



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
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Refer to NMFS No: WCRO-2024-00824

Peter Kozelka
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U.S. Environmental Protection Agency, Region IX
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San Francisco, California 94105-3901

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Reissuance of a Permit under the National Pollutant Discharge Elimination System to the City of San Diego for Wastewater Discharges by the Point Loma Wastewater Treatment Plant

Dear Mr. Kozelka:

This letter responds to your April 4, 2024, request for initiation of consultation with the National Marine Fisheries Service (NMFS) pursuant to Section 7 of the Endangered Species Act (ESA) for the subject action. Your request qualified for our expedited review and analysis because it met our screening criteria and contained all required information on, and analysis of, your proposed action and its potential effects to listed species and designated critical habitat.

We reviewed the Environmental Protection Agency's (EPA) consultation request and related initiation package. Where relevant, we have adopted the information and analyses you have provided and/or referenced but only after our independent, science-based evaluation confirmed they meet our regulatory and scientific standards. We adopt by reference the following sections of the Biological Evaluation and Essential Fish Habitat Assessment (BE/EFHA) submitted to NMFS by the EPA along with the consultation request on April 4, 2024 for the proposed action, status of species, action area, environmental baseline, and effects analysis:

- Executive Summary
- Section 1.0 Background
- Section 2.0 Environmental Baseline in the Action Area
- Section 3.0 Threatened and Endangered Species and Critical Habitat
- Section 4.0 Potential Adverse Effects of the Action on ESA-Listed Species
- Section 5.0 Essential Fish Habitat Assessment
- Section 6.0 Potential Adverse Effects on Essential Fish Habitat



CONSULTATION HISTORY

On March 28, 2023, EPA contacted NMFS to request an updated species list or confirm the species list in the 2022 Biological Opinion for the National Pollutant Discharge Elimination System (NPDES) permit remained up-to-date. On May 2, 2023, we provided EPA with an updated list of endangered and threatened species.

On January 30, 2024, EPA sent a draft BE/EFHA to NMFS for review and we provided comments on February 23, 2024. EPA also shared the draft permit provided to the public and the Clean Water Act (CWA) section 30(h) Tentative Decision Document (TDD) on March 8, 2024. On March 29, 2024, NMFS met with EPA in a conference call to discuss technical information about the proposed action and to provide clarification on various comments. On April 4, 2024, NMFS received a letter from EPA requesting formal consultation regarding the proposed action to renew the NPDES permit for the E.W. Blom Point Loma Wastewater Treatment Plant (PLWTP), along with an updated BE/EFHA incorporating our previous comments and edits.

Updates to the regulations governing interagency consultation (50 CFR part 402) were effective on May 6, 2024 (89 Fed. Reg. 24268). We are applying the updated regulations to this consultation. The 2024 regulatory changes, like those from 2019, were intended to improve and clarify the consultation process, and, with one exception from 2024 (offsetting reasonable and prudent measures), were not intended to result in changes to the Services' existing practice in implementing section 7(a)(2) of the Act. 89 Fed. Reg. at 24268; 84 Fed. Reg. at 45015. We have considered the prior rules and affirm that the substantive analysis and conclusions articulated in this biological opinion and incidental take statement would not have been any different under the 2019 regulations or pre-2019 regulations.

PROPOSED ACTION

The City of San Diego (hereafter, the City) is seeking a renewal of a NPDES permit to allow continued discharge of wastewater from PLWTP. Over a five-year period, PLWTP will discharge chemically enhanced primary treated (CEPT) wastewater into the Pacific Ocean from a 7,154 meter long (4.5 miles long) outfall pipe at a depth of 95 meters. Treated wastewater is discharged into waters in the U.S. Exclusive Economic Zone (EEZ), but state waters may be impacted as well. The Point Loma Ocean Outfall (PLOO) has an average dry weather design capacity of 240 million gallons per day (MGD) and a peak wet weather capacity of 432 MGD. In accordance with the California Ocean Plan requirements, PLOO discharge flows are expected to meet a minimum initial dilution of 204:1. Under the NPDES permit, PLWTP aims to reduce the discharge of total suspended solids (TSS) mass emissions, toxic metals, and toxic organic compounds. They also aim to reduce PLOO discharge flows to the ocean under the Pure Water

San Diego Program by producing and delivering approximately 30 MGD of potable reuse to the San Diego region by 2027, and up to 83 MGD of potable reuse by 2035.

RANGEWIDE STATUS OF THE SPECIES

We examined the status of each species that would be adversely affected by the proposed action to inform the description of the species’ “reproduction, numbers, or distribution” as described in 50 CFR 402.02. These species are:

- Marine mammals: Guadalupe fur seal (*Arctocephalus townsendi*), blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), gray whale (*Eschrichtius robustus*; Western North Pacific (WNP) Distinct Population Segment (DPS)), humpback whale (*Megaptera novaeangliae*; Central America DPS and Mexico DPS)
- Sea turtles: green sea turtle (*Chelonia mydas*), leatherback turtle (*Dermochelys coriacea*), loggerhead turtle (*Caretta caretta*), Olive ridley turtle (*Lepidochelys olivacea*)
- Marine invertebrates: white abalone (*Haliotis sorenseni*)

We also examined the likely effects on any listed species and species proposed for listing that your agency made “not likely to adversely affect” determinations for. These species are: North Pacific right whales (*Eubalaena japonica*), sei whales (*Balaenoptera borealis*), sperm whales (*Physeter macrocephalus*), giant manta rays (*Mobula birostris*), green sturgeon (*Acipenser medirostris*; Southern DPS), gulf grouper (*Mycteroperca jordani*), oceanic whitetip shark (*Carcharhinus longimanus*), scalloped hammerhead sharks (*Sphyrna lewini*; Eastern Pacific DPS), steelhead (*Oncorhynchus mykiss*; Southern California DPS), black abalone (*Haliotis cracherodii*), and sunflower sea stars¹ (*Pycnopodia helianthoides*). Our conclusions regarding the effects of the action on these species are presented below under the heading “Not Likely to Adversely Affect” Determinations.

The EPA’s BE/EFHA provides a detailed discussion of the status of the species likely to be affected and those not likely to be adversely affected by the proposed action in Section 3.0 (Threatened and Endangered Species and Critical Habitat) and Section 4.3 (Consequence Analysis). We adopt these sections of the EPA’s BE/EFHA here (50 CFR 402.14(h)(3)).

Critical habitat has been designated or proposed for green sturgeon (Southern DPS), steelhead trout (Southern California DPS), humpback whale (Central America DPS and Mexico DPS), north Pacific right whale, leatherback turtle, green turtle² (East Pacific DPS), and black abalone on the U.S. West Coast. However, no critical habitats overlap with the action area.

¹ Sunflower sea stars were proposed to be listed as threatened by NMFS on March 16, 2023 (88 FR 16212).

² NMFS proposed designating critical habitat for the East Pacific DPS of green sea turtles on July 19, 2023 (88 FR 46572).

ACTION AREA

“Action area” means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). For the purposes of EFH consultation, a Federal action means any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken by a Federal agency (50 CFR 600.910). The action area for the proposed action is the area offshore of Point Loma. The EPA’s BE/EFHA identified and describes the action area in Section 1.6 (Action Area: Point Loma Offshore) and Section 2.1 (Physical Description of the Mainland Shelf Off Point Loma). We adopt these sections of the EPA’s BE/EFHA here (50 CFR 402.14(h)(3)).

ENVIRONMENTAL BASELINE

The “environmental baseline” refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultations, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency’s discretion to modify are part of the environmental baseline (50 CFR 402.02).

The EPA’s BE/EFHA provides a detailed discussion and comprehensive assessment of the environmental baseline in Sections 2.0 (Environmental Baseline in the Action Area), 3.1 (Description of Fish Species), 3.2 (Description of Marine Mammal Species), 3.3 (Description of Sea Turtle Species), and 3.4 (Description of Marine Invertebrates). We adopt these sections of the EPA’s BE/EFHA here (50 CFR 402.14(h)(3)). In the following paragraphs, we provide additional information on the environmental baseline for ESA-listed species within the action area.

Most of the ESA-listed species occurring in the action area are highly migratory and do not spend extended periods of time within the action area. When they do appear in the offshore area near Point Loma and San Diego, they are at risk for threats from human activities such as vessel strikes and fishery interactions. Between 2013 and 2023, there were 85 reports of Guadalupe fur seals, humpback whales, gray whales, and blue whales stranding in San Diego county (NMFS stranding report, unpublished data). Of these strandings, there were two reports of Guadalupe fur seals, both observed entangled in fishing gear. Among whale strandings, humpback whales were the most commonly reported (17 reported entanglements), followed by gray whales (11 reported

entanglements), and blue whales (two reported entanglements). Twelve of the stranded whales showed signs of vessel strikes, and 18 had some evidence of interacting with fishery gear.

Sea turtles, much like marine mammals, do not spend extended periods of time within the action area, but when they do appear, they are at risk from the same threats. The most common sea turtle species in the San Diego area are green sea turtles, and they were the most commonly reported as stranded between 2013 and 2023. The action area borders, but does not overlap, with the proposed green sea turtle critical habitat designation, which is characterized as important foraging grounds for the species. There were 58 reports of stranded green sea turtles, 42 of which were found with possible vessel or propeller strikes, and ten with fishing gear. Olive ridley turtles were the second most reported stranded turtle species, followed by loggerheads. Stranding reports for both species largely indicate wounds to the turtles were observed, but there is no clear source of how the injuries were sustained.

Other threats encountered by marine species within the action area include exposure to persistent organic pollutants (POPs) already present in the water column and sediment. Information on POP levels in ESA-listed marine mammals and sea turtles throughout their range can be used as a measure of general baseline pollutant levels in these species. Sea turtles that forage or occur near urban areas have been found to have signs of POPs in their body, which likely came from occupying areas known to have POPs (Dodder et al., 2012; Lyons et al., 2014; Lyons & Lowe, 2015; Barraza et al., 2020). For sea turtles, relatively higher levels of POPs were found in green sea turtles off southern California compared to other turtle species in other regions (Komoroske et al., 2011). High DDE (dichlorodiphenyldichloroethylene) levels exceeded the “no effect” thresholds identified for loggerheads and suggest potential immunological effects on green turtles (Lewison et al., 2011; Barraza et al., 2020). For baleen whales, more data are available for humpback whales than other species. Elfes et al. (2010) found higher POP levels in humpback whales from the North Atlantic than from the North Pacific; however, DDT (dichlorodiphenyltrichloroethane) levels in humpback whales off southern California were higher than those in the North Atlantic. All POP classes were higher in the blubber of humpback whales off southern California than in other feeding regions in the North Pacific, potentially because of the species’ strong site fidelity to feeding areas and the highly urbanized coast of southern California (Varanasi et al., 1993; Elfes et al., 2010; Lee et al., 2023). Some individuals had PCB (polychlorinated biphenyl) levels at or near the health effects threshold identified for marine mammals (Ross et al., 1996; Kannan et al., 2000; Elfes et al., 2010). Analyses of dead beached gray whales from Alaska, Washington, and California did not show any region-specific differences in POP concentrations (Varanasi et al., 1993). Very little data are available for fin and blue whales. For Guadalupe fur seals, POP levels are not known; however, California sea lions may be used as a proxy given similar migration habits and patterns. California sea lions exhibit a wide range in pollutant values, including PCB and DDT levels higher than those found in humpback and gray whales (Kannan et al., 2000).

For white abalone, limited information is available on their historical abundance within the action area and the effects of past fisheries harvest. Commercial landings of white abalone (by weight in shell) in the region from Palos Verdes to Mexico made up only 1.42% of the total white abalone landings in California for the period from 1955-1993 (Hobday and Tegner 2000). Past fisheries harvest likely reduced the abundance and density of white abalone within the action area, although we do not have information to evaluate to what extent. White abalone outplanting efforts within the action area have been ongoing since 2019 to enhance wild populations to self-sustaining levels (NMFS 2019c).

EFFECTS OF THE ACTION

Under the ESA, “effects of the action” are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action.

The EPA’s BE/EFHA provides a detailed discussion and comprehensive assessment of the effects of the proposed action in Section 4.0 (Potential Adverse Effects of the Action on ESA-Listed Species. We adopt these sections of the EPA’s BE/EFHA here (50 CFR 402.14(h)(3)). NMFS has evaluated these sections and, after our independent, science-based evaluation, we have determined that the analysis of effects in these sections meets our regulatory and scientific standards.

The EPA proposes to re-issue the NPDES permit for the PLWTP that authorizes the discharge of treated wastewater through the PLOO. The potential effects associated with the discharge of treated wastewater by the PLWTP are:

- Toxicity associated with exposure to the discharge plume constituents such as metals and ammonia;
- Accumulation of other contaminants that may persist, be potentially harmful in low amounts, or are otherwise emerging as concerns for marine life;
- Exposure to environmental conditions created by the discharge of nutrients, including increased instances and extent of harmful algal blooms (HABs)

Exposure and Response to the Toxicity of PLWTP’s Effluent

For ESA-listed marine mammals and sea turtles, we do not have information to suggest individuals from these species take up extended resident within the action area, but we do expect individuals could make numerous or possibly frequent and extended visits to the action area over the course of relatively long lifetimes of extensive migrations of residence in the Southern

California Bight (SCB). During these visits, individuals would be exposed to the effects of the proposed action. We expect the duration of exposure to the proposed action to vary from as little as an hour up to several days at a time, and could include multiple times for individuals. For white abalone, their sedentary life history means risks for exposure to the discharged effluent are persistent across entire years.

Regarding toxicity effects, exposure to potentially toxic pollutants from the discharge effluent would primarily occur through the uptake of pollutants from food sources for ESA-listed marine mammals and sea turtles. The available data indicate ESA-listed marine mammals and sea turtles are generally not at risk of health effects from most of the compounds or elements measured in the PLWTP's effluent—this includes nitrogen and heavy metals such as cadmium, chromium, copper, lead, nickel, silver, and zinc. Nitrogen does not accumulate up the food chain and is not expected to accumulate in marine mammals or sea turtles. Most metals do not appear to biomagnify and are regulated and excreted by a host of marine life (Gray, 2002); therefore, we expect exposure to PLWTP's effluent to result in limited increases in pollutant uptake in marine mammals and sea turtles. Levels of metals measured in marine mammal tissues and sea turtles are generally low and not expected to pose a health risk (O'Shea, 1999; Saeki et al., 2000; Pugh & Becker, 2001; Das et al., 2003; O'Hara & Becker, 2003; Komoroske et al., 2012). Overall, we expect ESA-listed marine mammals and sea turtles to be exposed to toxic pollutants in PLWTP's effluent when foraging in the action area, but do not expect this occasional exposure to result in toxic health effects.

For white abalone, exposure to potentially toxic pollutants from the discharge effluent would occur through direct uptake of pollutants from the water as well as from food. Exposure to heavy metals can increase shell abnormalities and reduce shell growth, settlement, metamorphosis, and survival in larval abalone (Conroy et al., 1996; Gorski, 2006; Gorski & Nugegoda, 2006). Juvenile and adult abalone can accumulate heavy metals in their tissues, resulting in reduced feeding rates, growth, and survival (M. Martin et al., 1977; Liao et al., 2002; B. C. Chen & Liao, 2004; Tsai et al., 2004; Gorski, 2006; Huang et al., 2008, 2010; W. Y. Chen et al., 2011). The levels of heavy metals measured in PLWTP's effluent were below the values found to cause harmful effects on larval, juvenile, and adult abalone, especially when dilution is accounted for. Larval abalone may be exposed to higher effluent concentrations when passing through the zone of initial dilution (ZID), but we do not expect harmful effects because their exposure is likely to be of short duration.

Exposure and Response to Accumulation of Potentially Harmful Contaminants

POPs, including legacy organochlorine compounds and flame retardants, are likely being accumulated by ESA-listed marine mammals, sea turtles, and abalone as a result of wastewater discharge, and that accumulation poses a threat to such long-lived species. For white abalone, studies involving other abalone species show exposure to POPs such as tributyltin, triclosan, and bisphenol A, can result in accumulation, and thus, harmful effects on growth and reproductive

development (Horiguchi et al., 1998, 2001, 2005; Zhou et al., 2010; Gaume et al., 2012). Some of these contaminants have been detected in PLWTP's effluent at levels lower than those resulting in toxicity in the evaluated studies. However, long term exposure to low concentrations could result in accumulation and harmful effects.

With regard to marine mammals and sea turtles, numerous studies on humans and other mammals have linked POPs like PCBs, DDTs, and PBDEs (polybrominated diphenyl ethers; used as flame retardants) to elevated risks for reproductive impairment (Reijnders, 1986; Subramanian et al., 1987; Reddy et al., 2001; Schwacke et al., 2002); immunotoxicity (De Swart et al., 1996; Fonnum et al., 2006), endocrine disruption (Legler & Brouwer, 2003; Darnerud, 2008; Legler, 2008), neurotoxicity (Darnerud, 2003, 2008; Viberg et al., 2003, 2006), and cancer (Ylitalo et al., 2005; Bonefeld-Jorgensen et al., 2011). For example, relatively low PBDE concentrations have been associated with altered thyroid hormone levels in post-weaned and juvenile grey seals (Hall et al., 2003), which can then affect growth and development (Boas et al., 2006). PCBs and flame retardants have been detected in PLWTP's effluent during monitoring conducted from 2022-2023, and ESA-listed marine mammals would be indirectly affected by the proposed action by consuming prey that has accumulated POPs from the effluent. This, in turn, would expedite the potential for adverse health effects in individuals feeding in the action area, including effects on reproductive, endocrine, and immune systems. The same would hold true for sea turtles in the action area.

For legacy pollutants like PCBs and DDTs, the majority of the exposure likely results from historical contamination and the persistence of these pollutants in the action area. More recent POPs of concern include flame retardants such as PBDEs, which are being phased out and replaced by chlorinated organophosphates. The EPA (2015) identified three chlorinated organophosphates of concern for risks to aquatic organisms and human health: TCEP, TCPP, and TDCPP. PLWTP monitored for various flame retardants in the effluent in 2022 and 2023 but only TCEP, TCPP, and TDCPP were detected. The 2022 test was conducted during dry weather and results indicated only TDCPP was at a detectable concentration (310 ng/L) while the TCEP and TCPP were not. In 2023, sampling occurred during wet weather and TCEP, TCPP, and TDCPP were detected (340 ng/L of TDCPP, 450 ng/L of TCEP, and 1,000 ng/L of TCPP). Effluent loading of flame retardants ranged from 0.37 to 2.1 lbs/day (0.17 to 1 kg), using an average flow of 140 MGD, resulting in an overall loading of 135 to 767 lbs (61 to 348 kg) discharged annually. Over the course of the previous permit term, PLWTP discharged 675 to 2,832 lbs (306 to 1,738 kg). This estimate of flame retardant loading from the proposed action would add to the long-term accumulation of POPs in the action area.

Exposure and Response to HABs

PLWTP continuously discharges nutrients, which may contribute to the increased extent and severity of HABs in the action area. As a result, the proposed action could increase the risk of exposure to biotoxins for ESA-listed abalone that reside in the action area, and for ESA-listed

marine mammals and sea turtles foraging in the action area. HAB species that may be found within the action area include *Pseudo-nitzschia* spp that can produce domoic acid, and the dinoflagellates *Procentrum* and *Akashiwo sanguinea* that can produce saxitoxin (Corcoran & Shipe, 2011). Both domoic acid and saxitoxin are biotoxins known to be toxic to marine mammals, causing mortality and morbidity events (Van Dolah et al., 2003). Domoic acid may also be toxic for sea turtles (Harris et al., 2011). For abalone, blooms of *Cochlodinium* and *Gonyaulax spinifera* have resulted in mortality events along the California coast (Rogers-Bennett et al., 2012; Howard et al., 2012; Wilkins, 2013; De Wit et al., 2014).

As part of the 2022 NPDES permit, the City was required to conduct a euphotic zone study to understand the contribution of PLWTP's wastewater discharge to the risk of HABs in the action area. This study consists of two phases, the first of which has been completed and the second is expected to begin during the next permit term. Phase one of the study reviews existing data and literature to estimate the depth of the euphotic zone in the action area while phase two ground truths this estimation. The PLOO discharges at a depth of approximately 95 m with the ceiling of the plume estimated at 40 to 60 m; based on phase one of the study, the average euphotic zone depth in the waters surrounding the PLOO is 35 ± 14 m. This suggests a potential overlap of the plume and euphotic zone without accounting for swimming ability of various dinoflagellate species that may be present in the action area. During the last permit cycle, PLWTP released 138.9 to 144.3 MGD of wastewater discharge with annual average total nitrogen concentrations ranging from 48.1 to 54.5 mg/L. Based on reported flows and total nitrogen concentrations of discharge, they released approximately 9,590 mt to 10,866 mt of total nitrogen at a maximum reported discharge flow of 144.3 MGD each year³. Based on the results of phase two of the euphotic zone study, we will be able to better understand how nutrients from PLWTP's wastewater discharge contributes to HABs within the action area.

Risks to Populations

The proposed continuation of wastewater discharge from PLWTP for another five years under the re-issued NPDES permit poses a risk to ESA-listed marine mammals, sea turtles, and abalone by exposing individuals to pollutants in the effluent and plume, and/or to the increased frequency or extent of HABs the effluent could promote. The concentrations of metals and most other potentially toxic constituents in PLWTP's effluent are expected to be lower than those typically predicted to cause harmful effects and do not pose much of a threat for direct uptake from the water column or bioaccumulation through the food chain. However, studies confirm that ESA-listed marine mammals, sea turtles, and abalone are susceptible to endocrine disruption and harmful effects from POPs and other potentially harmful constituents that are known or expected

³ The following was used to convert an annual average concentration of 54.5 mg/L to pounds per year using the reported range of annual discharge flow rates: $[\text{mg/L}] * [\text{MGD}] * [8.34 \text{ pounds per gallon}]$. For converting pounds to metric tons, we used a 0.000454 pounds to metric tons conversion factor.

to be found in PLWTP's effluent (e.g., PBDEs and organophosphate flame retardants). The proposed action is likely to increase the body burdens of these contaminants and potentially expedite diminished health and fitness. Finally, HABs have been documented to cause mortality and other health issues in marine mammals and abalone along the California coast. The potential increase in frequency and/or extent of HABs due to PLWTP's discharge poses an increased risk of killing marine mammals, abalone, and possibly sea turtles as well. Further studies are needed to evaluate the levels of potentially harmful contaminants found in the effluent and their effects on ESA-listed species in the action area, as well as the composition, frequency, and extent of HABs in the action area and their association with PLWTP's discharge.

It is difficult to assess how these potential effects from the proposed action may affect ESA-listed marine mammals, sea turtles, and abalone at the population and species levels given the available information. For marine mammals and sea turtles, their transitory nature and broad distribution in the Pacific Ocean likely limits their exposure to the proposed action to relatively small segments of populations that may occasionally visit or favor the action area (as opposed to large proportions or entire populations). One exception may be the Central America DPS of humpback whales, because it has a small population and many or all of its members may visit the Southern California Bight annually and could enter the action area. We do not have information to further describe how many individuals or what percentage of their populations would be exposed or potentially affected by the proposed action. In addition, the extent of effects at the individual level are highly uncertain, given varying exposure levels and frequencies.

For white abalone, the action area contains one of the few known, remaining wild populations along the southern California coast, as well as a restoration site where captive-bred white abalone have been outplanted in support of recovery. The effects of the proposed action on individual health and fitness could affect the recovery of local populations within the action area; however, effects at the individual level are highly uncertain, making it difficult to anticipate what the population level effects may be. Based on their location within the action area (several miles from the discharge point), we expect abalone populations to be exposed to highly diluted, low concentrations of contaminants in the plume, which would likely require a long period of time to accumulate to levels that result in adverse effects on individual health. We do not expect that all abalone in the action area would be exposed to contaminants in the plume at the same concentrations, resulting in varying levels of exposure, uptake, and accumulation across individuals. We also do not expect that all abalone in the action area would be exposed to all HABs that occur within the area. Given the distribution of abalone in the action area and the best available information on past effects, we expect HAB-related impacts, including mortality, to generally be limited to a few abalone in a confined area at any given time, which would limit the effects on the population and species as a whole.

CUMULATIVE EFFECTS

“Cumulative effects” are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02 and 402.17(a)). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA. The EPA’s BE/EFHA provides a detailed discussion of the cumulative effects in section 4.4 (Cumulative Effects), and this section is adopted here (50 CFR 402.14(h)(3)). The EPA’s BE/EFHA discusses several permitted discharges in the action area that are expected to continue over the course of the proposed action. Some of the discharge originates from facilities in Mexico that are not subject to U.S. federally-issued permits; as such, these actions are considered a part of cumulative effects. Other discharge activities described in the BE/EFHA require federally-issued permits, which are subject to separate consultation under Section 7 of the ESA, and are not considered a part of the cumulative effects.

INTEGRATION AND SYNTHESIS

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action to the environmental baseline and the cumulative effects, taking into account the status of the species and critical habitat, to formulate the agency’s biological opinion as to whether the proposed action is likely to: (1) Reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) appreciably diminish the value of designated or proposed critical habitat as a whole for the conservation of the species.

We aggregate the *Integration and Synthesis* across species groups (e.g. marine mammals, sea turtles, abalone) for two reasons: (1) overall similarities in how some ESA-listed species are exposed to the proposed action at an individual and population level; and (2) uncertainty regarding the occurrence and magnitude of adverse effects that may result from the proposed action, limiting our ability to describe expected effects for each species individually. We provide a general synthesis of our understanding of how the proposed action may affect ESA-listed species and, where appropriate and necessary, we consider and describe any species-specific risks relevant to concluding this biological opinion.

Marine Mammals and Sea Turtles

As described in section 4.3 (Consequence Analysis) of the EPA’s BE/EFHA, we do not anticipate ESA-listed marine mammals and sea turtles will experience any adverse health effects associated with most of the potentially toxic compounds and elements found in PLWTP’s effluent discharge plume as a result of occasional exposure when foraging in the action area. We

base this conclusion on the limited exposure to concentrated amounts of these constituents and/or minimal risks the exposure may pose to their health.

However, ESA-listed marine mammals and sea turtles that may occasionally occur in the action area are susceptible to diminished health and reduced fitness as a result of exposure to potentially harmful contaminants, including POPs such as organophosphate flame retardants. Individuals of these species may already carry loads of potentially harmful contaminants prior to exposure (or as a result of previous exposure) to the proposed action, and these existing loads could already be compromising overall health and fitness. We recognize PLWTP's discharge may contain numerous other contaminants that could potentially harm ESA-listed marine mammal and sea turtle species, but the lack of information on these contaminants, their effects, and their concentrations limits our ability to analyze those effects further.

As described in the Executive Summary and Section 2.0 (Environmental Baseline in the Action Area, specifically Section 2.2 Effluent Quality, 2.3.1 Ammonia, 2.4 Sediment Quality) of the EPA's BE/EFHA, we expect the proposed action will increase the amount of POPs and other potentially harmful contaminants released into the environment. Despite the development of the Pure Water San Diego program and its planned reduction of effluent volume, contaminants will continue to be discharged into ocean waters. This will increase or expedite the accumulation of these potentially harmful contaminants in the bodies of ESA-listed marine mammals and sea turtles feeding in the action area, further increasing the potential for and rate of adverse health effects for these species. The expected occurrence and magnitude of exposure and health effects resulting from the discharge of potentially harmful contaminants is uncertain, partly because levels of some contaminants in the effluent have not been extensively monitored. This is also due in part to the range of responses to potential exposure and response in individuals.

To address this uncertainty, the proposed action includes requirements to monitor and describe the discharge of some of these potentially harmful contaminants, including flame retardants. As this information is collected, we expect to be better able to assess the relative effect and contribution of PLWTP's discharge to increasing contaminant levels in ESA-listed species. Given what is already known about the harmful nature of these constituents, we expect the monitoring data will inform efforts by the EPA and the City to investigate measures to minimize the discharge of potentially harmful contaminants during future permit actions.

As described in Section 2.2.3 (Ammonia and Nutrients) and 4.3 (Consequence Analysis), the PLWTP discharge contributes nutrients to the region's ocean waters that may contribute to an increased probability of HABs occurring within the action area, as well as to the increased extent and severity of these HABs. HABs can have adverse effects on marine mammals and sea turtles. We do not have a precise understanding of how PLWTP's discharge may increase the probability or severity of HABs in the action area, nor a method to assess if particular blooms are associated with the nutrients discharged by PLWTP. Ammonia is a large contributor to algal growth, but urea, an organic form of nitrogen, has been found to sustain HABs in Central and Southern

California (Kudela & Cochlan, 2000; Kudela et al., 2008; Howard et al., 2014) as well as promote HAB growth (McCarthy, 1972; Howard et al., 2007, 2014). The proposed action includes continued monitoring of nutrient outputs and the City conducting Phase 2 of the euphotic zone study in the PLOO region, especially at seasonal timescales. The intent of this study is to better understand the nitrogen dynamics and point loading resulting from PLWTP's discharge and relate that knowledge to HAB occurrence in the action area.

Due to the uncertainty associated with the exposure to potentially harmful contaminants and HABs associated with the PLWTP discharge and the resulting adverse effects at an individual level, we are also uncertain as to the relative occurrence and magnitude of these adverse effects at the population level for the ESA-listed marine mammals and sea turtles that may be exposed to the proposed action. As described in Section 4.3 (Consequence Analysis) of the EPA's BE/EFHA, we generally expect exposure to be limited to relatively few individuals (adults or juveniles) or small portions of these populations over the duration of the proposed permit. Exposure is more likely for individuals that may have some preference or site fidelity to the action area. Although there is uncertainty in the specific extent of population level exposure, at this time we generally do not anticipate widespread effects across populations that could potentially produce reduced productivity or fitness at a population level for any of these species.

As described in Section 2.0 (Environmental Baseline) and Section 4.4 (Cumulative Effects) of the EPA's BE/EFHA, we anticipate that most of the factors that have been affecting the quality and health of the environment within the action area are likely to continue into the future over the duration of the proposed permit. The effects from these factors pose potential continuing threats to the health of ESA-listed marine mammals and sea turtles that may visit the action area, as well as to the action area as a whole. Climate change could influence the migration and distribution of prey species, the relative exposure of various individuals and ESA-listed populations within the action area, and increase the probability and/or magnitude of HAB occurrence in the action area over time. However, these climate change effects are unlikely to factor into the 5-year proposed action time frame considered in this opinion.

Currently, there is substantial uncertainty regarding the expected effects' occurrence and magnitude. Additional information is needed to support a better understanding of these potential effects and inform future analyses. For example, additional information is needed regarding (a) the levels of POPs and other potentially harmful constituents in the discharge effluent and their effects on ESA-listed marine mammals and sea turtles, and (b) the effects that the discharge effluent may have on the frequency and extent of HABs within the action area.

Guadalupe fur seal

Over the course of the proposed action, we anticipate that some individual Guadalupe fur seals may occasionally enter the action area and possibly be harmed by the proposed action, especially during the summer months when they are present within the action area. These individuals would

experience increased risks of diminished health, diminished fitness, and even death. However, these fitness effects are expected to be minimal and restricted to a few animals only, and death is an unlikely outcome in all cases. Moreover, the concentration of contaminants from PLWTP are at levels not believed to be harmful to listed species but, over time, can accumulate to levels that pose health risks. However, the listed species' occurrence in the action area is transitory in nature and they do not spend extended periods of time exposed to contaminants in PLWTP's effluent. The Guadalupe fur seal population is estimated to be at least 31,019 individuals (Carretta et al., 2022, 2024), although exposure to the proposed action would likely be limited to a small number of individuals and thus a small portion of the population.

At this time, additional information is needed to more fully evaluate the exposure of Guadalupe fur seals to PLWTP's discharge and the anticipated effects at an individual and population level. The EPA's proposed permit requires monitoring that would address key questions regarding the effects of PLWTP's discharge on the action area and any Guadalupe fur seals that may occur there. The data generated will support improved effects analyses in future consultations on the proposed action, which is expected to continue into the foreseeable future beyond the current permit cycle. When that information becomes available, we anticipate that the EPA and NMFS will be in a better position to assess potential measures to minimize effects under future NPDES permits.

We do not expect the proposed action to reduce the likelihood of survival and recovery of Guadalupe fur seals, based on: (a) our current understanding of the action's potential effects even given the acknowledged uncertainties regarding the magnitude and intensity of those effects on the species' status; (b) the measures that have been proposed to address these uncertainties; and (c) the prospect of developing actions to minimize the effects in future consultations, using information gathered under these measures.

Blue whale

Over the course of the proposed action, we anticipate that some individual blue whales may occasionally enter the action area and possibly be harmed by the proposed action, especially during the summer months when they appear off the California coast to feed. These individuals would experience increased risks of diminished health, diminished fitness, and even death. However, these fitness effects are expected to be minimal and restricted to a few animals only, and death is an unlikely outcome in all cases. Moreover, the concentration of contaminants from PLWTP are at levels not believed to be harmful to listed species but, over time, can accumulate to levels that pose health risks. However, the listed species' occurrence in the action area is transitory in nature and they do not spend extended periods of time exposed to contaminants in PLWTP's effluent. Although the ENP stock of blue whales is relatively small (estimated 1,898 individuals) (Carretta et al., 2022, 2024), exposure to the proposed action would likely be limited to a small number of individuals. Additionally, the population that may be affected constitutes only a small portion of the globally-listed blue whale species.

At this time, additional information is needed to more fully evaluate the exposure of blue whales to PLWTP's discharge and the anticipated effects at an individual and population level. The EPA's proposed permit requires monitoring that would address key questions regarding the effects of PLWTP's discharge on the action area and any blue whales that may occur there. The data generated will support improved effects analyses in future consultations on the proposed action, which is expected to continue into the foreseeable future beyond the current permit cycle. When that information becomes available, we anticipate that the EPA and NMFS will be in a better position to assess potential measures to minimize effects under future NPDES permits.

We do not expect the proposed action to reduce the likelihood of survival and recovery of blue whales, based on: (a) our current understanding of the action's potential effects even given the acknowledged uncertainties regarding the magnitude and intensity of those effects on the species' status; (b) the measures that have been proposed to address these uncertainties; and (c) the prospect of developing actions to minimize the effects in future consultations, using information gathered under these measures.

Fin whale

Over the course of the proposed action, we anticipate that some individual fin whales may occasionally enter the action area and possibly be harmed by the proposed action at any time during the year. These individuals would experience increased risks of diminished health, diminished fitness, and even death. However, these fitness effects are expected to be minimal and restricted to a few animals only, and death is an unlikely outcome in all cases. Moreover, the concentration of contaminants from PLWTP are at levels not believed to be harmful to listed species but, over time, can accumulate to levels that pose health risks. However, the listed species' occurrence in the action area is transitory in nature and they do not spend extended periods of time exposed to contaminants in PLWTP's effluent. The CA/OR/WA stock of fin whales is estimated to consist of 11,065 individuals (Becker et al., 2020; Carretta et al., 2022, 2024), although exposure to the proposed action would likely be limited to a small number of individuals. Additionally, the population that may be affected constitutes only a portion of the globally-listed fin whale species.

At this time, additional information is needed to more fully evaluate the exposure of fin whales to PLWTP's discharge and the anticipated effects at an individual and population level. The EPA's proposed permit requires monitoring that would address key questions regarding the effects of PLWTP's discharge on the action area and any fin whales that may occur there. The data generated will support improved effects analyses in future consultations on the proposed action, which is expected to continue into the foreseeable future beyond the current permit cycle. When that information becomes available, we anticipate that the EPA and NMFS will be in a better position to assess potential measures to minimize effects under future NPDES permits.

We do not expect the proposed action to reduce the likelihood of survival and recovery of fin whales, based on: (a) our current understanding of the action's potential effects even given the acknowledged uncertainties regarding the magnitude and intensity of those effects on the species' status; (b) the measures that have been proposed to address these uncertainties; and (c) the prospect of developing actions to minimize the effects in future consultations, using information gathered under these measures.

Gray whale, Western North Pacific (WNP) DPS

Over the course of the proposed action, we anticipate that some individual WNP gray whales may occasionally enter the action area and possibly be harmed by the proposed action during the winter and spring migrations each year. There is a small likelihood (less than 1% chance) that any individual gray whale that may enter the action area could belong to the WNP population of gray whales. It is likely that at least one WNP gray whale would enter the action area during the five-year course of the proposed action and thus experience increased risks of diminished health, diminished fitness, and even death. However, these fitness effects are expected to be minimal and restricted to a few animals only, and death is an unlikely outcome in all cases. Moreover, the concentration of contaminants from PLWTP are at levels not believed to be harmful to listed species but, over time, can accumulate to levels that pose health risks. However, the listed species' occurrence in the action area is transitory in nature and they do not spend extended periods of time exposed to contaminants in PLWTP's effluent. The WNP population of gray whales is very small (290 individuals) (Carretta et al., 2024), but exposure to the proposed action would likely be extremely limited given their migratory behavior through such a small action area, the limited number of WNP gray whales that may occur in the action area, and the limited potential for foraging to occur.

At this time, additional information is needed to more fully evaluate the exposure of WNP gray whales to PLWTP's discharge and the anticipated effects at an individual and population level. The EPA's proposed permit requires monitoring that would address key questions regarding the effects of PLWTP's discharge on the action area and any WNP gray whales that may occur there. The data generated will support improved effects analyses in future consultations on the proposed action, which is expected to continue into the foreseeable future beyond the current permit cycle. When that information becomes available, we anticipate that the EPA and NMFS will be in a better position to assess potential measures to minimize effects under future NPDES permits.

We do not expect the proposed action to reduce the likelihood of survival and recovery of WNP gray whales, based on: (a) our current understanding of the actions' potential effects even given the acknowledged uncertainties regarding the magnitude and intensity of those effects on the species' status; (b) the measures that have been proposed to address these uncertainties; and (c) the prospect of developing actions to minimize the effects in future consultations, using information gathered under these measures.

Humpback Whales, Mexico DPS

Over the course of the proposed action, we anticipate that some individual humpback whales may occasionally enter the action area and possibly be harmed by the proposed action, especially during the spring, summer, and fall months. These individuals would experience increased risks of diminished health, diminished fitness, and even death. However, these fitness effects are expected to be minimal and restricted to a few animals only, and death is an unlikely outcome in all cases. Moreover, the concentration of contaminants from PLWTP is a gradient and listed species occurrence in the action area is transitory in nature. Based on contaminant signatures, there are likely individual humpback whales that favor or frequent foraging sites in Southern California that could include the action area. These individuals would be at increased risk of diminished health and fitness, and even death. The total abundance of the entire Mexico DPS remains unknown beyond the outdated estimate of 6,000-7,000 whales using data from over 15 years ago (Calambokidis et al., 2008; Bettridge et al., 2015). Based on a 6% annual growth rate and more recent data (Calambokidis & Barlow, 2020), NMFS estimates the Mexico DPS has a minimum abundance of 6,981 individuals. Whales from this DPS are expected occur in the action area given their general migratory movements along the U.S. west coast.

At this time, additional information is needed to more fully evaluate the exposure of the Mexico DPS humpback whales to PLWTP's discharge and the anticipated effects at an individual and population level. The EPA's proposed permit requires monitoring that would address key questions regarding the effects of PLWTP's discharge on the action area and any humpback whales that may occur there. The data generated will support improved effects analyses in future consultations on the proposed action, which is expected to continue into the foreseeable future beyond the current permit cycle. When that information becomes available, we anticipate that the EPA and NMFS will be in a better position to assess potential measures to minimize effects under future NPDES permits. In the future, NMFS will be developing further scientific information regarding the distribution of ESA-listed humpback whales. This information will support an improved understanding of the potential exposure of the Mexico DPS humpback whales to actions throughout their range, including specifically their presence and abundance in the SCB.

We do not expect the proposed action to reduce the likelihood of survival and recovery of the Mexico DPS of humpback whales, based on: (a) our current understanding of the action's potential effects even given the acknowledged uncertainties regarding the magnitude and intensity of those effects on the species' status; (b) the measures that have been proposed to address these uncertainties; and (c) the prospect of developing actions to minimize the effects in future consultations, using information gathered under these measures.

Humpback whale, Central America DPS

Similar to the Mexico DPS of humpback whales, we anticipate that some individual Central America DPS humpback whales may occasionally enter the action area and possibly be harmed by the proposed action, especially during the spring, summer, and fall months. Based on contaminant signatures, there are likely individual humpback whales that favor or frequent foraging sites in Southern California that could include the action area. These individuals would experience increased risks of diminished health, diminished fitness, and even death. However, these fitness effects are expected to be minimal and restricted to a few animals only, and death is an unlikely outcome in all cases. Moreover, the concentration of contaminants from PLWTP is a gradient and listed species occurrence in the action area is transitory in nature. The Central America – West Coast stock, which effectively represents the Central America DPS, has been recently estimated to consist of 1,496 individuals (Carretta et al., 2024). They could occur in the action area given their general migratory movements along the U.S. west coast.

As described above for the Mexico DPS, additional information is needed to more fully evaluate the exposure of the Central America DPS of humpback whales to PLWTP's discharge and the anticipated effects at an individual and population level. The EPA's proposed permit requires monitoring that would address key questions regarding the effects of PLWTP's discharge on the action area and any humpback whales that may occur there. The data generated will support improved effects analyses in future consultations on the proposed action, which is expected to continue into the foreseeable future beyond the current permit cycle. When that information becomes available, we anticipate that the EPA and NMFS will be in a better position to assess potential measures to minimize effects under future NPDES permits. In the future, NMFS will be developing further scientific information regarding the distribution of ESA-listed humpback whales. This information will support an improved understanding of the potential exposure of Central America DPS humpback whales to actions throughout their range, including specifically their presence and abundance in the SCB.

We do not expect the proposed action to reduce the likelihood of survival and recovery of the Central America DPS of humpback whales, based on: (a) our current understanding of the action's potential effects even given the acknowledged uncertainties regarding the magnitude and intensity of those effects on the species' status; (b) the measures that have been proposed to address these uncertainties; and (c) the prospect of developing actions to minimize the effects in future consultations, using information gathered under these measures.

Green turtle, East Pacific DPS

Over the course of the proposed action, we anticipate that some individual East Pacific DPS green sea turtles may be present in the action area and possibly be harmed by the proposed action. It is possible that some individual green turtles may reside in or make frequent or extended visits to the action area. These individuals would experience increased risks of

diminished health, diminished fitness, and even death. However, these fitness effects are expected to be minimal and restricted to a few animals only, and death is an unlikely outcome in all cases. Moreover, the concentration of contaminants from PLWTP is a gradient and listed species occurrence in the action area is transitory in nature. Based on nesting beach data, the current total adult female nester abundance is estimated at about 20,000 individuals (Seminoff et al., 2015). Given the likely increasing trend of the DPS, NMFS recently estimated a total mean population size of 3,580,207 animals in the East Pacific DPS (NMFS, 2023). Green sea turtles are likely at an increased risk of exposure to the proposed action compared to other ESA-listed sea turtles, given their known occurrence in and around the action area. However, we expect that exposure would be limited to a small subset of individuals from the East Pacific DPS.

At this time, additional information is needed to more fully evaluate the exposure of green sea turtles to PLWTP's discharge and the anticipated effects at an individual and population level. The EPA's proposed permit requires monitoring that would address key questions regarding the effects of PLWTP's discharge on the action area and any green sea turtles that may occur there. The data generated will support improved effects analyses in future consultations on the proposed action, which is expected to continue into the foreseeable future beyond the current permit cycle. When that information becomes available, we anticipate that the EPA and NMFS will be in a better position to assess potential measures to minimize effects under future NPDES permits.

We do not expect the proposed action to reduce the likelihood of survival and recovery of East Pacific DPS green sea turtles, based on: (a) our current understanding of the action's potential effects even given the acknowledged uncertainties regarding the magnitude and intensity of those effects on the species' status; (b) the measures that have been proposed to address these uncertainties; and (c) the prospect of developing actions to minimize the effects in future consultations, using information gathered under these measures.

Leatherback turtle

Over the course of the proposed action, we anticipate that some individual leatherback sea turtles may occasionally visit the action area and possibly be harmed by the proposed action. These individuals would experience increased risks of diminished health, diminished fitness, and even death. However, these fitness effects are expected to be minimal and restricted to a few animals only, and death is an unlikely outcome in all cases. Moreover, the concentration of contaminants from PLWTP is a gradient and listed species occurrence in the action area is transitory in nature. While there are no estimates for the total abundance of leatherback sea turtles within the population that may occur in the action area, the number of annual nesting females in the western Pacific has been estimated at 1,054 individuals (Martin et al., 2020). There is concern that the western Pacific population is in a state of decline, at high risk of extinction, and has shown no signs of recovery to date. However, we expect that exposure would be limited to a small number of individuals, constituting only a portion of the population that may be affected and a portion of

the globally-listed leatherback sea turtle species. The overall risks of exposure to the proposed action are relatively low, given that the SCB is not a primary foraging location for this species and the species is not known to show site fidelity to the SCB.

At this time, additional information is needed to more fully evaluate the exposure of leatherback sea turtles to PLWTP's discharge and the anticipated effects at an individual and population level. The EPA's proposed permit requires monitoring that would address key questions regarding the effects of PLWTP's discharge on the action area and any leatherback sea turtles that may occur there. The data generated will support improved effects analyses in future consultations on the proposed action, which is expected to continue into the foreseeable future beyond the current permit cycle. When that information becomes available, we anticipate that the EPA and NMFS will be in a better position to assess potential measures to minimize effects under future NPDES permits.

We do not expect the proposed action to reduce the likelihood of survival and recovery of leatherback sea turtles, based on: (a) our current understanding of the action's potential effects even given the acknowledged uncertainties regarding the magnitude and intensity of those effects on the species' status; (b) the measures that have been proposed to address these uncertainties; and (c) the prospect of developing actions to minimize the effects in future consultations, using information gathered under these measures.

Loggerhead turtle, North Pacific Ocean DPS

Over the course of the proposed action, we anticipate that some individual juvenile North Pacific Ocean DPS loggerhead sea turtles may occasionally visit the action area and possibly be harmed by the proposed action. These individuals would experience increased risks of diminished health, diminished fitness, and even death. However, these fitness effects are expected to be minimal and restricted to a few animals only, and death is an unlikely outcome in all cases. Moreover, the concentration of contaminants from PLWTP is a gradient and listed species occurrence in the action area is transitory in nature. There are no estimates for the total abundance of North Pacific Ocean DPS loggerhead sea turtles that may occur in the action area. The total number of adult females in the population was recently estimated at around 8,733 (S. Martin et al., 2020; NMFS & USFWS, 2020). It is estimated that there are approximately 340,000 loggerhead sea turtles of all ages in the North Pacific (Jones 2019 as cited in NMFS 2019). We expect that exposure would be limited to a small number of individuals (juveniles) and thus a small portion of the DPS.

At this time, additional information is needed to more fully evaluate the exposure of loggerhead sea turtles to PLWTP's discharge and the anticipated effects at an individual and population level. The EPA's proposed permit requires monitoring that would address key questions regarding the effects of PLWTP's discharge on the action area and any loggerhead sea turtles that may occur there. The data generated will support improved effects analyses in future

consultations on the proposed action, which is expected to continue into the foreseeable future beyond the current permit cycle. When that information becomes available, we anticipate that the EPA and NMFS will be in a better position to assess potential measures to minimize effects under future NPDES permits.

We do not expect the proposed action to reduce the likelihood of survival and recovery of North Pacific Ocean DPS loggerhead sea turtles, based on: (a) our current understanding of the action's potential effects even given the acknowledged uncertainties regarding the magnitude and intensity of those effects on the species' status; (b) the measures that have been proposed to address these uncertainties; and (c) the prospect of developing actions to minimize the effects in future consultations, using information gathered under these measures.

Olive ridley sea turtle

Over the course of the proposed action, we anticipate that some individual olive ridley sea turtles, most likely from Mexican nesting beach origins, may occasionally visit the action area and possibly be harmed by the proposed action. These individuals would experience increased risks of diminished health, diminished fitness, and even death. However, these fitness effects are expected to be minimal and restricted to a few animals only, and death is an unlikely outcome in all cases. Moreover, the concentration of contaminants from PLWTP is a gradient and listed species occurrence in the action area is transitory in nature. While there is no specific estimate of abundance for the Mexican nesting beach population, the total abundance of olive ridleys in the eastern tropical Pacific exceeds one million individuals, which includes hundreds of thousands of individuals from the Mexican nesting beach population (NMFS & USFWS, 2014). We expect that exposure to the proposed action would be limited to a small number of individuals and a small portion of the population.

At this time, additional information is needed to more fully evaluate the exposure of olive ridley sea turtles to PLWTP's discharge and the anticipated effects at an individual and population level. The EPA's proposed permit requires monitoring that would address key questions regarding the effects of PLWTP's discharge on the action area and any olive ridley sea turtles that may occur there. The data generated will support improved effects analyses in future consultations on the proposed action, which is expected to continue into the foreseeable future beyond the current permit cycle. When that information becomes available, we anticipate that EPA and NMFS will be in a better position to assess potential measures to minimize effects under future NPDES permits.

We do not expect the proposed action to reduce the likelihood of survival and recovery of olive ridley sea turtles, based on: (a) our current understanding of the action's potential effects even given the acknowledged uncertainties regarding the magnitude and intensity of those effects on the species' status; (b) the measures that have been proposed to address these uncertainties; and

(c) the prospect of developing actions to minimize the effects in future consultations, using information gathered under these measures.

White Abalone

As described in Section 4.3 (Consequence Analysis) of the EPA's BE/EFHA and the Effects of the Action section of this biological opinion, we do not expect ESA-listed abalone to experience adverse health effects from exposure to most of the potentially toxic constituents found in PLWTP's effluent. In general, the levels of heavy metals and other constituents that have been reported in PLWTP's effluent are lower than the levels found to significantly reduce survival, growth, and/or reproductive development in abalone.

Exposure to potentially harmful contaminants in the effluent such as POPs may result in accumulation and harmful effects such as reduced growth, reproductive development, and survival among individual abalone. Based on the distribution of abalone within the action area, exposure would likely be limited to low concentrations of contaminants in the plume and would likely vary by individual. In addition, accumulation may require a long period of time to reach levels that could adversely affect individual health.

The proposed action likely contributes to the increased probability, extent, and severity of HABs in the action area; however, we do not have information to assess if particular blooms are associated with the proposed action. We do not expect that all abalone in the action area would be exposed to all HABs that occur within the action area. If oceanographic conditions expose abalone to a HAB, then there is a reasonable potential for some abalone to die. Based on the best available information on past effects and the distribution of abalone in the action area, we would expect any HAB-related mortality of abalone to consist of no more than a few individuals in a confined area, limiting the effects on the population and species as a whole.

In summary, the proposed action may adversely affect survival, growth, and reproductive development of abalone in the action area, further exacerbating the risks of low density and reduced reproductive capacity for white abalone. As described in Section 2.0 (Environmental Baseline in the Action Area) and Section 4.4 (Cumulative Effects) of the EPA's BE/EFHA, abalone in the action area have already experienced years of exposure to discharges from wastewater treatment plants (including PLWTP), stormwater runoff, and adjacent rivers. The effects of the proposed action would be in addition to the ongoing effects of other discharges into the action area, warming water temperatures, and ocean acidification, along with other threats such as disease and poaching. However, based on the distribution of abalone in the action area, we expect exposure to harmful contaminants in the plume to be limited to low concentrations. Accumulation may vary for individual abalone and, given the low concentrations, may require a long period of time to reach levels that could adversely affect individual health. We also expect HAB-related mortality of abalone to be limited to a few individuals in a confined area. We

acknowledge the high degree of uncertainty regarding the specific occurrence and magnitude of expected effects based on the available information.

White abalone have declined significantly throughout their range and face a high risk of extinction, primarily due to overfishing and the resulting low local densities. The action area is an important area for white abalone because it contains several wild white abalone, as well as one of two experimental restoration sites where captive-bred white abalone have been outplanted to re-establish populations. We expect the proposed action to continue exposing these white abalone to PLWTP's effluent plume. These individuals would experience increased risks of diminished health, diminished fitness, and even death due to the proposed action. However, we expect these effects on fitness to be limited and restricted to a few individuals.

Additional information is needed to more fully evaluate the exposure of white abalone to PLWTP's discharge and the anticipated effects at an individual and population level. The EPA's proposed permit requires monitoring that would address key questions regarding the effects of PLWTP's discharge on the action area and white abalone that occur there. The data generated will support improved effects analyses in future consultations on the proposed action, which is expected to continue into the foreseeable future beyond the current permit cycle. When that information becomes available, we anticipate that the EPA and NMFS will be in a better position to assess potential measures to minimize effects under future NPDES permits.

We do not expect the proposed action to reduce the likelihood of survival and recovery of white abalone, based on: (a) our current understanding of the action's potential effects even given the acknowledged uncertainties regarding the magnitude and intensity of those effects on the species' status; (b) the measures that have been proposed to address these uncertainties; and (c) the prospect of developing actions to minimize the effects in future consultations, using information gathered under these measures.

Conclusion

After reviewing and analyzing the current status of the listed species and critical habitat, the environmental baseline within the action area, the effects of the proposed action, the effects of other activities caused by the proposed action, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of Guadalupe fur seals, blue whales, fin whales, the WNP DPS of gray whales, the Central America and Mexico DPSs of humpback whales, the East Pacific DPS of green turtles, leatherback turtles, the North Pacific Ocean DPS of loggerhead turtles, olive ridley turtles, or white abalone. There are no critical habitats that overlap with the action area.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. “Take” is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. “Harm” is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). “Harass” is further defined by interim guidance as to “create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering.” “Incidental take” is defined by regulation as takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant (50 CFR 402.02). Section 7(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this Incidental Take Statement (ITS).

Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take is reasonably certain to occur as follows:

We anticipate that all individual ESA-listed marine mammals, sea turtles, and abalone residing or feeding in the action area would uptake and/or accumulate potentially harmful contaminants including POPs such as organophosphate flame retardants as a result of the proposed action. This uptake and/or accumulation would increase their body burden of these contaminants and the risk of incurring adverse effects on their growth, reproduction, and overall health and survival over a shorter period of time than would otherwise occur absent the proposed action. We expect all ESA-listed individuals that may enter or reside in the action area would be at increased risk of experiencing this effect, but we expect that adverse effects would generally be limited to relatively few individuals (adults or juveniles) from these populations.

We cannot further enumerate the anticipated take of ESA-listed species from the proposed action, due to uncertainty in the number of individuals that may be subject to exposure and uncertainty in the response and level of harm that would occur for individuals exposed from each ESA-listed species. Instead, we can describe the extent of take associated with the potential accumulation of potentially harmful contaminants by relating the extent of take to the amount of these potentially harmful contaminants being discharged into the action area by PLWTP. While there are many potentially harmful contaminants, our analysis focused on the apparently increasing threat associated with accumulation of organophosphate flame retardants, given the recent literature describing the potential harm organophosphate flame retardants can have on

numerous ESA-listed species, and its known association with wastewater discharge in general. Consequently, we elect to use the extent of organophosphate flame retardant discharge as a surrogate to describe the extent of take associated with risks of increased contaminant levels for ESA-listed species as a result of the proposed action.

We have therefore quantified the potential incidental take of the proposed action in terms of the total loading of organophosphate flame retardants that we expect to be discharged by PLWTP. In the Executive Summary and Section 2.2.6 (Contaminants of Emerging Concern), EPA summarizes the concentrations of flame retardants present in the effluent over the course of the last permit cycle. The City conducted two tests (one during dry weather in 2022 and the second during wet weather in 2023) to analyze concentrations of flame retardants in the effluent. Based on the discharge monitoring data collected during the wet weather event, PLWTP estimates annual effluent loading for total organophosphate flame retardants was 955 lb (433 kg) per year and approximately 5,475 to 9,490 lbs (2,555 to 4,197.5 kg) for the permit term. These organophosphate flame retardants are released into the ecosystem and are potentially bioavailable for uptake into the food web and ESA-listed species.

The proposed action includes monitoring requirements to evaluate the levels of CECs, including specifically these organophosphate flame retardants, in the effluent and mass loadings to the receiving water. Through these monitoring requirements placed upon PLWTP by the EPA, we expect PLWTP to be able to monitor the discharge of organophosphate flame retardants relative to the amount of their discharge that has been described above, and to report the annual monitoring data to the EPA.

We also anticipate that all individual ESA-listed marine mammals, sea turtles, and abalone residing or feeding in the action area would face increased risks of exposure to HABs because the frequency and/or extent of HABs is likely to increase as a result of the proposed action. However, we expect that adverse effects would generally be limited to relatively few individuals (adults or juveniles) of these populations.

At this time, we cannot predict the precise extent that PLWTP's effluent contributes to increased probabilities of HABs, or distinguish which HABs may be more or less associated or influenced by the additional nutrient input from PLWTP's discharge. Consequently, we cannot further enumerate the anticipated take of ESA-listed species from the proposed action. Instead, we can describe the extent of take associated with increased probabilities of harmful effects from exposure to HABs by relating the extent of the increased probability of HABs to the amount of nutrients released into the action area.

PLWTP previously only monitored ammonia concentrations in their effluent but, under Terms and Conditions 1(b) from the last permit, EPA required PLWPT to monitor for various forms of nitrogen and to determine total nitrogen loading from the facility's discharge into receiving waters. Data describing various forms of nitrogen in the effluent will help us develop a better

understanding of the risks of increased probabilities of HABs to the amount of total nitrogen being released into the action area. Ammonia is estimated to make up 92% of all forms of nitrogen in effluents discharged by wastewater treatment plants in the Southern California Bight (Howard et al., 2014). However, knowledge of the different forms of nitrogen within wastewater allows us to develop a better understanding of nitrogen dynamics in Point Loma's discharge and the total nitrogen loading resulting from PLWTP's discharge into the action area. As described in the Executive Summary and Section 2.2.3 (Ammonia and Nutrients) of the EPA's BE/EFHA, the City regularly monitors ammonia in the vicinity of the PLOO after initial dilution. Assuming the quality of the influent and the efficacy of the treatment remains the same, we calculated a maximum total nitrogen discharge of 10,866 mt at the average dry weather flow rate of 140 MGD.

As part of the proposed action, the EPA requires PLWTP to continue monitoring of the influent, effluent, and receiving waters for parameters that include the several forms of nitrogen (e.g., ammonia, nitrate nitrogen, nitrite nitrogen). Through these monitoring requirements placed upon PLWTP by the EPA, we expect PLWTP to be able to continue monitoring of nitrogen levels in the discharge and estimate the total loading of nitrogen to the action area relative to the amount described above. We also expect PLWTP to report the annual total nitrogen monitoring data to the EPA.

Effect of the Take

In the biological opinion, NMFS determined that the amount or extent of anticipated take, coupled with other effects of the proposed action, is not likely to result in jeopardy to the species.

Reasonable and Prudent Measures

“Reasonable and prudent measures” are measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02).

1. The EPA shall monitor, document, and report the extent of incidental take of ESA-listed species resulting from PLWTP's discharge using the surrogates described in the *Amount or Extent of Take* section of this biological opinion, through the requirements placed upon the permittee (City of San Diego).

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the Federal action agency must comply (or must ensure that any applicant complies) with the following terms and conditions. The EPA or any applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this ITS (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply

with the following terms and conditions, protective coverage for the proposed action would likely lapse.

The following terms and conditions implement reasonable and prudent measure 1:

1a. The EPA shall require the City to continue to collect the necessary data to determine levels of organophosphate flame retardants in the effluent and the estimation of total organophosphate flame retardant discharge on an annual basis to the receiving waters around the PLOO in the Pacific Ocean, using sampling and analysis protocols that are consistent with or equivalent to those used in studies by other wastewater dischargers.

1b. The EPA shall require the City to continue to collect the necessary data to support the ongoing monitoring of all nitrogen forms from PLWTP's discharge, and the estimation of total nitrogen discharge on an annual basis to the receiving waters around the PLOO in the Pacific Ocean. In order to support this, the EPA shall require PLWTP to maintain at least monthly effluent sampling of ammonia, nitrate nitrogen, nitrite nitrogen, and organic nitrogen (Table E-6 in the proposed NPDES permit). The results from this monitoring will produce a more consistent and robust dataset that would improve our understanding of the proposed action's contribution to nutrient loading and HABs in the action area. The results will also assist efforts by the EPA and PLWTP to investigate measures to minimize the discharge of nutrients that may increase the probability of HAB occurrence in the action area during future permit actions.

1c. In order to assess the contribution of the PLOO to algal bloom formation in the action area, the EPA shall require the applicant to continue the study of the euphotic zone in the action area to measure and/or determine its seasonal depth.

1d. The EPA shall report the following to NMFS WCR within 180 days after the permit expiration date or at the time of permit renewal and consultation with NMFS: the estimated discharge of organophosphate flame retardants (pounds or kg) by PLWTP into the action area per year and the estimated levels of total nitrogen (pounds or kg) discharged by PLWTP into the action area per year.

The EPA may require the City to directly submit their report(s) to NMFS, provided that the EPA also receives the report(s). The report(s) shall be submitted electronically to the NMFS WCR Protected Resources Division's Long Beach Office Branch Chief (Dan Lawson) at the following email address: Dan.Lawson@noaa.gov.

Upon request from NMFS, the EPA shall provide NMFS any monitoring reports that have been submitted by the City to the EPA during the permit term.

1e. The EPA shall notify NMFS WCR if PLWTP's estimated annual discharge of organophosphate flame retardants and/or total nitrogen exceeds the amounts/levels that have

been assumed and described above, within a reasonable amount of time after monitoring results indicate that the amounts have been exceeded.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02).

Contaminants of Emerging Concern (CECs)

Effluent discharged from wastewater treatment plants can be a major source of CECs to the receiving waters. The following conservation recommendation related to CECs would provide information for future consultations and address questions related to the effects of the proposed action's discharge on the frequency and extent of CECs in the action area and the SCB.

- a. Collect the necessary data to determine levels of CECs in PLWTP's effluent and to estimate the total discharge of CECs on an annual basis to the waters around the PLOO in the Pacific Ocean, using sampling and analysis protocols consistent with or equivalent to those used in studies by other wastewater dischargers. CECs include pharmaceutical and personal care products, veterinary medicines, endocrine-disrupting chemicals, and nanomaterials.

Harmful Algal Blooms

The following conservation recommendations related to HABs in the action area would provide information for future consultations and address questions related to the effects of PLWTP's discharge on the frequency and extent of HABs in the action area and SCB.

- a. Evaluate the generation of nitrogen form, timing, and mass balance data from upwelling and stormwater runoff events in the coastal areas between La Jolla and Baja California (including areas off Point Loma) to couple with the required generation of nitrogen data from PLWTP's discharge and feed into regional modeling efforts (e.g. Southern California Bight Regional Monitoring Program).
- b. Evaluate the relationship of nitrogen released by PLWTP on near-bottom hypoxia, ocean acidification, and oxygen suppression in coastal areas between La Jolla and Baja California (including areas off Point Loma) to determine how natural processes interacts with PLWTP discharge.
- c. Assess what HAB species are in the coastal areas between La Jolla and Baja California (including areas off Point Loma), whether these species are being maintained within the subsurface plume, and whether they are manifesting concurrently with *Psuedo-*

nitschia and high domoic acid levels, or if *Pseudo-nitzschia* tend to bloom first and therefore reduce the prevalence of other HAB species.

- d. As part of evaluation of the euphotic zone depth within the action area across seasons to better understand the relationship of wastewater discharge and HABs and better predict the presence of harmful algal species depending on the euphotic zone depth, include consideration of the ability of dinoflagellate species to move up and down in the water column to access nutrients and sunlight.
- e. Synthesizing the results from additional data collection, monitoring and/or evaluation can be provided to NMFS in a report or reports, submitted on a schedule to be determined.
- f. Investigate the potential for denitrification as flows to the facility are reduced by increased water recycling projects planned by the City through the Pure Water San Diego program. Decreased flows at PLWTP may allow for some areas of the facility to be repurposed for denitrification processes that would further reduce nitrogen loading to the receiving waters and potential impacts related to HABs.

REINITIATION OF CONSULTATION

This concludes formal consultation for the EPA's re-issuance of a NPDES permit to the City for wastewater discharge by the Point Loma Wastewater Treatment Plant.

Under 50 CFR 402.16(a): "Reinitiation of consultation is required and shall be requested by the Federal agency, where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and: (1) If the amount or extent of taking specified in the incidental take statement is exceeded; (2) If new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion or written concurrence; or (4) If a new species is listed or critical habitat designated that may be affected by the identified action.

In this biological opinion, we describe the extent of take of the proposed action in terms of the amount of potentially harmful contaminants discharged into the action area by PLWTP, specifically the total loading of organophosphate flame retardants. It is estimated that PLWTP discharges approximately 955 lb (433 kg) of organophosphate flame retardants (TCEP, TCPP, and TDCPP combined) into the action area each year. If PLWTP's discharge of these organophosphate flame retardants per year is determined to be greater than this estimate (through the monitoring required by the EPA or other means), then we may determine that the extent of take of the proposed action that has been anticipated in this biological opinion has been exceeded.

We also describe the extent of take of the proposed action in terms of the amount of nutrients discharged into the action area by PLWTP, specifically nitrogen and its various forms. It is

estimated that PLWTP discharges a maximum of 10,866 mt of total nitrogen into the action area per year at an average discharge flow of 140 MGD. If PLWTP's discharge of total nitrogen per year is determined to be greater than this estimate (through the monitoring required by the EPA or other means), then we may determine that the extent of take of the proposed action that has been anticipated in this biological opinion has been exceeded.

In addition to the extent of take, we identify numerous uncertainties regarding the exposure of ESA-listed species to the proposed action and the effects of this exposure. If an event or events transpire such that HABs in the action area are identified as causing significant harm and/or mortality to ESA-listed species, we may determine that the extent of take associated with PLWTP's potential contribution to HABs and resulting effects to ESA-listed species has been exceeded, pending available information about the HAB event or events. In addition, we recognize that the state of science continues to develop regarding contaminants, HABs, wastewater discharge, and ESA-listed species. We also expect additional information to become available through studies undertaken in association with the proposed action and conservation recommendations provided in this biological opinion. We will consider new information as it becomes available and, based on that information, may determine that the extent of take of the proposed action that has been anticipated in this biological opinion has been exceeded.

“NOT LIKELY TO ADVERSELY AFFECT” DETERMINATIONS

We reviewed the EPA's consultation request document and related materials. Based on our knowledge, expertise, and your action agency's materials, we concur with your conclusions that the proposed action is not likely to adversely affect the following listed or proposed species: giant manta ray, Southern DPS green sturgeon, oceanic whitetip shark, Eastern Pacific DPS scalloped hammerhead shark, Southern California DPS steelhead, gulf grouper, North Pacific right whale, sei whale, sperm whale, black abalone, and sunflower sea star. The EPA's BE/EFHA provides a detailed discussion and analysis of the effects on these species in Sections 3.1 (Description of Fish Species), 3.2 (Description of Marine Mammal Species), 3.4 (Description of Marine Invertebrates), 4.3 (Consequence Analysis), and 4.5 (EPA's Determination). We adopt these sections of the EPA's BE/EFHA here (50 CFR 402.14(h)(3)).

ESSENTIAL FISH HABITAT

NMFS also reviewed the proposed action for potential effects on essential fish habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), including conservation measures and any determination you made regarding the potential effects of the action. This review was conducted pursuant to section 305(b) of the MSA, implementing regulations at 50 CFR 600.920, and agency guidance for use of the ESA consultation process to complete EFH consultation.

Section 305 (b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. Under the MSA, this consultation is intended to

promote the conservation of EFH as necessary to support sustainable fisheries and the managed species' contribution to a healthy ecosystem. For the purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity", and includes the associated physical, chemical, and biological properties that are used by fish (50 CFR 600.10). Adverse effect means any impact that reduces the quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species, and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects may result from actions occurring within EFH or outside of it and may include direct, indirect, site-specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) of the MSA also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH. Such recommendations may include measures to avoid, minimize, mitigate, or otherwise offset the adverse effects of the action on EFH (50 CFR 600.0-5(b)).

NMFS determined the proposed action would adversely affect EFH for various federally managed fish species within the Pacific Coast Groundfish (PCG), Coastal Pelagic Species (CPS), and Highly Migratory Species (HMS) Fishery Management Plans (FMPs). In addition, the proposed action occurs within, or in the vicinity of, rocky reef and canopy kelp habitats, which are designated as habitat areas of particular concern (HAPC) for various federally managed fish species within the Pacific Coast Groundfish FMP.

NMFS determined the proposed action would adversely affect EFH as follows:

- Reducing habitat functions necessary for growth to maturity;
- Modifying community structure;
- Bioaccumulation; and
- Modifying habitat.

At certain concentrations, wastewater discharge can alter ecosystem properties, including diversity, nutrient and energy transfer, productivity, connectivity, and species richness. These discharges can impair functions of finfish, shellfish, and related organisms, such as growth and egg development, visual acuity, swimming speed, equilibrium, feeding rate, response time to stimuli, predation rate, photosynthetic rate, spawning seasons, migration routes, and resistance to disease and parasites. Point-source discharges may affect the growth, survival, and condition of EFH-managed species and prey species if high levels of contaminants (e.g., chlorinated hydrocarbons, trace metals, PAHs, pesticides, and herbicides) are discharged. If contaminants are present, they may be absorbed across the gills or concentrated through bioaccumulation as contaminated prey is consumed (Raco-Rands, 1996).

The EPA's BE/EFHA evaluated several pollutants in PLWTP's effluent, including metals (arsenic, chromium, copper, nickel, zinc), nutrients (nitrogen, phosphorus) and ammonia, total

suspended solids, biological oxygen demand, and several CECs. In general, concentrations of metals in the influent, except for copper and zinc, have declined significantly since the 1980s largely due to source control programs, and all detected metals in the sediment at near-ZID sites are less than levels detected in PLOO pre-discharge surveys. Heavy metals and persistent organic compounds, such as pesticides and PCBs, tend to adhere to solid particles discharged from outfalls and accumulate in benthic sediments. Areas of sediment contamination are present within the action area, much of which is a result of historical deposition (e.g., of DDT and PCBs) and not associated with recent discharges from PLWTP. The concentrations of DDT and PCBs in the sediments have decreased substantially from those observed prior to the 1980s, primarily due to burial. There were no detections of PCBs or DDTs in the effluent from PLWTP, but samples of fish tissue exhibit some accumulation, varying across species and sampling stations. Values were within range of ranges previously reported for southern California fishes, suggesting the PLOO is not the source of PCBs and DDTs bioaccumulating in fish.

For biological oxygen demand and total suspended solids (TSS), there was an increase in TSS in 2022 due to the shutdown of a pump station and pipeline for upgrades. Despite this, there has been a continual decline in TSS emissions since 1995, and the City has been in compliance with TSS limits since 2008. The permit includes effluent limits for biological oxygen demand and TSS.

CECs include endocrine disruptors and neurotoxins that can cause deleterious effects in aquatic life. For example, many personal care products contain compounds known to be endocrine disruptors that can cause estrogenic effects on fish at relatively low (Brausch & Rand, 2011). Reyes et al. (2012) evaluated the reproductive endocrine status of hornyhead turbot at locations near the coastal discharge sites of four large municipal WWTPs (including Point Loma) and at far-field reference locations in the region. Levels of estrogens and androgens measured in hornyhead turbot differed by location, but these differences could not be linked to ocean discharge locations for the four WWTPs. PBDEs have been detected in PLWTP effluent as well as in sediment and fish tissue samples historically, but in whole effluent toxicity (WET) tests, specimens exposed to contaminants at levels recorded in effluent survived, suggesting wastewater discharged from PLWTP is non-toxic. Additionally, results from the City's Ocean Monitoring Program have suggested the discharged wastewater has not degraded benthic community structure or affected demersal fish and megabenthic invertebrate communities.

Adverse effects on EFH for species managed under the PCG, CPS, and HMS FMPs associated with the proposed action would be primarily limited to the ZID (the zone of initial dilution, which is the region surrounding the discharge point where organisms would be exposed to higher concentrations of the effluent prior to dilution) and to the influence of the discharge on HAB formation and prevalence. Various pollutants, including ammonia, pesticides, petroleum-based contaminants, and metals, can adversely affect EFH through acute (i.e., lethal) or chronic (i.e., sublethal) toxicity (Hanson et al., 2003). Organisms temporarily entrained in or passing through

the ZID would be exposed to higher concentrations of PLWTP's effluent, but are likely not present long enough to be exposed to chronic or lethal toxicity levels.

In addition, as described in Section 2.8 (Harmful Algal Blooms) and 4.3 (Consequence Analysis) of the EPA's BE/EFHA, PLWTP continuously discharges nutrients, which may contribute to the increased frequency, duration, size, and severity of HABs in the action area. HABs can have various effects on EFH, including effects on prey species, reduced dissolved oxygen levels, and direct toxicity. For example, HAB-related toxins such as saxitoxins have sublethal to lethal effects on crustaceans (Vasconcelos et al., 2010), and yessotoxins were linked to a large invertebrate mass mortality event off Sonoma County in 2001, involving abalone, sea urchins, and crab species (De Wit et al., 2014). Dense HABs can cause low dissolved oxygen levels, resulting in fish kills (Trainer et al., 2010; Anderson et al., 2012; Backer & Miller, 2016). Fish kills have also been linked to HAB-related toxins, such as saxitoxins (Gosselin et al., 1989; Lefebvre et al., 2004; Kudela et al., 2010; Trainer et al., 2010; Backer & Miller, 2016).

Due to the high site fidelity of many species managed under the PCG FMP (e.g., rockfish), they may be at risk of greater localized effects from wastewater discharges compared to other fish species with a more dispersed, pelagic distribution, such as those managed under the CPS and HMS FMPs. However, monitoring of benthic communities around the PLOO indicate no impacts from wastewater discharge to species diversity and distribution. The proposed action includes measures to avoid, minimize, or otherwise offset many of these adverse effects, including source control programs for toxic constituents, compliance with discharge permit requirements and water quality standards, outfall design to prevent nearshore transport of the effluent, and effluent discharge via a multi-port diffuser to reduce discharge velocities and pollutant concentrations at the point of discharge. Additionally, the permit includes monitoring requirements to increase the understanding of potential effects associated with flame retardants, nutrient output from discharge, and HABs.

In terms of effects on HAPCs (rocky reef, canopy kelp beds, and eelgrass beds), the PLOO discharges 4.5 miles (7.2 km) offshore at a depth of 310 ft (94.5 m) that was designed to prevent nearshore transport of the effluent, to reduce effects on nearshore rocky reefs. Kelp beds are present in the action area, but are approximately 3.5 miles (5.6 km) inshore of the PLOO. Research and ongoing monitoring, including quarterly mapping of kelp beds in the area in accordance with regulations promulgated by the San Diego Regional Water Quality Control Board, conducted at the Point Loma kelp bed, has not identified any impacts associated with the PLOO discharge. Instead, kelp forest community structure appears to be controlled by large-scale, low-frequency episodic changes in oceanographic conditions. Eelgrass habitat does exist within shallower regions near Point Loma, such as within the entrance channels to Mission and San Diego Bays, and east of Zuniga Jetty just offshore of Breakers Beach. However, the PLOO discharge is located more than 4.5 miles from the nearest known eelgrass beds. In addition, monitoring data rarely detect a potential plume at the most nearshore stations in the action area,

which are located farther offshore and in deeper water than the eelgrass beds. Therefore, we expect any adverse effects on eelgrass from the proposed project would be minimal.

Regarding cumulative effects, multiple permitted discharges release contaminants into the action area, resulting in cumulative impacts to EFH. Low flow diversions and treatment facilities have been effective at reducing bacteria and influent levels. When combined with other stormwater management practices, low flow diversions will improve water quality within the action area. In addition, increased recycling by the City has reduced the total volume of wastewater discharges into the action area. Reduced flow, discharge prohibitions, and other NPDES permit requirements will continue to improve water quality in the action area.

NMFS determined that as long as the measures identified and described in the Reasonable and Prudent Measures and Terms and Conditions sections of this biological opinion are implemented, then no additional measures are needed to avoid or minimize the adverse effects of the proposed action on EFH.

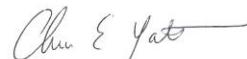
The EPA must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH (50 CFR 600. 920(l)). This concludes the MSA consultation.

DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The biological opinion will be available through NOAA Institutional Repository <https://repository.library.noaa.gov/>. A complete record of this consultation is on file at WCR Long Beach Office.

Please direct questions regarding this letter to Aileen San, NMFS WCR PRD Long Beach, at Aileen.San@noaa.gov.

Sincerely,



Chris Yates
Assistant Regional Administrator
for Protected Resources

cc: Peter Kozelka, EPA
Julie Song, EPA
Administrative File: 151422WCR2024PR00081

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