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Public Hearing (5/18/11)
ASBS Special Protections
Deadline: 5/20/11 by 12 noon

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May 19, 2011

State Water Resources Control Board
1001 I Street, 24th Floor
Sacramento, CA 95814

Attention: Jeanine Townsend

Re: Comment Letter – ASBS Special Protections
FSI 017092.9

Dear Ms. Townsend,

On behalf of the Irvine Company, Flow Science is pleased to provide comments on the *Draft General Exception to the California Ocean Plan Waste Discharge Prohibition for Selected Discharges into Areas of Special Biological Significance (ASBS), including Special Protections for Beneficial Uses and the Associated Program Environmental Impact Report.* The City of Newport Beach has reviewed this letter and concurs with the information set forth herein. We request that these comments be included in the administrative record for this matter.

These comments focus on available data describing the health of Southern California ASBS, the impact of storm water on ASBS, and the health of the Crystal Cove ASBS in particular where data are sufficient to allow such an assessment to be made. The comments also detail the history of stormwater regulation, both generally and as applicable to ASBS and the Ocean Plan.

Impacts of Storm Water on Southern California ASBS

In the 2010 SCCWRP Annual Report, Schiff et al. reported the results of a study designed to describe the range of natural water quality near southern California reference drainage locations and to assess how water quality near southern California "ASBS discharges" compares with water quality near southern California reference drainage locations.[1] As part of the study, receiving water was sampled at six southern Califonria ASBS reference sites and at 10 southern California ASBS non-reference or discharge sites, for a total of 31 pre-storm and 35 post-storm events. All 16 sites were described as open beaches with breaking waves and storm water flows into the sites, and samples were analyzed for 93 water quality parameters.

[1] Kenneth Schiff, Brenda Luk, Dominic Gregorio, Steve Gruber (2010). "Assessing water quality conditions in southern California's areas of special biological significance," Southern California Coastal Water Research Project 2010 Annual Report, pp. 251-260.

Schiff et al. (2010) compared post-storm concentrations from the reference sites to post-storm concentrations from "ASBS discharge" sites, and results showed no statistically significant difference between these two groups. The reference sites showed larger variability than the discharge sites for most parameters (see **Figure 1**, reproduced from Schiff et al. 2010). Schiff et al. (2010) concluded that "the reference and discharge data were similar in their distribution" (Schiff et al. 2010, at p. 258).

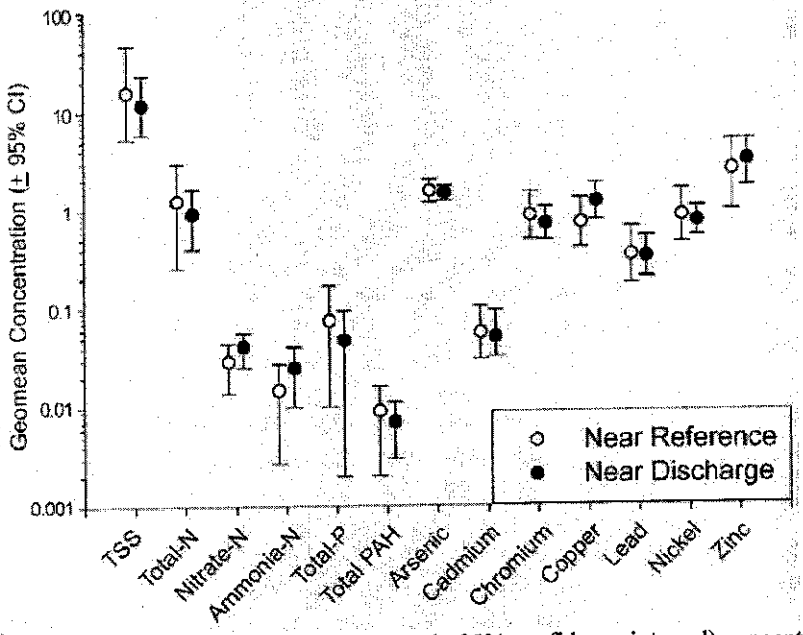

Figure 1. Comparison of geometric mean (+ 95% confidence interval) concentrations in ambient near-shore receiving waters following storm events at reference drainage and ASBS discharge sites. Total suspended solids (TSS) and nutrients in mg/L; Total Polycyclic Aromatic Hydrocarbons (Total PAHs) and total trace metals in µg/L. (Reproduced from Figure 2 of Schiff et al. (2010))

Pre-storm and post-storm concentrations were also compared for aggregated data from the 16 sites. This comparison showed no statistically significant difference between pre-storm and post-storm constituent concentrations. Neither sea urchin toxicity nor detectable total DDT/PCB were observed at any of the sites except for the rare occurrence of DDE at a few discharge sites.

Schiff et al. (2010) concluded as follows:

> "Based on the data collected during this study, ASBS in southern California are consistently protective of natural water quality following storm events. On average, the range of post-storm pollutant concentrations in receiving waters sampled near ASBS discharge sites were not significantly different from post-storm concentrations at reference drainage sites, which included stormwater inputs free of (or minimally

> influenced by) anthropogenic sources. No conservative tracer could be used to track natural constituents such as salinity, TSS, or DOC, in large part because pollutant concentrations were so low. Furthermore, synthetic anthropogenic contaminants such as total DDT or total PCB were not detectable across the wide variety of reference drainage sample locations in ASBS, and were rarely detectable at discharge sites in ASBS. Moreover, no post-storm samples collected near ASBS discharges exhibited toxicity." (Schiff et al. (2010) at p. 256)

Schiff et al. (2010) also presented data showing the frequency of "reference site based thresholds exceedances for all parameters during all storm events," reproduced as Figure 5.8.8 of the Draft PEIR.[2] This figure appears to indicate that constituent concentrations at ASBS 32 (Crystal Cove ASBS) exceeded reference site-based thresholds approximately 22% of the time. Schiff et al. (2010) defined the "reference site based thresholds" as the 85%-ile concentration based on the reference site dataset – i.e., these thresholds would be exceeded at reference sites 15% of the time. Although we obtained a dataset from the SWRCB (Dominic Gregorio, email communication, April 1, 2011), we have been unable to understand the data contained in this dataset or to reproduce the exceedance rates discussed by Schiff et al. (2010), and to date our queries about the dataset have not been answered.

In any case, it appears that the "exceedance frequency" for ASBS 32 (Crystal Cove) is not appreciably higher than the exceedance frequency in the reference dataset (i.e., approximately 22% v. 15%), confirming that the conclusions made generally (i.e., that storm water does not adversely impact ASBS sites in southern California in general) also hold for the Crystal Cove ASBS. These conclusions are reinforced by the high degree of variability of storm water in general, and the relatively small dataset used to characterize reference and discharge conditions.[3]

Detailed studies of water quality in ASBS 32 (Crystal Cove ASBS)

In 2004, Dr. Richard Ford (San Diego State University) drafted a report entitled, "Potential Impacts of the Pelican Hill Resort Project on the Marine Environment of the

[2] Note that this figure was printed incorrectly in the original version of Schiff et al. (2010). Ken Schiff has confirmed that the correct figure can be found as Figure 5.8.8 of the Draft PEIR (Ken Schiff, personal communication, March 7, 2011).

[3] It is not clear that the 85%-ile threshold used by Schiff et al. (2010) provides an accurate measure of whether or not water quality at "discharge sites" is significantly different than water quality at reference sites, particularly given the small datasets available for comparison and the variability of constituent concentrations in storm water discharges. A more appropriate measure would be hypothesis testing using statistical tests (e.g., a student's t-test or Wilcoxon rank sum test) to determine if the dataset describing water quality at a discharge site is significantly different from the dataset describing water quality at reference sites.

Newport Coast."[4] The purpose of the report was to "provide an evaluation of the potential impacts on the nearshore marine environment that might result from the proposed Pelican Hill Resort Project" (Ford 2004, at p. 1-1), a proposed development near the existing Pelican Hill Golf Course and Crystal Cove Development, which would drain to the Newport Coast ASBS. Specifically, the report focused on the "potential effects of storm runoff and dry weather low flows on the marine environment of the Newport Coast" as a result of the project (Ford 2004, at p. 1-1). The report drew its conclusions based on prior studies of runoff and marine water quality on the Newport Coast between 1993 and 2003.

Dr. Ford concluded that prior storm water and dry weather runoff from the Pelican Hill Golf Course and Crystal Cove Development had "no significant or measurable adverse effects on water quality or marine organisms in the adjacent marine environment of the Newport Coast" (Ford 2004, at p. 6-1). Further, he reported that "the extensive complement of BMPs employed as part of the golf course operations and the Crystal Cove Development have been very effective in preventing such adverse effects by controlling water quality and flows of runoff water before they reach the ocean" (Ford 2004, at p. 6-1). He concluded that the additional BMPs proposed for the Pelican Hill Resort Project, coupled with the powerful natural mixing processes of the nearshore environment of the Newport Coast, indicate "very clearly that storm runoff and nuisance flows from the proposed Pelican Hill Resort Project sites would not change the ocean water quality of the Newport Coast" (Ford 2004, at p. 6-1).

In April 2007, a group of investigators—including Richard Ford and Eric Strecker (Geosyntec Inc.)—issued a report for the Irvine Company titled, "Final Report: Water Quality and Marine Ecological Monitoring Studies for the Crystal Cove Project, 1999-2006."[5] This report summarized water quality and marine ecological monitoring data collected in connection with the Crystal Cove Community Development Project, a primarily residential development adjacent to ASBS 32 on the Newport Coast. The project featured a range of cutting-edge water quality protection measures, including structural BMPs and an ongoing pollution prevention program implemented via the Home Owners Association.

The central conclusion of the monitoring report is summarized as follows: "All evidence from six years of the multifaceted monitoring studies discussed above indicates very clearly that storm runoff from Crystal Cove Community Development Project has

[4] Richard F. Ford (2004). "Potential Impacts of the Pelican Hill Resort Project on the Marine Environment of the Newport Coast," prepared for The Irvine Company, April 20. This report was previously provided to the SWRCB. We hereby request that this report be included in the administrative record for this matter.

[5] Richard F. Ford, Barbara B. Hemmingsen, Michael A. Shane, Eric Strecker (2007). "Final Report: Water Quality and Marine Ecological Monitoring Studies for the Crystal Cove Project, 1999-2006," prepared for The Irvine Community Development Company, April. This report was previously provided to the SWRCB. We hereby request that this report be included in the administrative record for this matter.

not significantly changed the ocean water quality of the Newport Coast or affected marine organisms. Nor have natural water quality conditions in the ASBS been changed or adversely affected, because water quality constituents have remained well within the characteristic ranges for these constituents. This is highly likely the reason that no measurable effects on the marine organisms and habitats of the Irvine Coast Marine Life Refuge Area of Special Biological Signficance were observed." (Ford et al. 2007, at pp. 77-78).

The weight of evidence of these studies (i.e., Schiff et al. 2010, Ford 2004, and Ford et al. 2007) indicates that Southern California ASBSs, and the Crystal Cove ASBS in particular, are not adversely affected by stormwater discharges from local drainages.

Historical Regulation of Storm Flows to ASBS

Storm water quality was first discussed explicitly in the State's regulatory documents via the Basin Plans that were developed in each region of the State at the direction of the SWRCB in 1975. The Los Angeles Basin Plan[6] (1975 Basin Plan) is representative of the approach taken at that time to the regulation of storm flows, both generally and to the ocean and ASBS.

In the section titled "Protection of Areas of Special Biological Significance," the 1975 Basin Plan states that, "Discharge of waste from non-point sources, including but not limited to storm-water runoff, silt and urban runoff, will be controlled to the extent practicable. In control programs for waste from nonpoint sources, Regional Boards will give high priority to areas tributary to ASBS." (1975 Basin Plan at p.I-5-10).

The 1975 Basin Plan also states as follows: "The impact of the adoption of areas of special biological significance on the Basin Plan is that discharges of wastewaters and/or heat must be sufficiently removed spatially from these areas as to assure the maintenance of natural water quality in the areas. Existing wastewater and/or heat discharges which influence the natural water quality in the designated areas must be phased out as promptly as possible" (1975 Basin Plan at p. II-9-16 to 17). This passage indicates that discharges to ASBS from wastewater treatment plants (POTWs) and industrial cooling water systems (i.e., discharges of "heat") are the kinds of discharges to be prohibited and phased out. Importantly, storm water runoff discharges are different and separate from these two categories of discharge, and so were not included among the discharges to ASBS that were prohibited.

The 1975 Basin Plan also noted that few traditional "end-of-pipe" controls existed for storm flows, stating that "there is little, if anything, that can be done to mitigate the

[6] Califlornia Regional Water Quality Control Board, Los Angeles Region (1975). "Water Quality Control Plan, Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties," March (1975 Basin Plan).

effects of such runoff except for improved air pollution control practices, improved urban housekeeping, and improved environmental levels of performance for automotive equipment" (1975 Basin Plan at p. II-15-94). Although the Basin Plan specified controls for "traditional" point sources, storm water discharges were not covered: "... no practical and economic means has yet been developed for containment and treatment of urban runoff wastes for reduction of pollutants prior to downstream release, nor are standards for such measures presently in existence or contemplated for the foreseeable future, at least on a widespread basis....There are presently no generally applicable effluent limits nor water pollution control facilities in connection with urban runoff that appear practical or economical. The emphasis for water quality control from this standpoint should be public education, public cooperation in improved (outdoor) housekeeping, and continued search of solutions to the air pollution problems" (1975 Basin Plan at pp. I-5-87 and I-5-88; see also SWRCB Order No. WQ 91-04).

Clearly, the regulatory requirements of 1975 did not include a prohibition or ban on the discharges of stormwater to the ocean, including to ASBS. SWRCB Order No. WQ 91-04 further clarifies this point, stating that "throughout the years many documents have treated storm water discharge as a nonpoint source, even though it is legally a point source. This has led to some confusion in terminology. However, it is often obvious from statements in the document [the Basin Plan] that decision makers have sought to exclude storm water from requirements otherwise applicable to point sources." (SWRCB Order No. WQ 91-04 at footnote 16).

SWRCB Orders No. 91-03 and 91-04 indicate that the Clean Water Act Amendments of 1987 (specifically, subsection 402(p), which established NPDES requirements for municipal and industrial storm water discharges) required controls to "reduce the discharge of pollutants to the maximum extent practicable." (See SWRCB Order No. WQ 91-04 at p. 7).

Orders No. 91-03 and 91-04 clarify the application of the California Ocean Plan to storm water discharges, stating that

> "[n]arrative water quality objectives and toxic materials limitations (Table B) do apply to nonpoint sources, but compliance is determined by direct measurement in receiving waters... While on its face, Table B may appear to apply to storm water discharges, it is clear from reading the Functional Equivalent Document, which was adopted by the State Board at the same time as the Ocean Plan, that neither Table A nor Table B are meant to apply to storm water discharges: [citing the March 1990 Ocean Plan FED] 'The attainability analysis did not include stormwater discharges because there are few data available on pollutant concentrations in stormdrains. EPA's proposed regulations for stormwater discharges do not use water quality-based effluent limits for storm drains. Instead, an approach based on Best Management Practices is proposed, following an initial period of

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> characterization. We do not propose to apply water quality-based effluent limits such as Table B to stormdrains at this time. Technology-based standards will not be based on Table A, but on Best Management Practices...' Following the above statement, the Functional Equivalent Document states that the Plan explains how to apply Table B objectives to nonpoint sources. From this statement, it is clear that in drafting the Ocean Plan the State Board was viewing storm water discharges as nonpoint sources." (emphasis in original) (SWRCB Order No. WQ 91-04 at p. 13-14).

From these statements, it is similarly clear that the State Water Board did not intend to prohibit the discharge of storm water to the ocean (including ASBS, which are regulated by the Ocean Plan), but rather to manage storm water through the implementation of Best Management Practics (BMPs).

The statements above clearly imply that practical concerns (e.g., engineering feasibility, cost, etc.) are considerations relevant in determining to what extent storm water runoff to the ocean and to ASBS should be controlled. Thus, if the cost of preventing storm water runoff to the ocean would be extremely high, or if the engineering required to accomplish it would be impractical, it would be appropriate for these considerations to influence decisions about managing storm water runoff to ASBS.

The legislative history of the Ocean Plan also confirms that the SWRCB did not intend to regulate storm flows as point sources, or to prohibit storm flow discharges entirely. The transcript of a 1986 hearing before the California Senate Rules Committee on Ocean Plan legislation suggests that the legislation was primarily concerned with "complex effluent ocean discharges" from major municipal and industrial sources.[7] In the same document, the fiscal impact of the bill was understood as limited to POTWs that discharge to the ocean, and that the "unknown potential costs" would be "to agencies discharging sewage to the ocean." Also, there was no reference to storm water in the Legislative Analyst's report on the relevant bill.[8] These accounts of the legislative history of the Ocean Plan bill suggest that the bill was primarily aimed at controlling wastewater treatment plant discharge, and did not have storm water in view at all.

Later versions of the Ocean Plan also fail to indicate that storm water discharges would be prohibited. There is no reference to the prohibition of point- or non-point discharges of storm water in the 1997 Ocean Plan.[9] Consistent with SWRCB Order No.

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[7] Hearing on AB 3500 before the Senate Rules Committee, Third reading, California Legislature 1985-85 Regular Session, August 11, 1986.

[8] Legislative Analyst, Analysis of AB 3500 as amended, August 17, 1986.

[9] State Water Resources Control Board, California EPA (1997). "Water Quality Control Plan, Ocean Waters of California: California Ocean Plan" (1997 Ocean Plan).

WQ 91-04, the State Board's 1997 Ocean Plan Functional Equivalent Document (FED) noted that "...it would be premature to amend the Ocean Plan to control storm water discharge while the SWRCB and other agencies are developing policy. Therefore the staff will follow progress of the U.S. EPA and SWRCB storm water management programs, but will defer the issue for future consideration."[10] Thus, a prohibition of storm water was not mentioned in the 1997 Ocean Plan, and in fact that the State Board consciously chose in 1997 not to control storm water discharges via the Ocean Plan (as noted in the FED). The absence of such a prohibition, coupled with SWRCB awareness of the issue, indicates that the SWRCB chose in 1997 not to establish such a prohibition.

In the 2000 Ocean Plan FED, the SWRCB made the following statement:

> "The proposed Ocean Plan amendments do not alter the State's existing regulatory framework for controlling storm water and non-point sources of discharge. The U.S. EPA and the State Water Resources Control Board have determined that numeric effluent limits are infeasible for storm water permits. Municipal storm water dischargers are required to reduce discharge of pollutants 'to the maximum extent practicable' utilizing 'best management practices' (BMPs) in lieu of numeric limits. If the implemented BMPs do not result in the attainment of water quality standards, dischargers are required to utilize additional BMPs to achieve the standards."[11]

Thus, the intent of the SWRCB in updating the Ocean Plan in 2000 continued to be that storm water should be regulated via implementation of BMPs, and not via a prohibition on discharge of storm water to ASBS.

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[10] State Water Resources Control Board, California EPA (1997). "Functional Equivalent Document, Amendment of The Water Quality Control Plan for Ocean Waters of California: California Ocean Plan," March, at p. D-17.

[11] State Water Resources Control Board, Division of Water Quality (2000). "Functional Equivalent Document, Amendment of The Water Quality Control Plan for Ocean Waters of California: California Ocean Plan," September 1, at pp. 5-6.

Discharge of "Waste" to ASBS

The definition of "waste" given in the Porter-Cologne Act does not explicitly include storm water runoff. The relevant section of the Act states that "'Waste' includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal" (Cal. Water Code § 13050(d)). This definition seems largely focused on sewage and industrial wastes, and does not necessarily include storm water runoff.

In its current form, the California Ocean Plan (2009) includes the following implementation provision for ASBS: "Waste shall not be discharged to areas designated as being of special biological significance. Discharges [of waste] shall be located a sufficient distance from such designated areas to assure maintenance of natural water quality conditions in these areas."[12] In Appendix I, the 2009 Ocean Plan defines "waste" as "a discharger's total discharge, of whatever origin, i.e., gross, not net, discharge" (p. 27). Although somewhat unclear, this definition appears—given its focus on the "origin" of the discharge, and on the distinction between "gross" and "net" discharge—to mean discharges such as those from POTWs and utilities, which may utilize water from one source, process it, then discharge it to a receiving water body. This definition does not appear to encompass storm water discharges.

From a scientific perspective, storm water runoff should not be regarded as a "waste." Rainfall and subsequent storm water runoff are natural phenomena that occur even in natural watersheds without any anthropogenic alteration. Storm water runoff is the ordinary natural result of rain on any land surface, and often plays an important role in maintaining natural ecosystems. For example, in the nearshore environment storm water runoff provides an intermittent source of freshwater necessary to sustain fresh- and brackish-water lagoon and estuary systems that are common to the California coast. Preventing storm water runoff (i.e., the periodic introduction of freshwater) to the nearshore environment would, in fact, represent an alteration from the natural condition and water quality of the ecosystem. Thus, storm water runoff cannot be classed, in itself, as a form of waste.

Of course, certain pollutants present in particular storm water runoff could result in negative impacts or alterations to natural water quality, but this determination would need to be based on evidence of measureable water quality degradation or eco-system impact. As detailed in this comment letter, available data describing water quality, toxicity, and ecosystem health for ASBS in Southern California do not provide evidence

[12] State Water Resources Control Board, California EPA (2009). "Water Quality Control Plan, Ocean Waters of California: California Ocean Plan" (2009 Ocean Plan), p. 20.

of this nature. Rather, available evidence indicates that storm water discharges to ASBS do not generally alter natural water quality within those ASBSs.

For the reasons provided in this letter, I conclude that storm water discharges to ASBS should not be prohibited.

Please contact me at (626) 304-1134 if you have any questions regarding these comments.

Sincerely,

Susan C. Paulsen

Susan C. Paulsen, Ph.D., P.E.
Vice President and Senior Scientist