1<sup>st</sup> Doheny Desalination – Regional
- 2<sup>nd</sup> Cadiz Water Bank – SMWD
- 3<sup>rd</sup> Strand Ranch Water Bank - Pilot
- 4<sup>th</sup> (tie) San Juan Watershed Project
- 4<sup>rd</sup> (tie) Doheny Desalination – SCWD
- 6<sup>th</sup> Cadiz Water Bank – Retail
- 7<sup>th</sup> Poseidon Desalination – SOC
- 8<sup>th</sup> Poseidon Desalination – OC Basin

While the EM can be interpreted as the relative benefit that projects have regardless of their supply yield, the difference between buying MET water (even with allocation surcharges included during shortage conditions) and the project cost under Scenario 1B (which has the highest reliability of the four scenarios) can indicate the downside financial risk. Put another way, if an agency believed that Scenario 2A (the scenario showing the most water shortages) was most likely to occur and made an investment to address these shortages, but Scenario 1B occurred instead, what would be the downside financial exposure. **Figure 5-5** presents this potential downside financial risk.



**Figure 5-5. Potential Downside Financial Risk, Based on Scenario 1B**