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[TENTATIVE] WASTE DISCHARGE REQUIREMENTS ORDER
R5-2020-####



ORDER INFORMATION

Order Type(s): Waste Discharge Requirements (WDRs)
Status: TENTATIVE
Program: Title 27
Region 5 Office: Sacramento (Rancho Cordova)
Discharger(s): Aerojet Rocketdyne, Inc.
Facility: White Rock North Dump and Aerojet Waste Consolidation Unit Landfill
Address: 12353 White Rock Road
County: Sacramento County
Parcel Nos.: 072-0100-020
WDID: 5A34NC00106
Prior Order(s): CAO 96-150

CERTIFICATION

I, PATRICK PULUPA, Executive Officer, hereby certify that the following is a full, true, and correct copy of the order adopted by the California Regional Water Quality Control Board, Central Valley Region, on ____ [Month] [Year].

PATRICK PULUPA,
Executive Officer

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ADC	Alternative Daily Cover
Antidegradation Policy	Statement of Policy with Respect to Maintaining High Quality Waters in California, State Water Board Resolution 68-16
Basin Plan	<i>Water Quality Control Plan for the Sacramento and San Joaquin River Basins</i>
bgs	Below Ground Surface
BOD	Biological Oxygen Demand
BPTC	Best Practicable Treatment and Control
C&D	Construction and Demotion Materials
CalRecycle	California Department of Resources Recovery and Recycling
CAP	Corrective Action Program
CAMP	Corrective Action Monitoring Program
CEQA	California Environmental Quality Act
CEQA Guidelines	California Code of Regulations, Title 14, section 15000 et seq.
C.F.R.	Code of Federal Regulations
COCs	Constituents of Concern
CSM	Conceptual Site Model
C-Soil	Contaminated Soil
CQA	Construction Quality Assurance
CY	Cubic Yards
DEIR	Draft Environmental Impact Report

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Designated Waste	(a) Hazardous Waste subject to variance from management requirements per Health and Safety Code section 25143; and (b) Nonhazardous Waste containing pollutants that, under ambient conditions, could be released in concentrations exceeding applicable WQOs, or that could reasonably be expected to affect beneficial uses of water. (Wat. Code, § 13173.)
DMP	Detection Monitoring Program
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EC	Electrical Conductivity
EIR	Environmental Impact Report
EMP	Evaluation Monitoring Plan
FCPMP	Final Closure and Post-Closure Maintenance Plan
FEIR	Final Environmental Impact Report
FEMA	Federal Emergency Management Agency
GCL	Geosynthetic Clay Liner
Hazardous Waste	Wastes which, pursuant to Title 22, section 66261.3 et seq., are required to be managed in accordance with Division 4.5 of Title 22. (Title 27, § 20164; Title 23, § 2521(a).)
HDPE	High-Density Polyethylene
JTD	Joint Technical Document
LCRS	Leachate Collection and Removal System
LEA	Local Enforcement Agency

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Leachate	Liquid formed by the drainage of liquids from waste or by the percolation or flow of liquid through waste. Leachate includes any constituents extracted from the waste and dissolved or suspended in the fluid. (Title 27, § 20164.)
LFG	Landfill Gas
MCE	Maximum Credible Earthquake
MDB&M	Mount Diablo Base and Meridian
MDL	Method Detection Limit
NDMA	N-Nitroso-dimethylamine
µg/L	Micrograms per Liter
MCL	Maximum Contaminant Level
mg/L	Milligrams per Liter
MPE	Maximum Probable Earthquake
msl	Mean Sea Level
MRP	Monitoring and Reporting Program
MSW	Municipal Solid Waste regulated under 40 C.F.R. part 258
MSWLF	Municipal Solid Waste Landfill
MW	Monitoring Well
NPDES	USEPA National Pollutant Discharge Elimination System
PCBs	Polychlorinated biphenyls
PCPMP	Preliminary Closure and Post-Closure Maintenance Plan

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GLOSSARY

SAP	Sampling and Analysis Plan
SPRRs	Standard Provisions and Reporting Requirements
Subtitle D	USEPA-promulgated MSW regulations under RCRA (see 40 C.F.R. part 258)
SVOCs	Semi-Volatile Organic Compounds
RCRA	Resource Conservation and Recovery Act
ROWD	Report of Waste Discharge
TCE	Trichloroethene
TDB	To Be Determined
TDS	Total Dissolved Solids
Title 22	California Code of Regulations, Title 22
Title 23	California Code of Regulations, Title 23
Title 27	California Code of Regulations, Title 27
TPH	Total Petroleum Hydrocarbons
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds
WDRs	Waste Discharge Requirements
Wet Season	1 November through 30 April
WMU	Waste Management Unit or Unit
WQOs	Water Quality Objectives
WQPS	Water Quality Protection Standard
WWTP	Wastewater Treatment Plant

FINDINGS

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) hereby finds as follows:

Introduction

1. Aerojet Rocketdyne, Inc., owned by Aerojet Rocketdyne Holdings Inc., (Discharger) owns the White Rock North Dump and Aerojet Waste Consolidation Unit Landfill (collectively, "Facility"), which is located approximately 17 miles east of downtown Sacramento in Sacramento County, Section 26, 27, 34, 35, Township 9 North, Range 7 East, Mount Diablo Base and Meridian (MDB&M). The Facility's location is depicted on the Site Location Map in **Attachment A**.
2. The Facility is situated on an approximately 242-acre property comprised of Assessor's Parcel Number (APN) 072-0100-020 as shown in **Attachment B**. The address associated with the Facility is 12353 White Rock Road, Rancho Cordova, California 95742.
3. Since 1953, the Discharger and its subsidiaries have researched, designed and manufactured rocket engines and formulated chemicals on its original 5900 acre property. Disposal and operating practices led to soil and groundwater contamination. The USEPA listed the site on the Superfund program's National Priorities List (NPL) in 1983. Since then, the Discharger has worked to contain and remediate contaminated groundwater using multiple groundwater pump-and-treat systems which are currently regulated under WDRs Order R5-2017-0095 and NPDES Order CA0083861. The Orders currently allow for the discharge of up to 39.09 million gallons per day of treated groundwater from up to eleven groundwater extraction and treatment systems (GETs).
4. The Discharger has also been investigating and cleaning up contaminant source areas in soils. As part of the Discharger's efforts to clean up contaminated soil sources on the Discharger's property the Discharger proposes to construct a new 50-acre Class II landfill waste management unit (WMU) hereafter known as the Aerojet Waste Consolidation Unit or AWCU on the WRND parcel as shown in **Attachment B**.
5. The facility layout for the proposed AWCU on the WRND is shown in **Attachment C**. It will consist of primarily the AWCU waste management unit, truck haul roads for disposal of Transfer Material, employee vehicle parking, water supply for dust control, leachate storage tanks, and a truck tire wash station if the Discharger operates under wet conditions.

6. Additional information about the Facility is set forth in the **Information Sheet**, which is incorporated as part of these findings. (**See Finding 19**)

Aerojet Waste Consolidation Unit (AWCU)

7. The purpose of the AWCU is to consolidate **nonhazardous solid waste**, as defined in California Code of Regulations, title 27 (Title 27), section 20220, and **designated waste**, as defined in Title 27, section 20210, from identified areas within the Discharger's property, hereafter known as the AWCU Service Area, as shown in **Attachment D**.
8. Construction of the AWCU will allow the disposal of up to 1,000,000 cubic yards (CY) of waste soil that meets the Class II waste requirements and inert construction debris (collectively, "Transfer Material") in the AWCU. Transfer Material would be generated from future remediation projects located within the proposed **AWCU Service Area**, which comprises approximately 7,500 acres of Aerojet access-controlled property. It is estimated that approximately 500,000 CY of Transfer Material will originate from the Aerojet Landfill, consistent with the approved Aerojet Landfill Clean Closure Plan (CCP).
9. The Aerojet Landfill is an existing approximately 180-acre, non-operating, closed landfill owned by the Discharger located within the proposed AWCU Service Area approximately 2.3 miles north of the proposed WRND parcel, as shown in **Attachment D**. It is estimated that the remainder of the 1,000,000 CY of Transfer Materials would come from soil cleanups at different identified subareas within the AWCU Service Area also shown on **Attachment D**. There Aerojet Landfill is not the subject of this Order.

White Rock North Dump (WRND)

10. The WRND is an inactive pre-regulation landfill/dump referred to as an existing Closed, Abandoned, or Inactive Unit (CAI Unit) for the purposes of Title 27, section 20080, subdivision (g). Prior to construction of the WRND the area topography consisted of tailing piles due to extensive gold dredging in the late 1930s and early 1940s as shown in **Attachment E**.
11. From 1958 to 1964, WRND was a disposal site operated by the North American Waste Disposal Service Company under a Sacramento County franchise. Miscellaneous refuse and waste were placed between piles of dredge tailings and covered with adjacent dredged material. Solid waste placed at the WRND included putrescible waste from hotels, homes, hospitals, restaurants, packing houses; and non-putrescible wastes from construction, demolition, and development, including old appliances and automobiles. Liquid waste was disposed in a one-acre pond. Liquid waste included sewage tank waste, crank

case oil, and at least one 3,000-gallon load of trichloroethylene. Diesel and creosote were reportedly added to the pond almost daily to control odor and flies. Landfill operations ceased in 1964; however, records indicate unauthorized dumping of liquid wastes until 1970. The approximate location of the extent of waste disposed of at the WRND is shown in **Attachment F**. The WRND was closed, abandoned and/or inactive as of 27 November 1984.

12. Aerojet-General Corporation (Aerojet-General), which merged into Aerojet Rocketdyne Inc. (Discharger) in 2013, leased the WRND property from 1963-1970 as a buffer zone for their operations north of WRND. From June 1970 to January 1974 Aerojet-General owned the WRND property and had knowledge of the activities, conducted prior to its ownership, that caused pollution or nuisance at the site, and by virtue of its control over the property as the lessee had the ability to control the discharge of waste to the property. Aerojet's knowledge of the activities was enhanced due to Aerojet's disposal of a portion of its waste to WRND during the 1960s. Following Aerojet's sale of the property in January 1974 the property changed hands multiple times between 1974 and 1988.
13. On 2 June 1980, the California Solid Waste Management Board inspected the site for compliance with the Resource Conservation and Recovery Act (RCRA). After a 90-day grace period, the site was designated as an "open dump" under RCRA because of non-compliance with disease, fire, and access criteria. In 1981, the WRND was identified as an abandoned site, and in 1982 was added to the California Superfund Priority Ranking List. After completion of a site inspection in 1983, the site was placed on the Federal Superfund List (January 10, 1985), and included on Comprehensive Environmental Response Compensation and Liability Act Information System (CERCLIS). The site was included on the 1989 California State Bond Expenditure Plan (State Superfund), and was categorized as Rank 1 on the SWAT list by the Central Valley Water Board.
14. In 1988, the CLC Investment Corporation (CLC) purchased the WRND property and thereafter was required to perform a Solid Waste Assessment Test (SWAT) at the request of the Central Valley Water Board and a Preliminary Endangerment Assessment (PEA) at the request of the Department of Toxic Substances Control. Amongst other things, the results of investigation required by the SWAT/PEA found concentrations of volatile organic contaminants (VOCs) in the ground water and VOCs, semi-volatile organics (SVOCs), polychlorinated biphenyls (PCBs), dioxins, and dibenzofurans in the vadose zone. The VOCs found in the ground water included up to:
 - a. 2100 micrograms per liter ($\mu\text{g/L}$) trichloroethylene which has a Maximum Contaminant Level (MCL) limit of 5 $\mu\text{g/L}$ in drinking water;
 - b. 6.4 $\mu\text{g/L}$ 1,1-dichloroethylene (MCL of 5.0 $\mu\text{g/L}$);

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- c. 2.6 µg/L of chloroform; and
- d. 3.3 µg/L tetrachloroethane (MCL of 5.0 µg/L).

The Central Valley Water Board previously determined that above-described VOCs in groundwater originate from the WRND. The Central Valley Water Board further reserves the right to revisit this issue in subsequent orders.

15. The WRND parcel is a designated hazardous waste site for the purposes of California Environmental Quality Act (CEQA) Guidelines section 15087(c)(6).
16. On 3 May 1996 the Central Valley Water Board issued a Cleanup and Abatement Order 96-150 (1996 CAO) to address a known release from WRND. The 1996 CAO was issued to CLC, Aerojet-General Corp., NAWDCO, Alan Olson, and Ben Petrucci. The Discharger is currently implementing corrective action measures for the known release.
17. In 2001, the property sold from CLC to Aerojet-General. Aerojet Rocketdyne, Inc., wholly owned by Aerojet Rocketdyne Holdings Inc. continues to own the property.
18. Therefore, as the Facility's current owner and operator, the Discharger is responsible for compliance with this Order, which prescribes Waste Discharge Requirements (WDRs) regulating construction, monitoring, operation, corrective action, closure and post-closure maintenance of the Waste Management Units (WMUs) listed in **Table 1**.

**Table 1—Summary of Waste Management Units (WMUs)
Permitted under Order**

Unit	Type	Class	Size (acres)	Status
WRND	Landfill	Unclassified	100	Inactive
AWCU	Landfill	Class II	50	Planned

See Glossary for definitions of terms and abbreviations in table.

Note: The 50-acre AWCU will be constructed over the 100-acre WRND. The AWCU base liner system will serve as a final closure cover over a portion of the WRND. The maximum AWCU footprint authorized by these WDRs is 50-acres but may be less based on the amount of Transfer Material relocated from the AWCU Service Area.

Materials Accompanying Order

19. The following materials are attached to this Order, and incorporated herein:

Attachment A—Site Location Map
Attachment B—Landfill Limits
Attachment C—AWCU Facility Layout
Attachment D—Transfer Material Source Locations
Attachment E—Pre-Landfill Topography
Attachment F—Estimated WRND Waste Disposal Areas
Attachment G—Transfer Material Waste Characterization
Attachment H—Regional Geology
Attachment I—Depiction of Four Groundwater Bearing Layers
Attachment J—Land Use and Water Supply Well Map
Attachment K—Non-Contact Stormwater Drainage Plan
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Attachment W—AWCU Base Grading Details
Attachment X—Proposed AWCU and WRND Final Closure Cover Plan

Standard Provisions & Reporting Requirements for Non-Hazardous Discharges of Waste Regulated under Subtitle D and/or Title 27, December 2015 Edition (SPRRs or Standard Provisions)

Information Sheet for [Tentative] Waste Discharge Requirements Order R5-2020-#### (Information Sheet)

20. This Order is also accompanied by the concurrently adopted **Monitoring & Reporting Program R5-2020-#### (MRP)**, the provisions of which are incorporated as part of this Order. Each time the operative MRP is modified by the Central Valley Water Board or its Executive Officer, the revised version shall become the operative MRP (superseding the prior version) and be incorporated as part of this Order (i.e., in lieu of the prior version).

21. To the extent there are any material inconsistencies between the provisions of this Order, the operative MRP and the SPRRs, the provisions of this Order shall be controlling. However, to the extent a revised MRP contains new or different factual findings reflecting changed conditions or circumstances at the Facility, the revised MRP findings shall be controlling.

Report of Waste Discharge / Joint Technical Document

22. The Discharger submitted a draft ROWD/JTD dated April 2020 for Central Valley Water Board staff review and comments. On 14 May 2020 Central Valley Water Board staff provided preliminary comments on the draft ROWD/JTD. From 14 May 2020 to 23 June 2020 the Discharger responded to the comments and incorporated necessary changes to their draft ROWD/JTD relevant to the development of this Order.
23. On 24 June 2020, the Discharger submitted an updated Report of Waste Discharge (ROWD) as part of its draft Joint Technical Document (JTD) for the Facility. Information in the JTD was used in the development of this Order. The draft JTD was submitted as part of a CEQA Initial Study/Mitigated Negative Declaration (IS/MND). The Discharger's ROWD makes the following significant proposals:
- a. **Phase 1 AWCU:** Construct, fill and close consistent with Title 27 requirements a new Class II waste management unit (AWCU) on top of ±50-acres of the WRND within the existing WRND parcel. Construction of the AWCU will allow disposal of up to 1,000,000 CYs of contaminated waste soil that meets the Class II waste requirements and inert construction debris (together referred to as Transfer Material).
 - b. **Phase 2 WRND Cap and Closure:** Cap and close the remainder of the existing pre-regulation 100-acre WRND in accordance with Title 27 requirements (up to 50 acres plus any remaining portion of the up to 50-acre AWCU area not filled with Transfer Material).
 - c. **Schedule:** Completion of Phase 1 and Phase 2 would not exceed 15 years from the issuance of a solid waste facility permit. The Discharger commits to an AWCU final closure by December 31, 2035. Furthermore, The Discharger commits to completion of the excavation and relocation of Transfer Material from the Aerojet landfill to the AWCU within 24 months of implementing the Aerojet Landfill Clean Closure Plan, and final closure of the portion of the AWCU that received transfer material within 12 additional months or sooner due to a potential threat to receiving water quality from stormwater contact with the Transfer Material. The Discharger's preferred schedule for implementation of the WRND Phase 2 final closure is to begin when 1,000,000 CY of Transfer Material have

been placed in the AWCU. However, since the Discharger does not know the exact timing of all projects that would generate Transfer Material, the Discharger commits to the completion Phase 2 final closure by December 31, 2035.

24. Since 24 June 2020, the Discharger has submitted additional supplemental information as part of the ROWD/JTD. However, Central Valley Water Board staff finds the ROWD/JTD incomplete in a few aspects. This Order therefore requires that the Discharger submit the following additional materials for Executive Officer approval:
- a. An Operations Report regarding the use of Transfer Material as an Alternative Daily Cover (ADC);
 - b. An updated Conceptual Site Model (CSM);
 - c. Submittal of a facility-specific Sampling and Analysis Plan (SAP);
 - d. Initial Concentration Limits for incorporation as part of the operative Water Quality Protection Standard (WQPS);
 - e. A Stormwater Report regarding the need for regulatory coverage under the State Water Board's operative Industrial General Permit; and
 - f. Financial Assurances cost estimate for AWCU corrective action.

Applicability of Title 27 to WRND

25. Title 27, section 20080, subdivision (g) provides as follows:

Persons responsible for discharges at Units which were closed, abandoned, or inactive on or before November 27, 1984 (CAI Units), may be required to develop and implement a detection monitoring program in accordance with [Title 27, section 20380 et seq.]. If water quality impairment is found, such persons may be required to develop and implement a corrective action program under [section 20380 et seq.].

26. As noted above, the WRND was already closed and/or inactive as of 27 November 1984. It is therefore deemed to be a Closed, Abandoned or Inactive Unit (CAI Unit).
27. To the extent that this Order imposes any requirements not otherwise mandated for CAI Units under Title 27, those additional requirements are imposed for protection of the waters of the State of California, and for the protection of human health and the environment.

28. With respect to the development and implementation of a corrective action program for the WRND per Title 27, section 20380 et seq., Title 27, section 20090, subdivision (d) further provides as follows:

Actions taken by or at the direction of public agencies to cleanup or abate conditions of pollution or nuisance resulting from unintentional or unauthorized releases of waste or pollutants to the environment; provided that ... remedial actions intended to contain such wastes at the place of release shall implement applicable SWRCB-promulgated provisions of [Title 27, section 20005 et seq.] to the extent feasible.

29. As of the date of this Order, releases from the WRND have been, and will continue to be addressed separately through corrective action pursuant to the 1996 CAO (as updated, revised and/or replaced by another order). Accordingly, this Order does not require the Discharger to perform corrective action for existing releases from the WRND.
30. Following adoption of this Order, the Central Valley Water Board will revise the currently-operative 1996 CAO, or alternatively, replace the 1996 CAO with an entirely new Cleanup and Abatement Order (CAO) per Water Code section 13304. Notably, this Order prohibits all discharges of waste to the proposed AWCU until the 1996 CAO has been revised/updated or replaced.
31. Among other things, the new or updated CAO will require the Discharger to, as corrective action, install a Title 27-compliant cover over remaining surfaces of the existing WRND (i.e., those surfaces that are not already covered by the AWCU). Because the installation of the cover is considered part of "corrective action," it will be separately addressed by the new/updated CAO.
32. The forthcoming CAO may incorporate other Title 27 requirements that are found to be applicable by the Executive Officer.

Waste Classification for AWCU

33. The Discharger proposes to discharge certain **Nonhazardous Wastes** and **Designated Wastes** (per Wat. Code, § 13173), specifically, contaminated soils that meet the requirements of Health & Safety Code section 25143 to the Class II AWCU at the Facility. This Order authorizes the discharge of such wastes to the AWCU specified in **Section B.1** and **Table 9**.
34. The Discharger characterized the Transfer Material that will be consolidated from the AWCU Service Area and disposed of in the AWCU. The results of the waste characterization are shown in **Attachment G** from samples taken at different waste sources within the AWCU Service Area. The Discharger's waste

characterization shows COCs that were most frequently detected in the Transfer Material to those with the least number of detections. Attachment G also provides the number of samples analyzed for each COC and the maximum and average concentration of the COC. Attachment G also shows whether the COC would be analyzed for in a standard Monitoring and Reporting Program (MRP) using a list of COCs typically found at municipal solid waste landfills. Attachment G also identifies what section of the MRP the COC would be analyzed under. **Table 2** summarizes the effectiveness of using a standard MRP for detection monitoring of the Transfer Material.

35. The results of **Table 2** indicate that the Transfer Material waste characteristics are significantly different from wastes traditionally disposed of at municipal solid waste landfills. The Transfer Material may contain furans, dioxins, total petroleum hydrocarbons, PCBs, anions, and miscellaneous substances that would not be analyzed for using standard parameter monitoring in an MRP. Furthermore, in a standard MRP the frequency of monitoring for SVOCs, metals, and pesticides is every five years which is an ineffective monitoring strategy based on the prevalence of these COCs in the Transfer Material. The MRP requires that the Discharger monitor for the substances identified above on a more frequent basis beginning with (1) analyzing leachate in the LCRS sump; (2) analyzing any leakage in the AWCU leak detection system (LDS); and (3) analyzing any liquid and/or gas in the AWCU pan lysimeter(s). If any COCs are found in the unsaturated zone beneath the AWCU containment system and upon subsequent investigation it was determined that a release of waste from the AWCU had occurred the Discharger is required to extend monitoring for the substances identified above to the AWCU's groundwater monitoring system.
36. The results of waste characterization of the Transfer Material indicates that there were samples taken from the AWCU Service Area where COCs were present in the Transfer Material above the total threshold limit concentrations (TTLC) limits arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, thallium, zinc, endrin, 4,4'-DDT, 4,4'-DDE which classifies those samples as hazardous waste. On 30 July 2020, the Discharger provided a summary of its Transfer Material screening process. These WDRs require the Discharger to implement a waste screening and acceptance methodology consistent with CalRecycle and Department of Toxic Substances (DTSC) regulations to ensure that hazardous waste is not disposed of in the Class II AWCU.

Table 2—Summary of Transfer Material Waste Characterization

Analyte Category	# COCs Detected in Transfer Material	# COCs Analyzed Using Standard MRP List	% COCs Analyzed In Transfer Material Using Standard MRP List
SVOCs	47	38	81%
Metals	33	20	61%
VOCs	31	24	77%
Pesticides	21	17	81%
Furans	14	0	0%
Dioxins	11	0	0%
TPH	9	0	0%
Miscellaneous	7	0	0%
PCBs	7	0	0%
Anions	5	0	0%
Explosives	5	1	20%
Cyanide	1	1	100%
Other	1	0	0%

See Glossary for definitions of terms and abbreviations in table.

Unit Classification

37. The Facility’s existing WRND and proposed AWCU are not subject to federal Municipal Solid Waste (MSW) regulations promulgated under the Resource Consideration Recovery Act (RCRA) (42 U.S.C. § 6901 et seq.). Typically referred to as “Subtitle D,” these regulations are now codified as 40 C.F.R. part 258, and implemented in part through the provisions California Code of Regulations, Title 27 (Title 27) and in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62. The Facility is prohibited from disposing of MSW in the AWCU or WRND.

38. The WRND is an existing solid waste disposal site that was constructed and operated prior to the State Water Resources Control Board's (State Water Board) adoption of regulations for the disposal of solid waste. The WRND remains unclassified under this Order.
39. Per the ROWD/JTD, the proposed AWCU is consistent with applicable Title 27 siting criteria (§ 20250), general construction criteria (§ 20310), and containment criteria (§ 20320) for Class II Units. Accordingly, the Central Valley Water Board hereby classifies the AWCU as a **Class II Unit** for the discharge of non-hazardous solid waste and designated waste (per Wat. Code, § 13173).

Transfer Material as Alternative Daily Cover (ADC) for AWCU

40. In lieu of the daily cover required per Title 27, section 20680, the Discharger proposes to use an alternative daily cover (ADC) (see Title 27, §§ 20690, 20705), which consists of the **Transfer Material** characterized as nonhazardous contaminated soils.
41. In accordance with Title 27 section 20705, Discharger must demonstrate that its Transfer Material proposed as an ADC material: (a) will minimize percolation of liquids through waste; and (b) is consistent with the classification of the WMUs to which they are to be applied. The approved ADC material constituents and breakdown products are also included as part of the WQPS set forth in the MRP.
42. This Order requires that, prior to the use of Transfer Material as ADC for the AWCU, the Discharger submit an Operations Report demonstrating that such use will be protective of the environment, and that any waste constituents in the Transfer Material will remain within the AWCU's containment system. Use of Transfer Material is conditioned on Executive Officer written approval.

Site Conditions

43. The original topography of the WRND is characterized by variable topography and waste rock/tailing pits created by extensive gold dredging that occurred in the late 1930s and 1940s, as shown in **Attachment E**. Current ground elevation ranges from 270 ft to about 295 ft above mean seal level (amsl) across the AWCU as shown in **Attachment F**.
44. The regional geology of the Rancho Cordova area is located within the Sacramento Valley portion of the Great Valley geomorphic province of California as shown in **Attachment H**. The Sacramento Valley is a northwest-trending basin filled with marine and continentally derived sediments to depths greater than 20,000 ft. The Valley extends roughly from Red Bluff to the north, to the San Joaquin delta to the south, and is bound by the Sierra Nevada on the east and the coastal ranges on the west. At the latitude of the AWCU, the Sacramento

Valley is approximately 45 miles wide. Three geologic units are exposed in the AWCU region. Pleistocene-age terrace deposits of the American River are 10 ft to 50 ft thick and are composed of a poorly sorted mixture of sand, silt, gravels, cobbles, and clay. In the vicinity of the WRND, these deposits have been disturbed by gold dredging operations. The late Pliocene to early Pleistocene Laguna Formation comprises a heterogeneous assemblage of interbedded silt, clay, and sand with lenses of gravel. These sediments underlie the terrace deposits, range from 100 ft to 200 ft thick at their eastern boundary, and thicken to the west. The Mehrten Formation of Pliocene age underlies the Laguna Formation and outcrops east of WRND. In the AWCU area, the Mehrten Formation is approximately 200 ft thick and is composed primarily of dark, soft, well-sorted andesitic sands with less frequent lenses of cobbles and gravels.

45. The site geology at the AWCU has been interpreted by Koelzer Engineering Services (1991) from numerous borings and well installations performed on Aerojet property. Four basic units have been identified; from top to bottom, these are: (1) Subrounded to rounded gravel and cobble, including dredge tailings; (2) Clay with sand and gravel lenses, possibly part of the Laguna Formation; (3) Interbedded sands and gravels with fine-grained lenses; and (4) Clay as shown in **Attachment I**. The uppermost geologic unit is composed primarily of gravels, cobbles, sands, clays, and silts and is up to 125 ft thick. The upper portions (up to approximately 65 ft) of this unit have been reworked by gold dredging. To the north of Aerojet, this unit contains a thick clay zone which thins to the east and to the south toward the WRND. Beneath this coarse material is a geologic unit composed primarily of clay with some lenses of sand and gravel. The thickness of this zone ranges from approximately 10 ft to 80 ft. On the basis of regional stratigraphic correlation, this clay layer is most likely part of the Laguna Formation (Koelzer Engineering Services, 1991). Beneath the clay layer is a thick sequence of sediments composed primarily of sands and gravels which contain discontinuous lenses of sandy clay, clay, and silt. The lower part of the unit is composed mostly of dark colored gravels and sands containing lenses of clay and silt. These sediments are approximately 150 ft to 200 ft thick and are most likely part of the Laguna-Mehrten transition zone and the Mehrten Formation. The basal unit reached during the installation of the Aerojet wells consists of clay. The surface of this unit slopes approximately one percent from east to west and approximately 0.5 percent from north to south.
46. Land uses within one mile of the Facility include Aerojet Special Planning Area (AR SPA), agricultural (Ag), industrial (Ind), residential (Res), and mining (Mn) as shown in **Attachment J**.
47. Surface water from the south of the Facility originating from the WRND drains to an unnamed ditch and eventually to Morrison Creek, a tributary to the Sacramento River. According to the Central Valley Water Board's *Water Quality*

Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan), the beneficial uses of Sacramento River include: municipal and domestic use (MUN); agricultural supply (AGR); water contact recreation (REC-1); non-water contact recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD); wildlife habitat (WILD); migration of aquatic organisms (MIGR); and spawning, reproduction and/or early development (SPAWN). Surface water drainage originating from the WRND from the north of the Facility may drain to an unnamed ditch and eventually to Buffalo Creek, a tributary to American River. According to the Basin Plan), the beneficial uses of American River include: municipal and domestic use (MUN); agricultural supply (AGR); water contact recreation (REC-1); non-water contact recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD); wildlife habitat (WILD); migration of aquatic organisms (MIGR); and spawning, reproduction and/or early development (SPAWN).

48. Surface water drainage from the north of the Facility where the AWCU is located does not leave the Discharger's property but is captured in inundation areas and either percolates to groundwater or evaporates as shown in **Attachment K**.
49. Currently, the Discharger is not permitted to discharge stormwater from the Facility (which requires regulatory coverage under the State Water Board's operative Industrial General Permit). Unless the Discharger demonstrates that it can retain all stormwater on-site the Discharger is required to obtain coverage under the operative Industrial General Permit.
50. The Facility is located within the Central Sacramento County Groundwater Basin (Central Basin). The Central Basin is roughly bordered to the north by the American River, to the south by the Cosumnes and Mokelumne rivers, to the west by Interstate 5 and the Sacramento River, and to the east by the Sierra Nevada foothills. The Sierra Nevada Mountains represent the approximate eastern edge of the alluvial basin, where little groundwater flows into or out of the groundwater basin from the Sierra Nevada foothills. There is, however, interaction between groundwater of adjacent sub-basins at greater depths (CDWR, 2004). Groundwater underlying the Central Basin is contained within a shallow aquifer (Laguna or Modesto Formation) and in a deep aquifer (Mehrten Formation). The Laguna or Modesto Formation consists of older alluvial deposits of loosely to moderately compacted sand, silt, and gravel deposited in alluvial fans. These deposits are moderately permeable and have a thickness of about 100 ft to 650 ft (CDWR, 2004). The deeper, Mehrten Formation is a sequence of fragmented volcanic rocks, which crops out in a discontinuous band along the eastern margin of the basin. It is composed of intervals of black volcanic sands, stream gravels, silt, and clay interbedded with intervals of dense tuff breccia. The sand and gravel intervals are highly permeable and the tuff breccia intervals act as confining layers. The thickness of the Mehrten Formation is between 200 ft

and 1,200 ft. Groundwater is located from 20 ft to 100 ft below ground surface (bgs) depending on when and where the measurement is taken. The base of the potable water portion of the deep aquifer averages approximately 1,400 ft bgs.

51. Groundwater monitoring wells have been assigned to hydrostratigraphic layers A, B, C, and D based on lithologic and groundwater elevation data. The proposed AWCU area is located adjacent to and south of the southern boundary of the Aerojet Superfund Site. Groundwater in the area generally flows to the southwest with some local variability to the north and south. Locally, within the area of the former WRND and proposed AWCU, groundwater generally flows southwest and south, but is variable depending on season and hydrostratigraphic layer. Potentiometric surface (groundwater contour) maps for the Facility for layers A, B, C, and D are shown in **Attachment L** through **Attachment O** respectively.
52. Groundwater underneath the Facility is first encountered in the A-Layer between approximately 40 and 85 feet below ground surface (bgs) at the AWCU and generally flows north and east at a gradient of approximately 0.02 feet per foot (ft/ft) as shown in **Attachment L**. However, groundwater levels fluctuate, and flow direction is variable. In the eastern portion of the AWCU in December 2018, groundwater flow direction observed was to the northwest with a shallower gradient of 0.01 ft/ft. Groundwater elevations range between 197 and 242 feet above mean sea level (MSL).
53. The Discharger has stated that an updated conceptual site model (CSM) for the Facility could not be completed, especially as it relates to properly characterizing seasonal groundwater flow and direction in first encountered groundwater in the A-Layer. Once the Discharger installs planned detection monitoring wells around the AWCU and monitors groundwater flow and direction for an extended period of time, the Discharger will provide an updated CSM. Therefore, this Order requires the Discharger to submit an updated CSM.
54. Groundwater in the B, C, and D layers generally flows in a southerly direction. Lower potentiometric heads are observed in each underlying screen interval, indicating a general downward vertical head potential. In the area north and west of the AWCU, the groundwater flow is southwesterly also with a downward vertical component. The Discharger monitors the B, C, and D layers in accordance with the 1996 CAO.
55. A series of four groundwater extraction wells are located along the southern perimeter of the property southwest of the proposed AWCU footprint, as shown in **Attachment M**. Three offsite extraction wells are located approximately 1 to 1.5 miles south-southwest of the AWCU as shown in **Attachment N** and **Attachment O**. The extraction wells produce anywhere from 10 to 150 gallons per minute. The onsite extraction wells are screened in Layers B, C, and D, but

as of the date of this Order, it remains unclear whether the extraction wells have had any impact on groundwater hydraulic gradient along the southern edge of the WRND area. The updated CSM will determine the extent of the influence that the extraction wells have on the groundwater hydraulic gradient along the southern edge of the WRND area.

56. According to monitoring data for 2015-2020, existing groundwater quality for first-encountered groundwater in the A-Layer around the WRND has an electrical conductivity (EC) of 83-561 micromhos per centimeter ($\mu\text{mhos/cm}$). Monitoring data for 2020 indicates that existing groundwater quality for first encountered groundwater in the A-Layer around the WRND has total dissolved solids (TDS) of 100-370 milligrams per liter (mg/L).¹
57. According to the Basin Plan, the designated beneficial uses of groundwater at the Facility are municipal and beneficial use (MUN), agricultural supply (AGR) and industrial process supply (PRO).
58. There are four domestic, industrial and agricultural supply wells within one mile of the Facility. The locations of these wells are mapped in **Attachment J**.
59. Class II WMUs must be designed and constructed to withstand a Maximum Credible Earthquake (MCE). (Title 27, § 20370.) The Discharger's site-specific seismic analysis indicates that an earthquake, occurring along the Mysterious Ridge segment of the Great Valley Fault System (Segment 03), at a closest rupture distance of 41 miles, would result in the event summarized in **Table 3**.

Table 3—Seismic Analysis

Earthquake	Magnitude	Peak Ground Acceleration	Notes
Max Credible (MCE)	7	0.10 g	None

See Glossary for definitions of terms and abbreviations in table.

60. The Facility has an annual average precipitation of 21.0 inches (1998-2019), and a mean annual reference evapotranspiration ETo of 50.6 inches per year based on data from the CIMIS Fair Oaks Station #131.

¹ These concentrations exclude monitoring data from groundwater monitoring well **WR-6**, which has reported significantly higher EC (459-981 $\mu\text{mhos/cm}$) TDS (600-630 mg/L).

61. WMUs must be constructed to accommodate stormwater runoff from 24-hour precipitation events with a return period of 1,000 years (Design Storm) for Class II WMUs. (See Title 27, § 20320.) According to National Oceanic and Atmospheric Administration's (NOAA) Precipitation Frequency Atlas 14, Volume 6 (rev. 2014), the Facility's 1,000-year, 24-hour rainfall events are estimated to result in 7.27 inches of precipitation. Source: [NOAA Precipitation Frequency Data Server](https://hdsc.nws.noaa.gov/hdsc/pfds) (<https://hdsc.nws.noaa.gov/hdsc/pfds>). The Discharger's ROWD/JTD demonstrates that the Facility will be constructed such that non-contact stormwater surrounding the AWCU from a Design Storm will be diverted around the AWCU to drainage channels as shown in **Attachment K** to inundation areas where the stormwater will be contained and allowed to percolate or evaporate.
62. The Discharger proposes to minimize contact of stormwater during months outside of the Wet Season (1 May through 30 October) and cease disposal operations during the Wet Season (1 November through 30 April) when a Design Storm is most likely to occur. **Section A (Prohibitions)** prohibits the exposure of Transfer Material to stormwater during the Wet Season in order to limit the production of contact stormwater—i.e., wastewater which needs to be managed as leachate. The Discharger's ROWD/JTD does not demonstrate that the Discharger is capable of managing the production of wastewater during the Wet Season.
63. According to the Federal Emergency Management Agency's (FEMA) [Flood Insurance Rate Map](https://msc.fema.gov/portal) (<https://msc.fema.gov/portal>), the Facility is not located within a 100-year floodplain.

Monitoring Networks

64. Title 27 section 20415, subdivision (e)(4)-(5) requires the Discharger to provide a sampling and analysis plan (SAP) for each monitoring point at the Facility. The Discharger's ROWD/JTD referenced a sampling and analysis plan as sufficient to satisfy Title 27 requirements for these WDRs. However, the referenced SAP does not include monitoring points associated with the AWCU. This Order therefore requires the Discharger to submit an approved SAP that is specific to the Facility.
65. The Discharger currently performs, and will continue to perform, groundwater monitoring for the WRND via the 1996 CAO.
66. As of the date of this Order, the AWCU's **groundwater** monitoring network consists of the proposed monitoring wells listed in **Table 4** and shown in **Attachment P**.

AEROJET ROCKETDYNE, INC.

WHITE ROCK NORTH DUMP AND AEROJET WASTE CONSOLIDATION UNIT LANDFILL
SACRAMENTO COUNTY**Table 4—Planned Groundwater Monitoring Well Network for AWCU**

Well	Program	Monitored Phase (AWCU Only)	Water-Bearing Zone	Status
MW-1	Background, Detection	1A	A-Layer	Planned
MW-2	Background, Detection	1A	A-Layer	Planned
MW-3	Background, Detection	1A	A-Layer	Planned
MW-4	Background, Detection	1A	A-Layer	Planned
MW-5	Background, Detection	1A	A-Layer	Planned
MW-6	Background, Detection	1A	A-Layer	Planned
MW-7	Background, Detection	1A	A-Layer	Planned
MW-8	Background, Detection	1A	A-Layer	Planned
MW-9	Background, Detection	1A	A-Layer	Planned
MW-10	Background, Detection	1A	A-Layer	Planned
MW-11 to MW-XX	Background, Detection	1B - 1F	A-Layer	Planned

See Glossary for definitions of terms and abbreviations in table.

Note: The Discharger plans to construct AWCU phases 1B through 1F depending on how much transfer material is disposed of from the AWCU Service Area. As the Discharger constructs AWCU phases 1B through 1F the Discharger will install sufficient number of point of compliance groundwater monitoring points MW-XX to provide earliest detection of a release of waste to groundwater in the uppermost aquifer for each phase of construction. Phase terminology is subject to change.

67. As of the date of this Order, the Facility’s **unsaturated zone** monitoring network, including both the WRND and the AWCU, consists of the proposed monitoring points listed in **Table 5** and **Attachment R**.

Table 5—Planned Unsaturated Zone Monitoring Network for AWCU

Monitoring Point	Device Type	Program	Monitored Unit / Phase	Status
LYS-1A	Pan Lysimeter	Detection	AWCU Phase 1A	Planned
LYS-1B	Pan Lysimeter	Detection	AWCU Phase 1B	Planned
LYS-1C	Pan Lysimeter	Detection	AWCU Phase 1C	Planned
LYS-1D	Pan Lysimeter	Detection	AWCU Phase 1D	Planned
LYS-1E	Pan Lysimeter	Detection	AWCU Phase 1E	Planned
LYS-1F	Pan Lysimeter	Detection	AWCU Phase 1F	Planned
LFGP-1	Gas Probe	Detection	WRND	Planned
LFGP-2	Gas Probe	Detection	WRND	Planned
LFGP-3	Gas Probe	Detection	WRND	Planned
LFGP-4	Gas Probe	Detection	WRND	Planned
LFGP-5	Gas Probe	Detection	WRND	Planned
LFGP-6	Gas Probe	Detection	WRND	Planned
LFGP-7	Gas Probe	Detection	WRND	Planned
LFGP-8	Gas Probe	Detection	WRND	Planned
LFGP-9	Gas Probe	Detection	WRND	Planned
LFGP-10	Gas Probe	Detection	WRND	Planned
LFGP-11	Gas Probe	Detection	WRND	Planned
LFGP-12	Gas Probe	Detection	WRND	Planned

AEROJET ROCKETDYNE, INC.

WHITE ROCK NORTH DUMP AND AEROJET WASTE CONSOLIDATION UNIT LANDFILL
SACRAMENTO COUNTY

Monitoring Point	Device Type	Program	Monitored Unit / Phase	Status
GCL-1A	Gas Probe	Detection	AWCU Phase 1A Underlying Gas Collection Layer	Planned
GCL-1B	Gas Probe	Detection	AWCU Phase 1B Underlying Gas Collection Layer	Planned
GCL-1C	Gas Probe	Detection	AWCU Phase 1C Underlying Gas Collection Layer	Planned
GCL-1D	Gas Probe	Detection	AWCU Phase 1D Underlying Gas Collection Layer	Planned
GCL-1E	Gas Probe	Detection	AWCU Phase 1E Underlying Gas Collection Layer	Planned
GCL-1F	Gas Probe	Detection	AWCU Phase 1F Underlying Gas Collection Layer	Planned

See Glossary for definitions of terms and abbreviations in table.

Note: Pan Lysimeters LYS-1B through LYS-1F may be combined depending on whether the AWCU phases share common LCRS sumps. Each installed LCRS sump will have an unsaturated zone monitoring device in the form of a pan lysimeter installed directly below each LCRS sump and shall monitor the entire unsaturated zone below the LCRS sump. Also, gas probes LFGP-7 through LFGP-11 and LFGP-13 through LFGP-16 will be constructed at the point of compliance as the Discharger constructs phases 1B through 1F as needed for disposal of transfer material from the AWCU Service Area. Gas probes GCL-1B through GCL-1F may be combined depending on whether the AWCU phases share common LCRS sumps.

68. The Discharger does not currently conduct surface water monitoring associated with the WRND. Any necessary surface water monitoring for the WRND will be imposed via the updated CAO.

69. As of the date of this Order, the AWCU’s proposed **surface water** monitoring network consists of the proposed monitoring points listed in **Table 6** and **Attachment Q**.

Table 6—Planned Surface Water Monitoring Network for AWCU

Monitoring Point	Location	Program	Monitored Phase (AWCU)	Status
SW-3	Drainage Ditch, Northern Boundary	Detection	N/A	Planned
SW-4	Drainage Ditch, Northern Boundary	Detection	Phase 1A	Planned
SW-5	Drainage Ditch, Northern Boundary	Detection	Phase 1A	Planned

See Glossary for definitions of terms and abbreviations in table.

70. As of the adoption of this Order, the above-described networks comply with the monitoring requirements of Title 27. (See Title 27, §§ 20415–20435.) Subsequent changes to these networks will be reflected in a Revised Monitoring & Reporting Program issued by the Executive Officer.

Water Quality Protection Standard

71. A Water Quality Protection Standard (WQPS) is the analytical framework through which WMUs are individually monitored for releases and impacts to water quality. (Title 27, § 20390, subd. (a).) Under Title 27, a WQPS is separately established for each WMU in WDRs. (*Id.*)
72. In accordance with Title 27, this Order, by virtue of its incorporation of **Monitoring & Reporting Program R5-2020-#### (MRP)** and subsequent revisions thereto, establishes a WQPS for the WRND and AWCU.
73. As of the date of this Order, the Discharger has yet to submit a complete set of Concentration Limits for the Monitoring Parameters listed in the accompanying MRP. These remaining WQPS elements will be provided prior to the placement of Transfer Material in the AWCU. (See Reporting Requirements, § H.1.h.)

Corrective Action for WRND

74. On 3 May 1996 the Central Valley Water Board issued the 1996 CAO to address a known release from WRND. **Attachments S, T and U** show trichloroethene (TCE), perchlorate, and N-Nitroso-dimethylamine (NDMA) iso-concentration maps of the COCs detected in the various water bearing layers below the WRND. Only the release of TCE are attributed to the WRND. The release of perchlorate and NDMA to groundwater has been attributed to sources outside of the WRND property and is currently being addressed by Records of Decision and implementing orders for the Superfund Site.
75. For MUN-designated groundwater, the Water Quality Objective (WQO) incorporates the Maximum Contaminant Level (MCL) established for TCE in drinking water, 5 µg/L.
76. **Attachment S** shows concentration levels of TCE in groundwater of 50 µg/L in the A-Layer. The Discharger recently measured concentration levels of TCE in groundwater monitoring well WR-1R of 110 µg/L in the A-Layer.
77. As discussed in **Findings 25-31**, all corrective action for releases from the WRND has been, and will continue to be addressed separately through a Cleanup and Abatement Order (CAO) issued pursuant to Water Code section 13304. (See Title 27, § 20090, subd. (d).) The operative CAO will be updated or replaced prior to the discharge of waste in the AWCU. Among other things, the updated or replacement CAO will require installation of a Title 27-compliant cover over the remaining surfaces of the WRND.

AWCU Construction

78. Liners for new Class II WMUs (landfills and surface impoundments) must be designed and constructed to contain fluids (e.g., leachate, waste and landfill gas), so as to prevent the migration of waste to adjacent geologic materials, groundwater and surface water. (See Title 27, §§ 20310(a), 20330(a).)
79. The Central Valley Water Board is authorized to approve an **engineered alternative** to Title 27 prescriptive standards (see, e.g., Title 27, § 20330, subd. (c)), provided that the discharger demonstrates that compliance with the prescriptive standard would be unreasonably and unnecessarily burdensome in comparison to the proposed alternative. (Title 27, § 20080, subds. (b), (c).)
80. The Discharger submitted preliminary Construction Plans for the construction of new WMUs at the Facility, specifically the AWCU, which incorporate an engineered alternative shown in **Attachment V**, which is incorporated herein.

81. The Discharger proposes the following base and side slope double liner system for the AWCU (from top to bottom) as shown in **Attachment V**:
 - a. A minimum 12-inch-thick to 24-inch-thick protective soil cover layer (operation layer), obtained from select Transfer Material;
 - b. A 12-inch-thick LCRS gravel layer with a minimum 2 percent base slope within the LCRS gravel field and minimum 1 percent slope along the leachate main collection pipes, and 85 percent or the gravel retained on a 4.75-mm (No. 4) sieve;
 - c. A 16-ounce non-woven geotextile;
 - d. A 60-mil primary HDPE geomembrane (textured on both sides);
 - e. A 200-mil geonet;
 - f. A 60-mil secondary HDPE geomembrane (textured on both sides);
 - g. A needle punch geosynthetic clay liner (GCL) placed over select soils of sufficient thickness to provide a suitable subbase;
 - h. A VOC collection layer; and
 - i. A suitable subgrade.
82. The double liner system uses a single composite liner as its secondary liner which substitutes GCL as an engineered alternative for the 2-foot thick low permeability soil layer. (See Title 27, § 20080, subs. (b), (c).)
83. The Discharger has adequately demonstrated that construction of a liner in accordance with the Title 27 prescriptive standard would be unreasonably and unnecessarily burdensome in comparison to the proposed engineered alternative. The Discharger has further demonstrated that the proposed engineered alternative, as described in **Attachment V**, is not only consistent with the performance goals of the prescriptive standard, as described above, and will afford at least equivalent water quality protections.
84. The new AWCU will incorporate the leachate collection and removal systems (LCRS) described in further detail for Phase 1A WMU in **Attachment W**. The proposed LCRS comply with Title 27 prescriptive standards. (See Title 27, § 20340.). Phases 1B through 1F will be designed to have a LCRS system equivalent to that shown in **Attachment W**.

85. The Discharger does not propose to construct a Class II surface impoundment at the Facility for the management of liquid waste (i.e., leachate and stormwater which contacts waste [wastewater]). The Discharger proposes to manage leachate and wastewater through collection, temporary storage and ultimate disposal.
86. The Discharger proposes to collect leachate from the AWCU and wastewater and temporarily store it in a minimum of two 10,000 gallon storage tanks. Under this Order, the Discharger may apply a portion of AWCU's leachate back to the AWCU for dust control-purposes; all remaining AWCU leachate must be disposed offsite at an appropriately permitted wastewater treatment or waste disposal facility. (See § B.5.) The MRP further requires that the Discharger report where its AWCU leachate is disposed offsite, to ensure its proper handling, treatment and/or disposal. (See MRP, § E.2.I.)
87. The Discharger proposes to install a leak detection layer (Item e) between the double liner system to evaluate the performance of the primary geomembrane barrier layer installed below the LCRS. Detection of waste within the leak detection layer does not constitute a release of waste from the AWCU.
88. According to the submitted seismic analysis, the proposed AWCU will be able to withstand MCE seismic events described in **Finding 59**. (Title 27, § 20370.)

Closure of AWCU

89. Although the Discharger's Preliminary Closure and Post-Closure Maintenance Plan (PCPMP) proposes closure of both the WRND and the AWCU, this Order only directs the closure of the AWCU. The WRND "closure" (i.e., installation of a Title 27-compliant cover) will be addressed via a separate CAO.
90. The Discharger submitted a Preliminary Closure and Post-Closure Maintenance Plan (PCPMP) as Appendix J and K of its JTD. The JTD sets a schedule for closure, as summarized in **Table 7**.

Table 7—Unit Closure Schedule

Unit Module	Estimated Closure Date
AWCU (Phase 1A)	2035
AWCU (Phases 1B-1F)	2035
WRND (Phase 2)	2035

91. Per the PCPMP, the Discharger proposes closure of the AWCU with an engineered alternative final cover, as shown in **Attachment V** which is incorporated herein.

92. The Discharger proposes the following final closure cover for the AWCU (from top to bottom) as shown in **Attachment V**:
 - a. 2 feet of vegetative or mechanically erosion-resistant soil;
 - b. A drainage layer for slope stability purposes. If natural geologic materials with sufficient hydraulic conductivity is used the thickness of item a above may be reduced accordingly;
 - c. A 60-mil linear low-density polyethylene (LLDPE) geomembrane;
 - d. A geosynthetic clay line (GCL); and
 - e. 2 feet of foundation layer consisting of select Transfer Material (i.e., material with no construction debris, metal scraps, or particles in excess of 2 inches in diameter).
93. The single composite final closure cover for the AWCU substitutes GCL as an engineered alternative for the one-foot thick low permeability soil layer required in Title 27 section 21090, subdivision (a)(2).
94. The Discharger has adequately demonstrated that construction of a final cover over the AWCU in accordance with the Title 27 prescriptive standard would be unreasonably and unnecessarily burdensome in comparison to the proposed engineered alternative. The Discharger has further demonstrated that the proposed engineered alternative described in **Attachment V** is not only consistent with the performance goals of the prescriptive standard, as described above, and will afford at least equivalent water quality protections.
95. The Discharger proposes a final closure cover over the AWCU with side slopes of 3 horizontal feet for every 1 foot of vertical gain and a minimum top deck slope of 2 percent. Title 27, section 21090, subdivision (b)(1)(B) requires that the Discharger demonstrate that final cover slopes less than three percent still provides an effective system for diverting surface drainage from laterally-adjacent areas and preventing ponding in the allowed flatter portion. The analyses submitted in support of such a proposal shall take into account the design storm intensity under section 20365. The Discharger provided a settlement analysis and accompanying information that adequately demonstrates that the proposed minimum two percent slope satisfies the requirements of section 21090, subdivision (b)(1)(B), and is hereby approved as an engineered alternative.
96. The proposed final cover specified in **Attachment V** has side slopes which are within Title 27 limits (i.e., 1¾ horizontal feet for every 1 foot of vertical gain) and supported by a static and dynamic slope stability analysis demonstrating that

side slopes will remain stable. The final cover will include a 15-foot wide bench at minimum for every 50 feet of vertical gain. (See Title 27, § 21090, subd. (a).)

97. The Discharger's proposed final cover for the AWCU, together with any approved modifications set forth in **Attachment V** and these WDRs, is hereby approved for closure of the AWCU identified in **Table 1**.

Discharger Proposals for "Closure" of WRND

98. As noted above, the WRND is a CAI Unit that is not subject to the prescriptive requirements for "closure" under Title 27. Nevertheless, the installation of a Title 27-compliant cover is deemed to be appropriate corrective action to address WRND releases per Water Code section 13304.
99. The Discharger proposes to place a final closure cover over the WRND and the AWCU as shown in **Attachment X**. The final closure of WRND involves reducing its existing footprint by clean closing a portion of the WMU through excavation and consolidation of the waste material onto the remaining portion of the WRND which will receive a final closure cover. The consolidation of the WRND waste material shall be consistent with applicable laws and regulations.
100. As discussed in the Discharger's JTD, the Discharger proposes to close the WRND with a water balance/evapotranspiration (ET) final cover consisting of 2 feet of soil. However, at this time, the proposed cover does not appear to meet the applicable performance standard for closure under Title 27. (See § 20950, subd. (a)(2).) This issue will be revisited and addressed further in the forthcoming revised or replacement CAO addressing the WRND.

Post-Closure Maintenance

101. The Discharger's Preliminary Closure and Post-Closure Maintenance Plan (PCPMP) provides for post-closure maintenance of the AWCU and WRND for the entire post-closure maintenance period of at least 30 years, and until it is demonstrated that the Facility no longer poses a threat to the public health and safety and the environment. (See Title 27, §§ 20950(a)(1), 21180(a).) The PCPMP was included as Appendix K of the Discharger's JTD and included amongst other things the following components:
- a. Landfill Gas Migration System Monitoring and Maintenance,
 - b. Groundwater System Monitoring and Maintenance,
 - c. Stormwater Monitoring,
 - d. Final Cover Inspection and Maintenance,

- e. Settlement Monitoring and Maintenance,
 - f. Vegetative Cover Inspection and Maintenance,
 - g. Access Road Maintenance,
 - h. Drainage Control System Inspection and Maintenance, and
 - i. Site Security Inspection and Maintenance.
102. The Discharger's PCPMP may be revisited and further evaluated per the forthcoming revised/replacement CAO. The CAO may require the Discharger to update its PCPMP for both the WRND and the AWCU.

Financial Assurances

103. The PCPMP includes costs estimates for closure (Title 27, §§ 21820, 22206), post-closure maintenance (§§ 22210–22212), and foreseeable corrective action for releases (§§ 22220–22222). The Discharger's JTD provided preliminary cost estimates for closure and post-closure maintenance of the AWCU as shown in **Table 8**. However, the Discharger's PCPMP did not provide cost estimates for corrective action measures that may be needed for a foreseeable release of waste from the AWCU.
104. As of the date of this Order, these estimates, calculated in accordance with Title 27, are specified in **Table 8**.

Table 8—Current AWCU Cost Estimates (Financial Assurances)

Requirement	Estimated Cost
Closure (AWCU)	\$8.459M
30-years of Post-Closure Maintenance (AWCU)	\$2.734M
Corrective Action (AWCU)	TBD

105. This Order requires the Discharger to maintain financial assurances with CalRecycle in at least the Estimated Cost amounts specified in **Table 8**.

California Environmental Quality Act (CEQA)

106. In accordance with CEQA, on 13 October 2020, the Central Valley Water Board adopted **Resolution R5-2020-0045**, formally adopting a Mitigated Negative Declaration (MND) for the prescribing of WDRs authorizing, among other things, the construction of the AWCU at the Facility. Significant project elements are listed below. In particular, the MND stated that, with the implementation of

various mitigation and monitoring measures (implemented via this Order), the proposed project would not result in a significant impact on the environment.

- a. **Phase 1 AWCU:** Construct, fill and close consistent with Title 27 requirements a new Class II waste management unit (AWCU) on top of up to 50-acres of the WRND within the existing WRND parcel. Construction of the AWCU will allow disposal of up to 1,000,000 CYs of waste soil that meets the Class II waste requirements and inert construction debris (together referred to as Transfer Material);
 - b. **Phase 2 WRND Cap and Closure:** Cap and close the remainder of the existing pre-regulation 100-acre WRND in accordance with Title 27 requirements (up to 50 acres plus any remaining portion of the up to 50-acre AWCU area not filled with Transfer Material);
 - c. **Entitlements:** The current 250-acre WRND parcel, inclusive of the 100-acre former dump is zoned M1, which does not include landfill activities. In order to bring the parcel into compliance with its current use and to construct the AWCU on the parcel, incorporation of the WRND parcel into the Aerojet Special Planning Area (SPA) is required. Therefore, Project entitlements include amending the Aerojet SPA chapter of the Sacramento County zoning code to add the WRND parcel into the SPA "Industrial Zone."; and
 - d. **Schedule:** Completion of Phase 1 and Phase 2 would not exceed 15 years from the issuance of a solid waste facility permit. The Discharger commits to an AWCU final closure by December 31, 2035. Furthermore, The Discharger commits to completion of the excavation and relocation of Transfer Material from the Aerojet landfill to the AWCU within 24 months of implementing the Aerojet Landfill Clean Closure Plan, and final closure of the portion of the AWCU that received transfer material within 12 additional months or sooner due a threat to receiving water quality from stormwater contact with the transfer material. The preferred schedule for implementation of the WRND Phase 2 final closure is to begin when 1,000,000 CY of Transfer Material have been placed in the AWCU. However, since the Discharger does not know the exact timing of all projects that would generate Transfer Material, the Discharger has indicated it will complete Phase 2 final closure by December 31, 2035.
107. If there are any subsequent changes to the proposed project (e.g., per the revised CAO), the Central Valley Water Board will engage in further environmental review, to the extent such review is required under CEQA Guidelines. However, minor and technical changes to the project will be addressed via Addendum per the CEQA Guidelines.

108. Although this Order does not address the Phase 2 WRND Cap and Closure (discussed above), the Central Valley Water Board's forthcoming revised or replacement CAO will require such activities. The CAO will also be supported by the MND for purposes of compliance with CEQA.

Other Regulatory Matters

109. This Order is issued in part pursuant to Water Code section 13263, subdivision (a), which provides as follows:

The regional board, after any necessary hearing, shall prescribe requirements as to the nature of any proposed discharge, existing discharge, or material change in an existing discharge..., with relation to the conditions existing in the disposal area ... into which, the discharge is made or proposed. The requirements shall implement any relevant water quality control plans that have been adopted, and shall take into consideration the beneficial uses to be protected, the water quality objectives reasonably required for that purpose, other waste discharges, the need to prevent nuisance, and the provisions of [Water Code] Section 13241.

110. This Order implements the Central Valley Water Board's Basin Plan, which designates beneficial uses for surface water and groundwater and establishes water quality objectives (WQOs) necessary to preserve such beneficial uses.² (Wat. Code, § 13241 et seq.)
111. The State Water Board's *Statement of Policy with Respect to Maintaining High Quality Waters in California*, Resolution 68-16 (*Antidegradation Policy*) prohibits the Central Valley Water Board from authorizing degradation of "high quality waters" unless it is shown that such degradation: (1) will be consistent with the maximum benefit to the people of California; (2) will not unreasonably affect beneficial uses, or otherwise result in water quality less than as prescribed in applicable policies; and (3) is minimized through the discharger's best practicable treatment or control.
112. Consistent with Title 27, this Order requires the Discharger to maintain the Facility to contain waste within WMUs, thereby preventing degradation of water quality. To the extent that there are releases from Facility WMUs, will be required to address such releases through a Corrective Action Program. (See Title 27,

² Designated beneficial uses surface water and groundwater are discussed in **Finding 47** and **Finding 48**, respectively.

§§ 20385, 20415, 20430.) Because this Order does not authorize any degradation in water quality, it complies with the *Antidegradation Policy*.

113. For the purposes of California Code of Regulations, title 23 (Title 23), section 2200, the Facility has a threat-complexity rating of **2-B**, where:
- a. Threat Category “2” reflects waste discharges that can impair receiving water beneficial uses, cause short-term water quality objective violations, cause secondary drinking water standard violations, and cause nuisances; and
 - b. Complexity Category “B” reflects any discharger not included in Category A, with either (1) physical, chemical or biological treatment systems (except for septic systems with subsurface disposal), or (2) any Class II or Class III WMUs.

Reporting Requirements

114. This Order is also issued in part pursuant to Water Code section 13267, subdivision (b)(1), which provides that:

[T]he regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region ... shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

115. The technical reports required under this Order, as well as those required under the separately issued MRP, are necessary to ensure compliance with prescribed WDRs and the provisions of Title 27. Additionally, the burdens associated with such reports are reasonable relative to the need for their submission.

Procedural Matters

116. All local agencies with regulatory jurisdiction over land-use, solid waste disposal, air pollution and public health protection have approved the use of the Facility’s site for the discharge of waste to land as provided for herein.

117. The Discharger, interested agencies and interested persons were notified of the Central Valley Water Board's intent to prescribe the WDRs in this Order, and provided an opportunity to submit their written views and recommendations at a public hearing. (Wat. Code, § 13167.5; Title 27, § 21730.)
118. At a public meeting, the Central Valley Water Board heard and considered all comments pertaining to the discharges regulated under this Order.
119. The Central Valley Water Board will review and revise the WDRs in this Order as necessary.

REQUIREMENTS

IT IS HEREBY ORDERED, pursuant to Water Code sections 13263 and 13267, that the Discharger and their agents, employees and successors shall comply with the following.

- A. Discharge Prohibitions**—Except as otherwise expressly directed below, the Discharger shall comply with all Standard Prohibitions (SPRRs, § C), which are incorporated herein, as well as the following.
 1. **“Hazardous Waste,”** as defined per Title 23, section 2601, shall not be discharged at the Facility. The Department of Toxic Substances Control (DTSC) shall be immediately notified of any such discharges in violation of this Order.
 2. Except as specifically authorized for the AWCU in **Section B.1** and **Table 9, “Designated Waste,”** as defined per Water Code section 13173, shall not be discharged at the Facility.
 3. Except as expressly authorized in **Section B.1** and **Table 9**, leachate and landfill gas (LFG) condensate shall not be discharged into any of the Facility's WMUs, including the AWCU.
 4. The Discharger is prohibited from placing waste in the AWCU until each of the conditions in Section B.2 are fully satisfied.
 5. The Discharger is prohibited from placing any waste in the AWCU that does not originate from the *AWCU Service Area*, as described in **Findings 2-3**, and depicted in **Attachment D.**³

³ The WRND is considered part of the AWCU Service Area.

6. The Discharger is prohibited from exposing Transfer Material to stormwater during the Wet Season (1 November to 30 April), to limit the production of contact stormwater (i.e., wastewater which needs to be managed as leachate).⁴
7. The Discharger is prohibited from discharging waste outside of the AWCU waste containment system.
8. No new waste of any kind shall be discharged to the WRND.

B. Discharge Specifications—Except as otherwise expressly directed below, the Discharger shall comply with all Standard Discharge Specifications (SPRRs, § D), which are incorporated herein, as well as the following.⁵

1. The Discharger shall only discharge waste to the AWCU as specified in **Table 9**, subject to the table-specific definitions provided below.

Table 9—Authorized Waste Discharges at Facility

Waste Category	AWCU
Hazardous Waste Wastes which, pursuant to Title 22, section 66261.3 et seq., must be managed in accordance with Division 4.5 of Title 22. (Title 27, § 20164; Title 23, § 2521(a).)	No
Contaminated Soils (Transfer Material) Only contaminated soils that have been tested and determined that the soil as a whole and/or constituents of concern within the soil does not classify the contaminated soil as hazardous waste which is prohibited from disposal in a Class II landfill waste management unit	Yes

⁴ As noted in the Findings, the Discharger's ROWD/JTD does not demonstrate that the Discharger is capable of managing the production of wastewater during the Wet Season and is therefore prohibited from allowing stormwater to contact the Transfer Material during the Wet Season.

⁵ These Discharge Specifications apply only to the discharge of waste to the proposed AWCU. Discharges of waste to the WRND remain prohibited.

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Waste Category	AWCU
<p>Municipal Solid Waste (MSW) Wastes subject to 40 C.F.R. part 258. (Title 27, § 20164.)</p>	No New Wastes (see note below)
<p>Designated Waste (1) Hazardous Wastes subject to a variance from management requirements per Health and Safety Code section 25143; and (2) Nonhazardous Waste containing constituents that, under ambient conditions, could be released in concentrations exceeding WQOs, or could reasonably be expected to affect beneficial uses. (Wat. Code, § 13173.)</p>	Yes
<p>Inert Wastes Wastes that contain neither (i) hazardous wastes or soluble pollutants at concentrations in excess of WQOs, nor (ii) significant quantities of decomposable material. (Title 27, §§ 20164, 20230(a).)</p>	Yes
<p>Landfill Gas Condensate Liquid removed from a gas control system at a landfill and which are produced by the condensation of landfill gas being conveyed by that system. (Title 27, § 20164.)</p>	Dust Control Only
<p>Leachate Liquid formed by the drainage of liquids from waste or by the percolation or flow of liquid through waste. Includes any constituents extracted from the waste and dissolved or suspended in the fluid. (Title 27, § 20164.)</p>	Dust Control Only
<p>Asbestos-Containing Waste (>1%) Wastes containing at least 1 percent of non-friable asbestos particles.</p>	No
<p>Treated Wood Waste Wood treated with chemical preservatives that are: (i) administered for protection against insects, microorganisms, fungi, and other conditions leading to decay; and (ii) registered under the Federal Insecticide, Fungicide and Rodenticide Act. (Title 22, § 67386.4.)</p>	No

Note: The Discharger anticipates that, as part of AWCU construction activities, a small amount of material from the WRND will be excavated and discharged to the AWCU. Some of this soil may contain decomposed household wastes that would have constituted Municipal Solid Waste (MSW) at the time of the original discharge. Such material is no longer considered MSW for the purposes of this Order. This material may be discharged to the AWCU, provided that doing so is consistent with the AWCU's Class II classification for nonhazardous and/or designated waste.

2. Notwithstanding Section B.1 and Table 9, the Discharger shall not discharge any waste to the AWCU until each of the following conditions are met:
 - a. The Central Valley Water Board has revised the 1996 CAO, or replaced it within a new CAO addressing the same subject matter;
 - b. The Discharger has reported financial assurance cost estimates for corrective action to the Central Valley Water Board, and the cost estimate(s) are approved by the Executive Officer;
 - c. CalRecycle has approved the Discharger's demonstration of financial assurances for closure, post-closure maintenance, corrective action;
 - d. Central Valley Water Board staff have approved the Discharger's Post-Construction Report submitted in accordance with **Section H.1.b**⁶; and
 - e. The Executive Officer has approved the Discharger's proposed Concentration Limits submitted in accordance with **Section H.1.h**.
3. The Discharger is authorized to use Transfer Material, as described in **Finding 40**, as an Alternative Daily Cover (ADC) at the AWCU, provided that the following conditions are met:
 - a. The Discharger submittal of an Operations Report in accordance with **Section H.1.d** of this Order;
 - b. The Executive Officer's approval of the Operations Report;

⁶ Per Section H.1.b, the Post-Construction Report must still be submitted at least 60 days prior to discharge to the AWCU.

- c. The Transfer Material is applied in accordance with the approved Operations Report;
 - d. The Transfer Material applied as ADC (including any contact stormwater) remains within the AWCU's waste containment system at all times; and
 - e. The Transfer Material is not applied outside of the AWCU, including any areas with drainage beyond the Facility.
4. The Discharger shall not use any other materials⁷ as an ADC for the AWCU without Executive Officer approval as meeting the standards of Title 27, section 20705. Requests for use of other materials shall be made via the submission of an Operations Report containing the elements listed in **Section H.1.d** of this Order.⁸ Upon approval, the following conditions shall apply:
- a. The ADC material shall be applied in accordance with the Discharger's proposal per the Operations Report; and
 - b. The ADC material shall not be applied to areas with drainage beyond the AWCU, unless that the Discharger demonstrates in the Operations Report that resulting runoff will not pose a threat to surface water quality (accounting for sediment and suspended solids removal in a sedimentation basin); and the Executive Officer approves the demonstration.
5. Notwithstanding Section B.1 and Table 9, leachate and landfill gas condensate collected from the AWCU, and not reapplied to the AWCU as dust-control (see Table 9), shall be disposed offsite at an appropriately permitted wastewater treatment or waste disposal facility, and in accordance with the facility's operative permit(s).⁹

⁷ For the purposes of this Order, alternative ADC materials do not constitute "waste" originating from beyond the AWCU Service Area.

⁸ The subsequent Operations Report would address use of the alternative material for ADC in lieu of Transfer Material.

⁹ For facilities in California, an "appropriately permitted" facility is one that is subject to regulatory coverage under individual WDRs or general WDRs prescribed by the State Water Resources Control Board or a California Regional Water Quality Control Board.

6. The Discharger shall implement a waste screening and acceptance methodology consistent with CalRecycle and Department of Toxic Substances (DTSC) regulations to ensure that hazardous waste is not disposed of in the Class II AWCU. The Discharger shall provide to the Central Valley Water Board, prior to disposal of Transfer Material in the AWCU, a copy of the waste screening and acceptance methodology and criteria approved by CalRecycle and DTSC, that the Discharger will implement at the Facility.
7. The Discharger shall promptly remove and relocate all waste discharged at the Facility in violation of this Order. If unable to do so, they shall submit a report to the Central Valley Water Board: explaining how the violative discharge(s) occurred, and why the waste(s) cannot be removed; and proposing waste acceptance program updates to prevent reoccurrences.

C. Facility Specifications—The Discharger shall comply with all Standard Facility Specifications (SPRRs, § E) which are incorporated herein and;

1. In accordance with the Discharger's ROWD/JTD, in order to minimize the production of wastewater due stormwater contacting the Transfer Material the Discharger shall limit the expose area of the Transfer Material in the AWCU to 2.5 acres during the months of May, September, and October, the months leading up to and ending the Wet Season. All other areas within the AWCU shall be covered with materials that do not produce wastewater that must be managed as leachate or with the final closure cover prescribed in Section E of these WDRs.

D. Unit Construction Specifications—Except as otherwise expressly directed below, the Discharger shall comply with all Standard Construction Specifications and Standard Storm Water Provisions (SPRRs, §§ D, L), which are incorporated herein, as well as the following with respect to the AWCU.

1. Except as authorized in **Section D.2**, the Discharger shall not commence liner construction (other than preparatory earthmoving and grading) until the Central Valley Water Board has approved in writing all necessary construction plans, specifications and construction quality assurance plans related to the new liner(s).
2. Base liners and slope liners for the AWCU shall be constructed according to specifications in **Findings 78-88** and **Attachment V**.
3. The Discharger shall utilize a disinterested independent third party to perform the Construction Quality Assurance (CQA) requirements per Title 27, sections 20323 and 20324.

4. The Discharger shall perform an electric leak location survey of the primary liner and secondary liner (single composite liner) to ensure the integrity of the double liner system.
5. Critical interfaces of the base liner and side slope liner system shall be laboratory-tested to ensure minimum design shear strength. The results of such testing shall be reported to the Central Valley Water Board as part of the Construction Quality Assurance (CQA) Report
6. The Discharger shall not implement changes to approved liner designs in **Attachment V** until the Central Valley Water Board approves of the proposed changes in writing, provided that the proposed changes:
 - a. Previously approved components are not eliminated;
 - b. The engineering properties of previously approved components are not substantially reduced; and
 - c. The proposed liner system will result in water quality equal to or greater than the design(s) prescribed per Title 27, section 20310 et seq., and this Order.¹⁰

E. Closure & Post-Closure Maintenance Specifications—Except as otherwise directed below, the Discharger shall comply with all Standard Closure and Post-Closure Specifications (SPRRs, § G) and closure-related Standard Construction Specifications (SPRRs, § F), as well as the following with respect to closure of the AWCU.¹¹

1. The Discharger shall submit a Final or Partial Final Closure and Post Closure Maintenance Plan (CPMP), in accordance with section G of the SPRRs, at least two years prior to the proposed closure of any portion of any landfill.
2. The Discharger shall close landfills with the final cover components proposed in its most recently submitted Preliminary Closure and Post-Closure Maintenance Plan (PCPMP), as approved per **Findings 90-96** and **Attachment V**.

¹⁰ Proposed changes that do not meet these criteria are considered “material,” and will require the revision of this Order.

¹¹ The WRND’s “closure” and subsequent maintenance will be addressed via a separately-issued Cleanup and Abatement Order per Water Code section 13304.

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3. The Discharger shall obtain revised WDRs prior to closure of any landfill with a final cover other than the one(s) approved herein.
4. The Discharger shall utilize a disinterested independent third party to perform the Construction Quality Assurance requirements of Title 27, sections 20323 and 20324.
5. The Discharger shall perform an electric leak location survey of any final cover barrier system which contains a geomembrane barrier layer to ensure the integrity of the final cover.
6. During or after final cover installation, the Discharger may perform minor modifications to problematic areas of the final cover, provided that: (a) the barrier layer of the final cover (e.g., geomembrane, GCL and/or compacted clay layer) remains intact; and (b) the Central Valley Water Board approves of such modifications.
7. If settlement occurs above the final closure cover which contains a geomembrane barrier layer where ponding may occur which causes greater than one-foot of liquid head on the geomembrane barrier layer the Discharger shall address the settlement below the geomembrane layer such that the Discharger maintains less than one foot of liquid head on the geomembrane barrier layer. The Discharger shall take into consideration soil liquid pore pressures above the geomembrane barrier layer for final slope stability purposes when determining whether less than one foot of liquid head is required in order to ensure final closure cover slope stability.
8. If the final cover incorporates a geomembrane barrier, all edges of the final cover shall be sealed by connecting to the liner.
9. Where vegetation is used as the erosion resistant layer, the Discharger shall apply a volume of seed, binder and nutrients to the vegetative erosion-resistant layer sufficient to establish the vegetation proposed in the final closure plan. The Discharger shall also install any necessary erosion and sedimentation controls to protect vegetation while it is being established. A mechanically erosion-resistant soil where vegetation is not used to provide erosion control is exempted from this requirement.
10. Critical interfaces of the final cover shall be laboratory-tested to ensure minimum design shear strength. The results of such testing shall be reported to the Central Valley Water Board as part of the Construction Quality Assurance (CQA) Report

- F. Financial Assurances**—Except as otherwise directed below, the Discharger shall comply with all Standard Financial Assurance Provisions (SPRRs, § H), as well as the following with respect to the AWCU.¹²
1. Prior to the discharge of waste to the AWCU, the Discharger shall submit cost estimates for AWCU corrective action in accordance with **Section H.1.i**.
 2. The Discharger shall maintain with CalRecycle assurances of financial responsibility for the Estimate Cost amounts specified for each category in **Finding 103**, adjusted annually for inflation.
 3. A report regarding financial assurances, or a copy of the financial assurances report submitted to CalRecycle, shall be submitted to the Central Valley Water Board annually, no later than **1 June**.
 4. If CalRecycle determines that the submitted financial assurances for the AWCU are inadequate, the Discharger shall, within 90 days of such determination:
 - a. Obtain a new financial assurance mechanism for the amount specified by CalRecycle; and
 - b. Submit a report documenting such financial assurances to CalRecycle and the Central Valley Water Board.
 5. The PCPMP shall include all components required per Title 27, section 21769, subdivision (c), and include a lump sum cost estimate for:
 - a. Completion of all actions required for closure of the AWCU;
 - b. Preparation of detailed design specifications;
 - c. Development of a Final Closure and Post-Closure Maintenance Plan (FCPMP) for the AWCU; and
 - d. Undertaking at least 30 years of post-closure maintenance.
 6. Whenever changed conditions increase the estimated costs of closure and post-closure maintenance, the Discharger shall promptly submit an

¹² To the extent that the Central Valley Water Board imposes financial assurances requirements for the WRND (e.g., corrective action, closure and post-closure maintenance), those requirements shall be addressed via a separately-issued Cleanup and Abatement Order per Water Code section 13304.

updated PCPMP to the Central Valley Water Board, CalRecycle and the LEA.

G. Monitoring Requirements—Except as otherwise directed below, the Discharger shall comply with all applicable Standard Monitoring Specifications (SPRRs, § I) and Standard Response to Release Specifications (SPRRs, § J), for the Facility which includes the WMUs identified in Table 1 of Finding 17 as well as the following:

1. The Discharger shall comply with all provisions of the separately issued Monitoring and Reporting Program R5-2020-#### and any subsequent revisions thereto (operative MRP).
2. The Discharger shall comply with the Water Quality Protection Standard (WQPS) set forth in the operative MRP (see also Title 27, § 20390); and shall verify the compliance of each WMU with each subsequent monitoring event.
3. For all WMUs, the Discharger shall implement a groundwater, surface water and unsaturated zone detection monitoring program (DMP) in accordance with Title 27, sections 20385, 20415 and 20420.
4. For each WMU subject to corrective action, the Discharger shall implement a corrective action program (CAP) in accordance with Title 27, sections 20385, 20415 and 20430, and Section I of the SPRRs. Corrective action for any known release from the WRND shall occur under CAO 96-150 or any amendment to, a revision of, or replacement thereof.
5. Constituents of Concern (COCs) in water passing through each WMU's Point of Compliance shall not exceed concentration limits specified in the operative MRP.
6. The Discharger shall monitor and report in its operative MRP the COCs in leachate in order to continue to characterize the Transfer Material in accordance with Title 27§ 20200(c) as its characteristics may change as its sources may change within the AWCU Service Area.
7. The Discharger shall monitor and report in its operative MRP the sampling results of any additional monitoring points such as but not limited to monitoring of the leak detection system installed between the primary and secondary geomembrane barrier layers within the AWCU containment system to determine the performance of the primary waste containment barrier layer.

8. As described in **Findings 34-36**, the Discharger in its MRP shall monitor for the substances identified in **Finding 34** and **Attachment G** on a more frequent basis as specified in the MRP beginning with (1) analyzing for the COCs in leachate collected from the LCRS sump; (2) analyzing for the COCs in any leakage discovered in the AWCU leak detection system (LDS); and (3) analyzing for the COCs in any liquid and/or gas in the AWCU pan lysimeter(s). If any COCs are found in the unsaturated zone beneath the AWCU containment system and upon subsequent investigation it was determined that a release of waste from the AWCU had occurred the Discharger shall as part of its corrective action extend monitoring for the detected substances identified in **Finding 34** to the AWCU's groundwater monitoring system.
9. The Discharger shall continue to address the known release from the WRND under the 1996 CAO (as updated or replaced), and monitor the results of such action per the operative MRP.

H. Reporting Requirements—In addition to those Standard Provisions pertaining to notification and reporting obligations (see, e.g., §§ K.1-2, K.6, K.8-10), the Discharger shall comply with the following provisions.

1. **Additional Required Reports**—The following reports shall be submitted for Executive Officer review and approval.¹³ (See Other Provisions, § J.3.) Reports and their deadlines are also listed in **Section I** and **Table 10**.
 - a. **Construction and Design Plans**—The Discharger shall submit, for Central Valley Water Board staff approval, construction and design plans at least 90 days prior to the Discharger's solicitation of construction bids. (§ D; SPRRs, § F.)
 - b. **Post-Construction Report**—The Discharger shall submit, for Central Valley Water Board staff approval, a Post-Construction Report demonstrating construction in accordance with approved plans. (SPRRs, § F.27.)
 - c. **[Partial] Final Closure and Post-Closure Maintenance Plan**—At least two years prior to closure of the AWCU, the Discharger shall submit, for Central Valley Water Board staff approval, a [Partial]

¹³ Executive Officer approval required for all reports in this section, except as otherwise expressly provided.

Final Closure and Post-Closure Maintenance Plan,¹⁴ Design Plans and CQA Plan. (§ E; SPRRs, § G.)

- d. **Operations Report (ADC Demonstration)**—At least 60 days prior to the discharge of waste to the AWCU, the Discharger shall submit an Operations Report that includes the following components:
- i. A description of limiting environmental conditions for when the Transfer Material must be protected from the environment (e.g., wind and rain); and
 - ii. Prescribed measures to be taken to protect Transfer Material, if used as ADC, demonstrating that any waste constituents within the Transfer Material will remain within the AWCU’s waste containment system at all times.
- e. **Stormwater Report**—By 1 June 2021, the Discharger shall submit a technical report demonstrating that the entire Facility will be capable of retaining all stormwater onsite,¹⁵ or alternatively, has obtained regulatory coverage under the State Water Board’s operative Industrial General Permit (IGP). This report does not require approval or concurrence by the Central Valley Water Board.
- f. **Updated Conceptual Site Model (CSM)**—Within 2 years after installation of monitoring wells around the AWCU, the Discharger shall submit, for Central Valley Water Board staff concurrence, an updated Conceptual Site Model (CSM), that adequately describes seasonal groundwater flow and direction within the A-layer, taking into consideration hydrogeological effects from nearby water supply wells, nearby groundwater extraction wells used for remediating groundwater contamination, and percolation effects due to nearby stormwater inundation basins, and any other stormwater detention basins. Additionally, the CSM may propose additional installation of potentiometers that continually monitor groundwater elevation in order to capture seasonal variations.
- g. **Sampling and Analysis Plan (SAP)**—Prior to installation of AWCU groundwater monitoring wells, the Discharger shall submit,

¹⁴ The plan may be submitted as a “final” or “partial final” version.

¹⁵ I.e., stormwater retention such that Industrial General Permit coverage would not be required.

for Central Valley Water Board staff concurrence, a Sampling and Analysis Plan (SAP) for the Facility that includes list of all Facility monitoring points for groundwater, the unsaturated zone, surface water, leachate, and leak detection system(s), and the frequency with which each point will be monitored; and a map depicting each monitoring point.

- h. **Proposed Concentration Limits for WQPS**—Prior to the discharge of waste to the AWCU, the Discharger shall submit a technical report proposing initial Concentration Limits for each of the Monitoring Parameters listed in the MRP accompanying this Order. The proposed Concentration Limits shall incorporate initial background monitoring conducted at each groundwater monitoring well in accordance with Title 27, section 20415, subdivision (e)(6), as well as available information regarding seasonal changes in groundwater flow and direction.
- i. **Financial Assurances Cost Estimates for Corrective Action**—Prior to the discharge of waste to the AWCU, the Discharger shall submit a technical report containing cost estimates for corrective action to address foreseeable releases of waste from the AWCU. (See also § B.2.c for CalRecycle approval of mechanisms.)

2. General Reporting Requirements—The following provisions are applicable to all reports submitted under this Order.

- a. The Discharger shall comply with all MRP provisions pertaining to the submittal and formatting of reports and data.
- b. Reports shall be submitted electronically via the State Water Board's [GeoTracker Database](https://geotracker.waterboards.ca.gov) (<https://geotracker.waterboards.ca.gov>). After uploading, the Discharger shall notify Central Valley Water Board staff via email at CentralVallySacramento@WaterBoards.ca.gov. The following information shall be included in the body of the email:

Attention:	Title 27 Compliance & Enforcement Unit
Report Title:	[Title]
GeoTracker Upload ID:	[number]
Facility:	White Rock North Dump and Aerojet Waste Consolidation Unit Landfill
County:	Sacramento County
CIWQS Place ID:	868300

- c. All technical reports submitted under this Order shall be prepared by, or under the direct supervision of, a California-licensed civil engineer, certified engineering geologist, or professional geologist based on Title 27 requirements and the Professional Engineers Act (Business and Professions Code §§ 6700 – 6799) and the Geologist and Geophysicist Act (Business and Professions Code §§ 7800 – 7887) as appropriate. For the purposes of this section, a “technical report” is a report incorporating the application of scientific or engineering principles and/or the interpretation thereof.

- I. **Time Schedule**—The Discharger shall complete the tasks in accordance with the specified deadlines listed below per **Table 10**. See section requirements for specific requirements.

Table 10—Time Schedule

Category	Report	Deadline
Construction (AWCU)	Construction and Design Plan(s) (§ H.1.a)	90 Days Prior to Solicitation for Construction Bids
Construction (AWCU)	Post-Construction Report (§ H.1.b)	60 Days Prior to Proposed Discharge to Unit(s)
Final Closure (AWCU)	[Partial] Final Closure and Post-Closure Maintenance Plan Design Plans Construction Quality Assurance Plan (§ H.1.c)	2 Years Prior to Closure
Alternative Daily Cover (AWCU)	Operations Report (§ H.1.d)	60 Days Prior to Proposed Discharge to AWCU
Stormwater	Stormwater Report (§ H.1.e)	1 June 2021
Monitoring	Updated Conceptual Site Model (§ H.1.f)	2 years after installation of groundwater monitoring wells around the AWCU

AEROJET ROCKETDYNE, INC.

WHITE ROCK NORTH DUMP AND AEROJET WASTE CONSOLIDATION UNIT LANDFILL
SACRAMENTO COUNTY

Category	Report	Deadline
Monitoring	Sampling and Analysis Plan (§ H.1.g)	Prior to Installation of AWCU Monitoring Wells
Monitoring (AWCU)	Initial Concentration Limits for AWCU Water Quality Protection Standard (§ H.1.h)	Prior to Discharge of Transfer Material in AWCU
Financial Assurances (AWCU)	Cost Estimate for AWCU Corrective Action (§ H.1.i)	Prior to Discharge of Transfer Material in AWCU
Financial Assurances (AWCU)	CalRecycle Approval of Financial Assurances Mechanism(s) (§ B.2.c)	Prior to Discharge of Transfer Material in AWCU

J. Other Provisions

1. The Discharger shall maintain at the Facility copies of this Order (including all attachments), the operative Monitoring & Reporting Program (i.e., MRP R5-2020-#### and any revisions thereto), and the SPRRs. These materials shall be made available to all operating personnel, who shall be familiar with the contents of such materials.
2. The Discharger shall comply with all applicable provisions of Title 27 (including those provisions not specifically referenced herein).
3. Unless otherwise provided, all approvals by the Executive Officer must be in writing.

AEROJET ROCKETDYNE, INC.

WHITE ROCK NORTH DUMP AND AEROJET WASTE CONSOLIDATION UNIT LANDFILL
SACRAMENTO COUNTY

LIST OF ATTACHMENTS

Attachment A—Site Location Map
Attachment B—Landfill Limits
Attachment C—AWCU Facility Layout
Attachment D—Transfer Material Source Locations
Attachment E—Pre-Landfill Topography
Attachment F—Estimated WRND Waste Disposal Areas
Attachment G—Transfer Material Waste Characterization
Attachment H—Regional Geology
Attachment I—Depiction of Four Groundwater Bearing Layers
Attachment J—Land Use and Water Supply Well Map
Attachment K—Non-Contact Stormwater Drainage Plan
Attachment L—A-Layer Groundwater Potentiometric Map
Attachment M—B-Layer Groundwater Potentiometric Map
Attachment N—C-Layer Groundwater Potentiometric Map
Attachment O—D-Layer Groundwater Potentiometric Map
Attachment P—AWCU Monitoring Locations
Attachment Q—AWCU Surface Water Monitoring Points
Attachment R—Proposed Landfill Gas Monitoring Locations
Attachment S—TCE Iso-Concentration Map
Attachment T—Perchlorate Iso-Concentration Map
Attachment U—NDMA Iso-Concentration Map
Attachment V—AWCU Liner and Final Closure Cover Details
Attachment W—AWCU Base Grading Details
Attachment X—Proposed AWCU and WRND Final Closure Cover Plan

Standard Provisions and Reporting Requirements for Non-Hazardous Discharges of Waste Regulated under Subtitle D and/or Title 27, December 2015 Edition (SPRRs or Standard Provisions)

Information Sheet

Monitoring and Reporting Program R5-2020-#### (separate document)

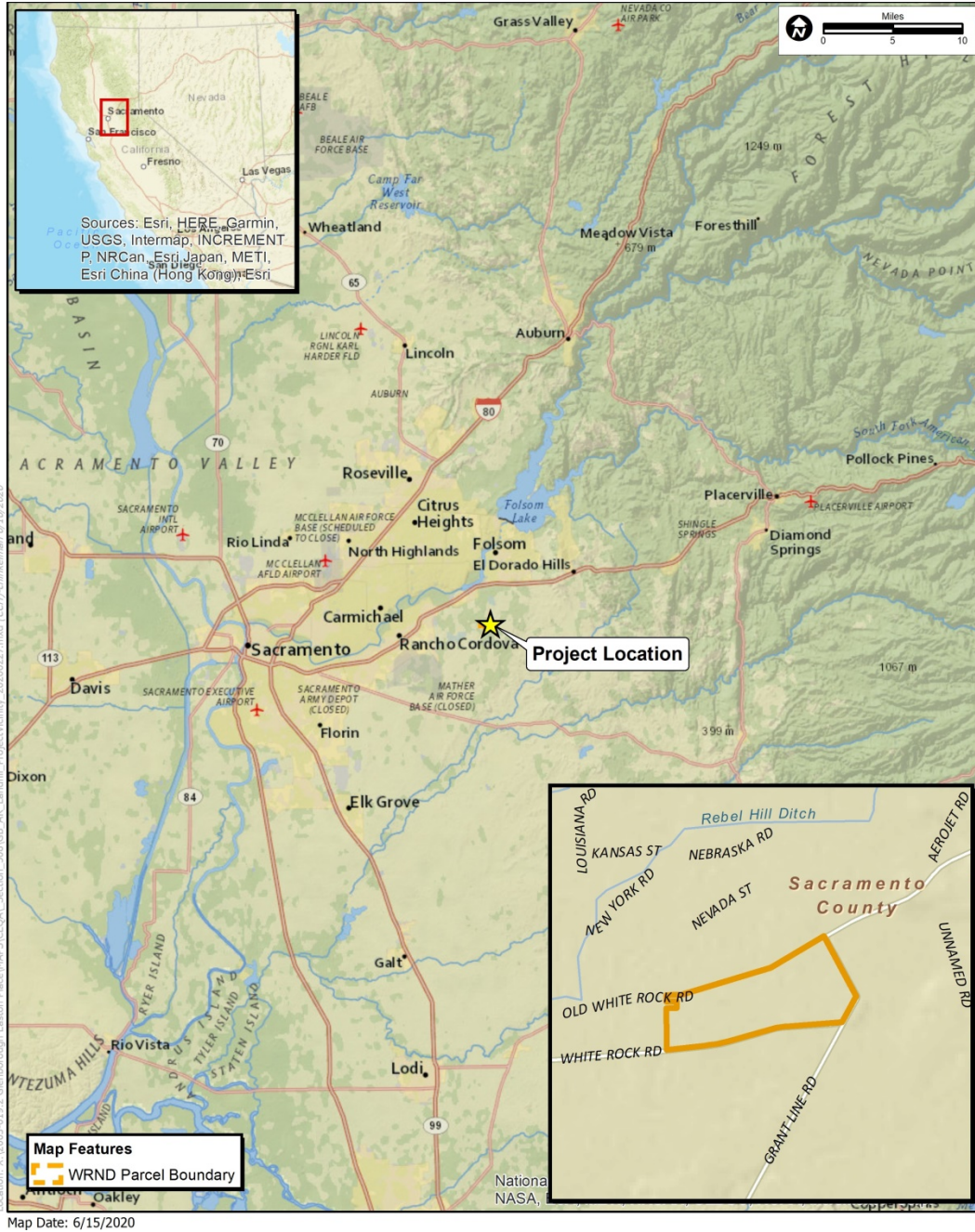
ENFORCEMENT

If, in the opinion of the Executive Officer, the Dischargers fail to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order may result in the assessment of Administrative Civil Liability of up to \$10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

ADMINISTRATIVE REVIEW

Any person aggrieved by this Central Valley Water Board action may petition the State Water Board for review in accordance with Water Code section 13320 and California Code of Regulations, title 23, section 2050 et seq. To be timely, the petition must be received by the State Water Board by 5:00 pm on the 30th day after the date of this Order; if the 30th day falls on a Saturday, Sunday or state holiday, the petition must be received by the State Water Board by 5:00 pm on the next business day. The law and regulations applicable to filing petitions are available on the [State Water Board website](http://www.waterboards.ca.gov/public_notices/petitions/water_quality) (http://www.waterboards.ca.gov/public_notices/petitions/water_quality). Copies will also be provided upon request.

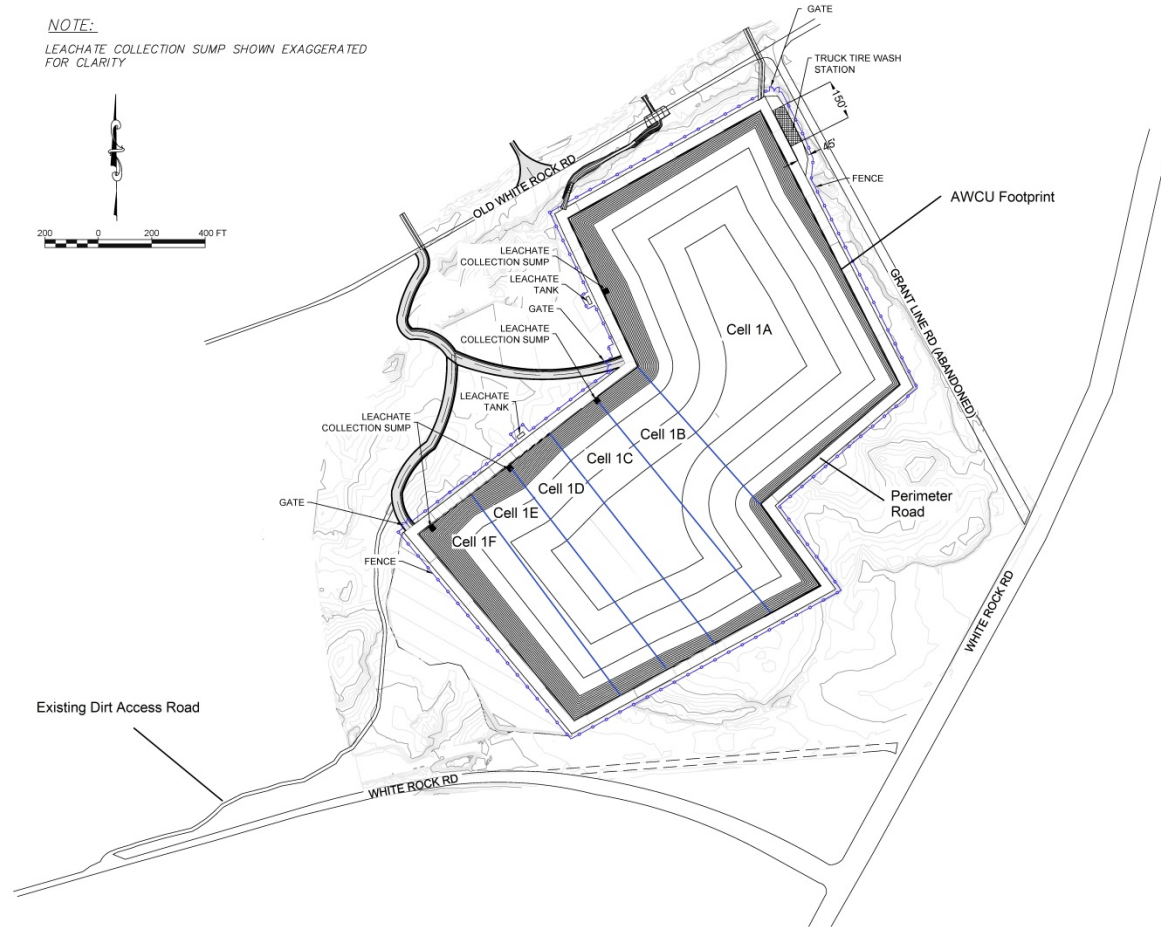
ATTACHMENT A—SITE LOCATION MAP



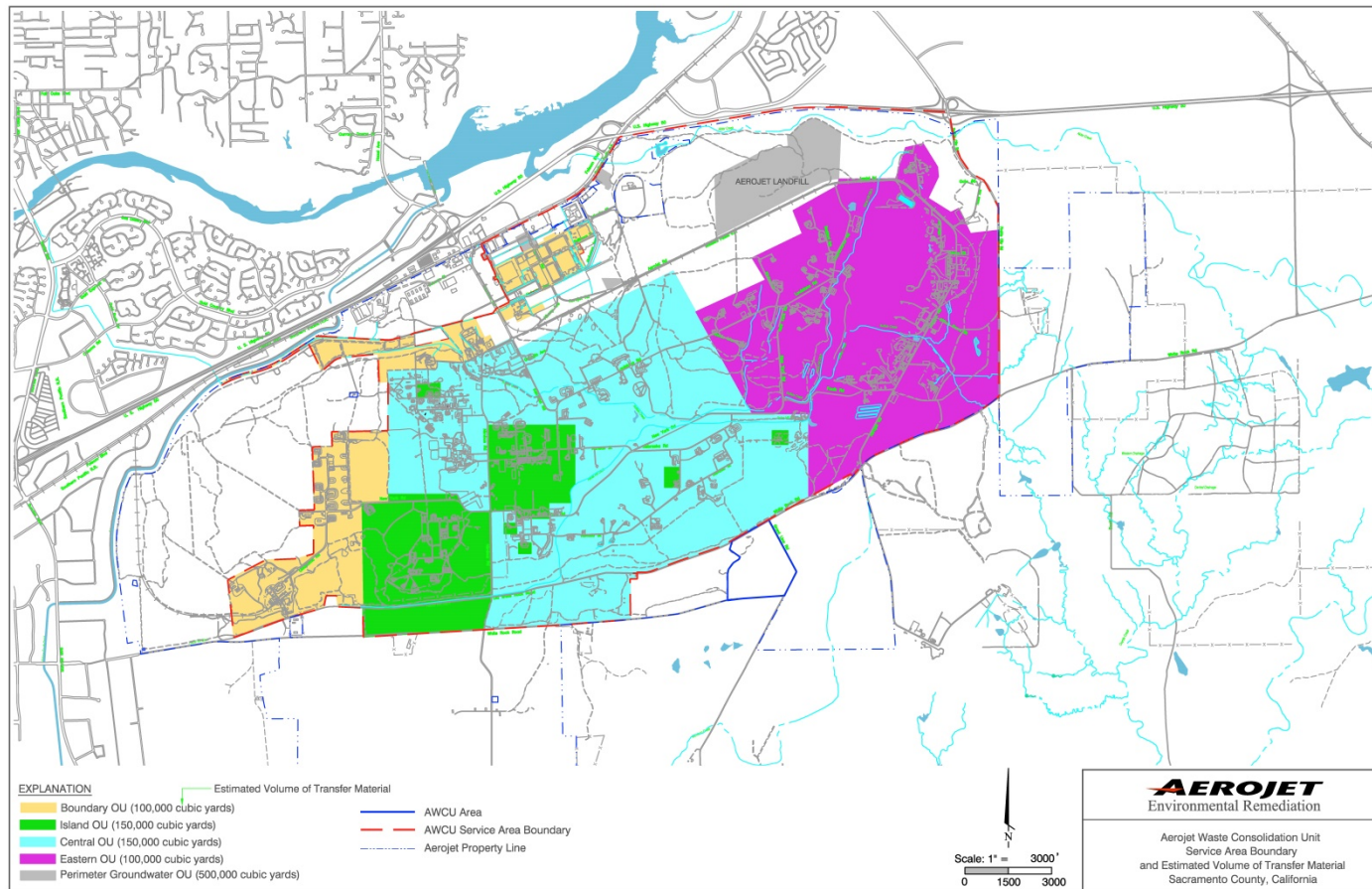
ATTACHMENT B—LANDFILL LIMITS



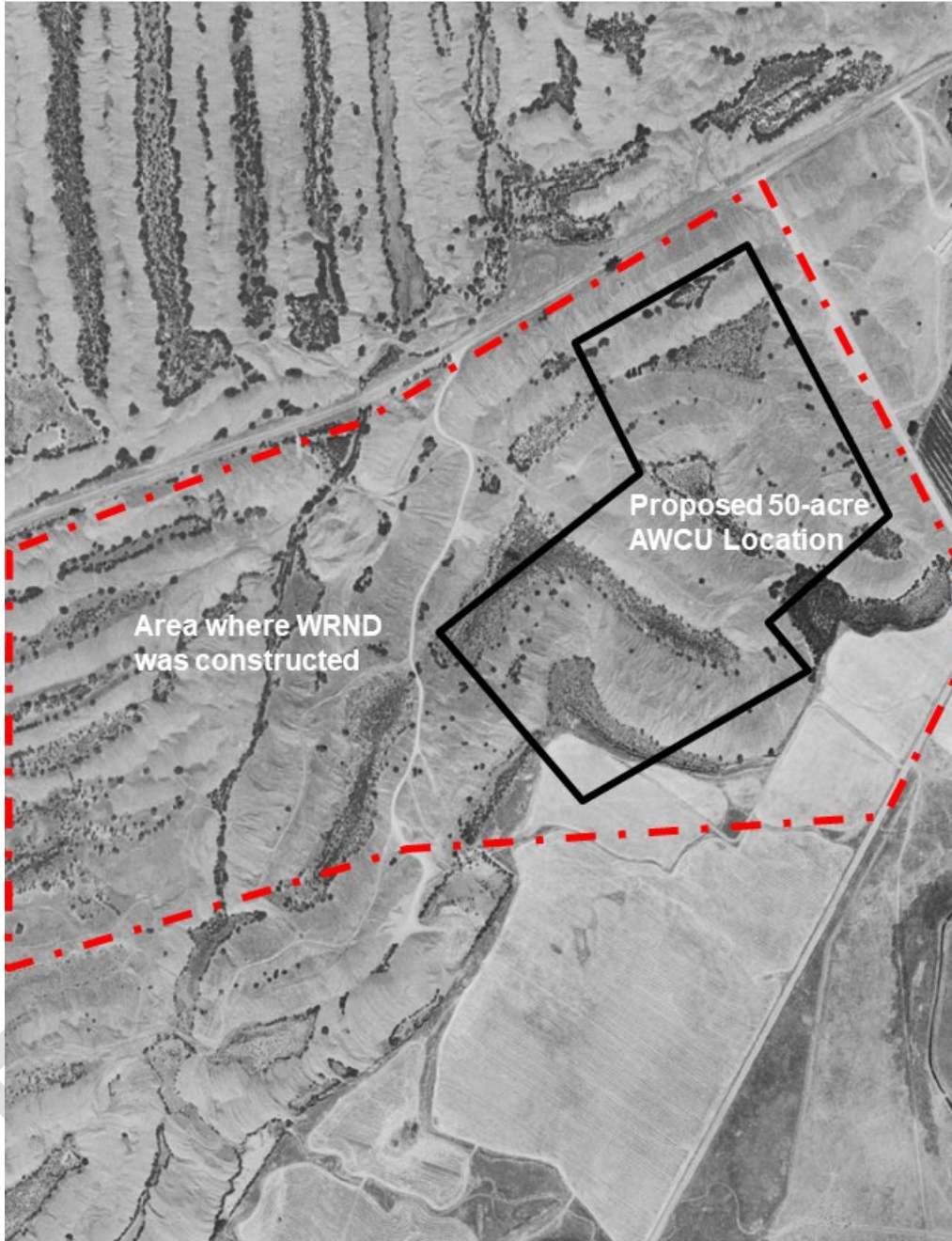
ATTACHMENT C—AWCU FACILITY LAYOUT



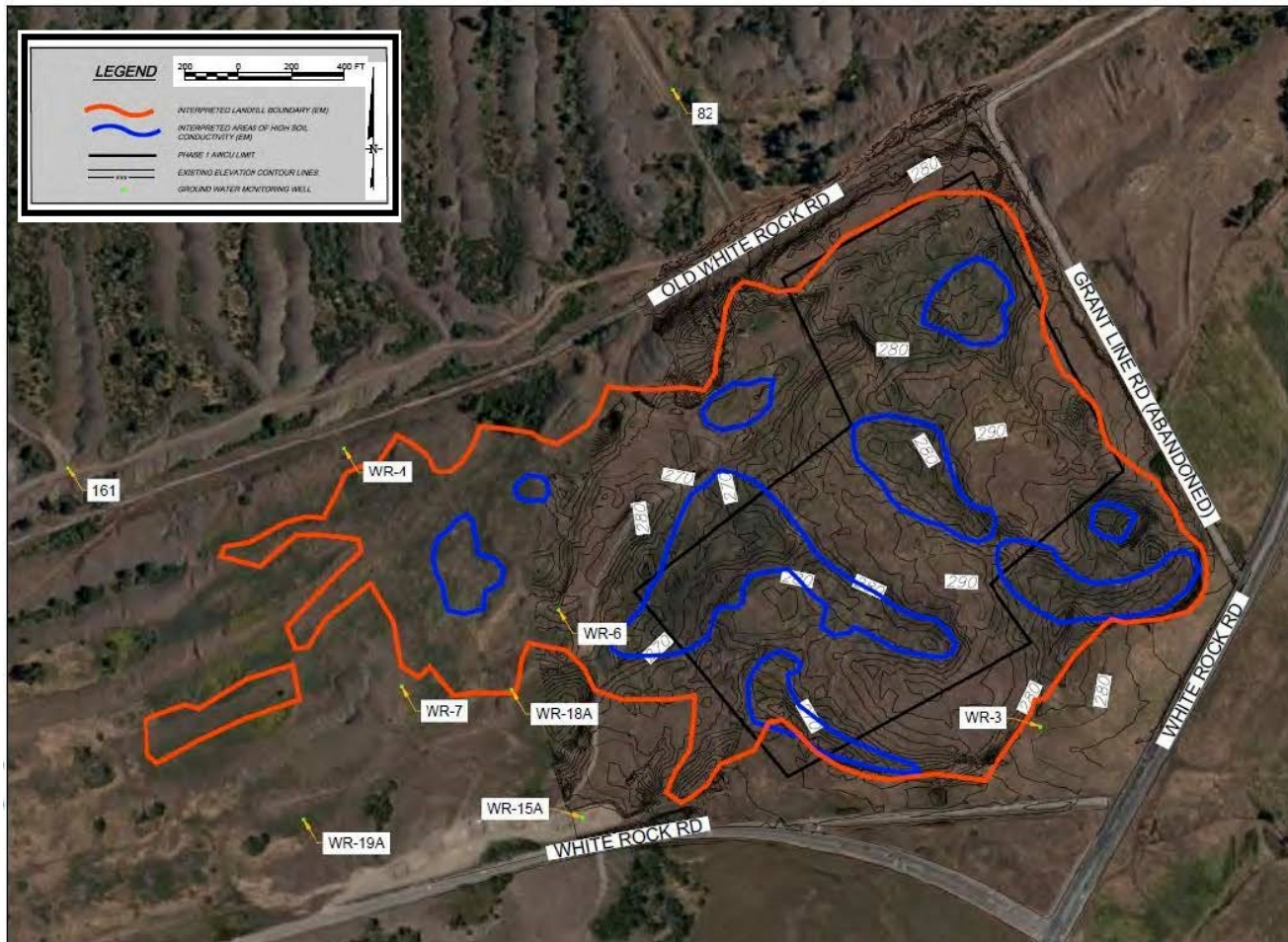
ATTACHMENT D—TRANSFER MATERIAL SOURCE LOCATIONS



ATTACHMENT E—PRE-LANDFILL TOPOGRAPHY



ATTACHMENT F—ESTIMATED WRND WASTE DISPOSAL AREAS-



ATTACHMENT G—TRANSFER MATERIAL WASTE CHARACTERIZATION

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
Anions	Sulfate	mg/kg	54	100.0%	90.00	17.35	-
Metals	Calcium	mg/kg	1161	100.0%	160,000.00	3,760.88	-
Metals	Chromium III (trivalent)	mg/kg	164	100.0%	290.00	86.81	-
Metals	Magnesium	mg/kg	1160	100.0%	21,600.00	4,668.86	-
Metals	Potassium	mg/kg	1160	100.0%	13,000.00	1,594.97	-
Metals	Strontium	mg/kg	1141	100.0%	200.00	34.50	-
Metals	Titanium	mg/kg	1275	100.0%	2,600.00	764.58	-
Metals	Aluminum	mg/kg	3911	100.0%	187,000.00	19,883.19	5-year Inorganics

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
Metals	Barium	mg/kg	3912	100.0%	4,620.00	148.36	5-year Inorganics
Metals	Chromium	mg/kg	4161	100.0%	43,000.00	94.69	5-year Inorganics
Metals	Cobalt	mg/kg	3898	100.0%	350.00	13.64	5-year Inorganics
Metals	Copper	mg/kg	4332	100.0%	5,900.00	46.85	5-year Inorganics
Metals	Iron	mg/kg	2508	100.0%	206,000.00	29,120.62	5-year Inorganics
Metals	Manganese	mg/kg	3889	100.0%	10,000.00	518.20	5-year Inorganics
Metals	Nickel	mg/kg	4285	100.0%	2,090.00	41.36	5-year Inorganics
Metals	Vanadium	mg/kg	3910	100.0%	450.00	70.06	5-year Inorganics
Metals	Zinc	mg/kg	4288	100.0%	7,800.00	87.47	5-year Inorganics

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
Misc	Cation exchange capacity	meq	232	100.0%	880.00	259.57	
Misc	Percent solids	%	12	100.0%	90.00	81.04	
Misc	Total solids	%	1384	100.0%	100.00	86.94	
Misc	Soil water content	%	62	100.0%	46.21	16.21	
Other	Sulfur, mold. (S8)	ug/kg	1	100.0%	100.00	100.00	
PCB	(PCB 136) 2,2',3,3',6,6'-Hexachlorobiphenyl	ug/kg	1	100.0%	610.00	610.00	
PCB	(PCB 109) 2,3,3',4,6-Pentachlorobiphenyl	ug/kg	1	100.0%	240.00	240.00	
SVOCs	Diocetyl ester hexanedioic acid A	mg/kg	236	100.0%	20.00	2.34	
SVOCs	(PCB 167) 2,3',4,4',5,5'-Hexachlorobiphenyl	ug/kg	1	100.0%	470.00	470.00	

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
SVOCs	(PCB 169) 3,3',4,4',5,5'-Hexachlorobiphenyl	ug/kg	1	100.0%	360.00	360.00	
VOCs	Octadecanoic acid	mg/kg	15	100.0%	8.00	1.22	
Misc	Hydrogen ion	s.u.	940	99.0%	11.70	7.54	
Misc	Moisture	%	1464	99.0%	86.50	13.40	
Metals	Lithium	mg/kg	1128	97.0%	41.00	8.44	
Anions	Nitrate as NO3	mg/kg	54	96.0%	1,300.00	179.70	
Anions	Fluoride	mg/kg	54	94.0%	14.00	2.43	
SVOCs	Hexadecanoic acid	mg/kg	117	94.0%	6.00	1.66	
Metals	Lead	mg/kg	4326	91.0%	2,511.00	14.22	5-year Inorganics
Metals	Sodium, total recoverable	mg/kg	162	90.0%	3,640.00	404.09	

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
Metals	Sodium	mg/kg	821	90.0%	2,200.00	251.81	
Metals	Arsenic	mg/kg	4194	84.0%	1,830.00	8.54	5-year Inorganics
DIOXIN	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	ng/g	285	82.0%	497.00	5.85	
Metals	Beryllium	mg/kg	4201	82.0%	14.00	0.54	5-year Inorganics
Metals	Chromium VI (hexavalent)	mg/kg	736	78.0%	720.00	3.30	
TPH	Total Petroleum Hydrocarbons (C16-C36) Motor Oil	mg/kg	603	76.0%	12,000.00	141.38	
DIOXIN	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	ng/g	273	75.0%	30.10	0.47	
DIOXIN	Total heptachlorodibenzo-p-dioxin (HpCDD)	ng/g	296	73.0%	68.50	0.99	

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
FURAN	Total hexachlorodibenzofuran (HxCDF)	ng/g	235	73.0%	18.10	0.47	
Metals	Molybdenum	mg/kg	3543	73.0%	220.00	1.30	
FURAN	Total tetrachlorodibenzofuran (TCDF)	ng/g	287	72.0%	20.00	0.34	
FURAN	1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	ng/g	285	70.0%	5.54	0.18	
DIOXIN	Total hexachlorodibenzo-p-dioxin (HxCDD)	ng/g	296	66.0%	17.80	0.27	
TPH	Diesel fuel	mg/kg	1595	66.0%	54,700.00	310.53	
FURAN	Total heptachlorodibenzofuran (HpCDF)	ng/g	296	65.0%	13.60	0.41	
FURAN	Total pentachlorodibenzofuran (PeCDF)	ng/g	296	63.0%	19.00	0.45	
TPH	Oil and grease	mg/kg	134	63.0%	89,000.00	4,477.03	

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
FURAN	2,3,7,8-Tetrachlorodibenzofuran (TCDF)	ng/g	289	61.0%	0.70	0.02	
FURAN	1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	ng/g	274	60.0%	4.69	0.07	
Metals	Mercury	mg/kg	4276	57.0%	140.00	0.38	5-year Inorganics
FURAN	2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	ng/g	274	55.0%	1.80	0.04	
Anions	Nitrite as N	mg/kg	54	54.0%	130.00	9.66	
TPH	Total Petroleum Hydrocarbons (C24-C36) Motor Oil	mg/kg	768	54.0%	51,000.00	224.03	
DIOXIN	Total tetrachlorodibenzo-p-dioxin (TCDD)	ng/g	287	53.0%	5.47	0.10	

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
FURAN	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	ng/g	274	53.0%	1.65	0.04	
FURAN	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	ng/g	274	51.0%	2.30	0.05	
TPH	Diesel Range Organics (C10-C24)	mg/kg	84	51.0%	2,200.00	211.06	
FURAN	1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	ng/g	275	49.0%	9.57	0.29	
VOCs	Trichloroethene	mg/kg	2257	47.0%	65,000.00	350.65	VOC Short List
DIOXIN	Total pentachlorodibenzo-p-dioxin (PeCDD)	ng/g	296	46.0%	4.97	0.10	
PCB	Total PCBs	mg/kg	52	46.0%	340.00	96.19	

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
DIOXIN	1,2,3,6,7,8- Hexachlorodibenzo-p-dioxin (HxCDD)	ng/g	273	44.0%	1.15	0.03	
FURAN	1,2,3,4,7,8,9- Heptachlorodibenzofuran (HpCDF)	ng/g	274	44.0%	0.79	0.04	
FURAN	1,2,3,7,8- Pentachlorodibenzofuran (PeCDF)	ng/g	274	44.0%	0.77	0.03	
DIOXIN	1,2,3,7,8,9- Hexachlorodibenzo-p-dioxin (HxCDD)	ng/g	273	43.0%	0.90	0.02	
TPH	Total Recoverable Petroleum Hydrocarbons	mg/kg	155	43.0%	65,800.00	2,854.93	
Metals	Cadmium	mg/kg	4363	42.0%	940.00	1.91	5-year Inorganics
TPH	Total Petroleum Hydrocarbons	mg/kg	135	40.0%	26,900.00	2,743.76	

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
VOCs	Methylene chloride	mg/kg	712	39.0%	410.00	4.94	
Metals	Antimony	mg/kg	5091	37.0%	101.00	0.69	5-year Inorganics
FURAN	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	ng/g	274	35.0%	0.40	0.01	
VOCs	Acetone	mg/kg	356	35.0%	190.00	1.60	VOC Short List
TPH	Extractable Petroleum Hydrocarbons (C10-C30)	mg/kg	3	33.0%	7.60	7.60	
Metals	Tin	mg/kg	1521	32.0%	47.00	0.98	5-year Inorganics
DIOXIN	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	ng/g	273	31.0%	0.37	0.02	
Metals	Thallium	mg/kg	4699	31.0%	1,400.00	2.42	5-year Inorganics

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
VOCs	1,1,1-Trichloroethane	mg/kg	2178	31.0%	2,300.00	15.21	VOC Short List
Anions	Perchlorate	mg/kg	3172	29.0%	2,600.00	48.85	
Pesticides	Pendimethalin	mg/kg	518	28.0%	17,000.00	133.90	
SVOCs	Dibutyl phthalate	mg/kg	2943	28.0%	51.00	3.26	5-year SVOC
Metals	Boron	mg/kg	3809	27.0%	1,400.00	9.83	
DIOXIN	1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	ng/g	273	26.0%	0.22	0.01	
PCB	Aroclor 1254	mg/kg	1042	24.0%	170.00	2.37	
Pesticides	alpha-Chlordane	ug/kg	12	23.0%	16.00	7.17	
PCB	Aroclor 1260	mg/kg	1034	22.0%	190.00	3.46	

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
DIOXIN	2,3,7,8-Tetrachlorodibenzo-p-dioxin	ng/g	282	20.0%	0.04	-	
VOCs	Tetrachloroethene	mg/kg	2217	20.0%	46,000.00	122.11	VOC Short List
Metals	Silver	mg/kg	4342	18.0%	13,600.00	29.16	5-year Inorganics
Misc	Total organic carbon	%	268	16.0%	57,000.00	10,236.37	
Pesticides	gamma-Chlordane	ug/kg	12	15.0%	13.00	8.80	
VOCs	1,1-Dichloroethene	mg/kg	1770	15.0%	97.00	2.29	VOC Short List
Metals	Selenium	mg/kg	4989	13.0%	84.50	2.26	5-year Inorganics
VOCs	Freon 11	mg/kg	708	13.0%	73.00	1.92	VOC Short List
Pesticides	4,4'-DDT	ug/kg	341	9.9%	1,200.00	48.05	5-year SVOC

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
SVOCs	Phenol	mg/kg	2608	9.7%	14.00	1.19	5-year SVOC
VOCs	Freon 113	mg/kg	454	8.8%	26.00	7.09	
VOCs	1,2-Dichloroethane	mg/kg	2207	8.4%	51.00	1.93	VOC Short List
PCB	Aroclor 1248	mg/kg	1044	8.2%	180.00	7.14	
TPH	Kerosene	mg/kg	313	8.1%	7,090.00	789.38	
Pesticides	4,4'-DDE	ug/kg	341	8.0%	48.00	7.93	5-year SVOC
Metals	Sulfide (acid volatile)	umol/g	11	7.7%	4.20	4.20	
VOCs	Chloroform	mg/kg	1796	7.5%	104.00	2.80	VOC Short List
VOCs	Carbon tetrachloride	mg/kg	1386	7.4%	13.00	0.19	VOC Short List

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
VOCs	Bromoform	mg/kg	538	7.1%	7.40	0.23	VOC Short List
VOCs	1,1,2,2-Tetrachloroethane	mg/kg	339	6.3%	4.00	1.49	VOC Short List
SVOCs	Phenanthrene	mg/kg	3634	6.2%	140.00	3.04	5-year SVOC
Pesticides	delta-BHC/HCH	ug/kg	341	5.9%	510.00	27.16	5-year SVOC
SVOCs	Chrysene	mg/kg	3621	5.4%	110.00	1.99	5-year SVOC
Pesticides	Heptachlor epoxide	ug/kg	341	5.3%	41.00	6.35	5-year SVOC
VOCs	Bromodichloromethane	mg/kg	842	5.3%	24.00	0.60	
SVOCs	Fluoranthene	mg/kg	3557	5.2%	168.00	3.37	5-year SVOC
Cyanide	Cyanide	mg/kg	267	4.8%	25.00	4.48	5-year Inorganics

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
VOCs	Toluene	mg/kg	322	4.8%	12.00	1.86	VOC Short List
SVOCs	Pyrene	mg/kg	3557	4.6%	176.00	3.93	5-year SVOC
VOCs	Dibromochloromethane	mg/kg	843	4.6%	2.20	0.16	VOC Short List
Pesticides	Aldrin	ug/kg	341	4.5%	7.40	1.33	5-year SVOC
Pesticides	Endosulfan II (Beta)	ug/kg	341	4.5%	3.80	1.59	5-year SVOC
Pesticides	Endrin	ug/kg	341	4.3%	220.00	15.50	5-year SVOC
SVOCs	Bis(2-ethylhexyl)phthalate	mg/kg	3060	4.3%	11.00	0.55	5-year SVOC
SVOCs	Benzo(b)fluoranthene/Benzo(k)fluoranthene	ug/kg	1983	3.7%	910.00	101.67	
Pesticides	Dieldrin	ug/kg	341	3.5%	8.30	2.36	5-year SVOC

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
SVOCs	Benzo(a)anthracene	mg/kg	3621	3.3%	109.00	3.08	5-year SVOC
SVOCs	n-Nitrosodimethylamine	mg/kg	3664	3.3%	119.00	1.04	5-year SVOC
SVOCs	Benzo(b)fluoranthene	mg/kg	1640	2.9%	59.50	4.43	5-year SVOC
SVOCs	Benzo(a)pyrene	mg/kg	3620	2.7%	67.00	2.50	5-year SVOC
VOCs	Freon	mg/kg	1391	2.7%	280.00	20.50	
Pesticides	4,4'-DDD	ug/kg	341	2.4%	2,300.00	261.70	5-year SVOC
Pesticides	Heptachlor	ug/kg	341	2.4%	4.70	1.28	5-year SVOC
SVOCs	10-10'-Oxybis-10H-phenoxarsine	mg/kg	78	2.4%	3.80	3.20	
Explosives	Nitroguanidine	mg/kg	218	2.1%	0.92	0.50	

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
SVOCs	Benzo(k)fluoranthene	mg/kg	1640	2.0%	62.60	6.73	5-year SVOC
Pesticides	beta-BHC/HCH	ug/kg	341	1.6%	3.80	1.29	5-year SVOC
Pesticides	gamma-BHC/HCH (Lindane)	ug/kg	341	1.6%	1.60	0.74	5-year SVOC
SVOCs	Indeno(1,2,3-cd)pyrene	mg/kg	3618	1.6%	21.90	1.47	5-year SVOC
SVOCs	Naphthalene	mg/kg	3689	1.6%	37.10	1.86	5-year SVOC
VOCs	trans-1,2-Dichloroethene	mg/kg	1875	1.5%	2.90	0.92	VOC Short List
SVOCs	1,2-Diphenylhydrazine	mg/kg	1706	1.4%	2,980.00	244.21	
SVOCs	2-Methylnaphthalene	mg/kg	2617	1.4%	124.00	11.91	5-year SVOC
SVOCs	Benzo(g,h,i)perylene	mg/kg	3550	1.4%	18.30	0.83	5-year SVOC

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
VOCs	Benzene	mg/kg	334	1.4%	0.82	0.40	VOC Short List
Pesticides	Endosulfan I (Alpha)	ug/kg	341	1.3%	1.00	0.73	5-year SVOC
VOCs	1,2-Dichloroethene (total)	mg/kg	165	1.2%	0.01	0.01	
VOCs	1,1-Dichloroethane	mg/kg	2089	1.2%	2.30	0.89	VOC Short List
Pesticides	alpha-BHC/HCH	ug/kg	341	1.1%	2.30	0.94	5-year SVOC
SVOCs	Anthracene	mg/kg	3550	1.1%	52.60	5.02	5-year SVOC
VOCs	1,2-Dichloropropane	mg/kg	538	1.1%	8.90	1.55	VOC Short List
SVOCs	Fluorene	mg/kg	3555	1.0%	21.00	2.86	5-year SVOC
VOCs	Styrene	mg/kg	316	0.9%	640.00	360.00	VOC Short List

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
VOCs	Dibromomethane	ug/g	336	0.9%	1.10	0.78	VOC Short List
SVOCs	Acenaphthene	mg/kg	3550	0.8%	21.00	2.78	5-year SVOC
Pesticides	Endrin aldehyde	ug/kg	341	0.8%	14.00	8.43	5-year SVOC
SVOCs	Dibenzo(a,h)anthracene	mg/kg	3617	0.7%	6.44	0.50	5-year SVOC
PCB	Aroclor 1016	mg/kg	811	0.6%	0.08	0.03	
Pesticides	Methoxychlor	ug/kg	341	0.5%	3.30	3.15	5-year SVOC
SVOCs	Benzyl alcohol	mg/kg	2592	0.5%	37.00	5.57	5-year SVOC
VOCs	cis-1,2-Dichloroethene	mg/kg	236	0.4%	0.01	0.01	VOC Short List
VOCs	2-Chloroethyl vinyl ether	mg/kg	269	0.4%	1.39	1.39	

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
VOCs	Chlorobenzene	mg/kg	550	0.4%	0.24	0.24	VOC Short List
SVOCs	Benzoic acid	mg/kg	2592	0.4%	15.00	3.63	
SVOCs	Pentachlorophenol	mg/kg	2617	0.4%	2.80	0.77	5-year SVOC
SVOCs	Diethyl phthalate	mg/kg	2609	0.3%	0.19	0.06	5-year SVOC
VOCs	2-Butanone	mg/kg	322	0.3%	19.00	19.00	VOC Short List
VOCs	Ethylene dibromide	ug/g	336	0.3%	0.00	-	VOC Short List
SVOCs	Acenaphthylene	mg/kg	3549	0.3%	0.37	0.10	5-year SVOC
Pesticides	Endrin ketone	ug/kg	341	0.3%	7.40	7.40	
Pesticides	Endosulfan sulfate	ug/kg	341	0.3%	12.00	12.00	5-year SVOC

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
SVOCs	Diphenylamine	ug/kg	903	0.2%	1,600.00	930.00	5-year SVOC
SVOCs	Dibenzofuran	mg/kg	2606	0.2%	7.76	3.14	5-year SVOC
Explosives	2-Nitrotoluene	mg/kg	569	0.2%	0.19	0.19	
Explosives	3-Nitrotoluene	mg/kg	570	0.2%	0.55	0.55	
Explosives	4-Nitrotoluene	mg/kg	570	0.2%	0.06	0.06	
Explosives	1,3,5-Trinitrobenzene	mg/kg	570	0.2%	0.65	0.65	5-year SVOC
SVOCs	4-Chloro-3-methylphenol	mg/kg	2395	0.2%	1.85	1.30	5-year SVOC
SVOCs	o-Cresol	mg/kg	2610	0.1%	0.45	0.27	5-year SVOC
SVOCs	2-Chlorophenol	mg/kg	2605	0.1%	1.80	1.68	5-year SVOC
SVOCs	2,4-Dinitrotoluene	mg/kg	3183	0.1%	1.81	1.37	5-year SVOC

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
SVOCs	Dimethyl phthalate	mg/kg	2610	0.1%	2.60	1.04	5-year SVOC
SVOCs	n-Nitrosodi-n-propylamine	mg/kg	2605	0.1%	1.85	1.76	5-year SVOC
SVOCs	4-Nitrophenol	mg/kg	2605	0.1%	1.79	1.68	5-year SVOC
SVOCs	1,2,4-Trichlorobenzene	mg/kg	2671	0.1%	1.86	1.72	5-year SVOC
VOCs	1,4-Dichlorobenzene	mg/kg	2681	0.1%	1.83	1.69	VOC Short List
SVOCs	2,4-Dichlorophenol	mg/kg	2605	0.1%	3.30	1.66	5-year SVOC
SVOCs	Benzyl butyl phthalate	mg/kg	2605	0.1%	0.08	0.06	5-year SVOC
SVOCs	Di-n-octyl phthalate	mg/kg	2609	0.1%	1.20	0.77	5-year SVOC
SVOC	Carbazole	ug/kg	1660	0.1%	6.60	6.60	

Analyte Type	Chemical Name	Units	Number of Samples	Detection Frequency	Max Detection Value	Avg Detection Value	MRP Monitoring
SVOCs	4-Bromophenyl phenyl ether	mg/kg	1866	0.1%	0.28	0.28	5-year SVOC

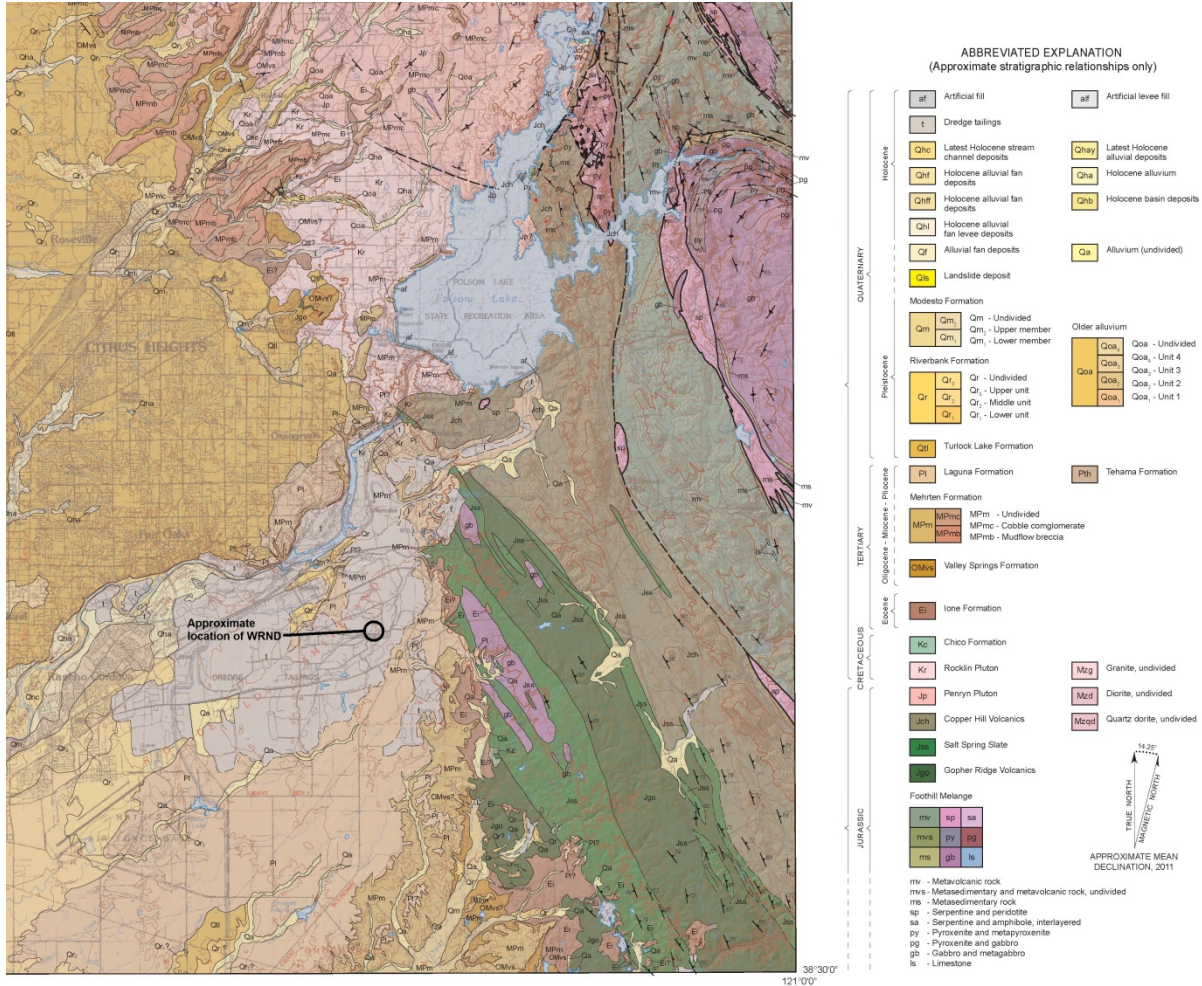
TENTATIVE

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WHITE ROCK NORTH DUMP AND AEROJET WASTE CONSOLIDATION UNIT LANDFILL

SACRAMENTO COUNTY

ATTACHMENT H—REGIONAL GEOLOGY



Geology compiled 2009 -2011
This geologic map was funded in part by the U.S. Geological Survey National Cooperative Geologic Mapping Program, STATEMAP Award no. G10AC00414.

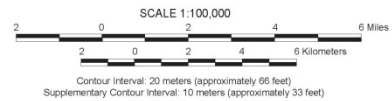


PRELIMINARY GEOLOGIC MAP OF THE SACRAMENTO 30' x 60' QUADRANGLE, CALIFORNIA

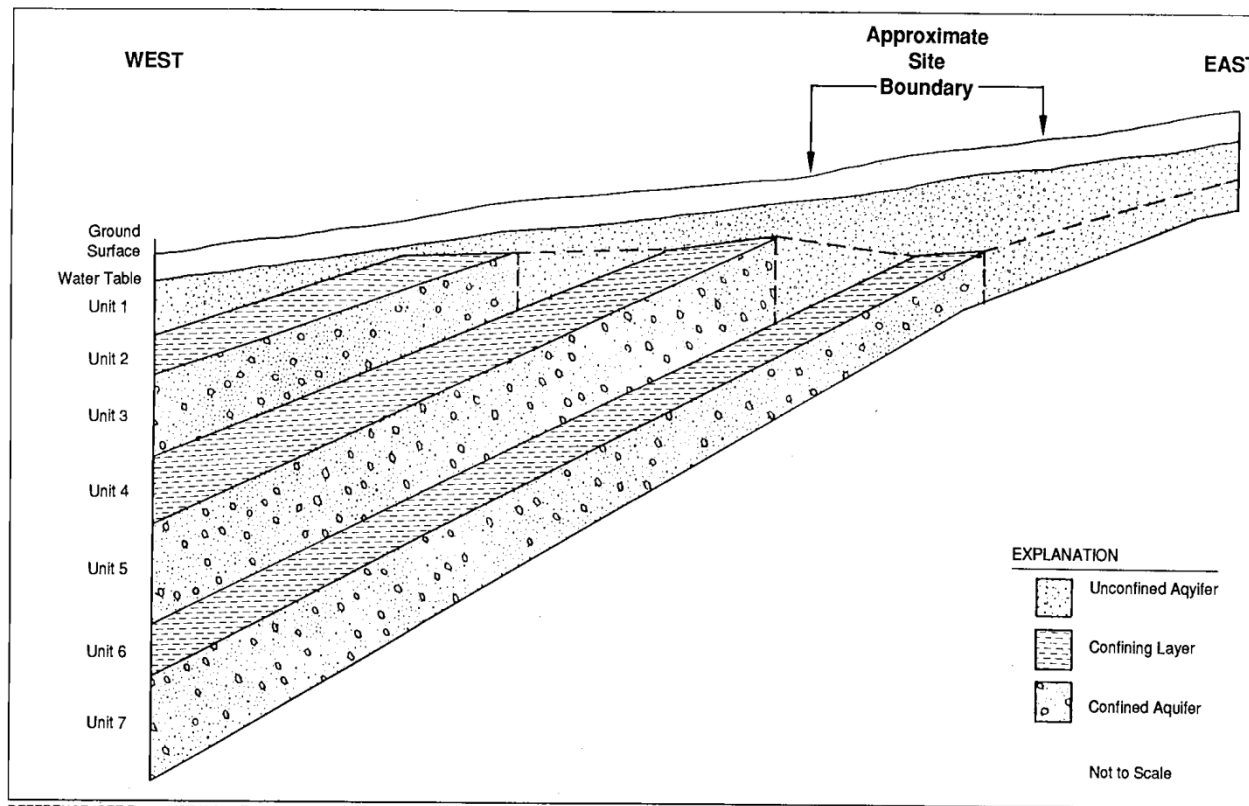
Compilation and Digital Preparation by

Carlos I. Gutierrez

2011



ATTACHMENT I—DEPICTION OF FOUR GROUNDWATER BEARING LAYERS

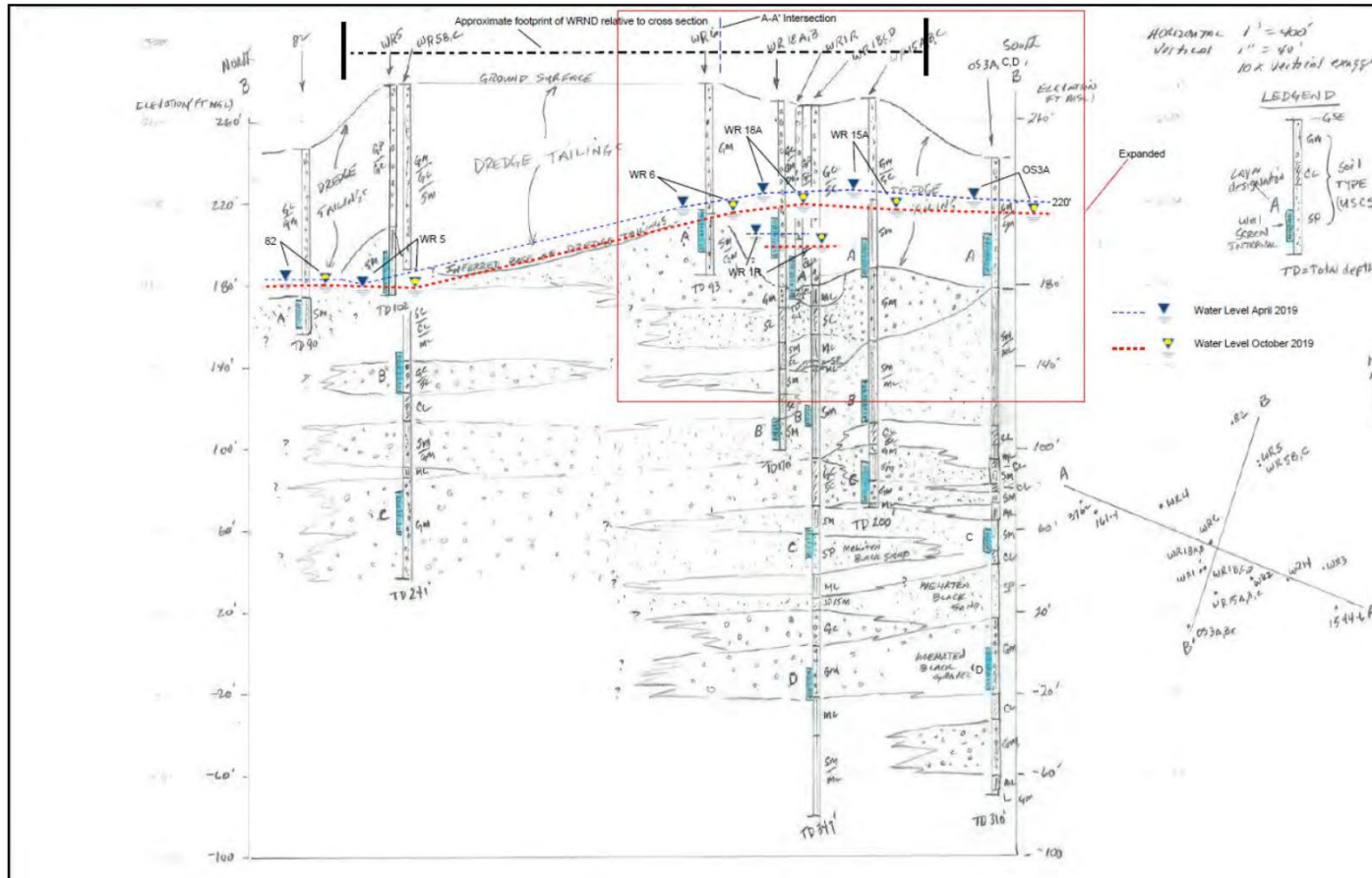


REFERENCE: GET Report, ICF Kaiser Engineers, September 1989

CONCEPTUAL CROSS SECTION OF HYDROGEOLOGIC SYSTEM

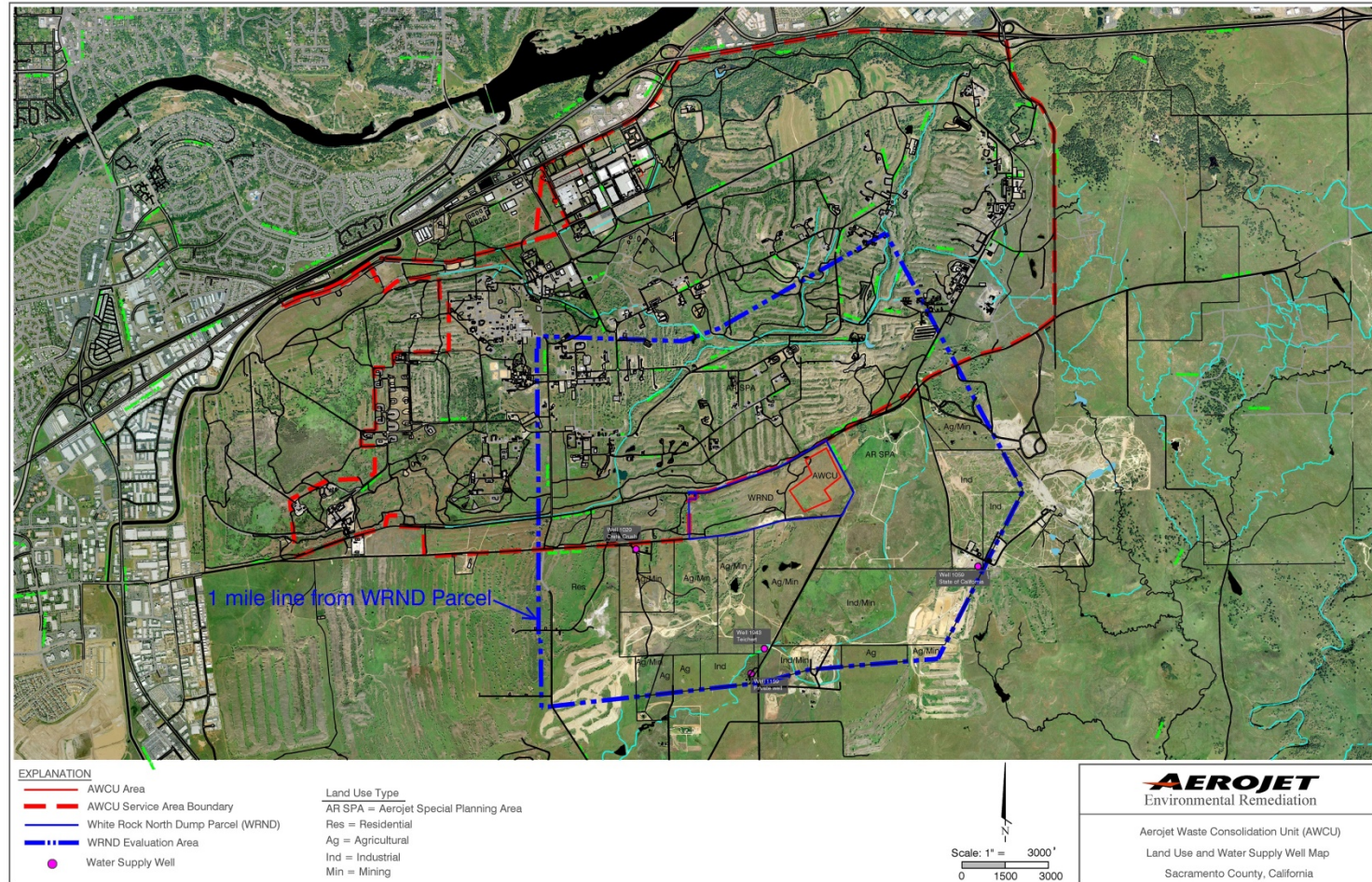
Former White Rock North Dump
Sacramento County, California
DECEMBER 1991

[TENTATIVE] WASTE DISCHARGE REQUIREMENTS ORDER R5-2020-####
 AEROJET ROCKETDYNE, INC.
 WHITE ROCK NORTH DUMP AND AEROJET WASTE CONSOLIDATION UNIT LANDFILL
 SACRAMENTO COUNTY

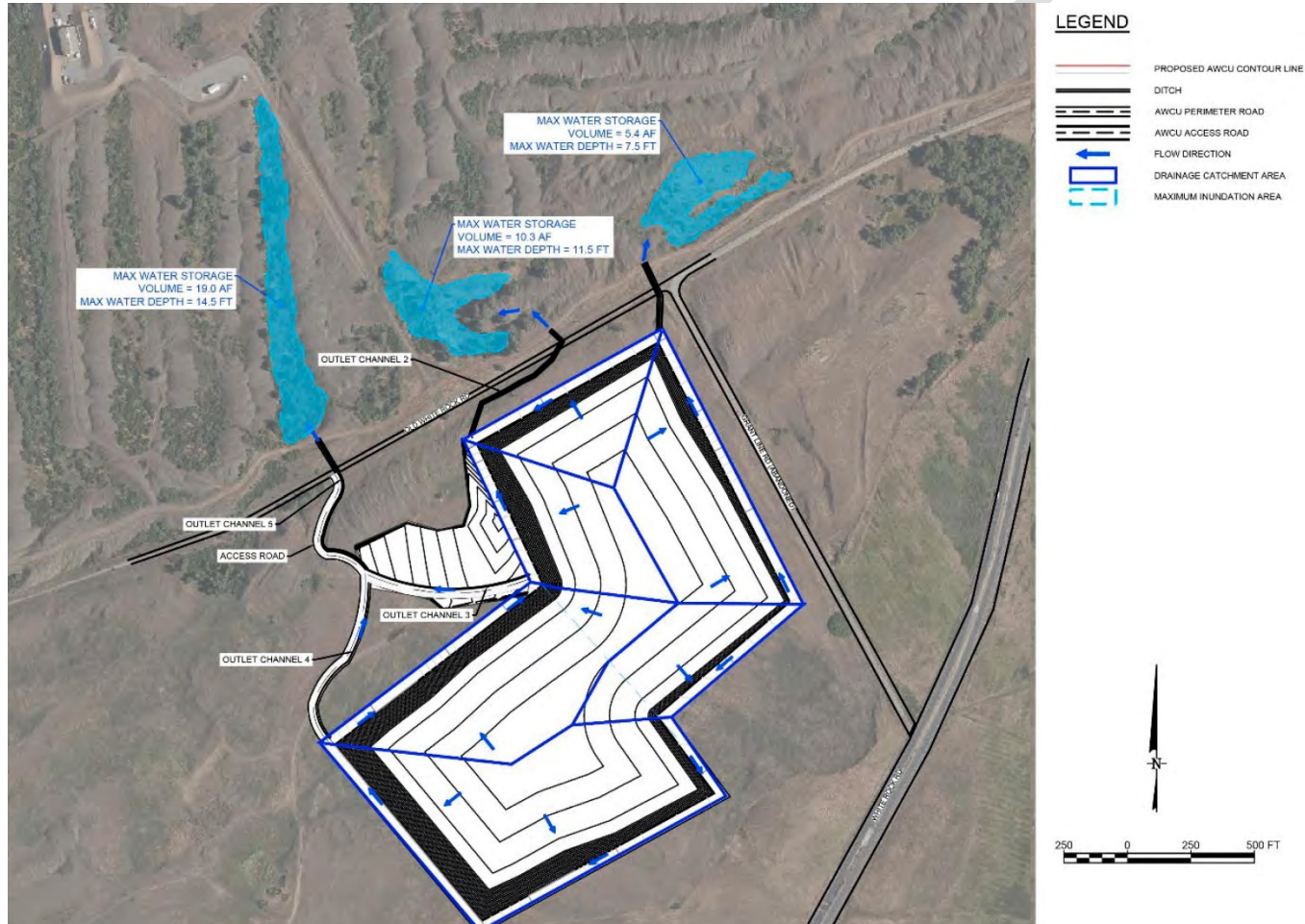


Reference: Geosyntec, 2018 Performance Evaluation Report Perimeter Groundwater Operable Unit (OU-5) Aerojet Superfund Site, Rancho Cordova, California, 2018)

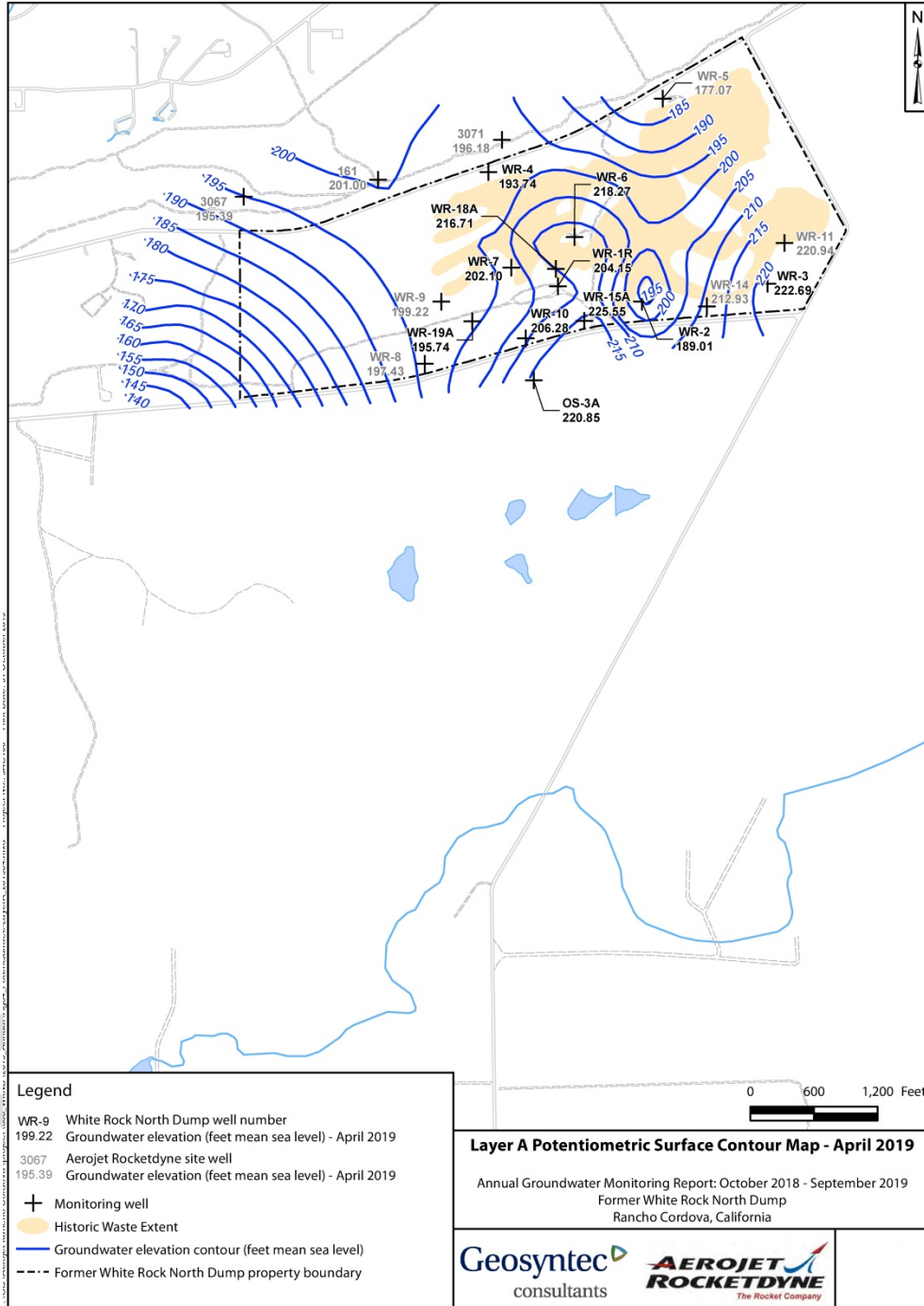
ATTACHMENT J—LAND USE AND WATER SUPPLY WELL MAP



ATTACHMENT K—NON-CONTACT STORMWATER DRAINAGE PLAN



ATTACHMENT L—A-LAYER GROUNDWATER POTENTIOMETRIC MAP

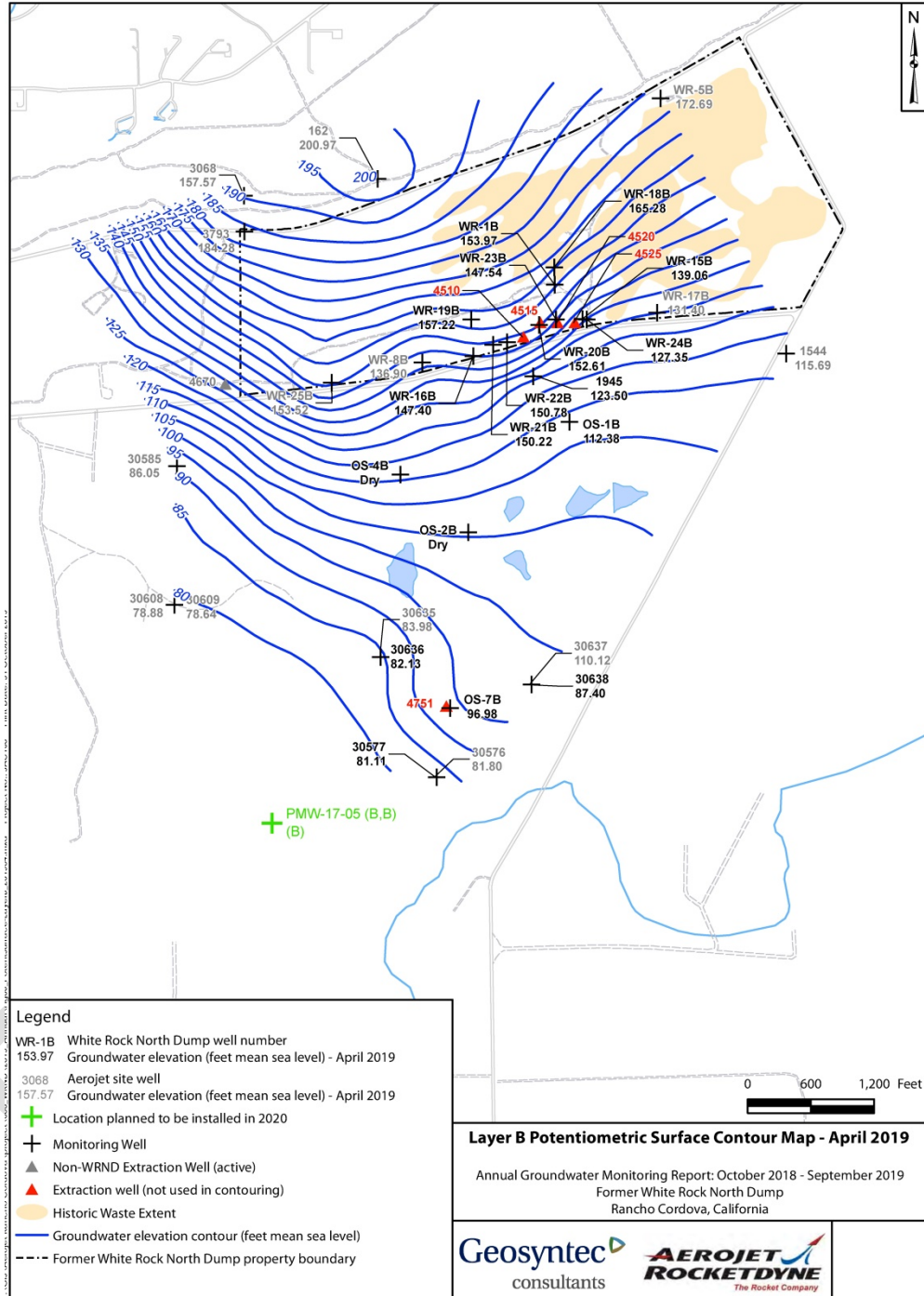


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ATTACHMENT M—B-LAYER GROUNDWATER POTENTIOMETRIC MAP

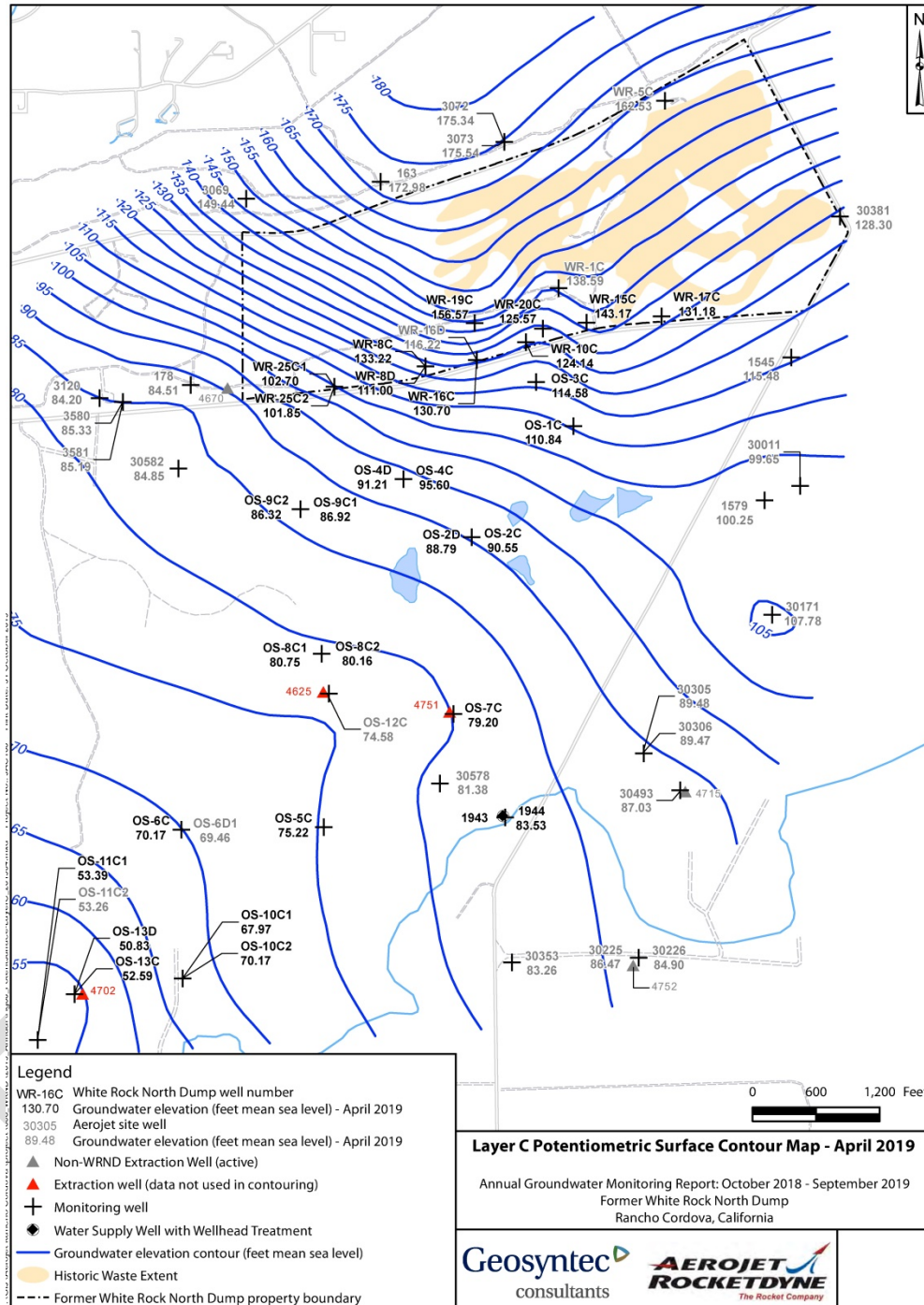


AEROJET ROCKETDYNE, INC.

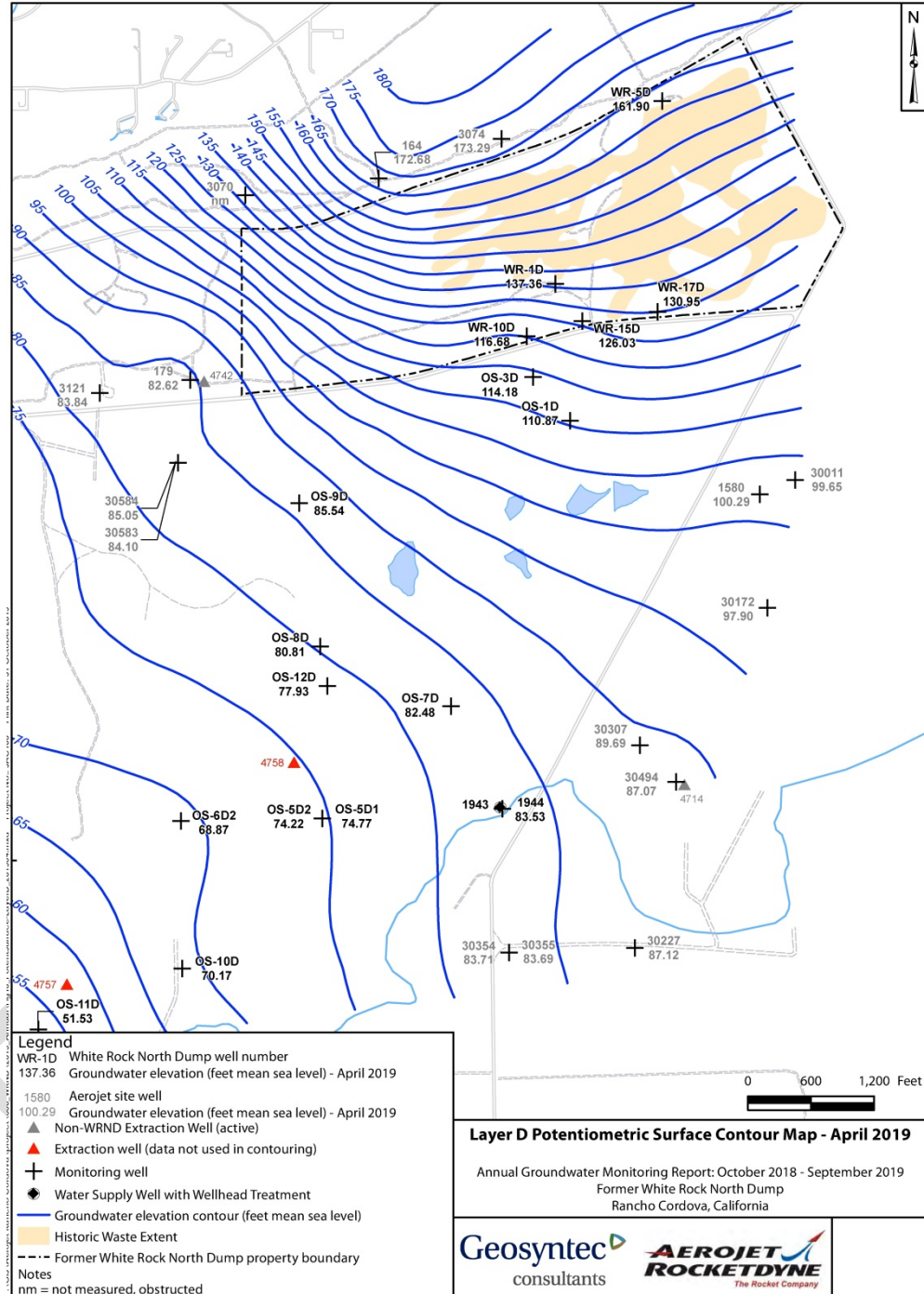
WHITE ROCK NORTH DUMP AND AEROJET WASTE CONSOLIDATION UNIT LANDFILL

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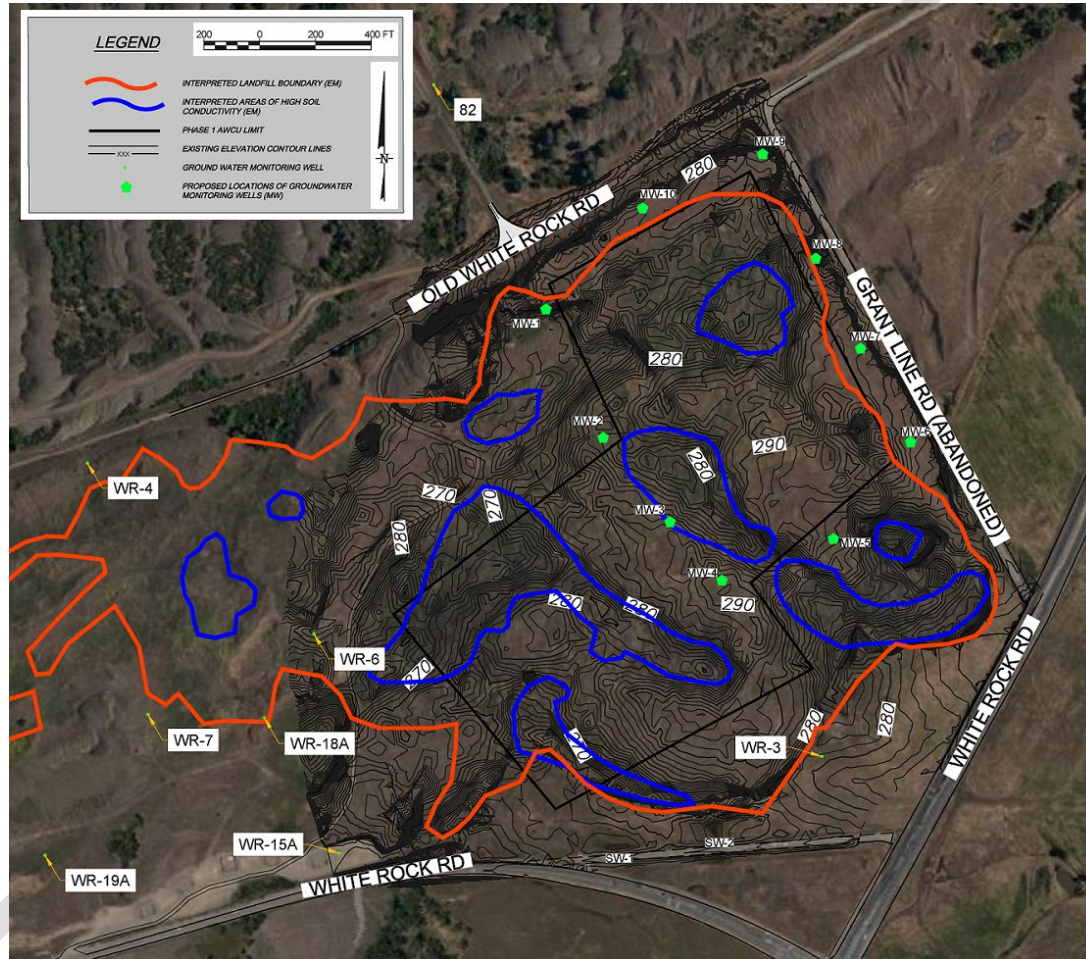
ATTACHMENT N—C-LAYER GROUNDWATER POTENTIOMETRIC MAP



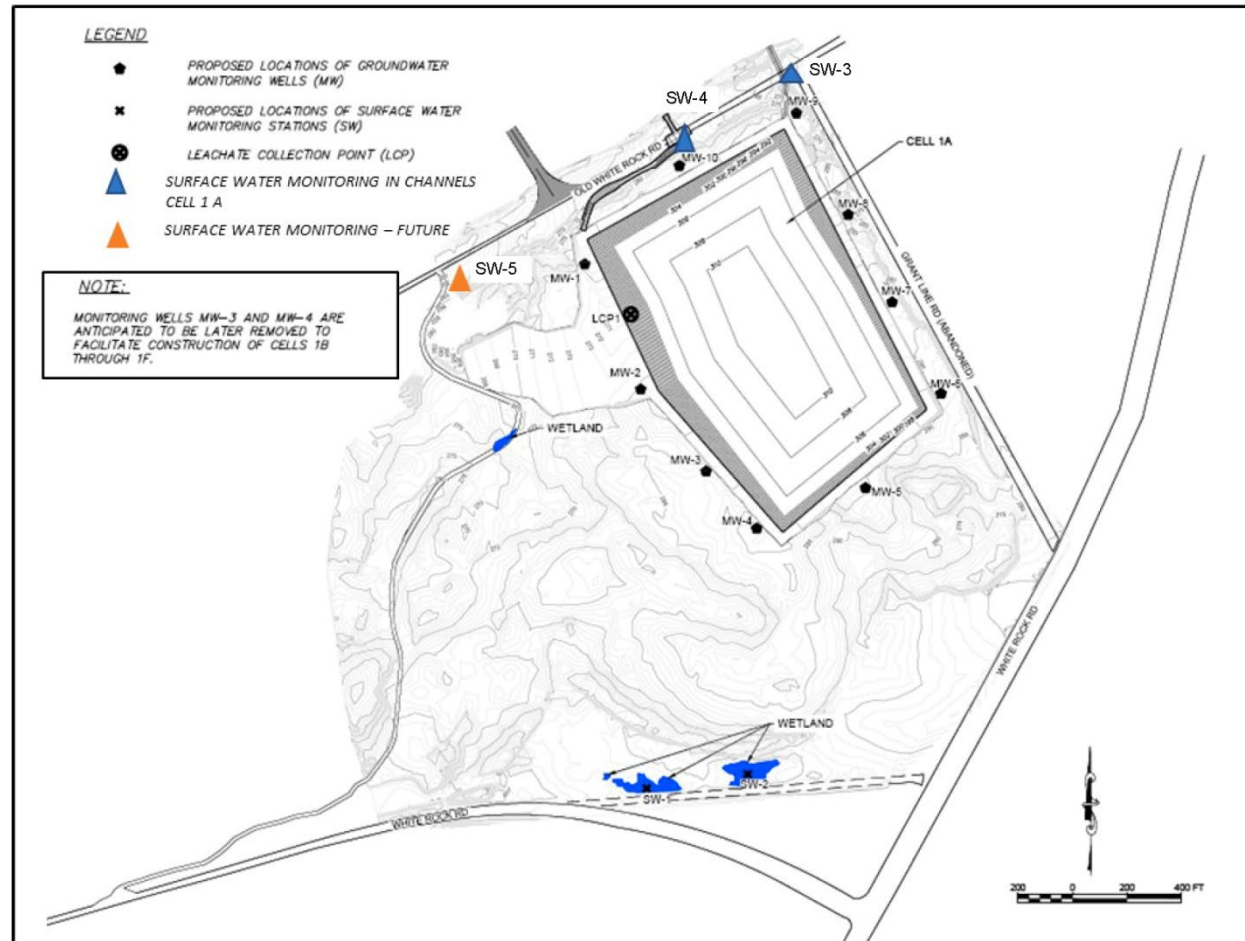
ATTACHMENT O—D-LAYER GROUNDWATER POTENTIOMETRIC MAP



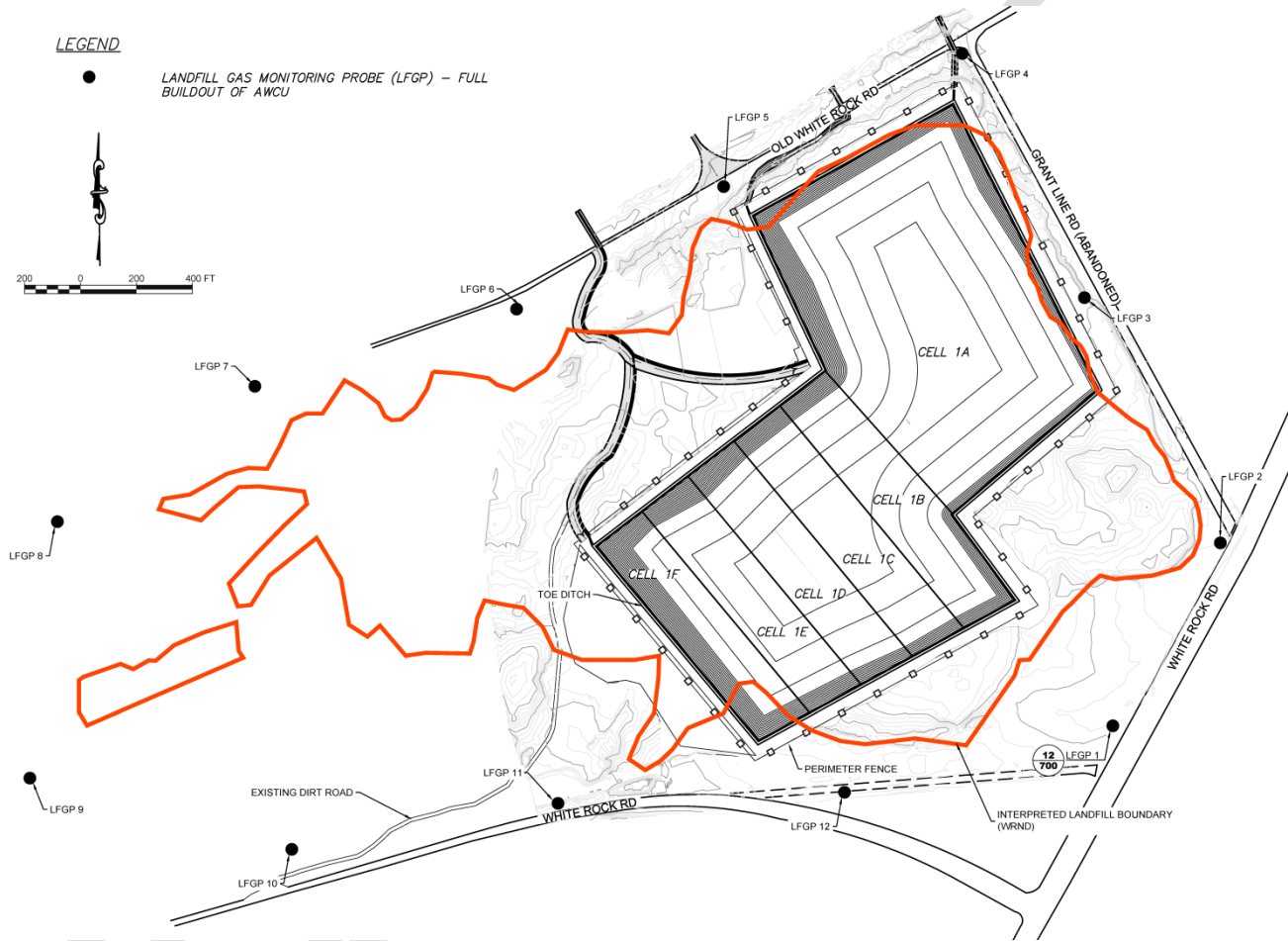
ATTACHMENT P—AWCU MONITORING LOCATIONS



ATTACHMENT Q—AWCU SURFACE WATER MONITORING POINTS

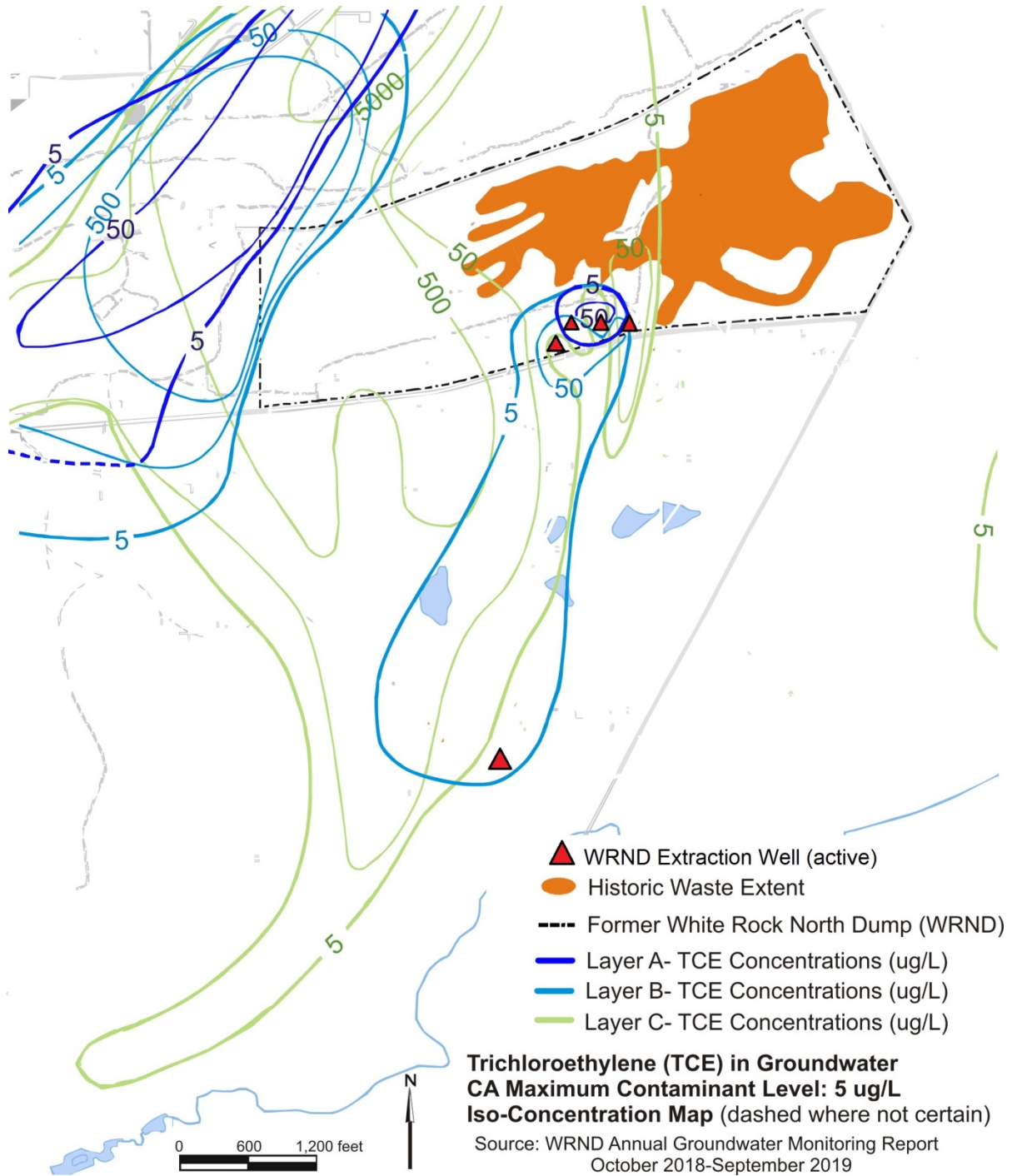


ATTACHMENT R—PROPOSED LANDFILL GAS MONITORING LOCATIONS



(Updated Version)

ATTACHMENT S—TCE ISO-CONCENTRATION MAP

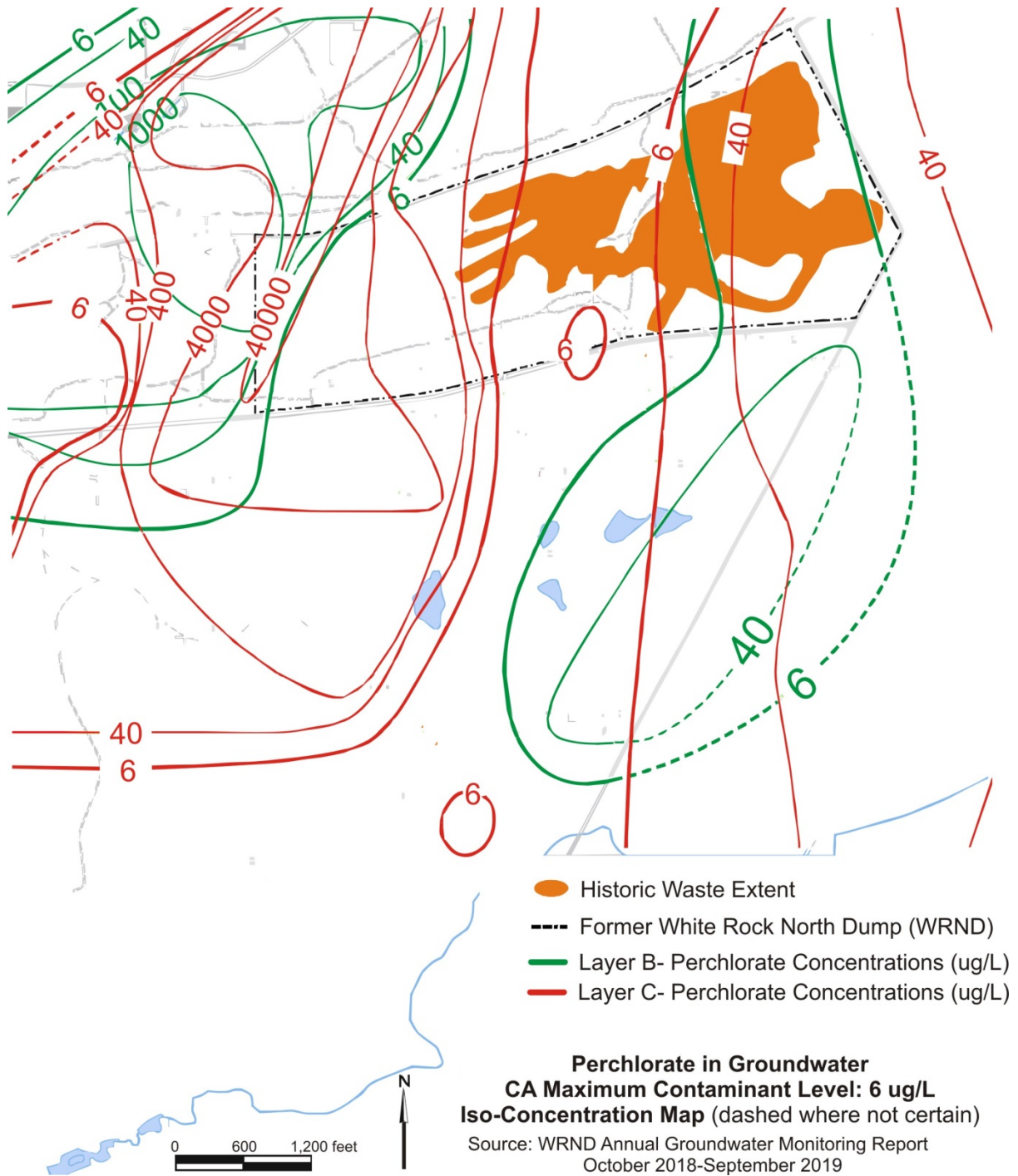


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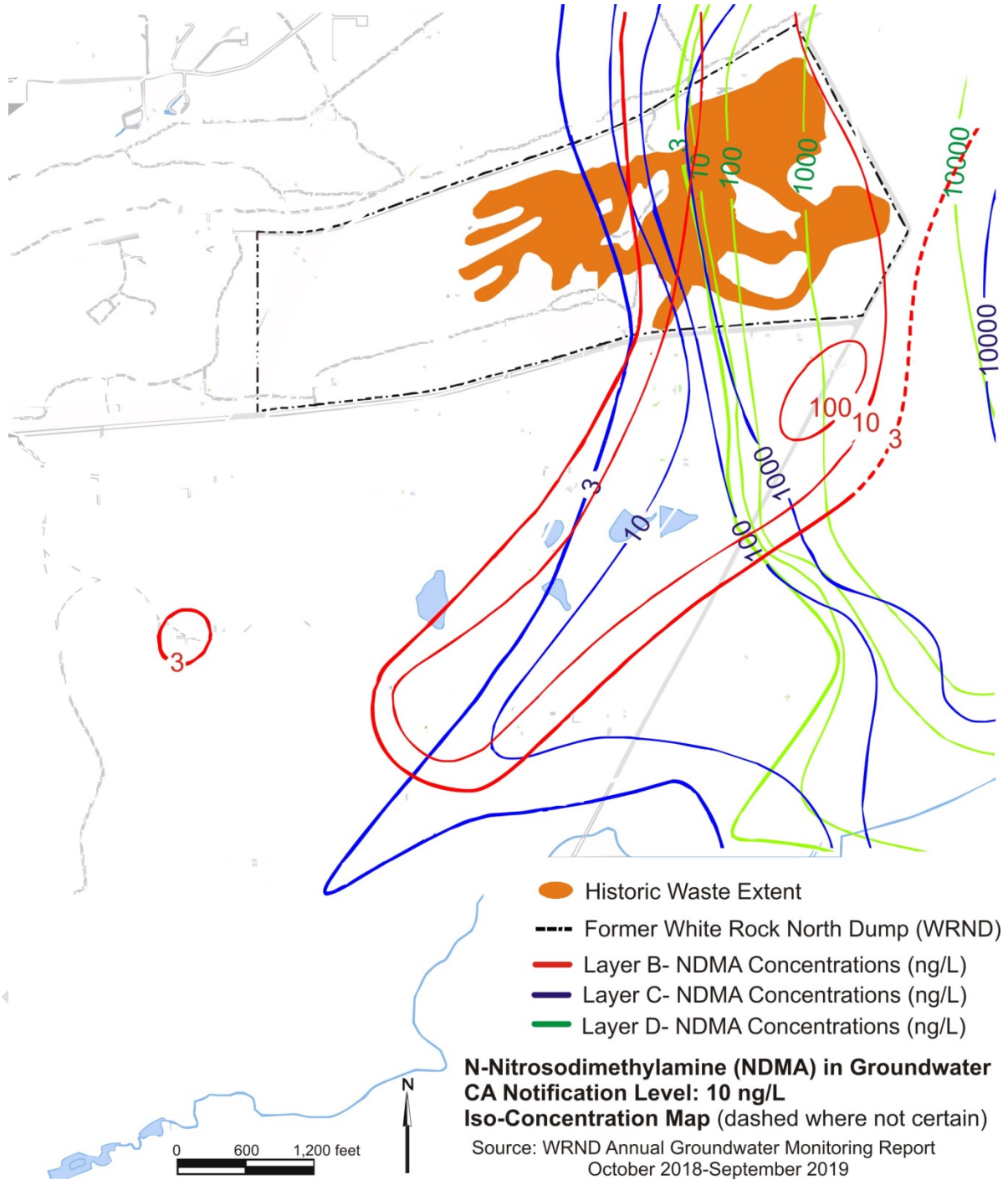
WHITE ROCK NORTH DUMP AND AEROJET WASTE CONSOLIDATION UNIT LANDFILL

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ATTACHMENT T—PERCHLORATE ISO-CONCENTRATION MAP



ATTACHMENT U—NDMA ISO-CONCENTRATION MAP

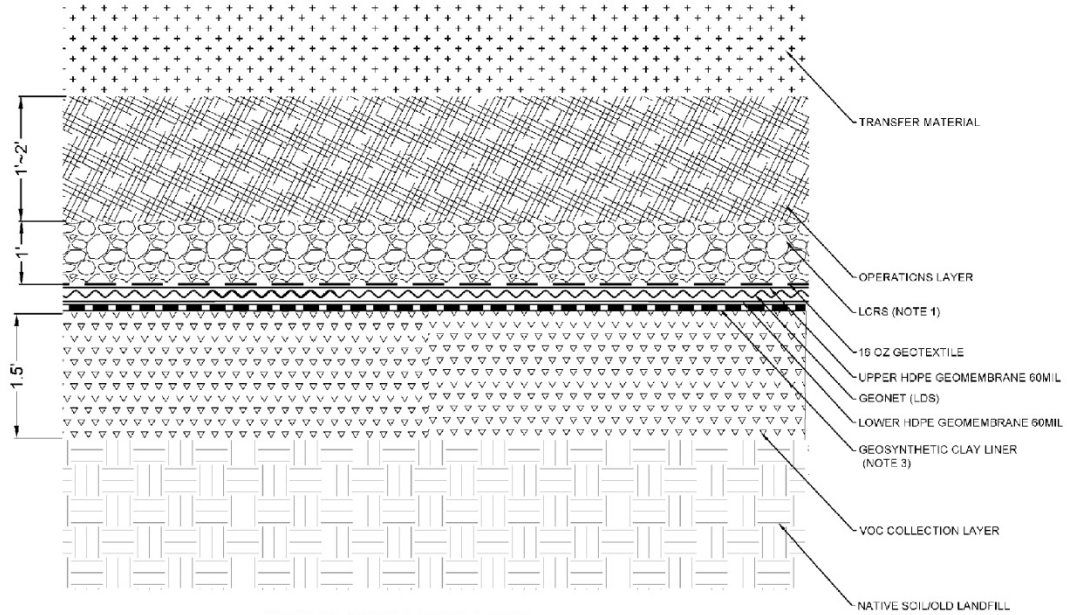


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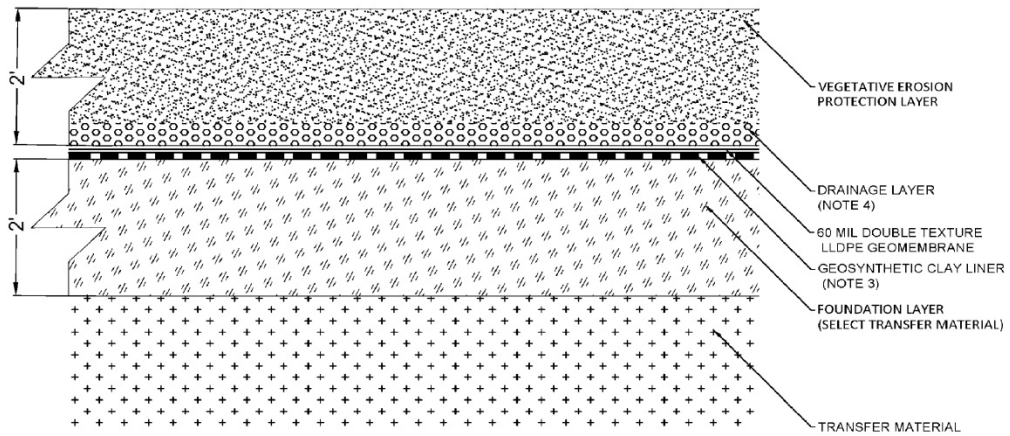
SACRAMENTO COUNTY

ATTACHMENT V—AWCU LINER AND FINAL CLOSURE COVER DETAILS



LINER SYSTEM DETAIL

NOT TO SCALE



COVER SYSTEM DETAIL

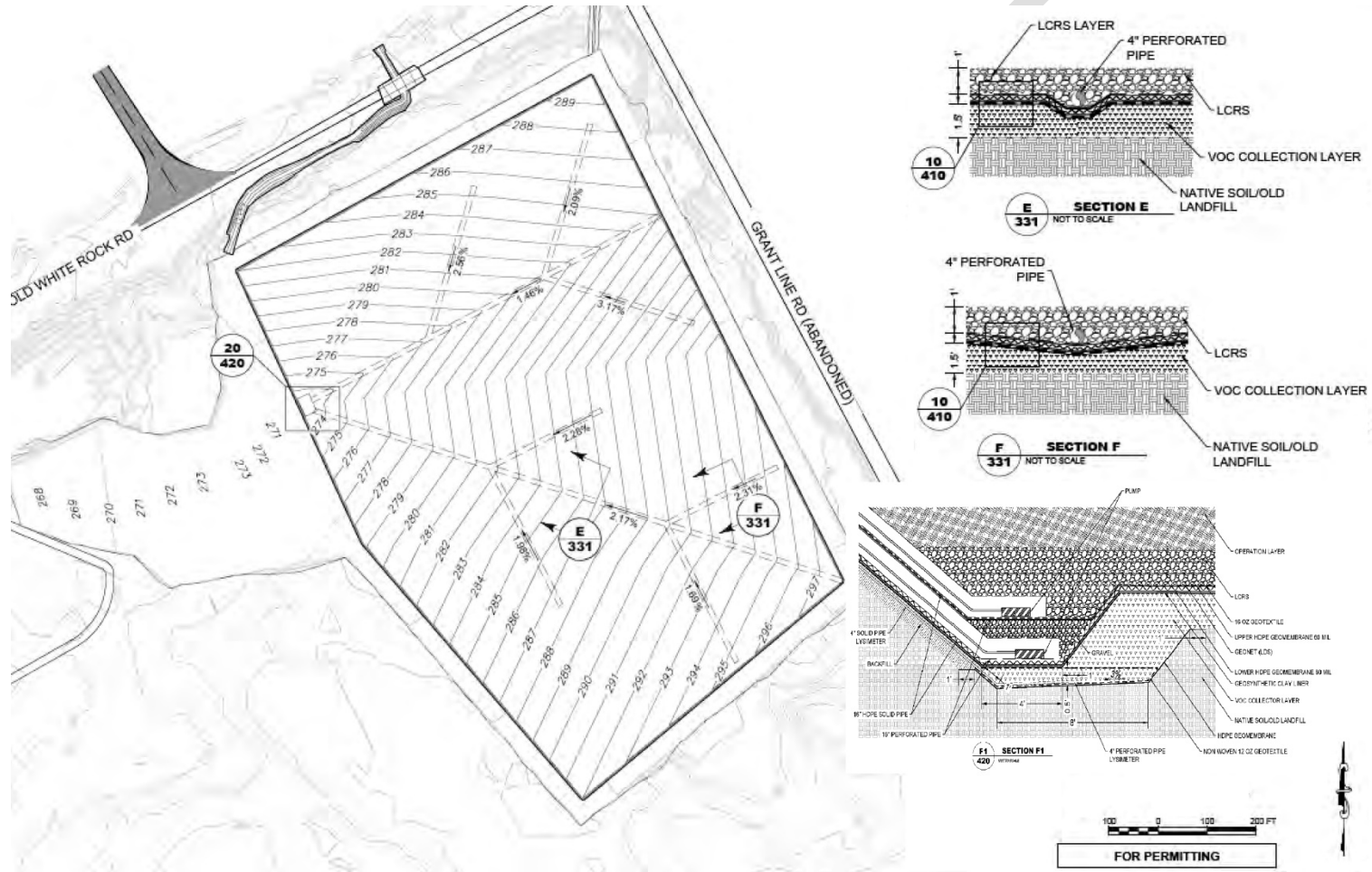
NOT TO SCALE

NOTES:

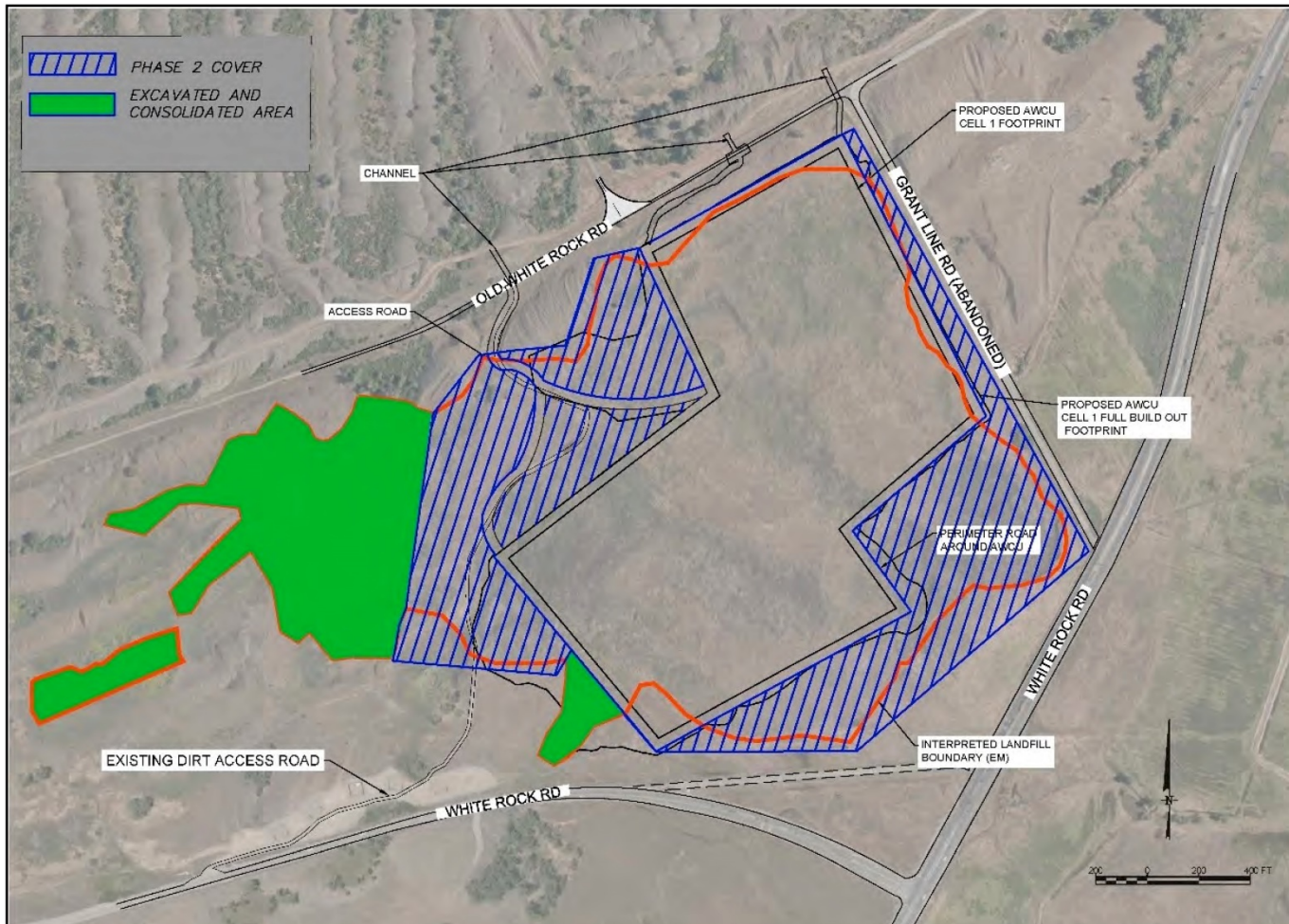
1. LEACHATE COLLECTION AND REMOVAL SYSTEM.
2. SPACING BETWEEN GEOSYNTHETICS COMPONENTS EXAGGERATED FOR CLARITY.
3. GCL IS PROPOSED AS AN ALTERNATIVE TO LOW PERMEABILITY SOIL LAYER.
4. DRAINAGE WILL BE EITHER COMPOSITE OR HIGH PERMEABILITY SOIL (GRAVEL). TO BE FINALIZED DURING FINAL DESIGN.

FOR PERMITTING

ATTACHMENT W—AWCU BASE GRADING DETAILS



ATTACHMENT X—PROPOSED AWCU AND WRND FINAL CLOSURE COVER PLAN



STANDARD PROVISIONS & REPORTING REQUIREMENTS

Non-Hazardous Discharges of Waste Regulated under Subtitle D and/or Title 27, December 2015 Edition

A. Applicability

1. These Standard Provisions and Reporting Requirements (SPRRs) are applicable to nonhazardous solid waste disposal sites that are regulated by the Central Valley Regional Water Quality Control Board (hereafter, Central Valley Water Board) pursuant to the provisions of California Code of Regulations, Title 27 ("Title 27"), section 20005 et seq., and municipal solid waste (MSW) landfills that are subject to the Federal Subtitle D regulations contained in 40 Code of Federal Regulations section 258 (hereafter, "Subtitle D" or "40 C.F.R. § 258.XX") in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62. The Subtitle D regulations are only applicable to MSW landfills and therefore any requirements in these SPRRs that are referenced as coming from Subtitle D are not applicable to non-MSW waste management units such as Class II surface impoundments, Class II waste piles, and non-MSW landfill units. All Subtitle D requirements in these SPRRs are referenced with "[40 C.F.R. § 258.XX]" after the requirement.
2. "Order," as used throughout this document, means the Waste Discharge Requirements (WDRs) to which these SPRRs are incorporated.
3. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, and do not protect the Discharger from liabilities under federal, state, or local laws. This Order does not convey any property rights or exclusive privileges.
4. The provisions of this Order are severable. If any provision of this Order is held invalid, the remainder of this Order shall not be affected.
5. If there is any conflicting or contradictory language between the WDRs, the Monitoring and Reporting Program (MRP), or the SPRRs, then language in the WDRs shall govern over either the MRP or the SPRRs, and language in the MRP shall govern over the SPRRs.
6. If there is a site-specific need to change a requirement in these SPRRs for a particular landfill facility, the altered requirement shall be placed in the appropriate section of the WDRs and will supersede the corresponding SPRRs requirement. These SPRRs are standard and cannot be changed as part of the permit writing process or in response to comments, but they will be periodically updated on an as-needed basis.

AEROJET ROCKETDYNE, INC.

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7. Unless otherwise stated, all terms are as defined in Water Code section 13050 and in Title 27, section 20164.

B. Terms and Conditions

1. Failure to comply with any waste discharge requirement, monitoring and reporting requirement, or Standard Provisions and Reporting Requirement, or other order or prohibition issued, reissued, or amended by the Central Valley Water Board or the State Water Board, or intentionally or negligently discharging waste, or causing or permitting waste to be deposited where it is discharged into the waters of the state and creates a condition of pollution or nuisance, is a violation of this Order and the Water Code, which can result in the imposition of civil monetary liability [Wat. Code, § 13350(a)]
2. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to [Wat. Code, § 13381]:
 - a. Violation of any term or condition contained in this Order;
 - b. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;
 - c. A change in any condition that results in either a temporary or permanent need to reduce or eliminate the authorized discharge; or
 - d. A material change in the character, location, or volume of discharge.
3. Before initiating a new discharge or making a material change in the character, location, or volume of an existing discharge, the Discharger shall file a new report of waste discharge (ROWD), or other appropriate joint technical document (JTD), with the Central Valley Water Board [Wat. Code, § 13260(c) and § 13264(a)]. A material change includes, but is not limited to, the following:
 - a. An increase in area or depth to be used for solid waste disposal beyond that specified in waste discharge requirements;
 - b. A significant change in disposal method, location, or volume (e.g., change from land disposal to land treatment);
 - c. A change in the type of waste being accepted for disposal; or

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- d. A change to previously-approved liner systems or final cover systems that would eliminate components or reduce the engineering properties of components.
4. Representatives of the Central Valley Water Board may inspect the facilities to ascertain compliance with the waste discharge requirements. The inspection shall be made with the consent of the owner or possessor of the facilities or, if the consent is refused, with a duly issued warrant. However, in the event of an emergency affecting the public health or safety, an inspection may be made without consent or the issuance of a warrant [Wat. Code, §13267(c)].
5. The Central Valley Water Board will review this Order periodically and will revise these waste discharge requirements when necessary [Wat. Code, § 13263(e) and Title 27, § 21720(b)].
6. Except for material determined to be confidential in accordance with California law and regulations, all reports prepared in accordance with terms of this Order shall be available for public inspection at the offices of the Central Valley Water Board [Wat. Code, § 13267(b)]. Data on waste discharges, water quality, geology, and hydrogeology shall not be considered confidential.
7. A discharge of waste into the waters of the state is a privilege, not a right. No discharge of waste into waters of the state, whether or not the discharge is made pursuant to waste discharge requirements, shall create a vested right to continue the discharge [Wat. Code, § 13263(g)].
8. Technical and monitoring reports specified in this Order are requested pursuant to the Water Code [§13267(b)]. Failure to furnish the reports by the specified deadlines or falsifying information in the reports, are misdemeanors that may be liable civilly in accordance with §13268(b) of the Water Code [Wat. Code, §13268(a)].

C. Standard Prohibitions

1. The discharge of liquid or semi-solid waste (waste containing less than 50 percent solids) is prohibited, except for the following when proposed in the ROWD/JTD and approved by this Order:
 - a. Dewatered sewage or water treatment sludge as described in Title 27, section 20220(c) provided it is discharged above a composite liner with a leachate collection and removal system (LCRS) [Title 27, § 20200(d)(3)].

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- b. Leachate and/or landfill gas condensate that is returned to the composite- lined waste management unit (with an LCRS) from which it came [Title 27, § 20340(g) and 40 C.F.R. § 258.28].
2. The discharge of wastes which have the potential to reduce or impair the integrity of containment structures or which, if commingled with other wastes in the waste management unit, could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products, which, in turn:
 - a. require a higher level of containment than provided by the unit; or
 - b. are ‘restricted wastes’; or
 - c. impair the integrity of containment structures;is prohibited [Title 27, § 20200(b)].
3. The discharge of wastes outside of a waste management unit or portions of a unit specifically designed for their containment is prohibited.
4. The discharge of solid waste containing free liquid or which may contain liquid in excess of the moisture holding capacity as a result of waste management operations, compaction or settlement is prohibited.
5. The discharge of waste to a closed landfill unit is prohibited.
6. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited.
7. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

D. Standard Discharge Specifications

1. The Discharger is responsible for accurate characterization of wastes, including a determination of whether or not wastes will be compatible with containment features and other wastes at the waste management unit and whether or not the wastes are required to be managed as a hazardous waste [Title 27, § 20200(c)] or designated waste [Title 27, § 20210].
2. Leachate and landfill gas condensate collected from a waste management unit shall be discharged to the unit from which it came, or discharged to an appropriate waste management unit in accordance with Title 27 and in a

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manner consistent with the waste classification of the liquid [Title 27, § 20200(d) and § 20340(g)].

3. The discharge of leachate or landfill gas condensate is restricted to those portions of a waste management unit that has a composite liner system and LCRS meeting the Federal Subtitle D requirements [40 C.F.R. § 258.28].
4. Leachate and condensate returned to a composite-lined landfill unit (when approved by this Order) shall be discharged and managed such that it does not cause instability of the waste, does not cause leachate seeps, does not generate additional landfill gas that is not extracted from the landfill by an active landfill gas extraction system, does not cause contaminants to enter surface water runoff, and does not cause leachate volumes to exceed the maximum capacity of the LCRS.
5. Any discharge of waste outside the portion of the landfill that was already covered with waste as of the landfill unit's respective Federal Deadline constitutes a "lateral expansion" and requires the installation of an approved composite liner system and LCRS [40 C.F.R. § 258.40(b)].
6. Wastes shall be discharged only into waste management units specifically designed for their containment and/or treatment, as described in this Order.
7. The discharge shall remain within the designated disposal area at all times.
8. The discharge of waste shall not cause a nuisance condition [Wat. Code, § 13050(m)].

E. Standard Facility Specifications

1. All waste management units shall be designed, constructed, and operated to ensure that wastes, including leachate, will be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater [Title 27, § 20240(c)], including the capillary fringe.
2. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].
3. Interim cover is daily and intermediate cover [Title 27, § 20750(a)]. Interim cover over wastes discharged to a landfill shall be designed and

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- constructed to minimize percolation of liquids through the wastes [Title 27, § 20705(b)].
4. Intermediate cover consisting of compacted earthen material of at least twelve (12) inches shall be placed on all surfaces of the fill where no additional solid waste will be deposited within **180 days** [Title 27, § 20700(a)].
 5. During wet weather conditions, the facility shall be operated and graded to minimize leachate generation.
 6. The Discharger shall immediately notify the Central Valley Water Board staff of any slope failure occurring at a waste management unit. Any failure which threatens the integrity of containment features or the waste management unit shall be promptly corrected in accordance with an approved method [Title 27, § 21710(c)(2)].
 7. The Discharger shall **immediately** notify Central Valley Water Board staff of any flooding, unpermitted discharge of waste off-site or outside of waste management units, equipment failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
 8. The Discharger shall limit water used for facility maintenance within landfill areas to the minimum amount necessary for dust control and construction.
 9. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
 10. The Discharger shall lock all groundwater monitoring wells with a lock on the well cap or monitoring well box. All monitoring devices shall be clearly labeled with their designation including all monitoring wells, LCRS risers, and lysimeter risers and shall be easily accessible for required monitoring by authorized personnel. Each monitoring device shall be clearly visible and be protected from damage by equipment or vehicles.
 11. The Discharger shall ensure that methane and other landfill gases are adequately vented, removed from landfill units, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, degradation, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.

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12. The Discharger shall maintain the depth of the fluid in the sump of each landfill unit at the minimum needed for efficient pump operation (the depth at which the pump turns on given the pump intake height and maximum pump cycle frequency).
13. The depth of fluid on the landfill liner shall not exceed **30 centimeters** (cm) [40 C.F.R. § 258.40(a)(2)]. This regulation is interpreted by the Central Valley Water Board to exclude the leachate sump. The Discharger shall **immediately** notify the Central Valley Water Board staff by telephone, and follow up in writing within **seven** days if monitoring reveals that the depth of fluid on any portion of the liner (excluding the sump) exceeds 30 cm (approximately 12 inches). The written notification shall include a timetable for remedial or corrective action necessary to achieve compliance with the leachate depth limitation.
14. Each LCRS shall be tested at least annually to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions [Title 27, § 20340(d)].
15. The Discharger shall maintain a *Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements* in accordance with State Water Board Order No. 2014-0057-DWQ (Industrial General Permit) or most recent general industrial storm water permit), or retain all storm water on-site.
16. Internal site drainage from surface or subsurface sources shall not contact or percolate through wastes.
17. New MSW landfill units or lateral expansions of existing units shall not be sited in a "wetland" [as defined in 40 C.F.R. § 232.29(r)] unless there is no practical alternative; steps have been taken to assure no net loss of wetland; the landfill unit will not degrade the wetland; the unit will not jeopardize threatened or endangered species or produce adverse modification of a critical habitat or violate any requirement of the Marine Protection, Research, and Sanctuaries Act of 1972 [40 C.F.R. § 258.12].

F. Standard Construction Specifications

1. The Discharger shall submit for review and approval at least 90 days prior to proposed construction, design plans and specifications for new landfill modules that include the following:
 - a. Detailed construction drawings showing all required liner system components, the LCRS, leachate sump, unsaturated zone

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- monitoring system, any proposed landfill gas monitoring and extraction points, and access to the LCRS for required annual testing.
- b. A Construction Quality Assurance (CQA) Plan prepared by a California-registered civil engineer or certified engineering geologist, and that meets the requirements of Title 27, section 20324.
 - c. A geotechnical evaluation of the area soils, evaluating their use as the base layer or reference to the location of this information in the ROWD/JTD [Title 27, § 21750(f)(4)].
 - d. Information about the seismic design of the proposed new module (or reference to the location of this information in the ROWD/JTD) in accordance with Title 27, section 20370.
 - e. A revised water quality monitoring plan for groundwater detection monitoring (or information showing the existing plan is adequate) in accordance with Title 27, section 20415.
 - f. An Operation Plan (or reference to the location of this information in the ROWD/JTD) meeting the requirements of Title 27, section 21760(b).
2. All containment structures shall be designed by, and construction shall be supervised by, a California registered civil engineer or a certified engineering geologist, and shall be certified by that individual as meeting the prescriptive standards, or approved engineered alternative design, in accordance with this Order prior to waste discharge.
 3. The Discharger shall not proceed with construction until the construction plans, specifications, and all applicable construction quality assurance plans have been approved. Waste management units shall receive a final inspection and approval of the construction by Central Valley Water Board staff before use of the unit commences [Title 27, § 20310(e)].
 4. Any report, or any amendment or revision of a report, that proposes a design or design change that might affect a waste management unit's containment features or monitoring systems shall be approved by a California registered civil engineer or a certified engineering geologist [Title 27, § 21710(d)].

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5. Materials used in containment structures shall have appropriate chemical and physical properties to ensure that such structures do not fail to contain waste because of pressure gradients, physical contact with waste or leachate, chemical reactions with soil or rock, climatic conditions, the stress of installation, or because of the stress of daily operations [Title 27, § 20320(a)].
6. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping [Title 27, § 20365(a)].
7. The Discharger shall design storm water conveyance systems for Class III units for a 100-year, 24-hour storm event, and shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
8. All Class III landfill units shall be designed to withstand the maximum probable earthquake and Class II waste management units shall be designed to withstand maximum credible earthquake without damage to the foundation or to the structures that control leachate, or surface drainage, or erosion, or gas [Title 27, § 20370(a)].
9. The Discharger shall perform stability analyses that include components to demonstrate the integrity of the landfill foundation, final slopes, and containment systems under both static and dynamic conditions throughout the landfill's life including the closure period and post-closure maintenance period [Title 27, § 21750(f)(5)].
10. New waste management units and expansions of existing units shall not be located on a known Holocene fault [Title 27, § 20260(d)].
11. Liners shall be designed and constructed to contain the fluid, including landfill gas, waste, and leachate [Title 27, § 20330(a)].
12. Hydraulic conductivities shall be determined primarily by appropriate field test methods in accordance with accepted civil engineering practice. The results of laboratory tests with both water and leachate, and field tests with water, shall be compared to evaluate how the field permeabilities will be affected by leachate. It is acceptable for the Discharger to use appropriate compaction tests in conjunction with laboratory hydraulic conductivity tests to determine field permeabilities as long as a reasonable number of field hydraulic conductivity tests are also conducted [Title 27, § 20320(c)].

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13. Hydraulic conductivities specified for containment structures other than the final cover shall be relative to the fluids (leachate) to be contained. Hydraulic conductivities for the final cover shall be relative to water [Title 27, § 20320(b)].
14. A test pad for each barrier layer and final cover shall be constructed in a manner duplicating the field construction. Test pad construction methods, with the designated equipment, shall be used to determine if the specified density/moisture-content/hydraulic conductivity relationships determined in the laboratory can be achieved in the field with the compaction equipment to be used and at the specified lift thickness [Title 27, § 20324(g)(1)(A)].
15. Performance requirements for geosynthetic membranes shall include, but are not limited to, a need to limit infiltration of water, to the greatest extent possible; a need to control landfill gas emissions; mechanical compatibility with stresses caused by equipment traffic, and for final covers the result of differential settlement over time and durability throughout the post-closure maintenance period [Title 27, § 20324(i)(1)].
16. The Discharger shall ensure proper preparation of the subgrade for any liner system that includes a GCL so as to provide a smooth surface that is free from rocks, sticks, or other debris that could damage or otherwise limit the performance of the GCL.
17. The Discharger shall propose an electronic leak location survey of the top liner for any new landfill module in the construction quality assurance plan unless the Discharger demonstrates that a leak location survey is not needed.
18. Leachate collection and removal systems are required for Class II landfills and surface impoundments, MSW landfills, and for Class III landfills which have a liner or which accept sewage or water treatment sludge [Title 27, § 20340(a)].
19. All new landfill units or lateral expansions of existing units that require a LCRS shall have a blanket-type LCRS that covers the bottom of the unit and extends as far up the sides as possible. The LCRS shall be of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used at the unit [Title 27, § 20340(e)].
20. The LCRS shall be designed, constructed, maintained, and operated to collect and remove twice the maximum anticipated daily volume of leachate from the waste management unit [Title 27, § 20340(b)].

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21. Leachate collection and removal systems shall be designed and operated to function without clogging through the scheduled closure of the landfill unit and during the post-closure maintenance period.
22. The LCRS shall be designed to maintain the depth of fluid over any portion of the LCRS of no greater than 30 cm [40 C.F.R. § 258.40(a)(2)], excluding the leachate sump. The leachate sump, leachate removal pump, and pump controls shall be designed and set to maintain a fluid depth no greater than the minimum needed for efficient pump operation [Title 27, § 20340(c)].
23. All construction of liner systems and final cover systems shall be performed in accordance with a Construction Quality Assurance Plan certified by a registered civil engineer or a certified engineering geologist [Title 27, § 20323].
24. The Construction Quality Assurance program shall be supervised by a registered civil engineer or a certified engineering geologist who shall be designated the CQA officer [Title 27, § 20324(b)(2)].
25. The Discharger shall ensure that a third party independent of both the Discharger and the construction contractor performs all of the construction quality assurance monitoring and testing during the construction of a liner system.
26. The Discharger shall notify Central Valley Water Board staff at least **14 days** prior to commencing field construction activities including construction of a new lined cell or module, construction of a final cover, or any other construction that requires Central Valley Water Board staff approval under this Order.
27. The Discharger shall submit for review and approval at least **60 days** prior to proposed discharge, final documentation required in Title 27 Section 20324(d)(1)(C) following the completion of construction of a new lined landfill module. The report shall be certified by a registered civil engineer or a certified engineering geologist and include a statement that the liner system was constructed in accordance with the approved design plans and specifications, the CQA Plan, the requirements of the WDRs, and that it meets the performance goals of Title 27. The report shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, the construction quality assurance plan, and the performance goals of Title 27.

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28. The Discharger shall not discharge waste onto a newly constructed liner system until the final documentation report has been reviewed and an acceptance letter has been received.
29. Prior to placement of waste in a new landfill unit, the Discharger shall monitor any pan lysimeter for the unit that has received enough rainfall to flood the LCRS sump. If liquid is detected in the pan lysimeter, the Discharger shall verify that the liquid is not from a leak in the primary liner system before waste can be accepted to the new module.

G. Standard Closure and Post-Closure Specifications

1. The Discharger shall submit a final or partial final closure and post-closure maintenance plan at least **two years** prior to the anticipated date of closure [Title 27, § 21780(d)(1)].
2. The Discharger shall notify the Central Valley Water Board in writing that a landfill unit or portion of a unit is to be closed either at the same time that the California Department of Resources Recycling and Recovery (CalRecycle) is notified or **180 days** prior to beginning any final closure activities, whichever is sooner [Title 27, § 21710(c)(5)(A)]. The notice shall include a statement that all closure activities will conform to the most recently approved final or partial final closure plan and that the plan provides for site closure in compliance with all applicable federal and state regulations [Title 27, § 21710(c)(5)(C)].
3. Initiation of closure activities shall begin within **30 days** of final waste receipt, or within one year of receipt of most recent waste if additional capacity remains [40 C.F.R. § 258.60(f)].
4. Closure activities shall be completed within **180 days** of the beginning of closure activities unless an extension is granted by the Executive Officer [40 C.F.R. § 258.60(g)].
5. The Discharger shall carry out both mandatory closure and normal closure of a waste management unit or a portion of a unit in accordance with a closure and post-closure maintenance plan approved by the Central Valley Water Board [Title 27, § 20950(a)(1)] through the issuance of closure waste discharge requirements.
6. The Discharger shall notify the Central Valley Water Board that a preliminary closure and post-closure maintenance plan has been prepared and placed in the operating record by the date of initial receipt of waste at any new MSW landfill unit or lateral expansion of any existing unit [40

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C.F.R. § 258.60(d)]. This notification shall be included in the cover letter transmitting the preliminary closure and post-closure maintenance plan.

7. In addition to the applicable provisions of Title 27, the preliminary closure and/or the post-closure maintenance plans for MSW landfill units shall include the following:
 - a. A description of the steps necessary to close all MSW landfill units at any point during their active life in accordance with the cover design requirements [40 C.F.R. § 258.60(c)];
 - b. An estimate of the largest area of the landfill unit(s) ever requiring a final cover at any time during the active life of the unit(s) [40 C.F.R. § 258.60(c)(2)];
 - c. An estimate of the maximum inventory of wastes ever on-site over the active life of the waste management facility [40 C.F.R. § 258.60(c)(3)]; and
 - d. A schedule for completing all activities necessary to satisfy the closure criteria in 40 C.F.R. section 258.60 [40 C.F.R. § 258.60(c)(4)].
8. The final closure and post-closure maintenance plan for the waste management unit shall include at least the following: an itemized cost analysis, closure schedule, any proposed final treatment procedures, map, changes to the unit description presented in the most recent ROWD, federal requirements for a MSW facility, land use of the closed unit, and a construction quality assurance plan [Title 27, § 21769(c) & (d)].
9. Closure of each waste management unit shall be under the direct supervision of a registered civil engineer or certified engineering geologist [Title 27, § 20950(b)].
10. The final cover of closed landfills shall be designed, graded, and maintained to prevent ponding and soil erosion due to high run-off velocities [Title 27, § 21090(b)(1)(A)].
11. The final grading design shall be designed and approved by a registered civil engineer or certified engineering geologist [Title 27, § 21090(b)(1)(C)].
12. All final cover designs shall include a minimum 1-foot thick erosion resistant layer [Title 27, § 21090(a)(3)(A)].

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13. The Discharger shall close the landfill with minimum 15-foot wide benches every 50 vertical feet [Title 27, § 21090(a)].
14. Final cover slopes shall not be steeper than a horizontal to vertical ratio of one and three quarters to one and designs having any slopes steeper than a horizontal to vertical ratio of three to one, or having a geosynthetic component, shall have these aspects of their design specifically supported in the slope stability report required in Title 27, section 21750(f)(5) [Title 27, § 21090(a)].
15. For any portions of the final cover installed after July 18, 1997, for which the Central Valley Water Board has not approved a slope and foundation stability report on or before that date, the Discharger shall meet the requirements of Title 27, section 21750(f)(5) [Title 27, § 21090(a)(6)].
16. Areas with slopes greater than ten percent, surface drainage courses, and areas subject to erosion by wind or water shall be designed and constructed to prevent such erosion [Title 27, § 21090(b)(2)].
17. The Discharger shall design storm water conveyance systems for closed Class III units for a 100-year, 24-hour storm event, and shall design storm water conveyance systems for closed Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
18. Closed landfill units shall be provided with at least two permanent surveying monuments, installed by a licensed land surveyor or by a registered civil engineer, from which the location and elevation of all wastes, containment structures, and monitoring facilities can be determined throughout the post-closure maintenance period [Title 27, § 20950(d)].
19. Following closure of any MSW landfill units, the Discharger shall notify the Executive Officer that the deed to the landfill facility property, or some other instrument that is normally examined during a title search, has been recorded and a copy placed in the operating record. The notation on the deed shall in perpetuity notify any potential purchaser of the property that the land has been used as a landfill facility and that use of the land is restricted to the planned use described in the post-closure maintenance plan [Title 27, § 20515(a)(4) and §21170, and 40 C.F.R. § 258.60(i)].
20. Construction or repair of the final cover system's low-hydraulic conductivity layer is to be carried out in accordance with an approved construction quality assurance plan [Title 27, § 21090(b)(1)(E)].

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21. The Discharger shall incorporate into the closure and post-closure maintenance plan a cover-integrity monitoring and maintenance program which includes at least the following: a periodic leak search, periodic identification of other problem areas, prompt cover repair, and vegetation maintenance [Title 27, § 21090(a)(4)].
22. The Discharger shall complete a final cover survey upon completion of closure activities for that portion of the landfill. The final cover surveys shall include an initial survey and map [Title 27, § 21090(e)(1). **Every five years**, the Discharger shall conduct a survey of the closed landfill cover and submit an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the final cover's low-hydraulic-conductivity layer [Title 27, § 21090(e)(2)].
23. Within **30 days** of completion of all closure activities, the Discharger shall certify that all closure activities were performed in accordance with the most recently approved final closure plan and CQA Plan, and in accordance with all applicable regulations. The Discharger shall also certify that closed landfill units shall be maintained in accordance with and approved post-closure maintenance plan [Title 27, § 21710(c)(6)].
24. Within **180 days** of completion of closure construction activities, the Discharger shall submit final documentation of closure, including the Certification of Closure. The closure documents shall include a final construction quality assurance report and any other documents necessary to support the certification [Title 27, § 21880].
25. The post-closure maintenance period shall continue until the Central Valley Water Board determines that wastes remaining in the landfill unit(s) no longer pose a threat to water quality [Title 27, § 20950(a)(1)].
26. The Discharger shall conduct a periodic leak search to monitor of the integrity of the final cover in accordance with the schedule in the approved final post-closure maintenance plan [Title 27, § 21090(a)(4)(A)].
27. The Discharger shall periodically inspect and identify problems with the final cover including areas that require replanting, erosion, areas lacking free drainage, areas damaged by equipment operations, and localized areas identified in the required five-year iso-settlement survey [Title 27, § 21090(a)(4)(B)].
28. The Discharger shall repair the cover promptly in accordance with a cover repair plan to be included in the final post-closure maintenance plan [Title 27, § 21090(a)(4)(C)].

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29. Throughout the post-closure maintenance period, the Discharger shall maintain the structural integrity and effectiveness of all containment structures, maintain the final cover as necessary to correct the effects of settlement and other adverse factors, continue to operate the LCRS as long as leachate is generated and detected, maintain the monitoring systems, prevent erosion and related damage of the final cover due to drainage, and protect and maintain surveyed monuments [Title 27, § 21090(c)].
30. Post-closure maintenance shall be conducted for a minimum period of 30 years or until the waste no longer poses a threat to environmental quality, whichever is greater [Title 27, § 21180(a) and Title 27, § 21900(a)].

H. Standard Financial Assurance Provisions

1. The Discharger shall establish an irrevocable fund for closure and post-closure maintenance to ensure closure and post-closure maintenance of each classified unit in accordance with an approved closure and post-closure maintenance plan [Title 27, § 20950(f) and § 22207(a)].
2. The Discharger shall obtain and maintain assurances of financial responsibility for initiating and completing corrective action for all known and reasonably foreseeable releases from the waste management unit [Title 27, § 20380(b), § 22221, and § 22222].

I. Standard Monitoring Specifications

1. The water quality monitoring program shall include appropriate and consistent sampling and analytical procedures and methods designed to ensure that monitoring results provide a reliable indication of water quality at all monitoring points and background monitoring points [Title 27, § 20415(e)(4) and 40 C.F.R. § 258.53(b)].
2. All monitoring systems shall be designed and certified by a registered geologist or a registered civil engineer [Title 27, § 20415(e)(1)].
3. All monitoring wells shall be cased and constructed in a manner that maintains the integrity of the monitoring well bore hole and prevents the bore hole from acting as a conduit for contaminant transport [Title 27, § 20415(b)(4)(A)].
4. All sample chemical analyses of any material shall be performed by a laboratory certified by the California Department of Health Services [Wat. Code, § 13176(a)].

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5. A Detection Monitoring Program for a new landfill facility shall be installed, operational, and one year of monitoring data collected from background monitoring points prior to the discharge of wastes [Title 27, § 20415(e)(6)].
6. Background for water samples or soil-pore gas samples shall be represented by the data from all samples taken from applicable background monitoring points during that reporting period (at least one sample from each background monitoring point).
7. The Discharger shall submit for approval, establish, and maintain an approved Sample Collection and Analysis Plan. The Sample Collection and Analysis Plan shall at a minimum include:
 - a. Sample collection procedures describing purging techniques, sampling equipment, and decontamination of sampling equipment;
 - b. Sample preservation information and shipment procedures;
 - c. Sample analytical methods and procedures;
 - d. Sample quality assurance/quality control (QA/QC) procedures;
 - e. Chain of Custody control; and
 - f. Sample analysis information including sample preparation techniques to avoid matrix interferences, method detection limits (MDLs), practical quantitation limits (PQLs) and reporting limits (RLs), and procedures for reporting trace results between the MDL and PQL.

If required by the Executive Officer, the Discharger shall modify the Sample Collection and Analysis Plan to conform with this Order.

8. For any given monitored medium, the samples taken from all monitoring points and background monitoring points to satisfy the data analysis requirements for a given reporting period shall all be taken **within a span not to exceed 30 days**, unless a longer time period is approved, and shall be taken in a manner that ensures sample independence to the greatest extent feasible. Specific methods of collection and analysis must be identified. Sample collection, storage, and analysis shall be performed according to the most recent version of USEPA Methods, such as the latest editions, as applicable, of: (1) Methods for the Analysis of Organics in Water and Wastewater (USEPA 600 Series), (2) Test Methods for Evaluating Solid Waste (SW-846, latest edition), and (3) Methods for

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Chemical Analysis of Water and Wastes (USEPA 600/4-79-020), and in accordance with the approved Sample Collection and Analysis Plan. Appropriate sample preparation techniques shall be used to minimize matrix interferences.

9. If methods other than USEPA-approved methods or Standard Methods are used, or there is a proposed alternant USEPA method than the one listed in the MRP, the proposed methodology shall be submitted for review and approval prior to use, including information showing its equivalence to the required method.
10. The **methods of analysis and the detection limits** used must be appropriate for the expected concentrations. For the monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., "trace" or "ND") in data from background monitoring points for that medium, the analytical method having the lowest MDL shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.
11. The laboratory reporting limit (RL) for all reported monitoring data shall be set no greater than the practical quantitation limit (PQL).
12. **"Trace" results** - results falling between the MDL and the PQL - shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run.
13. Laboratory data shall not be altered or revised by the Discharger. If the Discharger observes potential lab errors, it shall identify the issue in the monitoring report and shall describe steps that will be taken to prevent similar errors in the future.
14. **MDLs and PQLs** shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. These MDLs and PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than simply being quoted from USEPA analytical method manuals. In relatively interference-free water, laboratory-derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs. MDLs and PQLs shall be reported.
15. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived MDL/PQL values, the

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results shall be flagged in the laboratory report accordingly, along with estimates of the detection limit and quantitation limit actually achieved.

The **MDL shall always be calculated such that it represents the lowest achievable concentration associated with a 99% reliability of a nonzero result**. The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents the constituent's actual concentration in the sample. Normally, PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.

16. All **QA/QC** data shall be reported, along with the sample results to which they apply, including the method, equipment, analytical detection and quantitation limits, the percent recovery, an explanation for any recovery that falls outside the QC limits, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and signature of a responsible person from the laboratory. **Sample results shall be reported unadjusted for blank results or spike recoveries**. In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged, but the analytical results shall not be adjusted.
17. Unknown chromatographic peaks shall be reported, flagged, and tracked for potential comparison to subsequent unknown peaks that may be observed in future sampling events. Identification of unknown chromatographic peaks that recur in subsequent sampling events may be required.
18. The sampling interval of each monitoring well shall be appropriately screened and fitted with an appropriate filter pack to enable collection of representative groundwater samples [Title 27, § 20415(b)(4)(B)]. Groundwater samples shall not be field-filtered prior to laboratory analysis [40 C.F.R. § 258.53(b)]. Groundwater samples needing filtering (e.g., samples to be analyzed for dissolved metals) shall be filtered by the laboratory prior to analysis.
19. Groundwater elevations shall be measured in each well immediately prior to purging, each time groundwater is sampled. The owner or operator shall determine the rate and direction of groundwater flow each time groundwater is sampled. Groundwater elevations in wells which monitor the same waste management area shall be measured within a period of time short enough to avoid temporal variations in groundwater flow which

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could preclude accurate determination of groundwater flow rate and direction [40 C.F.R. § 258.53(d)].

20. Monitoring wells, piezometers, and other measurement, sampling, and analytical devices must be operated and maintained so that they perform to design specifications throughout the life of the monitoring program [40 C.F.R. § 258.51(c)(2)]. Monitoring devices that cannot be operated and maintained to perform to design specifications shall be replaced after review and approval of a report (i.e., work plan) for the proposed replacement devices.
21. All borings are to be logged during drilling under the direct supervision of a registered geologist or registered civil engineer with expertise in stratigraphic well logging [Title 27, § 20415(e)(2)].
22. Soils are to be described according to the Unified Soil Classification System [Title 27, § 20415(e)(2)(A)]. Rock is to be described in a manner appropriate for the purpose of the investigation [Title 27, § 20415(e)(2)(B)].
23. The Discharger shall submit a work plan for review and approval at least **60 days** prior to installation or abandonment of groundwater monitoring wells.
24. The Discharger shall provide Central Valley Water Board staff a minimum of **one week** notification prior to commencing any field activities related to the installation or abandonment of monitoring devices.
25. The water quality protection standard shall consist of the constituents of concern (COC), concentration limits, and the point of compliance. The water quality protection standard shall apply during the active life of the waste management unit, closure period, post-closure maintenance period, and any compliance period under Title 27, section 20410 [Title 27, § 20390].
26. The point of compliance at which the water quality protection standard applies is a vertical surface located at the hydraulically downgradient limit of the waste management unit that extends through the uppermost aquifer underlying the unit [Title 27, § 20405].
27. The compliance period is the minimum period of time during which the Discharger shall conduct a water quality monitoring program and is the number of years equal to the active life of the waste management unit plus the closure period [Title 27, § 20410(a)].

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28. The groundwater monitoring system shall include a sufficient number of monitoring points, installed at appropriate locations, to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater that has not been affected by a release from the waste management unit [Title 27, § 20415(b)(1)(A)].
29. The Detection Monitoring Program shall include a sufficient number of monitoring points, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater passing the point of compliance to allow the detection of a release from the waste management unit [Title 27, § 20415(b)(1)(B)1.].
30. Additional monitoring points shall be added as necessary to provide the best assurance of the **earliest possible detection** of a release from the waste management unit [Title 27, § 20415(b)(1)(B)2.].
31. The Detection Monitoring Program shall also include a sufficient number of monitoring points installed at appropriate depths and locations to yield groundwater samples from other aquifers or perched zones not already monitored to provide the earliest possible detection of a release from the waste management unit [Title 27, § 20415(b)(1)(B)3. and 4., and §20420(b)].
32. A surface water monitoring system shall be established to monitor each surface water body that could be affected by a release from the waste management unit [Title 27, § 20415(c)].
33. An unsaturated zone monitoring system shall be established for each waste management unit [Title 27, § 20415(d)].
34. The Discharger shall notify Central Valley Water Board staff within **seven days** if fluid is detected in a previously dry LCRS, unsaturated zone monitoring system, or if a progressive increase is detected in the volume of fluid in a LCRS [Title 27, § 21710(c)(3)].
35. Driller's logs for all monitoring wells shall to be submitted to the Central Valley Water Board and the Department of Water Resources [Wat. Code, § 13751 and Title 27, § 20415(b)(3)].
36. Groundwater elevation, temperature, electrical conductivity, turbidity, and pH are to be accurately measured at each well each time groundwater is sampled [Title 27, § 21415(e)(13)].

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37. The groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation being monitored shall be determined at least quarterly [Title 27, § 20415(e)(15)].
38. The Discharger shall graph all analytical data from each monitoring point and background monitoring point and shall submit the graphs to the Central Valley Water Board annually [Title 27, § 20415(e)(14)].
39. For each waste management unit, the Discharger shall collect all data necessary for selecting appropriate data analysis methods for establishing background values for each constituent of concern and for each monitoring parameter [Title 27, § 20420(c)]. The Discharger shall propose a data analysis method that includes a detailed description of the criteria to be used for determining “measurably significant” (as defined in Title 27, section 20164) evidence of a release from the waste management unit and determining compliance with the water quality protection standard [Title 27, § 20415(e)(6) and (7)].
40. For statistical analysis of data, the Discharger shall use one of the methods described in Title 27, section 20415(e)(8)(A)-(E). A non-statistical data analysis method can be used if the method can achieve the goal of the particular monitoring program at least as well as the most appropriate statistical method [Title 27, § 20415(e)(8)]. The Discharger shall use a statistical or nonstatistical data analysis method that complies with Title 27, section 20415(e)(7, 8, 9, and 10), to compare the concentration of each constituent of concern or monitoring parameter with its respective background concentration to determine whether there has been a measurably significant evidence of a release from the waste management unit. For any given monitoring point at which a given constituent has already exhibited a measurably significant indication of a release at that monitoring point, the Discharger may propose to monitor the constituent, at that well, using a concentration-versus-time plot.
41. The Discharger may propose an alternate statistical method [to the methods listed under Title 27, section 20415(e)(8)(A-D)] in accordance with Title 27, section 20415(e)(8)(E), for review and approval.
42. The statistical method shall account for data below the practical quantitation limit (PQL) with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to Title 27, section 20415(e)(7) that is used in the statistical method shall be the **lowest concentration (or value) that can be**

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reliably achieved within limits of precision and accuracy specified in the WDRs or an approved Sample Collection and Analysis Plan for routine laboratory operating conditions that are available to the facility. The Discharger's technical report (Sample Collection and Analysis Plan and/or Water Quality Protection Standard Report), pursuant to Title 27, section 20415(e)(7), shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, CCR, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or downgradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a "trace" detection) shall be identified and used in appropriate statistical or non-statistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory's concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of "ties".

43. The water quality protection standard for organic compounds which are not naturally occurring and not detected in background groundwater samples shall be taken as the detection limit of the analytical method used (e.g., USEPA methods 8260 and 8270).
44. Alternate statistical procedures may be used for determining the significance of analytical results for common laboratory contaminants (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate) if part of an approved water quality protection standard. Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Central Valley Water Board staff.
45. **Confirmation of Measurably Significant Evidence of a Release.** Whenever a constituent is detected at a detection monitoring point at a concentration that exceeds the concentration limit from the water quality protection standard, the Discharger shall conduct verification sampling to confirm if the exceedance is due to a release or if it is a false-positive (unless previous monitoring has already confirmed a release for that constituent at that monitoring point). An exceedance of the concentration limit from the water quality protection standard is considered measurably significant evidence of a release that must be either confirmed or denied. There are two separate verification testing procedures:
 - a. Standard Monitoring Specification I.46 provides the procedure for analytes that are detected in less than 10% of the background

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samples such as non- naturally occurring constituents like volatile organic compounds; and

- b. Standard Monitoring Specification I.47 provides the procedure for analytes that are detected in 10% or greater of the background samples such as naturally occurring constituents like chloride.

46. **Verification Procedure for Analytes Detected in Less than 10% of Background Samples.** The Discharger shall use the following non-statistical method for all analytes that are detected in less than 10% of the background samples. The non-statistical method shall be implemented as follows:

- a. **Initial Determination of Measurably Significant Evidence of a Release.** Identify each analyte in the current detection monitoring point sample that exceeds either its respective MDL or PQL, and for which a release has not been previously confirmed. The Discharger shall conclude that the exceedance provides a preliminary indication of a release or a change in the nature or extent of the release, at that monitoring point, if **either**:
 - i. The data contains two or more analytes that equal or exceed their respective MDLs; or
 - ii. The data contains one or more analyte that equals or exceeds its PQL.
- b. **Discrete Retest** [Title 27, § 20415(e)(8)(E) and § 20420(j)(1-3)]:
 - i. In the event that the Discharger or Central Valley Water Board staff concludes (pursuant to paragraph I.46.a., above) that there is a preliminary indication of a release, then the Discharger shall immediately notify Central Valley Water Board staff by phone or e-mail and, within 30 days of such indication, shall collect two new (retest) samples from the monitoring point where the release is preliminarily indicated and analyze them for the constituents that caused the need for the retest.
 - ii. **Confirmation of a Release.** As soon as the retest data are available, the Discharger shall conclude that measurably significant evidence of a release is confirmed if (not including the original sample) two or more analytes equal or exceed

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their respective MDLs or if one or more analyte equals or exceeds its PQL. The Discharger shall then:

- (A) **Immediately** verbally notify the Central Valley Water Board whether or not the retest confirmed measurably significant evidence of a release for the analyte at the monitoring point, and follow up with written notification submitted by certified mail within seven days of the verbal notification; and
- (B) Carry out the requirements of Section J, **RESPONSE TO A RELEASE** if a release has been confirmed.
- (C) Add any five-year analyte that is confirmed per this method to the monitoring parameter list such that it is monitored during each regular monitoring event.

47. **Verification Procedure for Analytes Detected in 10% or Greater of the Background Samples.** The Discharger shall use either a statistical or non-statistical method pursuant to Title 27, section 20415(e)(8)(E) for all analytes that are detected in 10% or greater of the background samples. The Discharger shall use one of the statistical methods required in Title 27, section 20415(e)(8)(E) unless another method has been proposed by the Discharger in a Water Quality Protection Standard Report (or equivalent report) and approved by the Central Valley Water Board in a Monitoring and Reporting Program pursuant to Title 27, section 20415(e)(8)(A-D)] or section 20415(e)(8)(E). The method shall be implemented as follows:

- a. **Initial Determination of Measurably Significant Evidence of a Release.** The Discharger shall compare the value reported by the laboratory for each analyte to the statistically-derived concentration limit from the most recent report (Annual Monitoring Report or Water Quality Protection Standard Report) that uses the approved statistical procedure. If the value exceeds the concentration limit for that constituent, the Discharger shall conclude that there is measurably significant evidence of a release [Title 27, § 20420(i)].
- b. **Retest Method** [Title 27, § 20415(e)(8)(E) and § 20420(j)(1-3)].
 - i. In the event that the Discharger or Central Valley Water Board staff concludes (pursuant to paragraph I.47.a., above) that there is a preliminary indication of a release, then the

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Discharger shall immediately notify Central Valley Water Board staff by phone or e-mail and, within 30 days [Title 27, § 20415(e)(3)] of such indication, the Discharger shall implement a verification procedure/retest option, in accordance with Title 27, sections 20415(e)(8)(E) and 20420(j)(2). The verification procedure shall include either a single “composite” retest (i.e., a statistical analysis that augments and reanalyzes the data from the monitoring point that indicated a release) or shall consist of at least two “discrete” retests (i.e., statistical analyses each of which analyzes only newly-acquired data from the monitoring point that indicated a release) [Title 27, § 20415(e)(8)(E)]. The Discharger may use an alternate method previously approved by the Central Valley Water Board and included in the Monitoring and Reporting Program. The verification procedure shall comply with the requirements of Title 27, section 20415(e)(8)(E) in addition to the performance standards of Title 27, section 20415(e)(9). The retest samples shall be collected from the monitoring point where the release is preliminarily indicated and shall be analyzed for the constituents that caused the need for the retest. For any indicated monitoring parameter or constituent of concern, if the retest results of one or more of the retest data suites confirm the original indication, the Discharger shall conclude that measurably significant evidence of a release has been confirmed.

ii. Confirmation of a Release. As soon as the retest data are available, the Discharger shall evaluate the results pursuant to paragraph I.47.b.1, above and shall:

- (A) Immediately** verbally notify the Central Valley Water Board whether or not the retest confirmed measurably significant evidence of a release for the analyte at the monitoring point, and follow up with written notification submitted by certified mail within seven days of the verbal notification; and
- (B)** Carry out the requirements of Section J, **RESPONSE TO A RELEASE** if a release has been confirmed.

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- (C) Add any five-year analyte that is confirmed per this method to the monitoring parameter list such that it is monitored during each regular monitoring event.

48. **Physical Evidence of a Release.** If the Discharger determines that there is a significant physical evidence of a release, the Discharger shall immediately verbally notify Central Valley Water Board staff and provide written notification by certified mail within 7 days of such determination, and within 90 days shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program [Title 27, § 20385(a)(3) and § 20420(l)(1) & (2)].

J. Response to Release

1. **Measurably Significant Evidence of a Release Has Been Confirmed.** If the Discharger has confirmed that there is measurably significant evidence of a release from a waste management unit pursuant to Standard Monitoring Specification I.46 or I.47, then the Discharger shall:
- a. **Immediately** sample all monitoring points in the affected medium at that waste management unit and determine the concentration of all monitoring parameters and constituents of concern for comparison with established concentration limits. Because this constituent of concern scan does not involve statistical testing, the Discharger will need to collect and analyze only a single water sample from each monitoring point in the affected medium [Title 27, § 20420(k)(1)].
 - b. **Within 14 days** of confirming measurably significant evidence of a release, the Discharger shall (for releases from MSW landfill units) notify all persons who own the land or reside on the land that directly overlies any portion of the plume of contamination if contaminants have migrated off-site if indicated by sampling of detection monitoring wells [40 C.F.R. § 258.55(g)(1)(iii)].
 - c. **Within 90 days** of confirming measurably significant evidence of a release, the Discharger shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program meeting the requirements of Title 27, sections 20420(k)(5)(A-D), including but not limited to the results of sampling pursuant to paragraph J.1.a, above. The Evaluation Monitoring Program shall be designed for the collection and analysis of all data necessary to assess the nature and extent of the release and to determine the spatial distribution and concentration of each constituent throughout the

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zone affected by the release [Title 27, § 20420(k)(5) and § 20425(b)]. For releases from MSW landfill units, the Evaluation Monitoring Program shall also include any additional proposals necessary to comply with 40 C.F.R. § 258.55, particularly the additional monitoring well required by 40 C.F.R. § 258.55(g)(1)(ii).

- d. **Within 180 days** of confirming measurably significant evidence of a release, the Discharger shall submit to the Central Valley Water Board an initial engineering feasibility study for a Corrective Action Program necessary to meet the requirements of Title 27, section 20430. At a minimum, the initial engineering feasibility study shall contain a detailed description of the corrective action measures that could be taken to achieve background concentrations for all constituents of concern [Title 27, § 20420(k)(6)].
- e. If the Discharger confirms that there is measurably significant evidence of a release from the waste management unit at any monitoring point, the Discharger may attempt to demonstrate that a source other than the waste management unit caused the evidence of a release or that the evidence is an artifact caused by an error in sampling, analysis, or statistical evaluation or by natural variation in groundwater, surface water, or the unsaturated zone. The Discharger may make a demonstration pursuant to Title 27, section 20420(k)(7) in addition to or in lieu of submitting both an amended report of waste discharge or an engineering feasibility study; however, the Discharger is not relieved of the requirements and due dates of Title 27, sections 20420(k)(6) & (7) unless Central Valley Water Board staff agree that the demonstration successfully shows that a source other than the waste management unit caused the evidence of a release or that the evidence resulted from error in sampling, analysis, or statistical evaluation or from natural variation in groundwater, surface water, or the unsaturated zone. In order to make this demonstration, the Discharger shall notify the Central Valley Water Board by certified mail of the intent to make the demonstration **within seven days** of determining measurably significant evidence of a release, and shall submit a report **within 90 days** of determining measurably significant evidence of a release [Title 27, § 20420(k)(7)].
- f. **Within 90 days** of the date that the Evaluation Monitoring Program from paragraph J.1.c is approved (the date is it established), the Discharger shall complete and submit the following:

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- i. **Results and Assessment for the Evaluation Monitoring Program.** A report with the results and assessment based on the approved Evaluation Monitoring Program [Title 27, § 20425(b)].
 - ii. **Updated Engineering Feasibility Study.** An updated engineering feasibility study for corrective action based on the data collected to delineate the release and data from the ongoing monitoring program required under Title 27, section 20425(e) [Title 27, § 20425(c)].
 - iii. **Amended ROWD for a Corrective Action Program.** An amended report of waste discharge to establish a Corrective Action Program meeting the requirements of Title 27, section 20430 based on the data collected to delineate the release and based on the updated engineering feasibility study [Title 27, § 20425(d)].
- g. The Discharger shall (for releases from MSW landfill units) discuss the results of the updated engineering feasibility study, prior to the final selection of a remedy, in a public meeting with interested and affected parties [40 C.F.R. § 258.56(d)].

K. General Provisions

1. In the event the Discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Discharger shall notify the appropriate Central Valley Water Board office by telephone as soon as it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing **within two weeks**. The written notification shall state the nature, time, and cause of noncompliance, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.
2. All reports and transmittal letters shall be signed by persons identified below:
 - a. For a corporation: by a principal executive officer of at least the level of senior vice-president.
 - b. For a partnership or sole proprietorship: by a general partner or the proprietor.

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- c. For a municipality, state, federal or other public agency: by either a principal executive officer or ranking elected or appointed official.
- d. A duly authorized representative of a person designated in a, b or c above if:
 - i. The authorization is made in writing by a person described in a, b, or c of this provision;
 - ii. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a Unit, superintendent, or position of equivalent responsibility (a duly authorized representative may thus be either a named individual or any individual occupying a named position); and
 - iii. The written authorization is submitted to the Central Valley Water Board.
- e. Any person signing a document under this Section shall make the following certification:

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

- 3. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.
- 4. The owner of the waste management facility shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and from gases and leachate generated by discharged waste during the active life, closure, and post-closure maintenance period of the

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waste management units and during subsequent use of the property for other purposes.

5. The fact that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order shall not be regarded as a defense for the Discharger's violations of this Order.
6. The Discharger shall notify the Central Valley Water Board of a material change in; the types, quantity, or concentrations of wastes discharged; site operations and features; or proposed closure procedures, including changes in cost estimates. This notification shall be given a reasonable time before the changes are made or become effective. No changes shall be made without Central Valley Water Board approval following authorization for closure pursuant to the site Notification of Closure [Title 27, § 21710(a)(4)].
7. The Discharger shall maintain legible records of the volume and type of each waste discharged at each waste management unit or portion of a unit, and the manner and location of discharge. Such records shall be maintained by the Discharger until the beginning of the post-closure maintenance period. These records shall be on forms approved by the State Water Board or Central Valley Water Board and shall be maintained at the waste management facility until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the State Water Board or Central Valley Water Board at any time during normal business hours. At the beginning of the post-closure maintenance period, copies of these records shall be sent to the Central Valley Water Board [Title 27, § 21720(f)].
8. In the event of any change in landowner or the operator of the waste management facility, the Discharger shall notify the succeeding owner or operator in writing of the existence of this Order. A copy of that notification shall be sent to the Central Valley Water Board.
9. In the event of any change of ownership or responsibility for construction, operation, closure, or post-closure maintenance of the waste discharge facilities described in this Order, the Discharger shall notify the Central Valley Water Board prior to the effective date of the change and shall include a statement by the new Discharger that construction, operation, closure, or post-closure maintenance will be in compliance with this Order and any revisions thereof [Title 27, § 21710(c)(1)].
10. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Central Valley Water Board

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requesting transfer of the Order within **14 days** of assuming ownership or operation of this facility. The request must 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 Central Valley Water Board, and a statement. The statement shall comply with the signatory requirements contained in General Provision K.2 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. Transfer of this Order shall be approved or disapproved by the Central Valley Water Board.

L. Storm Water Provisions

1. New and existing Class III landfills shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return period [Title 27, § 20260(c)].
2. New and existing Class II landfills shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return period [Title 27, § 20250(c)].
3. The Discharger shall design storm water conveyance systems for Class III units for a 100-year, 24-hour storm event, and shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
4. MSW landfills located in a 100-year floodplain shall demonstrate that the landfill unit will not restrict the flow of the 100-year flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste so as to pose a hazard to human health or the environment [40 C.F.R. § 258.11(a)].
5. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping under the precipitation conditions for the unit [Title 27, § 20365(a)].
6. Precipitation on landfills or waste piles which is not diverted by covers or drainage control systems shall be collected and managed through the LCRS, which shall be designed and constructed to accommodate the precipitation conditions for each class unit [Title 27, § 20365(b)].

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7. Diversion and drainage facilities shall be designed, constructed, and maintained to [Title 27, § 20365(c)]:
 - a. accommodate the anticipated volume of precipitation and peak flows from surface runoff and under the precipitation conditions for the waste management unit;
 - b. effectively divert sheet flow runoff laterally, via the shortest distance, into the drainage and collection facilities;
 - c. prevent surface erosion;
 - d. control and intercept run-on, in order to isolate uncontaminated surface waters from water that might have come into contact with waste;
 - e. take into account:
 - i. for closed waste management units and for closed portions of units, the expected final contours of the closed unit, including its planned drainage pattern;
 - ii. for operating portions of waste management units other than surface impoundments, the unit's drainage pattern at any given time;
 - iii. the possible effects of the waste management unit's drainage pattern on and by the regional watershed;
 - iv. the design capacity of drainage systems of downstream and adjacent properties by providing for the gradual release of retained water downstream in a manner which does not exceed the expected peak flow rate at the point of discharge if there were no waste management facility; and
 - f. preserve the system's function. The Discharger shall periodically remove accumulated sediment from the sedimentation or detention basins as needed to preserve the design capacity of the system.
8. Collection and holding facilities associated with precipitation and drainage control systems shall be emptied immediately following each storm or otherwise managed to maintain the design capacity of the system [Title 27, § 20365(d)].

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9. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].
10. Cover materials shall be graded to divert precipitation from the waste management unit, to prevent ponding of surface water over wastes, and to resist erosion as a result of precipitation [Title 27, § 20365(f)].

Any drainage layer in the final cover shall be designed and constructed to intersect with the final drainage system for the waste management unit in a manner promoting free drainage from all portions of the drainage layer [Title 27, §20365(f)].

TENTATIVE

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

[TENTATIVE] WASTE DISCHARGE REQUIREMENTS ORDER R5-2020-####
FOR
AEROJET ROCKETDYNE, INC.
WHITE ROCK NORTH DUMP AND AEROJET WASTE CONSOLIDATION UNIT
LANDFILL
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INFORMATION SHEET

Purpose of Constructing the AWCU

1. The purpose of the Aerojet Waste Consolidation Unit (AWCU) is to relocate waste (Transfer Material) from the Discharger's old Aerojet Landfill. By relocating the Transfer Material, the Discharger will be able to redevelop the former Aerojet Landfill land for commercial purposes. A secondary purpose is in the Discharger's efforts to address soil and groundwater contamination on the Discharger's property, the Discharger seeks to consolidate waste (also known as Transfer Material) from various locations on Aerojet controlled property to the AWCU, a new Class II landfill to be constructed on the old White Rock North Dump (WRND).
2. Approximately 500,000 cubic yards of Transfer Material will originate from the old Aerojet Landfill. The Aerojet Landfill consists of four WMUs. WMUs 1 through 3 contain waste classified as Class III, and WMU-4 contains waste classified as Class III, with asbestos-containing material. The WMUs were constructed between the tailings piles that were remnants of gold dredging initiated in the early 1900s. The gold dredging created valleys, where waste was eventually deposited by Aerojet starting in the 1960s. The gold dredging also generated mounds of cobble and soil, which was used for daily cover of the waste.
3. In the 1990s, the four WMUs were capped and closed with waste in place according to the requirements presented in the governing regulations at the time, namely Titles 14 and 23 CCR. Titles 14 and 23 were subsequently combined into Title 27, which became effective on July 18, 1997.
4. In-place closure activities included construction of a low permeability soil cover layer over the landfilled waste to reduce the amount of precipitation percolating into the landfill and installation of drainage features to direct surface water away from the landfill. In-place closure was overseen by the County of Sacramento and Central Valley Water Board. In accordance with Central Valley Water Board and County-approved Post-Closure Maintenance Plan activities, the Aerojet Landfill is currently maintained as non-irrigated open space.
5. In 2008 the Discharger proposed a Closure Modification Plan (CMP) in order to excavate and remove all waste from the Aerojet Landfill. The CMP modified the

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- prior closure plans¹ for the landfill as these plans consisted of closure with waste in place. The CMP was updated in 2015 and retitled as the CCP. The purpose of the CCP was to allow the Discharger to redevelop the land for commercial purposes following clean closure of the Aerojet Landfill.
6. The CCP was submitted to the California Integrated Waste Management Board (CIWMB) and the Central Valley Water Board for approval, with concurrence by the Local Enforcement Agency (LEA), to change the final closure and post closure maintenance plans for the Aerojet Landfill. The Sacramento County Environmental Management Department (EMD) was the authorized LEA under Division 30 of the Public Resources Code (PRC) and Title 14 of the CCR. Sacramento County EMD also acted as the CEQA Lead Agency. CEQA compliance included adoption of the Sacramento County Aerojet Landfill Closure Modification Plan Initial Study/Mitigated Negative Declaration (IS/MND, 04-PPE-0135) and the follow-on Aerojet Landfill CCP Addendum Initial Study (Control Number PLER2015-00061).
 7. The fully approved CCP authorized the excavation, onsite sorting, stockpiling, processing and offsite hauling and disposal of Aerojet Landfill Transfer Material. The proposal to transfer the material to the AWCU was consistent with the approved CCP with one exception: revisions to the assumed offsite Transfer Material haul route and final disposal location.
 8. The Discharger originally considered use of existing offsite landfills for disposal of Transfer Material. However, due to recent wildfires, existing disposal facilities in the region have received unanticipated large volumes of debris, resulting in diminishing available landfill space. Landfills in the region have been receiving large volumes of waste and are reluctant to commit to accepting Project-generated material. Furthermore, the transport of up to approximately 1,000,000 CYs of waste over public streets and highways to an existing offsite landfill that would accept it raised the Discharger's concerns. The concerns are related to the potential impacts to roadways, air quality and public safety associated with thousands of truck trips to and from the offsite landfill(s), with each round trip being approximately 120 miles.
 9. Due to the issues described above, Aerojet conducted a feasibility study to identify a preferred location for construction of the proposed AWCU. This study included review of the WRND site, which was ultimately selected for the proposed Project.
 10. The IS/MND CEQA Document found that use of the WRND site has the following benefits

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- a. Substitutes an approximate 8.5-mile roundtrip for a 120-mile roundtrip for trucks hauling Aerojet Landfill Transfer Material to a Class II landfill, thereby reducing by ninety-seven percent (97%) the vehicle miles traveled from 4.3M miles to approximately 113,000 miles, a reduction of 4.19M miles.
 - b. Eliminates approximately 22,000 truck trips throughout the project and approximately 250 truck trips per day, from local public roads and state highways in favor of private roadways entirely within the Aerojet controlled property.
 - c. Eliminates emissions from approximately 4.19M miles of diesel truck hauling.
 - d. Eliminates truck traffic departing and returning to the site every 90 seconds, six hours a day, five days a week, on public roads.
 - e. The WRND and proposed AWCU would be closed in accordance with current Title 27 regulations.
 - f. Reduces accident risks on public roads by eliminating from public right-of-way all truck trips associated with relocation of Transfer Material between the two landfills.
 - g. Relieves stress on offsite landfills.
 - h. Provides opportunity to establish an AWCU service area facilitating other waste consolidation efforts without the need to access the public transportation system.
11. The Project objectives were developed in consideration of CEQA, the Sacramento County General Plan, the approved land use master plans, and the County's and CVRWQCB's desire to ensure a process for official closure of the WRND. The Project objectives include the following:
- a. Amendment of the Aerojet SPA to add the existing WRND parcel, now owned by Aerojet, to the "Aerojet Industrial Zone";
 - b. Closure of the Aerojet Landfill consistent with the approved CCP and as modified by the proposed Project;
 - c. Approve, construct, cap and close a Title 27 compliant AWCU at the WRND to receive Transfer Material from within the AWCU Service Area;
 - d. Complete the excavation and relocation of Transfer Material from the Aerojet landfill to WRND within 24 months of implementing the CCP, and closure of the portion of the AWCU that received transfer material within 12 additional months;

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- e. Complete both Phases 1 and 2 activities necessary to cap and close the AWCU and remaining portions of the WRND consistent with Title 27 requirements by December 31, 2035;
- f. Minimize environmental impacts related to energy use, offsite transportation, safety and air quality;
- g. Relieve stress on offsite landfills; and,
- h. Ready the Aerojet Landfill property for development consistent with the Sacramento County General Plan.

TENTATIVE