STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401-7906

WASTE DISCHARGE REQUIREMENTS ORDER NO. R3-2013-0016

Waste Discharger Identification No. 3 270304001
May 30-31, 2013 Board Meeting

FOR

SALINAS SOLID WASTE AUTHORITY
CRAZY HORSE CLOSED LANDFILL
MONTEREY COUNTY

The California Regional Water Quality Control Board, Central Coast Region (hereafter "Water Board") finds that:

LANDFILL OWNER AND LOCATION

1. Salinas Valley Solid Waste Authority (hereafter "Discharger" or "SVSWA") owns and operates the Crazy Horse Class III Closed Landfill (hereafter "Landfill"). The SVSWA is a joint powers agency made up of the following local governments: Monterey County (eastern half of the unincorporated county), and the cities of Gonzales, Greenfield, King City, Salinas, and Soledad.

2. The Landfill is located at 350 Crazy Horse Canyon Road, approximately nine miles north of the City of Salinas in northern Monterey County, as shown on Landfill Location Map, **Figure 1**. The landfill is located in Section 14 and 15, Township 13 South, Range 3 East, Mount Diablo Base & Meridian. The Landfill latitude is 36.81° North and the longitude is 121.62° West. The Assessor Parcel Numbers for the Landfill are 125-271-063, 125-491-012, and 125-571-058.

PURPOSE OF ORDER

3. Waste Discharge Requirements Order No. R3-2013-0016 (hereafter "Order" or "Order No. R3-2013-0016") revises and updates the Landfill's description, closure construction, post-closure maintenance and monitoring of the Landfill, and prohibits discharge of new waste to the closed Landfill.

4. Order No. R3-2013-0016 reflects the Landfill's closed status, and establishes requirements pursuant to California Code of Regulations Title 27, Solid Waste (CCR Title 27), effective July 18, 1997, and pursuant to Code of Federal Regulations Title 40, Parts 257 and 258 (40 CFR Parts 257 and 258), Solid Waste Facility Disposal Criteria.

5. The Water Board has regulated waste disposal at the Landfill through Waste Discharge Requirements since 1970. The Landfill is currently regulated by Waste Discharge Requirements Order No. R3-2007-0003, adopted by the Water Board on February 9, 2007. Order No. R3-2013-0016 replaces Order No. R3-2007-0003.

6. Order No. R3-2013-0016 includes the following key updates:

    a. A detailed review of the Landfill site.

    b. Description of waste management unit closure.

    c. Updated Corrective Action Program.

    d. Postclosure maintenance requirements.

    e. A revised Monitoring and Reporting Program.

LANDFILL DESCRIPTION AND HISTORY

7. The Landfill site covers 160-acres, with 72 acres previously permitted for Class III municipal solid waste disposal. The landfill was constructed as a typical "canyon fill" whereby limited areas of the canyon walls and bottom were excavated to provide cover soil as the canyon was filled with waste.

8. The Landfill began operation in 1934 and operated as a burn dump until 1966 in the old disposal area now identified as Closed Module I or Module I. In 1966, the burn dump operations changed to sanitary landfill operations. Disposal continued in the Module I area covering approximately six acres, until about 1972. Since 1972, a disposal area adjacent to Module I covering approximately 66 acres (Closed Fill Area or Fill Area) was developed in phases with 51 acres unlined and 15 acres of composite liner.

9. The Landfill's ownership prior to 1950 is unknown. The City of Salinas owned the Landfill from 1950 until 1997. In August 1997, the SVSWA took ownership of the Landfill from the City of Salinas. Landfill's operators have changed several times since 1950. In 1950, the City of Salinas entered into a franchise agreement with Salinas Disposal Services, for the collection of solid waste in the City and operation of the Landfill. In the early 1990's the franchise agreement was purchased by US Waste and in March of 1998 US Waste merged with Waste Management while continuing to operate the Landfill. In October of 2000, the SVSWA entered into a contract agreement with Norcal Engineering (now Recology) to service several operations including operation of the Landfill, until May of 2009, when the Landfill stopped accepting waste.

10. The Landfill is located in a sparsely populated area of northern Monterey County. Land use within 1,000 feet of the Landfill property includes cattle grazing and rural residential use. The nearest residential buildings are located approximately 50 feet and 250 feet from the southeast and northwest sides of the landfill property boundary, respectively, as shown on Landfill Facilities Map, **Figure 2**.

11. According to the Monterey County General Plan, adopted in 1982, the zoning of the Landfill is Public/Quasi-public, suitable for landfill operations. The Landfill has been continuously operated since 1934, which pre-dates the current land use permitting policy such that a conditional land-use permit is not required for the landfill.

12. In December 1984, results from water samples collected from residential supply wells on the former Potter, Plescia, and Backus properties (located south of the landfill as shown on Landfill Facilities Map, **Figure 2)**, indicated the presence of volatile organic compounds (VOCs) in groundwater. In 1985, a remedial investigation determined that the VOCs were from a release of waste drums (major constituents included masticated rubber materials, carbon black, and other fillers and oils) and mixed solvents (which mainly included benzene and toluene). These materials were placed within the 6-acre Closed Module I disposal area during the 1970's and the contaminated groundwater was mobilized by pumping of nearby residential supply wells (Potter, Plescia, and Backus). An additional investigation in 1986 concluded that VOCs in groundwater resulted from both Module I and from the septic tanks on the former residential properties. These properties were subsequently purchased by the City of Salinas; the City incorporated these properties into the landfill's property, extending the southern property boundary south to its current location. Most of the septic tanks on the former residential properties were removed in 1987 and the supply wells on former residential properties were destroyed in the late 1980s. In May 2008, the SVSWA discovered and removed an additional septic tank from the former Plescia property.

13. Between 1992 and 1998, a 15-acre composite liner along the west side of the Fill Area was constructed, as shown on Landfill Monitoring Points & Treatment Systems Location Map, **Figure 3**. Waste disposal was planned in five phases, with phases I through III over the lined areas in the western portion of the landfill, phase IV over existing waste in the central portion of the landfill, and optional phase V, an approximate 4-acre area located near the current scale house facility. Phases I through IV were developed and received waste. Phase V, which would have required a composite bottom liner over the portion of the area that does not already have waste, was not developed.

CORRECTIVE ACTION HISTORY

14. In 1987 the City of Salinas installed a landfill gas extraction system within Module I and the then active Fill Area to mitigate landfill gas migration.

15. In 1988, the City of Salinas constructed a groundwater extraction and treatment system and a final cover to Module I to mitigate groundwater contamination from Module I. Based on the groundwater impacts from Module I, the U.S. Environmental Protection Agency placed Module I of the landfill on the National Priorities List (NPL) and the landfill became a Superfund site in 1990.

16. In 1998 the Discharger constructed a perimeter landfill gas control system to reduce impacts to groundwater from landfill gas migration. This perimeter system originally consisted of 40 wells on 200-foot centers near the perimeter of the landfill.

17. In 1998 the Discharger sealed the lower screened portions of eight multi-zone monitoring wells, which had been improperly installed and identified as contributing to vertical migration of groundwater contaminants.

18. In 2001, the Discharger discovered an abandoned disposal site along the southwest edge of the property, outside the waste footprint. The Discharger conducted an investigation in 2001 and determined that the waste appeared to be the result of pre-1950s on site burning and disposal of household garbage on a private property that was acquired in the 1980s as a landfill buffer. The Discharger completed clean closure of this abandoned disposal site in 2003 with removal of 1,600 tons of debris, followed by site restoration.

19. In 2004, the Discharger upgraded the Landfill gas extraction system to address landfill gas concentrations detected in perimeter gas monitoring wells. In closed Module I, the enhancements included extending gas extraction well casings and associated piping above the landfill cover in order to provide better control on the distribution of gas production. In addition, new vertical wells were installed in the active Fill Area's lined module and unlined portion in the Central Ravine slope, and the leachate cleanout risers were connected to the gas extraction system.

20. In 2006, vandals severely damaged the groundwater extraction and treatment system. For more than a year, the Discharger evaluated the performance of the original 15 extraction wells and groundwater impacts, and in 2007 repaired four centrally located groundwater extraction wells and discontinued extracting from the remaining wells.

21. In 2007, the Discharger identified waste outside the limits of the Module I final cover system with a series of investigatory test pits. The Discharger completed construction of a final cover extension for Closed Module I (0.34 acres) during final closure of the Landfill in 2013.

22. In 2008, the Discharger constructed a passive bioremediation system pilot test downgradient of Closed Module I to enhance biodegradation of VOCs in groundwater through the injection of hydrogen releasing compound (HRC). The passive bioremediation system consists of eight injection wells staggered in two rows on fifteen foot centers. The pilot test was a success and showed an overall

reduction in total VOCs. The Discharger continues to operate the pilot test bioremediation system and has plans to expand the bioremediation system in the future, if necessary as outlined in the Dischargers 2013 Corrective Action Plan.

23. In 2008, the Discharger investigated an area on the southern end of the landfill believed to contain old burn waste. Test pits indicated burn debris and construction and demolition type waste at unknown depths. The existing cover in this area is heavily vegetated with high density large eucalyptus trees. Due to the age of the waste and to avoid disturbance to existing vegetation and habitat, the Discharger was not required to remove the waste; however the Discharger completed construction of an extended bench drainage system past the limit of the final cover and above the burn dump area, to prevent stormwater erosion and infiltration into this burn dump area, during final closure of the Landfill in 2013.

24. In 2009, the Discharger installed 45 new landfill gas extraction wells and abandoned 57 inefficient or damaged landfill gas extraction wells. The Discharger also installed four additional landfill gas extraction wells in the vicinity of probe GW-2 to address elevated methane concentrations.

25. In 2011, during site final closure construction, the Discharger demolished the former onsite Covanta gas-to-energy facility and discovered a series of subsurface pipelines that radiated outward from the former gas-to-energy facility. These pipelines appear to have been constructed with the intent of discharging landfill gas condensate to the subsurface. The lines found leading into the Closed Fill Area and under the constructed final cover were not investigated further due to access limitations; the Discharger is currently investigating and evaluating possible impacts to soil below the former gas-to-energy facility and up to six nearby disposal sumps. The Discharger is required to update their Corrective Action Plan to include investigation results, and corrective actions taken and/or proposed to address soil impacts associated with the historical condensate practices at the former gas-to-energy facility.

CLOSURE

26. The goal of Landfill closure, including but not limited to the construction of a final cover system, is to minimize infiltration of water into the waste, thereby minimizing production of leachate and landfill gas. Leachate and landfill gas are the leading cause of groundwater pollution at landfill sites. After closure, the final cover constitutes the Landfill's principal waste containment feature.

27. The Discharger stopped receiving municipal solid waste from the general public and self-haul customers on February 28, 2009; franchise haulers on May 30, 2009; and from the Discharger's direct waste hauling operations on December 31, 2010.

28. The Discharger submitted Final Closure and Post-Closure Maintenance Plans (CPCMP) in January 2009 with revisions in December 2009, July 2010, August

2010, and October 2010. The Discharger submitted a Revised Final Closure Plan Addendum – Engineering Design Report in April 2011 (April Design Report) with additional revision letters on dated August 17, 2011 and August 19, 2011, and a subsequent email on August 24, 2011 containing revised construction specifications and Construction Quality Assurance. The Discharger provided support and rationale for a proposed engineered alternative final cover design pursuant to Order No. R3-2007-0003. The performance of the alternative composite cover's components, in combination, equal and exceed the waste containment capability of the prescriptive design and performance specifications of CCR Title 27. The Executive Officer approved the December 2009 CPCMP in a letter dated March 18, 2010, the October 2010 CPCMP in a letter dated March 2, 2011, and the April Design Report with August revisions in a letter dated September 7, 2011.

29. The Discharger began final closure construction activities for the Fill Area and final cover extension of Closed Module I in 2011.

30. In December 2012, a stormwater pipe failed during heavy rain, the resulting erosion exposed municipal type waste outside the landfill footprint on the southern end of the landfill adjacent adjacent to the old burn waste area described in Finding 23. The Discharger plans to excavate and clean close the area in 2013.

31. On April 30, 2013 (anticipated), the Discharger completed construction of the final cover over the 66 acre landfill and the final cover extension over Module I as described in further detail in the next finding. The final cover systems for the 66 acre area adjacent to Module I is designed in conformance with performance standards in CCR Title 27 §17388.3, §20950(a)(2)(A)1, §21790(b)(8)(B), §21790(b)(8)(D), §21140, §21145, and §21150.

32. **Final Cover Design –** The Landfill's final covers as constructed consist of the following (described from bottom to top):

    a. <u>Closed Module I</u>
        i. Two-foot thick minimum foundation of compact clean soil
        ii. High density polyethylene (HDPE) geomembrane
            a) Slopes < 10% – 60-mil smooth
            b) Slopes > 10% – 80-mil textured
        iii. Two-foot thick minimum vegetative cover soil.

    b. <u>Closed Module I Final Cover Extension</u>
        i. One-foot thick minimum foundation of compact clean soil
        ii. 50-mil studded/spiked linear low density polyethylene (LLDPE) geomembrane – "Super Gripnet"
        iii. HDPE artificial turf
        iv. Sand ballast – 0.44 inches to 0.5 inches thick

c. Equipment Parking Area
   i. Prepared subgrade
   ii. 6-inch minimum aggregate base
   iii. Geotextile fabric
   iv. 6-inch minimum low-permeability asphalt concrete

d. Closed Fill Area (North & West of Module I & Equipment Parking Area)
   i. One-foot thick minimum foundation of compact clean soil
   ii. 50-mil LLDPE geomembrane
      a) Topdeck – "Micro Spike"
      b) Slopes and Benches – "Super Gripnet"
   iii. HDPE artificial turf
   iv. Sand ballast
      a) Roads/benches – 0.9 to 1 inch
      b) Topdeck – 0.5 to 0.65 inches
      c) Slopes – 0.44 to 0.5 inches
      d) Drainage chutes/channels – sand cement

33. Order R3-2016-0013 requires the Discharger to complete final closure construction activities before October 1, 2013.

POSTCLOSURE

34. The goal of post-closure maintenance is to assure the Landfill continues to comply with CCR Title 27 and 40 CFR 258 closure requirements and the goal described in Finding 26, until the waste in the Landfill no longer poses a potential threat to water quality.

35. The Discharger proposes to maintain the landfill land use as non-irrigated open space with a possible photovoltaic (PV) power generation system on the topdeck and an equipment parking area adjacent to Closed Module I as shown on Landfill Facilities Map, **Figure 2**. The equipment parking area is expected to be used for Monterey County emergency equipment staging and parking, but the Discharger is also considering a residential recycling center in this area.

36. Postclosure onsite waste-related facilities include: leachate storage tanks and pump station, groundwater extraction and treatment system with passive groundwater air stripper, a VOC air filter facility, and a gas flare station. In addition, there is a future gas to energy facility proposed as shown on Landfill Facilities Map, **Figure 2**.

37. Postclosure ancillary facilities at the site include the following: an equipment maintenance building, administrative office trailer, scale house, and vehicle scales as shown on Landfill Facilities Map, **Figure 2**. The Discharger is also considering operating a residential recycling facility.

38. A small portion of the property to the west of the Landfill is used for an archery range (located outside of the waste footprint) as shown on Landfill Facilities Map, **Figure 2**, and is expected to continue throughout postclosure

CLASSIFICATION AND WASTE TYPE

39. The landfill is a closed Class III Municipal Solid Waste Landfill as defined by California Code of Regulations (CCR) Title 27, Sections 20240 and 20260.

40. Previous permitted disposal at the Landfill included non-hazardous municipal solid waste and inert waste.

GEOLOGY/HYDROGEOLOGY

41. **Setting –** The landfill lies within the southeastern portion of the elevated hilly region in northern Monterey County between the Pajaro River valley to the north, the Salinas River Valley to the south, Monterey Bay to the west, and the Gabilan Range to the east. The landfill is approximately two miles northeast of Prunedale, nine miles north of Salinas, and approximately ten miles east of Moss Landing.

42. **Topography –** The topography near the site consists of moderately steep rolling hills and intervening drainage courses with hills ranging from approximately 300 to 950 feet above mean sea level (amsl). The original topography of the site consisted of a southwest draining canyon, which has been modified substantially by 70 years of waste placement. The current topography of the site consists of a top deck with peak elevation of approximately 635 feet amsl and a minimum slope of five percent to the outer edges. Final cover slopes of 3H:1V bound the top deck and extend down to the base of the refuse prism at about 400 feet amsl. There are two final cover slopes steeper than 3H:1V, an upper eastern area that ranges from 2.2H:1V to 2H:1V and an upper southern area as steep as 2.3H:1V. The drainage of the Central Ravine below the landfill continues beyond the southern property line at about 290 amsl.

43. **Geologic Structure –** The Landfill is situated within the Salinian Block of the south-central portion of the Coast Range Geomorphic Province. The Salinian Block consists of a basement of Cretaceous quartz diorite “granitic rocks” and older metasedimentary rocks. A series of northwest trending right-lateral faults partition the Salinian Block into smaller blocks, with the San Andreas Fault forming the eastern boundary. The relative vertical movement of these faults has controlled the patterns of sedimentation in the region, with up-thrown basement blocks serving as the provenance for the thick accumulation of Tertiary marine sediments found within intervening structural basins. The site and surrounding areas are underlain at various depths by granitic rocks of the Salinian Block. The buried erosional surface of the granitic rocks generally dips about seven degrees to the west and is locally exposed at higher elevations. Tertiary (Pliocene-Miocene) marine sedimentary deposits unconformably overlie the basement rocks and thicken towards the west.

Pleistocene eolian and fluvial deposits unconformably overlie the Tertiary marine sediments but in some places are nonconformably in direct contact with the granitic rocks. Pleistocene marine terrace deposits and Holocene alluvial deposits unconformably overlie the eolian and fluvial deposits.

44. **Stratigraphy –** The identified geologic units within the vicinity of the landfill from youngest to oldest are: recent alluvial deposits, Pleistocene marine terrace deposits, Pleistocene eolian/fluvial deposits of the Aromas Sand, Tertiary marine sediments of the Purisima Formation, older Tertiary formations, and the Cretaceous quartz diorite (granitic rock) basement complex. In the vicinity of the landfill, recent alluvium, Aromas Sand, Purisima Formation, and granitic rock geologic units have been identified (from youngest to oldest):

    a. Alluvial/colluvial deposits occur in the Central Ravine area (directly down slope of the landfill), along the creek bottom in Crazy Horse Canyon to the east of the landfill, and may extend beneath a portion of the waste in the Central Ravine. The alluvium reaches a thickness of approximately 40 feet in the center of the ravine and is comprised of unconsolidated sands, silts, and clays derived from erosion of older deposits in the area.

    b. The Aromas Sand is exposed at the surface over portions of the site, and unconformably overlies the Purisima Formation except in the northeastern portion of the site, where it is reported to be in nonconformable contact with the granitic basement rock. Alternatively, the Aromas Sand may be in fault contact with the granitic rocks if the Gabilan Fault exists as depicted in reports. The Aromas Sand has a thickness of up to 140 feet near the landfill and consists of poorly to semiconsolidated, poorly bedded to cross-bedded, well-sorted fine sands interbedded with lenses of silty sands and sandy clays that increase in abundance with depth. In the southeast corner of the site, the fine-grained units within the Aromas Sand are more laterally continuous such that they form a base for a perched layer of groundwater. The brown to red-brown Aromas Sand is absent beneath the Central Ravine where the drainage has incised below the base of the Aromas Sand and into the upper portion of the Purisima Formation.

    c. The Purisima Formation is characterized as marine in origin and consists of poorly indurated sand, silt, and clay with some gravel. In the vicinity of the Landfill, the Purisima sediment contains a significant portion of granitic rock detritus, ranging in size from sand to gravel, that are reported to be the result of mass-wasting from adjacent granitic rock outcrops. The local Purisma Formation ranges between 0 to more than 300 feet thick and is dominated by a sequence of siltstones, sandy claystones, and shales in the upper 50 to 75 feet (informally called the “Transition Zone”). The Transition Zone is in unconformable contact with the alluvium in the Central Ravine. In boring logs, the Transition Zone is identified at depths between 35 and 140 feet below ground surface and is marked by a blue-gray claystone/shale

sequence. Below the Transition Zone, the Purisima Formation is described as primarily interbedded sand (or sandstone) and clay (or siltstone and claystone) with layers of sandy clay and gravelly clay and occasional gravel beds. Colors of the Purisima Formation sediments range from red and brown (nearer to the surface) to blue, gray, green, and black.

d. The granitic basement rocks crop out immediately north of the landfill with 30 to 50 percent slopes that are covered with a thin veneer of McCoy clay loam. The upper 100 to 200 feet of the granitic basement rock is reported to be significantly weathered.

45. **Faulting/Seismicity –** Several active and potentially active faults are near to the Landfill and include the San Andreas, Hayward-Calaveras, San Gregorio-Palo Colorado and the Monterey Bay faults. The nearest reported active fault is the San Andreas Fault, which is located approximately four miles to the northeast. No active faults have been mapped within the immediate vicinity of the landfill, although the 2004 JTD indicates that a possible extension of the Gabilan Fault occurs along the northeast boundary of the landfill, and the Vergeles Fault Zone occurs approximately 1.25 miles northeast of the landfill.

Prior to the previous 30-foot vertical expansion of the landfill, the Discharger prepared a slope stability analyses for the waste mass and final cover, the slope stability was required to have a factor of safety of 1.5 under static conditions, a calculated maximum permanent displacement of less than 12 inches under dynamic (seismic) loads, and interface shear strengths equal or exceeding an envelope defined by a friction angle of 31 degrees.

This stability analyses included the use of the computer program EQFAULT to estimate the maximum ground accelerations at the site for the maximum probable earthquake (MPE). The MPE is defined as an earthquake causing a maximum peak ground acceleration (PGA) value at the landfill with a return period of 100 years, or the maximum historical ground acceleration at the site, whichever is greater. Based on the analyses, a maximum PGA of 0.32g was calculated for an associated Richter magnitude 7.5 earthquake on the San Andreas fault. To be conservative, a probabilistic seismic hazard assessment (using the USGS Earthquake Hazards Program) was also evaluated. A ten percent probability of exceedance in 50 years (or return period of 475 years) was selected as a reasonable scenario for ground motion at the site. Under this scenario, the maximum acceleration was estimated to be 0.53g. This was used as the design ground motion. The results of the slope stability analysis, assuming maximum slopes of 3H:1V are as follows:

a. Static factor of safety is equal to or greater than 1.5 for the final landfill slopes.

b. For the final landfill slopes, displacement analysis concluded that the permanent displacement would be less than one foot under design ground motion.

The October 2010 CPCMP, evaluated and summarized the previous 2004 and 1993 slope stability analyses, and included additional stability analysis on the specific geosynthetic final cover components and the steep slopes described in Finding 42. The 2010 CPCMP concluded that the steeper slopes do not affect overall global stability because 1) the critical surfaces are over the lined areas on the west side of the topdeck, 2) the internal friction angle within the final cover must be greater than or equal to 34.5 degrees to resist failure, and 3) vehicle traffic on slopes steeper than 3H:1V will be prohibited. Appendix O of the CPCMP also included direct shear test results for the geosynthetic materials used in the final cover, the tests showed that the failure surface is between the geosynthetic membrane and the artificial turf. Therefore, excessive movement-related damage would primarily be limited to the artificial turf rather than the geomembrane, damage to the artificial turf of the final cover would not compromise containment of the waste.

46. **Hydrogeology –** There are five distinct hydrogeologic units in the vicinity of the landfill, including the unconfined alluvium, a perched zone within the upper portion of the Aromas Sand, the unconfined Aromas Sand, the semiconfined Purisima Formation, and the granitic bedrock. Seasonally, groundwater recharge occurs in the exposed granitic rocks to the north of the landfill in Crazy Horse Canyon. Groundwater in the Aromas Sand and underlying Purisima Formation is separated by an aquitard ("Transition Zone") that effectively creates a difference in hydraulic head of between 30 and 130 feet between the two units. The landfill hydrogeology is well characterized by well logs from over 80 groundwater monitoring and extraction wells and data from over 20 years of groundwater monitoring at the landfill. **Figure 3** shows locations for groundwater monitoring wells in addition to other monitoring points (i.e., surface water, soil gas, etc.) and treatment systems. The following is a detailed description of the water-bearing units, starting with the shallowest unit:

    a. *Alluvium:* The alluvium is comprised of unconsolidated sands, silts, and clays derived from erosion of older deposits in the area.

        Groundwater flow within the unconsolidated, porous alluvium is limited to a small area within the Central Ravine, directly downgradient of the landfill. The Landfill's downgradient alluvium monitoring well (A-32) indicates that the Central Ravine alluvium groundwater is shallow, varying between 5 and 18 feet below the ground surface (bgs), and is probably recharged by leakage from the adjacent Aromas Sand unit and seasonal runoff. Sedimentation Basin B, in the Central Ravine near the southwestern corner of the site, typically contains water through the dry season suggesting that groundwater discharges from the alluvium into Sedimentation Basin B during a portion of the year.

b. *Aromas Sand:* The Aromas Sand consists of poorly to semi-consolidated fine-grained sand with interbeds of silty sand and sandy clay; resulting in relatively low but varied permeability.

A small, persistent, but discontinuous perched zone of groundwater has been identified beneath the southeast portion of closed Module I in the upper portion of Aromas Sand. The perched zone has a saturated thickness of up to approximately six feet, and extends a short distance south and east of the refuse prism in closed Module I, as previously defined by abandoned piezometers PA-1, PA-2, and PA-3. Groundwater levels within the perched zone were approximately 60 feet below ground surface (bgs) and 60 feet above the underlying saturated zone near the base of the Aromas Sand. As a result of the limited extent of the perched zone, and because of the abundance of monitoring wells in the Aromas Sand downgradient of the perched zone, wells PA-1, PA-2, and PA-3 were abandoned in 2009 and the perched zone is no longer monitored.

There are currently 27 monitoring wells and 14 piezometers in the Aromas Sand. The underlying saturated zone of the Aromas Sand ranges from 0 (unsaturated) to 30 feet in thickness on top of the Transition Zone. It is encountered over the majority of the landfill with exception of where the Aromas Sand is absent in the Central Ravine area and north of Crazy Horse Road where the water table intersects the contact between the Aromas Sand and the granitic bedrock. Based on boring logs, the Transition Zone is largely unsaturated, suggesting that groundwater in the Aromas Sand may itself be perched and not in hydraulic communication with the Purisima Formation. Groundwater within the Aromas Sand is encountered as deep as approximately 150 feet bgs over portions of the site and surfaces at springs and seeps along the southern wall of the Central Ravine. According to piezometric surface maps, groundwater in the Aromas Sand unit generally flows from northeast to southwest, approximately parallel to the property boundary on the southeast side of the landfill as shown in Aromas Sand and Alluvial Aquifers Potentiometric Surface Map, **Figure 4**.

c. *Purisima Formation:* The Purisma Formation consists of poorly indurated sand, silt, and clay with some gravel. The permeability of the Purisima Formation is fairly low due to its fine-grained nature.

There are currently fifteen monitoring wells in the semi-confined to confined Purisima Formation. Groundwater levels within the Purisima Formation are approximately 40 to 230 feet bgs, or 30 to 130 feet below water levels in the Aromas Sand. Potentiometric surface maps indicate that groundwater flow is somewhat irregular but generally to the southwest, with a ridge in the potentiometric surface located near the Central Ravine area as shown in Purisma Formation Aquifer Potentiometric Surface Map, **Figure 5**.

d. *Granitic Bedrock:* According to geologic cross sections, two wells P-4 and A-61, located north of the landfill entrance, are completed in granitic bedrock. Depth to groundwater is approximately 125 feet bgs in the area of these wells. The top of the granitic bedrock, as depicted in cross-sections, slopes towards the southwest, with horizontal beds of Aromas Sand and Purisima Formation nonconformably "lapping" onto the granitic bedrock. This is thought to be an area of exchange of groundwater from the granitic bedrock into the Aromas Sand and Purisima Formation.

GROUNDWATER, SURFACE WATER, AND STORMWATER

47. **Groundwater –** Groundwater within the Aromas Sand and Purisma Formation is well characterized due to the number of monitoring wells in each unit. The potentiometric surface maps for the Aromas Sand and Purisma Formation (**Figures 4, and 5**, respectively) are based on groundwater measurements from the third quarter 2012 monitoring period. In comparison the Alluvial and Granitic groundwater zones are characterized by fewer wells and assumptions based on known geology. Since monitoring began at the Landfill, groundwater levels have remained fairly constant, with no discernible long-term trends over time. Locally, some fluctuations occur near groundwater extraction wells. Groundwater within the various units is described below:

    a. *Alluvium:* There are only two downgradient wells that monitor the Central Ravine alluvial aquifer, and as a result the equipotential contours shown on **Figure 5** are approximated based on few data points and the assumption that groundwater generally mimics the Central Ravine topography. The Central Ravine alluvium groundwater flows to southwest with an approximate gradient of 0.06 feet per foot (ft/ft).

    b. *Aromas Sand:* Groundwater in the Aromas Sand tends to flow toward the southwest at a gradient of approximately 0.03 ft/ft with a portion of the flow discharging as seeps along the Central Ravine. The Aromas Sand groundwater gradient steepens, approaching 0.06 ft/ft, as it approaches the alluvium of the Central Ravine. Based on published values for effective porosity, hydraulic conductivity data for Aromas Sand aquifer obtained from well aquifer tests and the current groundwater gradient, the Aromas Sand groundwater velocity is estimated between 0.0014 to 0.47 ft/day. Groundwater emerges from a portion of the Aromas Sand along the southern wall of the Central Ravine at elevations ranging from 340-360 feet above mean sea level.

    c. Purisima Formation: Groundwater in the Purisma Formation appears to follow the general topography of the site towards the southwest at a gradient of approximately 0.11 ft/ft. Based on published values for effective porosity, hydraulic conductivity data for Purisma Formation aquifer obtained from well

aquifer tests and the current groundwater gradient, the Purisma Formation groundwater velocity is estimated at 0.018 ft/day.

d. *Granitic Bedrock:* The three granitic aquifer monitoring wells are located such that they cannot provide a meaningful potentiometric surface map.

48. **Groundwater Quality –** There are three identified groundwater impact release areas, as shown on the Aromas Sand Aquifer Approximate Total VOCs Map, **Figure 6**. The three release areas are identified as the Southern Release, Western Release, and Eastern Release.

Southern Release: Southern Release groundwater impacts were initially detected in the Aromas Sand aquifer south of Module I in 1984. The Southern Release is characterized by elevated chloride and total dissolved solids, and VOCs. The VOCs primarily originate from Module I landfill gas and leachate sources; however some VOC impacts appear to have been due to historical practices on the residential properties prior to their acquisition. The Southern Release VOCs are dominated by chlorinated aliphatic compounds that include tetrachlorethene (PCE), trichloroethene (TCE), isomers of dichloroethene and dichlorethane, and vinyl chloride while aromatic compounds such as benzene, toluene, etc. comprise a much smaller fraction of the total VOC impacts. The VOC plume in the Aromas Sand originates from the southeast boundary of Closed Module I (near monitoring well A-16) and extends southwest towards the southern landfill property where the plume bends and widens towards the Central Ravine to the west where the toe of the plume is defined, about 1,300 feet downgradient of the source. Since 1998, total VOC concentrations in monitoring well A-12 (centrally located in the Southern Release, downgradient of Module I) have decreased from approximately 180 µg/L to approximately 70 µg/L in 2008. Since injections to promote bioremediation in 2008, total VOC concentrations in monitoring well A-12 have decreased to approximately 35 µg/L. VOCs are also detected in the Purisima Formation but are low relative to the concentrations detected in nearby wells screened in the Aromas Sand. Based on a review of well construction logs, the Purisima Formation VOC impacts were reported to be the result of vertical migration of contaminants through improperly installed multi-zone wells. As a corrective action measure, the Discharger modified eight multi-zone wells in 1998 to seal lower screened portions of the wells. The Southern Release impacts two offsite residential supply wells, which are discussed in Finding 51.

Western Release: Western Release groundwater impacts were initially detected in 1996 in monitoring well A-31, and appear to be due to landfill gas as groundwater monitoring results indicate background levels of inorganic constituents and trace to low levels for limited VOCs. Since final cover construction began in 2010, VOC detections have trended slightly higher with a greater number of VOC's detected; for example, prior to 2010 there were approximately six low-level detections and three trace detections for VOCs and in 2012 there were fifteen low-level detections and an additional seven trace detections for VOCs. The recent increasing VOC trends in

the Western Release coincide with final cover construction. Required water application on the landfill for soil compaction and dust control, and periodic shutdowns of the landfill gas extraction system resulted in increased landfill gas production and migration, respectively. Short-term impacts to groundwater are common with the construction of a final cover system, and are the result of construction related increases in landfill gas production and migration, and decreased off-gassing of landfill gas through the less permeable final cover, which forces increased migration toward groundwater until the landfill's gas collection system catches up. Completion of the final cover and consistent operation of the landfill gas extraction system is expected to decrease landfill gas related VOCs in groundwater quickly.

Eastern Release: The Eastern Release was initially identified in monitoring well A-8 with increasing trends for VOCs from 1997-2003. In 2003, the Discharger constructed monitoring wells A-60, A-61, and A-62 to evaluate the extent of the Eastern Release. Based on groundwater monitoring results, groundwater flow, and hydrogeology, the Eastern Release plume appears to ultimately travel south combining with the Southern Release. Although the Eastern Release impacts were originally attributed to landfill gas migration, increasing trends continued despite various landfill gas extraction improvements. In 2011, the Discharger demolished and removed the former Covanta gas-to-energy facility, which was located slightly upgradient of monitoring well A-8 and A-62, during demolition the Discharger identified a series of subsurface pipelines that may have transported landfill gas condensate to the subsurface. The Discharger is currently investigating potential soil impacts below the gas-to-energy facility and six disposal sumps near the scalehouse to determine if this is the source for the groundwater impacts in this area.

49. **Groundwater Recharge –** Surface inflow and subsurface inflow recharge the groundwater basin near the Landfill. Surface inflow constitutes the principle source of recharge to the basin and includes infiltration of precipitation and excess irrigation water; percolation along streams, canals, and other waterways; and artificial recharge from the sediment retention ponds.

50. **Groundwater Separation –** Historical excavation grades, liner design, and waste placement provide for separation between groundwater and waste that meet the CCR Title 27, Section 20240(c) requirement for maintaining a minimum five-foot separation.

51. **Supply Wells –** The 2004 JTD mapped approximately 26 domestic wells within a one-mile radius of the landfill. Most of the domestic wells are screened in the Purisima Formation; however, their filter packs typically extend from 50 feet bgs to the bottom of the well, providing a conduit for hydraulic communication with shallower units. Eight downgradient domestic wells (Githens, Whitcomb, Howard, Newman [former Polinski], Grider, 370 Crazy Horse Canyon Road, 380 Crazy Horse Canyon Road, and Reich [former Burton]) are monitored regularly as part of the

Landfill's Monitoring Program, as requested by homeowners and residents (**Figure 3**). Landfill and/or disinfection related VOCs have been detected periodically at trace concentrations or very low levels in the Reich and Grider wells since monitoring began, in 1999 and 2004 respectively. The Discharger monitors and maintains a granular activated carbon canister on the Grider well to remove trace level VOCs if present. The Discharger plans to add granular activated carbon treatment to the Reich well and has requested approval and access from the property owner. In addition, very infrequent, unconfirmed, trace detections of VOCs have been detected in the other residential wells since 1999.

52. **Surface Water –** All surface water drainage from the Landfill passes through Sedimentation Pond B, located southeast and downgradient of the Landfill and in the Central Ravine. Sedimentation Retention Pond B is an in-channel manmade pond and the Discharger is required to obtain Water Board 401 Water Quality Certification, Army Core of Engineers 404 Permit, and a Department of Fish and Wildlife Streambed Alteration Agreement to maintain and/or modify. Sedimentation Pond B contains water throughout the year, which is thought to be the result of discharging groundwater. Water from Sedimentation Pond B overflows during the wet season into Pesante Creek, which is within the Tembladero Slough drainage basin. The ephemeral creek within Crazy Horse Canyon, located on the east side of Crazy Horse Canyon Road, is separated from the landfill surface water drainage by the landfill's perimeter drainage ditch system.

53. **Precipitation –** Daily and quarterly rainfall data for the landfill are reported in the Landfill's semiannual detection monitoring reports. The 2004 JTD references the Prunedale Echo Valley Station, located about three miles northwest of the Landfill, managed by the Department of Water Resources. From 1971 to 1981 the Prunedale Echo Valley Station documented an average annual precipitation of approximately 18 inches with a calculated 100-year, 24-hour precipitation design storm of 4.8 inches. The 2010 CPCMP references the Pajaro Weather Station which is located approximately nine miles northwest of the site and managed by the Department of Water Resources. According to the 2010 CPCMP, this weather station is more reflective of Landfill's precipitation when compared to recent onsite weather measurements. From 1996 through 2012, the Pajaro Weather Station documented an annual average precipitation of approximately 26.4 inches, and the calculated 100-year, 24-hour precipitation design storm is approximately 5.65 inches for the landfill. Final closure drainage facilities are designed around the more conservative values from the Pajaro Weather station.

54. **Stormwater –** The landfill is isolated hydrologically such that no run-on to the landfill occurs. Drainage along Crazy Horse Canyon Road isolates the landfill from an area of high relief north of the landfill. Stormwater runoff from the Landfill discharges into through Sedimentation Basin B into an unnamed tributary of Pesante Creek.

55. **Flooding –** The Landfill is not in a 100-year flood plain according to the National Flood Insurance Program, as it is located in Zone C, a zone of minimal flooding.

56. **Springs –** Groundwater seeps occur in the Central Ravine, down-canyon from the toe of the landfill, approximately 200 feet east and uphill from Sedimentation Basin B, at the contact between the Aromas Sand and underlying Transition Zone. In addition, because Sedimentation Basin B retains water throughout the year, it is likely spring fed from the underlying saturated alluvium. No other springs or seeps have been reported to occur in the immediate area of the landfill

CONTROL SYSTEMS AND MONITORING

57. **Liner Design –** The 66-acre Closed Fill Area includes 51 acres with a minimum 1-foot thick layer of fine grained heavily compacted soils (unlined), and 15 acres with an engineered composite liner that consists of the following (each described from bottom to top):

    a. Base Composite Liner
        i. Two-foot thick minimum low permeability soil ($1x10^{-7}$ cm/s).
        ii. 60-mil textured HDPE geomembrane.
        iii. One-foot thick layer of gravel
        iv. 8-ounce geotextile fabric.
        v. Two-foot thick minimum protective cover soil operations layer.

    b. Slope Composite Liner
        i. Two-foot thick minimum low-permeability soil layer ($1x10^{-7}$ cm/s) or geosynthetic clay liner (GCL).
        ii. 60-mil textured HDPE geomembrane.
        iii. 16-ounce nonwoven geotextile fabric.
        iv. Two-foot thick minimum protective cover soil operations layer.

58. **Landfill Leachate/Groundwater Control –** Closed Module I does not have a leachate collection and recovery system (LCRS). In 1983, the City of Salinas constructed an LCRS within the unlined portion of the Fill Area and the Central Ravine that consists of a drainage system, which was reportedly used to dewater the granitic rocks during landfill construction, a filter fabric wrapped gravel collection gallery over naturally occurring clays, and a leachate storage tank located near Sedimentation Basin B. The system was later modified to discharge into a sump which is then pumped into a leachate storage tank near Sedimentation Basin A. However, leachate generated from this unlined Fill Area LCRS is minimal.

    The LCRS for the composite lined portion of the landfill in the Closed Fill Area consists of a 12-inch thick gravel layer that contains a network of perforated collection pipes and several clean-out risers that exit out of the side slopes of the landfill. Leachate from the composite lined portion of the landfill gravity drains to a leachate storage tank located near Sedimentation Basin A. From the leachate storage tank the leachate is reinjected under the final cover and over lined portions of the landfill as shown in Landfill Leachate Control System, **Figure 7**. During 2012,

the LCRS generated approximately 457,218 gallons of leachate. Leachate generation is expected to decrease significantly during the postclosure period as the final cover system significantly reduces rainfall infiltration, the landfill gas extraction system removes significant moisture through power generation or the flare, and there is a decrease in moisture as the waste mass degrades and stabilizes over time.

59. **Landfill Gas Control –** The landfill gas control/recovery system consists of a network of gas extraction wells, as shown in Landfill Gas Control and Monitoring Systems, **Figure 8**. The original landfill gas extraction system was installed in 1987 and improved in 1998, 2004, and 2009 as discussed in Findings 14, 16, and 24, respectively. The gas collected from the interior wells has historically been conveyed to a gas-to-energy facility, but during 2011, the gas-to-energy plant was dismantled due to equipment failure and obsolescence. The landfill gas is currently combusted in an onsite flare. The Discharger expects a new more efficient gas-to-energy facility to be built following final closure of the Landfill; however, the onsite flare will remain an alternative disposal option for landfill gas even with a new gas-to-energy facility and provide flexibility/redundancy for handling landfill gas. Landfill gas condensate is generated during landfill gas extraction and is either 1) burned off in the flare or power generation facility, or 2) reinjected into the landfill with landfill leachate.

60. **Stormwater Control –** Pursuant to CCR Title 27 and CFR 257 and 258 the final cover and landfill grading are designed to minimize infiltration of rainwater, creating significantly more runoff from the landfill compared to predevelopment conditions. The Landfill's drainage facilities are designed to control rainfall runoff from a 100 year, 24-hour storm while also having capacity to limit offsite discharge rates to the 100 year, 24-hour storm predevelopment discharge.

    The final cover design provides for excess surface precipitation to percolate through the sand in the artificial turf on the topdeck and the slopes, runoff flows between the artificial turf and the geomembrane to drainage channels and chutes, which incorporate sand cement in the turf to resist erosion and allow surface flow. Drainage from the north and west areas of the landfill is routed to Sedimentation Basin A, which in turn drains to Sedimentation Basin B. Sedimentation Basin B also receives runoff originating from the eastern and southern portions of the landfill. Sedimentation Basin B incorporates a spillway with a sluice gate to restrict peak discharge to 100 year, 24-hour storm predevelopment discharge. Stormwater discharge monitoring point SW-1 (**Figure 3**) is located just downstream of the sluice gate to monitor stormwater discharge quality.

61. **Groundwater Corrective Action Program –** Remediation efforts have been underway downgradient of the Closed Module I area since 1988 following closure of Module 1 and construction of a groundwater extraction and treatment system. The groundwater extraction and treatment system originally consisted of 25 groundwater extraction wells completed in both the Aromas Sand and Purisima Formation,

passive air stripping with induced draft for VOC removal from groundwater to the air stream, and a gas phase granulated activated carbon (GAC) column to remove VOCs from the air stream prior to discharge to the atmosphere. Treated groundwater is stored in a 500-gallon polyethylene tank for use as dust control or irrigation. In addition, nine recharge galleries are available for re-injection of treated groundwater to the Aromas Sand aquifer but are not used. The groundwater cleanup goals for the original Corrective Action Plan were set at one-half of the Federal MCLs. In 1988, the performance of the interim remedial action extraction wells averaged 0.33 gpm per well for the Aromas Sand wells and 1.5 gpm per well for the Purisima Formation wells. For the full remedial system, 15 extraction wells in the Aromas Sand produced an average between less than 0.1 gpm and 1.5 gpm per well, totaling approximately 6 gpm (average of 0.4 gpm per well) up until the mid 1990's, with diminishing performance until rehabilitation efforts were conducted in 1998.

In June 2006 the groundwater extraction and treatment system was severely damaged by vandals. While the groundwater extraction system was inoperable the Discharger performed a long-term rebound test, where the groundwater chemistry of wells within the Southern Release plume were evaluated for more than a year. The rebound test indicated that the Southern Release plume was relatively static, an additional review of the historical VOC concentrations also indicated that the groundwater extraction system had little effect on plume geometry. To protect offsite supply wells, the Discharger repaired the system to allow operation of four centrally located groundwater extraction wells (A-40, A-41, A-49, and A-52).

The Discharger's submitted an Engineering Feasibilty Study for Corrective Action (EFS), dated January 2008, which evaluated the three identified release areas (Southern, Western, and Eastern), current corrective actions, and possible future corrective actions. Potential corrective actions evaluated included: in-situ air-sparging/vapor extraction, bio-enhancement, phytoremdiation, intrinsic remediation, landfill gas extraction system enhancement, groundwater extraction with ex-situ treatment, groundwater extraction with chemical oxidation, groundwater extraction with aboveground metal enhanced reductive dehalogenation technology. The EFS recommended landfill gas extraction system enhancement and bioenhancement to reduce VOCs in groundwater.

The Discharger completed significant landfill gas enhancements in 2009. In 2008, the Discharger constructed a bioremediation corrective action system pilot test and the Discharger's Bioremediation Pilot Study for Corrective Action, dated September 2009, concluded that bioremediation through injection of HRC was an effective method for creating a favorable reducing environment for the VOCs within the Southern Release. The Discharger continues to operate the pilot test bioremediation system, as it is centrally located in the Southern Release plume.

The Discharger submitted a Corrective Action Plan dated September 14, 2010 with revisions on October 22, 2010, April 27, 2012, and February 2013. The 2013

Corrective Action Plan describes the existing corrective actions including bioremediation, groundwater pump and treat, landfill gas extraction, and installation of the final cover system. The plan also outlines future corrective action implementation of tasks and goals. The goals for corrective action are as follows: initially stabilize and then decrease VOC concentrations in groundwater, followed by a reduction of the individual VOCs below MCLs, and finally reduce individual VOCs below measurable concentrations. The Corrective Action Plan further outlines the goals as measurable targets in the near term (18 months after closure construction is completed), short term (three years after closure construction is completed), intermediate (five years after closure construction is completed), and long term (ten years after closure construction is completed). If the measurable targets or goals within each release area are not met within the timeframe specified the Corrective Action Plan proposes additional corrective actions including landfill gas system evaluation/enhancement, additional groundwater extraction improvements, bioremediation system operation/expansion, and source control related to soil impacts near the former gas-to-energy facility. The Corrective Action Plan may be revised in 2013 to determine effects from closure construction and the investigation of the gas condensate soil impacts near the former gas-to-energy plant.

62. **Leachate Monitoring –** The Landfill's monitoring reports summarize leachate analytical results back to 2005. The Landfill's leachate contains elevated inorganic constituents and VOCs.

63. **Surface Water Monitoring –** The Landfill's monitoring reports summarize surface water monitoring results at Sedimentation Basin B (**Figure 3**). VOCs have been detected infrequently at very low or trace levels. Since 2007, acetone has been occasionally detected at trace levels with a single low level detection in 2011 and methylene chloride with a single trace level detection in 2008. Methylene chloride is a common laboratory contaminant, while acetone is commonly used to clean glassware in laboratories but can also be produced at low levels during biological decomposition, such as biologically active ponds with wildlife and algae.

64. **Stormwater Monitoring –** The Landfill is enrolled in the "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. The Discharger monitors and collects stormwater samples from sampling point SW-1 located downstream of Sediment Basin B (**Figure 3**).

65. **Unsaturated Zone Monitoring –** The current unsaturated zone monitoring system is limited to landfill gas and consists of the unsaturated zone gas probe monitoring locations (**Figure 3**).

66. **Landfill Gas Monitoring –** The current landfill soil-pore gas monitoring system consists of 14 sampling locations around the perimeter of the landfill property boundary (GW-2 and GW-8 through GW-20). In accordance with CCR Title 27, the

14 soil-pore gas monitoring wells are positioned on approximately 1,000 foot centers around the perimeter of the landfill to depths equivalent to the adjacent refuse, or to five to ten feet above groundwater.

Historically, with the exception GW-8 (along the northern property boundary), soil-pore gas monitoring around the perimeter of the waste had consistently documented elevated levels of methane and approximately 30 different VOCs. In 2002, the Discharger installed monitoring probes GW-9 through GW-13 to replace interior probes GW-1, GW-3, and GW-4. In 2003, the Discharger installed probes GW-14 through GW-17 to replace probes GW-5 through GW-7. In 2010, the Discharger installed GW-18, GW-19, and GW-20. The new perimeter well locations show reduced methane concentrations in the landfill gas perimeter monitoring system. However, the Landfill's groundwater impacts continue to be attributed in part to landfill gas. Monitoring and Reporting Program No. R3-2013-0016 (hereafter MRP Order No. R3-2013-0016) requires the Discharger to monitor and report methane concentrations within the former interior probes to evaluate and maintain corrective action landfill gas extraction performance.

67. MRP Order No. R3-2013-0016 requires the Discharger to monitor and report on landfill observations, rainfall data, leachate collection and reinjection, landfill gas collection and disposal, condensate collection and disposal, and groundwater extraction and treatment. MRP Order No. R3-2013-0016 establishes Landfill monitoring points for groundwater (background, detection, corrective action, residential supply, and piezometers), soil pore gas probes, groundwater treatment, landfill leachate, landfill gas, landfill gas condensate, surface water, stormwater, and conditional seep or spill sampling and analysis, monitoring frequency, monitoring parameters, constituents of concern, criteria for sample collection and analyses, methods for analyzing data both statistically and non-statistically, reporting requirements, minimum monitoring report content, and definition of terms. Order No. R3-2013-0016 allows the Executive Officer to revise Monitoring and Reporting Programs.

BASIN PLAN

68. The Water Quality Control Plan, Central Coast Basin (Basin Plan), was adopted by the Water Board on September 8, 1994, and approved by the State Water Board on November 17, 1994. The Basin Plan incorporates statewide plans and policies by reference and contains a strategy for protecting beneficial uses of State Waters. This Order implements the water quality objectives stated in the Basin Plan.

69. The Basin Plan identifies the following present and anticipated beneficial uses for surface waters downgradient of the Landfill discharge:

    a. Domestic and Municipal Supply

    b. Groundwater Recharge

c. Contact Water Recreation

d. Non-Contact Water Recreation

e. Wildlife Habitat

70. Observed groundwater use in the vicinity of the Landfill is agricultural and domestic water supply. The Basin Plan identifies the following beneficial uses of groundwater in the vicinity of the Landfill:

a. Domestic and Municipal Supply

b. Agricultural Supply

c. Industrial Supply

CALIFORNIA ENVIRONMENTAL QUALITY ACT

71. This Order is for an existing facility and therefore is exempt from provisions of the California Environmental Quality Act (Public Resources Code, §21000, and et seq.) in accordance with Title 14, Chapter 3, §15301.

72. Environmental impacts from the landfill were evaluated in a Regional Solid Waste Facilities Project, Environmental Impact Report (EIR), dated September 2002. The proposed project included a 30-foot vertical expansion, traffic, and tonnage increases. The required public comment period was extended from the 45-day minimum, to a total of 100 days. In addition to the required public comment period, the project was also discussed during monthly Salinas Valley Solid Waste Authority Board meetings. The Notice of Determination approving the project was completed in December of 2003. Subsequent to completion of the EIR, technical amendments were drafted and approved to allow for additional tonnage increases and clarification that a “leachate barrier” was not required to complete the 30-foot vertical expansion at landfill.

73. In 2009, an Initial Study/Mitigated Negative Declaration (IS/MND) was prepared for the Landfill Final Closure Project and associated 2009 CPCMP. The IS/MND was certified as adequate and in compliance with CEQA by the SVSWA Board on March 20, 2009. However, the Landfill’s 2009 CPCMP was subsequently updated in 2009 and 2010 to include construction of a final cover with an artificial turf upper protective layer (as opposed to vegetative cover soil originally proposed), addition of drainage structures for the lower sedimentation basin, installation of a leachate recirculation system, and installation of a solar-based power generation system. As a result, a 2010 IS/MND was completed and circulated on August 5, 2010, to address the changes to the Landfill Final Closure Project. The 2010 IS/MND was approved by the SVSWA Board on September 23, 2010 and the SVSWA filed a Notice of

Determination with the Monterey County Recorder's Office on September 27, 2010 that was posted for 30 days.

GENERAL FINDINGS

74. In accordance with California Water Code (CWC) §13263(g), no discharge into waters of the State, whether or not the discharge is made pursuant to waste discharge requirements, shall create a vested right to discharge. All discharges of waste into waters of the State are privileges, not rights. Authorization to discharge waste is conditioned upon the Discharger complying with provisions of CWC Division 7 and with any more stringent limitations necessary to implement the Basin Plan, to protect beneficial uses, and to prevent nuisance. Compliance with Order No. R3-2013-0016 should assure conditions are met and mitigate any potential changes in water quality attributed to the Landfill.

75. **Antidegradation:** State Water Board Resolution No. 68-16 Statement of Policy with Respect to Maintaining High Quality of Waters in California (Resolution No. 68-16) requires Water Boards, in regulating the discharge of waste, to maintain high quality waters of the State until it is demonstrated that any change in quality will be consistent with the maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in Water Board policies (e.g., quality that exceeds applicable water quality standards). Resolution No. 68-16 also states, in part:

    "*Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in best practicable treatment and control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained*."

76. The discharges regulated by this Order are required to comply with the land disposal regulations contained in CCR Title 27, which are intended to prevent discharges of waste to waters of the State, preventing degradation of waters of the State. The discharge is subject to waste discharge requirements, which will result in best practicable treatment or control.

77. The landfill operates under the following Orders and Permits:

    a. Waste Discharge Requirements Order No. R3-2007-0003.

    b. General Waiver of Waste Discharge Requirements for Specific Types of Discharges, Resolution No. R3-2008-0010 (treated groundwater, bioremediation)

c. National Pollutant Discharge Elimination System General Permit No. CAS000001, Waste Discharge Requirements For Discharges of Storm Water Associated With Industrial Activities Excluding Construction Activities (Water Quality Order No. 91-13 DWQ), revised 1997. The facility is handled under the State Water Resources Control Board's (SWRCB) General Permit No. 3 27S002274 for Storm Water Discharges Associated with Industrial Activities.

d. California Integrated Waste Management Board Solid Waste Facility Permit No. 27-AA-0007.

e. Monterey Bay Unified Air Pollution Control District Title V Operating Permit TV 53-01.

f. Monterey Bay Unified Air Pollution Control District permit to operate landfill gas collection & flare system 10364; contaminated groundwater treatment system 10544.

g. Monterey Regional Water Pollution Control Agency, Long Term Special Liquid Waste Discharge Permit.

78. On November 24, 2008, CalRecycle staff stated in a letter that the Discharger has demonstrated availability of financial resources to conduct closure and post-closure maintenance activities and that the Discharger provided an appropriate financial assurance instrument for corrective action for a reasonably foreseeable release at the Landfill. The financial instruments for closure, post-closure maintenance, and corrective action adjust annually for inflation.

79. On **March 4, 2013**, the Water Board notified the Discharger and interested agencies and persons of its intent to issue Waste Discharge Requirements for the Landfill, and has provided the opportunity to review a copy of the proposed Order and submit written views and comments.

80. After considering all comments pertaining to this discharge during a public hearing on **May 30, 2013**, Water Board staff found that this Order is consistent with the above Findings.

IT IS HEREBY ORDERED pursuant to authority in CWC §13263 and §13267, the SVSWA, its agents, successors, and assigns in maintaining the Landfill, shall comply with the following:

A. COMPLIANCE WITH OTHER REGULATIONS AND ORDERS

1. Discharge of waste, closure, post-closure maintenance, and long-term monitoring shall comply with all applicable requirements contained in CCR Title 27 and 40 CFR 258. If any applicable regulation requirements overlap or conflict in any manner, the

most water quality protective requirement shall govern in all cases, unless specifically stated otherwise in this Order, or as directed by the Executive Officer.

2. The Discharger shall comply with all requirements for corrective actions requiring discharge to groundwater (e.g., enrollment in General Waiver for Specific Types of Discharges such as treated groundwater injection of carbon).

3. The Discharger shall monitor potential releases from the landfill to stormwater runoff by complying with all requirements contained in the General Storm Water Permit for Industrial Activities.

B. PROHIBITIONS

1. Discharge of waste at the Landfill is prohibited except as provided in the Executive Officer-approved Final Closure and Post-Closure maintenance Plan for the Landfill.

2. Discharge of waste, leachate, or gas condensate to ponded water, stormwater runoff, or waters of the State, including groundwater, is prohibited.

C. SPECIFICATIONS

1. The Discharger shall ensure the Landfill remains closed and that it maintains the Landfill in conformance with the Water Board Executive Officer-approved Final Closure Plan, except where the plan conflicts with this Order. In the event of conflict, this Order shall govern in cases where it is more protective of water quality. The Executive Officer shall approve any changes to the closure plan that may affect compliance with this Order prior to the Discharger implementing any changes.

2. The Discharger throughout postclosure shall:

    a. Protect and maintain the structural integrity and effectiveness of all containment structures.

    b. Protect, maintain, and operate the LCRS and Landfill Gas Extraction Systems as long as leachate and landfill gas are generated or as approved by the Executive Officer.

    c. Protect and maintain all monitoring systems required by this Order.

    d. Protect and maintain surveyed monuments.

    e. Prevent erosion and related damage of the final cover due to drainage, wind, or from other sources.

3. The Discharger shall maintain the final cover containment systems as follows (described from bottom to top):

a. Closed Module I
    i. Two-foot thick minimum foundation of compact clean soil
    ii. HDPE Geomembrane
        a) Slopes < 10% – 60-mil smooth
        b) Slopes > 10% – 80-mil textured
    iii. Two-foot thick minimum vegetative cover soil.

b. Closed Module I Final Cover Extension
    i. One-foot thick minimum foundation of compact clean soil
    ii. 50-mil studded/spiked LLDPE geomembrane – "Super Gripnet"
    iii. HDPE artificial turf
    iv. Sand ballast – 0.44 inches (no more than 1.25 inches)

c. Equipment Parking Area
    i. Prepared subgrade
    ii. 6-inch minimum aggregate base
    iii. Geotextile fabric
    iv. 6-inch minimum low-permeability asphalt concrete

d. Closed Fill Area (North & West of Module I & Equipment Parking Area)
    i. One-foot thick minimum foundation of compact clean soil
    ii. 50-mil LLDPE geomembrane
        a) Topdeck – "Micro Spike"
        b) Slopes and Benches – "Super Gripnet"
    iii. HDPE artificial turf
    iv. Sand ballast (minimum thickness, no more than 1.25 inches)
        a) Roads/benches – 0.9 inches
        b) Topdeck – 0.5 inches
        c) Slopes – 0.44 inches
        d) Drainage chutes/channels – sand cement (full coverage, cracks acceptable if erosion resistance is maintained)

e. An engineered alternative design for Landfill final cover areas approved by the Executive Officer. Engineered alternative designs shall satisfy the performance criteria in 40 CFR Part 258, and satisfy the criteria for an engineered alternative to the prescriptive design, as provided by CCR Title 27.

4. The Discharger shall maintain grading and positive drainage of all Landfill surfaces to minimize precipitation/surface water from infiltrating into waste, to prevent ponding of water, and to resist erosion. For vegetative covers the Discharger shall repair erosion rills greater than six inches in depth, or when rills leave insufficient cover to prevent infiltration of precipitation/surface water. For sand ballast/artificial turf areas, the Discharger shall replace sand ballast if it erodes below the following thickness':

a. Roads and Benches – 0.9 inches

b. Topdeck – 0.5 inches

c. Slopes – 0.44 inches

5. The Discharger shall design, construct, and maintain to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, overtopping, and damage to all Landfill WMUs and disposal areas, containment structures, and drainage facilities resulting from natural disasters (e.g., floods with a predicted frequency of once in 100 years, the maximum probable earthquake, and severe wind storms).

6. The Discharger shall use best management practices to maintain the capacity of stormwater retention facilities and thereby reduce or prevent pollutants in stormwater from discharging into receiving waters to the best available technology standard. CCR Title 27 §20365 requires that the Discharger periodically a) remove accumulated sediment from the stormwater retention facilities and b) empty or otherwise manage the facilities to maintain their capacity.

7. Discharge of landfill leachate or landfill gas condensate shall comply with all of the following:

   a. The Discharger may only return liquids to a landfill waste management unit equipped with a containment system that meets or exceeds the performance standard of CCR Title 27, CFR 40 Part 258.40(a)(2), or the standard set in this Order, whichever is more protective of water quality;

   b. The Discharger shall measure liquids by volume and record the volume on a monthly basis. The Discharger shall include the monthly volume records in the monitoring submittals required in MRP Order No. R3-2013-0016;

   c. A secondary containment system sized to hold 100 percent of the primary containment system holding capacity; and,

   d. An approved alternate method of leachate and landfill gas condensate disposal (e.g., wastewater treatment plant, recirculation within lined WMUs, burned off in the flare) that is acceptable to the Executive Officer.

8. The Discharger shall not create a nuisance, as defined by CWC §13050(m).

9. The Discharger shall remove waste discharged in violation of this Order.

10. The Discharger shall prevent formation of a habitat for carriers of pathogenic microorganisms.

D. WATER QUALITY PROTECTION STANDARDS

1. Discharge of waste must not cause a condition of pollution or contamination to occur through a measurably significant release of pollutants and/or contaminants, or waste constituents, as indicated by the most appropriate statistical or non-statistical data analysis method and retest method listed in MRP Order No. R3-2013-0016.

2. Discharge of waste must not cause a statistically significant difference in water quality over background concentrations for proposed concentration limits for each constituent of concern or monitoring parameter (per MRP Order No. R3-2013-0016) at the point of compliance. The Discharger shall maintain concentration limits for as long as the waste poses a threat to water quality. Concentration limits and point of compliance are pursuant to the following:

    a. Pursuant to CCR Title 27 §20400, the Water Board shall specify concentration limits in waste discharge requirements. The Water Board complies with the intent of CCR Title 27 §20400 by requiring the Discharger to establish and review concentration limitations on an annual basis in accordance with MRP Order No. R3-2013-0016.

    b. Pursuant to CCR Title 27 §20405, the point of compliance is a vertical surface located at the hydraulically downgradient limit of a WMU that extends through the uppermost aquifer underlying the WMU.

3. Discharge of waste must not cause concentrations of chemicals and radionuclides in groundwater to exceed the State Department of Public Health's latest recommended Drinking Water Action Levels or Maximum Contaminant Levels of CCR Title 22, Division 4, Chapter 15, Article 5.5.

4. Discharge of waste must not cause a violation of any applicable water quality standard for receiving waters adopted by the Water Board or the State Water Board.

5. Discharge of waste must neither cause nor contribute to any surface water impacts including, but not limited to:

    a. Floating, suspended, or deposited macroscopic particulate matter or foam.

    b. Increases in bottom deposits or aquatic growth.

    c. An adverse change in temperature, turbidity, or apparent color beyond natural background levels.

    d. The creation or contribution of visible, floating, suspended, or oil, or other products of petroleum origin.

e. The introduction or increase in concentration of toxic or other pollutants/contaminants resulting in unreasonable impairment of the beneficial uses of State waters.

6. MRP Order No. R3-2013-0016 lists constituents of concern and monitoring parameters for groundwater, leachate, landfill gas condensate, and landfill gas. Monitoring points and background monitoring points must, at a minimum, be those specified in MRP Order No. R3-2013-0016.

E. PROVISIONS

1. Order No. R3-2007-0003 "Waste Discharge Requirements for the Crazy Horse Class III Landfill," adopted by the Water Board on February 9, 2007, is hereby rescinded.

2. The Landfill Post-Closure Maintenance Period and Compliance Period, pursuant to CCR Title 27 §20380(d)(1), §20410, §20950, and 40 CFR 258.61(a) is a minimum of 30 years and until waste discharged at the Landfill no longer poses a threat to water quality. The Landfill Post-Closure Maintenance Period start date shall correspond with the later of:

   a. The final closure construction completion date; or,

   b. The date the Executive Officer approves all documents, pursuant to CCR Title 27 [i.e., §20323 – Construction Quality Assurance Plan, §20324(a) – Construction Quality Assurance Performance Standards, §20324(d)(1)(C) – Final Documentation Report and §21760(a)(1) – As Built Plans].

3. The Discharger is responsible for waste containment, monitoring, and correcting any problems resulting from the discharge of waste for as long as the waste poses a threat to water quality.

4. The Discharger shall comply with MRP Order No. R3-2013-0016, as specified by the Executive Officer.

5. **By October 1 of each year**, the Discharger shall complete all necessary runoff drainage, diversion, and erosion prevention measures. The Discharger shall construct, maintain, or repair precipitation and drainage control facilities to prevent erosion or Landfill flooding and to prevent surface drainage from contacting or percolating through waste. The Discharger shall repair covers to maintain integrity and protective components (i.e., grading, vegetative cover erosion, rodent holes, artificial turf tears, sand ballast thickness). During the wet weather season (October 1 through April 15 of each year), the Discharger shall promptly (depending on weather forecasts, access, and safety) repair drainage control facilities or final cover damage that threatens waste containment, cover integrity, or percolation of water into waste.

6. **By October 1 of each year**, the Discharger shall seed and maintain vegetation over all vegetative final cover slopes to prevent erosion. The Discharger shall select vegetation that requires minimum irrigation and maintenance and a rooting depth of less than the vegetative layer thickness. After receiving approval from the Executive Officer, the Discharger may utilize non-hazardous sludge as a soil amendment to promote vegetation. Soil amendments and fertilizers (including wastewater sludge) used to establish vegetation shall not exceed the vegetation's agronomic rates (i.e., annual nutrient needs).

7. By **October 1, 2013**, the Discharger shall complete Landfill closure construction drainage and basin improvements in accordance with the current Executive Officer-approved closure plan or an Executive Officer-approved closure plan amendment in accordance with **Specification C.1**.

8. The Discharger shall conduct Final Cover Surveys pursuant to CCR Title 27 §21090(e)(1), upon completion of all closure activities (e.g., construction of the final cover), the Discharger shall conduct an aerial photographic survey. The Discharger shall use the data obtained from the survey to produce a topographic map of the site at a scale and contour interval sufficient to depict the as-closed topography, and to allow for the early identification of any differential settlement pursuant to §21090(e)(2). The map produced pursuant to this provision, shall act as a base line against which to measure the total settlement through time, of all portions of the final cover since the date the Discharger closed the landfill. Upon completion of the topographic map, the Discharger shall submit a copy to the Water Board and all other applicable agencies. Pursuant to Title 27 §21090(e)(2), the Discharger is required to produce and submit to the Water Board an iso-settlement map accurately depicting the estimated total change in elevation for the final cover, **at least every five years after** completion of the baseline map. In addition, **annually for five years** following completion of closure construction activities, the Discharger shall produce and submit an iso-settlement map for the area above and immediately surrounding the leachate recirculation gallery at an appropriate scale to document differential settlement and adequate drainage. The iso-settlement survey maps shall document landfill elevations, flow directions of drainages, the drainage control system, and containment structures. The Discharger may propose alternative survey techniques pursuant to CCR Title 27 §210909(e)(3), and implement the alternative upon approval by the Executive officer.

9. Should additional data become available through monitoring or investigation that indicates compliance with this Order is not adequately protective of water quality, the Water Board will review and revise this Order as appropriate.

10. If the Discharger or the Water Board determines, pursuant to CCR Title 27 §20420, that there is evidence of a release from any portion of the Landfill, the Discharger shall immediately implement the procedures outlined in CCR Title 27 §20380, §20385, §20430, and MRP Order No. R3-2013-0016.

11. The Water Board shall be allowed, at any time and without prior notification:

    a. Entry upon the Landfill area or where the Discharger keeps records under the conditions of this Order and MRP Order No. R3-2013-0016.

    b. Access to a copy of any records that the Discharger keeps under the conditions of this Order and MRP Order No. R3-2013-0016.

    c. To inspect any facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order and MRP Order No. R3-2013-0016.

    d. To photograph, sample, and monitor for the purpose of showing compliance with this Order.

12. After notice and opportunity for a hearing, the Water Board may terminate or modify this Order for cause, including, but not limited to:

    a. Violation of any term or condition contained in this Order.

    b. Obtaining this Order by misrepresentation, or by failure to disclose fully all relevant facts.

    c. A change in any condition or endangerment to human health or environment caused by the discharged waste.

    d. A material change in character, location, or volume of the discharged waste.

13. Prior to the Discharger's repair of the low permeability component of the final cover, a third party (e.g., unrelated to the Discharger, Landfill operator, project designer, contractor) shall prepare a Construction Quality Assurance (CQA) Plan. The Executive Officer shall approve the CQA Plan prior to the start of construction activities. The third party shall implement the CQA Plan and provide regular construction progress reports to the Executive Officer.

14. If the low permeability layer is exposed during the repair of artificial turf or vegetative cover soils, the Discharger shall utilize a spotter dedicated to preventing and documenting any damage to the low permeability layer.

15. The Discharger shall obtain and maintain Financial Assurance Instruments (Instruments), which comply with CCR Title 27 (§22212 [Post Closure Fund], and §22220 et seq. [Corrective Action Fund]), and 40 CFR part 258. Pursuant to CCR Title 27 §20380(b), the Discharger shall obtain and maintain assurances of financial responsibility, naming the Water Board as beneficiary, for initiating and completing corrective action for all known or reasonably foreseeable releases. As Landfill conditions change, and upon the Executive Officer's request, the Discharger shall

submit a report proposing the amount of financial assurance necessary for corrective action for the Executive Officer's review and approval.

16. The Discharger shall take all reasonable steps to minimize or correct adverse impacts on the environment resulting from non-compliance with this Order.

REPORTING

17. The Discharger shall sign all reports as follows:

    a. Either a principal executive officer or ranking elected official.

    b. Their “duly authorized representative.”

    c. A California Registered Civil Engineer or Certified Engineering Geologist for all engineering reports and geologic reports, respectively.

18. Any person signing a report makes the following certification, whether its expressed or implied:

    "I certify under penalty of perjury I have personally examined and am familiar with the information submitted in this document and all attachments and, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of a fine and imprisonment."

19. Except for data deemed confidential under CWC §13267(b)(2), all reports prepared in accordance with this Order shall be available for public inspection at the Water Board office.

20. The Discharger shall submit reports in advance of any planned changes to the permitted closed Landfill, including but not limited to, land use or activities, which could potentially or actually result in non-compliance. Advance submittal should reflect the relative need for Water Board staff review and concurrence

21. By **October 1** of each year, the Discharger shall submit a Wet Weather Preparedness Report (WWPR). The WWPR shall describe compliance with **Provisions E.5** and **E.6** above, and include the most recent Final Cover and Leachate Recirculation Area Survey Map as required by **Provision E.8**. The report shall also detail preparedness actions taken to ensure discharges to surface water or groundwater do not occur during the impending rainy season, and ensure compliance with all other relevant CCR Title 27 and 40 CFR Part 258 standards.

22. Within **180-days** upon completion of Landfill closure construction, the Discharger shall submit a final construction closure report detailing all relevant information

pertaining to the Landfill closure including but not limited to final as-built drawings, construction modifications, final cover survey baseline map, start up and testing of the leachate and condensate recirculation system, and surface water runoff drainage controls.

23. Within **3-, 5-, and 10-years** upon completion of Landfill closure construction, the Discharger shall submit Corrective Action Progress Reports regarding short, intermediate, and long term corrective action goals specified in the Discharger's February 2013 Corrective Action Plan. The Corrective Action Progress Reports shall evaluate groundwater monitoring results in comparison to the appropriate corrective action goal, project future groundwater chemistry trends to assess whether goal attainment is realistic, and project the anticipated time frame to reach established goals. If monitoring data indicates that corrective action goals are not likely to be met, the Discharger shall evaluate existing corrective actions and propose changes or enhancements to corrective actions in the Corrective Action Progress Report.

24. The Discharger shall notify the Water Board with a written request of any proposed change in ownership or responsibility for construction or operation of the Landfill in accordance with CCR Title 27 §21710(c)(1). The written request shall be given at least **90-days** prior to the effective date of change in ownership or responsibility and shall:

    a. Be accompanied by an amended JTD and any technical documents that are needed to demonstrate continued compliance with these Waste Discharge Requirements.

    b. Contain the requesting entity's full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Water Board.

    c. Contain a statement indicating that the new Owner or Operator assumes full responsibility for compliance with this Order.

25. The Executive Officer, in writing, may approve or disapprove the Discharger's request for change in ownership or responsibility for the Landfill. In the event of any change in ownership, the Discharger shall notify the succeeding Owner or Operator, in writing, of the existence of this Order. The Discharger shall send a copy of that notification to the Executive Officer within **14-days** of the Discharger sending the notice to the new Owner or Operator.

26. The Discharger shall furnish, within a reasonable time, any information the Executive Officer may request to determine compliance with this Order or to determine whether cause exists for modifying or terminating this Order.

27. The Discharger or persons employed by the Discharger shall comply with all notice and reporting requirements of the State Department of Water Resources, Monterey

County, and other applicable permitting agencies with concurrence of the Executive Officer regarding the permitting, construction, alteration, inactivation, destruction, or abandonment of all monitoring wells used for compliance with this Order or with MRP Order No. R3-2013-0016, as required by CWC §13750.5 through §13755 and §13267.

28. Should the Discharger discover that it failed to submit any relevant facts or that it submitted incorrect information, it shall promptly submit the missing or corrected information.

29. The Discharger shall notify the Executive Officer, within **24 hours** by telephone, or email, and within **14 days** in writing, of:

    a. Any non-compliance that potentially or actually endangers health or the environment.

    b. Any flooding, equipment failure, slope failure, or other change in Landfill conditions which could impair the integrity of waste containment facilities or of precipitation and drainage control structures.

    c. Leachate or condensate seep(s) or spills occurring on or in proximity to the Landfill.

    d. Violation of a discharge prohibition.

    e. Violation of any treatment system's discharge limitation.

30. The Discharger shall submit reports of compliance or non-compliance with, or any progress reports on, final requirements contained in any compliance schedule within **14 days** following each scheduled date. If reporting non-compliance, the report shall include a description of:

    a. The reason for non-compliance.

    b. A description of the non-compliance.

    c. Schedule of tasks necessary to achieve compliance.

    d. An estimated date for achieving full compliance.

31. The Discharger shall promptly correct any non-compliance issue that threatens the Landfill's containment integrity. Correction schedules are subject to the approval of the Executive Officer, except when delays will threaten the environment and/or the Landfill's integrity (i.e., emergency corrective measures). For emergency corrective measures, the Discharger shall report details of the corrections in writing within **seven days** of initiating correction.

32. By **January 31 of every year**, the Discharger shall submit an Annual Summary Report to the Executive Officer addressing compliance with all terms of this Order (see MRP Order No. R3-2013-0016 **Part IV.B.1**).

33. The Discharger shall demonstrate to the Water Board compliance with all financial instruments pursuant to **Provision E.15**. The Discharger shall submit a Financial Assurance Report at a minimum of every five years that either validates the instrument's (described in Finding 78 of this Order) ongoing viability, or proposes and substantiates any needed changes. The next Financial Assurance Report is due **July 31, 2013** and every five years thereafter.

34. By **December 31, 2013**, the Landfill Owner shall record a notation on the deed to the Landfill property, or some other instrument that a potential purchaser normally examines during title search. The deed notation shall include a detailed description of the closed Landfill, including a map. The description shall include at a minimum:

    a. The date Landfill closure was completed;

    b. The Landfill boundaries including height and depths of the filled area;

    c. The boundaries of each waste management unit; and,

    d. The location for obtaining the closure and post-closure plans.

    The Owner shall include a copy of the notation in the Landfill record and the Owner shall submit a copy of the recorded notation to the Water Board Executive Officer within **14 days** following the recording. The notation shall in perpetuity notify any potential purchaser of the property that:

    a. The land was used as a Landfill.

    b. The land use is restricted by the approved post-closure maintenance plan, pursuant to CCR Title 27 §21170 (the deed notation shall include all information required by §21170).

    c. Pursuant to CCR Title 27 §21090, should the Discharger default in post-closure care, liability shifts to the new Owner/Operator.

35. By **May 31, 2018**, the Discharger shall submit an updated Joint Technical Document (JTD) pursuant to CCR Title 27 §21710. The Discharger may submit an addendum to the JTD, in accordance with CCR Title 27 §21585 et al., and meet the following criteria:

    a. Updated information on waste characteristics, geologic, and climatologic characteristics of the Landfill and the surrounding region, installed features,

precipitation and drainage controls, and closure and post closure maintenance plans, in accordance with CCR Title 27 §21740, §21750, §21760, and §21769.

b. Include a completed State Water Board JTD Index, in accordance with CCR Title 27 §21585(b).

c. Discuss whether, in the Discharger's opinion, there is any portion of this Order that is incorrect, obsolete, or otherwise in need of revision.

d. Include any other technical documents needed to demonstrate continued compliance with this Order and all pertinent State and Federal requirements.

e. Include detailed updated information regarding regulatory considerations, operating provisions, environmental monitoring and control features, and post-closure status.

36. The Discharger shall file with the Water Board a JTD pursuant to **Provision E.35** of this Order, or secure a waiver from the Executive Officer at least **120 days** before making any material change to the closed Landfill.

ENFORCEMENT

37. The Discharger shall comply with all conditions of this Order. Non-compliance violates State law and is grounds for enforcement action or modification of the Order.

38. Any person failing or refusing to furnish technical or monitoring program reports as required by subdivision (b) of CWC §13267, or falsifying any information provided therein, is guilty of a misdemeanor.

39. The Discharger and any person who violates Waste Discharge Requirements and/or who intentionally or negligently discharges waste or causes or permits waste discharges into surface waters or groundwater of the State may be liable for civil and/or criminal remedies, as appropriate, pursuant to CWC §13350, §13385, and §13387.

40. Provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order will not be affected.

41. This Order does not authorize commission of any act causing injury to the property of another, does not convey any property rights of any sort, does not remove liability under Federal, State, or Local laws, and does not guarantee a capacity right.

42. The Water Board requires all technical and monitoring reports pursuant to this Order in accordance with CWC §13267. Failure to submit reports in accordance with schedules established by this Order, attachments to this Order, or failure to submit a

report of sufficient technical quality acceptable to the Executive Officer, may subject the Discharger to enforcement action pursuant to CWC §13268.

43. The Discharger shall comply with all conditions of these Waste Discharge Requirements. Violations may result in enforcement actions, including Water Board orders or court orders requiring corrective action or imposing civil monetary liability, or in modification or revocation of these waste discharge requirements by the Water Board. (CWC §13261, §13267, §13263, §13265, §13268, §13300, §13301, §13304, §13340, and §13350).

44. No provision or requirement of Order No. R3-2013-0016 or MRP Order No. R3-2013-0016 is a limit on the Discharger's responsibility to comply with other Federal, State and local laws, regulations, or ordinances.

45. The Discharger shall comply with the following submittal and implementation schedule for all tasks and/or reports required by this Order.

TASK AND REPORT IMPLEMENTATION AND DATE DUE SUMMARY

TASK	IMPLEMENTATION DATE
Provision E.5: Runoff, drainage, diversion, and erosion prevention	October 1, of each year
Provision E.6: Seed and maintain vegetation	October 1, of each year
Provision E.7: Complete Landfill closure construction	October 1, 2013
Provision E.8: Final Cover Surveys	Completion of final cover survey; and every five years thereafter
Provision E.8: Leachate Recirculation Area Survey	Annually for five years following completion of closure construction
Provision E.34: Record notation to Landfill property deed	December 31, 2013
NOTIFICATIONS/REPORTS	**DUE DATE**
Provision E.21: Wet Weather Preparedness Report	October 1, of each year
Provision E.22: Final Construction Closure Report	Within 180-days after completion of closure construction
Provision E.23: Corrective Action Progress Reports	Within 3,5, 10-years after completion of closure construction
Provision E.24: Notice of change in ownership or responsibility	At least 90-days prior to the effective date of change
Provision E.25: Notice of ownership transfer	Within 14-days of notice to new Owner or Operator
Provision E.29: Notice of non-compliance	Within 24-hours verbally and within 14-days in writing
Provision E.30: Compliance and/or non-compliance	Within 14 days following each scheduled date
Provision E.31: Emergency corrective measures	Within 7-days of initiating corrections
Provision E.32: Annual Summary Report	January 31, of each year
Provision E.33: Financial Assurance Report	July 31, 2013; every five years thereafter
Provision E.34: Submit copy of recorded notation to deed	Within 14-days of recording the notation
Provision E.35: JTD	May 31, 2016
Provision E.36: JTD or request for waiver	At least 120-days prior to implementing changes

I, Kenneth A. Harris Jr., Interim Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Coast Region, on May 30, 2013.

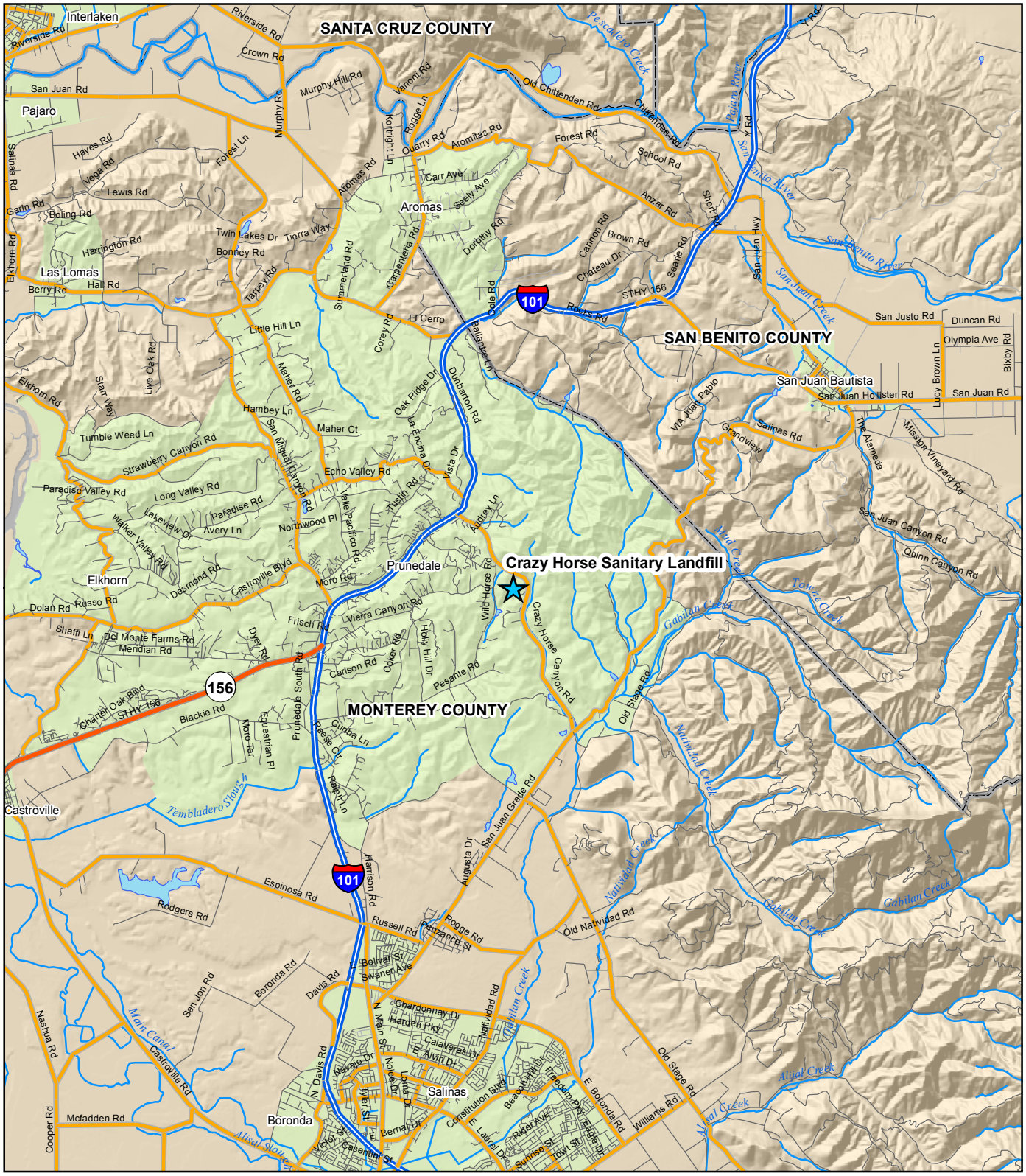
_____
Executive Officer

Figures:

- Figure 1 – Landfill Location Map
- Figure 2 – Landfill Facilities Map
- Figure 3 – Monitoring Points and Treatment Systems Location Map
- Figure 4 – Aromas Sand and Alluvial Aquifers Potentiometric Surface Map
- Figure 5 – Purisma Formation Potentiometric Aquifer Surface Map
- Figure 6 – Aromas Sand Aquifer Approximate Total VOCs Map
- Figure 7 – Landfill Leachate Control System
- Figure 8 – Landfill Gas Control and Monitoring Systems

Attachment 1 – Monitoring and Reporting Program Order No. R3-2013-0016

S:\Land Disposal\Land Disposal Facilities\PERMITTED SITES\Crazy Horse\R3-2013-0016\Draft Order\WDR Order No R3-2013-0016_final, proposed for BM.docx

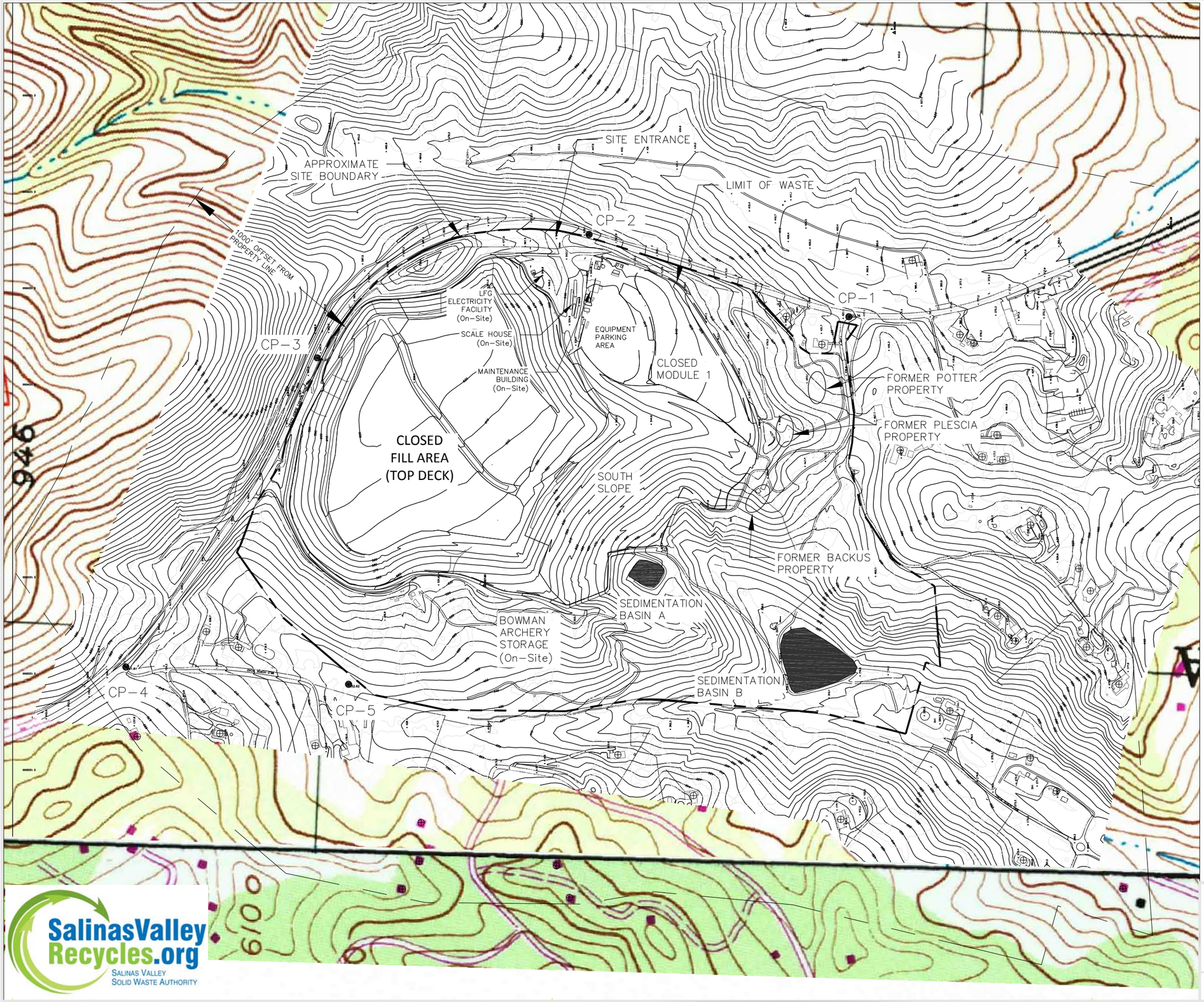


This figure was originally produced in color. Reproduction in black and white may result in a loss of information.

FIGURE 1
LANDFILL LOCATION MAP
WDR Order R3-2013-0016

07397182 | 07397182-F1.mxd | MOD: 08/19/08 | JDR

Golder Associates



LEGEND

- EXISTING SURVEY CONTROL POINT
- ENCLOSED RESIDENTIAL STRUCTURES WITHIN 1000' OF SITE PROPERTY BOUNDARY
- LIMIT OF IN-PLACE WASTE
- PROPERTY BOUNDARY
- APPROXIMATE LOCATION OF FORMER RESIDENTIAL PROPERTIES

CRAZY HORSE SURVEY CONTROL POINT DATA

DESC.	NORTH	EAST	ELEV.
CP1	543,711.01	1,234,344.52	422.36
CP2	545,065.51	1,234,771.92	534.02
CP3	546,470.301	1,234,132.00	581.20
CP4	547,462.33	1,232,527.41	541.81
CP5	546,307.29	1,232,437.28	452.62

NOTES

1. TOPOGRAPHIC CONTOURS ARE A COMPOSITE OF THE 2012 AERIAL TOPOGRAPHIC MAP (08/27/12) AND SUBSEQUENT GROUND SURVEYS.

150 0 150 300
SCALE FEET

SalinasValleyRecycles.org
SALINAS VALLEY SOLID WASTE AUTHORITY

TITLE

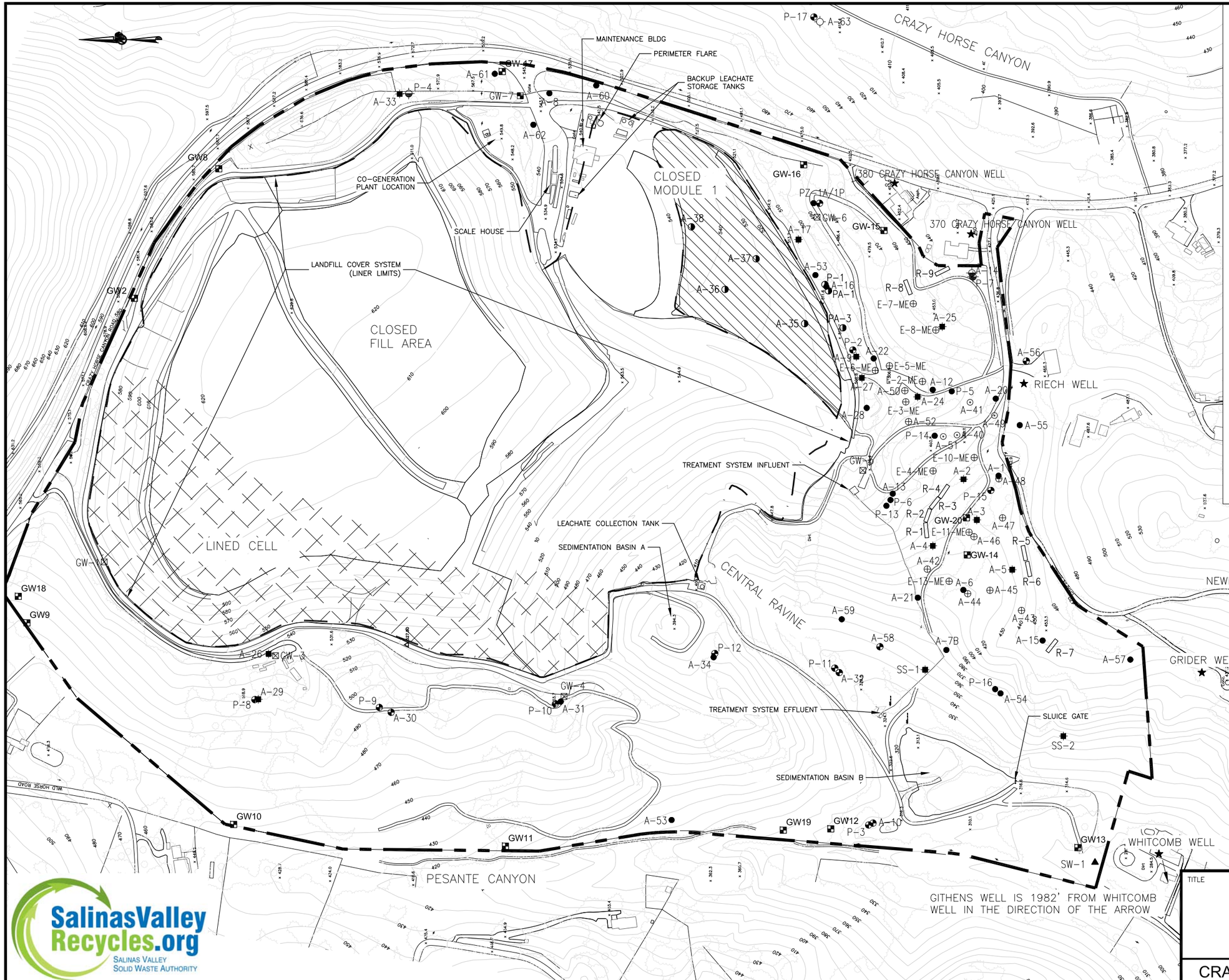
FIGURE 2

LANDFILL FACILITIES MAP

WDR ORDER R3-2013-0016

CRAZY HORSE LANDFILL

DATE APRIL 26, 2013



LEGEND

- BACKGROUND GROUNDWATER MONITORING WELL
- DETECTION GROUNDWATER MONITORING WELL
- CORRECTIVE ACTION GROUNDWATER MONITORING WELL
- RESIDENTIAL SUPPLY WELL
- PIEZOMETER
- PERIMETER SOIL PORE GAS PROBE
- INTERIOR SOIL PORE GAS PROBE
- GROUNDWATER TREATMENT INFLUENT / EFFLUENT
- STORMWATER
- EVALUATION MONITORING WELL
- ABANDONED EXTRACTION WELL
- RECHARGE GALLERY
- ABANDONED WELL
- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE LIMIT OF REFUSE

NOTES

1. TOPOGRAPHIC CONTOURS ARE A COMPOSITE OF THE 2012 AERIAL TOPOGRAPHIC MAP (08/27/12) AND SUBSEQUENT GROUND SURVEYS.

150 0 150 300
SCALE FEET

SalinasValleyRecycles.org
Salinas Valley Solid Waste Authority

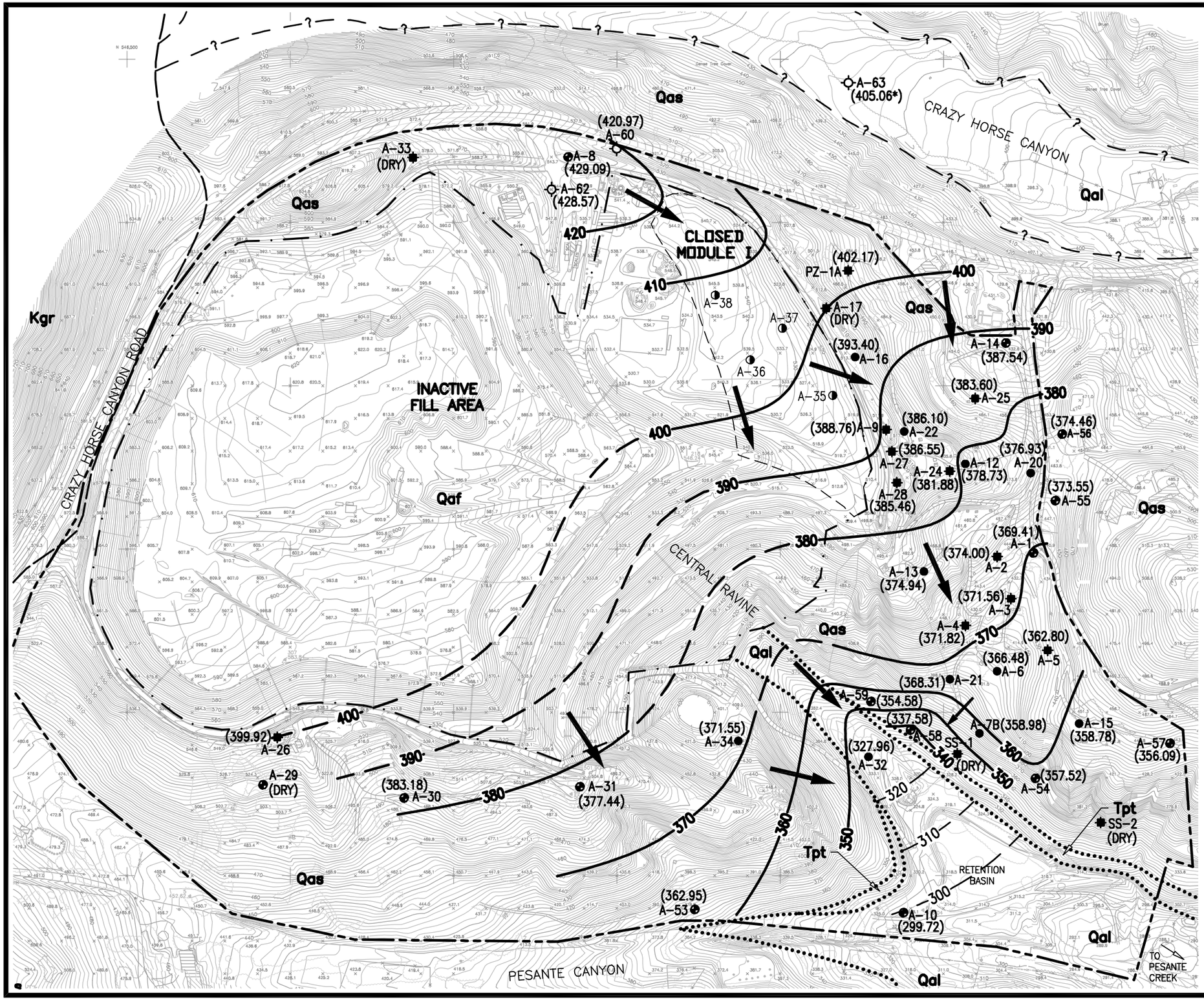
TITLE

FIGURE 3
MONITORING POINTS AND TREATMENT SYSTEMS MAP

WDR ORDER R3-2013-0016

CRAZY HORSE LANDFILL

DATE APRIL 26, 2013



EXPLANATION:

- EVALUATION MONITORING PROGRAM (EMP) MONITORING WELL
- CORRECTIVE ACTION PROGRAM (CAP) MONITORING WELL
- DETECTION MONITORING PROGRAM (DMP) MONITORING WELL
- PIEZOMETER
- ABANDONED WELL
- (373.35) JULY 16, 2012 GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (FAMSL)
- * DATA NOT USED TO CONSTRUCT CONTOURS
- 400 LINE OF EQUAL GROUNDWATER ELEVATION OF AROMAS SAND AQUIFER IN FAMSL; DASHED WHERE INFERRED
- 310 LINE OF EQUAL GROUNDWATER ELEVATION OF ALLUVIAL AQUIFER IN FAMSL; DASHED WHERE INFERRED
- DIRECTION OF GROUNDWATER FLOW
- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE LIMIT OF REFUSE

GEOLOGY (FROM GEOMATRIX, 2004):

Qaf	REFUSE FILL	QUATERNARY
Qal	ALLUVIUM AND COLLUVIUM	QUATERNARY
Qas	AROMAS SAND	QUATERNARY
Tpt	TRANSITION ZONE OF THE PURISIMA FORMATION	TERTIARY

- APPROXIMATE GEOLOGIC CONTACT, DOTTED WHERE CONCEALED, QUIRIED WHERE UNCERTAIN

AVERAGE HYDRAULIC CONDUCTIVITY OF THE AROMAS SAND = 4.72E-5 cm/sec

AVERAGE SEEPAGE VELOCITY OF THE AROMAS SAND = 0.05 ft/day

BASE MAP (AS OF 3/02/07) PROVIDED BY SVSWA

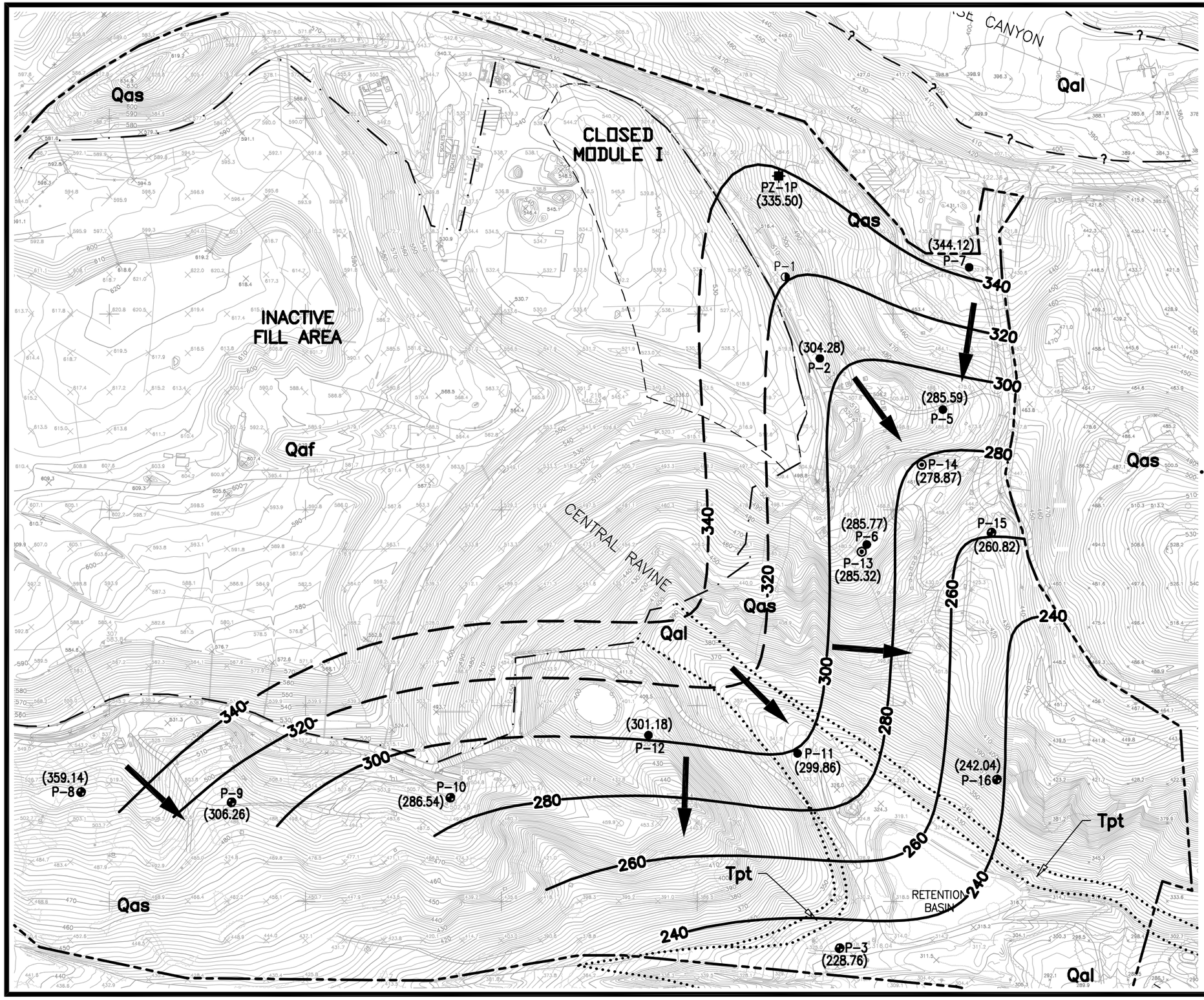
GRAPHIC SCALE
150 0 75 150 300
(in feet)
1 inch = 300 ft.

FIGURE 4
AROMAS SAND AND ALLUVIAL AQUIFERS POTENTIOMETRIC SURFACE MAP
WDR Order R3-2013-0016

2ND SEMIANNUAL
2012 WATER QUALITY MONITORING REPORT

Geo-Logic Associates
Geologists, Hydrogeologists, and Engineers

DRAWN BY:	DATE:	JOB NO.
VL	JANUARY 2013	2011-002



EXPLANATION:

- ● CORRECTIVE ACTION PROGRAM (CAP) MONITORING WELL
- ⊕ DETECTION MONITORING PROGRAM (DMP) MONITORING WELL
- ⊙ DUAL – CAP AND EXTRACTION WELL
- ✱ EMP PIEZOMETER
- ◑ ABANDONED WELL
- (285.59) JULY 16, 2012 GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (FAMSL)
- 300 LINE OF EQUAL GROUNDWATER ELEVATION IN FAMSL; DASHED WHERE INFERRED
- DIRECTION OF GROUNDWATER FLOW
- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE LIMIT OF REFUSE

GEOLOGY (FROM GEOMATRIX, 2004):

Qaf	REFUSE FILL	QUATERNARY
Qal	ALLUVIUM AND COLLUVIUM	
Qas	AROMAS SAND	
Tpt	TRANSITION ZONE OF THE PURISIMA FORMATION	TERTIARY

? APPROXIMATE GEOLOGIC CONTACT, DOTTED WHERE CONCEALED, QUIRIED WHERE UNCERTAIN

AVERAGE HYDRAULIC CONDUCTIVITY OF THE PURISIMA FORMATION = 9.45E-7 cm/sec

AVERAGE SEEPAGE VELOCITY OF THE PURISIMA FORMATION = 0.001 ft/day

BASE MAP (AS OF 3/02/07) PROVIDED BY SVSWA

N

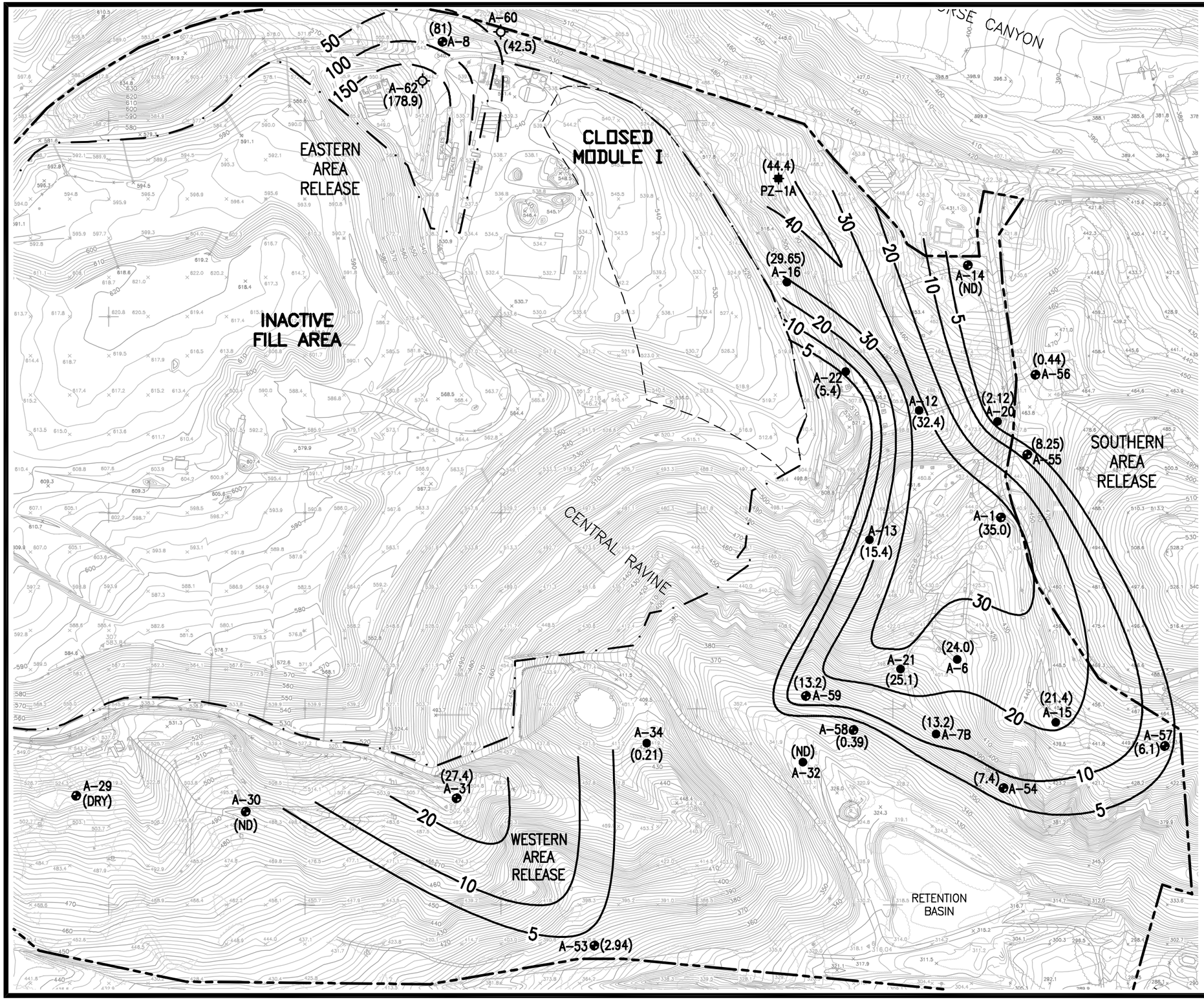
GRAPHIC SCALE
125 0 62.5 125 250
(in feet)
1 inch = 250 ft.

FIGURE 5
PURISMA FORMATION AQUIFER POTENTIOMETRIC SURFACE MAP
WDR Order R3-2013-0016

2ND SEMIANNUAL
2012 WATER QUALITY MONITORING REPORT

Geo-Logic Associates
Geologists, Hydrogeologists, and Engineers

DRAWN BY:	DATE:	JOB NO.
VL	JANUARY 2013	2011-002



EXPLANATION:

- EVALUATION MONITORING PROGRAM (EMP) MONITORING WELL
- CORRECTIVE ACTION PROGRAM (CAP) MONITORING WELL
- DETECTION MONITORING PROGRAM (DMP) MONITORING WELL
- PIEZOMETER
- (35.0) JULY 2012 TOTAL VOLATILE ORGANIC COMPOUNDS (VOC) CONCENTRATION IN MICROGRAMS PER LITER ($\mu g/L$)
- (ND) NOT DETECTED
- 20 LINE OF EQUAL TOTAL VOC CONCENTRATION IN $\mu g/L$; DASHED WHERE INFERRED
- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE LIMIT OF REFUSE

BASE MAP (AS OF 3/02/07) PROVIDED BY SVSWA

N

GRAPHIC SCALE

125 0 62.5 125 250

(in feet)

1 inch = 250 ft.

FIGURE 6

AROMAS SAND AQUIFER
APPROXIMATE TOTAL VOCS MAP

WDR Order R3-2013-0016

2ND SEMIANNUAL
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LEACHATE EVAPORATION UNIT (OFF-LINE)

LFGTE PLANT LOCATION

BACKUP LEACHATE STORAGE TANKS

GW-6

LIMIT OF BASE LINER

LCRS LATERAL DRAIN

ESTIMATED LEACHATE RECIRCULATION FOOTPRINT

MAIN LCRS COLLECTION LINE

BACKUP GALLERY

RECIRCULATION GALLERY FORCE MAIN (2" SDR 9 HDPE)

PRIMARY GALLERY

LR-1 LR-2 LR-3 LR-4 LR-5 LR-6 LR-7 LR-8 LR-9 LR-10 LR-11 LR-12

GW-1 GW-3 GW-4

LCRS CLEANOUT RISER PIPE

LCRS CLEAN-OUTS (CONNECTED TO LFG PERIMETER HEADER)

EXISTING LOWER LEACHATE HOLDING TANK (5,000 GA) AND PUMP STATION

CRAZY HORSE CANYON ROAD

Gate

Dirt

LEGEND

- LIMIT OF WASTE
- LIMIT OF FINAL COVER
- EXISTING GRADE CONTOURS
- LIMIT OF BASE LINER
- LEACHATE COLLECTION LAYER LATERAL PIPING
- BASE LINER LCRS CLEAN-OUT

NOTES

1. TOPOGRAPHIC CONTOURS ARE A COMPOSITE OF THE 2007 AERIAL TOPOGRAPHIC MAP (08/27/12) AND SUBSEQUENT GROUND SURVEYS.

100 0 100 200
SCALE FEET

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FIGURE 7
LANDFILL LEACHATE CONTROL SYSTEM

WDR ORDER R3-2013-0016

CRAZY HORSE LANDFILL

DATE APRIL 26, 2013

EXISTING LANDFILL GAS ENCLOSED GROUND FLARES (29 MMBTu/HR) 72 MMBTu/HR)

LFGTE PLANT AREA

CLOSED MODULE 1

LCRS CLEAN-OUTS (CONNECTED TO LFG PERIMETER HEADER)

LEGEND

- LIMIT OF PROPERTY
- LFG COLLECTION HEADER
- LFG LATERAL PIPING
- 04-29 EXISTING LFG EXTRACTION WELL
- PERIMTER HEADER SHUT-OFF VALVE
- LFG CONDENSATE SUMP
- GW-14 LFG PERIMETER MONITORING PROBE
- GW-3 LFG INTERIOR MONITORING PROBE
- LCRS CLEAN-OUT

NOTES

1. TOPOGRAPHIC CONTOURS ARE A COMPOSITE OF THE 2012 AERIAL TOPOGRAPHIC MAP (08/27/12) AND SUBSEQUENT GROUND SURVEYS.

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TITLE

FIGURE 8
LANDFILL GAS CONTROL AND MONITORING SYSTEMS

WDR ORDER R3-2013-0016

CRAZY HORSE LANDFILL

DATE APRIL 26, 2013