

California Regional Water Quality Control Board
San Diego Region

Response to Comments Report

Tentative Order No. R9-2023-0004

NPDES No. CA0107239

Waste Discharge Requirements for the University of California San Diego,
Scripps Institution of Oceanography, Discharge to the Pacific Ocean

March 8, 2023



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INTRODUCTION

This report contains the California Regional Water Quality Control Board, San Diego Region's (San Diego Water Board) responses to written comments received from interested parties and persons on Tentative Order No. R9-2023-0004, NPDES No. CA0107239, *Waste Discharge Requirements for University of California San Diego, Scripps Institution of Oceanography*, Discharge to the Pacific Ocean (Tentative Order).

The San Diego Water Board provided public notice of the release of the Tentative Order on January 21, 2023, and provided a period of at least 30 days for public review and comment on the Tentative Order. The public comment period ended on February 21, 2023.

<u>Written comments were received from:</u>	<u>Page No.</u>
University of California San Diego (Discharger)	5
Craig Carlisle	16

Comments and Responses

The summarized written comments and San Diego Water Board responses are set forth below. For comments received from the Discharger, the section of the Tentative Order the comment pertains to is shown in parenthesis in each comment below. The responses include a description of any actions taken to revise the Tentative Order in response to the comment. Proposed revisions to the Tentative Order are in red- underline for added text and ~~red-strikeout~~ for deleted text.

COMMENTS AND RESPONSES

1. Comments from University of California San Diego, dated February 21, 2023

1.1. Comment – Total Suspended Solids Effluent Limitations in Wrong Column (Section 4.1.1, Table 2)

Total Suspended Solids (TSS) effluent limitations are in "instantaneous minimum" column for both milligrams per liter (mg/L) and pounds per day (lbs/day) limitations and should be in "instantaneous maximum" column.

Response

Section 4.1.1, Table 2 has been modified as follows:

Table 1. Technology Based Effluent Limitations at Monitoring Locations EFF-001, 003, 004a, and 004b^{1,2,3}

Parameter	Units	Average Monthly	Average Weekly	Instantaneous Minimum	Instantaneous Maximum
Total Suspended Solids (TSS)	milligrams per liter (mg/L)	60	--	120	<u>120</u>
TSS	pounds per day (lbs/day)	626	--	1251	<u>1251</u>

1.2. Comment – Table 2. Formatting Error (Section 4.1.1, Table 2)

Correct a formatting error in the footnotes to Table 2.

Response

Section 4, Table 2, footnotes has been modified as follows:

Notes [for Table 2](#) ~~Error! Not a valid bookmark reference~~

1.3. Comment – Spelling Error (Section 4.1.1, Table 3)

In footnote 1, "commo" should be "common."

Response

Section 4.1.1, Table 3, Footnote 1 has been modified as follows:

See Attachment A for definitions of abbreviations and a glossary of common terms used in this Order.

1.4. Comment – Clarification (Section 4.1.2.1)

Change "Table" to "Table 4" in first and second paragraph.

Response

Section 4.1.2.1 has been modified as follows:

Outfalls 001, 003, 004, and 004b

Parameters that do not have reasonable potential to cause or contribute to an exceedance of water quality objectives, or for which reasonable potential to cause or contribute to an exceedance of water quality objectives cannot be determined, are referred to as performance goal parameters and are assigned the performance goals listed in Table 4. Performance goal parameters for Outfalls 001, 003, 004a, and 004b shall be monitored at monitoring locations EFF-001, EFF-003, EFF-004a, EFF-004b respectively as described in the MRP (Attachment E). The San Diego Water Board will use the results for informational purposes only, not compliance determinations.

The performance goals in Table 4 are not water quality-based effluent limitations (WQBELs) and are not enforceable, as such. However, the Discharger shall maintain, if not improve, the effluent quality to levels at or below the performance goal. The Discharger shall report all exceedances of performance goals at monitoring locations EFF-001, EFF-003, EFF-004a, or EFF-004b in the cover letter of the semiannual self-monitoring report (SMR).

1.5. Comment – References to In-Stream Waste Concentration (Section 7.10 and Attachment E, Sections 3.3.1, 3.3.3, 3.3.4, and 3.3.6.1)

Please remove references to In-Stream Waste Concentration (IWC).

Response

The following sections of the Tentative Order have been modified and renumbered when necessary, as shown below:

Section 7.10

Chronic Toxicity

Chronic toxicity is used to measure the acceptability of waters for supporting a healthy marine biota until approved methods are developed to evaluate biological response. Compliance with the chronic toxicity effluent limit or performance goal established in section 4.1 of this Order shall be determined using critical life stage toxicity tests in accordance with procedures prescribed by the Ocean Plan (2019) and restated in the MRP (Attachment E). Chronic toxicity shall be expressed as TUa, where:

$$\text{tuck} = 100 / \text{NOTEC}$$

where NEC is the No Observed Effect Concentration (also referred to as the No Observed Effect Level or NOEL) and is expressed as the maximum percent of effluent that causes no observable effect on a test organism, as determined by the result of a critical life stage toxicity test. The MDEL for chronic toxicity is exceeded and a violation will be flagged when a chronic toxicity test results in greater than or equal to 8 tock. ~~The MDEL for chronic toxicity is set at the "In-Stream" Waste Concentration (IWC) for the discharge (14.3% effluent¹).~~

$$^1 \text{IWC} = 1/\text{minimum initial dilution factor (D}_m) = 1/7 = 0.143 = 14.3\%$$

Attachment E, Section 3.3.1 (section deleted and subsequent sections renumbered)

~~3.3.1. Discharge In-stream Waste Concentration (IWC) for Chronic Toxicity~~

~~The chronic IWC is calculated by dividing 100 percent by the dilution ratio. The chronic toxicity IWC is 14.3 percent effluent.~~

Attachment E, Section 3.3.3 (renumbered as Section 3.3.2)

3.3.2.3. Chronic Marine Species and Test Methods

~~If effluent samples are collected from outfalls discharging to receiving waters with salinity greater than one parts per thousand (ppt), t~~The Discharger shall conduct the following chronic toxicity tests on effluent samples, ~~at the Discharge IWC (14.3 percent effluent),~~ in accordance with species and test methods in *Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to West Coast Marine Estuarine Organisms* (EPA/600/R-95/136, 1995). Artificial sea salts or hypersaline brine shall be used to increase sample salinity if needed. In no case shall these species be substituted with another test species unless written authorization from the San Diego Water Board is received.

~~¹IWC = 1/minimum initial dilution factor (D_m) = 1/7 = 0.143 = 14.3%~~

Attachment E, Section 3.3.4 (renumbered as Section 3.3.3)

3.3.3.4. Species Sensitivity Screening

Species sensitivity screening shall be conducted during this Order's first required sample collection, or within 36 months of the most recent screening, whichever is later.

For each suite during the species sensitivity screening, the Discharger shall collect a single effluent sample to initiate and concurrently conduct three toxicity tests using the fish, an invertebrate, and the alga species previously referenced. ~~This sample shall also be analyzed for the parameters required on a monthly frequency for the discharge, during that given month.~~ As allowed under the test method for the *Atherinops affinis*, a second and third sample shall be collected for use as test solution renewal water as the seven-day toxicity test progresses. The species exhibiting the highest Toxicity Units Chronic (TUC) ~~at the discharge-IWC~~ is considered the most sensitive species for that suite.

Attachment E, Section 3.3.6.1 (renumbered as Section 3.3.5.1)

3.3.5.6.1. The valid toxicity test results for the NOEC approach, reported in TUC ~~at the chronic toxicity IWC for the discharge.~~ All toxicity test results (whether identified as valid or otherwise) conducted during the calendar month shall be reported in the SMR as specified in Table E-9.

Attachment E, Section 3.3.8 (renumbered as Section 3.3.7)

3.3.7.8. Accelerated Monitoring Schedule for Maximum Daily Single Result:

The maximum daily single result of greater than or equal to 8 TUC shall be used to determine if accelerated testing needs to be conducted.

Once the Discharger becomes aware that the maximum daily single result is greater than or equal to 8 TUC, the Discharger shall notify the San Diego Water Board and implement an accelerated monitoring schedule within ten calendar days of the receipt of the result. However, if the sample is contracted out to a commercial laboratory, the Discharger shall ensure that the San Diego Water Board is notified, and the first of six accelerated monitoring tests is initiated within ten calendar days of the Discharger becoming aware of the result. The accelerated monitoring schedule shall consist of six toxicity tests ~~(including the discharge-IWC)~~, conducted at approximately two-week intervals, over a twelve-week period; in preparation for the TRE process and associated reporting, these results shall also be reported using the EC₂₅.

1.6. Comment – TCDD Equivalents Table (Attachment A, Part 2-Definitions)

TCDD Equivalents Table appears to have a few typos in the Toxicity Equivalency Factor (TEF) column compared to the TEF values in the 2010 San Francisco

Regional Water Quality Control Board report.

Response

The following table in Attachment A (Part 2-Definitions) has been modified as follows:

Isomer Group	Minimum Level (picogram per liter, pg/L)	2005 Toxicity Equivalency Factor (TEF)	Bioaccumulation Equivalency Factor (BEF)
2,3,7,8-tetra CDD	10	1.0	1.0
1,2,3,7,8-penta CDD	50	1.0	0.9
1,2,3,4,7,8-hexa CDDs	50	0.1	0.3
1,2,3,6,7,8-hexa CDDs	50	0.1	0.1
1,2,3,7,8,9-hexa CDDs	50	0.1	0.1
1,2,3,4,6,7,8-hepta CDD	50	0.01	0.05
octa CDD	100	0.0003	0.01
2,3,7,8-tetra CDF	10	0.1	0.8
1,2,3,7,8-penta CDF	50	0.03	0.2
2,3,4,7,8-penta CDF	50	0.3	1.6
1,2,3,4,7,8-hexa CDFs	50	0.1	0.08
1,2,3,6,7,8-hexa CDFs	50	0.1	0.2

Isomer Group	Minimum Level (picogram per liter, pg/L)	2005 Toxicity Equivalency Factor (TEF)	Bioaccumulation Equivalency Factor (BEF)
1,2,3,7,8,9-hexa CDFs	50	0.1	0.6
2,3,4,6,7,8-hexa CDFs	50	0.1	0.7
1,2,3,4,6,7,8-hepta CDFs	50	0.01	0.01
1,2,3,4,7,8,9-hepta CDFs	50	0.01	0.4
octa CDF	100	0.0003	0.02

1.7. Comment – Monitoring Requirements (Attachment E Tables E-2, E-3, E-4, and E-6)

Total suspended solids, settleable solids and turbidity should be changed to grab samples rather than composite because they are subject to instantaneous maximum limitations. Section 7.5 on page 27 of the permit specifies that instantaneous maximum limitations apply to grab samples.

Response

The sample types for total suspended solids, settleable solids and turbidity in Attachment E, Tables E-2, E-3, E-4, and E-6 have been modified as follows:

Table E-2. Effluent Monitoring at Monitoring Location EFF-001 (Outfall 001)

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Total Suspended Solids	milligrams per liter (mg/L)	Grab 24-hour Composite	2/Year	2

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Settleable Solids	milliliters per liter (ml/L)	<u>Grab 24-hour Composite</u>	2/Year	2
Turbidity	Nephelometric Turbidity Units (NTU)	<u>Grab 24-hour Composite</u>	2/Year	2

Table E-3. Effluent Monitoring at Monitoring Location EFF-002 (Outfall 002)

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Estimate or recorder/totalizer	Continuous ¹	2
Oil and Grease	mg/L	Grab	1/Year	2
Total Suspended Solids	mg/L	<u>Grab 24-hour Composite</u>	1/Year	2
Settleable Solids	ml/L	<u>Grab 24-hour Composite</u>	1/Year	2
Turbidity	NTU	<u>Grab 24-hour Composite</u>	1/Year	2

Table E-4. Effluent Monitoring at Monitoring Location EFF-003 (Outfall 003)

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Estimate or recorder/totalizer	Continuous ¹	2
Oil and Grease	mg/L	Grab	2/Year	2
Total Suspended Solids	mg/L	<u>Grab 24-hour Composite</u>	2/Year	2
Settleable Solids	ml/L	<u>Grab 24-hour</u>	2/Year	2

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
		Composite		
Turbidity	NTU	Grab 24-hour Composite	2/Year	2

Table E-6. Effluent Monitoring at Monitoring Location EFF-004b (Outfall 004b)

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Estimate or recorder/totalizer	Continuous ¹	2
Oil and Grease	mg/L	Grab	2/Year	2
Total Suspended Solids	mg/L	Grab 24-hour Composite	2/Year	2
Settleable Solids	ml/L	Grab 24-hour Composite	2/Year	2
Turbidity	NTU	Grab 24-hour Composite	2/Year	2

1.8. Comment – Monitoring (Attachment E, Section 3.3.4.)

Remove reference to parameters monitored on a monthly basis.

Response

Attachment E, Section 3.3.4. has been modified and renumbered as Attachment E, Section 3.3.3:

3.3.3.4. Species Sensitivity Screening

Species sensitivity screening shall be conducted during this Order’s first required sample collection, or within 36 months of the most recent screening, whichever is later.

For each suite during the species sensitivity screening, the Discharger shall collect a single effluent sample to initiate and concurrently conduct three toxicity tests using the fish, an invertebrate, and the alga species previously referenced. ~~This sample shall also be analyzed for the parameters required on a monthly frequency for the discharge, during that given month.~~ As allowed under the test method for the *Atherinops affinis*, a second and third sample shall be collected for use

as test solution renewal water as the seven-day toxicity test progresses. The species exhibiting the highest Toxicity Units Chronic (TUc) ~~at the discharge IWC~~ is considered the most sensitive species for that suite.

If the first suite of rescreening tests demonstrates that the same species is the most sensitive, then the rescreening does not need to include more than one suite of tests. If a different species is the most sensitive or if there is ambiguity, then the Discharger shall proceed with suites of screening tests for a minimum of three, but not to exceed five suites.

Species sensitivity rescreening is required every 36 months. The Discharger shall rescreen with the marine vertebrate species, a marine invertebrate species, and the alga species previously referenced, and continue to monitor with the most sensitive species.

The species used during routine monitoring shall be the most sensitive species from the most recent species sensitivity screening.

~~During the calendar month, toxicity~~ Toxicity tests used to determine the most sensitive test species shall be reported as effluent compliance monitoring results for the chronic toxicity maximum daily effluent limitation (MDEL) or performance goal.

1.9. Comment – Date (Attachment E, Table E-8)

Change March 30 to March 31. Coorection

Response

Attachment E, Table E-8 has been modified as follows:

Table E-8. Monitoring Periods

Sampling Frequency	Monitoring Period
1/Quarter (or quarterly)	January 1 through March 31 <u>30</u>
	April 1 through June 30
	July 1 through September 30
	October 1 through December 31

1.10. Comment – Seawater Discharge Category (Attachment F, Table F-2)

Corrections to the Seawater Discharge Category column in Table F-2 for several facilities. Change "non-indigenous species" to "discharges not associated with marine organisms" in the second column for the Electromagnetic Facility, the Hydraulics Laboratory, and the W.M Keck Center for Ocean Atmosphere Research (OAR).

Response

Attachment F, Table F-2 has been modified as follows:

Table F-2. Seawater Locations and Discharge Category

Location	Seawater Discharge Category	Chemical Additives	Seawater Return Discharge Destination
Electromagnetic Facility	Discharges from aquaria/tanks containing indigenous species or non-indigenous species not associated with marine organisms	None	Outfall 001
NOAA– Southwest Fisheries Science Center	Discharges from aquaria/tanks containing indigenous species	None	Outfall 001
Marine Conservation Technology Facility (formerly Building D)	Discharges from aquaria/tanks containing indigenous species,	Wash water on floor	Sanitary Sewer

Location	Seawater Discharge Category	Chemical Additives	Seawater Return Discharge Destination
Marine Conservation Technology Facility (formerly Building D)	Discharges from aquaria/tanks containing non-indigenous species	None	Outfall 001 (seawater from aquaria containing non-indigenous species will be treated prior to discharge)
Scholander Hall	Discharges from aquaria/tanks containing indigenous species	None	Sanitary Sewer
Hydraulics Laboratory	Discharges from aquaria/tanks containing non-indigenous species <u>not associated with marine organisms</u>	Tracer Dye and Chlorine	Sanitary Sewer
Hydraulics Laboratory	Discharges from aquaria/tanks containing indigenous species (in the future)	None (future use)	Outfall 001 (potential connection in the future)
W.M Keck Center for Ocean Atmosphere Research (OAR)	Discharges from aquaria/tanks containing non-indigenous species <u>not associated with marine organisms</u>	Yes (chlorine)	Sanitary Sewer

2. Comments from Craig Carlisle, dated February 6, 2023

2.1. Comment – Erosion and Sand Loss

The discharge of wastewater by Scripps Institution of Oceanography is exacerbating the effects of climate change by increasing the erosion of valuable beach sand. Over 30,000 cubic feet of sand are estimated to be removed from this popular beach every year by the discharge. The San Diego Water Board’s Conceptual Model in Resolution R9-2018-0051 *Addressing Threats to Beneficial Uses from Climate Change* identifies shoreline erosion as an impact from climate change.

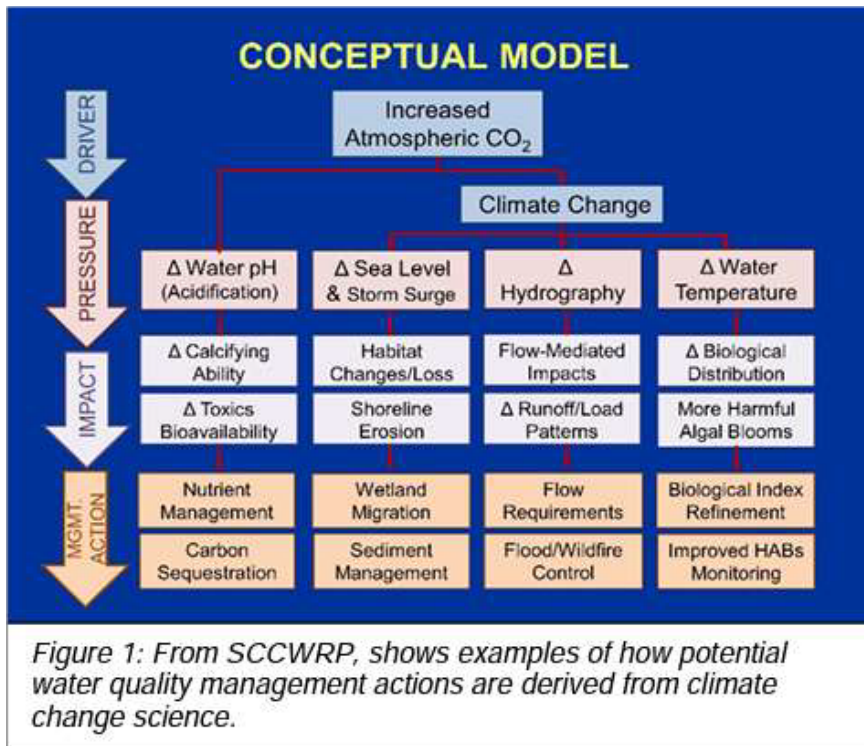


Figure 1: From page 3 of Craig Carlisle’s comment letter, dated February 6, 2023

The Resolution also has “Ensure low-gradient beaches remain accessible for recreational uses” listed as “Top Goals Related to Climate Change” in Table 1 along with “Flow Requirements” as a “Management Action.” Unfortunately, Resolutions do nothing until actions are actually taken and this is an excellent opportunity to clearly demonstrate commitment to the concepts in the Resolution by eliminating or at least reducing the discharge’s negative impacts.

Below are some photographs showing examples of the beach erosion caused by this discharge.

Note: There appears to be 5 discharge locations staining the sea wall south of the pier in the first photo below, not the three shown on Attachment B-Map (4b, 4a, and 2). The Map should also have a scale.



Photo 1: From page 4 of Craig Carlisle's comment letter, dated February 6, 2023



Photo 2: From page 5 of Craig Carlisle's comment letter, dated February 6, 2023



Photo 3: From page 5 of Craig Carlisle's comment letter, dated February 6, 2023



Photo 4: From page 5 of Craig Carlisle's comment letter, dated February 6, 2023



Photo 5: From page 6 of Craig Carlisle's comment letter, dated February 6, 2023
Sand Loss Estimate

Assumptions:

- The four outfalls each erode 0.5 to 1.0 ft. deep by 5 ft. wide by 10 to 30 ft. long volume of sand.
- The two high tides per day combined with long shore drift and wave action refill 50 to 80 percent of the eroded volume.

[NOTE: The photographs clearly show erosion deeper, wider, and longer than the dimensions used in the assumptions to be conservative.]

Calculations:

Low Estimate: 0.5 ft. deep x 5 ft. wide x 10 ft long x 2 per day x 50 percent x 4 outfalls = 100 cubic feet per day x 365 = 36,500 cubic feet of sand loss per year

High Estimate: 1 ft. deep x 5 ft. wide x 30 ft long x 2 per day x 80 percent x 4 outfalls = 960 cubic feet per day = 350,400 cubic feet of sand loss per year

Response

Attachment B of the Tentative Order shows the location of all five outfalls: Outfalls 001, 002, 003, 004a, and 004b.

The San Diego Water Board agrees that San Diego Water Board Resolution No. R9-2018-0051, *Addressing Threats to Beneficial Uses from Climate Change* (San Diego Water Board Climate Change Resolution) identifies shoreline erosion as an impact of climate change, and Table 1 of the San Diego Water Board Climate Change Resolution lists “ensuring low-gradient beaches remain accessible for recreational users.” Discharges from the Facility’s outfalls, however, do not render the beach inaccessible for water contact or non-contact recreational uses. In addition, a significant amount of the sand displaced by the discharges is replenished at high tide. Further, the overarching goal of the San Diego Water Board Climate Change Resolution is to address issues caused by climate change, such as how discharges from facilities may cause ocean acidification; or addressing how factors related to climate change such as sea level rise or changing rainfall patterns may affect treatment facilities or the quality of discharges. This discharge is different because it comprises of treated seawater and/or stormwater to a beach and is not a result of climate change. Nevertheless, the Tentative Order is consistent with the goals of the San Diego Water Board Climate Change Resolution and State Water Board Resolution No. 2017-0012, *Comprehensive Response to Climate Change* because it requires the Discharger to develop and submit a climate change action plan (CCAP) within 3 years of the effective date. The CCAP requires the Discharger to identify steps being taken to address climate change related impacts on the Facility (includes intake structures, storage and conveyance facilities, treatment facilities, and outfalls). The CCAP will also include steps taken or planned to address impacts such as sea level rise, volatile rain period impacts (both dry and wet weather); impacts on intake water quality; impacts on operations of treatment systems and on quality of the discharge and identify need to adjust permit conditions.

The San Diego Water Board acknowledges that the discharges from the Facility outfalls occur to a beach, similar to other permitted outfalls that discharge stormwater to beaches throughout the region. The discharges from the Facility outfalls to the San Diego-Scripps Area of Special Biological Significance (ASBS) are allowed under State Water Board Resolution No. 2015-0025, *Approving an Exception to the California Ocean Plan for the University of California San Diego Scripps Institution of Oceanography and Adopting an Addendum to the Initial Study/Mitigated Negative Declaration*. State Water Board Resolution No. 2015-0025 grants an exception to the prohibition of discharges to an ASBS, which allows the discharge to the San Diego Scripps-ASBS provided the discharge complies with water quality standards in the *Water Quality Control Plan Ocean Waters of California* (Ocean Plan) and does not alter natural water quality conditions in the receiving water. Ocean Plan water quality objectives are established to ensure reasonable protection of beneficial uses and prevention of nuisance conditions. Order No. R9-2015-0070 (Current Order) establishes effluent limitations based on Ocean Plan water quality objectives. There were no exceedances of effluent limitations during the permit term. In addition, monitoring data collected during the last 15 years shows that discharges from the Facility outfalls have not resulted in lower water quality than prescribed in the Ocean

Plan. State Water Board Resolution No. 2015-0025 does not require that the Discharger to remediate any impacts to the sand on the beach. The San Diego Water Board can only require changes in design to address impacts to water quality or to protect beneficial uses of the ocean. In this instance, the discharge meets water quality standards and is not adversely impacting beneficial uses of the ocean (as required by the Tentative Order and State Water Board Resolution No. 2015-0025).

As specified in the Ocean Plan, exceptions may be granted to Ocean Plan requirements provided that (a) the exception will not compromise protection of ocean waters for beneficial uses, and (b) the public interest will be served. State Water Board Resolution No. 2015-0025 meets both these requirements by establishing provisions to protect beneficial uses of the ocean and biological communities of the San Diego Scripps ASBS, and finds that the public interest is served granting the exception due to the Discharger's leading role in marine research. As an alternative to requiring the Discharger to terminate the discharge or relocate the Facility outfalls, the Discharger implements treatment controls and management measures based on provisions from State Water Board Resolution No. 2015-0025 which have been incorporated in the Tentative Order. These treatment controls and management measures include:

- Separation of seawater and stormwater systems to the extent possible.
- Utilizing a combination of non-chemical treatment processes to treat waste seawater from aquaria containing non-indigenous species or genetically modified species.
- Minimizing use of chemical additives. In the event, that any chemical additives or antibiotics are used in aquaria, the waste seawater is discharged to the sanitary sewer in accordance with the City of San Diego's pretreatment guidelines.
- Monitoring the discharge from the outfalls semiannually for Ocean Plan parameters (once during dry weather and once during wet weather).
- Monitoring receiving water near the Scripps Pier for Ocean Plan parameters during wet weather and dry weather and participating in the Southern California Bight monitoring program.
- Implementing structural and non-structural controls as part of its Stormwater Management Plan and enrolling in State Water Board Order No. 2013-0001-DWQ, *General Permit for Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems* (Phase II MS4 permit).

State Water Board Resolution No. 2015-0025 also recognizes that the public interest is served by granting the exception which allows the discharge to the San Diego-Scripps ASBS since the Facility occupies a leading role in marine research, with important applications in the fields of medicine and the environment. The

Birch Aquarium at Scripps Institution of Oceanography (Birch Aquarium) is a valuable educational resource, which serves more than 470,000 visitors a year and enables the Facility to support its educational and research mission. Most of the in vivo-biological research conducted at the Facility, which involves specimens, requires an open flow-through seawater system. Educational displays at the Birch Aquarium such as the kelp tank, tide pool, and other tanks require an open flow-through seawater system for kelp and other algae to grow. State Water Board Resolution No. 2015-0025 and the Tentative Order allow for continued use of the Facility's open flow-through seawater system in a manner that prevents adverse impacts to water quality and beneficial uses of the ocean.

The beach sand displacement or loss shown in Photo 2 of this report was the result of a broken intake line on Scripps Pier. The Discharger repaired the intake line in January 2020, eliminating the sand displacement or loss at that location. (See Photos 6 and 7 of this report.)



Photo 6: Photo provided by Kimberly O' Connell of University of California San Diego on January 30, 2020, showing bottom of the pier. Note that there is no sand displacement or loss below the pier.



Photo 7: Photo provided by Kimberly O' Connell of University of California San Diego on February 8, 2023, showing bottom of the pier. Note that there is no sand displacement or loss below the pier.

No changes were made to the Tentative Order as a result of this comment.

2.2. Comment – Restricting Use of Popular Public Beach

The Scripps Institution of Oceanography's discharge of wastewater is impacting the public's enjoyment of this beautiful beach. Not only is the discharge accelerating the loss of sand, it is preventing its unfettered enjoyment.

Clearly this meets the definition of a "Nuisance" as defined in the Water Code because it obstructs "*free use of property*" and interferes "*with the comfortable enjoyment of life or property.*" It also "affects at the same time an entire community or neighborhood, or any considerable number of persons" using this very popular beach.²

² "Nuisance" means anything which meets all of the following requirements:

- (1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
- (2) Affects at the same time an entire community or neighborhood, or any

Every beach walker, including the one below, cannot access the beach past the outfall without removing shoes and rolling up pants and wading through knee-deep wastewater.

The mother in the photograph below likely has no idea that her children are playing in wastewater. To her it's a safer location than the surf and it's often warmer than the ocean water. However, she has no way of knowing that the flow includes "...waste seawater (including treated or untreated waste seawater, filter backwash, and filtered or unfiltered raw seawater) and stormwater" and "...waste seawater from aquaria and tanks housing non-indigenous and/or genetically modified aquatic species"?

According to the US EPA "Exposure to contaminants in water can occur by direct ingestion (e.g., drinking water) or indirect ingestion (e.g., consuming foods and drinks made with water). Incidental ingestion (e.g., swallowing water while swimming), dermal contact (e.g., during showering or bathing, while swimming or wading in surface water), or inhalation (e.g., inhaling vapors during showering) can also occur." ³[Emphasis added] The US EPA estimates that incidental water ingestion rates while swimming range from 28 to 44 ml per hour.⁴ In other words, it is likely that there is some incidental ingestion of wastewater by children playing in these pools created by the discharge. Even though it may be safe for incidental ingestion by most individuals, sensitive individuals and parents may have a different standard for themselves and their children's exposure.

considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.

(3) Occurs during, or as a result of, the treatment or disposal of wastes.

³ <https://www.epa.gov/expobox/exposure-assessment-tools-media-water-and-sediment>

⁴ <https://www.epa.gov/expobox/exposure-factors-handbook-chapter-3>



Photo 8: From page 5 of Mr. Craig Carlisle's comment letter, dated February 6, 2023

The algal growth on the sea wall in several locations suggest there might be constituents that people would rather not contact. Unfortunately, they have no choice if they want to use the entire length of beach. Nor do they have any notice that they are in contact with a wastewater discharge that may also include stormwater, even though the general public has been well informed to avoid contact with stormwater runoff.

Response

The term "nuisance" is defined in Water Code section 13050(m) to mean anything that (1) is injurious to health, indecent or offensive to the senses, or an obstruction to the free use of property so as to interfere with the comfortable enjoyment of life or property; (2) affects an entire community or considerable number of persons; and (3) occurs during, or as a result of, the treatment or disposal of wastes. To constitute a "nuisance" under the San Diego Water Board's jurisdiction, all three elements cited above must be met. In this instance, there is no nuisance because not all three elements are met.

First, discharges from the Facility occur via five outfalls (Outfalls 001, 002, 003, 004a, and 004b). Photo 8 above (from page 5 of Craig Carlisle's comment letter) shows the discharge from Outfall 001 which consists of treated seawater, filtered seawater intermittently discharged from storage tanks, and stormwater (only during wet weather). The discharge is required to meet effluent limitations based on Ocean Plan water quality objectives established for protection of human health and marine life, and does not have any odor. The discharge does not obstruct the

free use of property because individuals can still use the beach while the treated/filtered seawater flows across the beach. Further, the flow is never deep enough to prevent people from walking through the water, and there are locations further downstream of the discharge where people can cross the discharge to access other portions of the beach. As such, the first element is not met. Because this discharge does not meet the first element then there is no possibility of a nuisance as defined by Water Code section 13050.

Second, the discharge does not appear to impact a considerable number of people at this location because only one complaint was received regarding the flow of treated/filtered seawater across the beach. The individuals who may be impacted by the discharge are those who visit the beach, which is not the scale of people contemplated by Water Code section 13050(m). Many beachgoers are not impacted by the discharge because they simply walk around it or play in it. As such, the second element is not met.

Third, the discharge does occur as a result of the treatment or disposal of wastes. Element three is met in this instance. However, as discussed below, the Discharger uses treatment controls and management measures to prevent the discharges from adversely affecting human health.

Therefore, elements one and two are not met in this instance, but element three is met. All elements must be met to make a successful nuisance claim. As such, a nuisance as defined by Water Code section 13050(m) is not satisfied here.

The Discharger implements treatment controls and management measures to prevent nuisance conditions and prevent adverse impacts to beneficial uses of the ocean, and to protect biological communities within the San Diego-Scripps ASBS (identified in response to comment 2.1 above). The discharge from Outfall 001 shown in Photo 8 of this report consists predominantly of treated seawater from aquaria that has gone through treatment which consists of filtration, ultraviolet disinfection and/or ozonation, and protein skimming; filtered seawater intermittently discharged from storage tanks; and stormwater during wet weather. The treatment processes prevent non-indigenous and genetically modified species and pathogenic organisms from being introduced into the ocean; and also provide some removal of other contaminants.

Although the Facility is permitted to discharge up to 1.25 million gallons per day (mgd) from four of the five outfalls, the Facility only discharged about 0.61 mgd from all five outfalls on an annual average basis from January 2018 through September 2022. Discharges from Outfall 001 made up about 75 percent of total discharges from the Facility on an annual average basis (from January 2018 through September 2022), with the other four outfalls discharging only about 25 percent of the total discharge from the Facility. This means a large portion of seawater discharged from the Facility goes through multiple treatment steps. Discharges of waste seawater from Outfalls 003, 004a, and 004b are either of significantly lower volume than Outfall 001 and/or are intermittent in nature and are not of large enough volume to create pools for children to play or wade in.

Discharges from Outfall 003 comprise of filtered seawater that has circulated once through aquaria and intermittent discharges from seawater storage tanks.

Discharges from Outfall 004a consist of intermittent low volume discharges typically between 3,000 and 30,000 gallons per day from settling tanks containing filtered seawater which occur only during settling tank maintenance. Discharges from Outfall 004b consist of low volumes of filter backwash (typically ranging from 100 to 20,000 gallons per day).

Two of the five Facility outfalls also discharge stormwater. Outfall 002 discharges only stormwater, and Outfall 001 discharges treated/filtered seawater commingled with stormwater during wet weather. Stormwater discharged from Outfall 002 goes through a media filtration system before discharge which reduces concentrations of pollutants such as metals, suspended solids, bacteria, and sediment in stormwater runoff. The Discharger also implements several management measures as part of its Stormwater Management Plan. These management measures include:

- Elimination of illicit discharges through practices such as irrigation system retrofits and outdoor washing best management practices;
- Erosion and sediment controls on slopes;
- Diversion of dry weather flows to bioswales;
- Use of infiltration galleries;
- Pollution prevention controls for material storage areas;
- Use of wash racks with sanitary sewer connections to eliminate the discharge of wash water from marine activities into the stormwater conveyance system; and
- Replacing lawns with drought tolerant and native plants.

These management measures either help reduce the loading of pollutants in stormwater runoff or reduce volume of stormwater discharged from the Facility. Discharges of stormwater from the Facility are also regulated under State Water Board Order No. 2013-0001-DWQ, *General Permit for Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems* (Phase II MS4 permit).

The Discharger also implements other management measures (listed in response to comment 2.1 above) based on provisions in State Water Board Resolution No. 2015-0025 which have been incorporated into the Tentative Order to prevent adverse impacts to beneficial uses of the ocean and to allow for protection of biological communities within the San Diego-Scripps ASBS.

Treatment controls and management measures implemented by the Discharger minimize risks of adverse impacts to public health from contact with the discharge. The outfall and receiving water monitoring data collected over the last 15 years demonstrates that treatment controls and management measures described have

protected water quality in the San Diego-Scripps ASBS and have contributed to the Discharger achieving compliance with permit conditions and requirements.

Craig Carlisle also mentioned in his letter that algal growth on the seawall in several locations suggest there might be constituents that people would rather not contact. The algal growth on the sea wall is not necessarily an indication of a public health threat. Algae stains on concrete or cement are typical after repeated long-term exposure to moisture.

No changes were made to the Tentative Order as a result of this comment.

2.3. Comment – Summary and Conclusions

2.3.1. Require the Discharger to Move the Discharge

The Order should require the Scripps Institution of Oceanography to move to discharge off the beach. A few years ago, they quickly added a second intake pipe on the pier while they repaired the leaking intake pipe. Unfortunately, that second pipe did not become a discharge pipe. Although moving the discharge to the end of the pier, or offshore by some other means, is costly, bear in mind that the Scripps Institution of Oceanography's annual budget is over \$250,000,000 including over \$7,000,000 in Earned Revenue and Private Giving just for the Birch Aquarium.⁵ The Scripps Institution of Oceanography's discharge is into an Area of Special Biological Significance (ASBS) and the State Water Board's California Ocean Plan prohibits discharges into an ASBS. However, the Scripps Institution of Oceanography was granted an exception in 2004. That exception should come with some additional responsibilities, which in this case should be the requirement to remove the discharge from the beach.

⁵ <https://scripps.ucsd.edu/annual-report-2021>

Response

The San Diego Water Board is not requiring relocation of the Facility outfalls. State Water Board Resolution No. 2015-0025 recognizes that the public interest is served by granting the exception which allows the discharge to the San Diego-Scripps ASBS since the Facility occupies a leading role in marine research, with important applications in the fields of medicine and the environment. The Birch Aquarium at Scripps Institution of Oceanography (Birch Aquarium) is a valuable educational resource, serving more than 470,000 visitors a year. Research activities at the Facility and at the Birch Aquarium depend on the use of the open seawater system. As an alternative to relocating the discharge, State Water Board Resolution No. 2015-0025 grants an exception to the Discharger which allows the discharge to the San Diego-Scripps ASBS. State Water Board Resolution No. 2015-0025 establishes provisions which have been incorporated into the Tentative Order to prevent the discharge from adversely affecting beneficial uses of ocean and to allow for protection of biological communities within the San Diego Scripps ASBS (in addition see response to comment 2.1 above), none of which require the Facility to end the discharge to the beach.

Further, the San Diego Water Board has determined that moving the discharge is infeasible at this time. The Discharger submitted a report to the San Diego Water Board dated August 9, 2005, which evaluated the feasibility and associated costs of alternatives to discharging into the San Diego-Scripps ASBS. The three alternatives identified were deemed to be infeasible for the reasons described:

- Complete Diversion of Seawater to the Sanitary Sewer. This alternative was determined to be infeasible due to the lack of capacity within the City of San Diego's Metropolitan sewer system for the entire volume of seawater discharge from the Facility.
- Extend the Scripps Pier Beyond the San Diego-Scripps ASBS and Install a New Outfall. This alternative was determined to be infeasible due to the environmental impacts on the San Diego-Scripps ASBS, cost (estimated to exceed \$50 million at that time) and associated environmental permits from other regulatory agencies.
- Discharge to an Ocean Outfall Outside of the San Diego-Scripps ASBS. This alternative included horizontal directional drilling under the San Diego-Scripps ASBS to install an outfall pipe below the ASBS that extended to Scripps Canyon, beyond the ASBS. This alternative was determined to be infeasible due to the environmental impacts on the San Diego-Scripps ASBS, cost (estimated to exceed \$20 million), and associated environmental permits from other regulatory agencies.

The Discharger also evaluated the option of installing a seawater discharge outfall at the end of the existing pier. This alternative was determined to be

infeasible due to the complex underground utility infrastructure on the land side of the pier. From an engineering perspective, conventional trenching or alternative trenching methods required to install a new pipeline, pump station, and supporting infrastructure, are not feasible in this area because of the density of underground utilities.

In addition, installing an outfall at the end of the existing pier will affect the critical long-term conservation systems that have been collecting data since 1916. Scripps Pier is one of the most active research piers in the world. Installing a seawater discharge outfall on the pier would compromise the continuous ocean monitoring data collected at the end of the pier to track temperature, salinity, pH/ocean acidification, and harmful algae blooms as well as continuous sampling of atmospheric gases.

No changes were made to the Tentative Order as a result of this comment.

2.3.2. Require Posting at Discharge Locations

All of the existing discharge locations should be posted to inform the public of what constituents may be in the discharge, thus allowing individuals to decide whether or not to avoid direct contact with wastewater. A notice in accordance with Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) may also be required since the historical monitoring data reported several constituents on the Proposition 65 list.⁶ Much of the public is aware that it is wise to avoid contact with stormwater, yet may be unaware that this discharge may include stormwater. Also, sensitive individuals such as children and immunocompromised persons, may want to use the beach but avoid any contact with either the ocean water or the discharge. As currently configured, those individuals can only use a portion of this beach.

Response

Although the Current Order does not require posting signs at the outfalls, all five outfalls currently have small notification signs that indicate what is being discharged from each outfall (seawater and/or stormwater) and that the discharge is monitored to ensure it meets Ocean Plan standards. The current signs are small (about 3 inches by 1 inch) and difficult to read. The Tentative Order has been modified to require the Discharger to post new notification signs within 180 days of the effective date of the Order. In addition see response to comment 2.2 above. Impacts from incidental contact with the discharge are de minimis due to the quality of the discharges and treatment controls and management measures implemented as required State Water Board Resolution No. 2015-0025 and the Tentative Order. Discharges of treated/filtered seawater from the Facility are required to meet effluent

⁶ <https://oehha.ca.gov/proposition-65/proposition-65-list>

limitations based on Ocean Plan water quality objectives established for protection of human health and marine life.

The following have been added to the sections of the Tentative Order shown below as a result of this comment:

Section 6.3.3.3:

Notification Signs

The Discharger shall post at least one new permanent sign at each of the Facility outfalls (Outfalls 001, 002, 003, 004a, and 004b) within 180 days of the effective date of the Order. The sign(s) posted at each outfall shall be of a size that is easily readable by the public and must include wording that describes the discharge from the outfall in text that is easily visible and legible. Signs may also include a quick response (QR) code that members of the public may scan to obtain more information on discharges from the Facility outfalls.

Section 6.2.2.3 of Attachment F (Fact Sheet):

Notification Signs

The Discharger is required to post at least one new notification sign at each of the Facility outfalls within 180 days of the effective date of the Order. The notification signs are to inform beach users of the presence of the discharges.

2.3.3. Require the Discharger to Quantify and Study Sand Loss

The Order should require the Scripps Institution of Oceanography to study and quantify the amount of past and ongoing sand loss resulting from the discharge, and to identify and undertake mitigation measures to address the damage. Scripps Institution of Oceanography researchers are already doing studies of coastal sand movement elsewhere in Region 9 yet, perhaps not surprisingly, appear to be unaware of the impact they are having in their own backyard.⁷

Response

The San Diego Water Board does not deem it necessary to require the Discharger to study and quantify the amount of past and ongoing sand displacement or loss. Discharges from the Facility are regulated under an NPDES permit which includes conditions from State Water Board Resolution No. 2015-0025. State Water Board Resolution No. 2015-0025 grants an exception allowing the discharges to the San Diego Scripps-ASBS. The sand displacement or loss caused by the discharges is similar to displacement or loss that occurs from permitted stormwater outfalls that discharge to beaches. Sand displacement or loss occurring as a result of the discharges are not a

⁷ <https://siocpg.ucsd.edu/research/beach-change/>

violation of the Discharger's Current Order or the Phase II MS4 permit. In addition, see response to comment 2.1 above.

No changes were made to the Tentative Order as a result of this comment.

2.3.4. Update Links on State Water Board Webpage

The information regarding the Scripps Institution of Oceanography Ocean Plan Exception on the State Water Board website should be updated to include the most recent Order.⁸ In addition, many of the links on that page, including those listed below, are broken and should be fixed.

Response

The San Diego Water Board has informed the State Water Board that the information on its website related to the exception granted to the Facility needs to be updated, and has provided the relevant documents to the State Water Board.

No changes were made to the Tentative Order as a result of this comment.

⁸ https://www.waterboards.ca.gov/water_issues/programs/ocean/asbs.html#scripps