

I. Issues Summary from Monterey Bay Aquarium:

1. The requirement for monitoring a reference and discharge site in the rocky intertidal zone to evaluate discharge impacts and its scientific value.

a. Monterey Bay Aquarium (MBA) does not believe that this intertidal monitoring approach will succeed in identifying impacts from discharges.

b. MBA is concerned that a rocky intertidal reference site does not exist.

Staff response:

a. and b. Rocky intertidal habitats are by far the rarest of all coastal habitats in California. Encompassing less than 7 square miles total, they serve to provide marine scientists with an indicator for anthropogenic and natural impacts. The State Water Board has historically collaborated with marine science institutions such as the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) who specialize in the consistent and long-term collection of three important marine ecosystem components: kelp forest, rocky shores, and coastal currents.

Patterns of species' abundance and diversity vary along the coast on scales of feet to hundreds of miles. Patterns also change over time-from year to year and decade to decade. Documenting these patterns is fundamental for understanding the nature of rocky intertidal ecosystems and essential for managing resources and comparing these changes to those potentially affected by land-based anthropogenic stressors.

Though MBA is concerned that the identification and establishment of rocky intertidal monitoring sites as a reference and a discharge site is an impossible task, State Board staff is confident it is possible. Staff successfully identified statistically significant community structure changes in the Bodega Marine Laboratory rocky intertidal study, which relied on discharge and reference sites in relatively close proximity to one another. More recently a rocky intertidal study, performed by Dr. Peter Raimondi and his staff (PISCO and UC Santa Cruz), was successfully undertaken as part of the ASBS regional monitoring effort in southern California. Dr. Raimondi and his staff are among the best rocky intertidal research teams in the State, and are the leading group for biodiversity oriented studies in this habitat.

In southern California several discharge and reference sites were surveyed by Dr. Raimondi's team, with the purpose of identifying differences between sites if such differences existed. Two ASBS sites in that study were determined to be statistically different when comparing motile and sessile organisms. While staff

understands that the southern California study did not determine that water quality was the absolute cause of those differences, the information is useful in a weight of evidence approach.

Based on previous experience with these programs, several factors must be taken into account when setting up a rocky intertidal monitoring program and survey design site specific to MBA and potential reference sites. Results of quantitative surveys can be statistically analyzed for the comparison of invertebrate and algal communities. Community measures of intertidal community structure may be assessed, such as sessile invertebrate cover, sessile invertebrate diversity, mobile invertebrate abundance, mobile invertebrate diversity, total algal cover, algal diversity and total cover, as well as considering these community measures in each tidal zone. It is then possible to statistically evaluate the data. An analysis of variance (ANOVA) (two-way or one-way) or multivariate analysis of variance (MANOVA) may be performed in order to compare differences.

Staff appreciates MBA's concern about the ability of identifying impacts from discharges. Direct waste discharges into the ASBS are only one potential stressor to the rocky intertidal community. Other stressors include pollutants from distant sources, poaching of intertidal organisms, and trampling from visitation. However, State Water Board staff is convinced, based on our recent experience in the southern California region that this task, though challenging, can be performed to identify differences between discharge and reference condition if such differences exist. Reference sites within a region are challenging but not impossible to identify, as evidenced by the southern California Bight study. Staff acknowledges that a single rocky intertidal survey, in which differences are identified between discharge and reference sites, may not result in absolute evidence that discharges solely responsible for the impact. A weight of evidence approach, and possibly follow up surveys, may be necessary to make a determination about the cause or contribution to impacts in the rocky intertidal community. Fortunately the exception does provide requirements for monitoring the other lines of evidence (e.g., receiving water chemistry and toxicity).

State Water Board staff also feels strongly that a rocky intertidal monitoring program will best be performed in the context of a regional monitoring effort, and we sincerely hope that MBA works with other ASBS dischargers in the Monterey Bay area to accomplish this in a collaborative manner.

2. The requirement to perform sediment studies and monitor for marine life toxicity arising from such studies, the scientific validity of this approach and appropriate use of resulting data.

a. MBA questions the validity of sediment analysis as an appropriate and useful tool when regulating ocean discharges.

b. MBA is concerned that the subtidal sediments adjacent to their outfalls are subject to significant transport by inshore and long-shore wave processes, are coarse-grained in nature and inappropriate for typical sediment analysis using finer grained and/or depositional material.

c. MBA believes that the requirement to perform annual sediment metals analysis and toxicity analysis is misguided and inherently flawed. MBA would prefer to focus resources on analyses of contaminants in their effluent or their bioaccumulation studies.

Staff response:

a., b., and c. Staff disagrees. Monitoring for water column and sediment conditions are a necessary part of assessing whether or not beneficial uses are protected. Sediment analysis is one essential line of evidence used with other monitoring data to support this assessment. It is not uncommon for a marine discharge permit to have conditions requiring the monitoring of the sediment adjacent to the outfall.

Sample collection and analysis may be tailored to site-specific conditions and based on the laboratory methods considered. The requirement for sediment toxicity testing has been required for other marine laboratory exceptions and permits and staff is unaware of any problems encountered in performing that analysis.

Staff acknowledges MBA's concern that subtidal sediments adjacent to their outfalls are subject to transport. However, sediment transport is very common in the marine environment and is not a sufficient reason to avoid sediment sampling and analysis. Sediment toxicity is an important line of evidence to be considered in determining if beneficial uses (marine life) are protected. Assessment of the sediment monitoring data will need to be considered along with other lines of evidence (e.g., effluent data) and will not be used out of context from the other lines of evidence.

Staff agrees that an annual requirement for sediment monitoring, testing for Table B chemicals and sediment toxicity may be excessive if there is not a provision to adapt to the first year results. That is why staff has proposed conditions in the exception that the Regional Water Board would have the discretion to reduce this monitoring component, in consultation with State Water Board staff, if it is clear that, based on the evidence submitted, beneficial uses are protected. Staff also proposes to reduce this requirement so that sediment

toxicity need only be performed a minimum of once per permit cycle (rather than once annually) if it is determined that sediment samples are nontoxic after the initial test.

It is also important to note that alternatively this sediment monitoring requirement may be met by participation in a regional monitoring program, and staff is generally supportive of that approach.

3. MBA is requesting greater detail regarding the requirement for storm water monitoring.

a. The MBA grounds and facility are both within and just outside the Pacific Grove ASBS boundary, and likewise, have discharge points both within and just outside the Pacific Grove ASBS boundary. MBA asks if only those discharge points that fall directly into the ASBS are to be sampled.

b. With regard to their roof discharge points, MBA asks if a rotation of individual roof drains need to be sampled, or, would a composited sample be acceptable.

c. The Hovden Way storm drain, a large storm drain located in the outer two-thirds of MBA, and just outside of the ASBS boundary, carries storm water from the City of Monterey and MBA. MBA asks if this storm drain is to be included in their monitoring, and if so, how should the results be analyzed and interpreted to discern MBA's stormwater contribution.

Staff response:

a. Staff feels that in this instance, it is necessary to collect effluent data from discharge points inside and outside the ASBS boundary. Staff has determined that discharges near the boundary of the ASBS, such as the case with the MBA discharges, are likely to influence water and sediment quality within the ASBS.

b. With regard to their roof drainages, either approach (i.e., a rotation of individual roof drains or a composited sample) is acceptable.

c. Yes, the Hovden Way storm drain is to be included in the monitoring program. Since this storm drain carries runoff from the City of Monterey and MBA, staff is supportive of a collaborative approach toward monitoring that drain. Efforts to interpret and discern MBA's stormwater contribution could include collecting samples at or upstream of the confluence.

4. MBA is concerned about the requirement to meet Natural Water Quality conditions and the State Water Board staff reliance on the Natural Water Quality Committee's (NWQC) reports.

a. MBA finds the NWQC results limited and of questionable value from a regulatory perspective, in that the concept of using ocean water sampling from a selected reference site characterized as a natural water quality baseline is impracticable and would provide an unreliable metric, based on the high variability of oceanic conditions and natural forces contributing to that variability.

b. MBA questions the State Water Board staff directive to monitor for natural water quality and prefers to focus monitoring efforts toward specific areas of impairment.

Staff response:

a. and b. The NWQC was formed to support the Scripps Institution of Oceanography's (SIO) exception to the Ocean Plan, as directed by the State Water Board. SIO operates and maintains the outfalls into the La Jolla ASBS. The State Water Board issued the first Ocean Plan exception (after the SCCWRP survey) to SIO (Resolution No. 2004-52). The San Diego Regional Water Board subsequently issued an NPDES Permit to SIO. As part of the SIO exception, State Water Board directed staff to create an ASBS Natural Water Quality Committee (NWQC) to define natural water quality in the San Diego-Scripps ASBS in La Jolla. The NWQC included very well respected scientists that are considered experts in their fields of study, including seawater chemistry, oceanography, and rocky intertidal biology. The NWQC had a mission to advise State Water Board staff regarding impacts of SIO's discharges into an adjoining ASBS. While the committee focused on SIO and other relevant data in the vicinity of SIO, they also recognized the importance of their work in the greater context of the ASBS, Ocean Plan, and storm water issues.

In September 2010 a final report from the NWQC was presented to the State Water Board, which included a definition of Natural Water Quality. The definition states that natural water quality is "that water quality (based on selected physical, chemical and biological characteristics) that is required to sustain marine ecosystems, and which is without apparent human influence, *i.e.*, an absence of significant amounts of:

a) man-made constituents (*e.g.*, DDT);

b) other chemical (*e.g.*, trace metals), physical (temperature/thermal pollution, sediment burial) and biological (*e.g.*, bacteria) constituents at levels that have been elevated due to man's activities above those resulting from the naturally occurring processes that affect the area in question; and

c) non-indigenous biota (e.g., invasive algal bloom species) that have been introduced either deliberately or accidentally by man.”

The definition also states that: “it is not practical to identify a unique seawater composition as exhibiting *natural water quality*. Nevertheless, the committee believes that it is practical to define an *operational natural water quality for an ASBS*, and that such a definition must satisfy the following criteria:

- it should be possible to define a *reference* area or areas for each ASBS that currently approximate *natural water quality* and that are expected to exhibit the likely natural variability that would be found in that ASBS,
- any detectable human influence on the water quality must not hinder the ability of marine life to respond to natural cycles and processes.”

Staff believes that defining an operational natural water quality condition within an ASBS based on reference conditions within the region is entirely appropriate and scientifically supportable. “Maintenance of natural water quality conditions” is an existing Ocean Plan requirement and has been an important component of exceptions and the exception process since 2004. Staff is confident that it is possible to define natural water quality conditions within the Pacific Grove ASBS, with the use of reference site conditions as a proxy for natural water quality.

5. MBA requests that provisions to allow flexibility be included and, if needed, allow for future adjustments to the General Monitoring requirement.

Staff response:

Staff agrees that flexibility is important to allow for the adaptation of the monitoring to monitoring results. Typically, the Terms and Conditions of the Mitigated Negative Declaration (MND) and Exception are incorporated into the permit issued by the Regional Water Board. The proposed conditions do include certain allowances for adapting the monitoring program based on initial results. Regional Water Board staff, in consultation with State Water Board staff, would approve those modifications. During the permit cycle changes are carried out at the permit level, not within the Exception. Changes in the Exception may also be proposed during triennial reviews of the Ocean Plan.

6. MBA provided another set of specific comments regarding the Draft Initial Study to request clarifications and corrections.

Staff response: Staff appreciates MBA’s attention to detail and comments on editing errors. Staff will review the suggestions in the table provided by MBA and

will make corrections where appropriate. Corrections and further responses to comments regarding the Initial Study will be placed in the final response to comments document prior to the adoption meeting for the exception. Corrections to the Initial Study will be made in an errata sheet.

II. Issues Summary from Monterey Coastkeeper:

1. Monterey Coastkeeper (MC) is concerned with the rocky intertidal monitoring component.

a. MC believes that the rocky intertidal monitoring component of MBAs terms and conditions will be of little use to determine a 'cause and effect' from discharges and thus hinder implementation of BMPs or other remedies. MC prefers that resources focus on bioaccumulation, sediment and water quality monitoring.

b. MC requests that studies be performed for the sampling and analysis of butyltins, a known anti-fouling toxicant related to boating and marina facilities. MC specifies sediment and bioaccumulation studies for either mussels or sand crab.

Staff response:

a. The waste discharge prohibition to ASBS is intended to protect the marine aquatic life beneficial use. The rocky intertidal community is an important component of the ASBS marine life and is also in a position to experience waste discharges in their most undiluted state at the point of discharge. The rocky intertidal monitoring proposed in the Special Protections has been carried out in other ASBS with very successful results by the rocky intertidal team at UC Santa Cruz, and with considerably less cost than would be expected from a private consulting firm, particularly if performed as part of a regional monitoring effort. In order to justify the continuation of an exception for waste discharges, staff must have monitoring evidence of the continued health of the marine aquatic life beneficial use. See staff response to MBA issue numbers 1.a. and 1.b. above.

b. Staff agrees that monitoring for butyltin is reasonable and should be included at least in the initial phase of monitoring. Staff recommends a collaborative approach to this type of monitoring. See response to MC issue number 4 below.

2. MC is concerned with the discharge of chlorine.

The chlorinated water from the two tanks labeled "SORAC" is treated and neutralized prior to discharge to the ASBS; however, MC would requests that this treated water not be discharged to the ASBS.

Staff response:

Staff has reviewed the extensive collection of monitoring data that MBA submitted in their exception application. The chlorine is neutralized with sodium thiosulfate and monitored for pH prior to discharge to the ocean. The proposed conditions require Table B constituent monitoring for the waste seawater effluent, and Table B includes total residual chlorine. Staff proposes to include total residual chlorine monitoring in waste seawater effluent annually, in the event that the Regional Board eliminates other Table B constituents in effluent monitoring. However, in light of MC concerns of this discharge, staff is agreeable to other feasible alternatives if MBA proposes them.

3. MC requests clarification on MBA drainages and discharge points of the Corporation Yard.

Staff response:

As part of their exception application, MBA has provided detailed maps of the aquarium grounds, facilities and site plan sheets. Since the initial submittal of the exception application, MBA has made improvements to the Corporation Yard, and plans are underway for additional pollution reduction measures. MBA is in the process of updating their facility diagram, and would provide that information as a requirement in the storm water management plan provisions in the exception.

4. MC is concerned of the potential legacy contaminants arising from the historic Monterey Boatworks property.

Historically, Monterey Boatworks operated on the parcel of land now located between Hopkins Marine Station (HMS) and MBA. For decades, boat hulls were scraped, sandblasted and repainted. Butyltins are one of the antifouling chemicals typically used on marine surfaces including boat hulls. Due to the highly toxic nature of this chemical to the environment and marine wildlife, MC requests that sediment analysis be conducted adjacent to the Boatworks property. MC also requests bioaccumulation studies are carried out in either mussels or sand crabs tissue analysis.

Staff response:

As a point of information, mussel watch data has confirmed that butyltin has declined significantly at many sites statewide. Butyltin concentrations in mussels in the Pacific Grove ASBS (Lovers Point) have also declined, however there is no data on mussel butyltin concentrations in the direct vicinity of MBA.

Staff agrees that this is an important issue and concurs that butyltin should be monitored in the water, sediment and marine life (bioaccumulation) in the ASBS boundary between HMS and Monterey Bay Aquarium. This and other reasons

are good cause for a regional monitoring effort where multiple parties can collaborate to address this issue.