STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

STAFF REPORT FOR REGULAR MEETING OF MAY 4-5, 2011
Prepared on February 28, 2011

ITEM NUMBER: **12**

SUBJECT: **Revised Waste Discharge Requirements for the Recology Pacheco Pass Class III Landfill and Inert Waste Landfill, Santa Clara County - Order No. R3-2011-0019**

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KEY INFORMATION:

Location:	3675 Pacheco Pass Highway, Gilroy, seven miles east of the City of Gilroy on a Private Road east of Highway 152.
Owner/Operator:	Recology Pacheco Pass (hereafter "Discharger").
Type of Waste:	Non-hazardous municipal solid waste and inert waste.
Capacity Used:	3,240,000 cubic yards (2,295,885 tons) for municipal solid waste, and 648,000 cubic yards (517,700 tons) for inert waste as of September 2008.
Remaining Capacity:	Closed September 2008.
Disposal:	Area fill method.
Liner System:	Site contains both lined and unlined Waste management units.
Existing Orders:	Waste Discharge Requirements Order No. R3-2004-0111 and General Permit for Industrial Stormwater Discharges.
This Action:	**Adopt Proposed Revised Waste Discharge Requirements Order No. R3-2011-0019**

SUMMARY

Proposed Waste Discharge Requirements Order No. R3-2011-0019 ("Order" or "Order No. R3-2011-0019" Attachment 1) and proposed Monitoring and Reporting Program Order No. R3-2011-0019 ("MRP" Attachment 2) for the Recology Pacheco Pass Class III Landfill and Inert Waste Landfill, reflect changes resulting from the Landfill's closure. Changes to the Order include:

1. Requiring completion of final cover construction by December 31, 2011;
2. Updating the final closure requirements, including element within the final cover system, to meet the performance standards of the California Code of Regulations, Title 27 (CCR Title 27);
3. Changes to the Landfill controls (i.e., landfill gas collection system, leachate collections system, etc.) and monitoring, based on existing releases and potential threats to water quality;
4. Revising the Landfill's information, including status change from active to closing.

The Order benefits and protects groundwater and surface water through required engineering controls (e.g., construction of a final cover system), monitoring, and corrective actions (e.g., improvements to surface water runoff). In addition to ceasing waste disposal operations, the

Discharger also proposes additional corrective actions by constructing a final cover over the recently active portion of the Landfill (Module A) and inert waste disposal areas. The final cover acts as a protective barrier layer over those areas of the Landfill that are undergoing final closure. The final cover will reduce infiltration into the lined portion of the Landfill, thereby reducing the potential for leachate generation and the subsequent threat to groundwater quality. Another benefit of the final cover will be improvement in Landfill gas extraction (better gas extraction also protects groundwater) and management of stormwater runoff. The Discharger also proposed a leachate and gas condensate (liquids generated as water comes in contact with waste) recirculation and infiltration system within the lined portion of the closed Landfill. This system will reduce human exposure, eliminate transporting leachate by truck to a disposal facility, leachate handling costs and air emissions, overall environmental exposure, and in general provides a sustainable on-site solution to liquids management. Water Board staff and the Discharger will continue to work together to improve water quality. The Discharger continues to be and has historically been very proactive and responsive in initiating actions for the protection of water quality

DISCUSSION

Order No. R3-2011-0019 updates and replaces Waste Discharge Requirements Order No. R3-2004-0111, adopted by the California Regional Water Quality Control Board, Central Coast Region (hereafter "Water Board") on December 3, 2004. The Order requires final cover completion by December 31, 2011. For the final cover portion of the Landfill, the design and construction specifications within the Order meet or exceed requirements in CCR Title 27, and 40 Code of Federal Regulations, Parts 257 and 258 (40 CFR 257 and 258), both of which pertain to siting, design, construction, operation, and closure of solid waste management facilities. This update also provides requirements and guidance for closure activities.

Facility Description: The Landfill property comprises 170 acres, as shown on Landfill Property Boundary, Figure 2 of the Order. The Discharger has owned and controlled operations over the entire life of the Landfill beginning in 1963 when disposal operations began. Since then, the Landfill received commercial, agricultural, and residential wastes from Gilroy, Morgan Hill, and the unincorporated areas of Santa Clara County, including San Martin. The Landfill's permitted 91-acre waste disposal footprint includes 66 acres of both lined and unlined (pre-Subtitle D) waste management units. The municipal solid waste Landfill covers 31 acres [including 15-acre Module A (lined) and 16-acre Parcel 1 (unlined)] and 35 acres of inert waste disposal area. The other parcels associated with the Landfill property include an environmental easement of 31.5 acres, the access road of 2.5 acres, and Parcel 2 of approximately 45 acres. The Discharger uses a portion of Parcel 2 and Parcel 3 to operate a composting facility.

Waste Placement and Capacity: The Discharger stopped receiving municipal solid waste at the Landfill on September 30, 2008 and prepared a closure/post-closure maintenance plan for the Landfill. As of September 2008, the Landfill holds an estimated 3,240,000 cubic yards (2,295,885 tons) of municipal solid waste, and 648,000 cubic yards (517,700 tons) of inert waste. The Landfill is currently undergoing closure activities.

Surrounding Land Use: Land within a one-mile radius of the Landfill is predominantly zoned for agricultural/range and agricultural/productive. There are no residences or other structures located within 1,000 feet of the Landfill's permitted waste disposal areas.

Geology: The Landfill is located on the western flank of the Diablo Range adjacent to, and east of, the southern Santa Clara Valley. The main trace of the northwest-trending Calaveras Fault Zone is approximately 1,000-feet northeast of the Landfill boundary and is an active Holocene fault. Secondary active traces of the Calaveras Fault underlie the Landfill. The faults divide the bedrock underlying the Landfill into four fault blocks. The Discharger's discovery of active faulting underlying

the Landfill property prompted modifications to waste disposal operations and design, and reduced the Landfill disposal capacity because of CCR Title 27 setback requirements for permitted waste disposal footprints adjacent to active faults.

The Santa Clara Valley, a northwest-trending structural depression between the Diablo Range on the east and the Santa Cruz Mountains on the west, is underlain by Quaternary alluvium that overlies the older Santa Clara Formation and the Pliocene-age Purisima Formation. Bedrock beneath the Landfill consists entirely of the Santa Clara Formation and bedding and structural features generally trend northwest.

Surface Water and Groundwater: The Landfill is located well above the 100-year flood plain and there are no designated wetlands within the Landfill boundary. Surface water flows are ephemeral and consist of natural drainage courses through the basin outside the Landfill boundary. Surface water drainage from the Landfill area enters unnamed tributaries to the Pacheco-Santa Ana Creek Hydrogeologic Area of the Pajaro River Hydrologic Unit. The Discharger maintains facilities necessary for properly collecting and diverting stormwater run-off from the Landfill and compost operations.

Bedrock units and geologic structure control the occurrence of groundwater beneath the Landfill. Active traces of the Calaveras Fault Zone create four distinct hydrogeologic units beneath the Landfill. Groundwater generally occurs in the more permeable sandstones and conglomerates within the fault blocks under confined conditions. Lower permeability clay gouge zones separate the fault blocks and groundwater, therefore groundwater within each fault block is generally isolated from groundwater in adjacent blocks.

Groundwater Quality: The Discharger has monitored groundwater at the Landfill since August 1985 through a network of monitoring wells. Volatile organic compounds (VOCs) and inorganic constituents impact areas of groundwater beneath and downgradient from the Landfill. The Discharger first detected VOCs in groundwater in 1987. Based on the information provided by the Discharger, the groundwater monitoring data indicates that the source of the VOCs resulted from Landfill gas migration from Parcel 1 (the older unlined portion of the Landfill) and possibly lined Module A.

The Discharger expanded the Landfill gas extraction system to better capture VOCs impacting groundwater, and the Discharger continues to operate and optimize their Parcel 1 leachate extraction system to improve water quality for inorganic constituents. Water Board staff evaluated the culmination of water quality data in the Discharger's "Third and Fourth Quarter Semi-Annual and Annual 2010 Monitoring Report" (Golder Associates, January 28, 2011) to assess the effectiveness of corrective actions. Water Board staff concurred with the Discharger's assessment that the overall decrease in the total number of VOCs detected, along with the decreasing trends in VOC concentrations in most wells, indicate that corrective actions with Landfill gas extraction have been effective in improving groundwater quality. Water Board staff and the Discharger's will continue to work together to evaluate the recent modifications to the Landfill gas extraction system to determine progress toward improved water quality.

Pursuant to the requirements of CCR Title 27, as specified in the Discharger's existing Order, if the VOCs concentrations in select wells do not stabilize and begin showing downward trends after one year of monitoring, the Discharger will submit an engineering feasibility study to Water Board staff proposing additional corrective actions and additional investigations to determine the nature and extent of VOCs, as needed. The Discharger submitted to Water Board staff a "reasonable foreseeable release scenario" for correction action financial assurance demonstration pursuant to the existing Order. Staff reviewed the Discharger's range of potential corrective actions, including installation of a groundwater pump-and-treat type system, if necessary, among other options; and

concurred with the Discharger's release scenario and associated costs for implementing corrective actions.

Generally, VOCs have historically ranged from trace to above Maximum Contaminant Levels (MCLs) for some constituents. A few examples of the historical high concentrations of the most common detected VOCs relative to their respective MCL include: tetrachloroethylene (PCE) at 59.0 µg/L [MCL = 5.0 µg/L]; trichloroethylene (TCE) at 62.0 µg/L [MCL = 5.0 µg/L]; cis-1,2-dichloroethene (cis-1,2-DCE) at 33 µg/L [MCL = 6.0 µg/L]; 1,1-dichloroethane (1,1-DCA) at 8.0 µg/L [MCL = 5.0 µg/L]; and vinyl chloride at 39.0 µg/L [MCL = 0.5 µg/L]. Some constituents remain above MCLs but the overall trends in VOCs appear to be decreasing, most notably in Well E-10 for PCE and TCE. Staff will evaluate, and require implementation of, appropriate corrective actions if VOC concentrations in groundwater exhibit increasing or non-responsive trends. Finding 33 of the Order includes a summary of some of the notable trends of VOCs and inorganic constituents in groundwater.

According to the Discharger's Third and Fourth Quarter Semiannual 2010 Monitoring Report, inorganic parameters for corrective action monitoring wells exhibited both statistically significant upward and downward trends. These trends reflect the natural variability of the complex hydrogeology/geology at the Landfill and possibly releases from the unlined waste management unit (Parcel 1). All groundwater monitoring wells at the Landfill, including background well E-1, have consistently exceeded secondary MCLs for total dissolved solids (TDS) (500 milligram per liter [mg/L]) and specific conductance (900 micromhos per centimeter [µmhos/cm]), due to poor natural groundwater quality and natural groundwater variability. Historical concentrations of TDS range from 230 mg/L to 2500 mg/L and specific conductance range from 653 µmhos/cm to 5820 µmhos/cm. In wells E-18 and E-23, the Discharger reports upward trends in manganese and historically there were upward trends in chloride in E-23, indicating a possible leachate release from the unlined Parcel 1 Landfill. As required by their existing Order, the Discharger is also currently evaluating the possible causes of the recent detections of nitrate and nitrite (i.e., nitrate plus nitrite, sum as nitrogen) (3.3 mg/L with an MCL of 10 mg/L) that exceeded concentration limits in monitoring well E-19. The Discharger's monitoring data show an apparent upward trend in nitrate concentrations since the 2005-2006 wet season. Based on Water Board staff's evaluation of available monitoring data, the upward trend is likely related to stormwater runoff from their compost operations, and not related to a release resulting from prior waste disposal at the Landfill. The Discharger uses statistical methods for all inorganic parameters to evaluate a) the occurrence of statistically significant groundwater trends as part of the detection monitoring program for releases, and b) to verify the effectiveness of corrective actions for releases.

Corrective Actions for Impacted Groundwater: Since 1991, the Discharger has implemented a series of corrective actions to improve water quality related to impacts from the unlined Parcel 1 Landfill and compost operations. Impacts involve VOCs and the inorganic constituents manganese, chloride, and nitrate. Staff agrees with the Discharger assessment that the impacts result from Landfill gas migration, possible leachate migration from Parcel 1, and possibly compost runoff, in the case of nitrate. Corrective actions to improve water quality included:

1. Installation and operation of a leachate extraction and gas extraction system;
2. Subsequent upgrades to the extraction systems including the installation of additional extraction wells for landfill gas, upgraded pumps for leachate extraction, and additional storage capacity for collected leachate;
3. Placement of final cover on closed portions of the previously closed Landfill (i.e., Parcel 1);
4. Installation of a moisture barrier on the north-facing side-slope of Parcel 1 as part of the construction of Module A; and
5. Improvements to compost stormwater runoff controls.

In addition to ceasing waste disposal operations, the Discharger also proposes additional corrective actions by constructing a final cover over the recently active portion of the Landfill (Module A and inert waste disposal areas). The final cover acts as a protective barrier layer over those areas of the Landfill that are undergoing final closure. The final cover will reduce infiltration into the lined portion of the Landfill, thereby reducing the potential for leachate generation and therefore threats to groundwater quality. Another benefit of the final cover will be improvement in Landfill gas extraction and better control over management of stormwater runoff.

To comply with their existing Order in addressing the upward trend in concentrations of nitrate detected in monitoring well E-19, the discharger constructed a lined pond in 2006 for capturing and storing stormwater runoff from the compost area. The Discharger also installed a series of tanks to capture the "first flush" runoff from their compost area (i.e., those stormwater flows containing the highest initial concentrations of pollutants during rainfall events). The Discharger also proposes to conduct an electronic leak detection survey and repair any holes found in the pond's liner that may be leaking and possibly contributing to the increased nitrate in groundwater at well E-19. As required by their existing Order, the Discharger will continue to evaluate nitrate concentrations to determine the need for any additional corrective actions to improve groundwater quality in the area around well E-19.

The MRP requires continued monitoring of concentration trends for inorganic constituents and VOCs in groundwater to evaluate the effectiveness of the leachate and gas extraction control systems; and final cover systems, in improving groundwater quality.

The Discharger must propose and implement further corrective actions, in accordance with Title 27 and the Order, if the final cover and/or other containment systems do not result in improved water quality over time.

Landfill Design Changes: The Discharger ceased disposal operations and plans to construct a final cover over Module A and the inert waste disposal areas. The Discharger submitted a Final Closure and Post-Closure Maintenance Plan (CPCMP) in January 2010. The Discharger provided support and rationale for a proposed engineered alternative final cover design pursuant to their existing Order. The Discharger also proposed a leachate and gas condensate recirculation and infiltration system within the lined portion of the closed Landfill. This system will reduce human exposure, eliminate leachate truck transportation costs and air emissions, overall environmental exposure, and provide a sustainable on-site solution to liquids management. Water Board staff detailed the design of the final cover system for Module A in **Finding 17** of the Order. Staff determined that the Discharger proposed a final cover design to exceed the prescriptive performance standards in CCR Title 27. The Executive Officer approved the engineered alternative final cover design in a letter dated March 30, 2010. The unlined inert waste disposal areas are not required to have a final cover system pursuant to CCR Title 27; however, the Discharger designed a final cover system to conform to Santa Clara County non-irrigated open space requirements.

Since 1987, the Discharger has implemented a number of operational changes and environmental control improvements to the Landfill that include, in part, the following:

- Placement of a final cover over portions of the previously closed and unlined Parcel 1 Landfill.
- Installation of Landfill leachate and Landfill gas collection wells in the Parcel 1 Landfill, and installation of subsequent upgrades to the system including additional wells, upgraded pumps, and additional storage capacity for collected liquids.
- Continued enhancements to the Landfill gas recovery system with installation of new gas recovery wells for both the lined and unlined Landfills, which allows better control of the migration of methane and volatile organic compounds (VOCs).

- Construction of Module A that was equipped with a bottom liner and leachate collection and removal systems to divert disposal away from the unlined Parcel 1 Landfill. Additionally, the Discharger installed a moisture barrier on the north-facing side-slope of Parcel 1 as part of the construction of Module A to direct leachate above Parcel 1 toward the lined Module A.
- Implementation of a materials recovery, recycling, and reuse program.
- Construction of improved stormwater management and control systems to segregate stormwater runoff from the Landfill and runoff from adjacent compost facility.
- Construction of extensive conveyance, storage (tanks for capturing the most concentrated portion of runoff generated at the beginning of the wet season, known as a "first flush" runoff event), and retention facilities, including a lined retention pond, to manage stormwater runoff from composting operations (food waste and chipped green wastes).
- Proposed construction of a final cover system for Module A, in addition to proposed refurbishments of the bench roads on the previously closed and unlined Parcel 1 Landfill to improve stormwater drainage off the final cover.

COMPLIANCE HISTORY

The Discharger and the Landfill are in compliance with the existing Order. The Discharger is responsive to Water Board staff's information requests and readily addresses compliance issues. Staff has not issued any violations to the Discharger since 2006, and the Discharger has met all reporting deadlines.

MONITORING AND REPORTING PROGRAM

The Landfill MRP includes:

Part I – Monitoring and Observation Schedule: This section requires periodic routine inspections of the Landfill and the leachate collection system, and detailed analytical monitoring of groundwater, leachate, and Landfill gas.

Part II – Sample Collection and Analysis: This section establishes criteria for sample collection and analysis, methods to determine concentration limits, and specifies how the Discharger must maintain these records.

Part III – Statistical and Non-Statistical Analysis of Data: This section establishes methods for the Discharger to determine Landfill compliance with water quality protection standards based on laboratory analytical information.

Part IV – Reporting: This section establishes formats and requirements that the Discharger must follow when submitting analytical data, annual reports, and summaries to the Water Board.

Part V – Definition of Terms: This section defines specific terms used in the MRP.

Monitoring and Reporting Program Changes: Water Board staff revised the existing MRP for the Landfill to coincide with revised Order No. R3-2011-0019. Revisions to the MRP include: 1) change in wells E-23 and E-26 from the detection monitoring program to the corrective action monitoring program due to recent detections of VOCs, 2) expanded stormwater monitoring and reporting requirements for leachate seeps and spills, 3) the addition of three constituents to the corrective action monitoring program to monitor the effectiveness of corrective actions and controls to improve water quality, and 4) a restructured format for ease of compliance with requirements and for consistency with other landfill monitoring programs.

Regulation of Stormwater discharges from the Landfill will continue under "Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities (General Storm Water Permit for Industrial Activities)," under State Water Resources Control Board (State Water Board) Water Quality Order No. 97-03-DWQ and National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS00001.

ENVIRONMENTAL SUMMARY

This Order contains prohibitions, discharge specifications, water quality protection standards, and provisions intended to protect the environment by mitigating or avoiding impacts of Landfill operations on water quality. The Order addresses a closing Landfill (Module A, Class III) and an existing closed Landfill (Parcel 1, Class III).

CALIFORNIA ENVIRONMENTAL QUALITY ACT

On June 7, 1984, the Santa Clara County Department of Planning and Development approved a Mitigated Negative Declaration for the active Landfill project. On December 7, 2010, the Santa Clara County Board of Supervisors approved a Mitigated Negative Declaration for the Landfill closure and the proposed Recology Pacheco Pass Transfer Station (Transfer Station) project. On February 3, 2011, the Santa Clara County Planning Commission approved the Use Permit for the Transfer Station, which included the Board of Supervisors' approved Mitigated Negative Declaration for the closure project component.

PUBLIC NOTICE AND COMMENTS ON ORDER NO. R3-2011-0019

Water Board staff distributed the draft Order No. R3-2011-0019 and MRP No. R3-2011-0019 on March 1, 2011 to a list of interested parties and agencies that have been historically involved with the Landfill. After a 30-day public comment period, Water Board staff received no comments to the Order and MRP.

CONCLUSION

The Order updates operational and monitoring requirements for the Recology Pacheco Pass Landfill to protect groundwater and surface water though closure and construction of a final cover system, engineering controls, corrective actions, preventative inspections, and monitoring. The Discharger's proposed closure plan is consistent with CCR Title 27 performance standards and the actions taken as part of this plan should address existing water quality impacts. As such, the Landfill does not pose a significant risk to groundwater and surface water with the controls and requirements in the Order.

RECOMMENDATION

Adopt Waste Discharge Requirements Order No. R3-2011-0011 and Monitoring and Reporting Program No. R3-2011-0019.

ATTACHMENT

Waste Discharge Requirements Order No. R3-2011-0019, including Monitoring and Reporting Program No. R3-2011-0019.