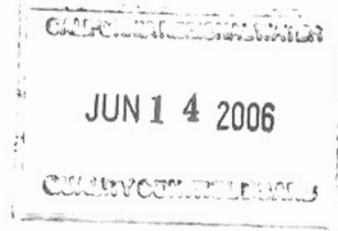


DEPARTMENT OF TRANSPORTATION

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June 14, 2006

Mr. Bruce Wolfe
Executive Officer
Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, 14th Floor
Oakland, California 94612

Attn: Brendan Thompson, Environmental Specialist

Subject: Comments on Tentative NPDES Permit and Waste Discharge Requirements for the California Department of Transportation, Devil's Slide Tunnel Project, San Mateo County

Dear Mr. Wolfe:

Thank you for the opportunity to comment on the draft tentative permit for the Devil's Slide Tunnel Project. We appreciate the Board staff's work in developing the tentative order.

As you know, the discharge covered by this permit results from dewatering during the construction phase and post-construction phase. Since the permit application was submitted in January 27, 2006, we have consulted with technical experts who have extensive experience with NPDES permits and with the handling and disposal of stormwater and non-storm water discharges from the Department's right-of-way to the Pacific Ocean. Technical issues resulting from these discussions are documented in the following comments for the Board's consideration.

We would like an opportunity to meet with Board staff to discuss these comments and resolve any issues brought up in our comments.

GENERAL COMMENT

We have several comments regarding the draft provisions of this permit. We believe that the overland flow of the discharge through rocky cliffs prior to entering the ocean where it will undergo rapid turbulent mixing within the ocean intertidal zone will quickly bring the concentration of pollutants of concern to levels which are undetectable beyond the surf zone. Also, the monitoring requirements appear more appropriate for a much larger discharge with a broader range of constituents.

We suggest that the initial permit contain limitations on turbidity and a requirement to monitor to assess effluent quality and collect adequate information to complete a reasonable potential analysis (RPA) for constituents likely to be present. Completing the RPA after discharge has begun is in conformance with the approach used by U.S. EPA in the Final General Permit for Offshore Oil and Gas Exploration, Development and Production Operations Off Southern California (please see Federal Register: September 22, 2004).

SECTION-SPECIFIC COMMENTS

1. Subsection IV.A.1 on “Final Effluent Limitations”

Comment – The Ocean Plan Table A limitations used in permit Table 7 were not intended for construction and/or post-construction phase dewatering discharges.

Table 7 of the draft permit presents the following effluent limitations:

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Instantaneous Minimum	Maximum Daily	Instantaneous Maximum
Total Suspended Solids ^a	mg/L	60	-	-	-	-
pH	standard units	-	-	6.0	-	9.0
Oil and Grease	mg/L	25	40	-	-	75
	lbs/day	-	-	-	-	-
Settleable Solids	ml/L	1.0	1.5	-	-	3.0
Turbidity	NTU	75	100	-	-	225
Chronic Toxicity	TUc	-	-	-	1	-

a. Percent Removal: The average monthly percent removal of total suspended solids shall not be less than 75 percent

As discussed in the permit Fact Sheet, these limitations are derived from the Ocean Plan Table A, with the exception of chronic toxicity which comes from Ocean Plan Table B.

Discussion: The first Ocean Plan (July 1972), including Table A, was adopted prior to the federal legislation which later became known as the Clean Water Act (PL 92-500, October 1972). The intent of Table A was primarily to address discharges from Publicly Owned Treatment Works (POTWs). This is clearly stated in State Board discussions of the Ocean Plan. For example:

“The values in Table A are derived from a study conducted in the early 1970s which evaluated the efficiency of a well run advanced primary waste treatment facility.”ⁱ

Table A was needed because no federal standards existed at that time describing the performance requirements of sewage treatment plants. When the Ocean Plan was revised in 1978, Table A was retained for technology-based effluent limitations and Table B was converted to a list of water quality objectives to be met in the receiving water upon completion of initial dilution. Table A has been modified over time, but is clearly still focused on sewage treatment plants. For example, in the current triennial review documentⁱⁱ the intent of future changes will be to bring Table A more in conformance with EPA’s secondary treatment standards for sewage treatment:

“The Central Coast Regional Water Quality Control Board suggested that the suspended solids effluent limitation in Table A should be amended to be consistent with the USEPA promulgated minimum level of suspended solids effluent quality attainable by secondary treatment [of sewage] in 40 CFR 133.102. USEPA echoed the fact that any effluent limitation for total suspended solids in any NPDES permit must be as stringent as total suspended solids effluent limitations that have been adopted under the Clean Water Act.” [*Ocean Plan Triennial Review Issue 22, page 42*]

The Ocean Plan states that the Table A limits apply only to POTWs and industrial discharges for which Effluent Limitations Guidelines have not been established pursuant to Sections 301, 302, 304, or 306 of the Federal Clean Water Act. Since EPA has established Effluent Limitations Guidelines for approximately 51 industrial categories, the current Table A limits arguably apply to very few discharges, other than POTWs. It is questionable whether the construction and post-construction phase dewatering discharges from the tunnel are an “industrial discharge” as used in the Ocean Plan. However, EPA has not established Effluent Limitations Guidelines for a “highway dewatering” category. It is impracticable and insupportable to apply effluent limits developed for advanced primary sewage treatment plants to these discharges.

Suggestion: It is more appropriate to apply water quality-based effluent limitations. If effluent limitations are deemed necessary, it is proposed that they be developed taking into account the type of discharge and the receiving water. Given that the discharge enters the intertidal zone at the base of cliffs, the suspended solids and settleable solids limitations cannot be justified. Turbidity, however, measures the smaller particles that may be carried further distances and that have more potential to impact marine life.

2. Subsection IV.A.1 on “Final Effluent Limitations”

Comment: *We believe that the total suspended solids limitation is not appropriate for the post-construction phase discharges and, in addition, is incorrectly derived from Ocean Plan Table A for construction and post-construction phase discharges.*

ⁱ Function Equivalent Document, Amendment of the Water Quality Control Plan for Ocean Waters of California, March 1997, SWRCB; page D-1.

ⁱⁱ *California Ocean Plan, Triennial Review and Workplan, 2005-2008*; posted on the Internet at: <http://www.swrcb.ca.gov/plnspols/docs/oplans/coptriirev20052008.pdf>

Discussion: The draft permit limitations included in the permit table 7 have two requirements applicable to total suspended solids.

- 60 mg/L average monthly
- The average monthly percent removal of total suspended solids shall not be less than 75 percent.

As discussed in comment #1, the 75% removal requirement was based on the expected performance of advanced primary sewage treatment plants. During dry weather, sewage treatment plants always have a substantial load of suspended solids so setting a percent removal requirement is reasonableⁱⁱⁱ. This approach, while reasonable for sewage treatment plants, is impractical when applied to a dewatering discharge. Dewatering discharges, particularly those that occur in the post-construction phase, may have extremely low TSS. For example, a discharge to the Ocean with a TSS of 20 mg/L, will have to be reduced to a TSS of 5 mg/L, which may not be technically feasible for post-construction phase discharges.

A second concern related to TSS is that the 60 mg/L average monthly limitation appears to be incorrectly adapted from the Ocean Plan. In the Ocean Plan, 60 mg/L is the *minimum* required of permittees who are otherwise required to remove 75% of the TSS. This is because advanced primary sewage treatment plants have difficulty meeting the 75% removal requirement during wet weather when inflows are diluted by rainwater in the system. In this case the Ocean Plan allows the treatment plants to remove less than 75% if the 75% removal would result in a limitation less than 60 mg/L. For this dewatering permit, it appears that the 60 mg/l *minimum* value in the Ocean Plan has been transformed into a *maximum* value.

Suggestion: These relatively small volume of discharges in the construction and post-construction phases are very unlikely to have any impact or even be detectable beyond the surf zone. As discussed earlier, a limitation on turbidity may be more appropriate than limitations on suspended solids or settleable solids.

3. Subsection IV.A.1 on “Final Effluent Limitations”

Comment: *The chronic toxicity water quality objective from Table B is incorrectly applied as an effluent limitation. Its use is also not consistent with other Water Board actions.*

Discussion: The permit Fact Sheet (Attachment F), states:

Because water quality objectives have not been established for any coagulants that may be used in the treatment process and material safety data sheets for coagulants suggest possible toxicity, it is appropriate to establish a Whole Effluent Toxicity limit per Table B of the Ocean Plan. This is reasonable. However, the draft permit does not use Table B procedures but rather takes a Table B water quality objective and applies it as if it were an effluent limitation from Table A.

Earlier versions of the Ocean Plan contained acute toxicity limitations in Table A (effluent limitations). Table A no longer contains a toxicity limitation applicable to effluents. Beginning

ⁱⁱⁱ The exception is during wet weather when the effluent to the sewage treatment plant may be dilute. For this reason Ocean Plan Table A combines the 75% removal requirement with the exception that the resulting limit should not be lower than 60 mg/L.

with the 2001 Ocean Plan, both chronic and acute toxicity limitations were included in Table B as *water quality objectives*. In other words, they apply to the receiving water rather than directly to the effluent. As specified in the Ocean Plan, water quality-based effluent limitations are derived from Table B in the following manner:

“4. Calculation of Effluent Limitations

a. Effluent limitations for water quality objectives listed in Table B, with the exception of acute* toxicity and radioactivity, shall be determined through the use of the following equation:

Equation 1: $C_e = C_o + D_m (C_o - C_s)$

where:

C_e = the effluent concentration limit, ug/l

C_o = the concentration (water quality objective) to be met at the completion of initial* dilution, ug/l

C_s = background seawater concentration (see Table C below), ug/l

D_m = minimum probable initial* dilution expressed as parts seawater per part wastewater.”

In this case: **C_s** (background seawater concentration) is zero. The objective for chronic toxicity in Table B is 1 TUc = **C_o**. The draft permit sets **C_e** (effluent limit) at 1 TUc. Although not discussed in the Fact Sheet, the permit has effectively set dilution - **D_m** = 0. In other words, by applying a Table B objective as if it were a Table A effluent limitation, the permit overlooks the specific procedures in the Ocean Plan for calculating water quality-based effluent limitations.

The Department has a very small discharge into a surf zone that will in fact be very rapidly mixed. The Fact Sheet acknowledges this in the discussion on dissolved oxygen when it states:

“rapid turbulent mixing within the ocean intertidal zone will negate any suppressed oxygen impact to the ocean environment.”

The same argument applies to chronic toxicity as well as the other constituents. The characteristics of the discharge as well as the location need to be considered during the development of water quality-based effluent limitations. The approach used in the permit is directly contrary to Ocean Plan Section II.A.3:

“Compliance with the water quality objectives of this chapter shall be determined from samples collected at stations representative of the area within the waste field where initial* dilution is completed.”

A different approach is taken by the State Board and Regional Boards in the ongoing effort to apply Ocean Plan standards to the discharges into Areas of Special Biological Significance (ASBS). This effort is currently in the sampling phase and the Water Boards have stated a preference that receiving water samples be taken “immediately outside the surf zone.” This recognizes that the surf zone provides immediate and effective mixing that should be taken into account in assessing compliance with toxicity objectives.

Note that the NPDES permit^{iv} for Half Moon Bay sewage treatment plant does not include a limitation for chronic toxicity although it does include one for acute toxicity. The absence of a limit for chronic toxicity is because discharge is less than 5 MGD, and the Board did not require the discharger to participate in the Effluent Toxicity Characterization Program (ETCP). The permit does require the facility to monitor for chronic toxicity once per year.

Suggestion: Ideally, compliance with the toxicity objective would be determined based on samples from the receiving water beyond the surf zone. However, given the location this would not be practical. A reasonable dilution factor should be used in establishing a permit effluent limitation for chronic toxicity if it is necessary that there be a limit. Zero may not be appropriate. The Scripps Institution of Oceanography is required by the State Board to complete an initial dilution study for storm water runoff for its discharge into the adjacent Areas of Special Biological Significance (ASBS). It may be appropriate borrow their result. We suggest that a permit condition be included to allow the Department to recommend a dilution factor based on work being done on ASBS for the Executive Officer's review and approval.

4. Subsection IV.A.1 on "Final Effluent Limitations"

Comment: *The pH limitation may not be appropriate for a small and relatively uncontaminated discharge during the post-construction phase.*

Discussion: As noted in earlier discussions, Table A, from which the pH limitation is derived, was developed for effluents from advanced primary sewage treatment plants. Sewage treatment plant discharges are typically large and have the potential to impact significant around the discharge. For treatment plant discharges pH limitations may be appropriate and EPA has set pH limitations in its definition of secondary treatment standards (40CFR133.03):

(c) **pH.** The effluent values for pH shall be maintained within the limits of 6.0 to 9.0 unless the publicly owned treatment works demonstrates that: (1) Inorganic chemicals are not added to the waste stream as part of the treatment process; and (2) contributions from industrial sources do not cause the pH of the effluent to be less than 6.0 or greater than 9.0.

As noted above, the EPA does allow excursions outside of the 6 – 9 range in certain circumstances.

In the post-construction phase, groundwater from a non-impacted site comes into contact with concrete from the initial tunnel lining. Concrete is alkaline and has the potential to increase the pH of waters in contact with it, especially if these waters are not buffered in the post-construction phase. The dewatering flow is unbuffered meaning that the pH is unstabilized. The addition of a small amount of acid or base can cause large changes in pH in an unbuffered liquid.

The Ocean, however, is highly buffered. Very substantial amounts of acid or base are needed to significantly change the pH of Ocean waters. When the dewatering flow hits the ocean, it will

^{iv} Order No. 00-016 is posted on the Internet at: <http://www.swrcb.ca.gov/rwqcb2/Agenda/03-15-00/3-15-00-5awdr.doc>

immediately adjust, after mixing to the Ocean pH (which is slightly basic). It seems very unlikely, that this flow could impact the pH standard in Section II.D.2 of the Ocean Plan ("The pH shall not be changed at any time more than 0.2 units from that which occurs naturally").

The appropriate standard for this discharge should be that specified in Section II.D.2. This Ocean Plan provision is included in the permit as a receiving water limitation in Section V.A.6. It is virtually impossible for this discharge to effect a change of 0.2 pH units in Ocean waters after mixing.

Suggestion: It is recommended that after discharge has been initiated a sample of the dewatering flow be added to various amounts of seawater to determine if any potential exists for a change greater than that allowed in the Ocean Plan. If an adverse impact is possible then it may be worth the substantial costs of building and operating a chemical treatment system. In addition, the operation of a permanent chemical treatment plant in a remote location presents its own potential for risk to the environment and to operating personnel. These risks will also need to be considered. In the event that no potential impact exists, which will be determined in the post-construction phase, the Department should be allowed to present these findings to the Board's Executive Officer. The Executive Officer based on review of these findings could then consider providing an exemption from treatment of groundwater in the post-construction phase without reopening the permit. This would ensure appropriate use of public funds.

5. Subsection IV.C.1.c on "Reopener Provisions"

Comment: This provision states that the Board may modify or reopen this order prior to its expiration date if bulk emulsion explosive products are used for blasting activities. Given the BMPs that will be implemented, this provision is not warranted.

Discussion: As described in the ROWD Section 3, page 3-13 ("Nitrates"), packaged or bulk emulsions explosive products could be used during construction. The contract provisions allow the Contractor to make the final selection of the product. However, the Contractor will be required to employ best management practices listed in this section, which include selection of appropriate explosive products for the job and conditions, and handling of the product to prevent spillage and misfires. A Blasting Plan will be prepared by the Contractor prior to commencement of test blasting, which will document the BMPs implemented, and include documentation on all parts of the tunnel where drilling and blasting is required.

Suggestion: The BMPs that will be implemented during the execution of the Blasting Plan will be documented as part of the SWPPP and the Dewatering Plan, which will be submitted to the Board for review prior to beginning of Dewatering Discharges. It is recommended that this reopener provision be deleted.

6. Subsection IV.C.2 on "Special Studies, Technical Reports and Additional Monitoring requirements"

Comment: In this provision, "If the discharge consistently exceeds an effluent limitation.....", the term "consistently exceeds is not defined.

7. Subsection IV.C.3.a on “Best Management Practices (BMPs) and Pollution Prevention”

Comment: This provision states that a monitoring plan for all coagulants is required. Please clarify the scope of monitoring, i.e. constituents and frequency of monitoring and reporting requirements.

8. Attachment D – Section IV.A under “Standard Provisions – Records”

Comment: This section mentions “sewage sludge”, which is not applicable to this project. The correct term that needs to be used is “sludge resulting from treatment of groundwater”.

9. Attachment E – Section III on “Influent Monitoring Requirements”

Comment: This section requires no influent monitoring requirements. The Department in item #1 above has expressed concerns with the effluent limitations for Total Suspended Solids. The current language in the Tentative Permit is conflicting, as demonstration of compliance with the 75% removal requirement will require influent sampling.

10. Attachment E - Section IV and V on “Effluent Monitoring Requirements”

Comment: The sampling requirements appear excessive given the small volume of the discharge and the limited potential that it will contain pollutants of concern.

Discussion: In evaluating the monitoring program, the nearest permitted site is a sewage treatment plant for wastewater from the town of Half Moon Bay and the surrounding area (The permit, Order No. 00-016, is posted: <http://www.swrcb.ca.gov/rwqcb2/Agenda/03-15-00/3-15-00-5awdr.doc>)

Minimum Sampling Frequency for Devils Slide and Nearby WWTP

Parameter	Devils Slide Construction Stage	Devils Slide Post-Construction	Half Moon Bay WWTP^b
Turbidity	continuous	monthly	twice/week
pH	continuous	Continuous	daily
Flow rate	continuous	Continuous	daily
Grease and oil	weekly	Monthly	quarterly
Suspended solids	monthly	Annually	twice/week
Settleable solids	monthly	Annually	twice/week
Acute toxicity	none	None	every 2 months
Chronic toxicity ^a	Annually	Annually	Annually
Table B priority pollutants	Annually/ Quarterly if coagulants used ^c	Annually/ Quarterly if coagulants used ^c	twice/year

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a Devils Slide chronic toxicity monitoring requirements are specified in Section V.A. (permit)

b. The treatment plant has an average dry weather flow design capacity of 4.0 million gallons per day (mgd), and can treat hourly peak flows up to 15 mgd during wet weather.

c. "in the event that a coagulant is used in the treatment process, with the exception of ferric chloride, critical life stage toxicity tests shall be performed quarterly, for two years, and semiannually thereafter."

The effluent from a sewage treatment plant is likely to contain a much wider range of pollutants, including potential toxicity. In addition the Half Moon Bay discharge is significantly larger. Presumably the monitoring frequency would be less for a much smaller dewatering discharge with fewer potential pollutants. In particular, the Table B monitoring is excessive. It is apparently included to address the potential for pollutants being added by the treatment process (i.e., coagulants), however, this concern should be adequately and more directly addressed by the chronic toxicity monitoring. Table B is particularly inappropriate in this context because most the Table B constituents in Table B are derived from EPA's priority pollutant list which is out of date and dominated by pollutants which are very unlikely to be present. The polymers which have been found to cause toxicity when used in wastewater treatment are not likely to be detected by Table B monitoring.

Suggestion: Propose an initial Table B sampling which would be repeated only of pollutants were detected at levels of concern.

11. Attachment E – Section X.B.3 on “Table 4: Monitoring Periods and Reporting Schedule”

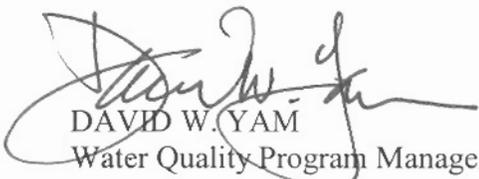
Comment – *Can the second quarter report be combined with the first semi-annual report? Please clarify.*

12. Attachment G – Section C of the Standard Provision and Reporting Requirements

Comment – *This section includes sludge monitoring and reporting requirements when it is sent to a landfill or applied to land as a soil amendment. If the Department plans to reuse the sludge as fill material at the Disposal Site, please clarify if the Department will be required to demonstrate compliance with section C.2.*

Please contact me or Hardeep Takhar at (510) 286-7182 if you have any questions or require additional information regarding these comments.

Sincerely,


DAVID W. YAM
Water Quality Program Manager
(510)286-5662