

**STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION**

STAFF REPORT FOR REGULAR MEETING OF OCTOBER 19, 2007

ITEM: 11

SUBJECT: **PROPOSED REVISED WASTE DISCHARGE REQUIREMENTS
FOR THE CITY OF SANTA MARIA, SANTA MARIA REGIONAL
CLASS III LANDFILL, SANTA BARBARA COUNTY - ORDER
NO. R3-2007-0045**

KEY INFORMATION:

Location: Approximately one mile east of Santa Maria
Type of Waste: Non-hazardous municipal solid wastes
Disposal: Cell/Module fill method
Liner System: Former Active and Inactive areas are unlined;
Double Composite liner beneath Active Area
Existing Orders: Waste Discharge Requirements, Order No. 01-041

SUMMARY

Revisions to the Santa Maria Regional Landfill's (landfill) Waste Discharge Requirements (WDR), as provided in proposed WDR Order No. R3-2007-0045 (Attachment 1) and Monitoring and Reporting Program (MRP) No. R3-2007-0045 (Attachment 2), are necessary to update the status of various components of the landfill. Important landfill water quality issues addressed by this revision include:

- Final cover system for the unlined Closed Active Area;
- Nonhazardous Hydrocarbon Impacted Soil Program (NHIS) as part of final cover for the Closed Active Area;
- Operations in Cell No. 1 of the Lined Area; anticipated schedule for optional Cell No. 2;
- Construction of a final cover for the Inactive Area, including development of an irrigated recreation complex;
- Groundwater Corrective Action Program.

The proposed Waste Discharge Requirements Order No. R3-2007-0045 ("Order" or "Order No. R3-2007-0045") specifies minimum landfill design and operation modifications to protect water quality.

The updates to the proposed Order include:

- a. Updated groundwater corrective action information and provision for evaluating inorganic impacts.
- b. Updated information on the status of the NHIS program and rolling closure in the Closed Active Area.
- c. A provision for final closure and post-closure maintenance plans for the Inactive and Closed Active Areas, including calendar dates for providing final cover systems for these areas.
- d. Proposed facility changes include addition of a concrete/asphalt grinding operation, agricultural plastic bailing and recycling, greenwaste diversion, biosolids use as cover soil amendment and

alternative daily cover, increase peak waste tonnage, expansion of the Household Hazardous Waste Collection Facility, and acceptance of treated wood waste.

The proposed Order updates and replaces Waste Discharge Requirements Order No. 01-041, adopted by the Regional Board in May 2001. The proposed Order covers the current landfill operations and provides guidance and requirements for planned changes at the landfill. For the lined portion of the facility, design and construction specifications within the proposed Order meet or exceed requirements in both the California Code of Regulations (CCR) Title 27, and 40 Code of Federal Regulations, Parts 257 and 258, both of which pertain to design of solid waste management facilities.

The proposed WDR/MRP benefits and protects groundwater and surface water in the region through required engineering controls, corrective action, and monitoring. The NHIS program, forced closure, and rolling final closure over the unlined Closed Active Area stopped disposal of municipal solid waste (MSW) in 2002, greatly reduced rainfall percolation through the existing MSW, and removed and safely disposed of significant volumes of hydrocarbon-contaminated soil from the exposed environment in the basin (sentence confusing). Provisions in the proposed WDR require that the cover systems are designed, constructed, and monitored to protect receiving surface waters from storm water runoff. The proposed MRP includes an additional storm water monitoring location as an additional protective measure. The proposed WDR includes a provision for the Discharger to update the hydrogeological conceptual model in relation to inorganic constituents found in groundwater and provide a better understanding of corrective action progress.

DISCUSSION

Landfill Description

The landfill is located approximately one mile east of the City of Santa Maria, in the northern portion of Santa Barbara County (Figures 1 and 2, Attachment 1). The facility sits on the south bank of the Santa Maria River, immediately behind the Corps of Engineer's 500-year flood control levee. The 290-acre facility is currently owned and operated by the City of Santa Maria (Discharger), as a Class III municipal solid waste landfill.

The landfill is divided into three areas, the Inactive Area, Closed Active Area, and Lined Area, as shown in Figure 3 of the proposed Order (Attachment 1) and discussed in greater detail below:

Inactive Area

A 68-acre unlined landfill area; this area received waste in the 1950s and 1960s and currently has an interim cover. Landfilling in the Inactive Area (including the former DeBernardi waste area) consisted of placing and burning waste at grade and covering with soil along a narrow strip of land directly adjacent to the Santa Maria River levee. Currently, waste in the Inactive Area is covered by between 3 and 12 feet of native soils, with the upper 2 feet amended with nutrients to support vegetative growth for the purpose of minimizing erosion and percolation of rainwater via evapotranspiration.

Closed Active Area

The Closed Active Area consists of 118 acres of inactive, unlined landfill. The Discharger has installed a final cover system over a portion of this area as part of "rolling closure" and the nonhazardous hydrocarbon impacted soils program (NHIS [see below]). The unlined Closed Active Area was initially landfilled using the trench and fill method, with waste disposed between 15 feet and 25 feet below grade in the north end and south end, respectively, of the area. In 2000, the Discharger provided a final cover for 24 acres of the northwest end of the Closed Active Area. The area has historically been the source of groundwater contamination downgradient and off site, as detailed below. As such, Order No. 01-041 required that the Discharger cease landfilling of MSW on

or before November 30, 2002, in this former area. The Discharger met this requirement by transferring operations to lined Cell No. 1 on the prescribed date. However, 94 acres of the Closed Active Area required final grade elevations and a final cover. Significant volumes of soil were needed to build sufficient slopes for proper drainage to limit ponding and infiltration of rainwater into underlying MSW. The Discharger implemented the NHIS program that provides a foundation layer and fills the remaining air space. The Executive Officer approved the Discharger's Hydrocarbon Soils Management and Disposal Plan (Disposal Plan) in January 2002.

Lined Area

This area consists of two double-lined cells for a total of 61 acres. Cell No. 1 is active; Cell No. 2 is projected for construction in 2014, if an alternative facility has not been established. Cell No. 1 incorporates a double-lined landfill cell, which includes a groundwater subdrain, a low permeability layer, leak detection layer, a second low-permeability layer, and leachate collection and drainage system. While the liner design requirements in the existing and proposed order are very stringent, they reflect the challenging siting conditions found at the landfill. The double-lined cell is required because of a periodic shallow groundwater condition (groundwater higher than the bottom of waste), high permeabilities of sediments beneath the site, and the fact that the site is a primary groundwater recharge area for the Santa Maria Basin. The landfill liner design described above exceeds the minimum requirements stated in Title 27 (Sections 20310-20340), however, the minimum design assumes a minimum of a 5-foot vertical groundwater separation from the bottom of the waste.

Ancillary facilities at the landfill include a state-of-the-art hazardous waste receiving and recycling program, concrete and asphalt recycling, agricultural plastics recycling, and landfill gas collection and treatment. Up to 100 percent of the landfill gas is exported to an off-site facility for electrical generation.

Hydrocarbon Soils: Large quantities of hydrocarbon-contaminated soils (hydrocarbon soils) exist throughout the Santa Maria basin as remnants from oil field production over the last 100 years. The NHIS program allows for hydrocarbon soils that meet NHIS acceptance criteria to be disposed at both the Closed Active Area and the Lined Area of the landfill. Hydrocarbon soils in the Closed Active Area are restricted to very low concentrations at or near the detectable solubility concentration for the soil. Placement of hydrocarbon soils beneath the low-permeability cover in Closed Active Area far exceeds the water quality protection presently afforded these exposed hydrocarbon soils throughout the Santa Maria basin. Use of hydrocarbon soils as a foundation layer for the final cover reduces long-term maintenance via improvement of drainage slopes and decrease of overall settlement, as these soils will not decompose like MSW. These soils are placed in the uppermost portion of remaining landfill capacity, and separated from underlying MSW by a linear low density polyethylene plastic liner (LLDPE), well above groundwater elevation. This greatly reduces the possibility of the intermixing of landfill leachate with groundwater near the base of waste in the landfill. The thickness of the NHIS used to crown the landfill ranges between 5 and 40 feet.

For disposal at the landfill, the NHIS soil must be nonhazardous per Title 22 regulations, and meet criteria to protect groundwater based on soil concentration, leachability, and mobility of hydrocarbon constituents in the soil. The Disposal Plan includes the "NHIS acceptance criteria" that is a set of quantitative standards for acceptance of NHIS, as determined by EPA Method SW-846 or Santa Barbara County sampling methodologies. The Discharger also has a load checking program to ensure that the generator's waste does not deviate from their submitted profile. Since the NHIS program began, the Discharger has modified the NHIS acceptance criteria three times after demonstrating to the Executive Officer that the specific alternative standards remain protective of groundwater and are below soil and leaching potential hazardous concentrations. The modifications are detailed below:

- In March 2003, after review of the Discharger's computer-based modeling study to assess the fate and transport of petroleum hydrocarbons under site-specific conditions, the Executive Officer approved an increase in the acceptance criteria for gasoline, diesel, and heavier hydrocarbon fractions. The fate and transport model used conservative assumptions; however, the Executive Officer approved revised standards for lighter hydrocarbon fractions that were lower than originally proposed by the Discharger in order to maintain a high level of protection.
- After evaluation of a considerable amount of site specific data as well as modeling results, in an August 2004 letter, the Executive Officer agreed to slightly increase the acceptance criteria for leachable hydrocarbons in gasoline and diesel ranges for soils from the former Guadalupe Oilfield (previously owned by Unocal; now owned and managed by Chevron).
- In a December 2005 letter, the Executive Officer approved a change in the polychlorinated biphenyl (PCBs) acceptance criteria from 1 mg/kg to 5 mg/kg total soil concentration (1/10 the hazardous level for PCB). However, for soils having a total PCB concentration of between 1 mg/kg and 5 mg/kg, the generator must perform a leachability analysis. For soil to meet the acceptance criteria, the leachable fraction must be non-detect at a practical quantitation level of 0.1 mg/L.

The NHIS program started in late 2002 with the first delivery of hydrocarbon soil. As of June 2007, the Discharger has accepted and disposed of approximately 1.87 million tons of NHIS in the Closed Active Area, resulting in the Discharger providing a final cover for an additional 36 acres for that area. Fifty-eight acres of the Closed Active Area still require a final cover. However, the Discharger has voluntarily covered all but 15 of the 58 remaining acres with the LLDPE liner (bottom liner for future NHIS placement), and plans to cover the remaining 15 acres by the end of 2007. In addition to oil sump wastes, NHIS sources include soil from various petroleum underground storage tank sites and land farmed oilfield wastes from both inside and outside the region.

Chevron began delivery of hydrocarbon-contaminated sand from the former Guadalupe Oil Field (GOF) to the NHIS section of the landfill in August 2006¹. Prior to initiating this activity, San Luis Obispo County gained approval of their Supplemental Environmental Impact Report (SEIR) to address Chevron's management of soil removed from the former GOF. This soil cleanup is driven by the Water Board-directed cleanup of the former oilfield in accordance with our Cleanup or Abatement Order No. 98-38. San Luis Obispo County obtained approval of the SEIR from the San Luis Obispo County Planning Commission at a public hearing in July 2005. Based on a claim from four Santa Maria residents that San Luis Obispo County did not adequately comply with the California Environmental Quality Act (CEQA) prior to obtaining approval of the SEIR², the July 2005 approval was appealed to the San Luis Obispo County Board of Supervisors and subsequently the California Coastal Commission in February 2006 and June 2006, respectively. Both appeals were denied, thereby resulting in the SEIR's approval being upheld. Since June 2006, a small group of Santa Barbara County citizens has appealed to a number of agencies and elected officials to prohibit disposal of former GOF soil at the landfill. Water Board staff have responded to inquiries from reporters, specific Santa Barbara County Supervisors, staff from Rep. Lois Capps' office, the U.S. Environmental Protection Agency, and the California Department of Toxic Substances Control on behalf of Sen. Dianne Feinstein's office. In all cases, Water Board staff has presented interested parties with data to support our modification of the landfill's NHIS acceptance criteria for GOF soil consistent with the approved SEIR. It is possible that controversy regarding Chevron's disposal of

¹ The former GOF occupies approximately 2,700 acres within the Nipomo Dunes Complex at the southern boundary of San Luis Obispo County. A small portion of the total acreage lies within northern Santa Barbara County.

² The four Santa Maria residents claimed San Luis Obispo County did not adequately publicize the July 2005 hearing, and citizens of Santa Maria did not have the opportunity to voice their concern regarding the landfill's acceptance of NHIS from the former GOF.

the former GOF soil at the landfill may continue if concerned citizens' complaints are not addressed to their satisfaction.

COMPLIANCE HISTORY

The Discharger has largely been compliant with the Order requirements since its adoption in May 2001. However, the Discharger has had the following violations over the period of the Order:

- On February 27, 2004, after the landfill received approximately two inches of rainfall over a two-day period, staff observed significant ponding over the Closed Active Area, erosion of cover surfaces, and accumulation of sediment in drainage ditches. This is a violation of WDRs. The Discharger responded by immediately draining the ponded water, cleaning out the ditches, and re-grading the area.
- The landfill has had several violations for low-level concentrations of VOCs in detection monitoring wells. The VOCs are part of a plume that is under corrective action monitoring. To address this fact, the draft MRP includes a transfer of associated detection monitoring wells into the corrective action monitoring program. The Discharger must evaluate progress towards cleanup based on VOC concentration trends from the corrective action wells.

Seismic Design

According to the 2000 Joint Technical Document (JTD), the closest known active or potentially active faults to the landfill are the Santa Maria River Fault and the Point San Luis Fault. The Santa Maria River Fault is located approximately two miles west of the site and considered potentially active with a maximum probable earthquake of magnitude 4.5 and a corresponding ground acceleration of 0.111 g. The Point San Luis Fault is estimated to be approximately three miles west of the site, although there is no known surface expression of this fault. The 2000 JTD estimated that the Point San Luis Fault has a maximum probable earthquake (MPE) of magnitude 6.5 and corresponding ground acceleration of 0.445 g's at the Santa Maria Landfill. In contrast, the 2006 JTD reports that the MPE event is controlled by an 8.0 magnitude event occurring on the Carrizo Plain segment of the San Andreas Fault, with a corresponding ground motion of 0.12 g. This was used as the design MPE for Cell No. 1 at the landfill.

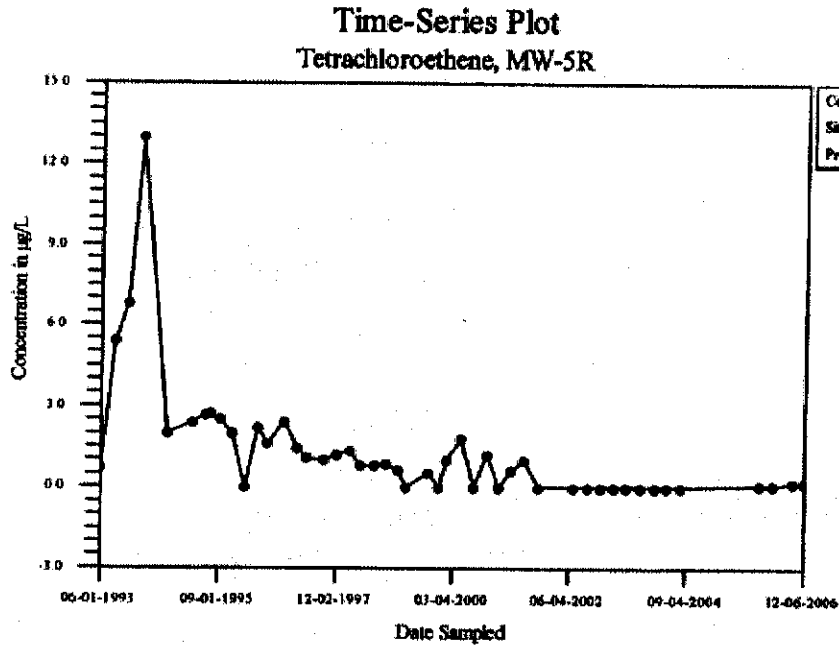
Title 27 (Section 20370) requires Class III landfills be designed to withstand the maximum probable earthquake without damage to the landfill foundation or containment structures.

Groundwater Degradation

Historically, low-concentrations of volatile organic compounds (VOCs) have been detected in three landfill perimeter and eight offsite (MWO 13 through MWO-18d) groundwater monitoring wells located adjacent to the Closed Active Area. The VOC plume distribution coupled with groundwater gradient information, indicate that the source of the VOCs is primarily the unlined Closed Active Area. Historically, VOC compounds including tetrachloroethene (PCE), 1,1-dichloroethane (DCA), trichloroethene (TCE), cis-1,2-dichloroethene, methylene chloride, and vinyl chloride were routinely detected at concentrations ranging from 0.1 µg/L to 6.9 µg/L at the downgradient landfill perimeter wells and 0.1 µg/L to 2.3 µg/L in downgradient offsite wells. PCE was the most consistently detected compound in the downgradient monitoring wells. For reference, the primary maximum contaminant level (MCL) for PCE is 5 µg/L.

Monitoring data collected since 2001 indicate that the frequency and concentrations of detected VOC compounds have declined since commencement of corrective action (discussed below). According to late 2006 monitoring data, only 1,1-DCA and PCE are commonly detected, and PCE concentrations have declined to below detection levels in wells near the landfill, and declined to concentrations of between 0.5 and 1 µg/L at the toe of the plume. The figure below illustrates the

decline in PCE concentrations in MW-5R, located immediately downgradient of the Closed Active Area:



1,1-DCA is detected sporadically at less than 1 µg/L in monitoring wells near the Closed Active Area landfill boundary (the MCL for 1,1-DCA is 5.0 ug/L). The following table illustrates recent PCE concentrations compared to historic values.

PCE (µg/L) in Groundwater
Closed Active Area and Off Site

Well	MCL	3/0/93	6/0/00	2/0/00	10/00	3/0/06	10/06
MW-4R	5	ND	0.18	0.23	ND	<0.1	<0.1
MW-5R	5	0.5	1.0	1.8	0.92	<0.1	<0.1
MW-11	5	0.61	0.12	0.46	0.81	<0.1	<0.1
MW-12-1	5	0.71	0.20	0.93	1.8	<0.18	<0.18
MW-12-2	5	ND	1.2	0.12	0.15	<0.18	<0.18
MWO-13	5	0.85	1.6	1.3	2.3	<0.18	0.39 J
MWO-14	5	0.80	0.59	0.81	0.66	<0.18	0.39 J
MWO-15	5	ND	0.42	0.43	0.20	0.67	0.36 J
MWO-16	5	ND	0.24	0.12	ND	<0.18	<0.18
MWO-17	5	0.69	0.85	0.93	0.77	0.41 J	0.38 J
MWO-18s	5	2.2	2.1	2.5	2.3	0.80	0.63
MWO-18d	5	1.6	1.5	1.4	0.54	0.68	0.63

Q- Quarter
J – Estimated value

Some inorganic constituents (manganese, iron, chloride, and nitrate) are detected above statistically calculated background levels (based on monitoring results from upgradient background wells MWO-9 and -10). In addition, manganese is routinely detected above the secondary maximum contaminant level of 0.05 mg/L. However, the inorganic quality of the groundwater has also improved since commencement of corrective action (i.e., rolling closure and landfill gas recovery), although contaminant time-trend plots show pulses of elevated inorganic constituents since corrective action in some monitoring wells.

Supply Wells

No domestic drinking water wells exist within the area defined by the offsite monitoring wells; however one agricultural supply well (PW-1 on Figure A-1 of Attachment 2) is within this area. Historically, the Discharger has voluntarily tested three drinking water and six agricultural supply wells downgradient of the landfill. None of the drinking water wells have ever had a VOC detection. This Order requires the Discharger to verify that all the nearby downgradient drinking water wells are included in monitoring. VOCs were detected at three of the six agricultural supply wells (including PW-1) during a 2000 sampling event. VOC concentrations in each of these three wells were below 1 µg/L and associated MCLs. According to records, the Discharger has not sampled these wells since 2000.

Downgradient property owners have been notified by the Discharger of the offsite VOCs impacts.

Groundwater Corrective Action

The Regional Board issued Cleanup or Abatement Order No. 96-027 (CAO) in July 1996. The CAO required the Discharger to define the downgradient edge of the contaminant plume and to implement corrective action. The CAO requirement to define the plume has been satisfied as the perimeter of the plume, defined by VOCs less than 1 µg/L, has been delineated. Both infiltration of water through waste and groundwater contacting the bottom of waste are contaminant source mechanisms for VOCs and inorganics. Landfill gas migration is also a likely source for VOC impacts in groundwater. The Discharger has also reported the inorganic impacts are caused by leaching of sediments in the vadose zone by acidic landfill gases. Closure of the former Active Area (including the installation of a low-permeability cover) limits the infiltration of moisture to waste, and decreases the generation of landfill gas and corresponding impacts to groundwater. Therefore, the Water Board required closure and encouraged enhanced landfill gas recovery as the most effective corrective action alternatives for improving downgradient water quality in the former Active Area. The Water Board rescinded CAO Order No. 96-027 in 2001.

The corrective action measures outlined above are ongoing and have been effective in reducing VOC groundwater impacts. However, as evident from current rising groundwater levels, the issue of groundwater intersection with MSW waste remains unresolved. Impacts from inorganic constituents have also improved since the startup of the corrective action; however, the mechanism causing "pulses" of inorganic impacts has not been satisfactorily identified. Clean closure or dewatering of large areas of the river sediments beneath the waste are prohibitively expensive measures and unrealistic solutions, given the volume of waste that would have to be moved to achieve clean-closure and the high groundwater flow rates through the underlying alluvial sediments. The Discharger is currently evaluating the geochemical signature of the groundwater and surface water in order to better understand the source of the inorganic constituents. If groundwater quality impacts remain unresolved, additional remedial alternatives will be considered, as appropriate.

Flood Plain

The landfill is located behind the Corps of Engineer's levee, designed for a 500-year flood event. However, Federal Emergency Management Agency's (FEMA) recent preliminary revised flood map shows that the landfill is within a 100-year flood plain. Title 27 (Section 20260) requires landfills to prevent inundation or washout due to 100-year floods; and prohibits landfills from restricting the flow

of the 100-year flood or reducing the temporary water storage capacity of the floodplain. (See also, 40 CFR § 258.11.) Provision No. 11 of the proposed WDR requires the Discharger to provide the Executive Officer an amended report of discharge that evaluates the potential threat and demonstrates compliance with Title 27.

PROPOSED LANDFILL FACILITY AND OPERATIONAL CHANGES

The following are the proposed operational changes for the Inactive Area, Closed Active Area, and Lined Areas of the landfill.

Inactive Area

The Inactive Area currently has an interim cover consisting of 3 to 12 feet of native soil, with soil amendments in the upper two feet to promote vegetative growth. Given the nature of the waste (burned refuse), the age of the waste (30+ years) and the lack of significant groundwater impacts directly downgradient of the Inactive Area, the Executive Officer concurred with the Discharger, in a letter dated May 14, 2002, that a prescriptive cover system for the Inactive Area is not necessary because the threat to underlying groundwater is much lower than that of a more recent landfill. The approved conceptual final cover system incorporates an irrigated sports complex over most of the area. The Discharger has not yet provided the Executive Officer design details of the cover system for the area beneath the sports complex, but Provision No. 2 of the proposed WDR requires the cover to be more restrictive than Title 27 prescriptive cover because of the irrigation component. The proposed cover over the remainder of the area consists of an evapotranspirative cover, having the following characteristics: 1) native soil between 4 and 12 feet in thickness over the waste, with the top two feet having a compost mixture to enhance vegetative growth, 2) compost mixture may partially consist of biosolids or other nutrients applied at agronomic rates (i.e., nitrogen loading not to exceed what plant material can uptake), and 3) Low-water-use vegetation may be used as the vegetative layer; however, the Discharger must ensure that adequate and timely vegetation (i.e., grasses) is established on the cover prior to each rainy season.

The Discharger is awaiting final land use plans and details for the irrigated sport complex from the City of Santa Maria's Department of Parks and Recreation before commencement of closure construction. As of May 2007, construction of the sports complex is approximately four years behind original schedule. This delay in final cover construction has not impacted groundwater quality beneath the Inactive Area as evidenced by the monitoring results from the downgradient wells.

Closed Active Area and NHIS Program

As of spring 2007, the Discharger has provided a final cover for 60 of the 118 acres of the Closed Active Area. Specifications for the cover provided in the proposed Order meet or exceed Title 27 requirements. In addition, the Discharger has installed an LLDPE liner over the MSW for all but 15 acres of the Closed Active Area, in preparation for NHIS/foundation layer material. The remaining 15 acres are scheduled to receive a LLDPE liner in late 2007. Completion of the LLDPE liner will significantly reduce infiltration of rainwater through the remainder of the Closed Active Area and help improve groundwater quality; however, VOC detections might increase initially due to the confinement of landfill gas beneath the cover system. The Discharger plans to further expand gas extraction in the north-central portion of the Closed Active Area and in the Lined Area in 2007. This will provide additional benefits to groundwater quality.

Completion of the final cover for the Closed Active Area is contingent on the rate at which acceptable NHIS soils become available for use at the landfill. The original schedule for closure completion was set for June 2008, as stipulated in a letter from the Executive Officer to the Discharger dated May 14, 2002. At the time of writing this staff report, the Discharger has not proposed a new date for closure completion. The Discharger indicates that the rate of available

NHIS material is less than originally projected and that they cannot control the rate, and therefore, the date of final closure. Water Board staff has reviewed the NHIS/rolling closure program and concluded that it may continue beyond the original required date for closure, provided that it continues to be protective of groundwater quality. If at any time the Executive Officer finds that the NHIS program is not protective of groundwater quality, including any indication that soils are not managed properly, not adequately characterized, soil profiles not clearly documented and easily reviewed, or there is the possibility of hazardous soil sources, the Executive Officer may terminate the NHIS program. Water Board staff's review of historic NHIS program soil profiles indicate that the profiles generally lack documentation on how the soils were spatially characterized (i.e., where in the soil stockpile or excavation samples were collected for analysis). Therefore, staff has included Provision No. 17 in the proposed WDR that requires a revision of the Hydrocarbon Soils Management and Disposal Plan to include procedures for spatially characterizing and documenting compliance.

Lined Area

Proposed changes to the Lined Area include an allowance for the acceptance of treated wood waste, a greenwaste diversion program for use as alternative daily cover, operation of a construction debris grinding for use as alternative daily cover, and disposal of sewage sludge in the lined area of the landfill. The proposed WDRs do not allow the Discharger to apply sludge at rates that exceed the water holding capacity of the MSW/daily cover materials.

Cell No. 1 of the Lined Area receives about 127,000 tons of waste per year. Assuming that waste diversion measures equal growth, Cell No. 1's estimated life capacity lasts until 2014. Construction and completion of Cell No. 2 will provide additional capacity for the landfill until 2018. However, the Discharger anticipates that Cell No. 2 will not be necessary because they plan to open a new regional landfill (Las Flores), located south of Santa Maria, prior to 2014.

Local agencies within Santa Barbara County are presently trying to site a future landfill site, but estimates suggest that the Las Flores facility is still approximately five years away from accepting waste.

Groundwater Corrective Action

The Discharger has not proposed any changes for groundwater corrective action. This seems warranted for the VOC-related groundwater impacts given the successful reduction in VOC concentrations. Inorganic concentrations have also shown improvement over the past five years. However, Water Board staff has concerns regarding periodic pulses of elevated concentrations of iron, manganese, nitrate and chloride. The source and transport mechanism for these constituents is unclear. Water Board staff has required (Provision E.11 of draft WDR) that the Discharger perform a study regarding the geochemical signature and mechanisms responsible for the inorganic constituents.

MONITORING AND REPORTING PROGRAM (MRP) CONTENT: Changes to the proposed MRP consist of:

Table 1 (Monitoring Parameters) in the tentative MRP has been amended from the prior MRP No. 01-041's Table 1 by including the following additional parameters: total alkalinity and perchlorate. Lead and selenium have been removed from the detection monitoring parameter list because historic monitoring data indicate that their concentrations are below action levels and not related to landfill activities. However, lead and selenium remain on the concentration of concern list (monitored every five years).

Three detection monitoring wells, MW-4R, -5R, -11, have been transferred to the corrective action monitoring program because they routinely have detected VOCs associated with the VOC plume at

the landfill, currently in corrective action. The Discharger must evaluate progress towards cleanup based on VOC concentration trends from these and other corrective action wells.

If the Discharger elects to construct the new Cell No. 2, in the Expansion Area, well No. MW-20 will be added to the monitoring program on the downgradient perimeter of the new cell.

POTENTIAL PROBLEMS

As discussed above, groundwater comes in contact with the waste during high stages of groundwater in the southeast portion of the unlined Closed Active Area. Groundwater downgradient of this area is currently under corrective action (gas recovery system, forced closure for municipal solid waste, rolling closure); however, prolonged periods of high groundwater might cause additional groundwater impairment in the area.

COMMENTS TO DRAFT ORDER AND MRP NO. R3-2007-0045

The draft Order and MRP No. R3-2007-0045 were distributed on August 2, 2007 to a list of interested parties and agencies that have been historically involved with the landfill. Comments received on the draft Order and MRP are included in Attachment C. All submitted comments were considered and nearly all were either included upon receipt or had previously been included in the original draft versions. The key issues referenced in comment letters are as follows:

Comments from Ms. Joan Leon:

1. On January 17, 2006, the NHIS acceptance criteria were changed to increase the contaminants by 50 percent but only for the Guadalupe Site sand. Gasoline criteria (C4-C12) was increased from 1 to 1.5 [ppm]. Diesel (C13-C22) was increased from 5.0-7.5 [ppm].

Staff's reponse: Our approval of the changes to the NHIS acceptance criteria considered several factors, including the degree of risk posed by the material's specific characteristics (mobility, volatility, leachability), intended use (foundation layer), placement location (lined/unlined areas, vertical separation from leachate and groundwater), and the overall benefit to the environment. We also considered the importance (from a water quality prospective) of providing the unlined active landfill area with a final cover system at the earliest possible time. We outlined these conditions, restrictions and considerations in our August 31, 2004 correspondence concerning the acceptance of NHIS material.

The NHIS acceptance criteria for the former Guadalupe Oil Field (GOF) soil were only slightly increased based on very conservative assumptions used in a predictive model. Based on the conservative assumptions, we believe there is adequate assurance the site groundwater will not experience measurable impacts (to date, the landfill has experienced no TPH groundwater impacts from NHIS operations). We believe there is no increased risk associated with the new thresholds. The new thresholds apply strictly to the leachable fraction of the total petroleum hydrocarbon ranges (gasoline and diesel fractions). Our approval of the revised thresholds was based on close consideration to the evaluation and research performed by the Shaw Group, as presented in its January 23, 2004 report titled, "Review of Acceptance Criteria of NHIS from the Unocal GOF Project Site." Based on our review of the Shaw report including our close review of profiles from the NHIS material at the GOF, and our consideration of site specific conditions at the Landfill, we determined that revision (increasing) of the acceptance criteria for the potential leachability of the gasoline and diesel TPH fractions is justified. Therefore, the TPH leachability acceptance criteria were revised from 1.0 to 1.5 mg/L in the gasoline range and from 5.0 to 7.5 mg/L in the diesel range. These revised TPH leachability standards reflect actual field leachability conditions as justified by the Shaw report. All other conditions, restrictions and acceptance criteria remain unchanged. Based on the

Shaw report, soils from the former GOF have been evaluated for NHIS disposal far more than any other soil that has been disposed at the NHIS portion of the Santa Maria landfill. As already stated, the revision is strictly for hydrocarbon-impacted soils from the former GOF. The existing acceptance criteria noted in our March 2003 letter remains in effect for all other sources of NHIS material.

2. Page 3 of the staff report states: "The Soil Acceptance Criteria is periodically modified based on the Discharger's request and demonstration that the new standards remain protective of the groundwater and are below hazardous concentrations." How are these requested changes monitored? Since the criteria were increased by 50% for the Guadalupe sand, will this mean that the criteria will be increased for other generators?

Staff's response: Before making a change to the NHIS acceptance criteria, the Discharger proposes the change to the Executive Officer in a report that provides the rationale supporting the proposed change along with technical justification as to why the change remains protective of groundwater. Staff reviews the proposed change and either provides comments or concurrence in a letter to the Discharger, signed by the Executive Officer. The Discharger's environmental compliance staff reviews soil profile data (report including chemical analysis and sampling scheme) submitted by the soil generator to ensure compliance with the NHIS acceptance criteria before accepting the soil for disposal at the landfill. The changes made to the NHIS acceptance criteria for the Guadalupe soils apply only to those soils because the justification behind the changes was specific to the conditions at Guadalupe. The primary condition considered for the Guadalupe soils were leachable fraction of diesel and gasoline range hydrocarbons, based on extensive laboratory leachability tests performed on soil samples collected from Guadalupe. The laboratory results of the leachable fraction are 1.1% and 0.4% of the concentration of leachate used in a transport modeling study for gasoline and diesel ranges, respectively. The modeling study, which used very conservative assumptions (e.g., no chemical degradation, high percolation rates) determined that groundwater would not be significantly impacted (maximum concentration of 7 micrograms per liter in groundwater, which is below EPA Method 8015 detection levels). The Guadalupe criteria apply only to the Guadalupe soils..

*Please note that the statement in the **Hydrocarbon Soils** section of the staff report "The Soil Acceptance Criteria is periodically modified based on the Discharger's request and demonstration that the new standards remain protective of the groundwater and are below hazardous concentrations" has been modified to include the number and types of changes that have occurred in the program to date.*

3. The contract between the City and Central Coast Resource and Recovery Inc. states in Exhibit A: Scope of Services: I A- "Contractor shall market NHIS capacity." Does this allow CCRRRI to go beyond the Santa Maria Valley to get customers to put their NHIS in our landfill: I believe the area served should be limited to the Santa Maria Valley.

Staff's Response: We respect your opinions and concerns regarding the source location of the material disposed at the landfill. As stated in this staff report, from the Water Board's perspective, the intent of the NHIS program was to get the unlined area of the landfill closed and covered, and in the process clean up hydrocarbon-impacted soil from oil fields in the area. Construction of the landfill cover is progressing; however, oil sump materials are slowly being removed by the generators and disposed at the landfill. Staff would prefer that the landfill only accept material from our region; however, the Water Board has no authority to dictate where the material comes from. This concern should have been addressed during the CEQA process in which Santa Maria obtained approval to implement the NHIS program at the landfill, or directed to the City.

4. Contract Exhibit A Section IIA- "The exact quality of NHIS...cannot be guaranteed." Who monitors the quality of the NHIS? What if the quality exceeds the limit?

Staff's Response: As stated above, the Discharger's environmental compliance staff is responsible for reviewing and approving soil profiles submitted by the soil generator. This includes reviewing the profiles to be sure that they are nonhazardous (hazardous waste defined by CCR Title 22) and are acceptable according to the NHIS acceptance criteria. In addition, the City also collects soil samples from a minimum of 5 percent of incoming truck loads to verify that the soil profiles are representative of disposed soil. In the event of an exceedance, the Discharger would require the generator to remove the soil at the generator's expense.

5. The Santa Maria Levee is in urgent need of reconstruction, according to the Corps of Engineers. Accepting more NHIS with possibly higher concentrations of contaminants is very troubling. Acceptance of NHIS should be limited to the valley and only within the minimum level of contaminants.

Staff's Response: Provision No. 11 of the proposed WDR was changed to address the issue regarding the Santa Maria Levee- the Discharger shall evaluate how to prevent inundation of the landfill from a 100-year flood. Staff determined that the NHIS acceptance criteria remains protective of underlying groundwater based on considerations of hydrocarbon leachability, transport, and mixing with underlying groundwater. The Water Board does not have authority to dictate the location of origin of the NHIS material.

Comments from Mr. Toru Miyoshi:

1. All NHIS materials should come from the Central Coast Region only. The City of Santa Maria and their contractor, CCRRI, approved the Tidelands Oil Company NHIS material from Long Beach, California without any notification to the Central Coast Region staff and until commencement of delivery from Long Beach. An analysis was sent to Santa Maria and Santa Barbara County Staff questioning the transfer of the contaminated Tidelands Oil material to Santa Maria. Since the investigation analysis prepared by Miller Brooks Environmental, Inc Huntington Beach, CA was sent anonymously, the City staff ignored the report as some disgruntled individual disregarded it. The city ordered another report that was made by Ninyo & Moore, Irving, CA and this report apparently found the material to be in compliance with your NHIS criteria. The Tidelands material commenced delivery to Santa Maria in late 2006 and discontinued delivery in the spring of 2007. They announced they would restart delivery in June 2007 but this has not happened. The reason for this action was never explained. However, an odor complaint was submitted from a farmer downwind from the landfill, which had to close down their operation due to the strong odor to the City shortly after commencement of the Tidelands NHIS material. I personally notified officials from Tidelands of this situation and they were surprised that this complaint was not forwarded to their office in Long Beach. I believe it was after this incident that caused Tideland Oil to suspend delivery of their contaminated NHIS material to the Santa Maria Landfill.

I submit this incident as an example of lack of oversight for the NHIS program. When the City Staff approved the Tidelands NHIS material, they submitted a one-page memo to the City Council and no public hearing was held for this major delivery of 187,000 cubic yards.

Staff's Response: The Discharger did informally notify staff of the Tidelands project. Based on issues raised by Mr. Miyoshi, staff looked into the Tideland's soil profile information, as provided by the Discharger. The latest profile information indicated that the soil did pass the analytical levels set forth by the NHIS acceptance criteria. However, staff noticed that statistically-based characterization methods, as outlined in EPA Method SW-846 and cited in the NHIS acceptance criteria, were not used to characterize the Tideland's soil, rather, less conservative methods based on averaging were used. The NHIS acceptance criteria stipulate that averaging methods are used, but this is in conflict with SW-846 characterization methods. The NHIS acceptance criteria do allow for sampling according to Santa Barbara County requirements, however, these are cost prohibitive for large

volumes of soil as they call for one discrete sample per 3,000 cubic yards. The Discharger has verbally committed to looking more closely into soil characterization issues. However, to be sure that this issue is addressed, staff has required in Provision 17 of the proposed WDR that the Discharger submit a revised version of the NHIS acceptance criteria to include 1) description of the EPA Method SW-846 characterization methods, and 2) decision logic as to when a soil profile requires Santa Barbara County soil characterization method or the EPA Method SW-846 method. In addition, staff has also added a requirement in Provision 4 that the Discharger provide details of each accepted soil profile in order to provide better transparency of the NHIS program and to facilitate staff's review of compliance with the NHIS acceptance criteria. Specifically, the Discharger shall provide a summary table that includes pertinent details of the soil profile, characterization methods, and documentation of compliance. Note that the Executive Officer approves the criteria, but it is up to the Discharger to determine whether the material the landfill receives meets those criteria, based on approved sampling methods. The Discharger is then subject to Board enforcement action if it exceeds the criteria.

2. Whenever a change in the NHIS criteria is made, a public hearing should be held in Santa Maria. When the Unocal-Chevron NHIS at Guadalupe Beach was approved after review of their EIR, it was revealed that the NHIS criteria was lowered to qualify this material to be dumped at the Santa Maria Landfill. The RWQCB staff indicated the original NHIS criteria was too conservative as a justification for qualifying Chevron's diluent contaminated sand to be dumped at the Santa Maria Class III landfill. There was no public hearing in Santa Maria to assure the public that this amendment posed no health hazard to our environment. It is important to note that this amendment would not apply to other NHIS that may be dumped at the Santa Maria Landfill. The question is, if the Chevron material is safe at the amended criteria why is other NHIS material denied the lower standard? Public acceptance and confidence should be a requisite for any change in the NHIS program.

Staff's Response: Please see our response to Ms. Leon's comment No. 2.

3. The brochure issued by CCRRI to sell the NHIS program must be corrected. The brochure listed the Regional Water Quality Control Board as one its customers. I have been informed they are not, however, no correction of the brochure has been ordered. The appearance of conflict cannot be avoided when the Water Board is listed as a customer.

Staff's Response: Water Board staff has asked the Discharger to remove the Water Board as a listed customer. Staff believes that the project you refer to relates to the soil cleanup at the Hernandez property on a former oilfield in Nipomo, where a responsible party could not be identified. Because it was critical to remediate the contaminated soil at the site, the Water Board helped the property owner negotiate a financial arrangement with the landfill for hydrocarbon-contaminated soil disposal in the NHIS section of the landfill, but the Water Board was not the responsible party. Updates of this project were provided to the Water Board.

4. The NHIS program was approved by your agency to cap a certain portion of the SM Landfill only. The City of Santa Maria is applying for a new permit at a new location to continue the NHIS program. Any extension of the NHIS program should be under city management not a private contractor paid by 50% of the dumping fee. Such an arrangement assure the people of Santa Maria a sense of security since monetary profit can become subordinate to protect public health and the environment.

Staff's Response: Comments noted. Please direct comments regarding the proposed new facility should to the County for review during the County's CEQA process. Assuming that the County approves the new facility, there will also be an opportunity to review and comment on a NHIS program (should it be proposed) and other WDRs provisions, during the WDR adoption process for the new facility.

5. RWQCB staff report date 10-19-07

Page 2 of your staff report under Landfill Description. "The facility sits on the south bank of the Santa Maria River, immediately behind the Corps of Engineer's 500 year flood control levee". This description is in error as the people of Santa Maria have been informed by the Santa Barbara County Flood Control Agency that the levee will not contain a 100 year storm and Flood insurance will become mandatory. Until the levee is renovated to meet the 100 storm, the Santa Maria Landfill is vulnerable to flooding. With the current Zaca fire that is denuding the Sisquoc and Cuyama Water shed, the vulnerability of landfill becomes more critical.

Staff Response: Thank you for alerting us to this matter. California Code of Regulations, Title 27, Section 20260(c) requires that the landfill "be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100 year return period." In response to this comment, staff has corrected Finding No. 21 to reflect the change in flood status, and changed Provision No. 11 to require the Discharger to submit a report that investigates potential problems that could result from such a flood, and proposes a remedy to the problem(s).

Comments from Mr. Kenneth McCalip:

1. 500 year flood levee can no longer hold 100 year flood: The Army Corps of Engineers has recently concluded that the Santa Maria levee is no longer fit to withstand a 100 year flood and is in the process of updating flood maps of the area. Your entire report is based on the erroneous fact that the levee protects this dump site. It would appear that at a minimum that the portion of the levee protecting this site should be upgraded as a condition of your proposed order.

Staff's Response: Please see our response to Mr. Miyoshi's comment No. 5.

2. Testing in 2000 showed that 3 out of 6 agricultural well contaminated with no follow up testing since 2000: Your own staff report shows no follow up testing has occurred of contaminated wells on private property for the past 7 years. This shows a total lack of monitoring by your board and that at a minimum that your should require updated testing prior to issuing these new standards.

Staff's Response: As the VOC plume is defined by the landfill's corrective action and detection monitoring wells, only one supply well (agricultural supply well PW-1) is located within the plume boundary, as defined by 1 ug/L isoconcentration line. This well, along with the Discharger's monitoring wells, is part of the monitoring and reporting program but has inadvertently not been sampled since 2000. Staff has alerted the Discharger that PW-1 needs to be sampled to verify that concentrations in this well remain below any action levels. The Discharger had historically voluntarily sampled other nearby agricultural supply wells in the area. 1998-2000 VOC sample results from the supply wells are generally below 1 ug/L, which is below any corresponding MCL. Monitoring results from the landfill's monitoring wells (all of which have been monitored as required) have demonstrated that VOCs have declined since 2000, suggesting that the plume is attenuating and that concentrations of VOCs in the supply wells have also attenuated.

3. Since groundwater currently comes in contact with waste, why would you allow this applicant to store waste in this area when the liner is required to be five feet away from any groundwater? With this site currently under a clean up order with "pulses" of contamination flowing off site it would seem at a minimum that you would require a complete clean up verified by testing prior to allowing further storage and possible additional environmental damages.

Staff's Response: As stated in the WDR, the selected remedy for groundwater corrective action in the unlined, closed active area of the landfill is enhanced landfill gas extraction and early closure/cover placement over the waste. In 2002, the Discharger transferred the municipal solid

waste (MSW) landfill operations to Cell #1, where waste is separated from groundwater by a minimum of five feet by a double liner and groundwater subdrain system. In the closed active area, NHIS soils are used as a foundation layer to provide proper drainage for the cover over the MSW. As such, the NHIS soils are placed a minimum of 30 feet above historical high groundwater, and are underlain by a 40-mil plastic liner system. Therefore, groundwater does not contact any of the NHIS.

As stated in the staff report and the proposed revised WDR, monitoring at the landfill has shown that both the VOC and inorganic constituents have declined since commencement of corrective action in 2000 for the closed active area of the landfill. That said, there have been periods in the monitoring history between 2000 and the present where the concentrations of manganese and other non-toxic inorganic constituents have climbed and subsequently subsided in some monitoring wells. These constituents are not regulated by primary MCLs, but have secondary MCLs as guidelines for protecting the beneficial use of groundwater from taste, color, odor, and other problems. The proposed WDR includes Provision 11 requiring the Discharger to evaluate sources and transport mechanisms of the inorganic constituents. There is a possibility that the inorganics are from sources other than the landfill.

Comments from Mr. Brad Haggeman, City of Santa Maria Utilities:

1. Draft Monitoring and Reporting Program (MRP) Part I, Section E.1.b, and Part I, Section E.6.b requires quarterly field probe and annual lab testing (TO-14) for Volatile Organic Compounds (VOCs) in all 52 soil pore gas (vadose zone) monitoring points. Although there is no requirement in existing WDR Order No. 01-041 to analyze any or all of the 52 soil gas probe samples in the lab, the City chose to perform this task in the lab for years on a quarterly basis. Since there were no significant "hits" in the lab data and since the sensitivity of the field equipment has improved to 2 ppm, the City switched to quarterly field instrument VOC monitoring in the fourth quarter 2006. We have continued with calibrated field monitoring since that time.

Therefore, we suggest that the following language be incorporated in the MRP Part I, Section E.1.b, and Part I, Section E.6.b.

"Test for volatile organic compounds annually using EPA Method TO-14 in probes where VOCs have been detected at concentrations greater than 2 ppm with field instruments in two consecutive sampling events."

Staff's Response: Staff concurs in part with your proposed change to the landfill gas monitoring program. However, based on gas-water partitioning relationships, there is a potential for a carcinogenic gas such as vinyl chloride to impact groundwater above the MCL, and to be an indoor air issue at concentrations well below the 2 ppm screening level that you suggest. Therefore, as a protective measure, staff will retain the laboratory testing of soil gas samples from 1) the soil gas probes adjacent to Cell #1, and 2) soil gas probes between the residential housing and the landfill. Otherwise, your suggested method of screening will be applied to the MRP.

2. Existing Order No. 01-041 was approved prior to the disposal area being lined and, therefore, did not allow disposal of wastes that contain less than 50 percent solids by weight. However, all areas dedicated for waste disposal now have lined containment system as described in the proposed WDR Section C.7.b. The City requests that the requirements for disposal of sewage sludge or water treatment sludge be updated to be consistent with the other landfills in the Central Coast region (i.e., Crazy Horse Landfill, City of Watsonville, City of Santa Cruz, Buena Vista Landfill, Monterey Peninsula Landfill, Cold Canyon Landfill, etc.) with regard to sludge disposal.

Staff's Response: Staff conditionally concurs with the City of Santa Maria's request provided that 1) the City provides calculations showing that disposed material in the landfill has the moisture

retention capacity to handle the extra moisture from disposed sludge, and 2) the landfill's leachate collection system is well managed and continues to be operated according to WDR specifications. Staff has added Provision 18 in the proposed WDR for disposal of sludge at the landfill. Provision 18 is consistent with WDRs for other landfills in the region.

CONCLUSION

This proposed Order addresses several key issues at the landfill:

1. The current waste profiling protocol does not adequately characterize hydrocarbon-contaminated soil for disposal under the NHIS program, because waste soil is not evaluated consistent with any existing prescribed protocol (SW-846 or Santa Barbara County). Revisions to the NHIS Disposal Plan required under this proposed order (Provision No. E.17) will correct this inadequacy.
2. Installation of a landfill's final cover system aids significantly in reducing groundwater quality impacts like those beneath the Santa Maria Landfill. We also know that final cover systems with insufficient slopes are susceptible to rainwater ponding and percolating through to waste, potentially exacerbating groundwater impacts. At this site, we are balancing the need for final cover installation with the need for effective long-term final cover slopes, achieved through the disposal of NHIS material. To reduce infiltration while they try to achieve adequate final slopes, the Discharger has installed a synthetic LLDPE liner beneath NHIS material. Additionally, as the landfill reaches final elevations and slopes in portions, the Discharger is required to install the final cover for that area (rolling closure). The NHIS program brings in stable (non-degradable), engineered fill soil that ensures a better, more stable long-term closure for the landfill.

RECOMMENDATION

Adopt proposed Waste Discharge Requirements Order No. R3-2007-0045.

ATTACHMENTS

1. Proposed Waste Discharge Requirements Order No. R3-2007-0045
2. Proposed Monitoring and Reporting Program No. R3-2007-0045
3. Comment Letters on Draft WDR and MRP No. R3-2007-0045