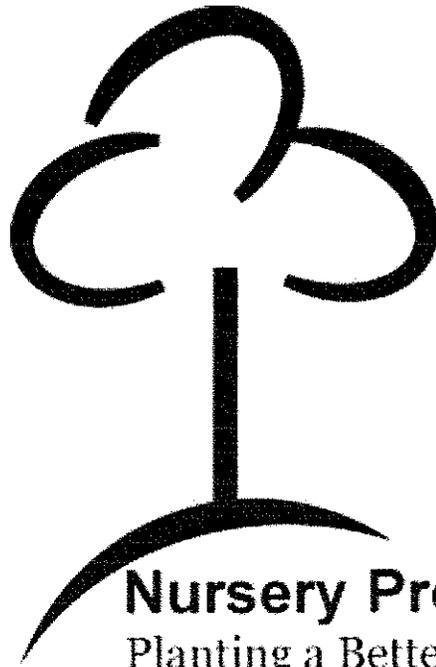


NURSERY PRODUCTS HAWES COMPOSTING FACILITY



Preliminary Closure & Post-Closure Maintenance Plan

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INTRODUCTION

1.1 Terms of Reference

This is the Preliminary Closure and Post-Closure Maintenance Plan (PCPCMP) for the two surface impoundments and one waste pile at the Nursery Products Hawes Composting Facility in San Bernardino County California.

1.2 Overview and Purpose

This document was prepared for Nursery Products in support of the Report of Waste Discharge for the Nursery Products Hawes Composting Facility. With this PCPCMP, Nursery Products provides a plan to close the two surface impoundments (retention ponds) and one waste pile (compost pad) in accordance with California Code of regulations Title 27, Section 21400 & 21410 requirements.

2. FACILITY OVERVIEW

2.1 Project Description

The facility is a biosolids and green material composting facility located on approximately 80 acres of a 160-acre parcel located within an unincorporated area of San Bernardino County. The facility will compost biosolids and green material to produce agricultural grade compost in compliance with U.S. Environmental Protection Agency (EPA) Code of Federal Regulations (CFR), Title 40, Chapter 1, Part 503 and Title 14 of the California Code of Regulations (CCR).

There are two surface impoundments (retention ponds) located on the northern end of the facility that collect storm water. The surface impoundments are designed to collect all storm water from the 100-year, 24-hour storm event over the entire facility and the 1,000-year, 24-hour storm event that falls directly on the surface impoundments.

The waste pile (compost pad) is located beneath the composting process and consists of prepared subgrade of no less than 12 inches of engineered native material. The engineered pad will be sloped to prevent ponding such that all storm water will flow to the surface impoundments.

2.2 General Settings/Site Location

The site is located west of Barstow, approximately 10 miles west of Hinkley Road, and 12.3 miles east of Kramer Junction, one mile south of State Route (SR) 58, and one mile west of Helendale Road. The site is located on land owned by Nursery Products, LLC, about 0.5 miles southeast of an abandoned World War II training airfield known as Hawes Field. The site is not pristine and is currently sparsely vegetated.

The Assessor's Parcel Number for the site is 0492-021-24-0000, and the site is the southeast quarter of Section 36 in Township 10N, Range 5W, San Bernardino Base and Meridian. The approximate latitude and longitude of site are 34 degrees 54.7 minutes and -117 degrees 21.0 minutes, respectively.

2.3 Site Topography

The topography is relatively level; elevations at the site range from about 2,310 to 2,335 feet above Mean Sea Level (MSL) across approximately 2,500 feet. Surface water currently drains to the north at the site.

2.4 Regional Geology

The site is located in the central portion of the Mojave Desert Geomorphic Province. This area is characterized by broad expanses of desert with localized mountains and dry lakebeds. The province is bounded by the San Bernardino Mountains and the Pinto fault to the south, the San Andreas fault to the west, the Garlock fault to the north and the Basin and Ranges Province to the east.

The broad valleys and plain areas within the Mojave Desert are underlain by alluvial deposits shed from the adjacent mountains or deposited by the ancestral Mojave River. The mountains are comprised of Mesozoic-age crystalline rock with areas of younger volcanic intrusive rocks. Tertiary-age volcanic rocks are present as are more recent Pleistocene-age and Holocene-age volcanic rocks. The nearest areas of topographic relief are the Kramer Hills to the west and Iron Mountain to the south. Both of these areas are underlain by crystalline rocks, including granitic and metamorphic rock types.

2.5 Site Geology

The site is located within a broad alluvial valley comprised of older, Pleistocene-age alluvial deposits. Younger, Holocene-age alluvial deposits are present as minor deposits in the lesser drainage areas. The site is underlain primarily by the older alluvial deposits. The alluvium encountered in the geotechnical borings was typically medium dense to dense and consisted of silty sand with gravel, and poorly graded sand with silt and gravel and clayey sand. Layers of poorly graded sand, and lean clay were also encountered (URS 2009).

2.6 Site Hydrogeology

The rate of precipitation infiltration is dependent on the nature of the soil. As mapped by the United States Department of Agriculture, Soil Conservation Service (San Bernardino County Hydrology Manual 1986), the site is located within the area designated as Group C. Group C soils have slow infiltration rates when thoroughly wet, slow rates of water transmission, and consist largely of silty loams with a nearly impervious layer, or soils with moderately fine to fine texture.

The site is underlain by deposits of alluvium. Based on the logs of the borings performed at the site, the alluvium typically consists of silty sand with gravel to poorly graded sand with silt and gravel (Unified Soil Classification System [USCS] classification SM to SP-SM) with lenses of lean to fat clay. At depth, clayey sand (USCS Classification SC) was encountered in Boring B-13. Published values of hydraulic conductivity for the near surface silty sand with gravel to poorly graded sand with silt range from 10^{-2} to 10^{-5} centimeters per second (cm/sec) (Holtz and Kovacs 1981). Two soil samples obtained from the site near surface and recompacted to 90 percent relative compaction were tested in the laboratory for hydraulic conductivity. The test results indicate a hydraulic conductivity on the order of 10^{-3} cm/sec. Lenses of lean clay were also observed (USCS classification CL). At depth, Boring B-13 encountered clayey sand. Clayey materials are anticipated to have hydraulic conductivities on the order of or less than 10^{-7} cm/sec. The geotechnical information collected at the site is presented in Appendix A (URS 2009).

Capillary rise is a function of the effective pore diameter between soil particles. The effective pore diameter of a soil can be roughly correlated to D_{10} , the grain size in millimeters that corresponds to 10 percent of the sample passing by weight. Typical values of capillary rise are also published based on soil type. Published values of capillary rise for the silty sand with gravel to poorly graded sand with silt and gravel alluvial materials at the site range between 0 and 40 feet and values in clayey materials are greater than or equal to 40 feet (Holtz and Kovacs 1981). A conservative estimate of the capillary rise at the site will be less than 100 feet above groundwater, however, saturated soil conditions or seepage was not observed above groundwater in Boring B-13.

2.7 Groundwater Hydrology and Quality

The site is located within the regional Mojave River groundwater basin. The Mojave Basin is underlain by strata that represent an ancient, alluvium-filled lakebed. Natural recharge of the groundwater basin occurs via infiltration of surface water. The major source of recharge to the groundwater system in the basin is the Mojave River. Groundwater flow in the regional aquifers is towards the north to northeast. The region relies almost entirely on groundwater for its water supply, which has resulted in increased depths to groundwater due to groundwater extraction.

The site vicinity is underlain by three interconnected aquifers, the Centro floodplain aquifer, the Centro regional aquifer and Harper Lake regional aquifer. Groundwater flow in the regional aquifers is toward the north to northeast. A series of local fault zones affect groundwater flow. The structural groundwater basins within the Mojave Region are divided by faulted bedrock and basement highs. Basement highs are impermeable bedrock areas that prevent groundwater flow. The faults and basement highs influence groundwater flow between the basins. The site is located within the Harper Valley Groundwater Basin. The groundwater is restricted from flowing east by basement highs of igneous and metamorphic ridges in the area of Iron Mountain located approximately 6 miles east of the site. The combination of these basement highs and the Lockhart Fault form an impenetrable barrier to ground water flow between the Harper Valley Basin beneath the property near Hawes Airport, and the groundwater within the Lower Mojave River Valley Basin, which underlies the Hinkley area.

According to the Lahontan Regional Water Quality Control Board Basin Plan, beneficial uses for groundwater in the Harper Valley basin include: municipal, domestic, agricultural, industrial supply, and freshwater replenishment. The average total dissolved solids for this area is 830 parts per million (ppm). The average nitrate and arsenic levels in the groundwater are 4.0 and 0.02 ppm, respectively. The United States Geologic Survey (USGS) National Water Information Service (NWIS) groundwater database (USGS 2007b), indicates that there are a limited number of water wells in the vicinity and there is little recent groundwater level and quality information for this area. Six water wells are reported to be located within a 6-mile radius of the property. The groundwater levels are summarized in the table below. The lowest elevation at the proposed site will be approximately 2,305 feet MSL at the bottom of the retention basins.

USGS Well ID	Approximate Distance from Site (miles)	Approximate Direction from Site	Approximate Depth to Static Groundwater (feet)	Approximate Elevation of Static Groundwater (feet, AMSL)
010N005W35G001S	1	West	289	NR
009N004W08D001S	2	Southeast	356	NR

010N004W33D001	2	East	275	2000
010N05W03J001S	5	North	228	NR
010N04W10D001	5.5	Northeast	232	1903
010N06W36D003	6.3	West	85	2085

Regional groundwater, saturated soil conditions, or seepage was not observed in Borings B-1 through B-12 performed at the site to depths of up to 35 feet. Boring B-13 was advanced at the site to evaluate the position of the regional groundwater aquifer and to obtain samples of the groundwater for background (pre-construction) analytical laboratory testing. Groundwater was first observed in Boring B-13 at a depth of 366 feet below the ground surface (bgs), in a layer of poorly graded sand with clay. Perched groundwater, saturated soil conditions, or seepage was not observed in Boring B-13 at shallower depths. On the following day, the depth to groundwater had stabilized within the borehole at approximately 305 feet bgs.

Results of the groundwater analyses are presented in the factual geotechnical report for the site (URS 2009). The groundwater analytical data were compared to applicable water quality goals consistent with the beneficial uses of groundwater specified in the Basin Plan. The goals were established as the most restrictive of the primary or secondary Maximum Contaminant Levels (MCLs) for drinking water, which are the most restrictive criteria that generally apply to municipal and domestic use, or the agricultural water quality limits. The water quality goal was raised to the natural background level for fluoride, manganese, Total Dissolved Solids (TDS), specific conductance, and chloride. These criteria are noted in Table 4 of the geotechnical report.

2.8 Land Use

The site is located in the desert region of the County. Land uses surrounding the site include predominantly vacant desert with a single residence located approximately 1.5 miles east of the site. There are no residential communities for a distance of at least eight miles to the north, west and south. Use of the site for composting operations will not conflict with existing surrounding land uses and there are no environmental justice issues as the surrounding land is vacant and undeveloped. The General Plan land use designation for the site is Resource Conservation. A composting facility may be allowed in any land use district subject to review and approval of a Conditional Use Permit (CUP) application under the Additional Uses section of the County development code. The site will be developed consistent with the General Plan land use goals and policies and no significant land use impacts will occur.

The site is currently vacant desert land disturbed by some development including roadways, transmission lines and other abandoned activities. There are no trees, rock outcroppings or historic buildings in the vicinity of the proposed site.

2.9 Post-Closure Land Use

After closure, the surface impoundments and waste pile will be returned to the native drought-tolerant vegetation to prevent erosion and protect public health and safety. The vegetation will blend in with the surrounding landscape.

2.10 Closure Date

The anticipated site life of the Nursery Product Hawes Composting Facility is approximately 30 years. Consequently, the closure date is approximately 2040.

3. FINAL CLOSURE DESIGN

3.1 General

The final closure design for the Nursery Products Hawes Composting Facility provides waste containment and groundwater protection at the Facility in accordance with Federal and State closure regulatory requirements.

3.2 Regulatory Requirements

Nursery Products proposes to close the surface impoundments and waste pile in accordance with the California Code of Regulations Title 27, Section 21400 requirements. This includes the removal of all free liquid remaining in the surface impoundments at the time of closure, discharge of the this liquid to an approved waste management unit, and treatment of residual liquid to eliminate free liquid. Following the removal and treatment of liquid waste, the surface impoundments and waste pile will be clean closed. Remaining containment features will be inspected for contamination and, if not contaminated, will be dismantled. Upon clean closure of the surface impoundments and waste pile, the site grades will be restored to the original configuration.

4. FINAL CLOSURE CONSTRUCTION SCHEDULE

4.1 General

The final closure construction schedule will be developed to provide approximate closure construction milestones corresponding to primary closure construction activities for the Nursery Products Hawes Composting Facility. The schedule provides for a six-month construction schedule and demonstrates that closure construction will be completed within the 180 days following the beginning of closure activities, as mandated by Title 27.

4.2 Closure Implementation

Implementation of final closure activities will commence after the Facility is no longer in operation, upon regulatory review and approval of the PCPCMP and closure design plans and specifications. Closure implementation activities will include:

- Decommissioning of environmental control systems;
- Removal of residual wastes and liner materials contaminated by wastes;
- Restoration of pre-site improvement grades by placement of engineered fill and vegetative layer;
- Restoration of pre-site improvement grades;
- Installation of drainage controls as needed;
- Installation of erosion control measures as needed;
- Installation of security provisions as needed;

The first phase of closure implementation will involve residual waste and liner removal and restoration of pre-site improvement grades. Upon completion of grade restoration, the second and final phase of implementation will commence. The second phase of closure implementation includes the establishment of vegetation on surface impoundment areas and waste pile areas.

5. FINAL CLOSURE CONSTRUCTION METHODS AND PROCEDURES

5.1 Removal of Existing Nursery Products Structures

Nursery Products will decommission and dismantle any structures at the time of the surface impoundment and waste pile closure and this will not impact final closure.

5.2 Decommissioning of Environmental Monitoring and Control Systems

The existing environmental control systems at the Nursery Products Hawes Composting Facility will be decommissioned and dismantled upon completion of clean closure activities and restoration of pre-site improvement grades. The removed portions of the systems will be transported and disposed of in accordance to Title 27. Reuse procedures for environmental control system components shall also follow the requirements contained in Title 27, including, but not limited to, one or more of the following:

- Washing with water, detergents or chemical solvents;
- Steam cleaning;
- Scrubbing with abrasives; and
- Sand blasting.

Any residues from the above-mentioned cleaning process would be handled and disposed of in compliance with all applicable regulations.

5.3 Survey Control

A survey shall be made of the entire site to produce a map of the site at a scale and contour interval sufficient to depict the as-closed topography of the unit and to allow the early identification of any differential settlement. Upon completion of this map, a copy will be submitted to the RWQCB, CIWMB, and the LEA in accordance with Title 27.

5.4 Soil Borrow Sources

Soils needed for closure construction over the surface impoundments and waste pile will be identified and secured prior to final closure construction, most likely from the Nursery Products Hawes Composting Facility.

5.5 Restoration of Grades

Restoration of grades will be conducted in accordance with generally accepted construction standards employed at California Class III landfills and in accordance with the closure CQA plan. A preliminary closure CQA plan is discussed in Section 6 of this PCPCMP. Methods and procedures for engineered

fill placement will be described in detail in the technical specifications to be developed at the time Nursery Products Hawes Composting Facility closure construction drawings are prepared.

5.6 Site Security

Site security systems that exist at the facility during operations will remain through final closure. The site will be surrounded by a chain link fence and access gates with locks.

6. CLOSURE CONSTRUCTION QUALITY ASSURANCE PLAN

6.1 General

A Construction Quality Assurance (CQA) plan will be developed prior to closure. The CQA plan is a guidance document which contains general and specific work requirements for monitoring of the closure construction activities at the Nursery Products Hawes Composting Facility. The final CQA plan will be included with the Construction documents and shall incorporate all of the elements of this plan. This CQA plan provides a description of the specific CQA activities to be performed and the materials and procedures to be used during closure construction. Conformance testing frequencies and requirements for the materials to be used in construction are included in tables in the CQA plan.

Regulations contained in Title 27 require closure construction to be performed in accordance with a CQA plan certified by a registered civil engineer or registered engineering geologist in the State of California. The CQA plan provides detailed information on the following CQA items:

- Site and project controls;
- Earthwork construction quality assurance; and
- Surface water management system construction quality assurance.

6.2 Final CQA Report

At the completion of closure, a certified CQA report will be submitted to the RWQCB acknowledging: (1) that the work has been performed in compliance with the contract drawings, the technical specifications, and approved changes; (2) physical sampling and testing has been conducted at the appropriate frequencies in accordance with the CQA plan; and (3) that the summary document provides the necessary supporting information.

At a minimum the CQA report will include:

- Summaries of construction activities;
- Approved contractors submittals;
- Monitoring logs and testing data sheets;
- Construction problems and solutions summary sheets;
- Approved changes from the design, technical specifications, and/or the contract drawings;
- Record drawings to be prepared by the contractors as outlined in the technical specifications; and
- A summary statement indicating compliance with the contract drawings, the technical specifications, and approved changes which is signed and sealed by a Civil Engineer or Engineering Geologist currently registered to practice in the State of California.

7. FINAL CLOSURE CONSTRUCTION COST ESTIMATE

7.1 General

Site restoration (clean closure) will be performed in accordance with the California Code of Regulations (CCR) Title 14, §17870 and per the County requirements. Written notice will be provided to the Local Enforcement Agency (LEA) of intent to perform site restoration at least 30 days prior to beginning site restoration. Site restoration will be completed that is necessary to protect public health, safety, and the environment. The operation and facility grounds, retention basins, and drainage areas will be cleaned of all residues including, but not limited to, compost materials, construction scraps, and other materials related to the operations, and these residues legally recycled, reused, or disposed. All machinery will be cleaned and removed or stored securely. All remaining structures will be cleaned of compost materials, dust, particulates, or other residues related to the composting and site restoration operations.

7.2 Removal of Structures and Site Restoration

For clean closure, all structures will require decommissioning and removal. These structures will be removed from the site in accordance with the implementation schedule to be included in the final closure plan. It is anticipated that some of the on-site environmental control monitoring sumps will operate for a limited time period during closure prior to removal. Any decommissioning or removal will be conducted in accordance with applicable federal, state and local regulations or advisories.

7.3 Site Security

Security will be expanded if deemed necessary by Nursery Products after the final shipment of compost materials to the site. Access will be denied to all persons, except personnel performing closure activities.

7.4 Final Grading

The final closure grades will be designed by a registered civil engineer or certified engineering geologist to provide for erosion control and run-on control. The final drainage will be similar to the drainage pattern which existed prior to site development, or as approved by the RWQCB in the final closure plan. No vegetation or irrigation is planned.

7.5 Post-Closure Activities

Since the site will be clean closed, no post-closure maintenance is proposed.

7.6 Cost Estimates and Financial Assurance

The closure cost estimate was prepared for the point in the active life when the extent and manner of operation will make closure the most expensive. A detailed closure cost estimate for the facility is attached in Appendix A, and is based on third-party closure of the site and on recent experience with closure of another compost facility. The closure cost estimate, with a 20 percent contingency for unforeseen circumstances is approximately \$160,000 (2008 dollars). There are no post-closure activities necessary due to the facility being clean closed. Financial assurance documentation for closure activities is required by both the County and the RWQCB.

7.7 Financial Assurance Mechanism

Nursery Products will establish a financial assurance mechanism (i.e., letter of credit) to assure financial responsibility for funding the closure costs.

8. CLOSURE

I certify under penalty of perjury that I have personally examined and am familiar with the information submitted in this Preliminary Closure and Post Closure Plan for the Nursery Products Hawes Composting Facility 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. My seal as a registered professional engineer licensed in the State of California is affixed below.



APPENDIX A

Preliminary Closure Cost Estimate

DATE: April 2008

PROJECT: Nursery Products Hawes Composting Facility

By: URS Corporation, 1615 Murray Canyon Road, Suite 1000, San Diego, CA 92108

ITEM DESCRIPTION	ESTIMATED QUANTITY	UNIT OF MEASURE	UNIT PRICE (IN FIGURES)	TOTAL (IN FIGURES)	NOTES
Final Closure Plan and Site Assessment	1	LS	\$ 25,000	\$ 25,000	Assumes an investigation and analytical testing to refine the prepare recommendations and a work plan for clean closure.
Removal and disposal of liner and monitoring components	5	DAYS	\$ 2,500	\$ 12,500	
Removal of liner	1	LS	\$ 6,000	\$ 6,000	Estimate for a 500 foot deep well typical abandonment.
Removal of groundwater monitoring well	12	TRIPS	\$ 250	\$ 3,000	Assumed haul distance of 25 miles to the Barstow landfill. Assumes \$100/hour of hauling and 2 hours round trip for load, travel, and unload at 50 CY per truckload.
Haul demolition waste to a nearby landfill.	600	TONS	\$ 50	\$ 30,000	Cost for disposal at Barstow Landfill.
Disposal of demolition waste					
Earthwork					
Import of fill materials	5,000	CY	\$ 2	\$ 10,000	
Grading	5,000	CY	\$ 2	\$ 10,000	
Erosion Control Best Management Practices	1	LS	\$ 10,000	\$ 10,000	Assumes minimal BMPs due to short construction during dry weather conditions.
Closure Quality Assurance					
Field observation of removals	5	DAYS	\$ 800	\$ 4,000	Assumes part-time observation of the removal of liner components.
Field observation and testing of compacted fill	5	DAYS	\$ 800	\$ 4,000	Assumes part-time observation of grading.
Geotechnical laboratory testing	1	LS	\$ 3,000	\$ 3,000	Assumes index testing and proctor testing on 3 samples of proposed fill material.
Analytical laboratory testing	1	LS	\$ 5,000	\$ 5,000	Minimal analytical testing after removal of structures and removal of liner components.
As-graded geotechnical reporting	1	LS	\$ 5,000	\$ 5,000	Preparation of an as-graded summary report documenting conformance with the final closure plan.

Subtotal	\$ 127,500
Contingency (20%)	\$ 25,500
Project Management/Administrative (5%)	\$ 6,400

Total Cost: \$ 160,000