

Hydrogen Sulfide Nuisance Prevention Protocol

Adopted 10/31/03; Revised 10/18/05, 12/9/10; 9/28/17; 8/27/18; 7/31/2019

This protocol is adopted to minimize exposure to the public from the release of hydrogen sulfide (H₂S) at levels that constitute a public nuisance. The protocol and its provisions are incorporated into the District Permits to Operate for dredges “Twin Lakes” and “Squirt”, and are enforceable through the provisions of Air District Rule 200.

A. Avoidance of beach discharge.

To the maximum extent feasible, the Port District shall discharge dredge sediments with H₂S odor potential under water, outside of the beach zone¹ whenever the wind is onshore.

B. Discretionary beach discharge²

Whenever the Port District elects to direct the sediments from its dredging operation into the beach zone, and when the wind direction is onshore (from between 090 degrees south through 270 degrees magnetic), it shall implement the following practices.

1. Give public notice of the intention to conduct beach discharge as much in advance as is possible by posting a conspicuous notice on the Harbor’s web site.
2. Operate an Air District-approved hydrogen sulfide monitor, which automatically samples and records data on the basis of one-minute sampling intervals.

(a) The vehicle-mounted H₂S monitor shall be operated from a stationary position parked adjacent to the dredge monitoring tower, except:

(1) If two or more public odor complaints from more than one distinct complainant are received by the Air District and/or the Port District within a 24 hour period, discharge will be terminated until the H₂S monitor can be relocated to a location directly downwind³ from the center of the discharge area⁴, and operated as follows:

¹ “The Beach Zone” is the area from East Cliff Drive seaward to the point where the water depth allows the pipe, while discharging sediment, to create a visible surface disturbance. The seaward extent of this zone will vary with the tide and sediment accretion.

² “Discretionary beach discharge” occurs when the Port District elects to deposit dredge sediments into the beach zone at a time when dredging is not immediately necessary to clear, or keep clear, the Harbor channel, or to protect any onshore asset, such as roads, utilities or other structures.

³ During periods when the wind is not steady “downwind” from the discharge area shall be the average direction the wind is blowing as it fluctuates back and forth or which is in the direction of the nearest residences if the wind is erratic.

⁴ The “Discharge Area” is a line passing through the terminus of the discharge pipe, perpendicular to the

- a. The H₂S monitor shall be operated within a warning zone⁵ with the following characteristics:
 - i. A semicircle whose center is at the discharge outlet,
 - ii. Whose arc runs from the surf line to the west clockwise to the surf line to the east, and
 - iii. Whose radius is at least the distance of the monitor from the discharge outlet.

- b. The H₂S monitor shall remain at the downwind location until:
 - i. 12 total hours of downwind monitoring data starting from the hour the last public complaint was received has been collected during dredging operations, or;
 - ii. The Port District elects to switch to offshore discharge, per section A of this protocol, or;
 - iii. The wind direction has changed from onshore (between 090 degrees south through 270 degrees magnetic), and is not forecast to return to an onshore direction for 12 hours of monitoring during operations as required by (1)(b)(i) above.

(b) The H₂S monitor shall be operated and maintained according to manufacturer specifications, and shall be sited so that it is protected from conditions that could adversely affect its performance.

(c) The H₂S monitor shall be checked for accuracy by performing the zero check every day of operation before beginning monitoring, according to the manufacturer's specifications.

(d) Anemometers approved by the Air District shall be located and operated as follows:

(1) A directional wind indicator approved by the Air District shall be collocated with the H₂S monitor to continuously provide a conspicuous indication of wind direction, and

(2) An anemometer approved by the Air District, which records wind

wind direction, whose length is marked by the visible surface flow or visible water upwelling of the sediment being discharged.

5 A "Warning Zone" is an area of the beach inside which members of the public are advised by a conspicuous boundary of Port District signage that plainly signals the dredge operation and warns of the possibility of H₂S odors inside the warning zone which could reach levels that might cause discomfort. This area represents the region of highest concentrations of any H₂S that may be released from the discharge area, and is the highest area inside of which the Port District will monitor H₂S concentrations.

speed and direction, shall be located at a position at the Harbor Beach approved by the Air District.

(e) The Port District shall maintain the following records for each day of dredging for three years:

- (1) The H₂S monitor's data output,
- (2) The anemometer's data output.
- (3) A log recording dredge events, including for each date of beach discharge at least:
 - (i) Time of commencement of beach discharge,
 - (ii) Time of termination of beach discharge,
 - (iii) Reason for termination of beach discharge,
 - (iv) If termination was required by H₂S monitor readings, the readings which triggered termination and all subsequent readings recorded by the monitor until they returned to below 15 ppb or 30 minutes after dredge operations cease for the day.
- (4) A detailed log of all odor complaints received by the Port District, describing at least:
 - (i) Complainant's name and location,
 - (ii) Time and date of complaint,
 - (iii) Period of operation complained of,
 - (iv) Summary of complaint,
 - (v) Physical symptoms complained of, and
 - (vi) Any operational response to remedy complaint.

3. Terminate discharge into the beach zone whenever:

- (a) The H₂S monitor rolling one hour average of 10 ppb is exceeded, or
- (b) The H₂S monitor is removed from service.

4. After such termination:

- (a) Beach zone discharge may be resumed when the H₂S monitor is placed back in service.
- (b) If beach zone discharge is terminated pursuant to 3(a) above, the H₂S monitor shall continue to operate and record H₂S concentrations until the readings return to below 15 ppb and remain there for at least 10 minutes.
- (c) Beach zone discharge that is terminated pursuant to 3(a) above may

resume the next hour after the dredge operation is modified to reduce H₂S emissions in accordance with 4(b).

5. Emissions associated with the harbor dredging operation shall not exceed an H₂S monitor rolling one-hour average of 30 ppb.

C. Emergency Beach Discharge⁶

Whenever the Port District is required by circumstances beyond its control to direct its dredge sediments into the beach zone, and when the wind direction is onshore (from between 090 degrees south through 270 degrees magnetic), it shall implement the following practices:

1. Comply with the requirements of sections B.1 and B. 2 above.
2. Give advance notice as follows:
 - (a) Notify the Air District by email or phone, as soon after the decision is made as possible, of the intention and rationale to conduct emergency beach discharge and the anticipated period of such discharge, and
 - (b) Notify the public of the intention to conduct emergency beach discharge as soon as possible after the decision is made by posting a conspicuous notice on the Harbor's web site and by giving individual notice to any member of the public who has requested such notice.
3. Terminate discharge into the beach zone any time the H₂S monitor is removed from service.
4. After such termination, beach zone discharge may be resumed when the H₂S monitor is placed back in service.
5. Emissions associated with harbor dredge operations shall be curtailed to maintain an H₂S monitor rolling one-hour average of less than 30 ppb.

D. Public Information Sign

1. During the dredge season, if there will be any beach zone discharge during the season, the Port District shall place at the beach front a semi-permanent sign at each beach location where other explanatory beach signs are installed, with a size and

⁶ "Emergency beach discharge occurs when the Harbor has to deposit dredge sediments into the beach zone because either: dredging is immediately necessary to clear, or keep clear, the Harbor channel to design depths, and the offshore outfall is incapacitated or unusable due to weather, sea conditions, breakage or shoaling, OR a public official having responsibility for public asset declares in writing that immediate beach replenishment is necessary to prevent damage to an asset such as roads, utilities, or structures.

conspicuity equal to the existing beach signs, that recites the following information:

Notice

“The Santa Cruz Port District dredges the Harbor channel between November 1st and May 1st each year. Dredge sediments are sometimes discharged to this area of the beach and may contain decomposing seaweed which can release hydrogen sulfide, a gas recognized by its rotten egg smell.

Because hydrogen sulfide can cause a public nuisance and possible adverse health effects, the Port District operates its dredge under a special permit from the Air District, which requires cessation if measured hydrogen sulfide levels from the dredging operation reach specified limits.

For information or complaints, you may call either:

The Air District Office at: 647-9411, or

The Port District Office at: 475-6161”