California Regional Water Quality Control Board
North Coast Region
Resolution No. R1-2026-0005

Project Criteria for an Exception to the Enclosed Bays and Estuaries Policy Prohibiting Waste Discharges to Humboldt Bay

Humboldt County

WHEREAS the California Regional Water Quality Control Board, North Coast Region, (hereinafter "North Coast Water Board") finds that:

1. The City of Eureka (Permittee) owns and operates the Elk River Wastewater Treatment Plant (Facility) that was commissioned in June of 1984. The Facility discharges secondary treated effluent via a 48-inch diameter pipe, 4,100 feet in length, and equipped with a multiple port diffuser to Humboldt Bay, an enclosed bay, and a water of the United States.

2. The State Water Resources Control Board (State Water Board) adopted Resolution No. 74-43, the *Water Quality Control Policy for the Enclosed Bays and Estuaries of California* (Policy), on May 16, 1974.[1] The Policy establishes, "that the discharge of municipal wastewaters and industrial process waters to enclosed bays and estuaries (other than the San Francisco Bay-Delta system) should only be allowed when a discharge enhances the quality of the receiving water above that which would occur in the absence of the discharge." The Policy statement is implemented in a Discharge Prohibition contained in the Policy that states: "New discharges of municipal wastewaters and industrial process waters (exclusive of cooling water discharges) to enclosed bays and estuaries, other than the San Francisco Bay-Delta system, which are not consistently treated and discharged in a manner that would enhance the quality of the receiving waters above that which would occur in the absence of the discharge, shall be prohibited." The North Coast Water Board Basin Plan also incorporates the prohibition provisions contained in the Enclosed Bays and Estuaries Policy.

3. In 1979, the State Water Board held a fact-finding hearing on the application of the Enclosed Bays and Estuaries Policy to waste discharges to Humboldt Bay. Following the hearing, the State Water Board adopted Order WQ 79-20. As specifically applied to Humboldt Bay, the State Water Board interpreted the enhancement provision of the Bays and Estuaries Policy to require: (1) full secondary treatment, with disinfection and dechlorination, of sewage discharges; (2) compliance with any additional NPDES permit requirements issued by the Regional Board to protect beneficial uses; and (3) the fuller realization of existing beneficial uses or the creation of new beneficial uses either by or in conjunction with a wastewater treatment project.

4. Historically, the Facility has discharged on the ebb tide to ensure that wastewater was conveyed to the Pacific Ocean. North Coast Water Board Resolution No. 80-10 concluded that the discharge to Humboldt Bay during ebb tide effectively classifies the discharge as an ocean discharge, rather than a discharge to an enclosed bay. On November 20, 1980, the State Water Board adopted Resolution No. 80-87 approving the ebb tide discharge concept as consistent with the requirements of the Policy.

5. National Pollutant Discharge Elimination System (NPDES) Order No. R1-2009-0033 required the Permittee to perform an effluent discharge study to assess the transport and fate of pollutants discharged from the Facility as well as the potential impacts to beneficial uses associated with the ebb-tide discharge. In compliance with Order No. R1-2009-0033, on January 8, 2014, the Permittee submitted the Effluent Discharge Study for the Elk River Wastewater Treatment Plant (2014 Effluent Discharge Study). The study utilized two models to simulate effluent transport:

    1) Advanced circulation (ADCIRC) as the primary model to predict currents within the Humboldt Bay that are the dominant mechanism of conveying effluent out to the ocean; and

    2) Particle tracking model (PTM) as a secondary model to track particles of effluent released by the Facility (utilizing currents predicted by ADCIRC).

    For baseline simulations, discharges began at slack tide and continued through the designated discharge window. Simulations were then conducted to determine the fate of effluent discharged under various tidal and Facility flow conditions. The 2014 Effluent Discharge Study modeling analysis shows that under all simulations the effluent is never completely conveyed to the ocean, and under certain conditions up to 90% of the effluent remains in Humboldt Bay.

    Thus, the findings of the original studies used to support Resolution Nos. 80-10 and 80-87 that concluded the Facility's discharge was effectively an ocean discharge are contradicted by the 2014 Effluent Discharge Study results. Based on the

[1] The Policy was amended in 1995 to include changes related to San Francisco Bay.

conclusions of the 2014 Effluent Discharge Study, the discharge is not consistent with the findings of Resolutions 80-10 and 80-87 since a significant portion of the Facility's effluent remains in Humboldt Bay.

During development of Order No. R1-2016-0001, North Coast Water Board staff (Staff) determined that the 2014 Effluent Discharge Study was representative of current conditions and more accurately describes the discharge as compared to the original studies. Consequently, the North Coast Water Board determined that the discharge does not qualify as an ocean discharge subject to the Ocean Plan but rather a bay discharge subject to the Enclosed Bays and Estuaries Policy.

In 2021, the City of Eureka submitted a Humboldt Bay Effluent Modeling report (Report). The City of Eureka developed a model of Humboldt Bay and surrounding coastal waters to determine effluent transport in the bay and demonstrate the zone of toxicity for ammonia in the area of the outfall.

The modeling showed no evidence of long-term accumulation of effluent in Humboldt Bay, with simulated effluent proportions remaining very low at all assessed locations: less than 0.65% during the wet season at higher discharge rates (13.6 MGD) and less than 0.25% during the dry season at lower discharge rates (5 MGD). The results indicate that bay flushing is sufficient to reduce effluent concentrations to near-zero (<0.2%) following each discharge cycle, and that the practice of discharging during outgoing tides effectively limits effluent retention and confines potential ammonia toxicity to the immediate vicinity of the diffuser.

North Coast Water Board staff are currently reviewing each report to evaluate the conflicting conclusions between the two reports. Staff will make recommendations on next steps upon completing an evaluation of the conflicting conclusions in the two reports.

6. NPDES Order No. R1-2023-0016 (Permit) was adopted by the North Coast Regional Water Board (North Coast Water Board) on October 5, 2023. The Permit includes Discharge Prohibition 3.1 that states, "The discharge of waste to Humboldt Bay is prohibited unless it complies with the State Water Board, Water Quality Control Policy for the Enclosed Bays and Estuaries of California (1974, 1995)."

7. As part of a Permit Compliance Schedule for meeting Discharge Prohibition 3.1, the Permit requires, in part, the Permittee to submit for Executive Officer review and approval a Feasibility Study, with funding sources, that provides a detailed description of the alternatives analyzed and the preferred alternative for complying with the Enclosed Bays and Estuaries Discharge Prohibition.

8. The remainder of the Permit Compliance Schedule for Discharge Prohibition 3.1 includes requirements to make the Feasibility Study available for public comment to all interested parties, submittal of design milestones, submittal of documentation as necessary to complete the California Environmental Quality Act, and submittal of

written verification and an electronic copy of complete design plans and specifications for construction.

Compliance Schedule for Discharge Prohibition 3.1

Task	Task Description	Due Date
1	Develop a scope of work and budget (Planning funds, Alternatives Analysis and Preferred Project) to fund a Feasibility Study to comply with Discharge Prohibition 3.1 of this Order.	April 1, 2024 (Completed)
2	Submit a Feasibility Study, including funding sources. The Feasibility Study shall provide a detailed description of the alternatives analyzed and the preferred alternative for complying with Discharge Prohibition 3.1. of this Order. Furthermore, the Feasibility Study shall be made available for public comment to all interested parties.	October 1, 2026
3	Submit, for Executive Officer review and approval, a Feasibility Study Final Report with a Preferred Alternative for compliance with Discharge Prohibition 3.1. of this Order.	October 1, 2029
4	Submit a 10% design of the preferred alternative.	December 1, 2031
5	Submit an Environmental Impact Report (EIR) or other documentation as necessary to complete the California Environmental Quality Act (CEQA) process for the Preferred Alternative	December 1, 2032
6	Procure and submit copies of all permits necessary to implement the Preferred Alternative (i.e. Coastal Commission, Army Corps of Engineers, Calif. Dept. of Fish and Wildlife, Regional Water Board, etc.)	December 1, 2033
7	Secure funding for implementation of the preferred alternative (construction, etc.) to comply with Discharge Prohibition 3.1. of this Order.	December 1, 2034
8	Submit an electronic copy of 90% design plans and specifications for the Preferred Alternative.	December 1, 2036
9	Submit written verification and an electronic copy of complete design plans and specifications for construction of the Preferred Alternative	December 1, 2037
10	Complete construction of the Preferred Alternative which complies with the Enclosed Bays and Estuaries Policy (Discharge Prohibition 3.1.),	December 31, 2042

	submit as-builts of the completed project, and achieve compliance with all Regional Water Board waste discharge requirements	

9. The State Water Board's Policy for Enclosed Bays and Estuaries (Policy) requires phasing out municipal and industrial wastewater discharges to bays such as Humboldt Bay unless they enhance water quality. Per the Policy, discharges must remove persistent pollutants to the maximum extent practicable, prevent untreated bypasses, minimize pollutant concentrations through effective treatment and dilution, and protect beneficial uses, including fisheries, recreation, and wildlife habitat.

10. In Order WQ- 79-20, the State Water Board interpreted the Policy in the specific context of Humboldt Bay with respect to the City of Arcata and potential application to the City of Eureka. Per Order WQ-79-20, "… it appears that there are projects, such as Arcata's marsh treatment proposal, which could potentially result in the fuller realization of existing beneficial uses and, hence, in a positive water quality benefit for the Bay". The State Water Board determined that, as applied to Humboldt Bay, "enhancement" of water quality associated with a Bay wastewater discharge may be demonstrated through: (1) full secondary treatment, with disinfection and dechlorination, of the discharge; (2) compliance with any additional NPDES permit requirements issued by the Regional Board to protect Beneficial Uses; and (3) the fuller realization of existing Beneficial Uses or the creation of new Beneficial Uses either by or in conjunction with the wastewater treatment project. The State Water Board acknowledged: "there is a reasonable probability that dischargers to Humboldt Bay could, through projects implemented in conjunction with a Bay wastewater treatment discharge, achieve compliance with the Policy."

Previous Alternative Analysis and Special Studies

The City has previously investigated the possibility of an Ocean Outfall and also performed studies to determine potential impacts to beneficial uses from their discharge to Humboldt Bay and initiated a mixing zone study for ammonia toxicity. A summary of those studies is listed below.

11. On July 12, 2021, the Permittee submitted an Ocean Outfall Evaluation. The Permittee examined the feasibility of three alternatives for ocean discharge which included discharging treated effluent through the existing Redwood Marine Terminal (RMTII) outfall, the Simpson outfall, or a new ocean outfall.

    The key findings from the evaluation are:

    - Discussions with the Humboldt Bay Harbor, Recreation and Conservation District (Harbor District) indicate the City cannot obtain a commitment from the Harbor District for the required capacity to ensure long-term operations. The Harbor District owns and operates the Ocean Outfall that is located on the Samoa Peninsula. The Harbor District indicated the outfall capacity of

RMTII is approximately 30 million gallons per day (MGD). Current uses and planned commitments to the RMTII outfall sum approximately 13 MGD, which leaves only 17 MGD of uncommitted capacity.

- The ocean discharge alternative would considerably increase the City's greenhouse gas emissions to move water across the Bay, by approximately 308,000 pounds of CO_2 equivalent per year.

- Construction of the Bay crossing would have a significant footprint and potentially significant environmental impacts.

- Per an analysis completed in May 2025, projected capital costs for a new three-segment pipeline that would run from the Facility to the Samoa Peninsula and discharge to the Pacific Ocean has a cost range of $176,630,500 for a depth of 42 feet and $210,630,500 for a depth of 79 feet.

Costs and environmental impacts will be updated and included in the Feasibility Study Report that is due on October 1, 2026, as a requirement of the compliance schedule in the Permit. The 2026 Feasibility Study will reflect current conditions and cost estimates.

12. The Permittee submitted a Biological Survey in August 2019 as required by NPDES Order No. R1-2016-0001. The Biological Survey included a comparative evaluation of indigenous biota in the vicinity of the outfall using a qualified aquatic biologist to determine if there have been any negative impacts to aquatic life in the area of the outfall due to the discharge.

    To assess adverse impacts of the discharge, the Biological Survey compared marine macroalgae (seaweeds) and invertebrate species in the immediate vicinity of the Permittee's outfall with marine macroalgae and invertebrate species in a control site located two miles south at Buhne Point. The Survey found that the two study areas share similar habitat traits, including rock armoring substrate size and type, salinity (marine), tidal influence, and proximity to the Humboldt Bay entrance channel.

    The relative abundance of ecologically important organisms was estimated using fixed plots in targeted assemblages during low tide events in the spring and fall. Surveys included photoplot imaging from a quadropod, crab trapping, and hook and line fish sampling. Surveys occurred on June 26, 2018, November 8, 2018, November 9, 2018, March 17, 2019, March 18, 2019, and March 19, 2019. Additional observations of habitats and species present in the study and control sites were recorded.

    No floating particulates, grease, discoloration of water or crustaceans, or observations of an objectionable nature were observed during plot surveys, vessel-based crab trapping, hook and line sampling or travel to and from sites. This study found no evidence that suggested degradation of biota in the receiving waters from the Permittee's discharge.

13. On November 1, 2021, the Permittee submitted a technical memorandum entitled, "Enclosed Bays and Estuaries Compliance Feasibility Study: Evaluation of Ammonia Toxicity during Elk River Wastewater Effluent Mixing in Humboldt Bay" (Memo). The Memo presents analyses to evaluate possible ammonia toxicity from the effluent discharged by the Permittee as it mixes in Humboldt Bay.

    PG Environmental (PG) was under contract with the North Coast Water Board to provide assistance in drafting the new Permit for the City of Eureka and to provide technical analysis of the Permittee submitted documents. Therefore, Staff sent the Memo to PG to review and advise the North Coast Water Board whether the discharge from the Elk River Wastewater Treatment Plant (Facility) may receive a dilution credit for ammonia and other non-bioaccumulative substances. Based on PG's review, the dilution modeling documented in the Memo demonstrates that ammonia concentrations in the Facility's effluent exceed applicable criteria at the end of pipe but achieve compliance after reasonable mixing in Humboldt Bay (31:1 dilution). Accordingly, the study provides the technical basis for granting a dilution credit under the State Implementation Policy. North Coast Water Board staff concur with PG's findings and consider the analysis adequate to support the inclusion of dilution credits for ammonia and other non-bioaccumulative substances in the Permit.

Criteria for Potential Exception to the Enclosed Bays and Estuaries Policy

14. As stated in Finding 3 above, Order 79-20 requires the City to achieve full secondary treatment, with disinfection and dechlorination, of their effluent and compliance with any additional NPDES permit requirements issued by the North Coast Board to protect beneficial uses. The Permit includes a compliance schedule to bring the City into compliance with the Policy and to reduce wet weather flows that can lead to bypass events at the Facility. The City will need to complete the tasks from the compliance schedules in the Permit by the due dates included in Finding 8 above.

15. The North Coast Water Board must continually apply and interpret the Policy in light of existing conditions in Humboldt Bay. To grant an exception under the Policy related to a wastewater discharge to Humboldt Bay, the North Coast Water Board must find that projects not only maintain compliance with the principles established by the State Water Board but also incorporate measures that improve water quality and protect beneficial uses. Such projects should demonstrate multiple benefits, such as habitat restoration, adaptation to variable climatic conditions and the impacts of climate change, pollutant reduction, and infrastructure improvements that reduce risks to Humboldt Bay and its communities.

    Consistent with the State Water Board's interpretation of the policy as expressly applied to Humboldt Bay, an eligible exception project or combination of projects shall use the following criteria:

15.1. **Protection and the Fuller Realization of Beneficial Uses**

Projects must support the protection of existing Beneficial Uses and provide for the fuller realization of existing Beneficial Uses or create new Beneficial Uses in or around Humboldt Bay. The existing Beneficial uses of Humboldt Bay include the following: Water Contact Recreation (REC-1), Non-Water Contact Recreation (REC-2), Commercial and Sport Fishing (COMM), Aquaculture (AQUA), Cold Freshwater Habitat (COLD), Marine Habitat (MAR), Wildlife Habitat (WILD), Preservation of Rare, Threatened, or Endangered Species (RARE), Migration of Aquatic Organisms (MIGR), Spawning, Reproduction and/or Early Development (SPWN), Shellfish Harvesting (SHELL), Estuarine Habitat (EST), Subsistence Fishing (FISH); Navigation (NAV); and Native American Culture (CUL).) Eligible projects would support Beneficial Uses within the Bay and provide for the fuller realization of Beneficial Uses in locations where the use is only marginally supported or create beneficial uses in locations where they are not currently supported. Eligible projects could also protect Beneficial Uses based upon existing conditions of Humboldt Bay and preserve Beneficial Uses that may be threatened or predicted to experience loss or reduction within Humboldt Bay.

The North Coast Water Board anticipates that the following classes of projects may create, or further enhance, support, or protect Beneficial Uses:

Climate Adaptation and Resilience

15.2. Projects that support adaptation to the impacts of storm surge and sea level rise and associated impacts of climate change. Portions of the shoreline and landward areas of the Bay are increasingly exposed to storm surge and coastal flooding, an indicator of sea level rise, and other climate-related impacts. Tectonic subsidence combined with sea level rise results in Humboldt Bay experiencing the highest rates of sea level rise across the Western United States. Projected rates of sea level rise for Humboldt Bay are doubled when compared to other California coastal communities. The impacts of sea level rise are compounded by the increased frequency of more extreme weather events in the North Coast. These changes threaten existing Beneficial Uses and critical infrastructure. Potential projects may include relocation or protection of vulnerable infrastructure (including wastewater infrastructure) or projects that promote resilience to the impacts of storm surge, coastal flooding, and sea level rise and thereby allow for the fuller realization of Beneficial Uses in Humboldt Bay.

15.3. The focus of most sea-level rise research and vulnerability and planning studies have been on the impacts of tidal flooding and inundation from rising sea levels and higher storm surge. However, low-lying areas around Humboldt Bay are not only threatened by overtopping of shoreline barriers by tidewaters, but also by reduced stormwater drainage capacity, especially when rainfall events coincide with high ocean water levels. As a result, sea level rise adaptation will be more complex and varied than solely relying on elevation and fortification of tidal barriers. Projects may therefore include reengineering of drainage and

stormwater conveyance infrastructure or restoration of streams and other waterways draining to the Bay.

15.4. Projects may address adaptation to climate change and sea level rise by improving or relocating infrastructure, protecting in-place, managed retreat of infrastructure and/or implementing nature-based solutions or hybrid approaches.

15.5. Projects that adapt to the impacts of sea level rise by utilizing nature-based solutions such as living shorelines, horizontal levees, eco-tone slopes, or wetland or marsh habitat enhancement can attenuate wave energy, reduce erosion, improve water quality, and enhance Beneficial Use support.

Habitat Restoration and Creation

15.6. Projects that create and restore wetlands to improve Humboldt Bay water quality, increase resilience, and support estuarine and aquatic habitats[2]

15.7. Projects that include wetlands and other features at the end of the treatment processes to provide effluent polishing and enhance beneficial uses while also adding or enhancing wetland habitat at the end of the treatment process for polishing of effluent.

Where feasible, projects that restore natural hydrologic features such as stream corridors, groundwater recharge areas, floodplains, and wetlands.

15.8. Part of Humboldt Bay and its shoreline were once blanketed by salt marsh. Historically, the low-lying alluvial areas, such as the Elk River Slough hydrographic area and the Eureka Slough hydrographic area to the north were predominately salt marsh with a network of tidal channels. The urban waterfront area west of Broadway and A Street were also historically salt marsh and windblown sand deposits overlaid on tidal mudflats or salt marsh. At the turn of the century, and over many decades of development, it is estimated 80-90% of salt marsh was lost in Humboldt Bay. Today, with some exceptions resulting from significant fill, these former regions of salt marsh and low-lying sand deposits are within the current floodplain, and vulnerable to increased extent, frequency, and severity of flooding in the future with sea level rise. Projects that re-establish historic salt marsh areas, or create new salt marsh areas, would allow for the fuller realization of Beneficial Uses.

Removal of Legacy Pollutants Impacting the Bay

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[2] In Order WQ-79-20 the State Water Board explicitly listed wetlands enhancement and/or restoration as a potential exception project: “Eureka, for example, might want to consider the restoration of some existing wetlands or the creation of some marsh adjacent to or near the Bay.”(Order WQ-79-20 p.11.)

15.9. Projects that remove legacy pollutants (pollutants outside the responsibility of the City of Eureka) impacting the Bay would allow for the fuller realization of Beneficial Uses. Humboldt Bay tidal waters include portions of shoreline where historic legacy uses included heavy industrial and commercial trades adjacent to the Bay. These areas are now experiencing or are threatened by tidal inundation and thereby impact water quality of Humboldt Bay. The Bay is listed on the 2012 California section 303(d) list for water bodies impaired by Dioxin Toxic Equivalents and polychlorinated biphenyl compounds (PCB). Examples of legacy pollutants to be removed or remediated may include dioxin toxic equivalents, polychlorinated biphenyl (PCB), petroleum hydrocarbons, volatile organic compounds (VOCs), pentachlorophenol (PCP), other semi-volatile organic compounds (SVOCs), furans and metals such as arsenic, cadmium, lead, vanadium and zinc. These pollutants may be found in site soils, groundwater or structures such as creosote piles. Projects that remove or remediate these legacy pollutants would enhance Bay water quality.

Disadvantaged Communities and Public Health

15.10. Projects that implement measures to provide access to clean water and public health, safety and welfare for disadvantaged communities. The shoreline area of Humboldt Bay includes many disadvantaged communities whose access to clean water, public services and general health, safety and welfare are threatened by sea level rise and climate change. These include, but are not limited to, mobile home parks and similar residential uses. Projects that help to mitigate risks to these communities would assist in maintaining and providing these communities with continued access to clean water and public services.

15.11. Projects that sewer unsewered areas around Humboldt Bay. Sewer projects will need to demonstrate effectiveness and pollutant removal that would be otherwise discharged without expanding sewer service to unsewered areas.

16. The Permittee has previously analyzed the potential for discharge via an Ocean Outfall. Based on the Findings above, the Permittee believes that discharge via an Ocean Outfall is not feasible based on cost of compliance and environmental impacts associated with drilling under Humboldt Bay to create a new Ocean Outfall. The Permittee also asserts that studies conducted thus far (Biological Survey, Ammonia Study) do not reflect that the discharge is causing and/or threatening to cause harm to Humboldt Bay beneficial uses. The Permittee will build upon the previous studies to conduct a new Alternatives Analysis that is due October 1, 2026. The updated Alternatives Analysis is necessary to add important information to the previous study and determine the most feasible method that achieves compliance with the Enclosed Bays and Estuaries Policy.

A project that meets the criteria listed in the findings above has the potential to reduce the cost of compliance and associated increase to rate payers, remove legacy pollutants from Humboldt Bay, enhance and maintain beneficial uses in a changing environment due to sea level rise and climate related impacts.

RESOLUTION

THEREFORE it is hereby resolved that:

The North Coast Water Board determines that projects that: 1) protect beneficial uses; and 2) enhance or create new beneficial uses would generally be consistent with an exception to the Enclosed Bays and Estuaries Discharge Prohibition. The City of Eureka may consider the classes of projects included in this resolution as it proposes projects for the North Coast Water Board to consider as means for complying with Discharge Prohibition 3.1. in NPDES permit Order No. R1-2023-0016 and subsequent permits that include the Prohibition.

CERTIFICATION

I, Valerie M. Quinto, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, North Coast Region, on February 18-19, 2026.

Valerie Q

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Valerie M. Quinto

Executive Officer

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