

Basis of Estimate
Final Detailed Remedial Action Alternative Cost Estimates
Area IV and the Northern Buffer Zone (NBZ)
Santa Susana Field Laboratory
Ventura County, California

Prepared for:



U.S. Department of Energy
4100 Guardian Street
Suite 160
Simi Valley, California 93063

Prepared by:



CDM Federal Programs Corporation (CDM Smith)
555 17th Street, Suite 500
Denver, Colorado 80202

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Final Detailed Remedial Action Alternative Cost Estimates Area IV and the Northern Buffer Zone (NBZ)

Prepared by:



Abhay I. Sonawane

Cost Estimator

CDM Federal Programs Corporation

Checked by:



Joe D. Guggenberger

Engineer

CDM Federal Programs Corporation

Reviewed and Approved by:



Gary L. Hazen

Senior Cost Estimator

CDM Federal Programs Corporation

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Section 1

Introduction

1.1 Overview

CDM Federal Programs Corporation (CDM Smith) has been tasked by the U.S. Department of Energy (DOE) to prepare the cost-benefit analysis (CBA) that evaluates the remedial action alternatives to address contaminated soils in Area IV and Northern Buffer Zone (NBZ) of Santa Susana Field Laboratory (SSFL) (Site). This CBA was developed to support the Area IV environmental impact statement (EIS) and subsequent development of a record of decision (ROD). To support the CBA, detailed cost estimates for each remedial action alternative were prepared and are presented in this basis of estimate (BOE). CBA is presented as Appendix K of the *Environmental Impact Statement for the Remediation of Area IV and the NBZ of the SSFL*.

The following five alternatives are evaluated in the CBA:

- No Action Alternative
- Cleanup to Administrative Order on Consent (AOC) Look-Up Table (LUT) Values Alternative
- Cleanup to Revised AOC LUT Values Alternative
- Conservation of Natural Resources Alternative – Residential Cleanup Scenario
- Conservation of Natural Resources Alternative – Open Space Scenario

The purpose of these detailed cost estimates is to provide support for the critical decision (CD)-1 stage of the project/program and support the development of a ROD. This BOE report documents the purpose, scope, cost estimating strategy, assumptions, source information, methodology, and associated limitations. This document and the associated estimates have been prepared in accordance with guidance in DOE Guides (DOE G 413.3-21A and PM-HBK-08-2017) and the policies and practices of the Environmental Management Consolidated Business Center, Office of Cost Estimating and Project Management Support.

The SSFL is located in Ventura County, California, on 2,852 acres in the hills between Chatsworth and Simi Valley and was developed as a remote site to test rocket engines and conduct nuclear research. Rockwell International's Canoga Park-based Rocketdyne Division began rocket engine testing in the Area I portion of SSFL in 1947. Rockwell created Atomics International in the early 1950s to conduct nuclear research in Area IV of SSFL. In 1996, Rockwell International sold its aerospace and defense business, including Area IV of SSFL, to The Boeing Company.

Starting in the mid-1950s, the Atomic Energy Commission (AEC), a predecessor agency of DOE, funded nuclear energy research on the 90-acre parcel of SSFL Area IV, which was leased from Rocketdyne. Energy Technology Engineering Center (ETEC) was established by AEC on this parcel in the early 1960s as a "center of excellence" for liquid metals research (primarily sodium, potassium, and mercury) and general metals compatibility testing. DOE also operated 10 small

nuclear reactors built for various research activities over the years of operation. As part of the operations of a research and development site, structures were constantly used, cleaned, and refurbished for a new purpose or demolished. These activities have resulted in chemical and radiological releases that have impacted buildings, soil, and groundwater. Remediation is needed to clean up the residual radionuclides and chemicals from historical operations in Area IV of the SSFL. The NBZ is included to ensure that any contamination contiguous and emanating from Area IV is analyzed and included in the cleanup, if necessary.

DOE needs to complete cleanup of Area IV and the NBZ in compliance with regulations, orders, and agreements, including the 2007 Consent Order (for groundwater) and the 2010 AOC (for soils and debris).

1.2 Technical Description

The five remedial action alternatives evaluated in the CBA are broadly based on the following scenarios of cleanup requirements. A more comprehensive discussion of the scope of the alternatives is provided in the EIS.

1.2.1 No Action Alternative

This alternative provides an environmental baseline against which impacts of remedial action alternatives can be compared. This alternative would leave removal action activities previously performed in their current conditions. No new removal and/or remedial activities would be initiated to address contaminated soil or otherwise mitigate the associated risks to human health and environment.

1.2.2 Cleanup to AOC LUT Values Alternative

Under this alternative, the 2010 AOC stipulates that soils be cleaned up to the AOC LUT values for chemical contaminants and for radionuclides. AOC LUT values are based on background concentrations for radionuclides as determined by the U.S. Environmental Protection Agency and background chemical concentrations as determined by the California Department of Toxic Substances Control. The cleanup effort under this alternative is assumed to take 26 years, with anticipated start in calendar year 2021 and completion in calendar year 2046.

1.2.3 Cleanup to Revised AOC LUT Values Alternative

Under this alternative, soil excavation and removal would be performed until all the soil requiring removal to meet the revised AOC LUT values is accomplished. The revised AOC chemical LUT values would be based on risk-based screening levels (RBSLs) developed in the Standardized Risk Assessment Methodology, which were calculated for the direct pathways suburban residential exposure scenario established for the SSFL. This scenario assumes that a receptor would be present on the remediated Site 24 hours per day, 350 days per year, for 30 years. Cleanup requirement for radionuclides would be identical to the Cleanup to AOC LUT Values alternative. The cleanup effort under this alternative is assumed to take 8 years, with anticipated start in calendar year 2021 and completion in calendar year 2028.

1.2.4 Conservation of Natural Resources Alternative – Residential Cleanup Scenario

Under this alternative, DOE would remediate Area IV and the NBZ to reduce the concentrations of chemical and radioactive constituents in the soil to levels necessary to protect human health and ecological resources. This alternative reduces risk to the public and the environment yet conserves natural resources, including biological, cultural, and water resources. The same ecological risk assessment would be performed to evaluate the potential effects of chemical and radionuclides in the soil on biotic receptors. Cleanup is determined by whichever risk assessment (human health or ecological) results in the lower concentration allowed to remain in the soil. Area IV and the NBZ would be subdivided into smaller areas or units for which concentrations would be averaged for purposes of evaluating risk or radiation exposure. For each unit, risk assessment calculations would be performed individually for each chemical and then the results summed to determine the risk value or hazard index. The risk results for each unit would be compared with the risk limit of 1×10^{-6} (1 chance in 1 million) for cancer-causing chemicals and/or to a hazard index of 1 for noncarcinogenic chemicals to make decisions regarding cleanup of the contaminated soil. The cleanup effort under this alternative is assumed to take 2 years, with anticipated start in calendar year 2021 and completion in calendar year 2022.

1.2.5 Conservation of Natural Resources Alternative – Open Space Scenario

Under this alternative, DOE would remediate Area IV and the NBZ to reduce the concentrations of chemical and radioactive constituents in the soil to levels necessary to protect human health and ecological resources. The Open Space Scenario is based on an exposure scenario consistent with Boeing's future plans for the land in Area IV and the NBZ. Boeing and the North American Land Trust recorded Grant Deeds of Conservation Easement and Agreements to permanently preserve land at SSFL as open space. The conservation easements are legally enforceable documents that, among other restrictions, forever prohibit residential, agricultural, or commercial development on site. Because there would be no permanent structures on the site, a recreational user scenario was used to evaluate the level of cleanup appropriate for use of Area IV and the NBZ as open space. The recreational user is assumed to visit the site 75 days per year and spend 8 hours on site on each visit over a period of 30 years. Exposure would be through the direct pathways of inhalation, inadvertent ingestion, and dermal contact (for chemicals) or direct exposure (for radionuclides). As with the Residential Scenario, risk assessments would be performed for each unit and results of the analysis for each constituent would be summed to determine a risk value or hazard index. The risk results for each unit would be compared with the risk limit of 1×10^{-6} (1 chance in 1 million) for cancer-causing chemicals and/or to a hazard index of 1 for noncarcinogenic chemicals to make decisions regarding cleanup of the contaminated soil. The cleanup effort under this alternative is assumed to take less than 2 years, with anticipated start in calendar year 2021 and completion in calendar year 2022.

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Section 2

Approach

2.1 Objective

As stated in Section 1, the detailed remedial action cost estimates are prepared to support the CBA in evaluating the remedial action alternatives to address contaminated soils in Area IV/NBZ. It also provides support for the CD-1 stage of the project/program and the development of a ROD.

2.2 Team Composition

The following individuals from CDM Smith were involved in the development of the detailed remedial action alternative cost estimates:

Exhibit 2-1. Team Composition

Name	Role/Responsibility	Organization
Abhay I. Sonawane	Preparer/Cost Estimator	CDM Smith
Joe D. Guggenberger	Calculation Checking	CDM Smith
Gary L. Hazen	Reviewer/Senior Cost Estimator	CDM Smith
John Wondolleck	Project Manager	CDM Smith

2.3 Work Activities (ECES Identified)

The cost estimates are organized using the Environmental Cost Element Structure (ECES) codes as developed by the Environmental Cost Engineering Committee (EC²), August 2003. The following project life-cycle phases were assumed in determining the ECES codes:

- Phase 4: Construction
- Phase 6: Surveillance and Long-Term Maintenance (SLTM)
- Phase 8: Program Management, Support, and Infrastructure

The detailed remedial action alternative cost estimate for each remedial action alternative includes the following work activities along with the corresponding ECES identified.

Exhibit 2-2. Work Activities with ECES Codes

ECES Code	DESCRIPTION
4.02.04	Institutional Controls
4.02.02	Community Awareness Activities
6.02.02	Community Awareness Activities
4.9x	General Conditions
Multiple ECES Codes	Work Plans and Submittals
4.02.01.01	Project Progress Meetings and Schedule Update
4.03.01	Work Plans
4.04.21	Submittals
4.04.19	Post-RA Completion Report
8.01.04	Home Office Personnel
4.02.01.01.15	Job Site Personnel
4.05.01.03	Temporary Facilities
4.05.01.01	Mobilization of Construction Equipment
4.05.36.04	Demobilization of Construction Equipment
4.9x	Best Management Practices – Structural
8.01.01	Stormwater Pollution Prevention Plan (SWPPP) Implementation and Maintenance
8.01.01.03	SWPPP Preparation (Report)
8.01.01.9x	SWPPP Oversight and Maintenance
4.05.02	Temporary Erosion and Sediment Control
4.05.02.04	Silt Fence
4.05.02.04	Wattles
4.05.02.04	Sediment Trap
4.05.02.04	Rock Filter Dam
4.05.02.04	Track-out Prevention
4.05.02.05	Temporary Seeding
4.05.02.9x	Erosion and Sediment Control Maintenance
4.05.9x	Existing Tree Protection
4.05.9x	Arborist and Care for Existing Trees
4.05.9x	Tree Protection Fencing
4.16.04	Dust Control
4.07.08.02	Air Monitoring
4.05.01.03.12	Decontamination/Wash Station
4.05.01.03.12	Purchase and Setup
4.05.01.03.12	Operation
4.05.9x	Street Sweeping
8.01.03.11	Traffic Control
8.01.03.11	Preconstruction Video Survey

Exhibit 2-2. (continued)

ECES Code	DESCRIPTION
8.01.03.11	Traffic Control Signs and Barricades
8.01.03.11	Traffic Control
Multiple ECES Codes	Excavation, Hauling, and Disposal
<i>Multiple ECES Codes</i>	<i>Low-Hazard, Moderate Hazard, Hazardous, and LLW/MLLW Soils</i>
4.05.9x	Construction Survey and Staking
4.05.05.01	Excavation
4.32.11.05	Hauling
4.07.11	Confirmation Sampling
4.08.04	Sample Analysis
4.33.08.05	Disposal
4.05.9x	<i>Excavation of Underground Utilities</i>
4.05.05	Backfill and Organic Amendment
4.05.05.06	<i>Backfill from Onsite Sources</i>
4.05.05.06	<i>Backfill from Offsite Sources</i>
4.05.02	Restoration
4.05.02.05	<i>Seeding</i>
4.05.08	<i>Allowance for Street/Pavement Repair</i>
6.21.08	Post-Construction Monitoring
6.02.04.06	Evaluating and Updating Institutional Controls
4.04.11	Remedial Design
4.02.09	Construction Management
4.02.01	Project Management
6.02.01	Project Management
6.07.9x	Construction Coordination
4.02.14	Health and Safety
4.02.01.01	Program Management
4.02.03	Regulatory Costs
8.01.03.13	Contingency (DOE Held)
8.01.03.13	Management Reserve (Contractor Held)

2.4 Technical Approach

Key technical approach assumptions that have significant impact on the costs include:

Contaminated Soil Areas and Volumes

Contaminated soil areas and volumes for cleanup are presented in the EIS. Contaminated soils were categorized and volumes were calculated based on the review of chemical concentrations relative to hazardous waste regulatory criteria, RBSLs, and LUT values and radionuclide

concentrations relative to LUT values. A standalone evaluation of the volumes is outside the scope of this BOE. For purposes of this evaluation, while volumes are reported in bank (in place) cubic yards, they are referred to generically as “cubic yards.”

- **Low-Hazard Soil:** Soil under this category has chemicals above AOC LUT values, but below risk-based levels and hazardous waste standards. Radionuclides are at or below provisional AOC LUT values. This soil does not meet the definition of either chemical hazardous or radioactive waste and is assumed to be transported to a permitted Resource Conservation and Recovery Act (RCRA) Class 2 or Class 3 disposal facility. The calculated volume for low-hazard soil is 718,000 cubic yards under Cleanup to AOC LUT Values Alternative; 28,000 cubic yards under Cleanup to Revised LUT Values Alternative; and 0 cubic yards under Conservation of Natural Resources Alternative – Residential and Open Space Scenarios.
- **Moderate-Hazard Soil:** Soil under this category has chemicals above risk-based levels but below hazardous standards. Radionuclides are at or below provisional AOC LUT values. This soil does not meet the definition of either chemical hazardous or radioactive waste and is assumed to be transported to a permitted RCRA Class 2 or Class 3 disposal facility. The calculated volume for moderate-hazard soil is 51,000 cubic yards under Cleanup to AOC LUT Values Alternative; 50,000 cubic yards under Cleanup to Revised LUT Values Alternative; 49,000 cubic yards under Conservation of Natural Resources Alternative – Residential Scenario; and 36,000 cubic yards under Conservation of Natural Resources Alternative – Open Space Scenario.
- **Hazardous Soil:** Soil under this category has chemicals above hazardous waste standards. Radionuclides are at or below provisional AOC LUT values. This soil exceeds the hazardous waste criteria and is assumed to be transported to a permitted RCRA Class 1 disposal facility. The calculated volume for hazardous soil is 2,000 cubic yards under all four remedial alternatives.
- **LLW/MLLW:** Soil under this category has chemicals below or above AOC LUT values, but radionuclides are above the provisional AOC LUT values. This soil category is classified as low-level radioactive waste (LLW) or mixed low-level radioactive waste (MLLW), which is assumed to be transported for disposal outside of California. The calculated volume for LLW/MLLW is 110,000 cubic yards under Cleanup to AOC LUT Values Alternative and Cleanup to Revised LUT Values Alternative; 1,000 cubic yards under Conservation of Natural Resources Alternative – Residential Scenario; and 200 cubic yards under Conservation of Natural Resources Alternative – Open Space Scenario.

Excavation

It is assumed that the excavation would be completed using an excavator with a 3-cubic-yard or smaller bucket (CAT 345B or equal). Excavated soil would be direct-loaded in the trucks for off-site disposal. It is also assumed that the average depth of excavation is 5 feet.

Hauling

Excavated contaminated soils are assumed to be loaded in bulk in covered, 23-ton capacity, rear dump trucks suitable for hauling on highways. Hazardous, LLW, and MLLW soils would be transported in a way that satisfies the DOE’s requirements for a “sealed” container.

Wastes Disposition

The following disposal facilities were assumed:

- Low-Hazard Soil and Moderate-Hazard Soil – For purposes of this cost estimate, the excavated volume of these soil categories is assumed to be disposed within the State of California. Chiquita Canyon Landfill or Westmorland Landfill are used as representative disposal facility. Thus, an average one-way travel distance of 135 miles is assumed for disposal by road.
- Hazardous Soil – For purposes of this cost estimate, the excavated volume of this soil category can be disposed at multiple disposal facilities within or outside the state of California. Energy Solutions' Clive disposal facility in Utah is used as a representative disposal facility. The one-way travel distance by road for disposal is 780 miles.
- LLW/MLLW – For purposes of this cost estimate, the excavated volume of this soil category is assumed to be disposed at Nevada National Security Site, Nevada. The one-way travel distance by road for disposal is 300 miles.

Backfill Soil Volumes

It is assumed that approximately 75 percent of the soil volume removed for each alternative would be replaced with backfill to accomplish slope stabilization and would be graded to self-drain. The backfill soil volume is assumed to be procured from an off-site commercial location(s) outside of SSFL. The assumed one-way travel distance by road for of the off-site borrow source is 50 miles.

General Conditions

General conditions include cost for various work plans and submittals, home office and job site personnel, and on-site temporary construction facilities. These are based on assumed duration for each alternative.

Best Management Practices

It is assumed that the existing stormwater controls measure would be in-place for use during the implementation of the remedial action, and only temporary erosion and sediment control measures would be required. Assumed temporary erosion and sediment control measures include silt fence, wattles, sediment traps, rock filter dams, track-out prevention, and temporary seeding.

Restoration

It is assumed that all disturbed areas would be seeded using native grass and wildflower seed mix after placement of clean backfill.

Post-Construction Monitoring

Post-construction monitoring includes cost for monitoring of total petroleum hydrocarbon (TPH)/polycyclic aromatic hydrocarbons (PAHs) impacted soils and areas where residual contamination is above the established LUT values (biological and cultural sensitive areas). It includes monitoring, sampling, analysis, and reporting.

Period of Analysis

The period of analysis for the cost estimate is assumed to be 30 years after construction and Area IV soil removal and disposal for periodic SLTM of TPH/PAHs-impacted soils and areas where residual contamination is above the established LUT values (biological and cultural sensitive areas).

2.5 Schedule

As described in the EIS, the Cleanup to AOC LUT Values Alternative would take 26 years, with an anticipated start in year 2021 and completion in year 2046; the Cleanup to Revised AOC LUT Values Alternative would take 8 years, with an anticipated start in year 2021 and completion in year 2028; the Conservation of Natural Resources Alternative – Residential Cleanup Scenario would take 2 years, with an anticipated start in year 2021 and completion in year 2022; and the Conservation of Natural Resources Alternative – Open Space Scenario would take less than 2 years, with an anticipated start in year 2021 and completion in year 2022.

Section 3

Methodology and Key Assumptions for Estimate Preparation

3.1 Methodology

The remedial action alternative cost estimates presented in this BOE are developed, maintained, and documented in a manner consistent with methods and the best practices identified in Cost Estimating Guide, DOE G 413.3-21A, April 2018; Cost Estimating Handbook (PM-HBK-08-2017), April 2017; and GAO Cost Estimating and Assessment Guide (GAO-09-3SP), March 2009.

The unit costs developed for the detailed remedial action alternative cost estimates were prepared using the U.S. Army Corps of Engineers (USACE) Micro Computer Aided Cost Engineering System (MCACES) Second Generation (MII) software (MII 4.4, Build 4.4.0.6) for various work activities, as presented in Section 2.3 of this BOE. The USACE cost guidance was used primarily for developing the structure and methodology used in the MII estimate.

Some of the unit costs within the work breakdown structure (WBS) of the detailed remedial action alternative cost estimates were developed using detailed, unit-cost, or activity-based; parametric; and specific analogy cost estimate techniques. Detailed, unit-cost, or activity-based cost estimates are the most definitive of the estimating techniques and use information down to the lowest level of detail available. Parametric estimating produces higher-level estimates when little information, other than basic parameters, is known about a project. Specific analogies use the known cost or schedule of an item as an estimate for a similar item in a new system.

It should be noted that the overall work activity organization indicated within the WBS of the detailed remedial action alternative cost estimates was developed by CDM Smith to capture the technical scope of all remedial action alternatives as presented in the CBA and EIS.

3.2 Key Assumptions

Key technical assumptions for development of the cost estimates are provided in Section 2.4.

Additional Key Assumptions

Additional key assumptions for estimate preparation include:

- The quantities used in the cost estimates for all remedial action alternatives, including factors such as expansion and compaction and productivity rates, are based on the CBA calculations developed by CDM Smith. All calculations are attached to this BOE.
- Sources of unit cost data were taken from commercially available sources (i.e., RS-Means), the USACE Cost Book/Unit Price Book, USACE Construction Equipment Ownership and Operating Expense Schedule – Region VII (EP-1101-1-8, Vol. 7, 2011), and vendor quotes as needed.

- Present worth calculations are included in the remedial action alternative cost estimates to perform the life-cycle cost analysis (LCCA) as described in Appendix F of *Cost Estimating Guide*, DOE G 413.3-21A. A nominal discount rate of 2.6% (30-Year) was used for calculating PW cost. Nominal discount rates are based on the Appendix C (Revised November 2017 for Calendar Year 2018) of the Office of Management and Budget (OMB) Circular A-94.

Direct Costs Assumptions

Various other direct costs were calculated using a recommended range of percentage of the total construction cost. These direct costs were obtained from the *Cost Estimating Guide*, DOE G 413.3-21A. The following cost assumptions were used for these other direct costs:

- Remedial Design: 15% of total construction cost. The project is assumed to be less complex; thus, a lower value of the recommended range (15% to 26%) was used.
- Construction Management: 10% of total construction cost. The project is assumed to be less complex but has longer duration and will require significant coordination with subcontractors and other stakeholder agencies; thus, a middle value of the recommended range (5% to 15%) was used.
- Project Management: 5% of total construction cost. Based on the time required for completing the project, a higher value of the recommended range (2% to 5%) was used.
- Construction Coordination: 1% of total construction cost. It is assumed that the project will require significant coordination with subcontractors and other stakeholder agencies; thus, the higher value of the recommended range (0.5% to 1%) was used.
- Health and Safety: 1.5% of total construction cost. For remediation projects, it is recommended to use more than the recommended range of 0.5% to 1%.
- Program Management: 1% of total construction cost was assumed based on longer duration of the project.
- Considerations for Estimating Research and Development Costs: This project is assumed to not require any research and development; thus, a cost for this category of direct costs was not included.
- Regulatory Costs: 1% of total construction cost was assumed.
- Specialty Equipment Costs: It is anticipated that this project does not require any specialty equipment; thus, a cost for this category of direct costs was not included.
- Non-Contract Costs: These costs are not assumed to be incurred for this project.

Contingency and Management Reserve Assumptions

The following cost assumptions were used:

- Contingency (DOE-held) of 30% was used for the cost estimates. Uncertainty/risk analysis was not available to use for determining contingency. Thus, based on previous work at similar DOE sites with similar scope, this contingency was determined.
- Management Reserve (Contractor-held) of 1% was assumed for the cost estimates, which is based on the project's simple and fairly defined scope.

Escalation Assumption

The following assumptions were used:

- Escalation rates of 2.4% (for year 2018) and 3.0% (2019 and beyond) were used to calculate escalation factors and applied to calculate future costs as described in the *Cost Estimating Guide*, DOE G 413.3-21A.

MII Cost Estimate Assumptions

Unit costs for various work activities were prepared using MII accounts for local market conditions to the degree practicable (e.g., the estimate uses local Davis-Bacon wage rate determinations for labor costs, local fuel and energy rates for equipment costs, and local vendor quotes for material costs). The following assumptions were made for the MII cost estimate:

- Escalation: The MII cost estimate is based on the *Detailed Remedial Action Alternative Cost Estimates* prepared and submitted to DOE on April 2016. Material and vendor quotes were escalated from July 2015 (4Q15) to September 2018 (4Q18). An escalation of 6.71% was calculated using the USACE Civil Works Construction Cost Index System (CWCCIS), EM 1110-2-1304, 31 March 2018, composite index (weighted average).
- Craft Labor: The estimate is based on the Davis-Bacon Wage Determination for Ventura County, California (General Decision Number: CA180025, 07/13/2018, CA25) for the base and fringe rates. In addition, payroll taxes and insurance have been updated for each laborer using the following factors:
 - Federal/State Unemployment Taxes: 5.01% (0.8% federal/4.21% state)
 - Social Security Taxes: 7.65%
 - Workmen's Compensation: Varies by Contractor Class
- Professional Labor: Rates not included in the labor rate database were determined using Foreign Labor Certification Data Center Online Wage Library (<http://flcdatacenter.com>) as of July 2018, tailored for Ventura County, CA.
- Equipment: The estimate is based on the latest available/supported MII equipment rate database (EP16R07), which has been updated using the latest USACE Region 07 (CA) area factors as provided in Appendix B of Engineering Pamphlet EP 1110-1-8, Volume 7, dated 30 November 2016. The area factors were further adjusted to account for current cost-of-money, California state sales tax, and fuel costs (gasoline, highway diesel, and off-road/dyed diesel) at the time of estimate preparation. Therefore, the equipment rates used in the estimate more accurately represent current calendar year 2018 prices.

- Material: Material costs were primarily obtained from vendor quotes in year 2015. Other material costs were obtained from recent previous work of similar scope or RS Means Cost Works 2016 as tailored to the Los Angeles, CA area. Material costs obtained from vendor quotes are applied as sub bid costs to avoid additional/double counting of markups. Material costs were escalated to September 2018 (4Q18) as described above.
- Contractor Overhead, Profit, and Bond Markups (Indirect Cost):

 - Job Office Overhead (JOOH) = JOOH calculated separately, which includes temporary site facilities, project dedicated supervisory staff and equipment, project deliverables, site mobilization and demobilization, and site surveying.
 - JOOH (Small Tools) = 2% of labor
 - Home Office Overhead (HOOH) = 10%
 - Profit = 8%
 - Bond = 2.75%; bond determined using the following MII-provided tiered Hazardous, Toxic and Radioactive Waste (HTRW) (other) bond table
- Contractor Markup over Subcontractor (Indirect Cost):

 - Home Office Overhead (HOOH) = 10%
 - Profit = 8%
 - Bond = 2.75%; bond determined using the following MII-provided tiered HTRW (other) bond table
- Subcontractor Overhead and Profit Markups (Indirect Cost):

 - Job Office Overhead (JOOH) = 2%
 - Home Office Overhead (HOOH) = 10%
 - Profit = 8%
- Various direct cost markups and costs associated with contingency were applied outside of the MII. Cost associated with these markups are presented in the life-cycle cost estimate tables in Attachment A through Attachment E.

Section 4

Cost Estimate Summary

4.1 Cost Estimate Classification

The classification is based on Table 4-2 (*Cost Estimate Classification*) of the *Cost Estimating Guide*, DOE G 413.3-21A, and is presented below:

Exhibit 4-1. Cost Estimate Classification

Cost Estimate Classification	Primary Characteristics	
	Level of Definition (% of Complete Definition)	Cost Estimating Description (Techniques)
Class 5, Concept Screening	0 to 2%	Stochastic, most parametric, judgment (parametric, specific analogy, expert opinion, trend analysis)
Class 4, Study or Feasibility	1 to 15%	Various, more parametric (parametric, specific analogy, expert opinion, trend analysis)
Class 3, Budget Authorization or Control	10 to 40%	Various, including combinations (detailed, unit-cost, or activity-based; parametric; specific analogy; expert opinion; trend analysis)
Class 2, Control or Bid/Tender	30 to 75%	Various, more definitive (detailed, unit-cost, or activity-based; expert opinion; learning curve)
Class 1, Check Estimate or Bid/Tender	65 to 100%	Deterministic, most definitive (detailed, unit-cost, or activity-based; expert opinion; learning curve)

These detailed remedial action alternative cost estimates are prepared to support the CD-1 stage of the project/program life-cycle; thus, they are classified as Class 4 (Study or Feasibility) estimates.

4.2 Cost Estimate Summary

Table 4-1 (Remedial Action Alternative Cost Summary) summarizes the capital construction costs, SLTM, and total life-cycle costs in current (CY 2018) dollars and future dollars for the No Action alternative and the four remedial action alternatives. It also presents the summary of LCCA, which includes present worth costs.

4.3 Cost Reasonableness

The detailed remedial action alternative cost estimates for the CD-1 stage of the project/program life-cycle were not compared to a similar project or previously developed estimate to perform the cost reasonableness review. Because the Area IV remediation work at SSFL includes unique site-specific consideration (e.g., ownership by a private party, unique ecological and cultural considerations, cleanup performed under AOC), that comparison may not be an appropriate technique for cost reasonableness.

A cost reasonableness approach used was benchmarking, which is a way to establish commercial norms and expectations, heuristics, or rules-of-thumb. The following benchmarks were used:

Direct Costs

Unit costs were derived from commercially available databases (e.g., USACE MII Cost Book and RS Means CostWorks), SSFL-specific vendor quotes, previous cost estimates, and professional judgment. Thus, these costs are benchmarked.

Indirect Costs

Indirect costs assumptions are presented in Section 3.2 and derived from DOE cost estimating guidance and USACE cost guidance for MII estimates. Hence, these costs are benchmarked.

Field Indirect Costs/General and Administrative Expenses

These are derived from DOE cost estimating guidance and USACE cost guidance for MII estimates. Hence, these costs are benchmarked.

Profit/Fee

These are derived from DOE cost estimating guidance and USACE cost guidance for MII estimates. Hence, these costs are benchmarked.

Escalation

Escalation rates were used as described in the Cost Estimating Guide, DOE G 413.3-21A.

Discount Rate

A nominal discount rate of 2.6% (30-Year) was used to perform the LCCA as described in Appendix F of *Cost Estimating Guide*, DOE G 413.3-21A. Nominal discount rates are based on the Appendix C (Revised November 2017 for Calendar Year 2018) of the OMB Circular A-94.

Contingency

Contingency is based on previous work at similar DOE sites with similar scope.

4.4 Sensitivity Analysis

As part of the detailed remedial action alternative cost estimate, sensitivity analysis of key cost driver elements was performed. Sensitivity analysis helps to determine which assumptions are key cost drivers and which cost elements are the most impacted by changes. Sensitivity analysis was performed to obtain a better understanding of the impacts of various cost drivers on the total costs (both current [CY 2018] dollar [non-discounted] costs and present worth dollar [discounted] costs).

The *Cost Estimating Guide*, DOE G 413.3-21A recommends performing sensitivity analysis. The guidance states that, “As a best practice, sensitivity analysis should be included in all cost estimates because it examines the effects of changing assumptions and ground rules”. According to this guidance, sensitivity analysis is a type of uncertainty analysis that measures the project impact of changing one or more input values. In the development of a remedial action alternative cost estimate, a sensitivity analysis should be considered for those factors that have a relatively high degree of uncertainty and that, with only a small change in their value, could significantly affect the overall cost of the alternative.

A sensitivity analysis might vary the values for these factors (e.g., low, medium, high) while keeping the values for other factors the same and noting the impact on the total estimated cost. The results of a sensitivity analysis should be reported in terms of total present worth for each scenario. The original estimate should be included for comparison.

4.4.1 Factors Selected for Sensitivity Analysis

CDM Smith performed sensitivity analysis on factors that are key cost driver elements in the cost estimate. The following factors were selected for the cost estimate evaluations and comparisons:

1. **Cost of Fuel:** Due to high volatility of fuel costs in recent years, cost of fuel was selected as one of the factors for sensitivity analysis.

A comparison was made of current (CY 2018) dollar (non-discounted) costs and present worth dollar (discounted) costs for all remedial action alternatives for three separate fuel cost scenarios. In this comparison, the current fuel cost (electricity, gas, off-road diesel, and on-road diesel) was reduced by 50% in one scenario and increased by 50% in the other scenario. All other factors were kept constant for all three scenarios. These costs are presented in Exhibit 4-2 in tabular and graphical format.

2. **Excavation Volume:** Excavation volume is the biggest cost driver in the cost estimate. Any change in the excavation volumes will result in change in cost for excavation, hauling, disposal, and backfill. Thus, excavation volume was selected as one of the factors for sensitivity analysis.

A comparison was made of current (CY 2018) dollar (non-discounted) costs and present worth dollar (discounted) costs for all remedial action alternatives for three separate excavation volume scenarios. Current excavation volumes as presented in the CBA, was reduced by 20% in one scenario and increased by 20% in the other scenario. By increasing the excavation volume, the off-site disposal volume and overall backfill volume increases; decreasing the excavation volume will decrease those volumes. All other costs not related to excavation were kept constant for all three scenarios. These costs are presented in Exhibit 4-3 in tabular and graphical format.

3. **Period of Analysis Assumptions:** Period of analysis directly impacts the SLTM costs. The period of analysis was evaluated for 30 years versus 100 years of SLTM.

A comparison was made of current (CY 2018) dollar (non-discounted) costs and present worth dollar (discounted) costs for all remedial action alternatives for two periods of analysis (30 and 100 years). Under this evaluation, capital construction costs (Area IV soil removal and disposal) and SLTM costs were kept constant for both periods of analysis. The difference between the two scenarios is that SLTM costs ceased at Year 30 for the 30-year period of analysis and continued until year 100 for the 100-year period of analysis. These costs are presented graphically in Exhibit 4-4. The graphs illustrate how the current (CY 2018) dollar (non-discounted) costs and present worth dollar (discounted) costs increase from year 0 to year 100 for each of the alternatives.

4.4.2 Conclusions

Based on the exhibits, the following conclusions can be drawn for the scenarios evaluated as part of this sensitivity analysis:

1. Cost of Fuel (current fuel cost factor assumption [1.00] versus low/high fuel cost factor [0.50/1.50])

As illustrated in Exhibit 4-2, reducing and increasing the fuel cost has a moderate impact on the total present worth cost. Total present worth cost was increased by an average of approximately 7.5% for all alternatives by increasing the fuel cost by a factor of 1.5 and reduced by an average of 8.1% for all alternatives by decreasing the fuel cost by a factor of 0.5. There is some additional minor sensitivity between alternatives (i.e., there is a greater magnitude in cost impacts for the Revised AOC LUT Value Alternative as compared to the other three alternatives) due to changes in fuel cost.

2. Excavation Volume (current excavation factor assumption [1.00] versus low/high excavation factor [0.80/1.20])

As illustrated in Exhibit 4-3, reducing and increasing the excavation volumes have a high impact on the total present worth cost. Total present worth cost was increased by an average of approximately 12.7% for all alternatives by increasing the excavation volume by a factor of 1.2 and reduced by an average of 14.5% for all alternatives by decreasing the excavation volume by a factor of 0.8. Based on the analysis, there is high sensitivity in present worth costs due to changes to these volumes. There is some additional minor sensitivity between alternatives (i.e., there is a greater magnitude in cost impacts for the AOC LUT Value and Revised AOC LUT Value Alternatives as compared to the other two alternatives) due to changes in excavation volumes.

3. Period of Analysis Assumptions (30 years versus 100 years)

As illustrated in Exhibits 4-4A, B, C, and D the current (CY 2018) dollar (non-discounted) as well as present worth costs for each alternative increase as the period of analyses increases, i.e., present worth costs are higher than current costs. This is due to higher escalation rate (3%) as compared to the discount rate (2.6%) used to perform the LCCA. Based on the analysis, the present worth costs are sensitive to changes to period of analysis beyond 30 years.

4.5 Uncertainty Analysis

Uncertainty analysis (e.g., Monte Carlo simulation, identification of risk mitigation strategies) was not performed at the CD-1 stage of the project/program life-cycle for the detailed remedial action alternative cost estimates. This can be included in future cost estimates to support CD-2.

TABLE 4-1

REMEDIAL ACTION ALTERNATIVES COST SUMMARY

Site:	SSFL Area IV/NBZ
Location:	Ventura County, California
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]
Cost Estimate Classification:	Class 4, Study or Feasibility (Level of Definition: 1% to 15%)
Base Year:	2018
Date of Estimate:	September 2018

<u>ALTERNATIVE</u>	<u>CAPITAL CONSTRUCTION COST (AREA IV SOIL REMEDIATION)</u>	
	<u>CURRENT (CY 2018) COST</u>	<u>FUTURE COST</u>
	<u>Total Project Cost</u>	<u>Total Project Cost</u>
No Action Alternative	\$0	\$0
Cleanup to AOC Look-Up Table Values Alternative	\$724,682,000	\$1,177,204,000
Cleanup to Revised AOC Look-Up Table Values Alternative	\$221,611,000	\$269,121,000
Conservation of Natural Resources Alternative – Residential Cleanup Scenario	\$46,586,000	\$51,662,000
Conservation of Natural Resources Alternative – Open Space Scenario	\$39,209,000	\$43,487,000

<u>ALTERNATIVE</u>	<u>SURVEILLANCE AND LONG-TERM MAINTENANCE (SLTM) COST</u>	
	<u>CURRENT (CY 2018) COST</u>	<u>FUTURE COST</u>
	<u>Total Project Cost</u>	<u>Total Project Cost</u>
No Action Alternative	\$3,087,000	\$5,013,000
Cleanup to AOC Look-Up Table Values Alternative	\$2,736,000	\$9,882,000
Cleanup to Revised AOC Look-Up Table Values Alternative	\$2,736,000	\$5,655,000
Conservation of Natural Resources Alternative – Residential Cleanup Scenario	\$2,736,000	\$4,736,000
Conservation of Natural Resources Alternative – Open Space Scenario	\$2,736,000	\$4,736,000

<u>ALTERNATIVE</u>	<u>TOTAL LIFE-CYCLE COST (LCC)</u>		<u>LIFE-CYCLE COST ANALYSES (LCCA)²</u>
	<u>CURRENT (CY 2018) COST</u>	<u>FUTURE COST</u>	<u>PRESENT WORTH (PW)</u>
	<u>Total Project Cost</u>	<u>Total Project Cost</u>	<u>Total Project Cost</u>
No Action Alternative	\$3,087,000	\$5,013,000	\$3,275,000
Cleanup to AOC Look-Up Table Values Alternative	\$727,418,000	\$1,187,086,000	\$773,502,000
Cleanup to Revised AOC Look-Up Table Values Alternative	\$224,347,000	\$274,776,000	\$230,314,000
Conservation of Natural Resources Alternative – Residential Cleanup Scenario	\$49,322,000	\$56,398,000	\$50,169,000
Conservation of Natural Resources Alternative – Open Space Scenario	\$41,945,000	\$48,223,000	\$42,689,000

Notes:

- 1 - Current costs, life-cycle costs, and estimated remedial timeframes for each remedial action alternative are presented on tables CS-1 through CS-5 in Attachments A through E, respectively.
- 2 - Per the DOE Cost Estimating Guide, DOE G 413.3-21A, "The lowest PW is the preferred alternative from an economic perspective."

Exhibit 4-2 - Cost of Fuel
Comparison of Current (CY 2018) Dollar Costs and Present Worth Costs
Three Fuel Cost Scenarios (Current Fuel Cost Factor Assumption [1.00] versus Low/High Fuel Cost Factor [0.50/1.50])

Scenario	Cleanup to the AOC LUT Values Alternative		Cleanup to Revised AOC LUT Values Alternative		Conservation of Natural Resources Alternative – Residential Cleanup Scenario		Conservation of Natural Resources Alternative – Open Space Scenario	
	Current (CY 2018) Cost	Present Worth	Current (CY 2018) Cost	Present Worth	Current (CY 2018) Cost	Present Worth	Current (CY 2018) Cost	Present Worth
Low Fuel Cost Factor (0.5)	\$670,596,000	\$713,158,000	\$206,084,000	\$211,591,000	\$45,750,000	\$46,552,000	\$39,012,000	\$39,719,000
Current Fuel Cost Factor (1.0)	\$727,418,000	\$773,502,000	\$224,347,000	\$230,314,000	\$49,322,000	\$50,169,000	\$41,945,000	\$42,689,000
High Fuel Cost Factor (1.5)	\$784,300,000	\$833,956,000	\$242,577,000	\$249,035,000	\$52,890,000	\$53,788,000	\$44,874,000	\$45,664,000

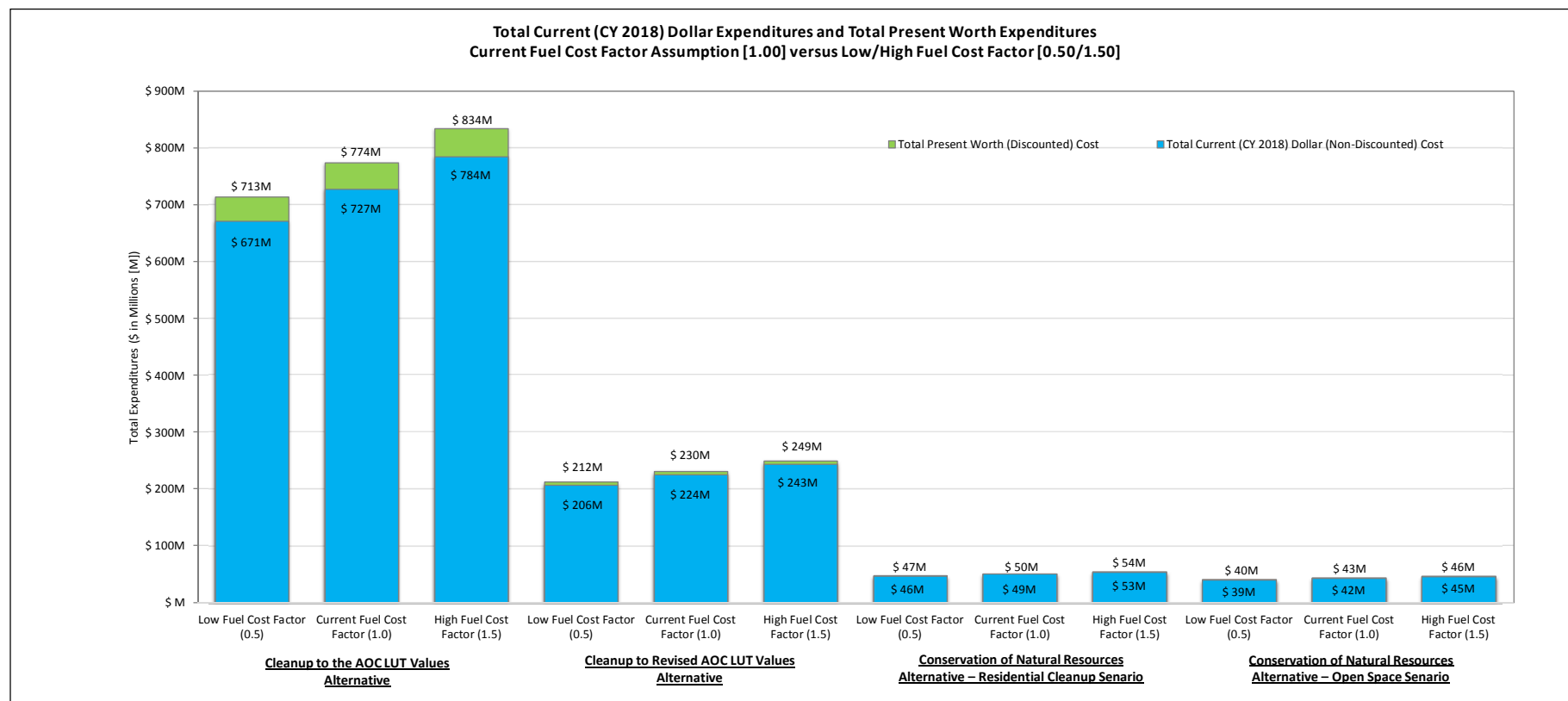


Exhibit 4-3 - Excavation Volume

Comparison of Current (CY 2018) Dollar Costs and Present Worth Costs

Three Excavation Scenarios (Current Excavation Factor Assumption [1.00] versus Low/High Excavation Factor [0.80/1.20])

Scenario	Cleanup to the AOC LUT Values Alternative		Cleanup to Revised AOC LUT Values Alternative		Conservation of Natural Resources Alternative – Residential Cleanup Scenario		Conservation of Natural Resources Alternative – Open Space Scenario	
	Current (CY 2018) Cost	Present Worth	Current (CY 2018) Cost	Present Worth	Current (CY 2018) Cost	Present Worth	Current (CY 2018) Cost	Present Worth
Low Excavation Factor (0.8)	\$623,849,000	\$663,489,000	\$192,505,000	\$197,661,000	\$43,501,000	\$44,275,000	\$37,601,000	\$38,294,000
Current Excavation Factor (1.0)	\$727,418,000	\$773,502,000	\$224,347,000	\$230,314,000	\$49,322,000	\$50,169,000	\$41,945,000	\$42,689,000
High Excavation Factor (1.2)	\$830,886,000	\$883,591,000	\$256,206,000	\$263,001,000	\$55,173,000	\$56,103,000	\$46,324,000	\$47,135,000

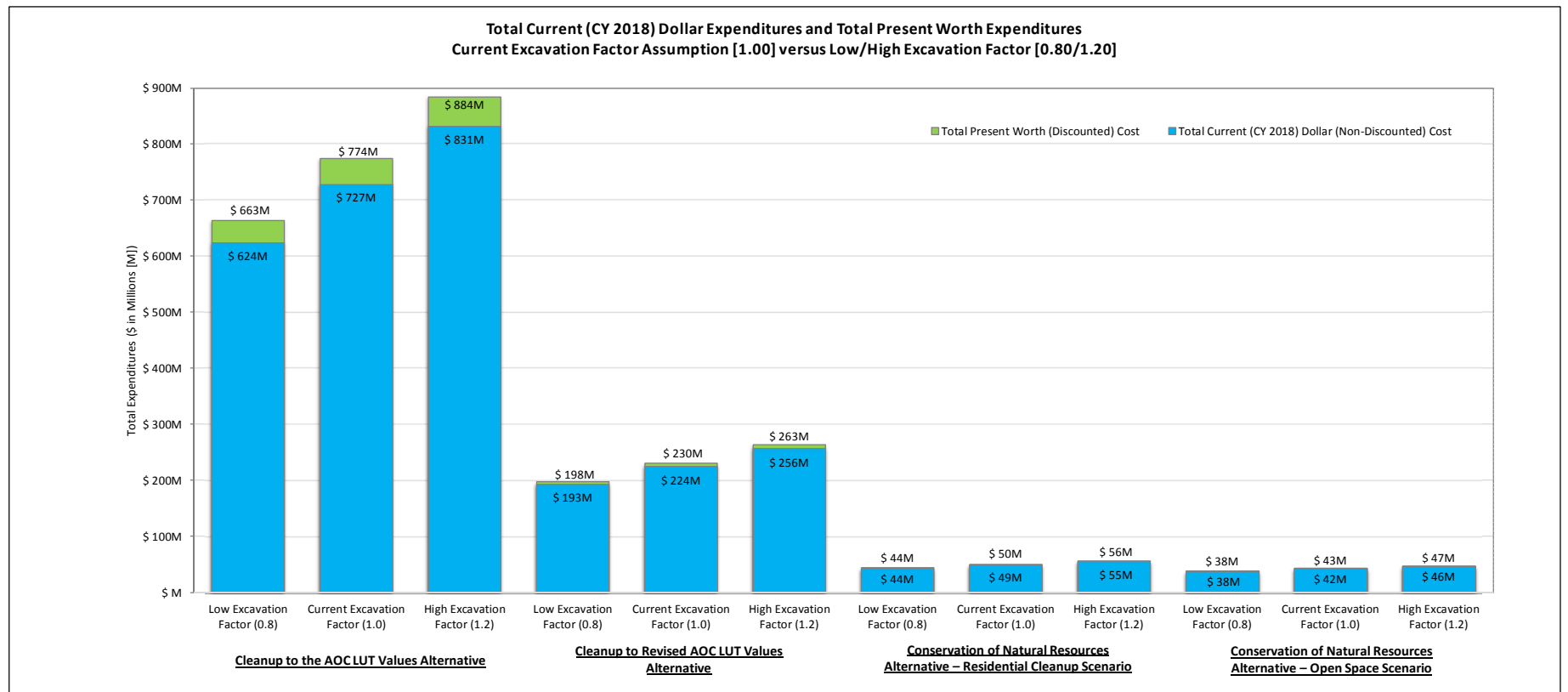


Exhibit 4-4.A
Total Current Dollar Expenditures versus Total Present Worth Expenditures
Cleanup to the AOC LUT Values Alternative - 100 Year Period of Analysis for SLTM

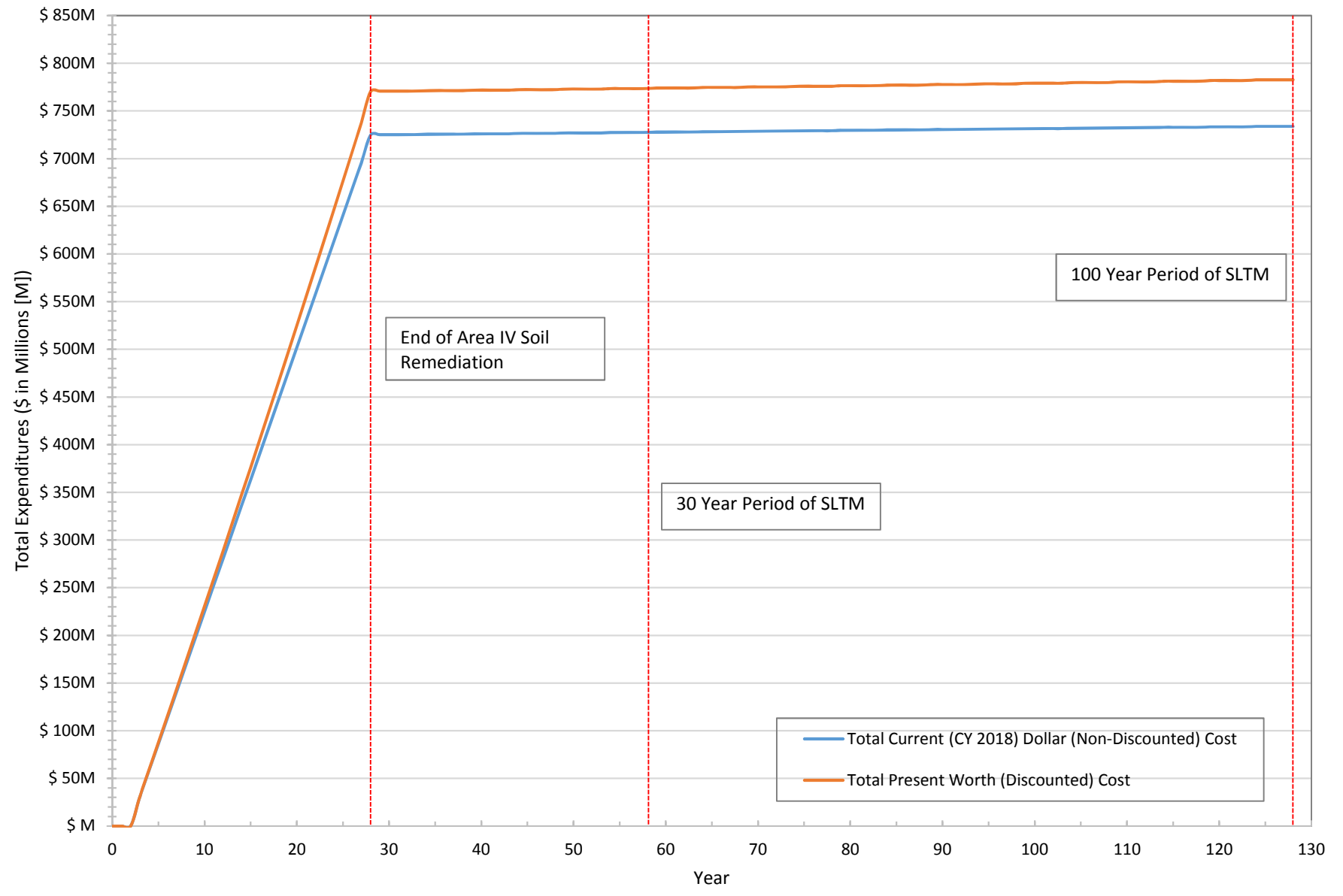


Exhibit 4-4.B
Total Current Dollar Expenditures versus Total Present Worth Expenditures
Cleanup to Revised AOC LUT Values Alternative - 100 Year Period of Analysis for SLTM

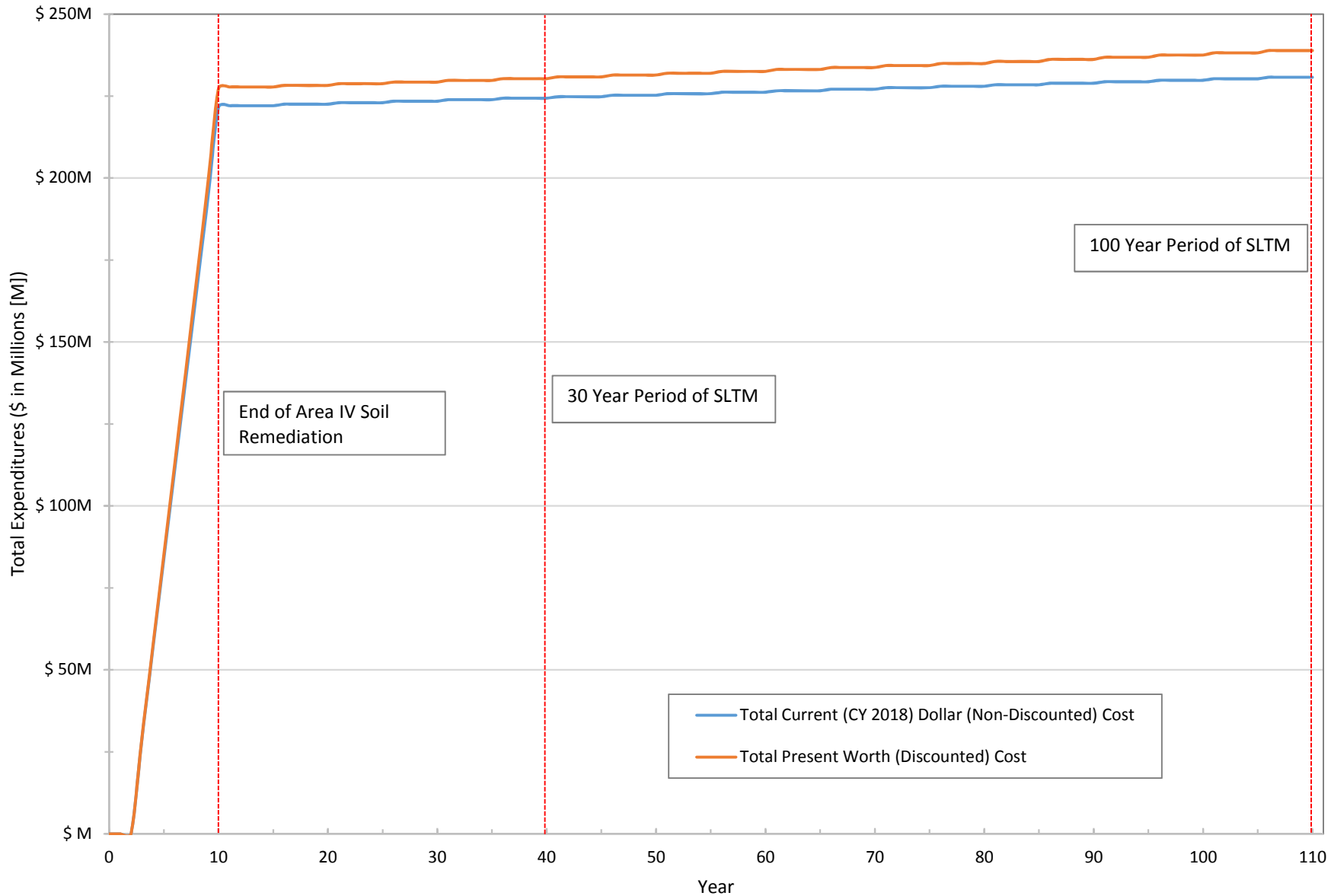


Exhibit 4-4.C
Total Current Dollar Expenditures versus Total Present Worth Expenditures
Conservation of Natural Resources Alternative - Residential Cleanup Scenario - 100 Year Period of
Analysis for SLTM

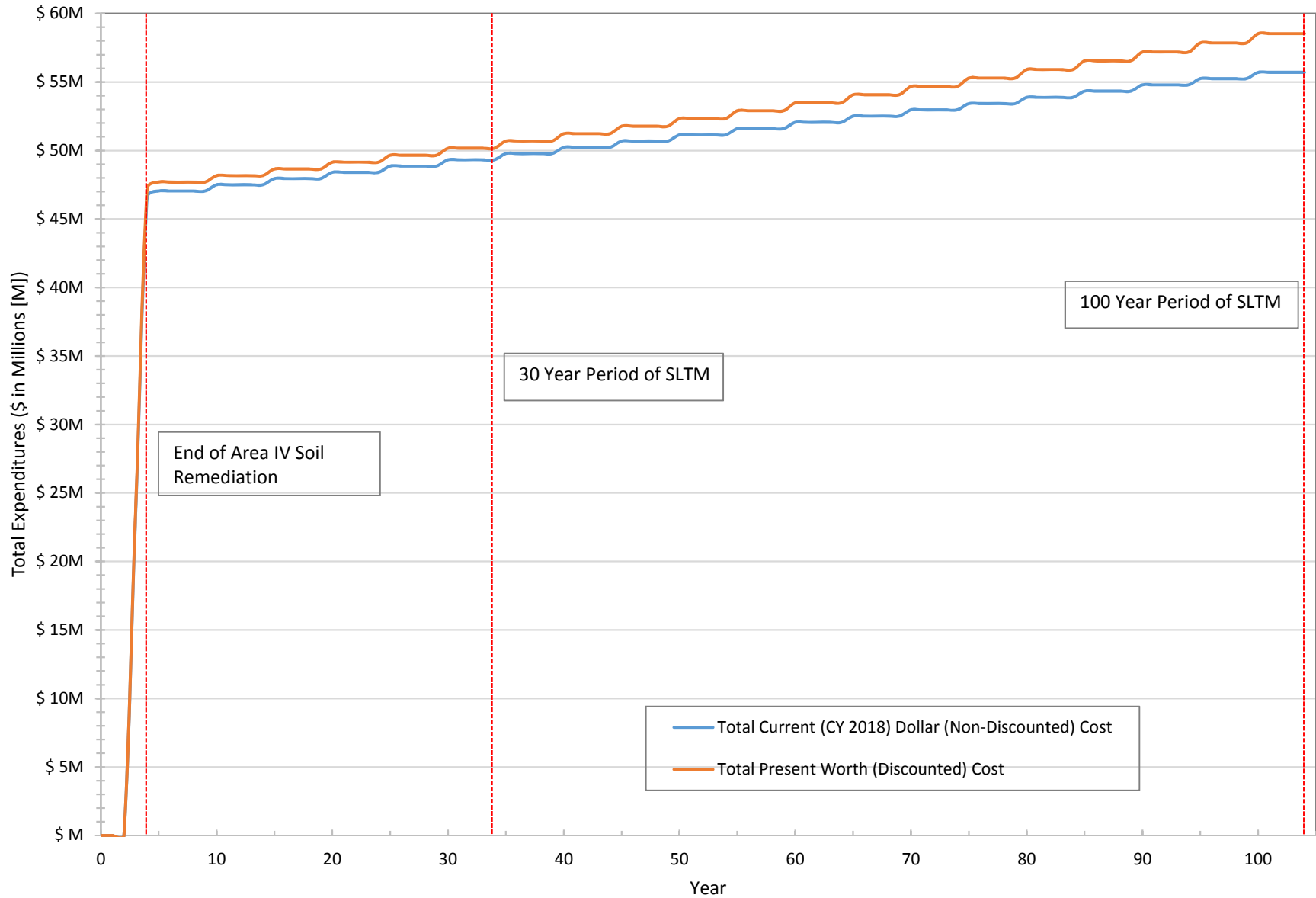
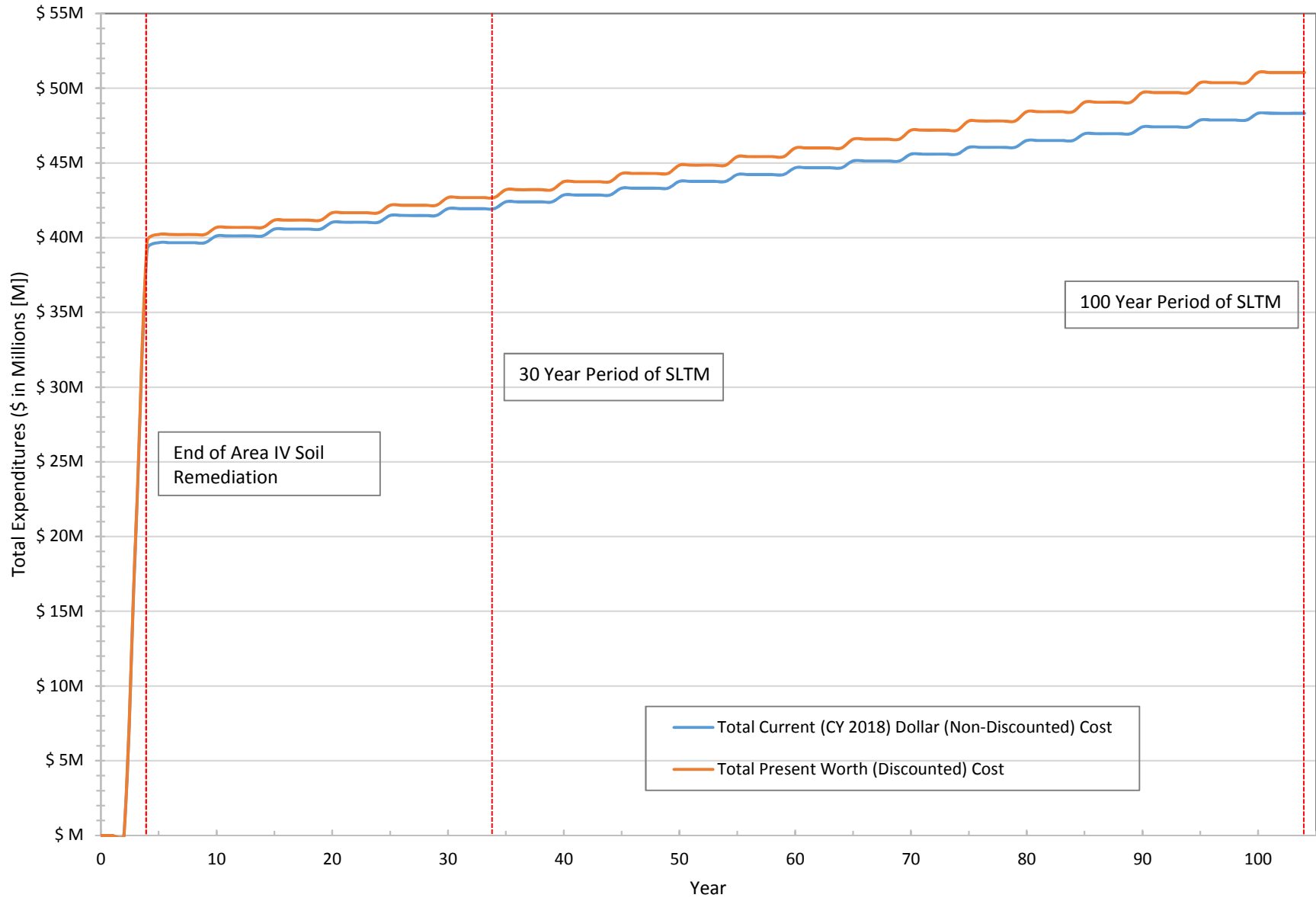


Exhibit 4-4.D

Total Current Dollar Expenditures versus Total Present Worth Expenditures

Conservation of Natural Resources Alternative - Open Space Scenario - 100 Year Period of Analysis for SLTM



Attachment A

Life-Cycle Cost Estimate – No Action Alternative

TABLE CS-1 - Current Cost (CY 2018)

Alternative **LIFE-CYCLE COST ESTIMATE - CURRENT (CY 2018) DOLLARS**

No Action Alternative

Site: SSFL Area IV/NBZ
 Location: Ventura County, California
 Document: Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates
 Project/Program Life-Cycle Stage: Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]
 Cost Estimate Classification: Class 4, Study or Feasibility (Level of Definition: 1% to 15%)
 Base Year: 2018
 Date of Estimate: September 2018

The No Action alternative provides an environmental baseline against which impacts of other remedial action alternatives can be compared. This alternative would leave removal action activities previously performed in their current conditions. No new removal and/or remedial activities would be initiated to address contaminated soil or otherwise mitigate the associated risks to human health and environment.

LIFE-CYCLE COST IN CURRENT DOLLARS

ECES Code	Description	Calendar Year (CY)												
		Periodic Surveillance and Long-Term Maintenance (30 Years)												
		2018	2019 - 2022	2023	2024 - 2027	2028	2029 - 2032	2033	2034 - 2037	2038	2039 - 2042	2043	2044 - 2047	2048
4.02.04	Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.02	Community Awareness Activities	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.02.02	Community Awareness Activities	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000
4.9x	General Conditions													
Multiple ECES Codes	Workplans and Submittals	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8.01.04	Home Office Personnel	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.01.01.15	Job Site Personnel	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.03	Temporary Facilities	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.01	Mobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.36.04	Demobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.9x	Best Management Practices - Structural													
8.01.01	SWPPP Implementation and Maintenance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.02	Temporary Erosion and Sediment Control	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Existing Tree Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.16.04	Dust Control	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.07.08.02	Air Monitoring	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.03.12	Decontamination/Wash Station	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Street Sweeping	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8.01.03.11	Traffic Control	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Multiple ECES Codes	Excavation, Hauling and Disposal													
4.05.9x	Construction Survey and Staking	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.05.01	Excavation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.32.11.05	Hauling	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.07.11	Confirmation Sampling	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.08.04	Sample Analysis	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.33.08.05	Disposal	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Excavation of Underground Utilities (D&D)													
4.05.05	Backfill													
4.05.05.06	Backfill from Offsite Sources	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.02	Restoration													
4.05.02.05	Seeding	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.08	Allowance for Street/Pavement Repair	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.21.08	Post-Construction Monitoring	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000
6.02.04.06	Evaluating and Updating Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Subtotal	\$270,000	\$0	\$270,000	\$0	\$270,000	\$0	\$270,000	\$0	\$270,000	\$0	\$270,000	\$0	\$270,000
4.04.11	Remedial Design (15%)	\$41,000	\$0	\$41,000	\$0	\$41,000	\$0	\$41,000	\$0	\$41,000	\$0	\$41,000	\$0	\$41,000
4.02.09	Construction Management (10%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.01	Project Management (5%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.02.01	Project Management (5%)	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000
6.07.9x	Construction Coordination (1%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.14	Health and Safety (1.5%)	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000
4.02.01.01	Program Management (1%)	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000
4.02.03	Regulatory Costs (1%)	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000
	Project Cost (without Contingency)	\$336,000	\$0	\$336,000	\$0	\$336,000	\$0	\$336,000	\$0	\$336,000	\$0	\$336,000	\$0	\$336,000
8.01.03.13	Contingency 30% (DOE Held)	\$101,000	\$0	\$101,000	\$0	\$101,000	\$0	\$101,000	\$0	\$101,000	\$0	\$101,000	\$0	\$101,000
8.01.03.13	Management Reserve 1% (Contractor Held)	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000
	Total Project Cost (TPC) - Current Dollars	\$441,000	\$0	\$441,000	\$0	\$441,000	\$0	\$441,000	\$0	\$441,000	\$0	\$441,000	\$0	\$441,000

- The draft detailed cost estimates are based primarily on the methodology as described in Cost Estimating Guide, DOE G 413.3-21A. - Specific assumptions used in preparation of the detailed cost estimates are included in the Basis of Estimate (BOE).	AREA IV SOIL REMOVAL AND DISPOSAL		PERIODIC SURVEILLANCE AND LONG-TERM MAINTENANCE		TOTAL LIFE-CYCLE COST - CURRENT (CY 2018) COST	
	TPC (WITHOUT CONTINGENCY)	TPC (CURRENT DOLLARS)	TPC (WITHOUT CONTINGENCY)	TPC (CURRENT DOLLARS)	LCC (WITHOUT CONTINGENCY)	LCC (CURRENT DOLLARS)
	\$0	\$0	\$2,352,000	\$3,087,000	\$2,352,000	\$3,087,000

(1) Cost presented for each ECES Code is presented on "Table CS-1". Cost for each ECES Code is the summation of costs under same ECES Code as presented on "Table CS-1" within the respective year. (2) Costs subtotals and totals are rounded-up to the nearest \$1,000.

TABLE CS-1 - Future Cost

Alternative **LIFE-CYCLE COST ESTIMATE - FUTURE DOLLARS**

No Action Alternative

Site:	SSFL Area IV/NBZ	The No Action alternative provides an environmental baseline against which impacts of other remedial action alternatives can be compared. This alternative would leave removal action activities previously performed in their current conditions. No new removal and/or remedial activities would be initiated to address contaminated soil or otherwise mitigate the associated risks to human health and environment.
Location:	Ventura County, California	
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates	
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]	
Cost Estimate Classification:	Class 4, Study or Feasibility (Level of Definition: 1% to 15%)	
Base Year:	2018	
Date of Estimate:	September 2018	

LIFE-CYCLE COST IN FUTURE DOLLARS

ECES Code	Description	Calendar Year (CY)												
		Periodic Surveillance and Long-Term Maintenance (30 Years)												
		2018	2019 - 2022	2023	2024 - 2027	2028	2029 - 2032	2033	2034 - 2037	2038	2039 - 2042	2043	2044 - 2047	2048
4.02.04	Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.02	Community Awareness Activities	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.02.02	Community Awareness Activities	\$20,000	\$0	\$23,200	\$0	\$26,900	\$0	\$31,200	\$0	\$36,200	\$0	\$41,900	\$0	\$48,600
4.9x	General Conditions													
Multiple ECES Codes	Workplans and Submittals	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8.01.04	Home Office Personnel	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.01.01.15	Job Site Personnel	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.03	Temporary Facilities	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.01	Mobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.36.04	Demobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.9x	Best Management Practices - Structural													
8.01.01	SWPPP Implementation and Maintenance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.02	Temporary Erosion and Sediment Control	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Existing Tree Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.16.04	Dust Control	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.07.08.02	Air Monitoring	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.03.12	Decontamination/Wash Station	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Street Sweeping	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8.01.03.11	Traffic Control	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Multiple ECES Codes	Excavation, Hauling and Disposal													
4.05.9x	Construction Survey and Staking	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.05.01	Excavation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.32.11.05	Hauling	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.07.11	Confirmation Sampling	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.08.04	Sample Analysis	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.33.08.05	Disposal	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Excavation of Underground Utilities (D&D)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.05	Backfill													
4.05.05.06	Backfill from Offsite Sources	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.02	Restoration													
4.05.02.05	Seeding	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.08	Allowance for Street/Pavement Repair	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.21.08	Post-Construction Monitoring	\$250,000	\$0	\$289,900	\$0	\$336,000	\$0	\$389,500	\$0	\$451,600	\$0	\$523,500	\$0	\$606,900
6.02.04.06	Evaluating and Updating Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Subtotal	\$270,000	\$0	\$314,000	\$0	\$363,000	\$0	\$421,000	\$0	\$488,000	\$0	\$566,000	\$0	\$656,000
4.04.11	Remedial Design (15%)	\$41,000	\$0	\$48,000	\$0	\$55,000	\$0	\$64,000	\$0	\$74,000	\$0	\$85,000	\$0	\$99,000
4.02.09	Construction Management (10%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.01	Project Management (5%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.02.01	Project Management (5%)	\$14,000	\$0	\$16,000	\$0	\$19,000	\$0	\$22,000	\$0	\$25,000	\$0	\$29,000	\$0	\$33,000
6.07.9x	Construction Coordination (1%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.14	Health and Safety (1.5%)	\$5,000	\$0	\$5,000	\$0	\$6,000	\$0	\$7,000	\$0	\$8,000	\$0	\$9,000	\$0	\$10,000
4.02.01.01	Program Management (1%)	\$3,000	\$0	\$4,000	\$0	\$4,000	\$0	\$5,000	\$0	\$5,000	\$0	\$6,000	\$0	\$7,000
4.02.03	Regulatory Costs (1%)	\$3,000	\$0	\$4,000	\$0	\$4,000	\$0	\$5,000	\$0	\$5,000	\$0	\$6,000	\$0	\$7,000
	Project Cost (without Contingency)	\$336,000	\$0	\$391,000	\$0	\$451,000	\$0	\$524,000	\$0	\$605,000	\$0	\$701,000	\$0	\$812,000
8.01.03.13	Contingency 30% (DOE Held)	\$101,000	\$0	\$118,000	\$0	\$136,000	\$0	\$158,000	\$0	\$182,000	\$0	\$211,000	\$0	\$244,000
8.01.03.13	Management Reserve 1% (Contractor Held)	\$4,000	\$0	\$4,000	\$0	\$5,000	\$0	\$6,000	\$0	\$7,000	\$0	\$8,000	\$0	\$9,000
	Total Project Cost (TPC) - Future Dollars	\$441,000	\$0	\$513,000	\$0	\$592,000	\$0	\$688,000	\$0	\$794,000	\$0	\$920,000	\$0	\$1,065,000

- The draft detailed cost estimates are based primarily on the methodology as described in Cost Estimating Guide, DOE G 413.3-21A. - Specific assumptions used in preparation of the detailed cost estimates are included in the Basis of Estimate (BOE).	AREA IV SOIL REMOVAL AND DISPOSAL		PERIODIC SURVEILLANCE AND LONG-TERM MAINTENANCE		TOTAL LIFE-CYCLE COST - FUTURE COST	
	TPC (WITHOUT CONTINGENCY)	TPC (FUTURE DOLLARS)	TPC (WITHOUT CONTINGENCY)	TPC (FUTURE DOLLARS)	LCC (WITHOUT CONTINGENCY)	LCC (FUTURE DOLLARS)
	\$0	\$0	\$3,820,000	\$5,013,000	\$3,820,000	\$5,013,000

(1) Future dollars are calculated by escalating current dollar costs from "Table CS-1 - Current Cost (CY 2018)" using annual escalation rate factors presented in "Table LCC-AERFT". (2) Costs subtotals and totals are rounded-up to the nearest \$1,000.

TABLE CS-1 - Present Worth

Alternative **LIFE-CYCLE COST ESTIMATE - PRESENT WORTH DOLLARS**

No Action Alternative

Site: SSFL Area IV/NBZ
 Location: Ventura County, California
 Document: Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates
 Project/Program Life-Cycle Stage: Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]
 Cost Estimate Classification: Class 4, Study or Feasibility (Level of Definition: 1% to 15%)
 Base Year: 2018
 Date of Estimate: September 2018

The No Action alternative provides an environmental baseline against which impacts of other remedial action alternatives can be compared. This alternative would leave removal action activities previously performed in their current conditions. No new removal and/or remedial activities would be initiated to address contaminated soil or otherwise mitigate the associated risks to human health and environment.

LIFE-CYCLE COST IN PRESENT WORTH DOLLARS

ECES Code	Description	Calendar Year (CY)												
		Periodic Surveillance and Long-Term Maintenance (30 Years)												
		2018	2019 - 2022	2023	2024 - 2027	2028	2029 - 2032	2033	2034 - 2037	2038	2039 - 2042	2043	2044 - 2047	2048
4.02.04	Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.02	Community Awareness Activities	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.02.02	Community Awareness Activities	\$20,000	\$0	\$20,500	\$0	\$20,900	\$0	\$21,300	\$0	\$21,700	\$0	\$22,100	\$0	\$22,600
4.9x	General Conditions													
Multiple ECES Codes	Workplans and Submittals	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8.01.04	Home Office Personnel	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.01.01.15	Job Site Personnel	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.03	Temporary Facilities	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.01	Mobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.36.04	Demobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.9x	Best Management Practices - Structural													
8.01.01	SWPPP Implementation and Maintenance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.02	Temporary Erosion and Sediment Control	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Existing Tree Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.16.04	Dust Control	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.07.08.02	Air Monitoring	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.03.12	Decontamination/Wash Station	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Street Sweeping	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8.01.03.11	Traffic Control	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Multiple ECES Codes	Excavation, Hauling and Disposal													
4.05.9x	Construction Survey and Staking	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.05.01	Excavation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.32.11.05	Hauling	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.07.11	Confirmation Sampling	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.08.04	Sample Analysis	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.33.08.05	Disposal	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Excavation of Underground Utilities (D&D)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.05	Backfill													
4.05.05.06	Backfill from Offsite Sources	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.02	Restoration													
4.05.02.05	Seeding	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.08	Allowance for Street/Pavement Repair	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.21.08	Post-Construction Monitoring	\$250,000	\$0	\$255,000	\$0	\$260,000	\$0	\$265,100	\$0	\$270,300	\$0	\$275,600	\$0	\$281,000
6.02.04.06	Evaluating and Updating Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Subtotal	\$270,000	\$0	\$276,000	\$0	\$281,000	\$0	\$287,000	\$0	\$292,000	\$0	\$298,000	\$0	\$304,000
4.04.11	Remedial Design (15%)	\$41,000	\$0	\$42,000	\$0	\$43,000	\$0	\$44,000	\$0	\$44,000	\$0	\$45,000	\$0	\$46,000
4.02.09	Construction Management (10%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.01	Project Management (5%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.02.01	Project Management (5%)	\$14,000	\$0	\$14,000	\$0	\$15,000	\$0	\$15,000	\$0	\$15,000	\$0	\$15,000	\$0	\$16,000
6.07.9x	Construction Coordination (1%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.14	Health and Safety (1.5%)	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000
4.02.01.01	Program Management (1%)	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$4,000
4.02.03	Regulatory Costs (1%)	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$4,000
	Project Cost (without Contingency)	\$336,000	\$0	\$343,000	\$0	\$350,000	\$0	\$357,000	\$0	\$362,000	\$0	\$369,000	\$0	\$379,000
8.01.03.13	Contingency 30% (DOE Held)	\$101,000	\$0	\$103,000	\$0	\$105,000	\$0	\$108,000	\$0	\$109,000	\$0	\$111,000	\$0	\$114,000
8.01.03.13	Management Reserve 1% (Contractor Held)	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000
	Total Project Cost (TPC) - Present Worth	\$441,000	\$0	\$450,000	\$0	\$459,000	\$0	\$469,000	\$0	\$475,000	\$0	\$484,000	\$0	\$497,000

- The draft detailed cost estimates are based primarily on the methodology as described in <i>Cost Estimating Guide, DOE G 413.3-21A</i> . - Specific assumptions used in preparation of the detailed cost estimates are included in the Basis of Estimate (BOE).	AREA IV SOIL REMOVAL AND DISPOSAL		PERIODIC SURVEILLANCE AND LONG-TERM MAINTENANCE		TOTAL LIFE-CYCLE COST - PRESENT WORTH	
	TPC (WITHOUT CONTINGENCY)	TPC (PRESENT WORTH)	TPC (WITHOUT CONTINGENCY)	TPC (PRESENT WORTH)	LCC (WITHOUT CONTINGENCY)	LCC (PRESENT WORTH)
	\$0	\$0	\$2,496,000	\$3,275,000	\$2,496,000	\$3,275,000

(1) Present Worth (PW) are calculated by discounting the future dollar costs from "Table CS-1 - Future Cost (CY 2018)" using the calculated discount factors presented in "Table SPV-ADRFT". (2) PW was calculated as described in Appendix F of the Cost Estimating Guide, DOE G 413.3-21A. (3) Costs subtotals and totals are rounded-up to the nearest \$1,000.

TABLE CS-1

DETAILED COST ESTIMATE BACKUP SUMMARY

Alternative No Action Alternative		Description:	The No Action alternative provides an environmental baseline against which impacts of other remedial action alternatives can be compared. This alternative would leave removal action activities previously performed in their current conditions. No new removal and/or remedial activities would be initiated to address contaminated soil or otherwise mitigate the associated risks to human health and environment.
Site:	SSFL Area IV/NBZ		
Location:	Ventura County, California		
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates		
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]		
Cost Estimate Classification:	Class 4, Study or Feasibility (Level of Definition: 1% to 15%)		
Base Year:	2018		
Date of Estimate:	September 2018		

SURVEILLANCE AND LONG-TERM MAINTENANCE COSTS (Assumed to be Incurred Every 5 Years Starting Year 0 [2016])

<u>ECES Code</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>UNIT(S)</u>	<u>UNIT COST</u>	<u>TOTAL</u>	<u>NOTES</u>
6.21.08	Post-Construction Monitoring	1	LS	\$250,000	\$250,000	Allowance. Consist of MNA for the entire Area IV/NBZ site. Includes monitoring, sampling, analysis, and report.
6.02.02	Community Awareness Activities	1	LS	\$20,000	\$20,000	Allowance. Includes community awareness meetings

Abbreviations:

- ECES Environmental Cost Element Structure
- QTY Quantity
- LS Lump Sum

Attachment B

Life-Cycle Cost Estimate – Cleanup to AOC Look-Up
Table Values Alternative

TABLE CS-2A - Current Cost (CY 2018)

LIFE-CYCLE COST ESTIMATE - CURRENT (CY 2018) DOLLARS

<p>Alternative: Cleanup to AOC Look-Up Table Values Alternative</p> <p>Site: SSFL Area IV/NBZ</p> <p>Location: Ventura County, California</p> <p>Document: Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates</p> <p>Project/Program Life-Cycle Stage: Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]</p> <p>Cost Estimate Classification: Class 4, Study or Feasibility (Level of Definition: 1% to 15%)</p> <p>Base Year: 2018</p> <p>Date of Estimate: September 2018</p>	<p>This alternative provides protection of human health and environment through excavation and offsite disposal of soils containing radionuclides and chemicals exceeding the AOC LUT values. Under this alternative, soil excavation and removal would be performed until all of the soil requiring removal to meet radionuclides and chemical AOC LUT values is accomplished. This alternative would meet the requirements for the frequency of truck hauling for importing of materials as well as exporting excavated contaminated soil for disposal set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 26 years, with anticipated start in year 2021 and completion in year 2046.</p> <p>¹ It is assumed that building demolition and disposal are NOT within the scope of this FCBA and are therefore not included in the cost estimate. It is assumed that building demolition/disposal and soil removal/disposal would be performed in a sequential manner where building removal would occur for 2 years (beginning in year 2019), followed by soil removal. DOE would demolish its remaining 18 structures within Area IV/NBZ and dispose of or recycle uncontaminated materials off site.</p>
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LIFE-CYCLE COST IN CURRENT DOLLARS

ECES Code	Description	Calendar Year (CY)																								
		Base Year	Area IV Building Demolition ¹			Area IV Soil Remediation																				
			2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
4.02.04	Institutional Controls	\$0	\$0	\$0	\$75,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.02	Community Awareness Activities	\$0	\$0	\$0	\$50,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	
6.02.02	Community Awareness Activities	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.9x	General Conditions																									
Multiple ECES Codes	Workplans and Submittals	\$0	\$0	\$0	\$190,900	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000		
8.01.04	Home Office Personnel	\$0	\$0	\$0	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400		
4.02.01.01.15	Job Site Personnel	\$0	\$0	\$0	\$1,717,500	\$1,717,500	\$1,717,500	\$1,717,500	\$1,717,500	\$1,717,500	\$1,717,500	\$1,717,500	\$1,717,500	\$1,717,500	\$1,717,500	\$1,717,500	\$1,717,500	\$1,717,500	\$1,717,500	\$1,717,500	\$1,717,500	\$1,717,500	\$1,717,500	\$1,717,500		
4.05.01.03	Temporary Facilities	\$0	\$0	\$0	\$82,800	\$40,600	\$40,600	\$40,600	\$40,600	\$40,600	\$40,600	\$40,600	\$40,600	\$40,600	\$40,600	\$40,600	\$40,600	\$40,600	\$40,600	\$40,600	\$40,600	\$40,600	\$40,600	\$40,600		
4.05.01.01	Mobilization of Construction Equipment	\$0	\$0	\$0	\$64,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
4.05.36.04	Demobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
4.9x	Best Management Practices - Structural																									
8.01.01	SWPPP Implementation and Maintenance	\$0	\$0	\$0	\$23,900	\$8,900	\$8,900	\$8,900	\$8,900	\$8,900	\$8,900	\$8,900	\$8,900	\$8,900	\$8,900	\$8,900	\$8,900	\$8,900	\$8,900	\$8,900	\$8,900	\$8,900	\$8,900	\$8,900		
4.05.02	Temporary Erosion and Sediment Control	\$0	\$0	\$0	\$837,400	\$55,200	\$55,200	\$55,200	\$55,200	\$55,200	\$55,200	\$55,200	\$55,200	\$55,200	\$55,200	\$55,200	\$55,200	\$55,200	\$55,200	\$55,200	\$55,200	\$55,200	\$55,200	\$55,200		
4.05.9x	Existing Tree Protection	\$0	\$0	\$0	\$68,500	\$15,200	\$15,200	\$15,200	\$15,200	\$15,200	\$15,200	\$15,200	\$15,200	\$15,200	\$15,200	\$15,200	\$15,200	\$15,200	\$15,200	\$15,200	\$15,200	\$15,200	\$15,200	\$15,200		
4.16.04	Dust Control	\$0	\$0	\$0	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300		
4.07.08.02	Air Monitoring	\$0	\$0	\$0	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300		
4.05.01.03.12	Decontamination/Wash Station	\$0	\$0	\$0	\$423,700	\$165,100	\$165,100	\$165,100	\$165,100	\$165,100	\$165,100	\$165,100	\$165,100	\$165,100	\$165,100	\$165,100	\$165,100	\$165,100	\$165,100	\$165,100	\$165,100	\$165,100	\$165,100	\$165,100		
4.05.9x	Street Sweeping	\$0	\$0	\$0	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100		
8.01.03.11	Traffic Control	\$0	\$0	\$0	\$1,547,800	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600		
Multiple ECES Codes	Excavation, Hauling and Disposal																									
4.05.9x	Construction Survey and Staking	\$0	\$0	\$0	\$5,400	\$5,400	\$5,400	\$5,400	\$5,400	\$5,400	\$5,400	\$5,400	\$5,400	\$5,400	\$5,400	\$5,400	\$5,400	\$5,400	\$5,400	\$5,400	\$5,400	\$5,400	\$5,400	\$5,400		
4.05.05.01	Excavation	\$0	\$0	\$0	\$318,400	\$318,400	\$318,400	\$318,400	\$318,400	\$318,400	\$318,400	\$318,400	\$318,400	\$318,400	\$318,400	\$318,400	\$318,400	\$318,400	\$318,400	\$318,400	\$318,400	\$318,400	\$318,400	\$318,400		
4.32.11.05	Hauling	\$0	\$0	\$0	\$5,239,200	\$5,239,200	\$5,239,200	\$5,239,200	\$5,239,200	\$5,239,200	\$5,239,200	\$5,239,200	\$5,239,200	\$5,239,200	\$5,239,200	\$5,239,200	\$5,239,200	\$5,239,200	\$5,239,200	\$5,239,200	\$5,239,200	\$5,239,200	\$5,239,200	\$5,239,200		
4.07.11	Confirmation Sampling	\$0	\$0	\$0	\$19,800	\$19,800	\$19,800	\$19,800	\$19,800	\$19,800	\$19,800	\$19,800	\$19,800	\$19,800	\$19,800	\$19,800	\$19,800	\$19,800	\$19,800	\$19,800	\$19,800	\$19,800	\$19,800	\$19,800		
4.08.04	Sample Analysis	\$0	\$0	\$0	\$328,300	\$328,300	\$328,300	\$328,300	\$328,300	\$328,300	\$328,300	\$328,300	\$328,300	\$328,300	\$328,300	\$328,300	\$328,300	\$328,300	\$328,300	\$328,300	\$328,300	\$328,300	\$328,300	\$328,300		
4.33.08.05	Disposal	\$0	\$0	\$0	\$2,918,900	\$2,918,900	\$2,918,900	\$2,918,900	\$2,918,900	\$2,918,900	\$2,918,900	\$2,918,900	\$2,918,900	\$2,918,900	\$2,918,900	\$2,918,900	\$2,918,900	\$2,918,900	\$2,918,900	\$2,918,900	\$2,918,900	\$2,918,900	\$2,918,900	\$2,918,900		
4.05.9x	Excavation of Underground Utilities (D&D)	\$0	\$0	\$0	\$32,000	\$32,000	\$32,000	\$32,000	\$32,000	\$32,000	\$32,000	\$32,000	\$32,000	\$32,000	\$32,000	\$32,000	\$32,000	\$32,000	\$32,000	\$32,000	\$32,000	\$32,000	\$32,000	\$32,000		
4.05.05	Backfill																									
4.05.05.06	Backfill from Offsite Sources	\$0	\$0	\$0	\$2,807,000	\$2,807,000	\$2,807,000	\$2,807,000	\$2,807,000	\$2,807,000	\$2,807,000	\$2,807,000	\$2,807,000	\$2,807,000	\$2,807,000	\$2,807,000	\$2,807,000	\$2,807,000	\$2,807,000	\$2,807,000	\$2,807,000	\$2,807,000	\$2,807,000	\$2,807,000		
4.05.02	Restoration																									
4.05.02.05	Seeding	\$0	\$0	\$0	\$4,900	\$4,900	\$4,900	\$4,900	\$4,900	\$4,900	\$4,900	\$4,900	\$4,900	\$4,900	\$4,900	\$4,900	\$4,900	\$4,900	\$4,900	\$4,900	\$4,900	\$4,900	\$4,900	\$4,900		
4.05.08	Allowance for Street/Pavement Repair	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
6.21.08	Post-Construction Monitoring	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
6.02.04.06	Evaluating and Updating Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
	Subtotal	\$0	\$0	\$0	\$17,500,000	\$15,718,000	\$15,718,000	\$15,718,000	\$15,718,000	\$15,718,000	\$15,718,000	\$15,718,000	\$15,718,000	\$15,718,000	\$15,718,000	\$15,718,000	\$15,718,000	\$15,718,000	\$15,718,000	\$15,718,000	\$15,718,000	\$15,718,000	\$15,718,000	\$15,718,000		
4.04.11	Remedial Design (15%)	\$0	\$0	\$0	\$2,625,000	\$2,358,000	\$2,358,000	\$2,358,000	\$2,358,000	\$2,358,000	\$2,358,000	\$2,358,000	\$2,358,000	\$2,358,000	\$2,358,000	\$2,358,000	\$2,358,000	\$2,358,000	\$2,358,000	\$2,358,000	\$2,358,000	\$2,358,000	\$2,358,000	\$2,358,000		
4.02.09	Construction Management (10%)	\$0	\$0	\$0	\$1,750,000	\$1,572,000	\$1,572,000	\$1,572,000	\$1,572,000	\$1,572,000	\$1,572,000	\$1,572,000	\$1,572,000	\$1,572,000	\$1,572,000	\$1,572,000	\$1,572,000	\$1,572,000	\$1,572,000	\$1,572,000	\$1,572,000	\$1,572,000	\$1,572,000	\$1,572,000		
4.02.01	Project Management (5%)	\$0	\$0	\$0	\$875,000	\$786,000	\$786,000	\$786,000	\$786,000	\$786,000	\$786,000	\$786,000	\$786,000	\$786,000	\$786,000	\$786,000	\$786,000	\$786,000	\$786,000	\$786,000	\$786,000	\$786,000	\$786,000	\$786,000		
6.02.01	Project Management (5%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
6.07.9x	Construction Coordination (1%)	\$0	\$0	\$0	\$175,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000		
4.02.14	Health and Safety (1.5%)	\$0	\$0	\$0	\$263,000	\$236,000	\$236,000	\$236,000	\$236,000	\$236,000	\$236,000	\$236,000	\$236,000	\$236,000	\$236,000	\$236,000	\$236,000	\$236,000	\$236,000	\$236,000	\$236,000	\$236,000	\$236,000	\$236,000		
4.02.01.01	Program Management (1%)	\$0	\$0	\$0	\$175,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000		
4.02.03	Regulatory Costs (1%)	\$0	\$0	\$0	\$175,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000	\$158,000		
	Project Cost (without Contingency)	\$0	\$0	\$0	\$23,538,000	\$21,144,000	\$21,144,000	\$21,144,000	\$21,144,000	\$21,144,000	\$21,144,000	\$21,144,000	\$21,144,000	\$21,144,000	\$21,144,000	\$21,144,000	\$21,144,000	\$21,144,000	\$21,144,000	\$21,144,000	\$21,144,000	\$21,144,000	\$21,144,000	\$21,144,000		
8.01.03.13	Contingency 30% (DOE Held)	\$0	\$0	\$0	\$7,062,000	\$6,344,000	\$6,344,000																			

TABLE CS-2B - Current Cost (CY 2018)

Alternative Cleanup to AOC Look-Up Table Values Alternative		LIFE-CYCLE COST ESTIMATE - CURRENT (CY 2018) DOLLARS															
Site:	SSFL Area IV/NBZ	This alternative provides protection of human health and environment through excavation and offsite disposal of soils containing radionuclides and chemicals exceeding the AOC LUT values. Under this alternative, soil excavation and removal would be performed until all of the soil requiring removal to meet radionuclides and chemical AOC LUT values is accomplished. This alternative would meet the requirements for the frequency of truck hauling for importing of materials as well as exporting excavated contaminated soil for disposal set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 26 years, with anticipated start in year 2021 and completion in year 2046.															
Location:	Ventura County, California																
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates																
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]																
Cost Estimate Classification:	Class 4, Study or Feasibility (Level of Definition: 1% to 15%)																
Base Year:	2018																
Date of Estimate:	September 2018																

		LIFE-CYCLE COST IN CURRENT DOLLARS															
ECES Code	Description	Calendar Year (CY)															
		Area IV Soil Remediation				Periodic Surveillance and Long-Term Maintenance (30 Years)											
		2043	2044	2045	2046	2047	2048 - 2051	2052	2053 - 2056	2057	2058 - 2061	2062	2063 - 2066	2067	2068 - 2071	2072	2071 - 2076
4.02.04	Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.02	Community Awareness Activities	\$20,000	\$20,000	\$20,000	\$20,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.02.02	Community Awareness Activities	\$0	\$0	\$0	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0
4.9x	General Conditions																
Multiple ECES Codes	Workplans and Submittals	\$18,000	\$18,000	\$18,000	\$63,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8.01.04	Home Office Personnel	\$111,400	\$111,400	\$111,400	\$111,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.01.01.15	Job Site Personnel	\$1,717,500	\$1,717,500	\$1,717,500	\$1,717,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.03	Temporary Facilities	\$40,600	\$40,600	\$40,600	\$56,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.01	Mobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.36.04	Demobilization of Construction Equipment	\$0	\$0	\$0	\$70,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.9x	Best Management Practices - Structural																
8.01.01	SWPPP Implementation and Maintenance	\$8,900	\$8,900	\$8,900	\$8,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.02	Temporary Erosion and Sediment Control	\$55,200	\$55,200	\$55,200	\$55,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Existing Tree Protection	\$15,200	\$15,200	\$15,200	\$15,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.16.04	Dust Control	\$361,300	\$361,300	\$361,300	\$361,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.07.08.02	Air Monitoring	\$31,300	\$31,300	\$31,300	\$31,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.03.12	Decontamination/Wash Station	\$165,100	\$165,100	\$165,100	\$165,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Street Sweeping	\$240,100	\$240,100	\$240,100	\$240,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8.01.03.11	Traffic Control	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Multiple ECES Codes	Excavation, Hauling and Disposal																
4.05.9x	Construction Survey and Staking	\$5,400	\$5,400	\$5,400	\$5,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.05.01	Excavation	\$318,400	\$318,400	\$318,400	\$318,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.32.11.05	Hauling	\$5,239,200	\$5,239,200	\$5,239,200	\$5,239,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.07.11	Confirmation Sampling	\$19,800	\$19,800	\$19,800	\$19,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.08.04	Sample Analysis	\$328,300	\$328,300	\$328,300	\$328,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.33.08.05	Disposal	\$2,918,900	\$2,918,900	\$2,918,900	\$2,918,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Excavation of Underground Utilities (D&D)	\$32,000	\$32,000	\$32,000	\$32,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.05	Backfill																
4.05.05.06	Backfill from Offsite Sources	\$2,807,000	\$2,807,000	\$2,807,000	\$2,807,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.02	Restoration																
4.05.02.05	Seeding	\$4,900	\$4,900	\$4,900	\$4,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.08	Allowance for Street/Pavement Repair	\$0	\$0	\$0	\$631,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.21.08	Post-Construction Monitoring	\$0	\$0	\$0	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0
6.02.04.06	Evaluating and Updating Institutional Controls	\$0	\$0	\$0	\$0	\$10,000	\$0	\$10,000	\$0	\$10,000	\$0	\$10,000	\$0	\$10,000	\$0	\$10,000	\$0
	Subtotal	\$15,718,000	\$15,718,000	\$15,718,000	\$16,482,000	\$280,000	\$0	\$280,000	\$0	\$280,000	\$0	\$280,000	\$0	\$280,000	\$0	\$280,000	\$0
4.04.11	Remedial Design (15%)	\$2,358,000	\$2,358,000	\$2,358,000	\$2,473,000	\$42,000	\$0	\$42,000	\$0	\$42,000	\$0	\$42,000	\$0	\$42,000	\$0	\$42,000	\$0
4.02.09	Construction Management (10%)	\$1,572,000	\$1,572,000	\$1,572,000	\$1,649,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.01	Project Management (5%)	\$786,000	\$786,000	\$786,000	\$825,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.02.01	Project Management (5%)	\$0	\$0	\$0	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0
6.07.9x	Construction Coordination (1%)	\$158,000	\$158,000	\$158,000	\$165,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.14	Health and Safety (1.5%)	\$236,000	\$236,000	\$236,000	\$248,000	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0
4.02.01.01	Program Management (1%)	\$158,000	\$158,000	\$158,000	\$165,000	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0
4.02.03	Regulatory Costs (1%)	\$158,000	\$158,000	\$158,000	\$165,000	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0
	Project Cost (without Contingency)	\$21,144,000	\$21,144,000	\$21,144,000	\$22,172,000	\$347,000	\$0	\$347,000	\$0	\$347,000	\$0	\$347,000	\$0	\$347,000	\$0	\$347,000	\$0
8.01.03.13	Contingency 30% (DOE Held)	\$6,344,000	\$6,344,000	\$6,344,000	\$6,652,000	\$105,000	\$0	\$105,000	\$0	\$105,000	\$0	\$105,000	\$0	\$105,000	\$0	\$105,000	\$0
8.01.03.13	Management Reserve 1% (Contractor Held)	\$212,000	\$212,000	\$212,000	\$222,000	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0
	Total Project Cost (TPC) - Current Dollars	\$27,700,000	\$27,700,000	\$27,700,000	\$29,046,000	\$456,000	\$0	\$456,000	\$0	\$456,000	\$0	\$456,000	\$0	\$456,000	\$0	\$456,000	\$0

- The draft detailed cost estimates are based primarily on the methodology as described in <i>Cost Estimating Guide, DOE G 413.3-21A</i> . - Specific assumptions used in preparation of the detailed cost estimates are included in the Basis of Estimate (BOE).	AREA IV SOIL REMOVAL AND DISPOSAL				PERIODIC SURVEILLANCE AND LONG-TERM MAINTENANCE				TOTAL LIFE-CYCLE COST - CURRENT (CY 2018) COST				(1) Cost presented for each ECES Code is presented on "Table CS-2". Cost for each ECES Code is the summation of costs under same ECES Code as presented on "Table CS-2" within the respective year. (2) Costs subtotals and totals are rounded-up to the nearest \$1,000.
	TPC (WITHOUT CONTINGENCY)		TPC (CURRENT DOLLARS)		TPC (WITHOUT CONTINGENCY)		TPC (CURRENT DOLLARS)		LCC (WITHOUT CONTINGENCY)		LCC (CURRENT DOLLARS)		
	\$553,166,000		\$724,682,000		\$2,082,000		\$2,736,000		\$555,248,000		\$727,418,000		

TABLE CS-2A - Future Cost

Alternative		LIFE-CYCLE COST ESTIMATE - FUTURE DOLLARS																								
Cleanup to AOC Look-Up Table Values Alternative																										
Site:	SSFL Area IV/NBZ	This alternative provides protection of human health and environment through excavation and offsite disposal of soils containing radionuclides and chemicals exceeding the AOC LUT values. Under this alternative, soil excavation and removal would be performed until all of the soil requiring removal to meet radionuclides and chemical AOC LUT values is accomplished. This alternative would meet the requirements for the frequency of truck hauling for importing of materials as well as exporting excavated contaminated soil for disposal set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 26 years, with anticipated start in year 2021 and completion in year 2046.																								
Location:	Ventura County, California																									
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates																									
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]																									
Cost Estimate Classification:	Class 4, Study or Feasibility (Level of Definition: 1% to 15%)	* It is assumed that building demolition and disposal are NOT within the scope of this FCBA and are therefore not included in the cost estimate. It is assumed that building demolition/disposal and soil removal/disposal would be performed in a sequential manner where building removal would occur for 2 years (beginning in year 2019), followed by soil removal. DOE would demolish its remaining 18 structures within Area IV/NBZ and dispose of or recycle uncontaminated materials off site.																								
Base Year:	2018																									
Date of Estimate:	September 2018																									
		LIFE-CYCLE COST IN FUTURE DOLLARS																								
ECES Code	Description	Calendar Year (CY)																								
		Base Year	Area IV Building Demolition ¹			Area IV Soil Remediation																				
		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
4.02.04	Institutional Controls	\$0	\$0	\$0	\$82,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.02	Community Awareness Activities	\$0	\$0	\$0	\$54,700	\$22,600	\$23,200	\$23,900	\$24,600	\$25,400	\$26,100	\$26,900	\$27,700	\$28,600	\$29,400	\$30,300	\$31,200	\$32,100	\$33,100	\$34,100	\$35,100	\$36,200	\$37,300	\$38,400	\$39,500	\$40,700
6.02.02	Community Awareness Activities	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.9x	General Conditions																									
Multiple ECES Codes	Workplans and Submittals	\$0	\$0	\$0	\$208,600	\$20,300	\$20,900	\$21,500	\$22,200	\$22,900	\$23,500	\$24,200	\$25,000	\$25,700	\$26,500	\$27,300	\$28,100	\$28,900	\$29,800	\$30,700	\$31,600	\$32,600	\$33,500	\$34,500	\$35,600	\$36,600
8.01.04	Home Office Personnel	\$0	\$0	\$0	\$121,800	\$125,400	\$129,200	\$133,100	\$137,100	\$141,200	\$145,400	\$149,800	\$154,200	\$158,900	\$163,600	\$168,600	\$173,600	\$178,800	\$184,200	\$189,700	\$195,400	\$201,200	\$207,300	\$213,500	\$219,900	\$226,500
4.02.01.01.15	Job Site Personnel	\$0	\$0	\$0	\$1,876,800	\$1,933,100	\$1,991,100	\$2,050,900	\$2,112,400	\$2,175,800	\$2,241,000	\$2,308,200	\$2,377,400	\$2,448,900	\$2,522,200	\$2,597,900	\$2,675,900	\$2,756,100	\$2,838,700	\$2,923,900	\$3,011,700	\$3,102,000	\$3,195,100	\$3,291,000	\$3,389,700	\$3,491,400
4.05.01.03	Temporary Facilities	\$0	\$0	\$0	\$90,500	\$45,700	\$47,100	\$48,500	\$50,000	\$51,500	\$53,000	\$54,600	\$56,200	\$57,900	\$59,700	\$61,500	\$63,300	\$65,200	\$67,200	\$69,200	\$71,200	\$73,400	\$75,600	\$77,800	\$80,200	\$82,600
4.05.01.01	Mobilization of Construction Equipment	\$0	\$0	\$0	\$70,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.36.04	Demobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.9x	Best Management Practices - Structural																									
8.01.01	SWPPP Implementation and Maintenance	\$0	\$0	\$0	\$26,200	\$10,100	\$10,400	\$10,700	\$11,000	\$11,300	\$11,700	\$12,000	\$12,400	\$12,700	\$13,100	\$13,500	\$13,900	\$14,300	\$14,800	\$15,200	\$15,700	\$16,100	\$16,600	\$17,100	\$17,600	\$18,100
4.05.02	Temporary Erosion and Sediment Control	\$0	\$0	\$0	\$915,100	\$62,200	\$64,000	\$66,000	\$67,900	\$70,000	\$72,100	\$74,200	\$76,500	\$78,800	\$81,100	\$83,500	\$86,100	\$88,600	\$91,300	\$94,000	\$96,800	\$99,700	\$102,700	\$105,800	\$109,000	\$112,300
4.05.9x	Existing Tree Protection	\$0	\$0	\$0	\$74,900	\$17,200	\$17,700	\$18,200	\$18,700	\$19,300	\$19,900	\$20,500	\$21,100	\$21,700	\$22,400	\$23,000	\$23,700	\$24,400	\$25,200	\$25,900	\$26,700	\$27,500	\$28,300	\$29,200	\$30,000	\$30,900
4.16.04	Dust Control	\$0	\$0	\$0	\$394,800	\$406,700	\$418,900	\$431,500	\$444,400	\$457,700	\$471,500	\$485,600	\$500,200	\$515,200	\$530,600	\$546,600	\$563,000	\$579,800	\$597,200	\$615,100	\$633,600	\$652,600	\$672,200	\$692,300	\$713,100	\$734,500
4.07.08.02	Air Monitoring	\$0	\$0	\$0	\$34,300	\$35,300	\$36,300	\$37,400	\$38,500	\$39,700	\$40,900	\$42,100	\$43,400	\$44,700	\$46,000	\$47,400	\$48,800	\$50,300	\$51,800	\$53,300	\$54,900	\$56,600	\$58,300	\$60,000	\$61,800	\$63,700
4.05.01.03.12	Decontamination/Wash Station	\$0	\$0	\$0	\$463,000	\$185,900	\$191,500	\$197,200	\$203,100	\$209,200	\$215,500	\$228,600	\$235,400	\$242,500	\$249,800	\$257,300	\$265,000	\$272,900	\$281,100	\$289,600	\$298,200	\$307,200	\$316,400	\$325,900	\$335,700	\$345,700
4.05.9x	Street Sweeping	\$0	\$0	\$0	\$262,400	\$270,300	\$278,400	\$286,800	\$295,300	\$304,200	\$313,300	\$322,700	\$332,400	\$342,400	\$352,600	\$363,200	\$374,100	\$385,300	\$396,900	\$408,800	\$421,100	\$433,700	\$446,700	\$460,100	\$473,900	\$488,100
8.01.03.11	Traffic Control	\$0	\$0	\$0	\$1,691,300	\$1,416,600	\$1,459,100	\$1,502,900	\$1,548,000	\$1,594,400	\$1,642,300	\$1,691,500	\$1,742,200	\$1,794,600	\$1,848,300	\$1,903,800	\$1,960,900	\$2,019,700	\$2,080,300	\$2,142,700	\$2,207,000	\$2,273,200	\$2,341,400	\$2,411,700	\$2,484,000	\$2,558,500
Multiple ECES Codes	Excavation, Hauling and Disposal																									
4.05.9x	Construction Survey and Staking	\$0	\$0	\$0	\$6,000	\$6,100	\$6,300	\$6,500	\$6,700	\$6,900	\$7,100	\$7,300	\$7,500	\$7,700	\$8,000	\$8,200	\$8,500	\$8,700	\$9,000	\$9,200	\$9,500	\$9,800	\$10,100	\$10,400	\$10,700	\$11,000
4.05.05.01	Excavation	\$0	\$0	\$0	\$348,000	\$358,400	\$369,200	\$380,300	\$391,700	\$403,400	\$415,500	\$427,900	\$440,800	\$454,000	\$467,600	\$481,700	\$496,100	\$511,000	\$526,300	\$542,100	\$558,400	\$575,100	\$592,400	\$610,100	\$628,400	\$647,300
4.32.11.05	Hauling	\$0	\$0	\$0	\$5,724,900	\$5,896,800	\$6,073,900	\$6,256,200	\$6,443,700	\$6,637,100	\$6,836,200	\$7,041,000	\$7,252,200	\$7,470,100	\$7,693,800	\$7,924,900	\$8,162,700	\$8,407,400	\$8,659,400	\$8,919,300	\$9,187,000	\$9,462,600	\$9,746,500	\$10,038,900	\$10,340,100	\$10,650,300
4.07.11	Confirmation Sampling	\$0	\$0	\$0	\$21,700	\$22,300	\$23,000	\$23,700	\$24,400	\$25,100	\$25,900	\$26,700	\$27,500	\$28,300	\$29,100	\$30,000	\$30,900	\$31,800	\$32,800	\$33,800	\$34,800	\$35,800	\$36,900	\$38,000	\$39,100	\$40,300
4.08.04	Sample Analysis	\$0	\$0	\$0	\$358,800	\$369,600	\$380,600	\$392,100	\$403,800	\$415,900	\$428,400	\$441,300	\$454,500	\$468,100	\$482,200	\$496,600	\$511,500	\$526,900	\$542,700	\$558,900	\$575,700	\$593,000	\$610,800	\$629,100	\$648,000	\$667,400
4.33.08.05	Disposal	\$0	\$0	\$0	\$3,189,500	\$3,285,300	\$3,383,900	\$3,485,500	\$3,590,000	\$3,697,700	\$3,808,600	\$3,922,800	\$4,040,400	\$4,161,800	\$4,286,500	\$4,415,200	\$4,547,700	\$4,684,000	\$4,824,400	\$4,969,200	\$5,118,300	\$5,271,900	\$5,430,100	\$5,593,000	\$5,760,800	\$5,933,600
4.05.9x	Excavation of Underground Utilities (D&D)	\$0	\$0	\$0	\$35,000	\$36,100	\$37,100	\$38,300	\$39,400	\$40,600	\$41,800	\$43,100	\$44,300	\$45,700	\$47,000	\$48,500	\$49,900	\$51,400	\$52,900	\$54,500	\$56,200	\$57,800	\$59,600	\$61,400	\$63,200	\$65,100
4.05.05	Backfill																									
4.05.05.06	Backfill from Offsite Sources	\$0	\$0	\$0	\$3,067,300	\$3,159,300	\$3,254,200	\$3,351,900	\$3,452,400	\$3,556,000	\$3,662,600	\$3,772,400	\$3,885,500	\$4,002,300	\$4,122,100	\$4,245,900	\$4,373,400	\$4,504,400	\$4,639,500	\$4,778,700	\$4,922,100	\$5,069,800	\$5,221,900	\$5,378,500	\$5,539,900	\$5,706,100
4.05.02	Restoration																									
4.05.02.05	Seeding	\$0	\$0	\$0	\$5,400	\$5,600	\$5,700	\$5,900	\$6,100	\$6,300	\$6,400	\$6,600	\$6,800	\$7,000	\$7,200	\$7,500	\$7,700	\$7,900	\$8,100	\$8,400	\$8,600	\$8,900	\$9,200	\$9,400	\$9,700	\$10,000
4.05.08	Allowance for Street/Pavement Repair	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
6.21.08	Post-Construction Monitoring	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
6.02.04.06	Evaluating and Updating Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
	Subtotal	\$0	\$0	\$0	\$19,124,000	\$17,691,000	\$18,222,000	\$18,769,000	\$19,332,000	\$19,912,000	\$20,509,000	\$21,124,000	\$21,757,000	\$22,411,000	\$23,082,000	\$23,775,000	\$24,489,000	\$25,222,000	\$25,979,000	\$26,758,000	\$27,561,000	\$28,388,000	\$29,240,000	\$30,117,000	\$31,021,000	\$31,951,000
4.04.11	Remedial Design (15%)	\$0	\$0	\$0	\$2,869,000	\$2,654,000	\$2,734,000	\$2,816,000	\$2,900,000	\$2,987,000	\$3,077,000	\$3,169,000	\$3,264,000	\$3,362,000	\$3,463,000	\$3,567,000	\$3,674,000	\$3,784,000	\$3,897,000	\$4,014,000	\$4,135,000	\$4,259,000	\$4,386,000	\$4,518,000	\$4,654,000	\$4,793,000
4.02.09	Construction Management (10%)	\$0	\$0	\$0	\$1,913,000	\$1,770,000	\$1,823,000	\$1,877,000	\$1,934,000	\$1,992,000	\$2,051,000	\$2,113,000	\$2,176,000	\$2,242,000	\$2,309,000	\$2,378,000	\$2,449,000	\$2,523,000	\$2,598,000	\$2,676,000	\$2,757,000	\$2,839,000	\$2,924,000	\$3,012,000	\$3,103,000	\$3,196,000
4.02.01	Project Management (5%)	\$0	\$0	\$0	\$957,000	\$885,000	\$912,000	\$939,000	\$967,000	\$996,000	\$1,026,000	\$1,057,000	\$1,088,000	\$1,121,000	\$1,155,000	\$1,189,000	\$1,225,000	\$1,262,000	\$1,299,000	\$1,338,000	\$1,379,000	\$1,420,000	\$1,462,000	\$1,506,000	\$1,552,000	\$1,598,000
6.02.01	Project Management (5%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
6.07.9x	Construction Coordination (1%)	\$0	\$0	\$0	\$192,000	\$177,000	\$183,000	\$188,000	\$194,000	\$200,000	\$206,000	\$212,000	\$218,000	\$225,000	\$231,000	\$238,000	\$245,000	\$253,000	\$260,000	\$268,000	\$276,000	\$284,000	\$293,000	\$302,000	\$311,000	\$320,000
4.02.14	Health and Safety (1.5%)	\$0	\$0	\$0	\$287,000	\$266,000	\$274,000	\$282,000	\$290,000	\$299,000	\$308,000	\$317,000	\$327,000	\$337,000	\$347,000	\$357,000	\$368,000	\$379,000	\$390,000	\$402,000	\$414,000	\$426,000	\$439,000	\$452,000	\$466,000	\$480,000
4.02.01.01	Program Management (1%)	\$0	\$0	\$0	\$192,000	\$177,000	\$183,000	\$188,000	\$194,000	\$200,000	\$206,000	\$212,000	\$218,000	\$225,000	\$231,000	\$238,000	\$245,000	\$253,000	\$260,000	\$268,000	\$276,000	\$284,000	\$293,000	\$302,000	\$311,000	\$320,000
4.02.03	Regulatory Costs (1%)	\$0	\$0	\$0	\$192,000	\$177,000	\$183,000	\$188,000	\$194,000	\$200,000	\$206,000	\$212,000	\$218,000	\$225,000	\$231,000	\$238,000	\$245,000	\$253,000	\$260,000	\$268,000	\$276,000	\$284,000	\$293,000	\$302,000	\$311,000	\$320,000
	Project Cost (without Contingency)	\$0	\$0	\$0	\$25,726,000	\$23,797,000	\$24,514,000	\$25,247,000	\$26,005,00																	

TABLE CS-2B - Future Cost

Alternative		LIFE-CYCLE COST ESTIMATE - FUTURE DOLLARS															
Cleanup to AOC Look-Up Table Values Alternative																	
Site:	SSFL Area IV/NBZ	This alternative provides protection of human health and environment through excavation and offsite disposal of soils containing radionuclides and chemicals exceeding the AOC LUT values. Under this alternative, soil excavation and removal would be performed until all of the soil requiring removal to meet radionuclides and chemical AOC LUT values is accomplished. This alternative would meet the requirements for the frequency of truck hauling for importing of materials as well as exporting excavated contaminated soil for disposal set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 26 years, with anticipated start in year 2021 and completion in year 2046.															
Location:	Ventura County, California																
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates																
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]																
Cost Estimate Classification:	Class 4, Study or Feasibility (Level of Definition: 1% to 15%)																
Base Year:	2018																
Date of Estimate:	September 2018																
LIFE-CYCLE COST IN FUTURE DOLLARS																	
ECES Code	Description	Calendar Year (CY)															
		Area IV Soil Remediation				Periodic Surveillance and Long-Term Maintenance (30 Years)											
		2043	2044	2045	2046	2047	2048 - 2051	2052	2053 - 2056	2057	2058 - 2061	2062	2063 - 2066	2067	2068 - 2071	2072	2071 - 2076
4.02.04	Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.02	Community Awareness Activities	\$41,900	\$43,200	\$45,800	\$47,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.02.02	Community Awareness Activities	\$0	\$0	\$0	\$0	\$48,600	\$0	\$56,300	\$0	\$65,300	\$0	\$75,700	\$0	\$87,700	\$0	\$101,700	\$0
4.9x	General Conditions																
Multiple ECES Codes	Workplans and Submittals	\$37,700	\$38,900	\$41,200	\$150,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8.01.04	Home Office Personnel	\$233,300	\$240,300	\$254,900	\$262,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.01.01.15	Job Site Personnel	\$3,596,200	\$3,704,000	\$3,929,500	\$4,047,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.03	Temporary Facilities	\$85,100	\$87,600	\$92,900	\$133,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.01	Mobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.36.04	Demobilization of Construction Equipment	\$0	\$0	\$0	\$166,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.9x	Best Management Practices - Structural																
8.01.01	SWPPP Implementation and Maintenance	\$18,700	\$19,200	\$20,400	\$21,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.02	Temporary Erosion and Sediment Control	\$115,600	\$119,100	\$126,300	\$130,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Existing Tree Protection	\$31,900	\$32,800	\$34,800	\$35,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.16.04	Dust Control	\$756,500	\$779,200	\$826,700	\$851,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.07.08.02	Air Monitoring	\$65,600	\$67,600	\$71,700	\$73,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.03.12	Decontamination/Wash Station	\$345,700	\$356,100	\$377,800	\$389,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Street Sweeping	\$502,800	\$517,800	\$549,400	\$565,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8.01.03.11	Traffic Control	\$2,635,300	\$2,714,300	\$2,879,600	\$2,966,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Multiple ECES Codes	Excavation, Hauling and Disposal																
4.05.9x	Construction Survey and Staking	\$11,400	\$11,700	\$12,400	\$12,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.05.01	Excavation	\$666,700	\$686,700	\$728,500	\$750,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.32.11.05	Hauling	\$10,969,900	\$11,298,900	\$11,986,800	\$12,346,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.07.11	Confirmation Sampling	\$41,500	\$42,800	\$45,400	\$46,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.08.04	Sample Analysis	\$687,400	\$708,100	\$751,200	\$773,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.33.08.05	Disposal	\$6,111,600	\$6,294,900	\$6,678,200	\$6,878,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Excavation of Underground Utilities (D&D)	\$67,100	\$69,100	\$73,300	\$75,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.05	Backfill																
4.05.05.06	Backfill from Offsite Sources	\$5,877,300	\$6,053,600	\$6,422,200	\$6,615,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.02	Restoration																
4.05.02.05	Seeding	\$10,300	\$10,600	\$11,300	\$11,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.08	Allowance for Street/Pavement Repair	\$0	\$0	\$0	\$1,488,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.21.08	Post-Construction Monitoring	\$0	\$0	\$0	\$0	\$606,900	\$0	\$703,500	\$0	\$815,500	\$0	\$945,400	\$0	\$1,096,000	\$0	\$1,270,600	\$0
6.02.04.06	Evaluating and Updating Institutional Controls	\$0	\$0	\$0	\$0	\$24,300	\$0	\$28,200	\$0	\$32,700	\$0	\$37,900	\$0	\$43,900	\$0	\$50,900	\$0
	Subtotal	\$32,910,000	\$33,897,000	\$35,961,000	\$38,841,000	\$680,000	\$0	\$788,000	\$0	\$914,000	\$0	\$1,059,000	\$0	\$1,228,000	\$0	\$1,424,000	\$0
4.04.11	Remedial Design (15%)	\$4,937,000	\$5,085,000	\$5,395,000	\$5,827,000	\$102,000	\$0	\$119,000	\$0	\$138,000	\$0	\$159,000	\$0	\$185,000	\$0	\$214,000	\$0
4.02.09	Construction Management (10%)	\$3,291,000	\$3,390,000	\$3,597,000	\$3,885,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.01	Project Management (5%)	\$1,646,000	\$1,695,000	\$1,799,000	\$1,943,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.02.01	Project Management (5%)	\$0	\$0	\$0	\$0	\$34,000	\$0	\$40,000	\$0	\$46,000	\$0	\$53,000	\$0	\$62,000	\$0	\$72,000	\$0
6.07.9x	Construction Coordination (1%)	\$330,000	\$339,000	\$360,000	\$389,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.14	Health and Safety (1.5%)	\$494,000	\$509,000	\$540,000	\$583,000	\$11,000	\$0	\$12,000	\$0	\$14,000	\$0	\$16,000	\$0	\$19,000	\$0	\$22,000	\$0
4.02.01.01	Program Management (1%)	\$330,000	\$339,000	\$360,000	\$389,000	\$7,000	\$0	\$8,000	\$0	\$10,000	\$0	\$11,000	\$0	\$13,000	\$0	\$15,000	\$0
4.02.03	Regulatory Costs (1%)	\$330,000	\$339,000	\$360,000	\$389,000	\$7,000	\$0	\$8,000	\$0	\$10,000	\$0	\$11,000	\$0	\$13,000	\$0	\$15,000	\$0
	Project Cost (without Contingency)	\$44,268,000	\$45,593,000	\$48,372,000	\$52,246,000	\$841,000	\$0	\$975,000	\$0	\$1,132,000	\$0	\$1,309,000	\$0	\$1,520,000	\$0	\$1,762,000	\$0
8.01.03.13	Contingency 30% (DOE Held)	\$13,281,000	\$13,678,000	\$14,512,000	\$15,674,000	\$253,000	\$0	\$293,000	\$0	\$340,000	\$0	\$393,000	\$0	\$456,000	\$0	\$529,000	\$0
8.01.03.13	Management Reserve 1% (Contractor Held)	\$443,000	\$456,000	\$484,000	\$523,000	\$9,000	\$0	\$10,000	\$0	\$12,000	\$0	\$14,000	\$0	\$16,000	\$0	\$18,000	\$0
	Total Project Cost (TPC) - Future Dollars	\$57,992,000	\$59,727,000	\$63,368,000	\$68,443,000	\$1,103,000	\$0	\$1,278,000	\$0	\$1,484,000	\$0	\$1,716,000	\$0	\$1,992,000	\$0	\$2,309,000	\$0
	- The draft detailed cost estimates are based primarily on the methodology as described in <i>Cost Estimating Guide, DOE G 413.3-21A</i> .	AREA IV SOIL REMOVAL AND DISPOSAL				PERIODIC SURVEILLANCE AND LONG-TERM MAINTENANCE				TOTAL LIFE-CYCLE COST - FUTURE COST				(1) Future dollars are calculated by escalating current dollar costs from "Table CS-2 - Current Cost (CY 2018)" using annual escalation rate factors presented in "Table LCC-AERFT". (2) Costs subtotals and totals are rounded-up to the nearest \$1,000.			
	- Specific assumptions used in preparation of the detailed cost estimates are included in the Basis of Estimate (BOE).	TPC (WITHOUT CONTINGENCY)		TPC (FUTURE DOLLARS)		TPC (WITHOUT CONTINGENCY)		TPC (FUTURE DOLLARS)		LCC (WITHOUT CONTINGENCY)		LCC (FUTURE DOLLARS)					
		\$898,612,000		\$1,177,204,000		\$7,539,000		\$9,882,000		\$906,151,000		\$1,187,086,000					

TABLE CS-2A - Present Worth

LIFE-CYCLE COST ESTIMATE - PRESENT WORTH DOLLARS

Alternative Cleanup to AOC Look-Up Table Values Alternative	SSFL Area IV/NBZ Ventura County, California Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range] Class 4, Study or Feasibility (Level of Definition: 1% to 15%) 2018 September 2018	This alternative provides protection of human health and environment through excavation and offsite disposal of soils containing radionuclides and chemicals exceeding the AOC LUT values. Under this alternative, soil excavation and removal would be performed until all of the soil requiring removal to meet radionuclides and chemical AOC LUT values is accomplished. This alternative would meet the requirements for the frequency of truck hauling for importing of materials as well as exporting excavated contaminated soil for disposal set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 26 years, with anticipated start in year 2021 and completion in year 2046. It is assumed that building demolition and disposal are NOT within the scope of this FCBA and are therefore not included in the cost estimate. It is assumed that building demolition/disposal and soil removal/disposal would be performed in a sequential manner where building removal would occur for 2 years (beginning in year 2019), followed by soil removal. DOE would demolish its remaining 18 structures within Area IV/NBZ and dispose of or recycle uncontaminated materials off site.
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LIFE-CYCLE COST IN PRESENT WORTH DOLLARS

ECES Code	Description	Calendar Year (CY)																								
		Base Year	Area IV Building Demolition ¹			Area IV Soil Remediation																				
		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
4.02.04	Institutional Controls	\$0	\$0	\$0	\$76,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.02	Community Awareness Activities	\$0	\$0	\$0	\$50,700	\$20,400	\$20,500	\$20,500	\$20,600	\$20,700	\$20,800	\$20,900	\$20,900	\$21,100	\$21,100	\$21,200	\$21,300	\$21,300	\$21,400	\$21,500	\$21,600	\$21,700	\$21,800	\$21,900	\$21,900	\$22,000
6.02.02	Community Awareness Activities	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.9x	General Conditions																									
Multiple ECES Codes	Workplans and Submittals	\$0	\$0	\$0	\$193,200	\$18,400	\$18,400	\$18,500	\$18,600	\$18,700	\$18,800	\$18,900	\$18,900	\$19,000	\$19,100	\$19,200	\$19,200	\$19,300	\$19,400	\$19,500	\$19,600	\$19,700	\$19,800	\$19,900	\$19,900	\$20,000
8.01.04	Home Office Personnel	\$0	\$0	\$0	\$112,800	\$113,200	\$113,700	\$114,200	\$114,600	\$115,000	\$115,500	\$116,000	\$116,500	\$117,000	\$117,500	\$118,000	\$118,500	\$119,000	\$119,500	\$120,000	\$120,500	\$121,000	\$121,500	\$122,000	\$122,500	\$123,000
4.02.01.01.15	Job Site Personnel	\$0	\$0	\$0	\$1,737,800	\$1,744,500	\$1,751,400	\$1,758,300	\$1,765,000	\$1,772,000	\$1,778,700	\$1,785,700	\$1,792,600	\$1,799,700	\$1,806,700	\$1,813,600	\$1,820,700	\$1,827,900	\$1,835,000	\$1,842,100	\$1,849,200	\$1,856,600	\$1,863,800	\$1,871,000	\$1,878,300	\$1,885,800
4.05.01.03	Temporary Facilities	\$0	\$0	\$0	\$83,800	\$41,300	\$41,500	\$41,600	\$41,800	\$42,000	\$42,100	\$42,300	\$42,600	\$43,000	\$43,300	\$43,600	\$44,000	\$44,100	\$44,300	\$44,600	\$45,000	\$45,300	\$45,600	\$46,000	\$46,300	\$46,700
4.05.01.01	Mobilization of Construction Equipment	\$0	\$0	\$0	\$65,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.36.04	Demobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.9x	Best Management Practices - Structural																									
8.01.01	SWPPP Implementation and Maintenance	\$0	\$0	\$0	\$24,300	\$9,200	\$9,200	\$9,200	\$9,200	\$9,300	\$9,300	\$9,300	\$9,400	\$9,400	\$9,400	\$9,500	\$9,500	\$9,500	\$9,600	\$9,600	\$9,700	\$9,700	\$9,700	\$9,800	\$9,800	\$9,800
4.05.02	Temporary Erosion and Sediment Control	\$0	\$0	\$0	\$847,300	\$56,200	\$56,300	\$56,600	\$56,800	\$57,100	\$57,300	\$57,500	\$57,700	\$58,000	\$58,100	\$58,300	\$58,600	\$58,800	\$59,100	\$59,300	\$59,500	\$59,700	\$60,000	\$60,200	\$60,400	\$60,700
4.05.9x	Existing Tree Protection	\$0	\$0	\$0	\$69,400	\$15,600	\$15,600	\$15,700	\$15,700	\$15,800	\$15,800	\$15,900	\$16,000	\$16,000	\$16,100	\$16,100	\$16,200	\$16,200	\$16,300	\$16,400	\$16,400	\$16,500	\$16,600	\$16,700	\$16,700	\$16,800
4.16.04	Dust Control	\$0	\$0	\$0	\$365,600	\$367,100	\$368,500	\$370,000	\$371,300	\$372,800	\$374,300	\$375,700	\$377,200	\$378,700	\$380,100	\$381,600	\$383,100	\$384,600	\$386,100	\$387,600	\$389,100	\$390,600	\$392,100	\$393,600	\$395,200	\$396,800
4.07.08.02	Air Monitoring	\$0	\$0	\$0	\$31,800	\$31,900	\$32,000	\$32,100	\$32,200	\$32,400	\$32,500	\$32,600	\$32,800	\$32,900	\$33,000	\$33,100	\$33,300	\$33,400	\$33,500	\$33,600	\$33,800	\$33,900	\$34,100	\$34,200	\$34,300	\$34,500
4.05.01.03.12	Decontamination/Wash Station	\$0	\$0	\$0	\$428,700	\$167,800	\$168,500	\$169,100	\$170,400	\$171,100	\$171,700	\$172,400	\$173,000	\$173,800	\$174,400	\$175,100	\$175,800	\$176,500	\$177,100	\$177,900	\$178,500	\$179,200	\$179,900	\$180,600	\$181,400	\$182,200
4.05.9x	Street Sweeping	\$0	\$0	\$0	\$243,000	\$244,000	\$244,900	\$245,900	\$246,800	\$247,800	\$248,700	\$249,700	\$250,700	\$251,700	\$252,600	\$253,600	\$254,600	\$255,600	\$256,600	\$257,600	\$258,600	\$259,600	\$260,600	\$261,600	\$262,600	\$263,700
8.01.03.11	Traffic Control	\$0	\$0	\$0	\$1,566,000	\$1,278,400	\$1,283,500	\$1,288,500	\$1,293,400	\$1,298,500	\$1,303,500	\$1,308,600	\$1,313,700	\$1,318,900	\$1,324,000	\$1,329,100	\$1,334,200	\$1,339,500	\$1,344,800	\$1,350,000	\$1,355,100	\$1,360,600	\$1,365,800	\$1,371,100	\$1,376,400	\$1,381,900
Multiple ECES Codes	Excavation, Hauling and Disposal																									
4.05.9x	Construction Survey and Staking	\$0	\$0	\$0	\$5,600	\$5,600	\$5,600	\$5,600	\$5,600	\$5,700	\$5,700	\$5,700	\$5,700	\$5,800	\$5,800	\$5,800	\$5,800	\$5,900	\$5,900	\$5,900	\$5,900	\$6,000	\$6,000	\$6,000	\$6,000	
4.05.05.01	Excavation	\$0	\$0	\$0	\$322,300	\$323,500	\$324,800	\$326,100	\$327,300	\$328,600	\$329,800	\$331,100	\$332,400	\$333,700	\$335,000	\$336,300	\$337,600	\$338,900	\$340,300	\$341,600	\$342,900	\$344,200	\$345,600	\$346,900	\$348,200	\$349,700
4.32.11.05	Hauling	\$0	\$0	\$0	\$5,300,700	\$5,321,300	\$5,342,700	\$5,363,500	\$5,383,800	\$5,405,300	\$5,425,900	\$5,447,000	\$5,468,200	\$5,489,800	\$5,511,100	\$5,532,400	\$5,554,000	\$5,575,800	\$5,597,500	\$5,619,200	\$5,640,900	\$5,663,400	\$5,685,200	\$5,707,200	\$5,729,500	\$5,752,300
4.07.11	Confirmation Sampling	\$0	\$0	\$0	\$20,100	\$20,200	\$20,300	\$20,400	\$20,400	\$20,500	\$20,600	\$20,700	\$20,800	\$20,900	\$21,000	\$21,100	\$21,100	\$21,200	\$21,300	\$21,400	\$21,500	\$21,600	\$21,700	\$21,700	\$21,800	
4.08.04	Sample Analysis	\$0	\$0	\$0	\$332,300	\$333,600	\$334,800	\$336,200	\$337,400	\$338,800	\$340,100	\$341,400	\$342,700	\$344,100	\$345,400	\$346,700	\$348,100	\$349,500	\$350,900	\$352,200	\$353,500	\$355,000	\$356,300	\$357,700	\$359,100	\$360,500
4.33.08.05	Disposal	\$0	\$0	\$0	\$2,953,200	\$2,964,700	\$2,976,500	\$2,988,200	\$2,999,500	\$3,011,500	\$3,022,900	\$3,034,700	\$3,046,500	\$3,058,600	\$3,070,500	\$3,082,300	\$3,094,300	\$3,106,500	\$3,118,500	\$3,130,600	\$3,142,700	\$3,155,300	\$3,167,400	\$3,179,700	\$3,192,100	\$3,204,800
4.05.9x	Excavation of Underground Utilities (D&D)	\$0	\$0	\$0	\$32,500	\$32,600	\$32,700	\$32,900	\$33,000	\$33,100	\$33,200	\$33,400	\$33,500	\$33,600	\$33,700	\$33,900	\$34,000	\$34,100	\$34,200	\$34,400	\$34,600	\$34,800	\$35,000	\$35,100	\$35,200	\$35,300
4.05.05.06	Backfill from Offsite Sources	\$0	\$0	\$0	\$2,840,100	\$2,851,000	\$2,862,400	\$2,873,600	\$2,884,500	\$2,896,100	\$2,907,100	\$2,918,400	\$2,929,700	\$2,941,300	\$2,952,700	\$2,964,100	\$2,975,700	\$2,987,400	\$2,999,000	\$3,010,600	\$3,022,200	\$3,034,300	\$3,046,000	\$3,057,700	\$3,069,700	\$3,081,900
4.05.02	Restoration																									
4.05.02.05	Seeding	\$0	\$0	\$0	\$5,000	\$5,100	\$5,100	\$5,100	\$5,100	\$5,200	\$5,100	\$5,200	\$5,200	\$5,200	\$5,200	\$5,300	\$5,300	\$5,300	\$5,300	\$5,300	\$5,400	\$5,400	\$5,400	\$5,400	\$5,500	
4.05.08	Allowance for Street/Pavement Repair	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
6.21.08	Post-Construction Monitoring	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
6.02.04.06	Evaluating and Updating Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
	Subtotal	\$0	\$0	\$0	\$17,708,000	\$15,966,000	\$16,029,000	\$16,092,000	\$16,153,000	\$16,218,000	\$16,279,000	\$16,343,000	\$16,406,000	\$16,471,000	\$16,535,000	\$16,599,000	\$16,663,000	\$16,729,000	\$16,794,000	\$16,859,000	\$16,924,000	\$16,992,000	\$17,057,000	\$17,123,000	\$17,190,000	\$17,258,000
4.04.11	Remedial Design (15%)	\$0	\$0	\$0	\$2,657,000	\$2,395,000	\$2,405,000	\$2,414,000	\$2,423,000	\$2,433,000	\$2,442,000	\$2,452,000	\$2,461,000	\$2,471,000	\$2,481,000	\$2,490,000	\$2,500,000	\$2,510,000	\$2,520,000	\$2,529,000	\$2,539,000	\$2,549,000	\$2,559,000	\$2,569,000	\$2,579,000	\$2,589,000
4.02.09	Construction Management (10%)	\$0	\$0	\$0	\$1,771,000	\$1,597,000	\$1,603,000	\$1,610,000	\$1,616,000	\$1,622,000	\$1,628,000	\$1,635,000	\$1,641,000	\$1,648,000	\$1,654,000	\$1,660,000	\$1,667,000	\$1,673,000	\$1,680,000	\$1,686,000	\$1,693,000	\$1,700,000	\$1,706,000	\$1,713,000	\$1,719,000	\$1,726,000
4.02.01	Project Management (5%)	\$0	\$0	\$0	\$886,000	\$799,000	\$802,000	\$805,000	\$808,000	\$811,000	\$814,000	\$818,000	\$821,000	\$824,000	\$827,000	\$830,000	\$834,000	\$837,000	\$840,000	\$843,000	\$847,000	\$850,000	\$853,000	\$857,000	\$860,000	\$863,000
6.02.01	Project Management (5%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
6.07.9x	Construction Coordination (1%)	\$0	\$0	\$0	\$178,000	\$160,000	\$161,000	\$161,000	\$162,000	\$163,000	\$163,000	\$164,000	\$165,000	\$165,000	\$166,000	\$166,000	\$167,000	\$168,000	\$168,000	\$169,000	\$170,000	\$170,000	\$171,000	\$172,000	\$173,000	
4.02.14	Health and Safety (1.5%)	\$0	\$0	\$0	\$266,000	\$240,000	\$241,000	\$242,000	\$243,000	\$244,000	\$245,000	\$246,000	\$247,000	\$248,000	\$249,000	\$250,000	\$251,000	\$252,000	\$253,000	\$254,000	\$255,000	\$256,000	\$257,000	\$258,000	\$259,000	
4.02.01.01	Program Management (1%)	\$0	\$0	\$0	\$178,000	\$160,000	\$161,000	\$161,000	\$162,000	\$163,000	\$163,000	\$164,000	\$165,000	\$165,000	\$166,000	\$166,000	\$167,000	\$168,000	\$168,000	\$169,000	\$170,000	\$170,000	\$171,000	\$172,000	\$173,000	
4.02.03	Regulatory Costs (1%)	\$0	\$0	\$0	\$178,000	\$160,000	\$161,000	\$161,000	\$162,000	\$163,000	\$163,000	\$164,000	\$165,000	\$165,000	\$166,000	\$166,000	\$167,000	\$168,000	\$168,000	\$169,000	\$170,000	\$170,000	\$171,000	\$172,000	\$173,000	
	Project Cost (without Contingency)	\$0	\$0	\$0	\$23,822,000	\$21,477,000	\$21,563,000	\$21,646,000	\$21,729,000	\$21,817,000	\$21,897,000	\$21,986,000	\$22,071,000	\$22,157,000	\$22,244,000	\$22,326,000	\$22,415,000	\$22,504,000	\$22,590,000	\$22,677,000	\$22,767,000	\$22,856,000	\$22,944,000	\$23,035,000	\$23,122,000	

TABLE CS-2B - Present Worth

Alternative **Cleanup to AOC Look-Up Table Values Alternative** **LIFE-CYCLE COST ESTIMATE - PRESENT WORTH DOLLARS**

Site: **SSFL Area IV/NBZ**
 Location: **Ventura County, California**
 Document: **Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates**
 Project/Program Life-Cycle Stage: **Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]**
 Cost Estimate Classification: **Class 4, Study or Feasibility (Level of Definition: 1% to 15%)**
 Base Year: **2018**
 Date of Estimate: **September 2018**

This alternative provides protection of human health and environment through excavation and offsite disposal of soils containing radionuclides and chemicals exceeding the AOC LUT values. Under this alternative, soil excavation and removal would be performed until all of the soil requiring removal to meet radionuclides and chemical AOC LUT values is accomplished. This alternative would meet the requirements for the frequency of truck hauling for importing of materials as well as exporting excavated contaminated soil for disposal set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 26 years, with anticipated start in year 2021 and completion in year 2046.

LIFE-CYCLE COST IN PRESENT WORTH DOLLARS

ECES Code	Description	Calendar Year (CY)															
		Area IV Soil Remediation				Periodic Surveillance and Long-Term Maintenance (30 Years)											
		2043	2044	2045	2046	2047	2048 - 2051	2052	2053 - 2056	2057	2058 - 2061	2062	2063 - 2066	2067	2068 - 2071	2072	2071 - 2076
4.02.04	Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.02	Community Awareness Activities	\$22,100	\$22,200	\$22,400	\$22,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
6.02.02	Community Awareness Activities	\$0	\$0	\$0	\$0	\$22,600	\$0	\$23,000	\$0	\$23,400	\$0	\$23,900	\$0	\$24,400	\$0	\$24,800	
4.9x	General Conditions																
Multiple ECES Codes	Workplans and Submittals	\$19,900	\$20,000	\$20,100	\$71,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
8.01.04	Home Office Personnel	\$122,900	\$123,300	\$124,300	\$124,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.02.01.01.15	Job Site Personnel	\$1,893,100	\$1,900,600	\$1,915,300	\$1,922,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.01.03	Temporary Facilities	\$44,800	\$45,000	\$45,300	\$63,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.01.01	Mobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.36.04	Demobilization of Construction Equipment	\$0	\$0	\$0	\$79,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.9x	Best Management Practices - Structural																
8.01.01	SWPPP Implementation and Maintenance	\$9,900	\$9,900	\$10,000	\$10,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.02	Temporary Erosion and Sediment Control	\$60,900	\$61,200	\$61,600	\$61,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.9x	Existing Tree Protection	\$16,800	\$16,900	\$17,000	\$17,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.16.04	Dust Control	\$398,300	\$399,900	\$403,000	\$404,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.07.08.02	Air Monitoring	\$34,600	\$34,700	\$35,000	\$35,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.01.03.12	Decontamination/Wash Station	\$182,000	\$182,800	\$184,200	\$184,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.9x	Street Sweeping	\$264,700	\$265,700	\$267,800	\$268,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
8.01.03.11	Traffic Control	\$1,387,300	\$1,392,800	\$1,403,600	\$1,408,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Multiple ECES Codes	Excavation, Hauling and Disposal																
4.05.9x	Construction Survey and Staking	\$6,100	\$6,100	\$6,100	\$6,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.05.01	Excavation	\$351,000	\$352,400	\$355,100	\$356,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.32.11.05	Hauling	\$5,774,600	\$5,797,500	\$5,842,400	\$5,864,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.07.11	Confirmation Sampling	\$21,900	\$22,000	\$22,200	\$22,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.08.04	Sample Analysis	\$361,900	\$363,400	\$366,200	\$367,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.33.08.05	Disposal	\$3,217,200	\$3,230,000	\$3,255,000	\$3,267,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.9x	Excavation of Underground Utilities (D&D)	\$35,400	\$35,500	\$35,800	\$35,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.05	Backfill																
4.05.05.06	Backfill from Offsite Sources	\$3,093,900	\$3,106,200	\$3,130,200	\$3,142,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.02	Restoration																
4.05.02.05	Seeding	\$5,500	\$5,500	\$5,600	\$5,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.08	Allowance for Street/Pavement Repair	\$0	\$0	\$0	\$707,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
6.21.08	Post-Construction Monitoring	\$0	\$0	\$0	\$0	\$281,000	\$0	\$286,500	\$0	\$292,200	\$0	\$297,900	\$0	\$303,800	\$0	\$309,700	
6.02.04.06	Evaluating and Updating Institutional Controls	\$0	\$0	\$0	\$0	\$11,300	\$0	\$11,500	\$0	\$11,800	\$0	\$12,000	\$0	\$12,200	\$0	\$12,500	
	Subtotal	\$17,325,000	\$17,394,000	\$17,529,000	\$18,451,000	\$315,000	\$0	\$321,000	\$0	\$328,000	\$0	\$334,000	\$0	\$341,000	\$0	\$347,000	
4.04.11	Remedial Design (15%)	\$2,599,000	\$2,610,000	\$2,630,000	\$2,768,000	\$48,000	\$0	\$49,000	\$0	\$50,000	\$0	\$51,000	\$0	\$52,000	\$0	\$53,000	
4.02.09	Construction Management (10%)	\$1,733,000	\$1,740,000	\$1,753,000	\$1,846,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.02.01	Project Management (5%)	\$867,000	\$870,000	\$877,000	\$923,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
6.02.01	Project Management (5%)	\$0	\$0	\$0	\$0	\$16,000	\$0	\$17,000	\$0	\$17,000	\$0	\$17,000	\$0	\$18,000	\$0	\$18,000	
6.07.9x	Construction Coordination (1%)	\$174,000	\$174,000	\$176,000	\$185,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.02.14	Health and Safety (1.5%)	\$260,000	\$261,000	\$263,000	\$277,000	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$6,000	\$0	\$6,000	\$0	\$6,000	
4.02.01.01	Program Management (1%)	\$174,000	\$174,000	\$176,000	\$185,000	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	
4.02.03	Regulatory Costs (1%)	\$174,000	\$174,000	\$176,000	\$185,000	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	
	Project Cost (without Contingency)	\$23,306,000	\$23,397,000	\$23,580,000	\$24,820,000	\$392,000	\$0	\$400,000	\$0	\$408,000	\$0	\$416,000	\$0	\$425,000	\$0	\$432,000	
8.01.03.13	Contingency 30% (DOE Held)	\$6,992,000	\$7,020,000	\$7,074,000	\$7,446,000	\$118,000	\$0	\$120,000	\$0	\$123,000	\$0	\$125,000	\$0	\$128,000	\$0	\$130,000	
8.01.03.13	Management Reserve 1% (Contractor Held)	\$234,000	\$234,000	\$236,000	\$249,000	\$4,000	\$0	\$4,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	
	Total Project Cost (TPC) - Present Worth	\$30,532,000	\$30,651,000	\$30,890,000	\$32,515,000	\$514,000	\$0	\$524,000	\$0	\$536,000	\$0	\$546,000	\$0	\$558,000	\$0	\$567,000	

- The draft detailed cost estimates are based primarily on the methodology as described in Cost Estimating Guide, DOE G 413.3-21A.
 - Specific assumptions used in preparation of the detailed cost estimates are included in the Basis of Estimate (BOE).

AREA IV SOIL REMOVAL AND DISPOSAL		PERIODIC SURVEILLANCE AND LONG-TERM MAINTENANCE		TOTAL LIFE-CYCLE COST - PRESENT WORTH	
TPC (WITHOUT CONTINGENCY)	TPC (PRESENT WORTH)	TPC (WITHOUT CONTINGENCY)	TPC (PRESENT WORTH)	LCC (WITHOUT CONTINGENCY)	LCC (PRESENT WORTH)
\$587,962,000	\$770,257,000	\$2,473,000	\$3,245,000	\$590,435,000	\$773,502,000

(1) Present Worth (PW) are calculated by discounting the future dollar costs from "Table CS-2 - Future Cost (CY 2018)" using the calculated discount factors presented in "Table SPV-ADRFT". (2) PW was calculated as described in Appendix F of the Cost Estimating Guide, DOE G 413.3-21A. (3) Costs subtotals and totals are rounded-up to the nearest \$1,000.

DETAILED COST ESTIMATE BACKUP SUMMARY

Alternative Cleanup to AOC Look-Up Table Values Alternative		Description: This alternative provides protection of human health and environment through excavation and offsite disposal of soils containing radionuclides and chemicals exceeding the AOC LUT values. Under this alternative, soil excavation and removal would be performed until all of the soil requiring removal to meet radionuclides and chemical AOC LUT values is accomplished. This alternative would meet the requirements for the frequency of truck hauling for importing of materials as well as exporting excavated contaminated soil for disposal set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 26 years, with anticipated start in year 2021 and completion in year 2046.
Site:	SSFL Area I/NBZ	
Location:	Ventura County, California	
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates	
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]	
Cost Estimate Classification:	Class 4, Study or Feasibility (Level of Definition: 1% to 15%)	
Base Year:	2018	
Date of Estimate:	September 2018	

INSTITUTIONAL CONTROLS CAPITAL COSTS: (Assumed to be Incurred During Year 3 [2021])

ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
4.02.04	Institutional Controls	1	LS	\$75,000	\$75,000	Allowance, Includes establishment of ICs during construction
4.02.02	Community Awareness Activities	1	LS	\$50,000	\$50,000	Allowance, Includes public meetings and extensive outreach programs

AREA IV SOIL REMOVAL AND DISPOSAL COSTS: (Assumed to be Incurred During Year 3 [2021])

ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
4.9x	General Conditions					
Multiple ECES Codes						
<i>Workplans and Submittals</i>						
4.02.01.01	Project Progress Meetings and Schedule Update	12	MO	\$1,497	\$17,967	Weekly meetings and updating project schedule.
4.03.01	Work Plans	1	LS	\$138,773	\$138,773	Includes preparation of administrative BMPs
4.04.21	Submittals	1	LS	\$34,100	\$34,100	General submittals typical of a construction project.
8.01.04	Home Office Personnel	12	MO	\$9,283	\$111,399	Includes project manager and administrative support.
4.02.01.01.15	Job Site Personnel	12	MO	\$143,122	\$1,717,468	Includes general site personnel, archeologist and biologist.
4.05.01.03	Temporary Facilities	12	MO	\$6,899	\$82,790	Includes staging area, temporary offices.
4.05.01.01	Mobilization of Construction Equipment	1	LS	\$64,015	\$64,015	
4.9x Best Management Practices - Structural SWPPP Implementation and Maintenance						
8.01.01	SWPPP Preparation (Report)	1	LS	\$15,004	\$15,004	Itemized separately from other Work Plans
8.01.01.9x	SWPPP Oversight and Maintenance	12	MO	\$738.00	\$8,853	
4.05.02 Temporary Erosion and Sediment Control						
4.05.02.04	Silt Fence	243,660	LF	\$2.86	\$697,831	
4.05.02.04	Wattles	2,500	LF	\$7.64	\$19,111	
4.05.02.04	Sediment Trap	10	EA	\$1,464	\$14,644	
4.05.02.04	Rock Filter Dam	10	EA	\$3,587	\$35,871	
4.05.02.04	Track-out Prevention	10	EA	\$1,472	\$14,723	Gravel pad at excavation exit areas
4.05.02.05	Temporary Seeding	6	ACR	\$275.81	\$1,691	
4.05.02.9x	Erosion and Sediment Control Maintenance	12	MO	\$4,464	\$53,567	
4.05.9x Existing Tree Protection						
4.05.9x	Arborist and Care for Existing Trees	12	MO	\$1,259	\$15,102	Buffer zone around trees identified. Watering assumed under dust control.
4.05.9x	Tree Protection Fencing	100	EA	\$53.29	\$5,329	Routine checks of trees by arborist.
4.16.04	Dust Control	12	MO	\$30,102	\$361,221	Assumes use of 16,000 gallons per day purchased from Ventura County
4.07.08.02	Air Monitoring	12	MO	\$2,603	\$31,237	Perimeter air monitoring for particulate (PM-10)
4.05.01.03.12 Decontamination/Wash Station						
4.05.01.03.12	Purchase and Setup	1	EA	\$258,641	\$258,641	Wash station capable of re-using wash water.
4.05.01.03.12	Operation	12	MO	\$13,752	\$165,020	
4.05.9x Street Sweeping						
8.01.03.11	Traffic Control	12	MO	\$20,005	\$240,065	Daily street sweeping along access roads.
8.01.03.11	Preconstruction Video Survey	1	LS	\$4,398	\$4,398	
8.01.03.11	Traffic Control Signs and Barricades	1	LS	\$284,770	\$284,770	
8.01.03.11	Traffic Control	12	MO	\$104,880	\$1,258,563	Traffic control/flagman along Wootsey Canyon Road.
Multiple ECES Codes						
Excavation, Hauling and Disposal						
Multiple ECES Codes						
<i>Low-Hazard and Moderate-Hazard Soil</i>						
4.05.9x	Construction Survey and Staking	5.04	ACR	\$925.61	\$4,664	
4.05.05.01	Excavation	29,577	BCY	\$8.19	\$242,235	Includes excavation and loading
4.32.11.05	Hauling	44,365	TON	\$80.91	\$3,589,603	An average of 135 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	440	EA	\$39.23	\$17,261	
4.08.04	Sample Analysis	440	EA	\$651.29	\$286,568	
4.33.08.05	Disposal	44,365	TON	\$52.94	\$2,348,703	Disposal inside of California (Class 2 or Class 3 disposal facility)
Multiple ECES Codes						
<i>Hazardous Soil</i>						
4.05.9x	Construction Survey and Staking	0.01	ACR	\$926.67	\$11	
4.05.05.01	Excavation	77	BCY	\$46.84	\$3,603	Includes excavation and loading
4.32.11.05	Hauling	115	TON	\$506.58	\$58,452	An average of 780 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	1	EA	\$39.25	\$39	
4.08.04	Sample Analysis	1	EA	\$651.29	\$651	
4.33.08.05	Disposal	115	TON	\$88.24	\$10,182	Disposal outside of California.
Multiple ECES Codes						
<i>LLW/MLLW Soil</i>						
4.05.9x	Construction Survey and Staking	0.72	ACR	\$925.61	\$666	
4.05.05.01	Excavation	4,231	BCY	\$17.15	\$72,558	Includes excavation and loading
4.32.11.05	Hauling	6,346	TON	\$250.72	\$1,591,108	An average of 300 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	63	EA	\$39.23	\$2,471	
4.08.04	Sample Analysis	63	EA	\$651.29	\$41,031	
4.33.08.05	Disposal	6,346	TON	\$88.24	\$559,985	Disposal outside of California (Class 1 disposal facility)
4.05.9x	Excavation of Underground Utilities (D&D)	1	LS	\$32,000	\$32,000	Assumes 10% of total excavation cost
4.05.05 Backfill and Organic Amendment						
4.05.05.06	Backfill from Offsite Sources	25,413	ECY	\$110.45	\$2,806,917	Assume backfill would come from an offsite source within 50 miles of site.
4.05.02 Restoration						
4.05.02.05	Seeding	6	AC	\$845.70	\$4,879	Seeding disturbed areas with native grasses and wildflower seed mix.

DETAILED COST ESTIMATE BACKUP SUMMARY

Alternative Cleanup to AOC Look-Up Table Values Alternative		Description: This alternative provides protection of human health and environment through excavation and offsite disposal of soils containing radionuclides and chemicals exceeding the AOC LUT values. Under this alternative, soil excavation and removal would be performed until all of the soil requiring removal to meet radionuclides and chemical AOC LUT values is accomplished. This alternative would meet the requirements for the frequency of truck hauling for importing of materials as well as exporting excavated contaminated soil for disposal set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 26 years, with anticipated start in year 2021 and completion in year 2046.
Site:	SSFL Area IV/NBZ	
Location:	Ventura County, California	
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates	
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]	
Cost Estimate Classification:	Class 4, Study or Feasibility (Level of Definition: 1% to 15%)	
Base Year:	2018	
Date of Estimate:	September 2018	

AREA IV SOIL REMOVAL AND DISPOSAL COSTS: (Assumed to be Incurred During Year 4 [2022] through Year 28 [2046])

ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
4.9x	General Conditions					
<i>Multiple ECES Codes</i>	<i>Workplans and Submittals</i>					
4.02.01.01	Project Progress Meetings and Schedule Update	12	MO	\$1,497	\$17,967	Weekly meetings and updating project schedule.
8.01.04	Home Office Personnel	12	MO	\$9,283	\$111,399	Includes project manager and administrative support.
4.02.01.01.15	Job Site Personnel	12	MO	\$143,122	\$1,717,468	Includes general site personnel, archeologist and biologist.
4.05.01.03	Temporary Facilities	12	MO	\$3,383	\$40,592	Includes staging area, temporary offices.
4.9x	Best Management Practices - Structural					
<i>Multiple ECES Codes</i>	<i>SWPPP Implementation and Maintenance</i>					
8.01.01	SWPPP Oversight and Maintenance	12	MO	\$738.00	\$8,853	
4.05.02	Temporary Erosion and Sediment Control					Temporary measures to be used separately or concurrently.
4.05.02.05	Temporary Seeding	6	ACR	\$275.81	\$1,591	
4.05.02.9x	Erosion and Sediment Control Maintenance	12	MO	\$4,464	\$53,567	
4.05.9x	Existing Tree Protection					
4.05.9x	Arborist and Care for Existing Trees	12	MO	\$1,259	\$15,102	Buffer zone around trees identified. Watering assumed under dust control.
4.16.04	Dust Control	12	MO	\$30,102	\$361,221	Assumes use of 16,000 gallons per day purchased from Ventura County
4.07.08.02	Air Monitoring	12	MO	\$2,603	\$31,237	Perimeter air monitoring for particulate (PM-10)
4.05.01.03.12	Decontamination/Wash Station					
4.05.01.03.12	Operation	12	MO	\$13,752	\$165,020	
4.05.9x	Street Sweeping	12	MO	\$20,005	\$240,065	Daily street sweeping along access roads.
8.01.03.11	Traffic Control	12	MO	\$104,880	\$1,258,563	Traffic control/flagman along Woolsey Canyon Road.
<i>Multiple ECES Codes</i>	Excavation, Hauling and Disposal					
<i>Multiple ECES Codes</i>	<i>Low-Hazard and Moderate-Hazard Soil</i>					
4.05.9x	Construction Survey and Staking	5.04	ACR	\$925.61	\$4,664	
4.05.05.01	Excavation	29,577	BCY	\$8.19	\$242,235	Includes excavation and loading
4.32.11.05	Hauling	44,365	TON	\$80.91	\$3,589,603	An average of 135 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	440	EA	\$39.23	\$17,261	
4.08.04	Sample Analysis	440	EA	\$651.29	\$286,568	
4.33.08.05	Disposal	44,365	TON	\$52.94	\$2,348,703	Disposal inside of California (Class 2 or Class 3 disposal facility)
<i>Multiple ECES Codes</i>	<i>Hazardous Soil</i>					
4.05.9x	Construction Survey and Staking	0.01	ACR	\$926.67	\$11	
4.05.05.01	Excavation	77	BCY	\$46.84	\$3,603	Includes excavation and loading
4.32.11.05	Hauling	115	TON	\$506.58	\$58,452	An average of 780 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	1	EA	\$39.25	\$39	
4.08.04	Sample Analysis	1	EA	\$651.29	\$651	
4.33.08.05	Disposal	115	TON	\$88.24	\$10,182	Disposal outside of California.
<i>Multiple ECES Codes</i>	<i>LLW/MLLW Soil</i>					
4.05.9x	Construction Survey and Staking	0.72	ACR	\$925.61	\$666	
4.05.05.01	Excavation	4,231	BCY	\$17.15	\$72,558	Includes excavation and loading
4.32.11.05	Hauling	6,346	TON	\$250.72	\$1,591,108	An average of 300 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	63	EA	\$39.23	\$2,471	
4.08.04	Sample Analysis	63	EA	\$651.29	\$41,031	
4.33.08.05	Disposal	6,346	TON	\$88.24	\$559,985	Disposal outside of California (Class 1 disposal facility)
4.05.9x	Excavation of Underground Utilities (D&D)	1	LS	\$32,000	\$32,000	Assumes 10% of total excavation cost
4.05.05	Backfill and Organic Amendment					
4.05.05.06	Backfill from Offsite Sources	25,413	ECY	\$110.45	\$2,806,917	Assume backfill would come from an offsite source within 50 miles of site.
4.05.02	Restoration					
4.05.02.05	Seeding	6	AC	\$845.70	\$4,879	Seeding disturbed areas with native grasses and wildflower seed mix.

TABLE CS-2

DETAILED COST ESTIMATE BACKUP SUMMARY

Alternative Cleanup to AOC Look-Up Table Values Alternative		Description: This alternative provides protection of human health and environment through excavation and offsite disposal of soils containing radionuclides and chemicals exceeding the AOC LUT values. Under this alternative, soil excavation and removal would be performed until all of the soil requiring removal to meet radionuclides and chemical AOC LUT values is accomplished. This alternative would meet the requirements for the frequency of truck hauling for importing of materials as well as exporting excavated contaminated soil for disposal set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 26 years, with anticipated start in year 2021 and completion in year 2046.
Site:	SSFL Area IV/NBZ	
Location:	Ventura County, California	
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates	
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]	
Cost Estimate Classification:	Class 4, Study or Feasibility (Level of Definition: 1% to 15%)	
Base Year:	2018	
Date of Estimate:	September 2018	

AREA IV SOIL REMOVAL AND DISPOSAL COSTS: (Assumed to be Incurred During Year 29 [2047])

ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
4.9x	General Conditions					
Multiple ECES Codes	Workplans and Submittals					
4.02.01.01	Project Progress Meetings and Schedule Update	12	MO	\$1,497	\$17,967	Weekly meetings and updating project schedule.
4.04.19	Post-RA Completion Report	1	LS	\$45,890	\$45,890	Preparation of the post-remedial action completion report.
8.01.04	Home Office Personnel	12	MO	\$9,283	\$111,399	Includes project manager and administrative support.
4.02.01.01.15	Job Site Personnel	12	MO	\$143,122	\$1,717,468	Includes general site personnel, archeologist and biologist.
4.05.01.03	Temporary Facilities	12	MO	\$4,709	\$56,508	Includes staging area, temporary offices.
4.05.36.04	Demobilization of Construction Equipment	1	LS	\$70,591	\$70,591	
4.9x	Best Management Practices - Structural					
8.01.01	SWPPP Implementation and Maintenance					
8.01.01.9x	SWPPP Oversight and Maintenance	12	MO	\$738.00	\$8,853	
4.05.02	Temporary Erosion and Sediment Control					Temporary measures to be used separately or concurrently.
4.05.02.05	Temporary Seeding	6	ACR	\$275.81	\$1,591	
4.05.02.9x	Erosion and Sediment Control Maintenance	12	MO	\$4,464	\$53,567	
4.05.9x	Existing Tree Protection					
4.05.9x	Arborist and Care for Existing Trees	12	MO	\$1,259	\$15,102	Buffer zone around trees identified. Watering assumed under dust control.
4.16.04	Dust Control	12	MO	\$30,102	\$361,221	Assumes use of 16,000 gallons per day purchased from Ventura County
4.07.08.02	Air Monitoring	12	MO	\$2,603	\$31,237	Perimeter air monitoring for particulate (PM-10)
4.05.01.03.12	Decontamination/Wash Station					
4.05.01.03.12	Operation	12	MO	\$13,752	\$165,020	
4.05.9x	Street Sweeping	12	MO	\$20,005	\$240,065	Daily street sweeping along access roads.
8.01.03.11	Traffic Control	12	MO	\$104,880	\$1,258,563	Traffic control/flagman along Woolsey Canyon Road.
8.01.03.11	Traffic Control	12	MO	\$104,880	\$1,258,563	
Multiple ECES Codes	Excavation, Hauling and Disposal					
Multiple ECES Codes	Low-Hazard and Moderate-Hazard Soil					
4.05.9x	Construction Survey and Staking	5.04	ACR	\$925.61	\$4,664	
4.05.05.01	Excavation	29,577	BCY	\$8.19	\$242,235	Includes excavation and loading
4.32.11.05	Hauling	44,365	TON	\$80.91	\$3,589,603	An average of 135 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	440	EA	\$39.23	\$17,261	
4.08.04	Sample Analysis	440	EA	\$651.29	\$286,568	
4.33.08.05	Disposal	44,365	TON	\$52.94	\$2,348,703	Disposal inside of California (Class 2 or Class 3 disposal facility)
Multiple ECES Codes	Hazardous Soil					
4.05.9x	Construction Survey and Staking	0.01	ACR	\$926.67	\$11	
4.05.05.01	Excavation	77	BCY	\$46.84	\$3,603	Includes excavation and loading
4.32.11.05	Hauling	115	TON	\$506.58	\$58,452	An average of 780 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	1	EA	\$39.25	\$39	
4.08.04	Sample Analysis	1	EA	\$651.29	\$651	
4.33.08.05	Disposal	115	TON	\$88.24	\$10,182	Disposal outside of California.
Multiple ECES Codes	LLW/MLLW Soil					
4.05.9x	Construction Survey and Staking	0.72	ACR	\$925.61	\$666	
4.05.05.01	Excavation	4,231	BCY	\$17.15	\$72,558	Includes excavation and loading
4.32.11.05	Hauling	6,346	TON	\$250.72	\$1,591,108	An average of 300 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	63	EA	\$39.23	\$2,471	
4.08.04	Sample Analysis	63	EA	\$651.29	\$41,031	
4.33.08.05	Disposal	6,346	TON	\$88.24	\$559,985	Disposal outside of California (Class 1 disposal facility)
4.05.9x	Excavation of Underground Utilities (D&D)	1	LS	\$32,000	\$32,000	Assumes 10% of total excavation cost
4.05.05	Backfill and Organic Amendment					
4.05.05.06	Backfill from Offsite Sources	25,413	ECY	\$110.45	\$2,806,917	Assume backfill would come from an offsite source within 50 miles of site.
4.05.02	Restoration					
4.05.02.05	Seeding	6	ACR	\$845.70	\$4,879	Seeding disturbed areas with native grasses and wildflower seed mix.
4.05.08	Allowance for Street/Pavement Repair	2.5	MI	\$252,645	\$631,612	Repairing Woolsey Canyon Road.

DETAILED COST ESTIMATE BACKUP SUMMARY

Alternative Cleanup to AOC Look-Up Table Values Alternative		Description: This alternative provides protection of human health and environment through excavation and offsite disposal of soils containing radionuclides and chemicals exceeding the AOC LUT values. Under this alternative, soil excavation and removal would be performed until all of the soil requiring removal to meet radionuclides and chemical AOC LUT values is accomplished. This alternative would meet the requirements for the frequency of truck hauling for importing of materials as well as exporting excavated contaminated soil for disposal set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 26 years, with anticipated start in year 2021 and completion in year 2046.
Site:	SSFL Area I/NBZ	
Location:	Ventura County, California	
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates	
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]	
Cost Estimate Classification:	Class 4, Study or Feasibility (Level of Definition: 1% to 15%)	
Base Year:	2018	
Date of Estimate:	September 2018	

ANNUAL COSTS (Assumed to be Incurred During Year 4 [2022] through Year 29 [2047])						
ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
4.02.02	Community Awareness Activities	1	LS	\$20,000	\$20,000	Allowance. Includes community awareness meetings
SURVEILLANCE AND LONG-TERM MAINTENANCE COSTS (Assumed to be Incurred Every 5 Years After Year 29 [2047])						
ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
6.21.08	Post-Construction Monitoring	1	LS	\$250,000	\$250,000	Consist of monitoring of TPH/PAHs impacted soils and areas where residual contamination is above the established LUT values (biological and cultural sensitive areas) Includes monitoring, sampling, analysis, and report.
6.02.04.06	Evaluating and Updating Institutional Controls	1	LS	\$10,000	\$10,000	
6.02.02	Community Awareness Activities	1	LS	\$20,000	\$20,000	

Notes:
Quantities presented herein are presented in attached detailed calculations. Unit costs presented herein are derived from the attached MII detailed cost backup.

Abbreviations:

AC	Acre	MO	Month
BCY	Bank Cubic Yard	QTY	Quantity
ECES	Environmental Cost Element Structure	TON	Ton
ECY	Embankment Cubic Yard	YR	Year
LCY	Loose Cubic Yard		
LF	Linear feet		
LS	Lump Sum		

Attachment C

Life-Cycle Cost Estimate – Cleanup to Revised AOC Look-Up Table Values Alternative

TABLE CS-3 - Current Cost (CY 2018)

LIFE-CYCLE COST ESTIMATE - CURRENT (CY 2018) DOLLARS

Alternative			This alternative provides protection of human health and environment through excavation and offsite disposal of soils containing radionuclides and chemicals exceeding the revised LUT values. It should be noted that under this alternative, the cleanup requirement as stipulated by 2010 AOC would not be met. Soils containing chemicals concentrations between AOC LUT values for chemicals and the revised LUT values for chemicals (RBSLs) would be left in place. The frequency of truck hauling would meet the current limit set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 8 years with anticipated start in year 2021 and completion in year 2028.
Cleanup to Revised AOC Look-Up Table Values Alternative			
Site:	SSFL Area IV/NBZ		
Location:	Ventura County, California		
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates		
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]		
Cost Estimate Classification:	Class 4, Study or Feasibility (Level of Definition: 1% to 15%)		
Base Year:	2018		
Date of Estimate:	September 2018		

¹ It is assumed that building demolition and disposal are NOT within the scope of this FCBA and are therefore not included in the cost estimate. It is assumed that building demolition/disposal and soil removal/disposal would be performed in a sequential manner where building removal would occur for 2 years (beginning in year 2019), followed by soil removal. DOE would demolish its remaining 18 structures within Area IV/NBZ and dispose of or recycle uncontaminated materials off site.

LIFE-CYCLE COST IN CURRENT DOLLARS

ECES Code	Description	Calendar Year (CY)																						
		Base Year	Area IV Building Demolition ¹			Area IV Soil Remediation								Periodic Surveillance and Long-Term Maintenance (30 Years)										
		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030 - 2033	2034	2035 - 2038	2039	2040 - 2043	2044	2045 - 2048	2049	2050 - 2053	2054	2055 - 2058
4.02.04	Institutional Controls	\$0	\$0	\$0	\$75,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.02.02	Community Awareness Activities	\$0	\$0	\$0	\$50,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
6.02.02	Community Awareness Activities	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000	
4.9x	General Conditions																							
Multiple ECES Codes	Workplans and Submittals	\$0	\$0	\$0	\$190,900	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$63,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
8.01.04	Home Office Personnel	\$0	\$0	\$0	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$111,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.02.01.01.15	Job Site Personnel	\$0	\$0	\$0	\$1,717,800	\$1,717,800	\$1,717,800	\$1,717,800	\$1,717,800	\$1,717,800	\$1,717,800	\$1,717,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.01.03	Temporary Facilities	\$0	\$0	\$0	\$84,800	\$42,600	\$42,600	\$42,600	\$42,600	\$42,600	\$42,600	\$58,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.01.01	Mobilization of Construction Equipment	\$0	\$0	\$0	\$64,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.36.04	Demobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$70,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.9x	Best Management Practices - Structural																							
8.01.01	SWPPP Implementation and Maintenance	\$0	\$0	\$0	\$23,900	\$8,900	\$8,900	\$8,900	\$8,900	\$8,900	\$8,900	\$8,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.02	Temporary Erosion and Sediment Control	\$0	\$0	\$0	\$247,500	\$54,900	\$54,900	\$54,900	\$54,900	\$54,900	\$54,900	\$54,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.9x	Existing Tree Protection	\$0	\$0	\$0	\$34,300	\$15,700	\$15,700	\$15,700	\$15,700	\$15,700	\$15,700	\$15,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.16.04	Dust Control	\$0	\$0	\$0	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300	\$361,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.07.08.02	Air Monitoring	\$0	\$0	\$0	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300	\$31,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.01.03.12	Decontamination/Wash Station	\$0	\$0	\$0	\$423,700	\$165,100	\$165,100	\$165,100	\$165,100	\$165,100	\$165,100	\$165,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.9x	Street Sweeping	\$0	\$0	\$0	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100	\$240,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
8.01.03.11	Traffic Control	\$0	\$0	\$0	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$1,258,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Multiple ECES Codes	Excavation, Hauling and Disposal																							
4.05.9x	Construction Survey and Staking	\$0	\$0	\$0	\$4,200	\$4,200	\$4,200	\$4,200	\$4,200	\$4,200	\$4,200	\$4,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.05.01	Excavation	\$0	\$0	\$0	\$327,400	\$327,400	\$327,400	\$327,400	\$327,400	\$327,400	\$327,400	\$327,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.32.11.05	Hauling	\$0	\$0	\$0	\$6,544,400	\$6,544,400	\$6,544,400	\$6,544,400	\$6,544,400	\$6,544,400	\$6,544,400	\$6,544,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.07.11	Confirmation Sampling	\$0	\$0	\$0	\$7,700	\$7,700	\$7,700	\$7,700	\$7,700	\$7,700	\$7,700	\$7,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.08.04	Sample Analysis	\$0	\$0	\$0	\$127,700	\$127,700	\$127,700	\$127,700	\$127,700	\$127,700	\$127,700	\$127,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.33.08.05	Disposal	\$0	\$0	\$0	\$2,627,300	\$2,627,300	\$2,627,300	\$2,627,300	\$2,627,300	\$2,627,300	\$2,627,300	\$2,627,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.9x	Excavation of Underground Utilities (D&D)	\$0	\$0	\$0	\$33,000	\$33,000	\$33,000	\$33,000	\$33,000	\$33,000	\$33,000	\$33,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.05	Backfill																							
4.05.05.06	Backfill from Offsite Sources	\$0	\$0	\$0	\$1,779,900	\$1,779,900	\$1,779,900	\$1,779,900	\$1,779,900	\$1,779,900	\$1,779,900	\$1,779,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.02	Restoration																							
4.05.02.05	Seeding	\$0	\$0	\$0	\$3,900	\$3,900	\$3,900	\$3,900	\$3,900	\$3,900	\$3,900	\$3,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.08	Allowance for Street/Pavement Repair	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$631,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
6.21.08	Post-Construction Monitoring	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0	
6.02.04.06	Evaluating and Updating Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,000	\$0	\$10,000	\$0	\$10,000	\$0	\$10,000	\$0	\$10,000	\$0	\$10,000	\$0	
	Subtotal	\$0	\$0	\$0	\$16,466,000	\$15,502,000	\$15,502,000	\$15,502,000	\$15,502,000	\$15,502,000	\$15,502,000	\$16,266,000	\$280,000	\$0	\$280,000	\$0	\$280,000	\$0	\$280,000	\$0	\$280,000	\$0	\$280,000	
4.04.11	Remedial Design (15%)	\$0	\$0	\$0	\$2,470,000	\$2,326,000	\$2,326,000	\$2,326,000	\$2,326,000	\$2,326,000	\$2,326,000	\$2,440,000	\$42,000	\$0	\$42,000	\$0	\$42,000	\$0	\$42,000	\$0	\$42,000	\$0	\$42,000	
4.02.09	Construction Management (10%)	\$0	\$0	\$0	\$1,647,000	\$1,551,000	\$1,551,000	\$1,551,000	\$1,551,000	\$1,551,000	\$1,551,000	\$1,627,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.02.01	Project Management (5%)	\$0	\$0	\$0	\$824,000	\$776,000	\$776,000	\$776,000	\$776,000	\$776,000	\$776,000	\$814,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
6.02.01	Project Management (5%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0	
6.07.9x	Construction Coordination (1%)	\$0	\$0	\$0	\$165,000	\$156,000	\$156,000	\$156,000	\$156,000	\$156,000	\$156,000	\$163,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.02.14	Health and Safety (1.5%)	\$0	\$0	\$0	\$247,000	\$233,000	\$233,000	\$233,000	\$233,000	\$233,000	\$233,000	\$244,000	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	
4.02.01.01	Program Management (1%)	\$0	\$0	\$0	\$165,000	\$156,000	\$156,000	\$156,000	\$156,000	\$156,000	\$156,000	\$163,000	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	
4.02.03	Regulatory Costs (1%)	\$0	\$0	\$0	\$165,000	\$156,000	\$156,000	\$156,000	\$156,000	\$156,000	\$156,000	\$163,000	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	
	Project Cost (without Contingency)	\$0	\$0	\$0	\$22,149,000	\$20,856,000	\$20,856,000	\$20,856,000	\$20,856,000	\$20,856,000	\$20,856,000	\$21,880,000	\$347,000	\$0	\$347,000	\$0	\$347,000	\$0	\$347,000	\$0	\$347,000	\$0	\$347,000	
8.01.03.13	Contingency 30% (DOE Held)	\$0	\$0	\$0	\$6,645,000	\$6,257,000	\$6,257,000	\$6,257,000	\$6,257,000	\$6,257,000	\$6,257,000	\$6,564,000	\$105,000	\$0	\$105,000	\$0	\$105,000	\$0	\$105,000	\$0	\$105,000	\$0	\$105,000	
8.01.03.13	Management Reserve 1% (Contractor Held)	\$0	\$0	\$0	\$222,000	\$209,000	\$209,000	\$209,000	\$209,000	\$209,000	\$209,000	\$219,000	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	
	Total Project Cost (TPC) - Current Dollars	\$0	\$0	\$0	\$29,016,000	\$27,322,000	\$27,322,000	\$27,322,000	\$27,322,000	\$27,322,000	\$27,322,000	\$28,663,000	\$456,000	\$0	\$456,000	\$0	\$456,000	\$0	\$456,000	\$0	\$456,000	\$0	\$456,000	

- The draft detailed cost estimates are based primarily on the methodology as described in Cost Estimating Guide, DOE G 413.3-21A.
 - Specific assumptions used in preparation of the detailed cost estimates are included in the Basis of Estimate (BOE).

AREA IV SOIL REMOVAL AND DISPOSAL		PERIODIC SURVEILLANCE AND LONG-TERM MAINTENANCE		TOTAL LIFE-CYCLE COST - CURRENT (CY 2018) COST	
TPC (WITHOUT CONTINGENCY)	TPC (CURRENT DOLLARS)	TPC (WITHOUT CONTINGENCY)	TPC (CURRENT DOLLARS)	LCC (WITHOUT CONTINGENCY)	LCC (CURRENT DOLLARS)
\$169,165,000	\$221,611,000	\$2,082,000	\$2,736,000	\$171,247,000	\$224,347,000

(1) Cost presented for each ECES Code is presented on "Table CS-3". Cost for each ECES Code is the summation of costs under same ECES Code as presented on "Table CS-3" within the respective year. (2) Costs subtotals and totals are rounded-up to the nearest \$1,000.

TABLE CS-3 - Future Cost

Alternative LIFE-CYCLE COST ESTIMATE - FUTURE DOLLARS

Cleanup to Revised AOC Look-Up Table Values Alternative

Site: SSFL Area IV/NBZ
 Location: Ventura County, California
 Document: Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates
 Project/Program Life-Cycle Stage: Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]
 Cost Estimate Classification: Class 4, Study or Feasibility (Level of Definition: 1% to 15%)
 Base Year: 2018
 Date of Estimate: September 2018

This alternative provides protection of human health and environment through excavation and offsite disposal of soils containing radionuclides and chemicals exceeding the revised LUT values. It should be noted that under this alternative, the cleanup requirement as stipulated by 2010 AOC would not be met. Soils containing chemicals concentrations between AOC LUT values for chemicals and the revised LUT values for chemicals (RBSLs) would be left in place. The frequency of truck hauling would meet the current limit set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 8 years with anticipated start in year 2021 and completion in year 2028.

¹ It is assumed that building demolition and disposal are NOT within the scope of this FCBA and are therefore not included in the cost estimate. It is assumed that building demolition/disposal and soil removal/disposal would be performed in a sequential manner where building removal would occur for 2 years (beginning in year 2019), followed by soil removal. DOE would demolish its remaining 18 structures within Area IV/NBZ and dispose of or recycle uncontaminated materials off site.

LIFE-CYCLE COST IN FUTURE DOLLARS

ECES Code	Description	Calendar Year (CY)																								
		Base Year	Area IV Building Demolition ¹			Area IV Soil Remediation								Periodic Surveillance and Long-Term Maintenance (30 Years)												
		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030 - 2033	2034	2035 - 2038	2039	2040 - 2043	2044	2045 - 2048	2049	2050 - 2053	2054	2055 - 2058		
4.02.04	Institutional Controls	\$0	\$0	\$0	\$82,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
4.02.02	Community Awareness Activities	\$0	\$0	\$0	\$54,700	\$22,600	\$23,200	\$23,900	\$24,600	\$25,400	\$26,100	\$26,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
6.02.02	Community Awareness Activities	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$27,700	\$0	\$32,100	\$0	\$37,300	\$0	\$43,200	\$0	\$50,100	\$0	\$58,000	\$0			
4.9x	General Conditions																									
Multiple ECES Codes	Workplans and Submittals	\$0	\$0	\$0	\$208,600	\$20,300	\$20,900	\$21,500	\$22,200	\$22,900	\$23,500	\$85,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
8.01.04	Home Office Personnel	\$0	\$0	\$0	\$121,800	\$125,400	\$129,200	\$133,100	\$137,100	\$141,200	\$145,400	\$149,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.02.01.01.15	Job Site Personnel	\$0	\$0	\$0	\$1,877,100	\$1,933,400	\$1,991,500	\$2,051,300	\$2,112,800	\$2,176,200	\$2,241,400	\$2,308,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.01.03	Temporary Facilities	\$0	\$0	\$0	\$92,700	\$48,000	\$49,400	\$50,900	\$52,400	\$54,000	\$55,600	\$78,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.01.01	Mobilization of Construction Equipment	\$0	\$0	\$0	\$70,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.36.04	Demobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$94,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.9x	Best Management Practices - Structural																									
8.01.01	SWPPP Implementation and Maintenance	\$0	\$0	\$0	\$26,200	\$10,100	\$10,400	\$10,700	\$11,000	\$11,300	\$11,700	\$12,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.02	Temporary Erosion and Sediment Control	\$0	\$0	\$0	\$270,500	\$61,800	\$63,700	\$65,600	\$67,600	\$69,600	\$71,700	\$73,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.9x	Existing Tree Protection	\$0	\$0	\$0	\$37,500	\$17,700	\$18,300	\$18,800	\$19,400	\$19,900	\$20,500	\$21,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.16.04	Dust Control	\$0	\$0	\$0	\$394,800	\$406,700	\$418,900	\$431,500	\$444,400	\$457,700	\$471,500	\$485,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.07.08.02	Air Monitoring	\$0	\$0	\$0	\$34,300	\$35,300	\$36,300	\$37,400	\$38,500	\$39,700	\$40,900	\$42,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.01.03.12	Decontamination/Wash Station	\$0	\$0	\$0	\$463,000	\$185,900	\$191,500	\$197,200	\$203,100	\$209,200	\$215,500	\$221,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.9x	Street Sweeping	\$0	\$0	\$0	\$262,400	\$270,300	\$278,400	\$286,800	\$295,300	\$304,200	\$313,300	\$322,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
8.01.03.11	Traffic Control	\$0	\$0	\$0	\$1,479,100	\$1,416,600	\$1,459,100	\$1,502,900	\$1,548,000	\$1,594,400	\$1,642,300	\$1,691,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
Multiple ECES Codes	Excavation, Hauling and Disposal																									
4.05.9x	Construction Survey and Staking	\$0	\$0	\$0	\$4,600	\$4,800	\$4,900	\$5,100	\$5,200	\$5,400	\$5,500	\$5,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.05.01	Excavation	\$0	\$0	\$0	\$357,800	\$368,500	\$379,600	\$391,000	\$402,700	\$414,800	\$427,200	\$440,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.32.11.05	Hauling	\$0	\$0	\$0	\$7,151,100	\$7,365,800	\$7,587,000	\$7,814,700	\$8,049,000	\$8,290,500	\$8,539,200	\$8,795,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.07.11	Confirmation Sampling	\$0	\$0	\$0	\$8,500	\$8,700	\$9,000	\$9,200	\$9,500	\$9,800	\$10,100	\$10,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.08.04	Sample Analysis	\$0	\$0	\$0	\$139,600	\$143,800	\$148,100	\$152,500	\$157,100	\$161,800	\$166,700	\$171,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.33.08.05	Disposal	\$0	\$0	\$0	\$2,870,900	\$2,957,100	\$3,045,900	\$3,137,300	\$3,231,400	\$3,328,300	\$3,428,200	\$3,530,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.9x	Excavation of Underground Utilities (D&D)	\$0	\$0	\$0	\$36,100	\$37,200	\$38,300	\$39,500	\$40,600	\$41,900	\$43,100	\$44,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.05	Backfill																									
4.05.05.06	Backfill from Offsite Sources	\$0	\$0	\$0	\$1,944,900	\$2,003,300	\$2,063,500	\$2,125,400	\$2,189,100	\$2,254,800	\$2,322,500	\$2,392,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.02	Restoration																									
4.05.02.05	Seeding	\$0	\$0	\$0	\$4,300	\$4,400	\$4,600	\$4,700	\$4,800	\$5,000	\$5,100	\$5,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.08	Allowance for Street/Pavement Repair	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$849,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
6.21.08	Post-Construction Monitoring	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$346,100	\$0	\$401,200	\$0	\$465,100	\$0	\$539,200	\$0	\$625,100	\$0	\$724,600	\$0			
6.02.04.06	Evaluating and Updating Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$13,900	\$0	\$16,100	\$0	\$18,700	\$0	\$21,600	\$0	\$25,100	\$0	\$29,000	\$0			
Subtotal		\$0	\$0	\$0	\$17,993,000	\$17,448,000	\$17,972,000	\$18,511,000	\$19,066,000	\$19,638,000	\$20,227,000	\$21,861,000	\$388,000	\$0	\$450,000	\$0	\$522,000	\$0	\$604,000	\$0	\$701,000	\$0	\$812,000	\$0		
4.04.11	Remedial Design (15%)	\$0	\$0	\$0	\$2,699,000	\$2,618,000	\$2,696,000	\$2,777,000	\$2,860,000	\$2,946,000	\$3,035,000	\$3,280,000	\$59,000	\$0	\$68,000	\$0	\$79,000	\$0	\$91,000	\$0	\$106,000	\$0	\$122,000	\$0		
4.02.09	Construction Management (10%)	\$0	\$0	\$0	\$1,800,000	\$1,745,000	\$1,798,000	\$1,852,000	\$1,907,000	\$1,964,000	\$2,023,000	\$2,187,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.02.01	Project Management (5%)	\$0	\$0	\$0	\$900,000	\$873,000	\$899,000	\$926,000	\$954,000	\$982,000	\$1,012,000	\$1,094,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
6.02.01	Project Management (5%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$20,000	\$0	\$23,000	\$0	\$27,000	\$0	\$31,000	\$0	\$36,000	\$0	\$41,000	\$0		
6.07.9x	Construction Coordination (1%)	\$0	\$0	\$0	\$180,000	\$175,000	\$180,000	\$186,000	\$191,000	\$197,000	\$203,000	\$219,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.02.14	Health and Safety (1.5%)	\$0	\$0	\$0	\$270,000	\$262,000	\$270,000	\$278,000	\$286,000	\$295,000	\$304,000	\$328,000	\$6,000	\$0	\$7,000	\$0	\$8,000	\$0	\$10,000	\$0	\$11,000	\$0	\$13,000	\$0		
4.02.01.01	Program Management (1%)	\$0	\$0	\$0	\$180,000	\$175,000	\$180,000	\$186,000	\$191,000	\$197,000	\$203,000	\$219,000	\$4,000	\$0	\$5,000	\$0	\$6,000	\$0	\$7,000	\$0	\$8,000	\$0	\$9,000	\$0		
4.02.03	Regulatory Costs (1%)	\$0	\$0	\$0	\$180,000	\$175,000	\$180,000	\$186,000	\$191,000	\$197,000	\$203,000	\$219,000	\$4,000	\$0	\$5,000	\$0	\$6,000	\$0	\$7,000	\$0	\$8,000	\$0	\$9,000	\$0		
Project Cost (without Contingency)		\$0	\$0	\$0	\$24,202,000	\$23,471,000	\$24,175,000	\$24,902,000	\$25,646,000	\$26,416,000	\$27,210,000	\$29,407,000	\$481,000	\$0	\$558,000	\$0	\$648,000	\$0	\$750,000	\$0	\$870,000	\$0	\$1,006,000	\$0		
8.01.03.13	Contingency 30% (DOE Held)	\$0	\$0	\$0	\$7,261,000	\$7,042,000	\$7,253,000	\$7,471,000	\$7,694,000	\$7,925,000	\$8,163,000	\$8,823,000	\$145,000	\$0	\$168,000	\$0	\$195,000	\$0	\$225,000	\$0	\$261,000	\$0	\$302,000	\$0		
8.01.03.13	Management Reserve 1% (Contractor Held)	\$0	\$0	\$0	\$243,000	\$235,000	\$242,000	\$250,000	\$257,000	\$265,000	\$273,000	\$295,000	\$5,000	\$0	\$6,000	\$0	\$7,000	\$0	\$8,000	\$0	\$9,000	\$0	\$11,000	\$0		
Total Project Cost (TPC) - Future Dollars		\$0	\$0	\$0	\$31,706,000	\$30,748,000	\$31,670,000	\$32,623,000	\$33,597,000	\$34,606,000	\$35,646,000	\$38,525,000	\$631,000	\$0	\$732,000	\$0	\$850,000	\$0	\$983,000	\$0	\$1,140,000	\$0	\$1,319,000	\$0		

- The draft detailed cost estimates are based primarily on the methodology as described in Cost Estimating Guide, DOE G 413.3-21A.
 - Specific assumptions used in preparation of the detailed cost estimates are included in the Basis of Estimate (BOE).

AREA IV SOIL REMOVAL AND DISPOSAL		PERIODIC SURVEILLANCE AND LONG-TERM MAINTENANCE		TOTAL LIFE-CYCLE COST - FUTURE COST	
TPC (WITHOUT CONTINGENCY)	TPC (FUTURE DOLLARS)	TPC (WITHOUT CONTINGENCY)	TPC (FUTURE DOLLARS)	LCC (WITHOUT CONTINGENCY)	LCC (FUTURE DOLLARS)
\$205,429,000	\$269,121,000	\$4,313,000	\$5,655,000	\$209,742,000	\$274,776,000

(1) Future dollars are calculated by escalating current dollar costs from "Table CS-3 - Current Cost (CY 2018)" using annual escalation rate factors presented in "Table LCC-AERFT". (2) Costs subtotals and totals are rounded-up to the nearest \$1,000.

TABLE CS-3 - Present Worth

Alternative Cleanup to Revised AOC Look-Up Table Values Alternative	SSFL Area IV/NBZ Ventura County, California Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range] Class 4, Study or Feasibility (Level of Definition: 1% to 15%) 2018 September 2018	This alternative provides protection of human health and environment through excavation and offsite disposal of soils containing radionuclides and chemicals exceeding the revised LUT values. It should be noted that under this alternative, the cleanup requirement as stipulated by 2010 AOC would not be met. Soils containing chemicals concentrations between AOC LUT values for chemicals and the revised LUT values for chemicals (RBSLs) would be left in place. The frequency of truck hauling would meet the current limit set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 8 years with anticipated start in year 2021 and completion in year 2028. It is assumed that building demolition and disposal are NQI within the scope of this FCBA and are therefore not included in the cost estimate. It is assumed that building demolition/disposal and soil removal/disposal would be performed in a sequential manner where building removal would occur for 2 years (beginning in year 2019), followed by soil removal. DOE would demolish its remaining 18 structures within Area IV/NBZ and dispose of or recycle uncontaminated materials off site.
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LIFE-CYCLE COST ESTIMATE - PRESENT WORTH DOLLARS

LIFE-CYCLE COST IN PRESENT WORTH DOLLARS

ECES Code	Description	Calendar Year (CY)																					
		Area IV Building Demolition ¹			Area IV Soil Remediation								Periodic Surveillance and Long-Term Maintenance (30 Years)										
		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030 - 2033	2034	2035 - 2038	2039	2040 - 2043	2044	2045 - 2048	2049	2050 - 2053	2054
4.02.04	Institutional Controls	\$0	\$0	\$0	\$76,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.02	Community Awareness Activities	\$0	\$0	\$0	\$50,700	\$20,400	\$20,500	\$20,500	\$20,600	\$20,700	\$20,800	\$20,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.02.02	Community Awareness Activities	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$20,900	\$0	\$21,300	\$0	\$21,800	\$0	\$22,200	\$0	\$22,700	\$0	\$23,100	\$0
4.9x	General Conditions																						
Multiple ECES Codes	Workplans and Submittals	\$0	\$0	\$0	\$193,200	\$18,400	\$18,400	\$18,500	\$18,600	\$18,700	\$18,700	\$66,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
8.01.04	Home Office Personnel	\$0	\$0	\$0	\$112,800	\$113,200	\$113,700	\$114,200	\$114,600	\$115,000	\$115,500	\$115,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.02.01.01.15	Job Site Personnel	\$0	\$0	\$0	\$1,738,100	\$1,744,800	\$1,751,800	\$1,758,600	\$1,765,300	\$1,772,300	\$1,779,000	\$1,786,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.01.03	Temporary Facilities	\$0	\$0	\$0	\$85,900	\$43,400	\$43,500	\$43,700	\$43,800	\$44,000	\$44,200	\$60,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.01.01	Mobilization of Construction Equipment	\$0	\$0	\$0	\$65,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.36.04	Demobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$73,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.9x	Best Management Practices - Structural																						
8.01.01	SWPPP Implementation and Maintenance	\$0	\$0	\$0	\$24,300	\$9,200	\$9,200	\$9,200	\$9,200	\$9,300	\$9,300	\$9,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.02	Temporary Erosion and Sediment Control	\$0	\$0	\$0	\$250,500	\$55,800	\$56,100	\$56,300	\$56,500	\$56,700	\$57,000	\$57,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.9x	Existing Tree Protection	\$0	\$0	\$0	\$34,800	\$16,000	\$16,100	\$16,200	\$16,300	\$16,300	\$16,400	\$16,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.16.04	Dust Control	\$0	\$0	\$0	\$365,600	\$367,100	\$368,500	\$370,000	\$371,300	\$372,800	\$374,300	\$375,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.07.08.02	Air Monitoring	\$0	\$0	\$0	\$31,800	\$31,900	\$32,000	\$32,100	\$32,200	\$32,400	\$32,500	\$32,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.01.03.12	Decontamination/Wash Station	\$0	\$0	\$0	\$428,700	\$167,800	\$168,500	\$169,100	\$169,700	\$170,400	\$171,100	\$171,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.9x	Street Sweeping	\$0	\$0	\$0	\$243,000	\$244,000	\$244,900	\$245,900	\$246,800	\$247,800	\$248,700	\$249,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
8.01.03.11	Traffic Control	\$0	\$0	\$0	\$1,369,500	\$1,278,400	\$1,283,500	\$1,288,500	\$1,293,400	\$1,298,500	\$1,303,500	\$1,308,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Multiple ECES Codes	Excavation, Hauling and Disposal																						
4.05.9x	Construction Survey and Staking	\$0	\$0	\$0	\$4,300	\$4,400	\$4,400	\$4,400	\$4,400	\$4,400	\$4,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.05.01	Excavation	\$0	\$0	\$0	\$331,300	\$332,600	\$333,900	\$335,300	\$336,500	\$337,900	\$339,100	\$340,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.32.11.05	Hauling	\$0	\$0	\$0	\$6,621,300	\$6,646,900	\$6,673,600	\$6,699,600	\$6,725,000	\$6,751,800	\$6,777,600	\$6,803,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.07.11	Confirmation Sampling	\$0	\$0	\$0	\$7,900	\$7,900	\$8,000	\$7,900	\$8,000	\$8,100	\$8,100	\$8,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.08.04	Sample Analysis	\$0	\$0	\$0	\$129,300	\$129,800	\$130,300	\$130,800	\$131,300	\$131,800	\$132,400	\$132,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.33.08.05	Disposal	\$0	\$0	\$0	\$2,658,200	\$2,668,500	\$2,679,200	\$2,689,700	\$2,699,900	\$2,710,600	\$2,721,000	\$2,731,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.9x	Excavation of Underground Utilities (D&D)	\$0	\$0	\$0	\$33,500	\$33,600	\$33,700	\$33,900	\$34,000	\$34,200	\$34,300	\$34,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.05	Backfill																						
4.05.05.06	Backfill from Offsite Sources	\$0	\$0	\$0	\$1,800,800	\$1,807,800	\$1,815,100	\$1,822,200	\$1,829,000	\$1,836,400	\$1,843,400	\$1,850,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.02	Restoration																						
4.05.02.05	Seeding	\$0	\$0	\$0	\$4,000	\$4,000	\$4,100	\$4,100	\$4,100	\$4,100	\$4,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.08	Allowance for Street/Pavement Repair	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$656,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
6.21.08	Post-Construction Monitoring	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$261,000	\$0	\$266,100	\$0	\$271,300	\$0	\$276,700	\$0	\$282,200	\$0	\$287,600	
6.02.04.06	Evaluating and Updating Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,500	\$0	\$10,700	\$0	\$11,000	\$0	\$11,100	\$0	\$11,400	\$0	\$11,600	
	Subtotal	\$0	\$0	\$0	\$16,661,000	\$15,746,000	\$15,809,000	\$15,871,000	\$15,931,000	\$15,995,000	\$16,056,000	\$16,913,000	\$293,000	\$0	\$299,000	\$0	\$305,000	\$0	\$310,000	\$0	\$317,000	\$0	\$323,000
4.04.11	Remedial Design (15%)	\$0	\$0	\$0	\$2,500,000	\$2,362,000	\$2,372,000	\$2,381,000	\$2,390,000	\$2,400,000	\$2,409,000	\$2,537,000	\$44,000	\$0	\$45,000	\$0	\$46,000	\$0	\$47,000	\$0	\$48,000	\$0	\$49,000
4.02.09	Construction Management (10%)	\$0	\$0	\$0	\$1,667,000	\$1,575,000	\$1,581,000	\$1,588,000	\$1,594,000	\$1,600,000	\$1,606,000	\$1,692,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.02.01	Project Management (5%)	\$0	\$0	\$0	\$834,000	\$788,000	\$791,000	\$794,000	\$797,000	\$800,000	\$803,000	\$846,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
6.02.01	Project Management (5%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$15,000	\$0	\$15,000	\$0	\$16,000	\$0	\$16,000	\$0	\$16,000	\$0	\$17,000	
6.07.9x	Construction Coordination (1%)	\$0	\$0	\$0	\$167,000	\$158,000	\$159,000	\$159,000	\$160,000	\$160,000	\$161,000	\$170,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.02.14	Health and Safety (1.5%)	\$0	\$0	\$0	\$250,000	\$237,000	\$238,000	\$239,000	\$239,000	\$240,000	\$241,000	\$254,000	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000
4.02.01.01	Program Management (1%)	\$0	\$0	\$0	\$167,000	\$158,000	\$159,000	\$159,000	\$160,000	\$160,000	\$161,000	\$170,000	\$3,000	\$0	\$3,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000
4.02.03	Regulatory Costs (1%)	\$0	\$0	\$0	\$167,000	\$158,000	\$159,000	\$159,000	\$160,000	\$160,000	\$161,000	\$170,000	\$3,000	\$0	\$3,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000
	Project Cost (without Contingency)	\$0	\$0	\$0	\$22,413,000	\$21,182,000	\$21,268,000	\$21,350,000	\$21,431,000	\$21,515,000	\$21,598,000	\$22,752,000	\$363,000	\$0	\$370,000	\$0	\$380,000	\$0	\$386,000	\$0	\$394,000	\$0	\$402,000
8.01.03.13	Contingency 30% (DOE Held)	\$0	\$0	\$0	\$6,724,000	\$6,355,000	\$6,381,000	\$6,405,000	\$6,430,000	\$6,455,000	\$6,480,000	\$6,826,000	\$109,000	\$0	\$111,000	\$0	\$114,000	\$0	\$116,000	\$0	\$119,000	\$0	\$121,000
8.01.03.13	Management Reserve 1% (Contractor Held)	\$0	\$0	\$0	\$225,000	\$212,000	\$213,000	\$214,000	\$215,000	\$216,000	\$216,000	\$228,000	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$5,000
	Total Project Cost (TPC) - Present Worth	\$0	\$0	\$0	\$29,362,000	\$27,749,000	\$27,862,000	\$27,969,000	\$28,076,000	\$28,186,000	\$28,294,000	\$29,806,000	\$476,000	\$0	\$485,000	\$0	\$498,000	\$0	\$506,000	\$0	\$517,000	\$0	\$528,000

- The draft detailed cost estimates are based primarily on the methodology as described in Cost Estimating Guide, DOE G 413.3-21A. - Specific assumptions used in preparation of the detailed cost estimates are included in the Basis of Estimate (BOE).	AREA IV SOIL REMOVAL AND DISPOSAL		PERIODIC SURVEILLANCE AND LONG-TERM MAINTENANCE		TOTAL LIFE-CYCLE COST - PRESENT WORTH		(1) Present Worth (PW) are calculated by discounting the future dollar costs from "Table CS-3 - Future Cost (CY 2018)" using the calculated discount factors presented in "Table SPV-ADRF1". (2) PW was calculated as described in Appendix F of the Cost Estimating Guide, DOE G 413.3-21A. (3) Costs subtotals and totals are rounded-up to the nearest \$1,000.
	TPC (WITHOUT CONTINGENCY)	TPC (PRESENT WORTH)	TPC (WITHOUT CONTINGENCY)	TPC (PRESENT WORTH)	LCC (WITHOUT CONTINGENCY)	LCC (PRESENT WORTH)	
	\$173,509,000	\$227,304,000	\$2,295,000	\$3,010,000	\$175,804,000	\$230,314,000	

DETAILED COST ESTIMATE BACKUP SUMMARY

Alternative Cleanup to Revised AOC Look-Up Table Values Alternative		Description: This alternative provides protection of human health and environment through excavation and offsite disposal of soils containing radionuclides and chemicals exceeding the revised LUT values. It should be noted that under this alternative, the cleanup requirement as stipulated by 2010 AOC would not be met. Soils containing chemicals concentrations between AOC LUT values for chemicals and the revised LUT values for chemicals (RBSLs) would be left in place. The frequency of truck hauling would meet the current limit set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 8 years with anticipated start in year 2021 and completion in year 2028.	
Site:	SSFL Area I/NBZ		
Location:	Ventura County, California		
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates		
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 (Approve Alternative Class 4, Study or Feasibility (Level of		
Cost Estimate Classification:	Definition: 1% to 15%)		
Base Year:	2018		
Date of Estimate:	September 2018		

INSTITUTIONAL CONTROLS CAPITAL COSTS: (Assumed to be Incurred During Year 3 [2021])						
ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
4.02.04	Institutional Controls	1	LS	\$75,000	\$75,000	Allowance, Includes establishment of ICs during construction
4.02.02	Community Awareness Activities	1	LS	\$50,000	\$50,000	Allowance, Includes public meetings and extensive outreach programs

AREA IV SOIL REMOVAL AND DISPOSAL COSTS: (Assumed to be Incurred During Year 3 [2021])						
ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
4.9x	General Conditions					
Multiple ECES Codes	Workplans and Submittals					
4.02.01.01	Project Progress Meetings and Schedule Update	12	MO	\$1,497	\$17,967	Weekly meetings and updating project schedule.
4.02.01	Work Plans	1	LS	\$138,773	\$138,773	Includes preparation of administrative BMPs
4.04.21	Submittals	1	LS	\$34,100	\$34,100	General submittals typical of a construction project.
8.01.04	Home Office Personnel	12	MO	\$9,283	\$111,399	Includes project manager and administrative support.
4.02.01.01.15	Job Site Personnel	12	MO	\$143,147	\$1,717,767	Includes general site personnel, archeologist and biologist.
4.05.01.03	Temporary Facilities	12	MO	\$7,063	\$84,754	Includes staging area, temporary offices.
4.05.01.01	Mobilization of Construction Equipment	1	LS	\$64,015	\$64,015	
4.9x	Best Management Practices - Structural					
8.01.01	SWPPP Implementation and Maintenance					
8.01.01.03	SWPPP Preparation (Report)	1	LS	\$15,004	\$15,004	Itemized separately from other Work Plans
8.01.01.9x	SWPPP Oversight and Maintenance	12	MO	\$738.00	\$8,853	
4.05.02	Temporary Erosion and Sediment Control					Temporary measures to be used separately or concurrently.
4.05.02.04	Silt Fence	55,760	LF	\$2.86	\$159,694	
4.05.02.04	Wattles	875	LF	\$7.64	\$6,689	
4.05.02.04	Sediment Trap	4	EA	\$1,465	\$5,858	
4.05.02.04	Rock Filter Dam	4	EA	\$3,651	\$14,602	
4.05.02.04	Track-out Prevention	4	EA	\$1,461	\$5,842	Gravel pad at excavation exit areas
4.05.02.05	Temporary Seeding	5	ACR	\$275.81	\$1,241	
4.05.02.9x	Erosion and Sediment Control Maintenance	12	MO	\$4,464	\$53,567	
4.05.9x	Existing Tree Protection					
4.05.9x	Arborist and Care for Existing Trees	12	MO	\$1,301	\$15,617	Buffer zone around trees identified. Watering assumed under dust control.
4.05.9x	Tree Protection Fencing	35	EA	\$533.29	\$18,665	Routine checks of trees by arborist.
4.16.04	Dust Control	12	MO	\$30,102	\$361,221	Assumes use of 16,000 gallons per day purchased from Ventura County
4.07.08.02	Air Monitoring	12	MO	\$2,603	\$31,237	Perimeter air monitoring for particulate (PM-10)
4.05.01.03.12	Decontamination/Wash Station					
4.05.01.03.12	Purchase and Setup	1	EA	\$258,641	\$258,641	Wash station capable of re-using wash water.
4.05.01.03.12	Operation	12	MO	\$13,752	\$165,020	
4.05.9x	Street Sweeping	12	MO	\$20,005	\$240,065	Daily street sweeping along access roads.
8.01.03.11	Traffic Control					
8.01.03.11	Preconstruction Video Survey	1	LS	\$4,398	\$4,398	
8.01.03.11	Traffic Control Signs and Barricades	1	LS	\$90,569	\$90,569	
8.01.03.11	Traffic Control	12	MO	\$104,880	\$1,258,563	Traffic control/flagman along Woolsey Canyon Road.
Multiple ECES Codes	Excavation, Hauling and Disposal					
Multiple ECES Codes	Low-Hazard and Moderate-Hazard Soil					
4.05.9x	Construction Survey and Staking	1.85	ACR	\$925.61	\$1,712	
4.05.05.01	Excavation	9,750	BCY	\$8.19	\$79,853	Includes excavation and loading
4.32.11.05	Hauling	14,625	TON	\$80.91	\$1,183,309	An average of 135 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	81	EA	\$39.23	\$3,178	
4.08.04	Sample Analysis	81	EA	\$651.29	\$52,754	
4.33.08.05	Disposal	14,625	TON	\$52.94	\$774,248	Disposal inside of California (Class 2 or Class 3 disposal facility)
Multiple ECES Codes	Hazardous Soil					
4.05.9x	Construction Survey and Staking	0.05	ACR	\$925.00	\$46	
4.05.05.01	Excavation	250	BCY	\$46.84	\$11,710	Includes excavation and loading
4.32.11.05	Hauling	375	TON	\$506.58	\$189,968	An average of 780 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	2	EA	\$39.22	\$78	
4.08.04	Sample Analysis	2	EA	\$651.29	\$1,303	
4.33.08.05	Disposal	375	TON	\$88.24	\$33,090	Disposal outside of California.
Multiple ECES Codes	LLW/MLLW Soil					
4.05.9x	Construction Survey and Staking	2.60	ACR	\$925.63	\$2,407	
4.05.05.01	Excavation	13,750	BCY	\$17.15	\$235,813	Includes excavation and loading
4.32.11.05	Hauling	20,625	TON	\$250.72	\$5,171,100	An average of 300 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	113	EA	\$39.23	\$4,433	
4.08.04	Sample Analysis	113	EA	\$651.29	\$73,596	
4.33.08.05	Disposal	20,625	TON	\$88.24	\$1,819,950	Disposal outside of California (Class 1 disposal facility)
4.05.9x	Excavation of Underground Utilities (D&D)	1	LS	\$33,000	\$33,000	Assumes 10% of total excavation cost
4.05.05	Backfill and Organic Amendment					
4.05.05.06	Backfill from Offsite Sources	17,813	ECY	\$99.92	\$1,779,825	Assume backfill would come from an offsite source within 50 miles of site.
4.05.02	Restoration					
4.05.02.05	Seeding	5	AC	\$845.69	\$3,806	Seeding disturbed areas with native grasses and wildflower seed mix.

DETAILED COST ESTIMATE BACKUP SUMMARY

Alternative Cleanup to Revised AOC Look-Up Table Values Alternative		Description: This alternative provides protection of human health and environment through excavation and offsite disposal of soils containing radionuclides and chemicals exceeding the revised LUT values. It should be noted that under this alternative, the cleanup requirement as stipulated by 2010 AOC would not be met. Soils containing chemicals concentrations between AOC LUT values for chemicals and the revised LUT values for chemicals (RBSLs) would be left in place. The frequency of truck hauling would meet the current limit set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 8 years with anticipated start in year 2021 and completion in year 2028.
Site:	SSFL Area IV/NBZ	
Location:	Ventura County, California	
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates	
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Class 4, Study or Feasibility (Level of	
Cost Estimate Classification:	Definition: 1% to 15%)	
Base Year:	2018	
Date of Estimate:	September 2018	

AREA IV SOIL REMOVAL AND DISPOSAL COSTS: (Assumed to be Incurred During Year 4 (2022) through Year 9 (2027))						
ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
4.9x	General Conditions					
<i>Multiple ECES Codes</i>	<i>Workplans and Submittals</i>					
4.02.01.01	Project Progress Meetings and Schedule Update	12	MO	\$1,497	\$17,967	Weekly meetings and updating project schedule.
8.01.04	Home Office Personnel	12	MO	\$9,283	\$111,399	Includes project manager and administrative support.
4.02.01.01.15	Job Site Personnel	12	MO	\$143,147	\$1,717,767	Includes general site personnel, archeologist and biologist.
4.05.01.03	Temporary Facilities	12	MO	\$3,546	\$42,556	Includes staging area, temporary offices.
4.9x	Best Management Practices - Structural					
<i>Multiple ECES Codes</i>	<i>SWPPP Implementation and Maintenance</i>					
8.01.01	SWPPP Oversight and Maintenance	12	MO	\$738.00	\$8,853	
8.01.01.9x	SWPPP Oversight and Maintenance	12	MO	\$738.00	\$8,853	Temporary measures to be used separately or concurrently.
4.05.02	Temporary Erosion and Sediment Control					
4.05.02.05	Temporary Seeding	5	ACR	\$275.81	\$1,241	
4.05.02.9x	Erosion and Sediment Control Maintenance	12	MO	\$4,464	\$53,567	
4.05.9x	Existing Tree Protection					
4.05.9x	Arborist and Care for Existing Trees	12	MO	\$1,301	\$15,617	Buffer zone around trees identified. Watering assumed under dust control.
4.16.04	Dust Control	12	MO	\$30,102	\$361,221	Assumes use of 16,000 gallons per day purchased from Ventura County
4.07.08.02	Air Monitoring	12	MO	\$2,603	\$31,237	Perimeter air monitoring for particulate (PM-10)
4.05.01.03.12	Decontamination/Wash Station					
4.05.01.03.12	Operation	12	MO	\$13,752	\$165,020	
4.05.9x	Street Sweeping	12	MO	\$20,005	\$240,065	Daily street sweeping along access roads.
8.01.03.11	Traffic Control	12	MO	\$104,880	\$1,258,563	Traffic control/flagman along Woolsey Canyon Road.
8.01.03.11	Traffic Control	12	MO	\$104,880	\$1,258,563	
<i>Multiple ECES Codes</i>	Excavation, Hauling and Disposal					
<i>Multiple ECES Codes</i>	Low-Hazard and Moderate-Hazard Soil					
4.05.9x	Construction Survey and Staking	1.85	ACR	\$925.61	\$1,712	
4.05.05.01	Excavation	9,750	BCY	\$8.19	\$79,853	Includes excavation and loading
4.32.11.05	Hauling	14,625	TON	\$80.91	\$1,183,309	An average of 135 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	81	EA	\$39.23	\$3,178	
4.08.04	Sample Analysis	81	EA	\$651.29	\$52,754	
4.33.08.05	Disposal	14,625	TON	\$52.94	\$774,248	Disposal inside of California (Class 2 or Class 3 disposal facility)
<i>Multiple ECES Codes</i>	Hazardous Soil					
4.05.9x	Construction Survey and Staking	0.05	ACR	\$925.00	\$46	
4.05.05.01	Excavation	250	BCY	\$46.84	\$11,710	Includes excavation and loading
4.32.11.05	Hauling	375	TON	\$506.58	\$189,968	An average of 780 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	2	EA	\$39.22	\$78	
4.08.04	Sample Analysis	2	EA	\$651.28	\$1,303	
4.33.08.05	Disposal	375	TON	\$88.24	\$33,090	Disposal outside of California.
<i>Multiple ECES Codes</i>	LLW/MLLW Soil					
4.05.9x	Construction Survey and Staking	2.60	ACR	\$925.63	\$2,407	
4.05.05.01	Excavation	13,750	BCY	\$17.15	\$235,813	Includes excavation and loading
4.32.11.05	Hauling	20,625	TON	\$250.72	\$5,171,100	An average of 300 mile one-way hauling distance to disposal facility
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4.08.04	Sample Analysis	113	EA	\$651.29	\$73,596	
4.33.08.05	Disposal	20,625	TON	\$88.24	\$1,819,950	Disposal outside of California (Class 1 disposal facility)
4.05.9x	Excavation of Underground Utilities (D&D)	1	LS	\$33,000	\$33,000	Assumes 10% of total excavation cost
4.05.05	Backfill and Organic Amendment					
4.05.05.06	Backfill from Offsite Sources	17,813	ECY	\$99.92	\$1,779,825	Assume backfill would come from an offsite source within 50 miles of site.
4.05.02	Restoration					
4.05.02.05	Seeding	5	AC	\$845.69	\$3,806	Seeding disturbed areas with native grasses and wildflower seed mix.

TABLE CS-3

DETAILED COST ESTIMATE BACKUP SUMMARY

Alternative Cleanup to Revised AOC Look-Up Table Values Alternative		Description: This alternative provides protection of human health and environment through excavation and offsite disposal of soils containing radionuclides and chemicals exceeding the revised LUT values. It should be noted that under this alternative, the cleanup requirement as stipulated by 2010 AOC would not be met. Soils containing chemicals concentrations between AOC LUT values for chemicals and the revised LUT values for chemicals (RBSLs) would be left in place. The frequency of truck hauling would meet the current limit set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 8 years with anticipated start in year 2021 and completion in year 2028.
Site:	SSFL Area I/NBZ	
Location:	Ventura County, California	
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates	
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative]	
Cost Estimate Classification:	Class 4, Study of Feasibility (Level of Definition: 1% to 15%)	
Base Year:	2018	
Date of Estimate:	September 2018	

AREA IV SOIL REMOVAL AND DISPOSAL COSTS: (Assumed to be Incurred During Year 10 [2028])

ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
4.9x	General Conditions					
Multiple ECES Codes	Workplans and Submittals					
4.02.01.01	Project Progress Meetings and Updating Project Schedule	12	MO	\$1,497	\$17,967	Weekly meetings and updating project schedule.
4.04.19	Post-RA Completion Report	1	LS	\$45,890	\$45,890	Preparation of the post-remedial action completion report.
8.01.04	Home Office Personnel	12	MO	\$9,283	\$111,399	Includes project manager and administrative support.
4.02.01.01.15	Job Site Personnel	12	MO	\$143,147	\$1,717,767	Includes general site personnel, archeologist and biologist.
4.05.01.03	Temporary Facilities	12	MO	\$4,873	\$58,472	Includes staging area, temporary offices.
4.05.36.04	Demobilization of Construction Equipment	1	LS	\$70,591	\$70,591	
4.9x	Best Management Practices - Structural					
8.01.01	SWPPP Implementation and Maintenance					
8.01.01.9x	SWPPP Oversight and Maintenance	12	MO	\$738.00	\$8,853	Temporary measures to be used separately or concurrently.
4.05.02	Temporary Erosion and Sediment Control					
4.05.02.05	Temporary Seeding	5	ACR	\$275.81	\$1,241	
4.05.02.9x	Erosion and Sediment Control Maintenance	12	MO	\$4,464	\$53,567	
4.05.9x	Existing Tree Protection					
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4.05.01.03.12	Decontamination/Wash Station					
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8.01.03.11	Traffic Control	12	MO	\$104,880	\$1,258,563	Traffic control/flagman along Woolsey Canyon Road.
Multiple ECES Codes	Excavation, Hauling and Disposal					
Multiple ECES Codes	Low-Hazard and Moderate-Hazard Soil					
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Multiple ECES Codes	LLW/MLLW Soil					
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4.05.05	Backfill and Organic Amendment					
4.05.05.06	Backfill from Offsite Sources	17,813	ECY	\$99.92	\$1,779,825	Assume backfill would come from an offsite source within 50 miles of site.
4.05.02	Restoration					
4.05.02.05	Seeding	5	ACR	\$845.69	\$3,806	Seeding disturbed areas with native grasses and wildflower seed mix.
4.05.08	Allowance for Street/Pavement Repair	2.5	MI	\$252,645	\$631,612	Repairing Woolsey Canyon Road.

DETAILED COST ESTIMATE BACKUP SUMMARY

Alternative Cleanup to Revised AOC Look-Up Table Values Alternative		Description: This alternative provides protection of human health and environment through excavation and offsite disposal of soils containing radionuclides and chemicals exceeding the revised LUT values. It should be noted that under this alternative, the cleanup requirement as stipulated by 2010 AOC would not be met. Soils containing chemicals concentrations between AOC LUT values for chemicals and the revised LUT values for chemicals (RBSLs) would be left in place. The frequency of truck hauling would meet the current limit set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 8 years with anticipated start in year 2021 and completion in year 2028.
Site:	SSFL Area I/NBZ	
Location:	Ventura County, California	
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates	
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Class 4, Study or Feasibility (Level of Definition: 1% to 15%)]	
Cost Estimate Classification:	2018	
Base Year:	September 2018	
Date of Estimate:		

ANNUAL COSTS (Assumed to be Incurred During Year 4 [2022] through Year 10 [2028])						
ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
4.02.02	Community Awareness Activities	1	LS	\$20,000	\$20,000	Allowance. Includes community awareness meetings

SURVEILLANCE AND LONG-TERM MAINTENANCE COSTS (Assumed to be Incurred Every 5 Years After Year 10 [2028])						
ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
6.21.08	Post-Construction Monitoring	1	LS	\$250,000	\$250,000	Consist of monitoring of TPH/PAHs impacted soils and areas where residual contamination is above the established LUT values (biological and cultural sensitive areas) Includes monitoring, sampling, analysis, and report.
6.02.04.06	Evaluating and Updating Institutional Controls	1	LS	\$10,000	\$10,000	
6.02.02	Community Awareness Activities	1	LS	\$20,000	\$20,000	Allowance. Includes community awareness meetings

Notes:
Quantities presented herein are presented in attached detailed calculations. Unit costs presented herein are derived from the attached MII detailed cost backup.

Abbreviations:

AC	Acre	MO	Month
BCY	Bank Cubic Yard	QTY	Quantity
ECES	Environmental Cost Element Structure	TON	Ton
ECY	Embankment Cubic Yard	YR	Year
LCY	Loose Cubic Yard		
LF	Linear feet		
LS	Lump Sum		

Attachment D

Life-Cycle Cost Estimate – Conservation of Natural Resources Alternative – Residential Cleanup Scenario

TABLE CS-4 - Current Cost (CY 2018)

Alternative		LIFE-CYCLE COST ESTIMATE - CURRENT (CY 2018) DOLLARS																
Conservation of Natural Resources Alternative – Residential Cleanup Scenario																		
Site:	SSFL Area IV/NBZ	This alternative provides protection of human health and environment through excavation and offsite disposal of soils from units (smaller subareas within Area IV and NBZ) where risk exceeds acceptable level (area-averaged cancer risk is greater than 1 x 10 ⁻⁶ , HI is greater than 1, and/or TED is greater than 25 millirem per year). It should be noted that under this alternative, the cleanup requirement as stipulated by 2010 AOC would not be met. Units containing soil with average chemicals and radionuclide concentrations between AOC LUT values and concentrations associated with risk thresholds would be left in place. The frequency of truck hauling would meet the current limit set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 2 years with anticipated start in year 2021 and completion in year 2022.																
Location:	Ventura County, California																	
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates																	
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]																	
Cost Estimate Classification:	Class 4, Study or Feasibility (Level of Definition: 1% to 15%)																	
Base Year:	2018																	
Date of Estimate:	September 2018																	
LIFE-CYCLE COST IN CURRENT DOLLARS																		
ECES Code	Description	Calendar Year (CY)																
		Base Year	Area IV Building Demolition ¹			Area IV Soil Remediation		Periodic Surveillance and Long-Term Maintenance (30 Years)										
		2018	2019	2020	2021	2022	2023	2022 - 2025	2028	2027 - 2030	2033	2032 - 2035	2038	2037 - 2040	2043	2042 - 2045	2048	2047 - 2050
4.02.04	Institutional Controls	\$0	\$0	\$0	\$75,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.02	Community Awareness Activities	\$0	\$0	\$0	\$50,000	\$20,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.02.02	Community Awareness Activities	\$0	\$0	\$0	\$0	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0
4.9x	General Conditions																	
Multiple ECES Codes	Workplans and Submittals	\$0	\$0	\$0	\$190,900	\$63,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8.01.04	Home Office Personnel	\$0	\$0	\$0	\$111,400	\$111,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.01.01.15	Job Site Personnel	\$0	\$0	\$0	\$1,719,100	\$1,719,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.03	Temporary Facilities	\$0	\$0	\$0	\$93,300	\$67,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.01	Mobilization of Construction Equipment	\$0	\$0	\$0	\$64,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.36.04	Demobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$70,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.9x	Best Management Practices - Structural																	
8.01.01	SWPPP Implementation and Maintenance	\$0	\$0	\$0	\$23,900	\$8,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.02	Temporary Erosion and Sediment Control	\$0	\$0	\$0	\$140,100	\$55,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Existing Tree Protection	\$0	\$0	\$0	\$36,600	\$17,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.16.04	Dust Control	\$0	\$0	\$0	\$361,300	\$361,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.07.08.02	Air Monitoring	\$0	\$0	\$0	\$31,300	\$31,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.03.12	Decontamination/Wash Station	\$0	\$0	\$0	\$423,700	\$165,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Street Sweeping	\$0	\$0	\$0	\$240,100	\$240,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8.01.03.11	Traffic Control	\$0	\$0	\$0	\$1,288,800	\$1,258,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Multiple ECES Codes	Excavation, Hauling and Disposal																	
4.05.9x	Construction Survey and Staking	\$0	\$0	\$0	\$4,700	\$4,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.05.01	Excavation	\$0	\$0	\$0	\$256,100	\$256,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.32.11.05	Hauling	\$0	\$0	\$0	\$3,921,300	\$3,921,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.07.11	Confirmation Sampling	\$0	\$0	\$0	\$4,200	\$4,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.08.04	Sample Analysis	\$0	\$0	\$0	\$69,100	\$69,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.33.08.05	Disposal	\$0	\$0	\$0	\$2,144,100	\$2,144,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Excavation of Underground Utilities (D&D)	\$0	\$0	\$0	\$26,000	\$26,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.05	Backfill																	
4.05.05.06	Backfill from Offsite Sources	\$0	\$0	\$0	\$1,949,900	\$1,949,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.02	Restoration																	
4.05.02.05	Seeding	\$0	\$0	\$0	\$4,300	\$4,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.08	Allowance for Street/Pavement Repair	\$0	\$0	\$0	\$0	\$631,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.21.08	Post-Construction Monitoring	\$0	\$0	\$0	\$0	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0
6.02.04.06	Evaluating and Updating Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$10,000	\$0	\$10,000	\$0	\$10,000	\$0	\$10,000	\$0	\$10,000	\$0	\$10,000	\$0
Subtotal		\$0	\$0	\$0	\$13,230,000	\$13,202,000	\$280,000	\$0	\$280,000	\$0	\$280,000	\$0	\$280,000	\$0	\$280,000	\$0	\$280,000	\$0
4.04.11	Remedial Design (15%)	\$0	\$0	\$0	\$1,985,000	\$1,981,000	\$42,000	\$0	\$42,000	\$0	\$42,000	\$0	\$42,000	\$0	\$42,000	\$0	\$42,000	\$0
4.02.09	Construction Management (10%)	\$0	\$0	\$0	\$1,323,000	\$1,321,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.01	Project Management (5%)	\$0	\$0	\$0	\$662,000	\$661,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.02.01	Project Management (5%)	\$0	\$0	\$0	\$0	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0
6.07.9x	Construction Coordination (1%)	\$0	\$0	\$0	\$133,000	\$133,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.14	Health and Safety (1.5%)	\$0	\$0	\$0	\$199,000	\$199,000	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0
4.02.01.01	Program Management (1%)	\$0	\$0	\$0	\$133,000	\$133,000	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0
4.02.03	Regulatory Costs (1%)	\$0	\$0	\$0	\$133,000	\$133,000	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0
Project Cost (without Contingency)		\$0	\$0	\$0	\$17,798,000	\$17,763,000	\$347,000	\$0	\$347,000	\$0	\$347,000	\$0	\$347,000	\$0	\$347,000	\$0	\$347,000	\$0
8.01.03.13	Contingency 30% (DOE Held)	\$0	\$0	\$0	\$5,340,000	\$5,329,000	\$105,000	\$0	\$105,000	\$0	\$105,000	\$0	\$105,000	\$0	\$105,000	\$0	\$105,000	\$0
8.01.03.13	Management Reserve 1% (Contractor Held)	\$0	\$0	\$0	\$178,000	\$178,000	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0
Total Project Cost (TPC) - Current Dollars		\$0	\$0	\$0	\$23,316,000	\$23,270,000	\$456,000	\$0	\$456,000	\$0	\$456,000	\$0	\$456,000	\$0	\$456,000	\$0	\$456,000	\$0
- The draft detailed cost estimates are based primarily on the methodology as described in Cost Estimating Guide, DOE G 413.3-21A. - Specific assumptions used in preparation of the detailed cost estimates are included in the Basis of Estimate (BOE).		AREA IV SOIL REMOVAL AND DISPOSAL			PERIODIC SURVEILLANCE AND LONG-TERM MAINTENANCE				TOTAL LIFE-CYCLE COST - CURRENT (CY 2018) COST						(1) Cost presented for each ECES Code is presented on "Table CS-4". Cost for each ECES Code is the summation of costs under same ECES Code as presented on "Table CS-4" within the respective year. (2) Costs subtotals and totals are rounded-up to the nearest \$1,000.			
		TPC (WITHOUT CONTINGENCY)		TPC (CURRENT DOLLARS)		TPC (WITHOUT CONTINGENCY)		TPC (CURRENT DOLLARS)		LCC (WITHOUT CONTINGENCY)		LCC (CURRENT DOLLARS)						
		\$35,561,000		\$46,586,000		\$2,082,000		\$2,736,000		\$37,643,000		\$49,322,000						

TABLE CS-4 - Future Cost

Alternative		LIFE-CYCLE COST ESTIMATE - FUTURE DOLLARS															
Conservation of Natural Resources Alternative – Residential Cleanup Scenario																	
Site:	SSFL Area IV/NBZ	This alternative provides protection of human health and environment through excavation and offsite disposal of soils from units (smaller subareas within Area IV and NBZ) where risk exceeds acceptable level (area-averaged cancer risk is greater than 1 x 10 ⁻⁶ , HI is greater than 1, and/or TED is greater than 25 millirem per year). It should be noted that under this alternative, the cleanup requirement as stipulated by 2010 AOC would not be met. Units containing soil with average chemicals and radionuclide concentrations between AOC LUT values and concentrations associated with risk thresholds would be left in place. The frequency of truck hauling would meet the current limit set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 2 years with anticipated start in year 2021 and completion in year 2022.															
Location:	Ventura County, California																
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates																
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]																
Cost Estimate Classification:	Class 4, Study or Feasibility (Level of Definition: 1% to 15%)																
Base Year:	2018	¹ It is assumed that building demolition and disposal are <u>NOT</u> within the scope of this FCBA and are therefore not included in the cost estimate. It is assumed that building demolition/disposal and soil removal/disposal would be performed in a sequential manner where building removal would occur for 2 years (beginning in year 2019), followed by soil removal. DOE would demolish its remaining 18 structures within Area IV/NBZ and dispose of or recycle uncontaminated materials off site.															
Date of Estimate:	September 2018																

ECES Code		Description		LIFE-CYCLE COST IN FUTURE DOLLARS																			
				Base Year	Area IV Building Demolition ¹		Area IV Soil Remediation		Calendar Year (CY)														
					2018	2019	2020	2021	2022	2023	2022 - 2025	2028	2027 - 2030	Periodic Surveillance and Long-Term Maintenance (30 Years)									
																2033	2032 - 2035	2038	2037 - 2040	2043	2042 - 2045	2048	2047 - 2050
4.02.04		Institutional Controls	\$0	\$0	\$0	\$82,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.02.02		Community Awareness Activities	\$0	\$0	\$0	\$54,700	\$22,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
6.02.02		Community Awareness Activities	\$0	\$0	\$0	\$0	\$0	\$23,200	\$0	\$26,900	\$0	\$31,200	\$0	\$36,200	\$0	\$41,900	\$0	\$48,600	\$0	\$0			
4.9x		General Conditions																					
Multiple ECES Codes		Workplans and Submittals	\$0	\$0	\$0	\$208,600	\$72,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
8.01.04		Home Office Personnel	\$0	\$0	\$0	\$121,800	\$125,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.02.01.01.15		Job Site Personnel	\$0	\$0	\$0	\$1,878,500	\$1,934,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.01.03		Temporary Facilities	\$0	\$0	\$0	\$102,000	\$75,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.01.01		Mobilization of Construction Equipment	\$0	\$0	\$0	\$70,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.36.04		Demobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$79,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.9x		Best Management Practices - Structural																					
8.01.01		SWPPP Implementation and Maintenance	\$0	\$0	\$0	\$26,200	\$10,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.02		Temporary Erosion and Sediment Control	\$0	\$0	\$0	\$153,100	\$62,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.9x		Existing Tree Protection	\$0	\$0	\$0	\$40,000	\$20,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.16.04		Dust Control	\$0	\$0	\$0	\$394,800	\$406,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.07.08.02		Air Monitoring	\$0	\$0	\$0	\$34,300	\$35,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.01.03.12		Decontamination/Wash Station	\$0	\$0	\$0	\$463,000	\$185,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.9x		Street Sweeping	\$0	\$0	\$0	\$262,400	\$270,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
8.01.03.11		Traffic Control	\$0	\$0	\$0	\$1,408,300	\$1,416,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
Multiple ECES Codes		Excavation, Hauling and Disposal																					
4.05.9x		Construction Survey and Staking	\$0	\$0	\$0	\$5,200	\$5,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.05.01		Excavation	\$0	\$0	\$0	\$279,900	\$288,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.32.11.05		Hauling	\$0	\$0	\$0	\$4,284,900	\$4,413,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.07.11		Confirmation Sampling	\$0	\$0	\$0	\$4,600	\$4,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.08.04		Sample Analysis	\$0	\$0	\$0	\$75,600	\$77,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.33.08.05		Disposal	\$0	\$0	\$0	\$2,342,900	\$2,413,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.9x		Excavation of Underground Utilities (D&D)	\$0	\$0	\$0	\$28,500	\$29,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.05		Backfill																					
4.05.05.06		Backfill from Offsite Sources	\$0	\$0	\$0	\$2,130,700	\$2,194,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.02		Restoration																					
4.05.02.05		Seeding	\$0	\$0	\$0	\$4,700	\$4,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.05.08		Allowance for Street/Pavement Repair	\$0	\$0	\$0	\$0	\$711,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
6.21.08		Post-Construction Monitoring	\$0	\$0	\$0	\$0	\$0	\$289,900	\$0	\$336,000	\$0	\$389,500	\$0	\$451,600	\$0	\$523,500	\$0	\$606,900	\$0	\$0			
6.02.04.06		Evaluating and Updating Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$11,600	\$0	\$13,500	\$0	\$15,600	\$0	\$18,100	\$0	\$21,000	\$0	\$24,300	\$0	\$0			
		Subtotal	\$0	\$0	\$0	\$14,457,000	\$14,860,000	\$325,000	\$0	\$377,000	\$0	\$437,000	\$0	\$506,000	\$0	\$587,000	\$0	\$680,000	\$0	\$0			
4.04.11		Remedial Design (15%)	\$0	\$0	\$0	\$2,169,000	\$2,229,000	\$49,000	\$0	\$57,000	\$0	\$66,000	\$0	\$76,000	\$0	\$89,000	\$0	\$102,000	\$0	\$0			
4.02.09		Construction Management (10%)	\$0	\$0	\$0	\$1,446,000	\$1,486,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.02.01		Project Management (5%)	\$0	\$0	\$0	\$723,000	\$743,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
6.02.01		Project Management (5%)	\$0	\$0	\$0	\$0	\$0	\$17,000	\$0	\$19,000	\$0	\$22,000	\$0	\$26,000	\$0	\$30,000	\$0	\$34,000	\$0	\$0			
6.07.9x		Construction Coordination (1%)	\$0	\$0	\$0	\$145,000	\$149,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0			
4.02.14		Health and Safety (1.5%)	\$0	\$0	\$0	\$217,000	\$223,000	\$5,000	\$0	\$6,000	\$0	\$7,000	\$0	\$8,000	\$0	\$9,000	\$0	\$11,000	\$0	\$0			
4.02.01.01		Program Management (1%)	\$0	\$0	\$0	\$145,000	\$149,000	\$4,000	\$0	\$4,000	\$0	\$5,000	\$0	\$6,000	\$0	\$6,000	\$0	\$7,000	\$0	\$0			
4.02.03		Regulatory Costs (1%)	\$0	\$0	\$0	\$145,000	\$149,000	\$4,000	\$0	\$4,000	\$0	\$5,000	\$0	\$6,000	\$0	\$6,000	\$0	\$7,000	\$0	\$0			
		Project Cost (without Contingency)	\$0	\$0	\$0	\$19,447,000	\$19,988,000	\$404,000	\$0	\$467,000	\$0	\$542,000	\$0	\$628,000	\$0	\$727,000	\$0	\$841,000	\$0	\$0			
8.01.03.13		Contingency 30% (DOE Held)	\$0	\$0	\$0	\$5,835,000	\$5,997,000	\$122,000	\$0	\$141,000	\$0	\$163,000	\$0	\$189,000	\$0	\$219,000	\$0	\$253,000	\$0	\$0			
8.01.03.13		Management Reserve 1% (Contractor Held)	\$0	\$0	\$0	\$195,000	\$200,000	\$5,000	\$0	\$5,000	\$0	\$6,000	\$0	\$7,000	\$0	\$8,000	\$0	\$9,000	\$0	\$0			
		Total Project Cost (TPC) - Future Dollars	\$0	\$0	\$0	\$25,477,000	\$26,185,000	\$531,000	\$0	\$613,000	\$0	\$711,000	\$0	\$824,000	\$0	\$954,000	\$0	\$1,103,000	\$0	\$0			

- The draft detailed cost estimates are based primarily on the methodology as described in Cost Estimating Guide, DOE G 413.3-21A. - Specific assumptions used in preparation of the detailed cost estimates are included in the Basis of Estimate (BOE).	AREA IV SOIL REMOVAL AND DISPOSAL		PERIODIC SURVEILLANCE AND LONG-TERM MAINTENANCE				TOTAL LIFE-CYCLE COST - FUTURE COST				(1) Future dollars are calculated by escalating current dollar costs from "Table CS-4 - Current Cost (CY 2018)" using annual escalation rate factors presented in "Table LCC-AERFT". (2) Costs subtotals and totals are rounded-up to the nearest \$1,000.
	TPC (WITHOUT CONTINGENCY)	TPC (FUTURE DOLLARS)	TPC (WITHOUT CONTINGENCY)	TPC (FUTURE DOLLARS)	LCC (WITHOUT CONTINGENCY)	LCC (FUTURE DOLLARS)					
	\$39,435,000	\$51,662,000	\$3,609,000	\$4,736,000	\$43,044,000	\$56,398,000					

TABLE CS-4 - Present Worth

Alternative
Conservation of Natural Resources Alternative – Residential Cleanup Scenario **LIFE-CYCLE COST ESTIMATE - PRESENT WORTH DOLLARS**

Site: SSFL Area IV/NBZ
Location: Ventura County, California
Document: Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates
Project/Program Life-Cycle Stage: Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]
Cost Estimate Classification: Class 4, Study or Feasibility (Level of Definition: 1% to 15%)
Base Year: 2018
Date of Estimate: September 2018

This alternative provides protection of human health and environment through excavation and offsite disposal of soils from units (smaller subareas within Area IV and NBZ) where risk exceeds acceptable level (area-averaged cancer risk is greater than 1 x 10⁻⁶, HI is greater than 1, and/or TED is greater than 25 millirem per year). It should be noted that under this alternative, the cleanup requirement as stipulated by 2010 AOC would not be met. Units containing soil with average chemicals and radionuclide concentrations between AOC LUT values and concentrations associated with risk thresholds would be left in place. The frequency of truck hauling would meet the current limit set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 2 years with anticipated start in year 2021 and completion in year 2022.
¹ It is assumed that building demolition and disposal are NOT within the scope of this FCBA and are therefore not included in the cost estimate. It is assumed that building demolition/disposal and soil removal/disposal would be performed in a sequential manner where building removal would occur for 2 years (beginning in year 2019), followed by soil removal. DOE would demolish its remaining 18 structures within Area IV/NBZ and dispose of or recycle uncontaminated materials off site.

LIFE-CYCLE COST IN PRESENT WORTH DOLLARS

ECES Code	Description	Calendar Year (CY)																	
		Base Year	Area IV Building Demolition ¹			Area IV Soil Remediation		Periodic Surveillance and Long-Term Maintenance (30 Years)											
			2018	2019	2020	2021	2022	2023	2022 - 2025	2028	2027 - 2030	2033	2032 - 2035	2038	2037 - 2040	2043	2042 - 2045	2048	2047 - 2050
4.02.04	Institutional Controls	\$0	\$0	\$0	\$76,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.02	Community Awareness Activities	\$0	\$0	\$0	\$50,700	\$20,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.02.02	Community Awareness Activities	\$0	\$0	\$0	\$0	\$0	\$20,500	\$0	\$20,900	\$0	\$21,300	\$0	\$21,700	\$0	\$22,100	\$0	\$22,600	\$0	\$0
4.9x	General Conditions																		
Multiple ECES Codes	Workplans and Submittals	\$0	\$0	\$0	\$193,200	\$65,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
8.01.04	Home Office Personnel	\$0	\$0	\$0	\$112,800	\$113,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.02.01.01.15	Job Site Personnel	\$0	\$0	\$0	\$1,739,400	\$1,746,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.01.03	Temporary Facilities	\$0	\$0	\$0	\$94,500	\$68,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.01.01	Mobilization of Construction Equipment	\$0	\$0	\$0	\$65,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.36.04	Demobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$71,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.9x	Best Management Practices - Structural																		
8.01.01	SWPPP Implementation and Maintenance	\$0	\$0	\$0	\$24,300	\$9,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.02	Temporary Erosion and Sediment Control	\$0	\$0	\$0	\$141,800	\$56,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.9x	Existing Tree Protection	\$0	\$0	\$0	\$37,100	\$18,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.16.04	Dust Control	\$0	\$0	\$0	\$365,600	\$367,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.07.08.02	Air Monitoring	\$0	\$0	\$0	\$31,800	\$31,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.01.03.12	Decontamination/Wash Station	\$0	\$0	\$0	\$428,700	\$167,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.9x	Street Sweeping	\$0	\$0	\$0	\$243,000	\$244,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
8.01.03.11	Traffic Control	\$0	\$0	\$0	\$1,304,000	\$1,278,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Multiple ECES Codes	Excavation, Hauling and Disposal																		
4.05.9x	Construction Survey and Staking	\$0	\$0	\$0	\$4,900	\$4,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.05.01	Excavation	\$0	\$0	\$0	\$259,200	\$260,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.32.11.05	Hauling	\$0	\$0	\$0	\$3,967,400	\$3,982,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.07.11	Confirmation Sampling	\$0	\$0	\$0	\$4,300	\$4,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.08.04	Sample Analysis	\$0	\$0	\$0	\$70,000	\$70,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.33.08.05	Disposal	\$0	\$0	\$0	\$2,169,300	\$2,177,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.9x	Excavation of Underground Utilities (D&D)	\$0	\$0	\$0	\$26,400	\$26,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.05	Backfill																		
4.05.05.06	Backfill from Offsite Sources	\$0	\$0	\$0	\$1,972,900	\$1,980,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.02	Restoration																		
4.05.02.05	Seeding	\$0	\$0	\$0	\$4,400	\$4,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.08	Allowance for Street/Pavement Repair	\$0	\$0	\$0	\$0	\$641,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
6.21.08	Post-Construction Monitoring	\$0	\$0	\$0	\$0	\$0	\$255,000	\$0	\$260,000	\$0	\$265,100	\$0	\$270,300	\$0	\$275,600	\$0	\$281,000	\$0	
6.02.04.06	Evaluating and Updating Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$10,300	\$0	\$10,500	\$0	\$10,700	\$0	\$10,900	\$0	\$11,100	\$0	\$11,300	\$0	
	Subtotal	\$0	\$0	\$0	\$13,387,000	\$13,411,000	\$286,000	\$0	\$292,000	\$0	\$298,000	\$0	\$303,000	\$0	\$309,000	\$0	\$315,000	\$0	
4.04.11	Remedial Design (15%)	\$0	\$0	\$0	\$2,009,000	\$2,012,000	\$43,000	\$0	\$44,000	\$0	\$45,000	\$0	\$46,000	\$0	\$47,000	\$0	\$48,000	\$0	
4.02.09	Construction Management (10%)	\$0	\$0	\$0	\$1,339,000	\$1,342,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.02.01	Project Management (5%)	\$0	\$0	\$0	\$670,000	\$671,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
6.02.01	Project Management (5%)	\$0	\$0	\$0	\$0	\$0	\$15,000	\$0	\$15,000	\$0	\$15,000	\$0	\$16,000	\$0	\$16,000	\$0	\$16,000	\$0	
6.07.9x	Construction Coordination (1%)	\$0	\$0	\$0	\$134,000	\$135,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.02.14	Health and Safety (1.5%)	\$0	\$0	\$0	\$201,000	\$202,000	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	
4.02.01.01	Program Management (1%)	\$0	\$0	\$0	\$134,000	\$135,000	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	
4.02.03	Regulatory Costs (1%)	\$0	\$0	\$0	\$134,000	\$135,000	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	
	Project Cost (without Contingency)	\$0	\$0	\$0	\$18,008,000	\$18,043,000	\$355,000	\$0	\$362,000	\$0	\$369,000	\$0	\$378,000	\$0	\$385,000	\$0	\$392,000	\$0	
8.01.03.13	Contingency 30% (DOE Held)	\$0	\$0	\$0	\$5,403,000	\$5,413,000	\$107,000	\$0	\$109,000	\$0	\$111,000	\$0	\$114,000	\$0	\$116,000	\$0	\$118,000	\$0	
8.01.03.13	Management Reserve 1% (Contractor Held)	\$0	\$0	\$0	\$181,000	\$181,000	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	
	Total Project Cost (TPC) - Present Worth	\$0	\$0	\$0	\$23,592,000	\$23,637,000	\$466,000	\$0	\$475,000	\$0	\$484,000	\$0	\$496,000	\$0	\$505,000	\$0	\$514,000	\$0	

- The draft detailed cost estimates are based primarily on the methodology as described in Cost Estimating Guide, DOE G 413.3-21A.
 - Specific assumptions used in preparation of the detailed cost estimates are included in the Basis of Estimate (BOE).

AREA IV SOIL REMOVAL AND DISPOSAL		PERIODIC SURVEILLANCE AND LONG-TERM MAINTENANCE		TOTAL LIFE-CYCLE COST - PRESENT WORTH	
TPC (WITHOUT CONTINGENCY)	TPC (PRESENT WORTH)	TPC (WITHOUT CONTINGENCY)	TPC (PRESENT WORTH)	LCC (WITHOUT CONTINGENCY)	LCC (PRESENT WORTH)
\$36,051,000	\$47,229,000	\$2,241,000	\$2,940,000	\$38,292,000	\$50,169,000

(1) Present Worth (PW) are calculated by discounting the future dollar costs from "Table CS-4 - Future Cost (CY 2018)" using the calculated discount factors presented in "Table SPV-ADRFT".
 (2) PW was calculated as described in Appendix F of the Cost Estimating Guide, DOE G 413.3-21A. (3) Costs subtotals and totals are rounded-up to the nearest \$1,000.

TABLE CS-4

DETAILED COST ESTIMATE BACKUP SUMMARY

Alternative Conservation of Natural Resources Alternative – Residential Cleanup Scenario						
Site:		Description: This alternative provides protection of human health and environment through excavation and offsite disposal of soils from units (smaller subareas within Area IV and NBZ) where risk exceeds acceptable level (area-averaged cancer risk is greater than 1×10^{-6} , HI is greater than 1, and/or TED is greater than 25 millirem per year). It should be noted that under this alternative, the cleanup requirement as stipulated by 2010 AOC would not be met. Units containing soil with average chemicals and radionuclide concentrations between AOC LUT values and concentrations associated with risk thresholds would be left in place. The frequency of truck hauling would meet the current limit set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 2 years with anticipated start in year 2021 and completion in year 2022.				
Location:		SSFL Area IV/NBZ Ventura County, California				
Document:		Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates				
Project/Program Life-Cycle Stage:		Critical Decision (CD)-1 [Approve Alternative Class 4, Study of Feasibility (Level of Definition: 1% to 15%)				
Cost Estimate Classification:		2018				
Base Year:		September 2018				
Date of Estimate:		September 2018				
INSTITUTIONAL CONTROLS CAPITAL COSTS: (Assumed to be Incurred During Year 3 [2021])						
ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
4.02.04	Institutional Controls	1	LS	\$75,000	\$75,000	Allowance, Includes establishment of ICs during construction
4.02.02	Community Awareness Activities	1	LS	\$50,000	\$50,000	Allowance, Includes public meetings and extensive outreach programs
AREA IV SOIL REMOVAL AND DISPOSAL COSTS: (Assumed to be Incurred During Year 3 [2021])						
ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
4.9x	General Conditions					
<i>Multiple ECES Codes</i>						
4.02.01.01	Project Progress Meetings and Schedule Update	12	MO	\$1,497	\$17,968	Weekly meetings and updating project schedule.
4.03.01	Work Plans	1	LS	\$138,773	\$138,773	Includes preparation of administrative BMPs
4.04.21	Submittals	1	LS	\$34,100	\$34,100	General submittals typical of a construction project.
8.01.04	Home Office Personnel	12	MO	\$9,283	\$111,399	Includes project manager and administrative support.
4.02.01.01.15	Job Site Personnel	12	MO	\$143,255	\$1,719,060	Includes general site personnel, archeologist and biologist.
4.05.01.03	Temporary Facilities	12	MO	\$7,772	\$93,268	Includes staging area, temporary offices.
4.05.01.01	Mobilization of Construction Equipment	1	LS	\$64,015	\$64,015	
<i>Best Management Practices - Structural</i>						
<i>SWPPP Implementation and Maintenance</i>						
8.01.01	SWPPP Preparation (Report)	1	LS	\$15,004	\$15,004	Itemized separately from other Work Plans
8.01.01.03	SWPPP Oversight and Maintenance	12	MO	\$738.00	\$8,853	
<i>Temporary Erosion and Sediment Control</i>						
4.05.02.04	Silt Fence	18,200	LF	\$2.86	\$52,124	Temporary measures to be used separately or concurrently.
4.05.02.04	Wattles	875	LF	\$7.64	\$6,689	
4.05.02.04	Sediment Trap	4	EA	\$1,465	\$5,858	
4.05.02.04	Rock Filter Dam	4	EA	\$3,651	\$14,602	
4.05.02.04	Track-out Prevention	4	EA	\$1,461	\$5,842	Gravel pad at excavation exit areas
4.05.02.05	Temporary Seeding	5	ACR	\$275.80	\$1,379	
4.05.02.9x	Erosion and Sediment Control Maintenance	12	MO	\$4,464	\$53,567	
<i>Existing Tree Protection</i>						
4.05.9x	Arborist and Care for Existing Trees	12	MO	\$1,487	\$17,848	Buffer zone around trees identified. Watering assumed under dust control.
4.05.9x	Tree Protection Fencing	35	EA	\$533.29	\$18,665	Routine checks of trees by arborist.
4.16.04	Dust Control	12	MO	\$30,102	\$361,221	Assumes use of 16,000 gallons per day purchased from Ventura County
4.07.08.02	Air Monitoring	12	MO	\$2,603	\$31,238	Perimeter air monitoring for particulate (PM-10)
<i>Decontamination/Wash Station</i>						
4.05.01.03.12	Purchase and Setup	1	EA	\$258,641	\$258,641	Wash station capable of re-using wash water.
4.05.01.03.12	Operation	12	MO	\$13,752	\$165,020	
<i>Street Sweeping</i>						
4.05.9x	Street Sweeping	12	MO	\$20,005	\$240,065	Daily street sweeping along access roads.
<i>Traffic Control</i>						
8.01.03.11	Preconstruction Video Survey	1	LS	\$4,398	\$4,398	
8.01.03.11	Traffic Control Signs and Barricades	1	LS	\$25,835	\$25,835	
8.01.03.11	Traffic Control	12	MO	\$104,880	\$1,258,564	Traffic control/flagman along Woolsey Canyon Road.
<i>Multiple ECES Codes</i>						
<i>Excavation, Hauling and Disposal</i>						
<i>Multiple ECES Codes</i>						
<i>Low-Hazard and Moderate-Hazard Soil</i>						
4.05.9x	Construction Survey and Staking	4.70	ACR	\$925.64	\$4,351	
4.05.05.01	Excavation	24,500	BCY	\$8.19	\$200,655	Includes excavation and loading
4.32.11.05	Hauling	36,750	TON	\$80.91	\$2,973,443	An average of 135 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	98	EA	\$39.24	\$3,846	
4.08.04	Sample Analysis	98	EA	\$651.29	\$63,826	
4.33.08.05	Disposal	36,750	TON	\$52.94	\$1,945,545	Disposal inside of California (Class 2 or Class 3 disposal facility)
<i>Hazardous Soil</i>						
4.05.9x	Construction Survey and Staking	0.20	ACR	\$925.00	\$185	
4.05.05.01	Excavation	1,000	BCY	\$46.84	\$46,840	Includes excavation and loading
4.32.11.05	Hauling	1,500	TON	\$506.58	\$759,870	An average of 780 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	5	EA	\$39.22	\$196	
4.08.04	Sample Analysis	5	EA	\$651.33	\$3,257	
4.33.08.05	Disposal	1,500	TON	\$88.24	\$132,360	Disposal outside of California.
<i>LLW/MLLW Soil</i>						
4.05.9x	Construction Survey and Staking	0.10	ACR	\$925.00	\$93	
4.05.05.01	Excavation	500	BCY	\$17.15	\$8,575	Includes excavation and loading
4.32.11.05	Hauling	750	TON	\$250.59	\$187,943	An average of 300 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	3	EA	\$39.17	\$118	
4.08.04	Sample Analysis	3	EA	\$651.33	\$1,954	
4.33.08.05	Disposal	750	TON	\$88.24	\$66,180	Disposal outside of California (Class 1 disposal facility)
4.05.9x	Excavation of Underground Utilities (D&D)	1	LS	\$26,000	\$26,000	Assumes 10% of total excavation cost
4.05.05	Backfill and Organic Amendment					
4.05.05.06	Backfill from Offsite Sources	19,500	ECY	\$99.99	\$1,949,805	Assume backfill would come from an offsite source within 50 miles of site.
4.05.02	Restoration					
4.05.02.05	Seeding	5	AC	\$845.70	\$4,229	Seeding disturbed areas with native grasses and wildflower seed mix.

TABLE CS-4

DETAILED COST ESTIMATE BACKUP SUMMARY

Alternative Conservation of Natural Resources Alternative – Residential Cleanup Scenario		Description: This alternative provides protection of human health and environment through excavation and offsite disposal of soils from units (smaller subareas within Area IV and NBZ) where risk exceeds acceptable level (area-averaged cancer risk is greater than 1×10^{-6} , HI is greater than 1, and/or TED is greater than 25 millirem per year). It should be noted that under this alternative, the cleanup requirement as stipulated by 2010 AOC would not be met. Units containing soil with average chemicals and radionuclide concentrations between AOC LUT values and concentrations associated with risk thresholds would be left in place. The frequency of truck hauling would meet the current limit set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 2 years with anticipated start in year 2021 and completion in year 2022.
Site:	SSFL Area IV/NBZ	
Location:	Ventura County, California	
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates	
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Class 4, Study of Feasibility (Level of Definition: 1% to 15%)	
Cost Estimate Classification:	2018	
Base Year:	2018	
Date of Estimate:	September 2018	

AREA IV SOIL REMOVAL AND DISPOSAL COSTS: (Assumed to be Incurred During Year 4 [2022])

ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
4.9x	General Conditions					
Multiple ECES Codes	Workplans and Submittals					
4.02.01.01	Project Progress Meetings and Updating Project Schedule	12	MO	\$1,497	\$17,968	Weekly meetings and updating project schedule.
4.04.19	Post-RA Completion Report	1	LS	\$45,890	\$45,890	Preparation of the post-remedial action completion report.
8.01.04	Home Office Personnel	12	MO	\$9,283	\$111,399	Includes project manager and administrative support.
4.02.01.01.15	Job Site Personnel	12	MO	\$143,255	\$1,719,060	Includes general site personnel, archeologist and biologist.
4.05.01.03	Temporary Facilities	12	MO	\$5,582	\$66,986	Includes staging area, temporary offices.
4.05.36.04	Demobilization of Construction Equipment	1	LS	\$70,591	\$70,591	
4.9x	Best Management Practices - Structural					
Multiple ECES Codes	SWPPP Implementation and Maintenance					
8.01.01	SWPPP Maintenance	12	MO	\$738.00	\$8,853	
8.01.01.9x	SWPPP Maintenance	12	MO	\$738.00	\$8,853	
4.05.02	Temporary Erosion and Sediment Control					
4.05.02.05	Temporary Seeding	5	ACR	\$275.80	\$1,379	
4.05.02.9x	Erosion and Sediment Control Maintenance	12	MO	\$4,464	\$53,567	Temporary measures to be used separately or concurrently.
4.05.9x	Existing Tree Protection					
4.05.9x	Arborist and Care for Existing Trees	12	MO	\$1,487	\$17,848	Buffer zone around trees identified. Watering assumed under dust control.
4.16.04	Dust Control	12	MO	\$30,102	\$361,221	Assumes use of 16,000 gallons per day purchased from Ventura County
4.07.08.02	Air Monitoring	12	MO	\$2,603	\$31,238	Perimeter air monitoring for particulate (PM-10)
4.05.01.03.12	Decontamination/Wash Station					
4.05.01.03.12	Operation	12	MO	\$13,752	\$165,020	
4.05.9x	Street Sweeping	12	MO	\$20,005	\$240,065	Daily street sweeping along access roads.
8.01.03.11	Traffic Control	12	MO	\$104,880	\$1,258,564	Traffic control/flagman along Woolsey Canyon Road.
8.01.03.11	Traffic Control	12	MO	\$104,880	\$1,258,564	
Multiple ECES Codes	Excavation, Hauling and Disposal					
Multiple ECES Codes	Low-Hazard and Moderate-Hazard Soil					
4.05.9x	Construction Survey and Staking	4.70	ACR	\$925.64	\$4,351	
4.05.05.01	Excavation	24,500	BCY	\$8.19	\$200,655	Includes excavation and loading
4.32.11.05	Hauling	36,750	TON	\$80.91	\$2,973,443	An average of 135 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	98	EA	\$39.24	\$3,846	
4.08.04	Sample Analysis	98	EA	\$651.29	\$63,826	
4.33.08.05	Disposal	36,750	TON	\$52.94	\$1,945,545	Disposal inside of California (Class 2 or Class 3 disposal facility)
Multiple ECES Codes	Hazardous Soil					
4.05.9x	Construction Survey and Staking	0.20	ACR	\$925.00	\$185	
4.05.05.01	Excavation	1,000	BCY	\$46.84	\$46,840	Includes excavation and loading
4.32.11.05	Hauling	1,500	TON	\$506.58	\$759,870	An average of 780 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	5	EA	\$39.22	\$196	
4.08.04	Sample Analysis	5	EA	\$651.33	\$3,257	
4.33.08.05	Disposal	1,500	TON	\$88.24	\$132,360	Disposal outside of California.
Multiple ECES Codes	LLW/MLLW Soil					
4.05.9x	Construction Survey and Staking	0.10	ACR	\$925.00	\$93	
4.05.05.01	Excavation	500	BCY	\$17.15	\$8,575	Includes excavation and loading
4.32.11.05	Hauling	750	TON	\$250.59	\$187,943	An average of 300 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	3	EA	\$39.17	\$118	
4.08.04	Sample Analysis	3	EA	\$651.33	\$1,954	
4.33.08.05	Disposal	750	TON	\$88.24	\$66,180	Disposal outside of California (Class 1 disposal facility)
4.05.9x	Excavation of Underground Utilities (D&D)	1	LS	\$26,000	\$26,000	Assumes 10% of total excavation cost
4.05.05	Backfill and Organic Amendment					
4.05.05.06	Backfill from Offsite Sources	19,500	ECY	\$99.99	\$1,949,805	Assume backfill would come from an offsite source within 50 miles of site.
4.05.02	Restoration					
4.05.02.05	Seeding	5	ACR	\$845.70	\$4,229	Seeding disturbed areas with native grasses and wildflower seed mix.
4.05.08	Allowance for Street/Pavement Repair	2.5	MI	\$252,645	\$631,612	Repairing Woolsey Canyon Road.

TABLE CS-4

DETAILED COST ESTIMATE BACKUP SUMMARY

Alternative Conservation of Natural Resources Alternative – Residential Cleanup Scenario						
Site:	SSFL Area IV/NBZ	Description: This alternative provides protection of human health and environment through excavation and offsite disposal of soils from units (smaller subareas within Area IV and NBZ) where risk exceeds acceptable level (area-averaged cancer risk is greater than 1×10^{-6} , HI is greater than 1, and/or TED is greater than 25 millirem per year). It should be noted that under this alternative, the cleanup requirement as stipulated by 2010 AOC would not be met. Units containing soil with average chemicals and radionuclide concentrations between AOC LUT values and concentrations associated with risk thresholds would be left in place. The frequency of truck hauling would meet the current limit set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take 2 years with anticipated start in year 2021 and completion in year 2022.				
Location:	Ventura County, California					
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates					
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Class 4, Study of Feasibility (Level of Definition: 1% to 15%)					
Cost Estimate Classification:	2018					
Base Year:	2018					
Date of Estimate:	September 2018					
ANNUAL COSTS (Assumed to be Incurred During Year 4 [2022])						
ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
4.02.02	Community Awareness Activities	1	LS	\$20,000	\$20,000	Allowance. Includes community awareness meetings
SURVEILLANCE AND LONG-TERM MAINTENANCE COSTS (Assumed to be Incurred Every 5 Years After Year 4 [2022])						
ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
6.21.08	Post-Construction Monitoring	1	LS	\$250,000	\$250,000	Consist of monitoring of TPH/PAHs impacted soils and areas where residual contamination is above the established LUT values (biological and cultural sensitive areas) Includes monitoring, sampling, analysis, and report.
6.02.04.06	Evaluating and Updating Institutional Controls	1	LS	\$10,000	\$10,000	
6.02.02	Community Awareness Activities	1	LS	\$20,000	\$20,000	Allowance. Includes community awareness meetings

Notes:

Quantities presented herein are presented in attached detailed calculations. Unit costs presented herein are derived from the attached MII detailed cost backup.

Abbreviations:

AC	Acre	MO	Month
BCY	Bank Cubic Yard	QTY	Quantity
ECES	Environmental Cost Element Structure	TON	Ton
ECY	Embankment Cubic Yard	YR	Year
LCY	Loose Cubic Yard		
LF	Linear feet		
LS	Lump Sum		

Attachment E

Life-Cycle Cost Estimate – Conservation of Natural Resources Alternative – Open Space Scenario

TABLE CS-5 - Current Cost (CY 2018)

Alternative		LIFE-CYCLE COST ESTIMATE - CURRENT (CY 2018) DOLLARS																
Conservation of Natural Resources Alternative – Open Space Scenario																		
Site:	SSFL Area IV/NBZ	This alternative provides protection of human health and environment through excavation and offsite disposal of soils from units (smaller subareas within Area IV and NBZ) where risk exceeds acceptable level (area-averaged cancer risk is greater than 1 x 10 ⁻⁶ , HI is greater than 1, and/or TED is greater than 25 millirem per year). It should be noted that under this alternative, the cleanup requirement as stipulated by 2010 AOC would not be met. Units containing soil with average chemicals and radionuclide concentrations between AOC LUT values and concentrations associated with risk thresholds would be left in place. The frequency of truck hauling would meet the current limit set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take less than 2 years with anticipated start in year 2021 and completion in year 2022. 1 It is assumed that building demolition and disposal are <u>NOT</u> within the scope of this FCBA and are therefore not included in the cost estimate. It is assumed that building demolition/disposal and soil removal/disposal would be performed in a sequential manner where building removal would occur for 2 years (beginning in year 2019), followed by soil removal. DOE would demolish its remaining 18 structures within Area IV/NBZ and dispose of or recycle uncontaminated materials off site.																
Location:	Ventura County, California																	
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates																	
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]																	
Cost Estimate Classification:	Class 4, Study or Feasibility (Level of Definition: 1% to 15%)																	
Base Year:	2018																	
Date of Estimate:	September 2018																	
LIFE-CYCLE COST IN CURRENT DOLLARS																		
ECES Code	Description	Calendar Year (CY)																
		Base Year	Area IV Building Demolition ¹			Area IV Soil Remediation		Periodic Surveillance and Long-Term Maintenance (30 Years)										
		2018	2019	2020	2021	2022	2023	2022 - 2025	2028	2027 - 2030	2033	2032 - 2035	2038	2037 - 2040	2043	2042 - 2045	2048	2047 - 2050
4.02.04	Institutional Controls	\$0	\$0	\$0	\$75,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.02	Community Awareness Activities	\$0	\$0	\$0	\$50,000	\$20,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.02.02	Community Awareness Activities	\$0	\$0	\$0	\$0	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0	\$20,000	\$0
4.9x	General Conditions																	
Multiple ECES Codes	Workplans and Submittals	\$0	\$0	\$0	\$190,900	\$63,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8.01.04	Home Office Personnel	\$0	\$0	\$0	\$111,400	\$111,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.01.01.15	Job Site Personnel	\$0	\$0	\$0	\$1,719,100	\$1,719,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.03	Temporary Facilities	\$0	\$0	\$0	\$93,300	\$67,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.01	Mobilization of Construction Equipment	\$0	\$0	\$0	\$64,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.36.04	Demobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$70,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.9x	Best Management Practices - Structural																	
8.01.01	SWPPP Implementation and Maintenance	\$0	\$0	\$0	\$23,900	\$8,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.02	Temporary Erosion and Sediment Control	\$0	\$0	\$0	\$137,900	\$54,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Existing Tree Protection	\$0	\$0	\$0	\$36,600	\$17,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.16.04	Dust Control	\$0	\$0	\$0	\$361,300	\$361,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.07.08.02	Air Monitoring	\$0	\$0	\$0	\$31,300	\$31,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.03.12	Decontamination/Wash Station	\$0	\$0	\$0	\$423,700	\$165,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Street Sweeping	\$0	\$0	\$0	\$240,100	\$240,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8.01.03.11	Traffic Control	\$0	\$0	\$0	\$1,288,800	\$1,258,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Multiple ECES Codes	Excavation, Hauling and Disposal																	
4.05.9x	Construction Survey and Staking	\$0	\$0	\$0	\$4,200	\$4,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.05.01	Excavation	\$0	\$0	\$0	\$196,000	\$196,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.32.11.05	Hauling	\$0	\$0	\$0	\$2,982,100	\$2,982,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.07.11	Confirmation Sampling	\$0	\$0	\$0	\$4,100	\$4,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.08.04	Sample Analysis	\$0	\$0	\$0	\$66,500	\$66,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.33.08.05	Disposal	\$0	\$0	\$0	\$1,575,000	\$1,575,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Excavation of Underground Utilities (D&D)	\$0	\$0	\$0	\$20,000	\$20,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.05	Backfill																	
4.05.05.06	Backfill from Offsite Sources	\$0	\$0	\$0	\$1,436,000	\$1,436,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.02	Restoration																	
4.05.02.05	Seeding	\$0	\$0	\$0	\$3,900	\$3,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.08	Allowance for Street/Pavement Repair	\$0	\$0	\$0	\$0	\$631,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.21.08	Post-Construction Monitoring	\$0	\$0	\$0	\$0	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0	\$250,000	\$0
6.02.04.06	Evaluating and Updating Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$10,000	\$0	\$10,000	\$0	\$10,000	\$0	\$10,000	\$0	\$10,000	\$0	\$10,000	\$0
	Subtotal	\$0	\$0	\$0	\$11,136,000	\$11,110,000	\$280,000	\$0	\$280,000	\$0	\$280,000	\$0	\$280,000	\$0	\$280,000	\$0	\$280,000	\$0
4.04.11	Remedial Design (15%)	\$0	\$0	\$0	\$1,671,000	\$1,667,000	\$42,000	\$0	\$42,000	\$0	\$42,000	\$0	\$42,000	\$0	\$42,000	\$0	\$42,000	\$0
4.02.09	Construction Management (10%)	\$0	\$0	\$0	\$1,114,000	\$1,111,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.01	Project Management (5%)	\$0	\$0	\$0	\$557,000	\$556,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.02.01	Project Management (5%)	\$0	\$0	\$0	\$0	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0	\$14,000	\$0
6.07.9x	Construction Coordination (1%)	\$0	\$0	\$0	\$112,000	\$112,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.14	Health and Safety (1.5%)	\$0	\$0	\$0	\$168,000	\$167,000	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0
4.02.01.01	Program Management (1%)	\$0	\$0	\$0	\$112,000	\$112,000	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0
4.02.03	Regulatory Costs (1%)	\$0	\$0	\$0	\$112,000	\$112,000	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0
	Project Cost (without Contingency)	\$0	\$0	\$0	\$14,982,000	\$14,947,000	\$347,000	\$0	\$347,000	\$0	\$347,000	\$0	\$347,000	\$0	\$347,000	\$0	\$347,000	\$0
8.01.03.13	Contingency 30% (DOE Held)	\$0	\$0	\$0	\$4,495,000	\$4,485,000	\$105,000	\$0	\$105,000	\$0	\$105,000	\$0	\$105,000	\$0	\$105,000	\$0	\$105,000	\$0
8.01.03.13	Management Reserve 1% (Contractor Held)	\$0	\$0	\$0	\$150,000	\$150,000	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0
	Total Project Cost (TPC) - Current Dollars	\$0	\$0	\$0	\$19,627,000	\$19,582,000	\$456,000	\$0	\$456,000	\$0	\$456,000	\$0	\$456,000	\$0	\$456,000	\$0	\$456,000	\$0
- The draft detailed cost estimates are based primarily on the methodology as described in Cost Estimating Guide, DOE G 413.3-21A. - Specific assumptions used in preparation of the detailed cost estimates are included in the Basis of Estimate (BOE).		AREA IV SOIL REMOVAL AND DISPOSAL		PERIODIC SURVEILLANCE AND LONG-TERM MAINTENANCE				TOTAL LIFE-CYCLE COST - CURRENT (CY 2018) COST				(1) Cost presented for each ECES Code is presented on "Table CS-5". Cost for each ECES Code is the summation of costs under same ECES Code as presented on "Table CS-5" within the respective year. (2) Costs subtotals and totals are rounded-up to the nearest \$1,000.						
		TPC (WITHOUT CONTINGENCY)	TPC (CURRENT DOLLARS)	TPC (WITHOUT CONTINGENCY)	TPC (CURRENT DOLLARS)	LCC (WITHOUT CONTINGENCY)	LCC (CURRENT DOLLARS)											
		\$29,929,000	\$39,209,000	\$2,082,000	\$2,736,000	\$32,011,000	\$41,945,000											

TABLE CS-5 - Future Cost

Alternative	LIFE-CYCLE COST ESTIMATE - FUTURE DOLLARS	
Conservation of Natural Resources Alternative – Open Space Scenario		
Site:	SSFL Area IV/NBZ	This alternative provides protection of human health and environment through excavation and offsite disposal of soils from units (smaller subareas within Area IV and NBZ) where risk exceeds acceptable level (area-averaged cancer risk is greater than 1 x 10 ⁻⁶ , HI is greater than 1, and/or TED is greater than 25 millirem per year). It should be noted that under this alternative, the cleanup requirement as stipulated by 2010 AOC would not be met. Units containing soil with average chemicals and radionuclide concentrations between AOC LUT values and concentrations associated with risk thresholds would be left in place. The frequency of truck hauling would meet the current limit set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take less than 2 years with anticipated start in year 2021 and completion in year 2022.
Location:	Ventura County, California	
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates	
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]	
Cost Estimate Classification:	Class 4, Study or Feasibility (Level of Definition: 1% to 15%)	
Base Year:	2018	It is assumed that building demolition and disposal are NOT within the scope of this FCBA and are therefore not included in the cost estimate. It is assumed that building demolition/disposal and soil removal/disposal would be performed in a sequential manner where building removal would occur for 2 years (beginning in year 2019), followed by soil removal. DOE would demolish its remaining 18 structures within Area IV/NBZ and dispose of or recycle uncontaminated materials off site.
Date of Estimate:	September 2018	

LIFE-CYCLE COST IN FUTURE DOLLARS

ECES Code	Description	Calendar Year (CY)																
		Base Year 2018	Area IV Building Demolition ¹			Area IV Soil Remediation		Periodic Surveillance and Long-Term Maintenance (30 Years)										
			2019	2020	2021	2022	2023	2022 - 2025	2028	2027 - 2030	2033	2032 - 2035	2038	2037 - 2040	2043	2042 - 2045	2048	2047 - 2050
4.02.04	Institutional Controls	\$0	\$0	\$0	\$82,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.02	Community Awareness Activities	\$0	\$0	\$0	\$54,700	\$22,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.02.02	Community Awareness Activities	\$0	\$0	\$0	\$0	\$0	\$23,200	\$0	\$26,900	\$0	\$31,200	\$0	\$36,200	\$0	\$41,900	\$0	\$48,600	\$0
4.9x	General Conditions																	
Multiple ECES Codes	Workplans and Submittals	\$0	\$0	\$0	\$208,600	\$72,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8.01.04	Home Office Personnel	\$0	\$0	\$0	\$121,800	\$125,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.01.01.15	Job Site Personnel	\$0	\$0	\$0	\$1,878,500	\$1,934,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.03	Temporary Facilities	\$0	\$0	\$0	\$102,000	\$75,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.01	Mobilization of Construction Equipment	\$0	\$0	\$0	\$70,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.36.04	Demobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$79,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.9x	Best Management Practices - Structural																	
8.01.01	SWPPP Implementation and Maintenance	\$0	\$0	\$0	\$26,200	\$10,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.02	Temporary Erosion and Sediment Control	\$0	\$0	\$0	\$150,700	\$61,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Existing Tree Protection	\$0	\$0	\$0	\$40,000	\$20,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.16.04	Dust Control	\$0	\$0	\$0	\$394,800	\$406,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.07.08.02	Air Monitoring	\$0	\$0	\$0	\$34,300	\$35,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.01.03.12	Decontamination/Wash Station	\$0	\$0	\$0	\$463,000	\$185,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Street Sweeping	\$0	\$0	\$0	\$262,400	\$270,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8.01.03.11	Traffic Control	\$0	\$0	\$0	\$1,408,300	\$1,416,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Multiple ECES Codes	Excavation, Hauling and Disposal																	
4.05.9x	Construction Survey and Staking	\$0	\$0	\$0	\$4,600	\$4,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.05.01	Excavation	\$0	\$0	\$0	\$214,200	\$220,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.32.11.05	Hauling	\$0	\$0	\$0	\$3,258,600	\$3,356,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.07.11	Confirmation Sampling	\$0	\$0	\$0	\$4,500	\$4,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.08.04	Sample Analysis	\$0	\$0	\$0	\$72,700	\$74,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.33.08.05	Disposal	\$0	\$0	\$0	\$1,721,100	\$1,772,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.9x	Excavation of Underground Utilities (D&D)	\$0	\$0	\$0	\$21,900	\$22,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.05	Backfill																	
4.05.05.06	Backfill from Offsite Sources	\$0	\$0	\$0	\$1,569,200	\$1,616,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.02	Restoration																	
4.05.02.05	Seeding	\$0	\$0	\$0	\$4,300	\$4,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.05.08	Allowance for Street/Pavement Repair	\$0	\$0	\$0	\$0	\$711,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.21.08	Post-Construction Monitoring	\$0	\$0	\$0	\$0	\$0	\$289,900	\$0	\$336,000	\$0	\$389,500	\$0	\$451,600	\$0	\$523,500	\$0	\$606,900	\$0
6.02.04.06	Evaluating and Updating Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$11,600	\$0	\$13,500	\$0	\$15,600	\$0	\$18,100	\$0	\$21,000	\$0	\$24,300	\$0
	Subtotal	\$0	\$0	\$0	\$12,169,000	\$12,506,000	\$325,000	\$0	\$377,000	\$0	\$437,000	\$0	\$506,000	\$0	\$587,000	\$0	\$680,000	\$0
4.04.11	Remedial Design (15%)	\$0	\$0	\$0	\$1,826,000	\$1,876,000	\$49,000	\$0	\$57,000	\$0	\$66,000	\$0	\$76,000	\$0	\$89,000	\$0	\$102,000	\$0
4.02.09	Construction Management (10%)	\$0	\$0	\$0	\$1,217,000	\$1,251,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.01	Project Management (5%)	\$0	\$0	\$0	\$609,000	\$626,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.02.01	Project Management (5%)	\$0	\$0	\$0	\$0	\$0	\$17,000	\$0	\$19,000	\$0	\$22,000	\$0	\$26,000	\$0	\$30,000	\$0	\$34,000	\$0
6.07.9x	Construction Coordination (1%)	\$0	\$0	\$0	\$122,000	\$126,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.14	Health and Safety (1.5%)	\$0	\$0	\$0	\$183,000	\$188,000	\$5,000	\$0	\$6,000	\$0	\$7,000	\$0	\$8,000	\$0	\$9,000	\$0	\$11,000	\$0
4.02.01.01	Program Management (1%)	\$0	\$0	\$0	\$122,000	\$126,000	\$4,000	\$0	\$4,000	\$0	\$5,000	\$0	\$6,000	\$0	\$6,000	\$0	\$7,000	\$0
4.02.03	Regulatory Costs (1%)	\$0	\$0	\$0	\$122,000	\$126,000	\$4,000	\$0	\$4,000	\$0	\$5,000	\$0	\$6,000	\$0	\$6,000	\$0	\$7,000	\$0
	Project Cost (without Contingency)	\$0	\$0	\$0	\$16,370,000	\$16,825,000	\$404,000	\$0	\$467,000	\$0	\$542,000	\$0	\$628,000	\$0	\$727,000	\$0	\$841,000	\$0
8.01.03.13	Contingency 30% (DOE Held)	\$0	\$0	\$0	\$4,911,000	\$5,048,000	\$122,000	\$0	\$141,000	\$0	\$163,000	\$0	\$189,000	\$0	\$219,000	\$0	\$253,000	\$0
8.01.03.13	Management Reserve 1% (Contractor Held)	\$0	\$0	\$0	\$164,000	\$169,000	\$5,000	\$0	\$5,000	\$0	\$6,000	\$0	\$7,000	\$0	\$8,000	\$0	\$9,000	\$0
	Total Project Cost (TPC) - Future Dollars	\$0	\$0	\$0	\$21,445,000	\$22,042,000	\$531,000	\$0	\$613,000	\$0	\$711,000	\$0	\$824,000	\$0	\$954,000	\$0	\$1,103,000	\$0

- The draft detailed cost estimates are based primarily on the methodology as described in Cost Estimating Guide, DOE G 413.3-21A.
 - Specific assumptions used in preparation of the detailed cost estimates are included in the Basis of Estimate (BOE).

AREA IV SOIL REMOVAL AND DISPOSAL		PERIODIC SURVEILLANCE AND LONG-TERM MAINTENANCE		TOTAL LIFE-CYCLE COST - FUTURE COST	
TPC (WITHOUT CONTINGENCY)	TPC (FUTURE DOLLARS)	TPC (WITHOUT CONTINGENCY)	TPC (FUTURE DOLLARS)	LCC (WITHOUT CONTINGENCY)	LCC (FUTURE DOLLARS)
\$33,195,000	\$43,487,000	\$3,609,000	\$4,736,000	\$36,804,000	\$48,223,000

(1) Future dollars are calculated by escalating current dollar costs from "Table CS-5 - Current Cost (CY 2018)" using annual escalation rate factors presented in "Table LCC-AERFT". (2) Costs subtotals and totals are rounded-up to the nearest \$1,000.

TABLE CS-5 - Present Worth

Alternative Conservation of Natural Resources Alternative – Open Space Scenario		LIFE-CYCLE COST ESTIMATE - PRESENT WORTH DOLLARS															
Site:	SSFL Area IV/NBZ	This alternative provides protection of human health and environment through excavation and offsite disposal of soils from units (smaller subareas within Area IV and NBZ) where risk exceeds acceptable level (area-averaged cancer risk is greater than 1 x 10 ⁻⁶ , HI is greater than 1, and/or TED is greater than 25 millirem per year). It should be noted that under this alternative, the cleanup requirement as stipulated by 2010 AOC would not be met. Units containing soil with average chemicals and radionuclide concentrations between AOC LUT values and concentrations associated with risk thresholds would be left in place. The frequency of truck hauling would meet the current limit set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take less than 2 years with anticipated start in year 2021 and completion in year 2022.															
Location:	Ventura County, California																
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates																
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]																
Cost Estimate Classification:	Class 4, Study or Feasibility (Level of Definition: 1% to 15%)																
Base Year:	2018	1 It is assumed that building demolition and disposal are NOT within the scope of this FCBA and are therefore not included in the cost estimate. It is assumed that building demolition/disposal and soil removal/disposal would be performed in a sequential manner where building removal would occur for 2 years (beginning in year 2019), followed by soil removal. DOE would demolish its remaining 18 structures within Area IV/NBZ and dispose of or recycle uncontaminated materials off site.															
Date of Estimate:	September 2018																

		LIFE-CYCLE COST IN PRESENT WORTH DOLLARS																	
ECES Code	Description	Calendar Year (CY)																	
		Base Year	Area IV Building Demolition ¹			Area IV Soil Remediation		Periodic Surveillance and Long-Term Maintenance (30 Years)											
			2018	2019	2020	2021	2022	2023	2022 - 2025	2028	2027 - 2030	2033	2032 - 2035	2038	2037 - 2040	2043	2042 - 2045	2048	2047 - 2050
4.02.04	Institutional Controls	\$0	\$0	\$0	\$76,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.02.02	Community Awareness Activities	\$0	\$0	\$0	\$50,700	\$20,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.02.02	Community Awareness Activities	\$0	\$0	\$0	\$0	\$0	\$20,500	\$0	\$20,900	\$0	\$21,300	\$0	\$21,700	\$0	\$22,100	\$0	\$22,600	\$0	\$0
4.9x	General Conditions																		
Multiple ECES Codes	Workplans and Submittals	\$0	\$0	\$0	\$193,200	\$65,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
8.01.04	Home Office Personnel	\$0	\$0	\$0	\$112,800	\$113,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.02.01.01.15	Job Site Personnel	\$0	\$0	\$0	\$1,739,400	\$1,746,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.01.03	Temporary Facilities	\$0	\$0	\$0	\$94,500	\$68,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.01.01	Mobilization of Construction Equipment	\$0	\$0	\$0	\$65,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.36.04	Demobilization of Construction Equipment	\$0	\$0	\$0	\$0	\$71,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.9x	Best Management Practices - Structural																		
8.01.01	SWPPP Implementation and Maintenance	\$0	\$0	\$0	\$24,300	\$9,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.02	Temporary Erosion and Sediment Control	\$0	\$0	\$0	\$139,600	\$55,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.9x	Existing Tree Protection	\$0	\$0	\$0	\$37,100	\$18,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.16.04	Dust Control	\$0	\$0	\$0	\$365,600	\$367,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.07.08.02	Air Monitoring	\$0	\$0	\$0	\$31,800	\$31,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.01.03.12	Decontamination/Wash Station	\$0	\$0	\$0	\$428,700	\$167,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.9x	Street Sweeping	\$0	\$0	\$0	\$243,000	\$244,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
8.01.03.11	Traffic Control	\$0	\$0	\$0	\$1,304,000	\$1,278,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Multiple ECES Codes	Excavation, Hauling and Disposal																		
4.05.9x	Construction Survey and Staking	\$0	\$0	\$0	\$4,300	\$4,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.05.01	Excavation	\$0	\$0	\$0	\$198,400	\$199,100	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.32.11.05	Hauling	\$0	\$0	\$0	\$3,017,200	\$3,028,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.07.11	Confirmation Sampling	\$0	\$0	\$0	\$4,200	\$4,300	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.08.04	Sample Analysis	\$0	\$0	\$0	\$67,400	\$67,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.33.08.05	Disposal	\$0	\$0	\$0	\$1,593,600	\$1,599,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.9x	Excavation of Underground Utilities (D&D)																		
4.05.05	Backfill																		
4.05.05.06	Backfill from Offsite Sources	\$0	\$0	\$0	\$1,453,000	\$1,458,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.02	Restoration																		
4.05.02.05	Seeding	\$0	\$0	\$0	\$4,000	\$4,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.05.08	Allowance for Street/Pavement Repair	\$0	\$0	\$0	\$0	\$641,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
6.21.08	Post-Construction Monitoring																		
6.02.04.06	Evaluating and Updating Institutional Controls	\$0	\$0	\$0	\$0	\$0	\$255,000	\$0	\$260,000	\$0	\$265,100	\$0	\$270,300	\$0	\$275,600	\$0	\$281,000	\$0	
	Subtotal	\$0	\$0	\$0	\$11,269,000	\$11,286,000	\$286,000	\$0	\$292,000	\$0	\$298,000	\$0	\$303,000	\$0	\$309,000	\$0	\$315,000	\$0	
4.04.11	Remedial Design (15%)	\$0	\$0	\$0	\$1,691,000	\$1,693,000	\$43,000	\$0	\$44,000	\$0	\$45,000	\$0	\$46,000	\$0	\$47,000	\$0	\$48,000	\$0	
4.02.09	Construction Management (10%)	\$0	\$0	\$0	\$1,127,000	\$1,129,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.02.01	Project Management (5%)	\$0	\$0	\$0	\$564,000	\$565,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
6.02.01	Project Management (5%)	\$0	\$0	\$0	\$0	\$0	\$15,000	\$0	\$15,000	\$0	\$15,000	\$0	\$16,000	\$0	\$16,000	\$0	\$16,000	\$0	
6.07.9x	Construction Coordination (1%)	\$0	\$0	\$0	\$113,000	\$113,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
4.02.14	Health and Safety (1.5%)	\$0	\$0	\$0	\$170,000	\$170,000	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	
4.02.01.01	Program Management (1%)	\$0	\$0	\$0	\$113,000	\$113,000	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	
4.02.03	Regulatory Costs (1%)	\$0	\$0	\$0	\$113,000	\$113,000	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	
	Project Cost (without Contingency)	\$0	\$0	\$0	\$15,160,000	\$15,182,000	\$355,000	\$0	\$362,000	\$0	\$369,000	\$0	\$378,000	\$0	\$385,000	\$0	\$392,000	\$0	
8.01.03.13	Contingency 30% (DOE Held)	\$0	\$0	\$0	\$4,548,000	\$4,555,000	\$107,000	\$0	\$109,000	\$0	\$111,000	\$0	\$114,000	\$0	\$116,000	\$0	\$118,000	\$0	
8.01.03.13	Management Reserve 1% (Contractor Held)	\$0	\$0	\$0	\$152,000	\$152,000	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	\$4,000	\$0	
	Total Project Cost (TPC) - Present Worth	\$0	\$0	\$0	\$19,860,000	\$19,889,000	\$466,000	\$0	\$475,000	\$0	\$484,000	\$0	\$496,000	\$0	\$505,000	\$0	\$514,000	\$0	

- The draft detailed cost estimates are based primarily on the methodology as described in Cost Estimating Guide, DOE G 413.3-21A.		AREA IV SOIL REMOVAL AND DISPOSAL				PERIODIC SURVEILLANCE AND LONG-TERM MAINTENANCE				TOTAL LIFE-CYCLE COST - PRESENT WORTH				(1) Present Worth (PW) are calculated by discounting the future dollar costs from "Table CS-5 - Future Cost (CY 2018)" using the calculated discount factors presented in "Table SPV-ADRFT". (2) PW was calculated as described in Appendix F of the Cost Estimating Guide, DOE G 413.3-21A. (3) Costs subtotals and totals are rounded-up to the nearest \$1,000.	
- Specific assumptions used in preparation of the detailed cost estimates are included in the Basis of Estimate (BOE).		TPC (WITHOUT CONTINGENCY)		TPC (PRESENT WORTH)		TPC (WITHOUT CONTINGENCY)		TPC (PRESENT WORTH)		LCC (WITHOUT CONTINGENCY)		LCC (PRESENT WORTH)			
		\$30,342,000		\$39,749,000		\$2,241,000		\$2,940,000		\$32,583,000		\$42,689,000			

TABLE CS-5

DETAILED COST ESTIMATE BACKUP SUMMARY

Alternative Conservation of Natural Resources Alternative – Open Space Scenario		Description: This alternative provides protection of human health and environment through excavation and offsite disposal of soils from units (smaller subareas within Area IV and NBZ) where risk exceeds acceptable level (area-averaged cancer risk is greater than 1×10^{-6} , HI is greater than 1, and/or TED is greater than 25 millirem per year). It should be noted that under this alternative, the cleanup requirement as stipulated by 2010 AOC would not be met. Units containing soil with average chemicals and radionuclide concentrations between AOC LUT values and concentrations associated with risk thresholds would be left in place. The frequency of truck hauling would meet the current limit set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take less than 2 years with anticipated start in year 2021 and completion in year 2022.				
Site:	SSFL Area IV/NBZ					
Location:	Ventura County, California					
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates					
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Class 4, Study of Feasibility (Level of Definition: 1% to 15%)					
Cost Estimate Classification:	2018					
Base Year:	2018					
Date of Estimate:	September 2018					
INSTITUTIONAL CONTROLS CAPITAL COSTS: (Assumed to be Incurred During Year 3 [2021])						
ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
4.02.04	Institutional Controls	1	LS	\$75,000	\$75,000	Allowance, Includes establishment of ICs during construction
4.02.02	Community Awareness Activities	1	LS	\$50,000	\$50,000	Allowance, Includes public meetings and extensive outreach programs
AREA IV SOIL REMOVAL AND DISPOSAL COSTS: (Assumed to be Incurred During Year 3 [2021])						
ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
4.9x	General Conditions					
Multiple ECES Codes	Workplans and Submittals					
4.02.01.01	Project Progress Meetings and Schedule Update	12	MO	\$1,497	\$17,968	Weekly meetings and updating project schedule.
4.03.01	Work Plans	1	LS	\$138,773	\$138,773	Includes preparation of administrative BMPs
4.04.21	Submittals	1	LS	\$34,100	\$34,100	General submittals typical of a construction project.
8.01.04	Home Office Personnel	12	MO	\$9,283	\$111,399	Includes project manager and administrative support.
4.02.01.01.15	Job Site Personnel	12	MO	\$143,255	\$1,719,060	Includes general site personnel, archeologist and biologist.
4.05.01.03	Temporary Facilities	12	MO	\$7,772	\$93,268	Includes staging area, temporary offices.
4.05.01.01	Mobilization of Construction Equipment	1	LS	\$64,015	\$64,015	
4.9x	Best Management Practices - Structural					
8.01.01	SWPPP Implementation and Maintenance					
8.01.01.03	SWPPP Preparation (Report)	1	LS	\$15,004	\$15,004	Itemized separately from other Work Plans
8.01.01.9x	SWPPP Oversight and Maintenance	12	MO	\$738.00	\$8,853	
4.05.02	Temporary Erosion and Sediment Control					Temporary measures to be used separately or concurrently.
4.05.02.04	Silt Fence	17,480	LF	\$2.86	\$50,062	
4.05.02.04	Wattles	875	LF	\$7.64	\$6,689	
4.05.02.04	Sediment Trap	4	EA	\$1,465	\$5,858	
4.05.02.04	Rock Filter Dam	4	EA	\$3,651	\$14,602	
4.05.02.04	Track-out Prevention	4	EA	\$1,461	\$5,842	Gravel pad at excavation exit areas
4.05.02.05	Temporary Seeding	5	ACR	\$275.78	\$1,241	
4.05.02.9x	Erosion and Sediment Control Maintenance	12	MO	\$4,464	\$53,567	
4.05.9x	Existing Tree Protection					
4.05.9x	Arborist and Care for Existing Trees	12	MO	\$1,487	\$17,848	Buffer zone around trees identified. Watering assumed under dust control.
4.05.9x	Tree Protection Fencing	35	EA	\$533.29	\$18,665	Routine checks of trees by arborist.
4.16.04	Dust Control	12	MO	\$30,102	\$361,221	Assumes use of 16,000 gallons per day purchased from Ventura County
4.07.08.02	Air Monitoring	12	MO	\$2,603	\$31,238	Perimeter air monitoring for particulate (PM-10)
4.05.01.03.12	Decontamination/Wash Station					
4.05.01.03.12	Purchase and Setup	1	EA	\$258,641	\$258,641	Wash station capable of re-using wash water.
4.05.01.03.12	Operation	12	MO	\$13,752	\$165,020	
4.05.9x	Street Sweeping					Daily street sweeping along access roads.
8.01.03.11	Traffic Control					
8.01.03.11	Preconstruction Video Survey	1	LS	\$4,398	\$4,398	
8.01.03.11	Traffic Control Signs and Barricades	1	LS	\$25,835	\$25,835	
8.01.03.11	Traffic Control	12	MO	\$104,880	\$1,258,564	Traffic control/flagman along Woolsey Canyon Road.
Multiple ECES Codes	Excavation, Hauling and Disposal					
Multiple ECES Codes	Low-Hazard and Moderate-Hazard Soil					
4.05.9x	Construction Survey and Staking	4.20	ACR	\$925.60	\$3,888	
4.05.05.01	Excavation	18,000	BCY	\$8.19	\$147,420	Includes excavation and loading
4.32.11.05	Hauling	27,000	TON	\$80.91	\$2,184,570	An average of 135 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	93	EA	\$39.23	\$3,648	
4.08.04	Sample Analysis	93	EA	\$651.29	\$60,570	
4.33.08.05	Disposal	27,000	TON	\$52.94	\$1,429,380	Disposal inside of California (Class 2 or Class 3 disposal facility)
Multiple ECES Codes	Hazardous Soil					
4.05.9x	Construction Survey and Staking	0.25	ACR	\$926.00	\$232	
4.05.05.01	Excavation	1,000	BCY	\$46.84	\$46,840	Includes excavation and loading
4.32.11.05	Hauling	1,500	TON	\$506.58	\$759,870	An average of 780 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	6	EA	\$39.25	\$236	
4.08.04	Sample Analysis	6	EA	\$651.25	\$3,908	
4.33.08.05	Disposal	1,500	TON	\$88.24	\$132,360	Disposal outside of California.
Multiple ECES Codes	LLW/MLLW Soil					
4.05.9x	Construction Survey and Staking	0.05	ACR	\$930.00	\$47	
4.05.05.01	Excavation	100	BCY	\$17.15	\$1,715	Includes excavation and loading
4.32.11.05	Hauling	150	TON	\$250.59	\$37,589	An average of 300 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	3	EA	\$39.17	\$118	
4.08.04	Sample Analysis	3	EA	\$651.33	\$1,954	
4.33.08.05	Disposal	150	TON	\$88.24	\$13,236	Disposal outside of California (Class 1 disposal facility)
4.05.9x	Excavation of Underground Utilities (D&D)					Assumes 10% of total excavation cost
4.05.05	Backfill and Organic Amendment					
4.05.05.06	Backfill from Offsite Sources	14,325	ECY	\$100.24	\$1,435,938	Assume backfill would come from an offsite source within 50 miles of site.
4.05.02	Restoration					
4.05.02.05	Seeding	5	AC	\$845.67	\$3,806	Seeding disturbed areas with native grasses and wildflower seed mix.

TABLE CS-5

DETAILED COST ESTIMATE BACKUP SUMMARY

Alternative Conservation of Natural Resources Alternative – Open Space Scenario		Description: This alternative provides protection of human health and environment through excavation and offsite disposal of soils from units (smaller subareas within Area IV and NBZ) where risk exceeds acceptable level (area-averaged cancer risk is greater than 1×10^{-6} , HI is greater than 1, and/or TED is greater than 25 millirem per year). It should be noted that under this alternative, the cleanup requirement as stipulated by 2010 AOC would not be met. Units containing soil with average chemicals and radionuclide concentrations between AOC LUT values and concentrations associated with risk thresholds would be left in place. The frequency of truck hauling would meet the current limit set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take less than 2 years with anticipated start in year 2021 and completion in year 2022.
Site:	SSFL Area IV/NBZ	
Location:	Ventura County, California	
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates	
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Class 4, Study of Feasibility (Level of Definition: 1% to 15%)	
Cost Estimate Classification:	2018	
Base Year:	September 2018	
Date of Estimate:	September 2018	

AREA IV SOIL REMOVAL AND DISPOSAL COSTS: (Assumed to be Incurred During Year 4 [2022])

ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
4.9x	General Conditions					
Multiple ECES Codes	Workplans and Submittals					
4.02.01.01	Project Progress Meetings and Updating Project Schedule	12	MO	\$1,497	\$17,968	Weekly meetings and updating project schedule.
4.04.19	Post-RA Completion Report	1	LS	\$45,890	\$45,890	Preparation of the post-remedial action completion report.
8.01.04	Home Office Personnel	12	MO	\$9,283	\$111,399	Includes project manager and administrative support.
4.02.01.01.15	Job Site Personnel	12	MO	\$143,255	\$1,719,060	Includes general site personnel, archeologist and biologist.
4.05.01.03	Temporary Facilities	12	MO	\$5,582	\$66,986	Includes staging area, temporary offices.
4.05.36.04	Demobilization of Construction Equipment	1	LS	\$70,591	\$70,591	
4.9x	Best Management Practices - Structural					
Multiple ECES Codes	SWPPP Implementation and Maintenance					
8.01.01	SWPPP Maintenance	12	MO	\$738.00	\$8,853	
8.01.01.9x	SWPPP Maintenance	12	MO	\$738.00	\$8,853	
4.05.02	Temporary Erosion and Sediment Control					Temporary measures to be used separately or concurrently.
4.05.02.05	Temporary Seeding	5	ACR	\$275.78	\$1,241	
4.05.02.9x	Erosion and Sediment Control Maintenance	12	MO	\$4,464	\$53,567	
4.05.9x	Existing Tree Protection					
4.05.9x	Arborist and Care for Existing Trees	12	MO	\$1,487	\$17,848	Buffer zone around trees identified. Watering assumed under dust control.
4.16.04	Dust Control	12	MO	\$30,102	\$361,221	Assumes use of 16,000 gallons per day purchased from Ventura County
4.07.08.02	Air Monitoring	12	MO	\$2,603	\$31,238	Perimeter air monitoring for particulate (PM-10)
4.05.01.03.12	Decontamination/Wash Station					
4.05.01.03.12	Operation	12	MO	\$13,752	\$165,020	
4.05.9x	Street Sweeping	12	MO	\$20,005	\$240,065	Daily street sweeping along access roads.
8.01.03.11	Traffic Control					
8.01.03.11	Traffic Control	12	MO	\$104,880	\$1,258,564	Traffic control/flagman along Woolsey Canyon Road.
Multiple ECES Codes	Excavation, Hauling and Disposal					
Multiple ECES Codes	Low-Hazard and Moderate-Hazard Soil					
4.05.9x	Construction Survey and Staking	4.20	ACR	\$925.60	\$3,888	
4.05.05.01	Excavation	18,000	BCY	\$8.19	\$147,420	Includes excavation and loading
4.32.11.05	Hauling	27,000	TON	\$80.91	\$2,184,570	An average of 135 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	93	EA	\$39.23	\$3,648	
4.08.04	Sample Analysis	93	EA	\$651.29	\$60,570	
4.33.08.05	Disposal	27,000	TON	\$52.94	\$1,429,380	Disposal inside of California (Class 2 or Class 3 disposal facility)
Multiple ECES Codes	Hazardous Soil					
4.05.9x	Construction Survey and Staking	0.25	ACR	\$926.00	\$232	
4.05.05.01	Excavation	1,000	BCY	\$46.84	\$46,840	Includes excavation and loading
4.32.11.05	Hauling	1,500	TON	\$506.58	\$759,870	An average of 780 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	6	EA	\$39.25	\$236	
4.08.04	Sample Analysis	6	EA	\$651.25	\$3,908	
4.33.08.05	Disposal	1,500	TON	\$88.24	\$132,360	Disposal outside of California.
Multiple ECES Codes	LLW/MLLW Soil					
4.05.9x	Construction Survey and Staking	0.05	ACR	\$930.00	\$47	
4.05.05.01	Excavation	100	BCY	\$17.15	\$1,715	Includes excavation and loading
4.32.11.05	Hauling	150	TON	\$250.59	\$37,589	An average of 300 mile one-way hauling distance to disposal facility
4.07.11	Confirmation Sampling	3	EA	\$39.17	\$118	
4.08.04	Sample Analysis	3	EA	\$651.33	\$1,954	
4.33.08.05	Disposal	150	TON	\$88.24	\$13,236	Disposal outside of California (Class 1 disposal facility)
4.05.9x	Excavation of Underground Utilities (D&D)	1	LS	\$20,000	\$20,000	Assumes 10% of total excavation cost
4.05.05	Backfill and Organic Amendment					
4.05.05.06	Backfill from Offsite Sources	14,325	ECY	\$100.24	\$1,435,938	Assume backfill would come from an offsite source within 50 miles of site.
4.05.02	Restoration					
4.05.02.05	Seeding	5	ACR	\$845.67	\$3,806	Seeding disturbed areas with native grasses and wildflower seed mix.
4.05.08	Allowance for Street/Pavement Repair	2.5	MI	\$252,645	\$631,612	Repairing Woolsey Canyon Road.

TABLE CS-5

DETAILED COST ESTIMATE BACKUP SUMMARY

Alternative Conservation of Natural Resources Alternative – Open Space Scenario						
Site:	SSFL Area IV/NBZ	Description: This alternative provides protection of human health and environment through excavation and offsite disposal of soils from units (smaller subareas within Area IV and NBZ) where risk exceeds acceptable level (area-averaged cancer risk is greater than 1×10^{-6} , HI is greater than 1, and/or TED is greater than 25 millirem per year). It should be noted that under this alternative, the cleanup requirement as stipulated by 2010 AOC would not be met. Units containing soil with average chemicals and radionuclide concentrations between AOC LUT values and concentrations associated with risk thresholds would be left in place. The frequency of truck hauling would meet the current limit set forth by the transportation agreement made between DOE, NASA, and Boeing (Boeing 2015). The cleanup effort under this alternative would take less than 2 years with anticipated start in year 2021 and completion in year 2022.				
Location:	Ventura County, California					
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates					
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Class 4, Study of Feasibility (Level of Definition: 1% to 15%)]					
Cost Estimate Classification:	2018					
Base Year:	2018					
Date of Estimate:	September 2018					
ANNUAL COSTS (Assumed to be Incurred During Year 4 [2022])						
ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
4.02.02	Community Awareness Activities	1	LS	\$20,000	\$20,000	Allowance. Includes community awareness meetings
SURVEILLANCE AND LONG-TERM MAINTENANCE COSTS (Assumed to be Incurred Every 5 Years After Year 4 [2022])						
ECES Code	DESCRIPTION	QTY	UNIT(S)	UNIT COST	TOTAL	NOTES
6.21.08	Post-Construction Monitoring	1	LS	\$250,000	\$250,000	Consist of monitoring of TPH/PAHs impacted soils and areas where residual contamination is above the established LUT values (biological and cultural sensitive areas) Includes monitoring, sampling, analysis, and report.
6.02.04.06	Evaluating and Updating Institutional Controls	1	LS	\$10,000	\$10,000	
6.02.02	Community Awareness Activities	1	LS	\$20,000	\$20,000	Allowance. Includes community awareness meetings

Notes:

Quantities presented herein are presented in attached detailed calculations. Unit costs presented herein are derived from the attached MII detailed cost backup.

Abbreviations:

AC	Acre	MO	Month
BCY	Bank Cubic Yard	QTY	Quantity
ECES	Environmental Cost Element Structure	TON	Ton
ECY	Embankment Cubic Yard	YR	Year
LCY	Loose Cubic Yard		
LF	Linear feet		
LS	Lump Sum		

Attachment F

Detailed Cost Breakout - MII

**Cleanup to AOC Look-Up Table Values
Alternative**

Cost Breakout Backup
Cleanup to AOC LUT Values Alternative

Description	Quantity	UOM	CostToPrime (\$)	ContractCost (\$)	ProjectCost (\$)	Operating Cost (\$)			Number of years: 26			
						Months	Monthly	Annual	\$ per Yr	UOM	Unit Cost	
Cleanup to AOC LUT Values Alternative												
4.9x General Conditions	1	LS	40,428,581	49,349,956	49,349,956	-	-	-	-	-	-	-
Multiple ECES Codes Workplans and Submittals	1	LS	561,918	685,916	685,916	-	-	-	-	-	-	-
4.02.01.01 Project Meetings and Updating Project Schedule	312	MO	382,702	467,152	467,152	12	1,497.28	17,967.38	-	-	-	-
4.03.01 Work Plans	1	LS	113,686	138,773	138,773	-	-	-	-	-	-	-
4.04.21 Submittals	1	LS	27,936	34,100	34,100	-	-	-	-	-	-	-
4.04.19 Post-RA Completion Report	1	LS	37,594	45,890	45,890	-	-	-	-	-	-	-
8.01.04 Home Office Personnel	312	MO	2,372,766	2,896,364	2,896,364	12	9,283.22	111,398.62	-	-	-	-
4.02.01.01.15 Job Site Personnel	312	MO	36,581,696	44,654,179	44,654,179	12	143,122.37	1,717,468.42	-	-	-	-
4.05.01.03 Temporary Facilities	312	MO	912,202	1,113,497	1,113,497	12	3,568.90	42,826.81	-	-	-	-
4.05.01.03.25 Project Sign	2	EA	2,926	3,571	3,571	-	-	-	-	-	-	-
4.05.01.03.21 Staging Area and Security Fencing	1	LS	31,644	38,627	38,627	-	-	-	-	-	-	-
4.05.01.03 Temporary Facilities	312	MO	864,593	1,055,383	1,055,383	12	3,382.64	40,591.65	-	-	-	-
4.05.36.01 Removal of Temporary Construction Facilities	1	LS	13,039	15,916	15,916	-	-	-	-	-	-	-
4.05.00 Mobilization and Demobilization	1	LS	110,272	134,606	134,606	-	-	-	-	-	-	-
4.05.01.01 Site Mobilization	1	LS	52,442	64,015	64,015	-	-	-	-	-	-	-
4.05.36 Site Demobilization	1	LS	57,830	70,591	70,591	-	-	-	-	-	-	-
4.05.36.04 Equipment Demobilization	1	LS	48,377	59,052	59,052	-	-	-	-	-	-	-
4.05.36.01.9x Site Cleanup	1	LS	9,453	11,539	11,539	-	-	-	-	-	-	-
4.9x Best Management Practices	1	LS	46,625,237	56,914,028	56,914,028	-	-	-	-	-	-	-
8.01.01 SWPPP Implementation and Maintenance	1	LS	200,859	245,183	245,183	-	-	-	-	-	-	-
8.01.01.03 SWPPP Preparation	1	LS	12,292	15,004	15,004	-	-	-	-	-	-	-
8.01.01.9x SWPPP Oversight and Maintenance	312	MO	188,567	230,178	230,178	12	737.75	8,853.00	-	-	-	-
4.05.02 Temporary Erosion and Sediment Control	1	LS	1,815,629	2,216,284	2,216,284	-	-	-	-	-	-	-
4.05.02.04 Silt Fence	243660	LF	571,678	697,831	697,831	-	-	-	-	-	-	-
4.05.02.04 Wattles	2500	LF	15,656	19,111	19,111	-	-	-	-	-	-	-
4.05.02.04 Sediment Trap	10	EA	11,997	14,644	14,644	-	-	-	-	-	-	-
4.05.02.04 Rock Filter Dam	10	EA	29,386	35,871	35,871	-	-	-	-	-	-	-
4.05.02.04 Track-Out Prevention	10	EA	12,061	14,723	14,723	-	-	-	-	-	-	-
4.05.02.05 Temporary Seeding	150	ACR	33,892	41,371	41,371	-	-	-	5,769,230,777	ACR	275.81	-
4.05.02.9x Inspection and Maintenance	312	MO	1,140,958	1,392,733	1,392,733	12	4,463.89	53,566.65	-	-	-	-
4.05.9x Existing Tree Protection	100	EA	365,363	445,987	445,987	-	-	-	-	-	-	-
4.05.9x Arborist and Care for Existing Trees	312	MO	321,675	392,658	392,658	12	1,258.52	15,102.23	-	-	-	-
4.05.9x Tree Protection Fencing	100	EA	43,688	53,329	53,329	-	-	-	-	-	-	-
4.16.04 Dust Control	312	MO	7,693,930	9,391,749	9,391,749	12	30,101.76	361,221.12	-	-	-	-
4.07.08.02 Air Monitoring	312	MO	665,348	812,170	812,170	12	2,603.11	31,237.31	-	-	-	-
4.05.01.03.12 Decontamination/Wash Station	1	LS	3,726,774	4,549,161	4,549,161	-	-	-	-	-	-	-
4.05.01.03.12 Decontamination/Wash Station Purchase and Setup	1	EA	211,884	258,641	258,641	-	-	-	-	-	-	-
4.05.01.03.12 Decontamination/Wash Station Operation	312	MO	3,514,890	4,290,520	4,290,520	12	13,751.67	165,020.00	-	-	-	-
4.05.9x Street Sweeping	312	MO	5,113,323	6,241,680	6,241,680	12	20,005.38	240,064.62	-	-	-	-
8.01.03.11 Traffic Control	1	LS	27,044,012	33,011,814	33,011,814	-	-	-	-	-	-	-
8.01.03.11 Preconstruction Video Survey	1	LS	3,603	4,398	4,398	-	-	-	-	-	-	-
8.01.03.11 Traffic Control Signs and Barricades	1	LS	233,290	284,770	284,770	-	-	-	-	-	-	-
8.01.03.11 Traffic Control	312	MO	26,807,119	32,722,646	32,722,646	12	104,880.28	1,258,563.31	-	-	-	-
Multiple ECES Codes Excavation and Hauling	881000	BCY	125,903,933	153,687,153	153,687,153	-	-	-	33884.6154	BCY	174.45	-
Multiple ECES Codes Low-Hazard and Moderate-Hazard Soil	769000	BCY	88,192,102	107,653,453	107,653,453	-	-	-	29576.9231	BCY	139.99	-
4.05.9x Construction Survey and Staking	131	ACR	99,334	121,255	121,255	-	-	-	5,0384,6154	ACR	925.61	-
4.05.05.01 Excavation	769000	BCY	5,161,631	6,300,648	6,300,648	-	-	-	29576.9231	BCY	8.19	-
4.32.11.05 Hauling	1153500	TON	76,461,327	93,334,048	93,334,048	-	-	-	44365.3846	TON	80.91	-
4.07.11 Confirmation Sampling	11437	EA	367,598	448,716	448,716	-	-	-	440	EA	39.23	-
4.08.04 Sample Analysis	11437	EA	6,102,211	7,448,786	7,448,786	-	-	-	440	EA	651.29	-
Multiple ECES Codes Hazardous Soil	2000	BCY	1,337,802	1,633,015	1,633,015	-	-	-	76.9230769	BCY	816.51	-
4.05.9x Construction Surveying and Staking	0.3	ACR	227	278	278	-	-	-	0.01153846	ACR	926.67	-
4.05.05.01 Excavation	2000	BCY	76,739	93,673	93,673	-	-	-	76.9230769	BCY	46.84	-
4.32.11.05 Hauling	3000	TON	1,244,997	1,519,730	1,519,730	-	-	-	115.384615	TON	506.58	-
4.07.11 Confirmation Sampling	28	EA	900	1,099	1,099	-	-	-	1	EA	39.25	-
4.08.04 Sample Analysis	28	EA	14,939	18,236	18,236	-	-	-	1	EA	651.29	-
Multiple ECES Codes LLW/MLLW Soil	110000	BCY	36,374,028	44,400,685	44,400,685	-	-	-	4230.76923	BCY	403.64	-
4.05.9x Construction Surveying and Staking	18.7	ACR	14,180	17,309	17,309	-	-	-	0.71923077	ACR	925.61	-
4.05.05.01 Excavation	110000	BCY	1,545,258	1,886,250	1,886,250	-	-	-	4230.76923	BCY	17.15	-
4.32.11.05 Hauling	165000	TON	33,890,251	41,368,813	41,368,813	-	-	-	6346.15385	TON	250.72	-
4.07.11 Confirmation Sampling	1634	EA	52,519	64,108	64,108	-	-	-	63	EA	39.23	-
4.08.04 Sample Analysis	1634	EA	871,821	1,064,205	1,064,205	-	-	-	63	EA	651.29	-
4.33.08.05 Disposal	1321500	TON	68,835,953	75,891,638	75,891,638	-	-	-	50826.9231	TON	57.43	-
4.33.08.05 Low-Hazard and Moderate-Hazard Soil	1153500	TON	55,390,483	61,068,019	61,068,019	-	-	-	44365.3846	TON	52.94	-
4.33.08.05 Hazardous Soil	3000	TON	240,098	264,707	264,707	-	-	-	115.384615	TON	88.24	-
4.33.08.05 LLW/MLLW Soil	165000	TON	13,205,363	14,558,912	14,558,912	-	-	-	6346.15385	TON	88.24	-
4.05.05 Backfill	660750	ECY	59,788,036	72,981,462	72,981,462	-	-	-	25413.4615	ECY	110.45	-
4.05.05.06 Backfill from Offsite Sources	660750	ECY	59,788,036	72,981,462	72,981,462	-	-	-	25413.4615	ECY	110.45	-
4.32.11.05 Import Fill Material	881000	LCY	54,091,107	66,027,392	66,027,392	-	-	-	33884.6154	LCY	74.95	-
4.05.05 Fill	660750	ECY	5,573,300	6,803,160	6,803,160	-	-	-	25413.4615	ECY	10.3	-
- Quality Control and Testing	1	LS	123,629	150,910	150,910	-	-	-	-	-	-	-
4.05.02 Restoration	1	LS	621,353	758,467	758,467	-	-	-	-	-	-	-
4.05.02.05 Seeding	150	ACR	103,922	126,855	126,855	-	-	-	5,769,230,777	ACR	845.7	-
4.05.08 Allowance for Street/Pavement Repair	1	LS	517,430	631,612	631,612	-	-	-	-	-	-	-
4.05.08 Woolsey Canyon Road	2.5	MI	517,430	631,612	631,612	-	-	-	-	-	-	-

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
CLEANUP TO AOC LOOK-UP TABLE VALUES ALTERNATIVE					
4.9x General Conditions	1.00	LS	40,428,581	49,349,956	49,349,956
Multiple ECES Codes Workplans and Submittals	1.00	LS	561,918	685,916	685,916
(Note: Includes project schedule, submittals, and work plans.)					
4.02.01.01 Project Meetings and Updating Project Schedule	312.00	MO	382,702	467,152	467,152
			<i>1,226.61</i>	<i>1,497.28</i>	<i>1,497.28</i>
FOP FA-PROJM Project Managers	1,690.00	HR	173,252	211,484	211,484
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FC-ENGCI Engineers, Civil	1,352.00	HR	112,355	137,148	137,148
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	2,704.00	HR	97,095	118,521	118,521
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
4.03.01 Work Plans	1.00	LS	113,686	138,773	138,773
FOP FA-PROJM Project Managers	80.00	HR	8,201	10,011	10,011
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FC-ENGCI Engineers, Civil	600.00	HR	49,862	60,864	60,864
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	120.00	HR	4,309	5,260	5,260
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FC-ENGQC Engineers, Quality Control	120.00	HR	10,908	13,315	13,315
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FD-SAENG Safety Engineers	240.00	HR	15,834	19,328	19,328
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
HTW HO-STFSCI Staff Scientist (HTW Projects)	440.00	HR	24,572	29,995	29,995
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
4.04.21 Submittals	1.00	LS	27,936	34,100	34,100
FOP FA-PROJM Project Managers	24.00	HR	2,460	3,003	3,003
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
			<i>83.10</i>	<i>101.44</i>	<i>101.44</i>

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	160.00	HR	13,296	16,231	16,231
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	40.00	HR	35.91 1,436	43.83 1,753	43.83 1,753
FOP FC-ENGQC Engineers, Quality Control (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	40.00	HR	90.90 3,636	110.96 4,438	110.96 4,438
FOP FD-SAENG Safety Engineers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	40.00	HR	65.97 2,639	80.53 3,221	80.53 3,221
HTW HO-STFSCI Staff Scientist (HTW Projects) (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	80.00	HR	55.85 4,468	68.17 5,454	68.17 5,454
4.04.19 Post-RA Completion Report	1.00	LS	37,594	45,890	45,890
FOP FA-PROJM Project Managers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	56.00	HR	102.52 5,741	125.14 7,008	125.14 7,008
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	300.00	HR	83.10 24,931	101.44 30,432	101.44 30,432
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	80.00	HR	35.91 2,873	43.83 3,507	43.83 3,507
FOP FC-ENGQC Engineers, Quality Control (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	24.00	HR	90.90 2,182	110.96 2,663	110.96 2,663
FOP FD-SAENG Safety Engineers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	8.00	HR	65.97 528	80.53 644	80.53 644
HTW HO-STFSCI Staff Scientist (HTW Projects) (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	24.00	HR	55.85 1,340	68.17 1,636	68.17 1,636
8.01.04 Home Office Personnel	312.00	MO	7,605.02 2,372,766	9,283.22 2,896,364	9,283.22 2,896,364
FOP FA-PROJM Project Managers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	21,632.00	HR	93.20 2,016,025	113.76 2,460,901	113.76 2,460,901
HTW HO-SECADM Secretarial/ Administrative (HTW Projects) (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	10,816.00	HR	32.98 356,741	40.26 435,463	40.26 435,463
			117,249.02	143,122.37	143,122.37

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.02.01.01.15 Job Site Personnel	312.00	MO	36,581,696	44,654,179	44,654,179
FOP FA-AGENS General Superintendents (P.M.) (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	54,080.00	HR	89.85 4,859,221	109.68 5,931,505	109.68 5,931,505
FOP FC-ENGPE Engineers, Project (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	54,080.00	HR	91.96 4,973,026	112.25 6,070,423	112.25 6,070,423
FOP FC-ENGQC Engineers, Quality Control (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	54,080.00	HR	82.64 4,469,044	100.87 5,455,228	100.87 5,455,228
FOP FD-SAENG Safety Engineers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	54,080.00	HR	59.98 3,243,523	73.21 3,959,271	73.21 3,959,271
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	21,632.00	HR	75.55 1,634,250	92.22 1,994,880	92.22 1,994,880
HTW HO-STFSCI Staff Scientist (HTW Projects) (Note: Average of biologist, archeologist, and arborist wage rate. Time based on estimated total for all three disciplines. Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	32,448.00	HR	50.77 1,647,364	61.97 2,010,887	61.97 2,010,887
FOP FC-FLABT Field Constr. QC./Lab Technician (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	54,080.00	HR	40.91 2,212,385	49.94 2,700,592	49.94 2,700,592
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	54,080.00	HR	32.64 1,765,361	39.85 2,154,923	39.85 2,154,923
USR U-MT-TF-300 Cell phone and air card (Note: Per estimator. Based on business plan rate for monthly talk and text plan, 4 GB data bundle, and 5 GB air card.)	2,808.00	MO	160.07 449,463	195.39 548,645	195.39 548,645
EP T50XX004 TRUCK, HIGHWAY, CONVENTIONAL, 1/2 TON PICKUP, 4X4	384,896.00	HR	29.43 11,328,061	35.93 13,827,824	35.93 13,827,824
4.05.01.03 Temporary Facilities	312.00	MO	912,202	1,113,497	1,113,497
4.05.01.03.25 Project Sign	2.00	EA	2,926	3,571	3,571
USR SI-LE-001 Project sign installation (Note: Productivity per estimator.)	2.00	EA	1,462.77 1,491	1,785.56 1,821	1,785.56 1,821
USR SI-MT-001 Project sign, high intensity reflectorized (Note: Material cost from RS Means CostWorks 2015 number 01 58 1350 0020 for a 4' x 5' project sign and from www.lowes.com for a \$5.97 for 4"x4"x8' pressure treated post. Material cost includes sign and 2 posts.)	2.00	EA	717.03 1,434	875.25 1,751	875.25 1,751

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.05.01.03.21 Staging Area and Security Fencing (Note: Assumes construction of staging area.)	1.00	LS	31,644	38,627	38,627
USR EW-MT-005 3/8" max flex aggregate (Note: **Vendor quote, Select Sand & Gravel, Mar/2015** Includes delivery.)	1,360.00	TON	26,094	31,852	31,852
USR TF-LE-002 Spread gravel with dozer	862.00	LCY	1,121	1,368	1,368
USR TF-LE-003 Compact gravel material with roller	741.00	ECY	1,181	1,442	1,442
USR FN-001 Temporary Fencing, chain link, 6' high, 11 ga (Note: Vendor quote from National Construction Rentals, May 2013. Cost includes installation and removal. Length of fence = Chain Link fence (560 lf) + Gate (2 x 20 lf). Escalated to Mar 2015.)	760.00	LF	2,838	3,465	3,465
USR FN-002 Temporary Fencing - Gate (Note: Vendor quote from National Construction Rentals, May 2013. Cost includes installation and removal. Escalated to Mar 2015.)	2.00	EA	410	500	500
4.05.01.03 Temporary Facilities	312.00	MO	864,593	1,055,383	1,055,383
USR TF-MT-001 Office Trailer, furnished, rent per month, 50' x 12', excl. hookups (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1320 0550.)	624.00	MO	269,678	329,187	329,187
USR TF-MT-002 Storage Boxes, rent per month, 40' x 8' (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1320 1350.)	312.00	MO	33,294	40,640	40,640
USR TF-MT-007 Rent toilet portable chemical (Note: Rental cost per RS Means CostWorks 2015 item number 01 54 3340 6410.)	1,248.00	MO	251,699	307,241	307,241
USR TF-MT-003 Field Office Expense, office equipment rental, average (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0100.)	312.00	MO	65,921	80,468	80,468
USR TF-MT-004 Field Office Expense, office supplies, average (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0120.)	312.00	MO	26,468	32,309	32,309
USR TF-MT-005 Field Office Expense, telephone bill; avg. bill/month, incl. long distance (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0140.)	624.00	MO	55,933	68,276	68,276
USR TF-MT-006 Field Office Expense, field office lights & HVAC (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1340 0160.)	624.00	MO	105,873	129,236	129,236
USR TF-MT-008 Office Trailer, delivery or pickup (Note: Cost per RS Means CostWorks 2015 number 01 52 1320 0890. Assumes 30 mile delivery or pickup distance, one-way, \$11.30 per mile per RS Means CostWorks 2015 number 01 52 1320 0800. Includes mob/demob for 2 office trailer and 1 storage box.)	2.00	EA	1,120	1,368	1,368

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR TF-MT-009 Secondary containment for 550 gallon gasoline or diesel tanks. (Note: Vendor quote from The Tank Depot, July 2015.)	1.00	EA	784.31 784	957.38 957	957.38 957
USR TF-MT-010 Secondary containment for 1,000 gallon gasoline or diesel tanks. (Note: Vendor quote from The Tank Depot, July 2015.)	1.00	EA	1,727.62 1,728	2,108.86 2,109	2,108.86 2,109
USR U-MT-TF-400 Water cooler rental (Note: Vendor quote from Culligan Water, Savannah, Georgia, October 2012. \$40 per year plus \$25 deposit.)	624.00	MO	5.78 3,609	7.06 4,405	7.06 4,405
USR U-MT-TF-401 Water cooler water - 5 gallon bottle (Note: Vendor quote from Culligan Water, Savannah, Georgia, October 2012. \$5 one time delivery fee.)	1,248.00	EA	4.80 5,993	5.86 7,315	5.86 7,315
USR U-MT-TF-450 Dumpster - delivery or pickup (Note: Vendor quote from ABC Waste, October 2012.)	1.00	EA	26.68 27	32.56 33	32.56 33
USR U-MT-TF-451 Dumpster service, 4 CY (Note: Vendor quote from ABC Waste, October 2012. Includes 6% surcharge for fuel.)	312.00	MO	88.23 27,527	107.70 33,601	107.70 33,601
USR U-MT-TF-100 Temporary electrical hookup (Note: Per estimator.)	2.00	EA	5,335.50 10,671	6,512.88 13,026	6,512.88 13,026
USR U-MT-TF-101 Temporary telephone hookup (Note: Per estimator.)	2.00	EA	2,134.20 4,268	2,605.15 5,210	2,605.15 5,210
4.05.36.01 Removal of Temporary Construction Facilities	1.00	LS	13,039	15,916	15,916
USR U-MT-TF-201 Office trailer teardown and removal (Note: Per estimator)	1.00	LS	907	1,107	1,107
USR USR-LE-EW-SR-001 Remove and restore temporary staging area	24.00	HR	505.49 12,132	617.04 14,809	617.04 14,809
4.05.00 Mobilization and Demobilization	1.00	LS	110,272	134,606	134,606
4.05.01.01 Site Mobilization	1.00	LS	52,442	64,015	64,015
USR USR-MB-LE-001 Mobilization or demobilization of heavy equipment	5.00	EA	2,708.60 13,543	3,306.31 16,532	3,306.31 16,532
USR USR-MB-LE-002 Mobilization or demobilization of medium equipment	10.00	EA	2,049.04 20,490	2,501.20 25,012	2,501.20 25,012
USR USR-MB-LE-003 Mobilization or demobilization of self-propelled equipment	3.00	EA	1,935.48 5,806	2,362.58 7,088	2,362.58 7,088
USR USR-MB-LE-004 Oversize/overwidth load hauling permits (Note: Per estimator)	8.00	EA	1,067.10 8,537	1,302.58 10,421	1,302.58 10,421
USR U-MB-LE-100 Pre-construction video survey of road (Note: Assumes haul roads would be video surveyed to document road conditions prior to job start. Includes allowance for video camera and placing video on DVDs with multiple copies.)	1.00	LS	4,066	4,963	4,963

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.05.36 Site Demobilization	1.00	LS	57,830	70,591	70,591
4.05.36.04 Equipment Demobilization	1.00	LS	48,377	59,052	59,052
USR USR-MB-LE-001 Mobilization or demobilization of heavy equipment	5.00	EA	2,708.60 13,543	3,306.31 16,532	3,306.31 16,532
USR USR-MB-LE-002 Mobilization or demobilization of medium equipment	10.00	EA	2,049.04 20,490	2,501.20 25,012	2,501.20 25,012
USR USR-MB-LE-003 Mobilization or demobilization of self-propelled equipment	3.00	EA	1,935.48 5,806	2,362.58 7,088	2,362.58 7,088
USR USR-MB-LE-004 Oversize/overwidth load hauling permits (Note: Per estimator)	8.00	EA	1,067.10 8,537	1,302.58 10,421	1,302.58 10,421
4.05.36.01.9x Site Cleanup (Note: Includes general site cleanup and removal of erosion/sediment control after the completion of construction. This does not include the removal of the construction staging pad as it will be left in place for future work.)	1.00	LS	9,453	11,539	11,539
USR MDM-06 Site Cleanup (Note: Assume 5 days)	5.00	DAY	1,890.59 9,453	2,307.79 11,539	2,307.79 11,539
4.9x Best Management Practices	1.00	LS	46,625,237	56,914,028	56,914,028
8.01.01 SWPPP Implementation and Maintenance	1.00	LS	200,859	245,183	245,183
8.01.01.03 SWPPP Preparation	1.00	LS	12,292	15,004	15,004
FOP FA-PROJM Project Managers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	8.00	HR	93.20 746	113.76 910	113.76 910
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	120.00	HR	75.55 9,066	92.22 11,066	92.22 11,066
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	16.00	HR	32.64 522	39.85 638	39.85 638
FOP FC-FLDRT Field Draftsmen (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	40.00	HR	48.95 1,958	59.76 2,390	59.76 2,390
8.01.01.9x SWPPP Oversight and Maintenance	312.00	MO	188,567	230,178	230,178
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	2,496.00	HR	75.55 188,567	92.22 230,178	92.22 230,178
4.05.02 Temporary Erosion and Sediment Control	1.00	LS	1,815,629	2,216,284	2,216,284
4.05.02.04 Silt Fence	243,660.00	LF	571,678	697,831	697,831
			2.35 0.21	2.86 0.25	2.86 0.25

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR SP-ESC-MT-001 Erosion control, silt fence, polypropylene, ideal conditions, 3' high (Note: Material cost from RS Means CostWorks number 31 25 1416 1100.)	243,660.00	LF	50,702	61,890	61,890
USR SP-ESC-LE-001 Silt Fence Installation (Note: Productivity from Means CostWorks 2015 number 31 25 1416 1100.)	243,660.00	LF	2.14 520,976	2.61 635,940	2.61 635,940
4.05.02.04 Wattles	2,500.00	LF	6.26 15,656	7.64 19,111	7.64 19,111
USR SP-ESC-LE-100 Wattle Installation	2,500.00	LF	5.08 12,695	6.20 15,497	6.20 15,497
USR SP-ESC-MT-100 Wattle (Note: Vendor quote, Impact Absorbents, July 2015. Cost based on 1 pallet (300 feet of 9" x 25' segments). Includes wood stake every 4'.)	2,500.00	LF	1.18 2,961	1.45 3,615	1.45 3,615
4.05.02.04 Sediment Trap	10.00	EA	1,199.68 11,997	1,464.42 14,644	1,464.42 14,644
USR EW-EX-LE-002 Excavating sediment trap	700.00	BCY	17.14 11,997	20.92 14,644	20.92 14,644
4.05.02.04 Rock Filter Dam	10.00	EA	2,938.61 29,386	3,587.07 35,871	3,587.07 35,871
USR EW-RP-LE-004 Rock filter dam placement	700.00	LCY	9.35 6,544	11.41 7,988	11.41 7,988
USR EW-MT-103 Rock Filter Dam Material (Note: Based on previous work. Includes delivery.)	1,100.00	TON	20.77 22,842	25.35 27,883	25.35 27,883
4.05.02.04 Track-Out Prevention	10.00	EA	1,206.14 12,061	1,472.30 14,723	1,472.30 14,723
USR TF-LE-002 Spread gravel with dozer	350.00	LCY	1.30 455	1.59 556	1.59 556
USR TF-LE-003 Compact gravel material with roller	300.00	ECY	1.59 478	1.95 584	1.95 584
USR EW-MT-005 3/8" max flex aggregate (Note: Vendor quote from previous work, March 2015. Includes delivery.)	580.00	TON	19.19 11,128	23.42 13,584	23.42 13,584
4.05.02.05 Temporary Seeding (Note: Assumes temporary seasonal seeding for erosion control.)	150.00	ACR	225.95 33,892	275.81 41,371	275.81 41,371
USR SR-SD-LE-002B Temporary Seeding	150.00	ACR	55.21 8,282	67.40 10,109	67.40 10,109
USR SR-SD-MT-010 Temporary seeding (Note: Vendor quote, outsidepride.com, July 2015. Based 4 lbs per acre of native seed mix.)	150.00	ACR	170.74 25,610	208.41 31,262	208.41 31,262

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.05.02.9x Inspection and Maintenance	312.00	MO	1,140,958	1,392,733	1,392,733
			3,656.92	4,463.89	4,463.89
USR SP-ESC-LE-008 Inspection and maintenance of erosion and sediment control measures.	5,408.00	HR	996,686	1,216,625	1,216,625
			184.30	224.97	224.97
USR SP-ESC-MT-007 Erosion and sediment control maintenance allowance (Note: Per estimator)	1,352.00	WK	144,272	176,108	176,108
			106.71	130.26	130.26
4.05.9x Existing Tree Protection	100.00	EA	365,363	445,987	445,987
			3,653.63	4,459.87	4,459.87
4.05.9x Arborist and Care for Existing Trees	312.00	MO	321,675	392,658	392,658
			1,031.01	1,258.52	1,258.52
HTW HO-STFSCI Staff Scientist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	6,336.00	HR	321,675	392,658	392,658
			50.77	61.97	61.97
4.05.9x Tree Protection Fencing	100.00	EA	43,688	53,329	53,329
			436.88	533.29	533.29
USR FN-SF-LE-001 Safety fence installation	10,000.00	LF	12,493	15,250	15,250
			1.25	1.52	1.52
USR FN-SF-LE-002 Safety fence removal	10,000.00	LF	6,246	7,625	7,625
			0.62	0.76	0.76
USR FN-SF-MT-001 Orange safety fence (Note: Vendor quote, Grainger, June 2015.)	10,000.00	LF	17,500	21,362	21,362
			1.75	2.14	2.14
USR FN-SF-MT-002 5-foot steel t-post (Note: Vendor quote, Blain's Farm and Fleet, June 2015.)	2,000.00	EA	7,448	9,092	9,092
			3.72	4.55	4.55
4.16.04 Dust Control	312.00	MO	7,693,930	9,391,749	9,391,749
			24,660.03	30,101.76	30,101.76
USR TR-LE-005 Dust control	52,000.00	HR	6,078,373	7,419,687	7,419,687
			116.89	142.69	142.69
USR TR-MT-100 Water for Dust Control (Note: Based on current pricing for 16,000 gallons per day (0.049 ac-ft/day or 21.4 CCF/day). Assumes \$1,480 per ac-ft for base fee and \$2,960 per ac-ft for penalty. Unit cost assumes penalty would be incurred for exceeding the district's allotment.)	148,720.00	CCF	1,615,557	1,972,062	1,972,062
			10.86	13.26	13.26
4.07.08.02 Air Monitoring	312.00	MO	665,348	812,170	812,170
			2,132.52	2,603.11	2,603.11
USR SFTY-05 PM10 Dust Monitor (Note: Thermo Scientific ADR-1500. Vendor Quote: Field Environmental, 2014. Monthly Rental)	312.00	MO	505,745	617,348	617,348
			1,620.98	1,978.68	1,978.68
			446.31	544.80	544.80

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR AIRWE-M Weather Station, monthly rental - M (Note: Davis Vantage Pro Weather Station.Vendor Quote: Pine Environmental, 2014. Monthly Rental)	312.00	MO	139,250	169,978	169,978
USR PM-M Air Sample Analysis - Particulate Matter - M (Note: Vendor Quote: Test America, 2013.)	312.00	EA	20,352	24,843	24,843
4.05.01.03.12 Decontamination/Wash Station	1.00	LS	3,726,774	4,549,161	4,549,161
4.05.01.03.12 Decontamination/Wash Station Purchase and Setup	1.00	EA	211,884	258,641	258,641
USR TR-MT-900 Above ground steel wash rack w/water collection, treatment and storage for re-use (Note: Vendor quote, Riveer, July 2015. Includes wash water containment, collection, treatment and storage system. Total length is 42' x 18' with 6' side walls.)	1.00	EA	211,884	258,641	258,641
4.05.01.03.12 Decontamination/Wash Station Operation	312.00	MO	3,514,890	4,290,520	4,290,520
USR TR-LE-100 Decontamination/Wash Station	54,080.00	HR	3,484,926	4,253,944	4,253,944
USR TR-MT-910 Replacement bag filter for wash station (Note: Vendor quote, Riveer, July 2015.)	936.00	EA	29,964	36,576	36,576
4.05.9x Street Sweeping	312.00	MO	5,113,323	6,241,680	6,241,680
USR TR-LE-004 Street sweeper	27,040.00	HR	5,113,323	6,241,680	6,241,680
8.01.03.11 Traffic Control	1.00	LS	27,044,012	33,011,814	33,011,814
8.01.03.11 Preconstruction Video Survey	1.00	LS	3,603	4,398	4,398
USR TR-LE-003 Preconstruction video survey of roadway	16.00	HR	2,536	3,095	3,095
USR TR-MT-800 Preconstruction video survey of roadway (Note: Per estimator)	1.00	LS	1,067	1,303	1,303
8.01.03.11 Traffic Control Signs and Barricades	1.00	LS	233,290	284,770	284,770
(Note: Includes setup signs and maintenance during construction.)					
USR TR-LE-002 Setup signs and barricades (Note: Productivity per estimator)	16.00	EA	1,473	1,798	1,798
USR TR-LE-001 Traffic control sign and barricade maintenance (Note: Assumes 4 hour per month)	1,248.00	HR	229,802	280,512	280,512
USR TR-MT-005 Be Prepared To Stop, CW3-4, 36" x 36" (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	8.00	EA	730	891	891
USR TR-MT-006 Flag Man Sign, CW20-7, 36" x 36" (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	8.00	EA	730	891	891

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR TR-MT-009 Economy stand for aluminum diamond-shaped signs, 48" to 60" signs (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	16.00	EA	34.68 555	42.33 677	42.33 677
8.01.03.11 Traffic Control	312.00	MO	26,807,119	32,722,646	32,722,646
USR TR-LE-006 Traffic Control Flagmen	416,000.00	HR	64.44 26,807,119	78.66 32,722,646	78.66 32,722,646
Multiple ECES Codes Excavation and Hauling	881,000.00	BCY	125,903,933	153,687,153	153,687,153
Multiple ECES Codes Low-Hazard and Moderate-Hazard Soil	769,000.00	BCY	88,192,102	107,653,453	107,653,453
4.05.9x Construction Survey and Staking	131.00	ACR	99,334	121,255	121,255
0.2 SUR-02 Surveying Crew	131.00	ACR	758.28 99,334	925.61 121,255	925.61 121,255
4.05.05.01 Excavation	769,000.00	BCY	5,161,631	6,300,648	6,300,648
USR EW-EX-A5-100 Excavation - Non-Hazardous/Non-Radioactive Waste	769,000.00	BCY	6.71 5,161,631	8.19 6,300,648	8.19 6,300,648
4.32.11.05 Hauling	1,153,500.00	TON	76,461,327	93,334,048	93,334,048
USR EW-HL-A5-100 Hauling - Non-Hazardous/Non-Radioactive Waste	1,153,500.00	TON	66.29 76,461,327	80.91 93,334,048	80.91 93,334,048
4.07.11 Confirmation Sampling	11,437.00	EA	367,598	448,716	448,716
USR EW-CS-001 Confirmation sampling	11,437.00	EA	32.14 367,598	39.23 448,716	39.23 448,716
4.08.04 Sample Analysis	11,437.00	EA	6,102,211	7,448,786	7,448,786
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	11,437.00	EA	533.55 6,102,211	651.29 7,448,786	651.29 7,448,786
Multiple ECES Codes Hazardous Soil	2,000.00	BCY	1,337,802	1,633,015	1,633,015
4.05.9x Construction Surveying and Staking	0.30	ACR	227	278	278
USR SUR-02 Surveying Crew	0.30	ACR	758.28 227	925.61 278	925.61 278
			38.37	46.84	46.84

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.05.05.01 Excavation	2,000.00	BCY	76,739	93,673	93,673
USR EW-EX-A5-200 Excavation - RCRA Hazardous Waste	2,000.00	BCY	76,739	93,673	93,673
			38.37	46.84	46.84
			415.00	506.58	506.58
4.32.11.05 Hauling	3,000.00	TON	1,244,997	1,519,730	1,519,730
USR DS-900 End-Dump-Sized Liner Bag (Note: Vendor quote, US Ecology, July 2015. Required for a "sealed" container.)	130.00	EA	91,614	111,830	111,830
			704.72	860.23	860.23
USR EW-HL-A5-200 Hauling - RCRA Hazardous Waste	3,000.00	TON	1,153,383	1,407,900	1,407,900
			384.46	469.30	469.30
			32.14	39.23	39.23
4.07.11 Confirmation Sampling	28.00	EA	900	1,099	1,099
USR EW-CS-001 Confirmation sampling	28.00	EA	900	1,099	1,099
			32.14	39.23	39.23
			533.55	651.29	651.29
4.08.04 Sample Analysis	28.00	EA	14,939	18,236	18,236
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	28.00	EA	14,939	18,236	18,236
			533.55	651.29	651.29
			330.67	403.64	403.64
Multiple ECES Codes LLW/MLLW Soil	110,000.00	BCY	36,374,028	44,400,685	44,400,685
			758.28	925.61	925.61
4.05.9x Construction Surveying and Staking	18.70	ACR	14,180	17,309	17,309
USR SUR-02 Surveying Crew	18.70	ACR	14,180	17,309	17,309
			758.28	925.61	925.61
			14.05	17.15	17.15
4.05.05.01 Excavation	110,000.00	BCY	1,545,258	1,886,250	1,886,250
USR EW-EX-A5-400 Excavation - Low-level Radioactive Waste (LLW)	110,000.00	BCY	1,545,258	1,886,250	1,886,250
			14.05	17.15	17.15
			205.40	250.72	250.72
4.32.11.05 Hauling	165,000.00	TON	33,890,251	41,368,813	41,368,813
USR DS-900 End-Dump-Sized Liner Bag (Note: Vendor quote, US Ecology, July 2015. Required for a "sealed" container.)	7,174.00	EA	5,055,680	6,171,317	6,171,317
			704.72	860.23	860.23
			174.75	213.32	213.32
USR EW-HL-A5-400 Hauling - Low-level Radioactive Waste (LLW)	165,000.00	TON	28,834,571	35,197,495	35,197,495
			32.14	39.23	39.23
4.07.11 Confirmation Sampling	1,634.00	EA	52,519	64,108	64,108
USR EW-CS-001 Confirmation sampling	1,634.00	EA	52,519	64,108	64,108
			32.14	39.23	39.23

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.08.04 Sample Analysis	1,634.00	EA	871,821	1,064,205	1,064,205
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	1,634.00	EA	871,821	1,064,205	1,064,205
4.33.08.05 Disposal	1,321,500.00	TON	68,835,953	75,891,638	75,891,638
4.33.08.05 Low-Hazard and Moderate-Hazard Soil	1,153,500.00	TON	55,390,493	61,068,019	61,068,019
USR DS-100 Non-Hazardous/Non-Radioactive Waste Disposal (Note: Assume disposal at an applicable facility within 135 mile of the site. Assumed vendor quote from Waste Management Facilities, July 2015.)	1,153,500.00	TON	55,390,493	61,068,019	61,068,019
4.33.08.05 Hazardous Soil	3,000.00	TON	240,098	264,707	264,707
USR DS-200 RCRA Hazardous Waste Disposal (Note: Assumes disposal outside of California. Cost based on vendor quote from US Ecology, July 2015.)	3,000.00	TON	240,098	264,707	264,707
4.33.08.05 LLW/MLLW Soil	165,000.00	TON	13,205,363	14,558,912	14,558,912
USR DS-400 Low-level Radioactive Waste (LLW) Disposal (Note: Assumes disposal outside of California. Cost based on vendor quote from US Ecology, July 2015.)	165,000.00	TON	13,205,363	14,558,912	14,558,912
4.05.05 Backfill	660,750.00	ECY	59,788,036	72,981,462	72,981,462
4.05.05.06 Backfill from Offsite Sources	660,750.00	ECY	59,788,036	72,981,462	72,981,462
4.32.11.05 Import Fill Material	881,000.00	LCY	54,091,107	66,027,392	66,027,392
USR EW-HL-010 Haul Imported Soil	881,000.00	LCY	21,948,572	26,791,963	26,791,963
USR EW-MT-200 Borrow, common earth (Note: Based on average of the following RS Means CostWorks 2015 numbers: 31232 315 4000, 31232 315 7000, 31232 316 0035, and 31232 316 0020. \$/BCY cost converted to \$/LCY using 1.2 LCY per BCY)	881,000.00	LCY	24,621,614	30,054,866	30,054,866
USR EW-MT-210 Organic Amendment	881,000.00	LCY	7,520,921	9,180,562	9,180,562
4.05.05 Fill	660,750.00	ECY	5,573,300	6,803,160	6,803,160
USR EW-BM-LE-200 Fill - Spreading	881,000.00	LCY	3,303,618	4,032,628	4,032,628

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR SD-SP-LE-004B Site Grading - Rough	150.00	ACR	662.64 99,395	808.86 121,329	808.86 121,329
USR EW-BM-LE-202 Fill - Compaction	660,750.00	ECY	2.98 1,971,495	3.64 2,406,545	3.64 2,406,545
USR SD-SP-LE-005 Site Grading - Finish	150.00	ACR	1,325.27 198,791	1,617.72 242,658	1,617.72 242,658
- Quality Control and Testing	1.00	LS	123,629	150,910	150,910
USR SL-TEST-100 Backfill chemical testing (Note: Per estimator)	89.00	EA	1,067.10 94,972	1,302.58 115,929	1,302.58 115,929
USR SL-TEST-01 Soil testing, soil density, nuclear method, ASTM D2922 (Note: Cost from RS Means CostWorks 2015 item number 01 45 2350 4735.)	655.00	EA	43.75 28,657	53.41 34,981	53.41 34,981
4.05.02 Restoration	1.00	LS	621,353	758,467	758,467
4.05.02.05 Seeding	150.00	ACR	103,922	126,855	126,855
USR SR-SD-LE-002 Seeding	150.00	ACR	692.82 180.61 27,091	845.70 220.46 33,069	845.70 220.46 33,069
USR SR-SD-MT-011 Seeding, native grass and wildflower seed mix. (Note: Vendor quote, outsidepride.com, July 2015. Based 4 lbs per acre of native seed mix and 16 pounds per acre of native wildflower seed mix.)	150.00	ACR	512.21 76,831	625.24 93,786	625.24 93,786
4.05.08 Allowance for Street/Pavement Repair (Note: Quantity Assumed Per Estimator)	1.00	LS	517,430	631,612	631,612
4.05.08 Woolsey Canyon Road	2.50	MI	517,430	631,612	631,612
USR SR-PV-300 Hauling for asphalt cold milling and paving	4,015.00	LCY	206,972.11 9.79 39,312	252,644.65 11.95 47,986	252,644.65 11.95 47,986
USR SR-PV-410 Cold milling asphalt paving, profile grooving, asphalt pavement, 2" deep, load and sweep (Note: Based on English Cost Book number 320116715350.)	36,130.00	SY	1.04 37,585	1.27 45,879	1.27 45,879
USR SR-PV-510 Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick, no hauling included (Note: Based on English Cost Book number 321216130380.)	36,130.00	SY	1.65 59,777	2.02 72,968	2.02 72,968
USR SR-PV-MT-510 Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick (Note: Material cost from RS Means CostWorks 2015 number 32 12 1613 0380.)	36,130.00	SY	10.54 380,756	12.86 464,778	12.86 464,778

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
CLEANUP TO AOC LOOK-UP TABLE VALUES ALTERNATIVE	1.00	LS	1,792,407.58	1,977,621.02	1,184,015.56	1,184,015.56
4.9x General Conditions	1.00	LS	419,382.03	384,976.03	48.03	48.03
Multiple ECES Codes Workplans and Submittals	1.00	LS	8,222.00	0.00	0.00	0.00
(Note: Includes project schedule, submittals, and work plans.)						
4.02.01.01 Project Meetings and Updating Project Schedule	312.00	MO	5,746.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	1,690.00	HR	1,690.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	1,352.00	HR	1,352.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	2,704.00	HR	2,704.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
4.03.01 Work Plans	1.00	LS	1,600.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	80.00	HR	80.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	600.00	HR	600.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	120.00	HR	120.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGQC Engineers, Quality Control	120.00	HR	120.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FD-SAENG Safety Engineers	240.00	HR	240.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
HTW HO-STFSCI Staff Scientist (HTW Projects)	440.00	HR	440.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
4.04.21 Submittals	1.00	LS	384.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	24.00	HR	24.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	160.00	HR	160.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	40.00	HR	40.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGQC Engineers, Quality Control	40.00	HR	40.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FD-SAENG Safety Engineers	40.00	HR	40.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
HTW HO-STFSCI Staff Scientist (HTW Projects)	80.00	HR	80.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
4.04.19 Post-RA Completion Report	1.00	LS	492.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	56.00	HR	56.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	300.00	HR	300.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	80.00	HR	80.00	0.00	0.00	0.00

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGQC Engineers, Quality Control	24.00	HR	24.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FD-SAENG Safety Engineers	8.00	HR	8.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
HTW HO-STFSCI Staff Scientist (HTW Projects)	24.00	HR	24.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
8.01.04 Home Office Personnel	312.00	MO	32,448.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	21,632.00	HR	21,632.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
HTW HO-SECADM Secretarial/ Administrative (HTW Projects)	10,816.00	HR	10,816.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
4.02.01.01.15 Job Site Personnel	312.00	MO	378,560.00	384,896.00	0.00	0.00
FOP FA-AGENS General Superintendents (P.M.)	54,080.00	HR	54,080.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGPE Engineers, Project	54,080.00	HR	54,080.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGQC Engineers, Quality Control	54,080.00	HR	54,080.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FD-SAENG Safety Engineers	54,080.00	HR	54,080.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	21,632.00	HR	21,632.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
HTW HO-STFSCI Staff Scientist (HTW Projects)	32,448.00	HR	32,448.00	0.00	0.00	0.00
(Note: Average of biologist, archeologist, and arborist wage rate. Time based on estimated total for all three disciplines. Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-FLABT Field Constr. QC./Lab Technician	54,080.00	HR	54,080.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	54,080.00	HR	54,080.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
USR U-MT-TF-300 Cell phone and air card	2,808.00	MO	0.00	0.00	0.00	0.00
(Note: Per estimator. Based on business plan rate for monthly talk and text plan, 4 GB data bundle, and 5 GB air card.)						
EP T50XX004 TRUCK, HIGHWAY, CONVENTIONAL, 1/2 TON PICKUP, 4X4	384,896.00	HR	0.00	384,896.00	0.00	0.00
4.05.01.03 Temporary Facilities	312.00	MO	152.03	80.03	48.03	48.03
4.05.01.03.25 Project Sign	2.00	EA	16.00	16.00	8.00	8.00
USR SI-LE-001 Project sign installation	2.00	EA	16.00	16.00	8.00	8.00
(Note: Productivity per estimator.)						
USR SI-MT-001 Project sign, high intensity reflectorized	2.00	EA	0.00	0.00	0.00	0.00
(Note: Material cost from RS Means CostWorks 2015 number 01 58 1350 0020 for a 4' x 5' project sign and from www.lowes.com for a \$5.97 for 4"x4"x8' pressure treated post. Material cost includes sign and 2 posts.)						
4.05.01.03.21 Staging Area and Security Fencing	1.00	LS	16.03	16.03	16.03	16.03
(Note: Assumes construction of staging area.)						
USR EW-MT-005 3/8" max flex aggregate	1,360.00	TON	0.00	0.00	0.00	0.00
(Note: **Vendor quote, Select Sand & Gravel, Mar/2015** Includes delivery.)						
USR TF-LE-002 Spread gravel with dozer	862.00	LCY	8.62	8.62	8.62	8.62
USR TF-LE-003 Compact gravel material with roller	741.00	ECY	7.41	7.41	7.41	7.41

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR FN-001 Temporary Fencing, chain link, 6' high, 11 ga (Note: Vendor quote from National Construction Rentals, May 2013. Cost includes installation and removal. Length of fence = Chain Link fence (560 lf) + Gate (2 x 20 lf). Escalated to Mar 2015.)	760.00	LF	0.00	0.00	0.00	0.00
USR FN-002 Temporary Fencing - Gate (Note: Vendor quote from National Construction Rentals, May 2013. Cost includes installation and removal. Escalated to Mar 2015.)	2.00	EA	0.00	0.00	0.00	0.00
4.05.01.03 Temporary Facilities	312.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-001 Office Trailer, furnished, rent per month, 50' x 12', excl. hookups (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1320 0550.)	624.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-002 Storage Boxes, rent per month, 40' x 8' (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1320 1350.)	312.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-007 Rent toilet portable chemical (Note: Rental cost per RS Means CostWorks 2015 item number 01 54 3340 6410.)	1,248.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-003 Field Office Expense, office equipment rental, average (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0100.)	312.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-004 Field Office Expense, office supplies, average (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0120.)	312.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-005 Field Office Expense, telephone bill; avg. bill/month, incl. long distance (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0140.)	624.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-006 Field Office Expense, field office lights & HVAC (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1340 0160.)	624.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-008 Office Trailer, delivery or pickup (Note: Cost per RS Means CostWorks 2015 number 01 52 1320 0890. Assumes 30 mile delivery or pickup distance, one-way, \$11.30 per mile per RS Means CostWorks 2015 number 01 52 1320 0800. Includes mob/demob for 2 office trailer and 1 storage box.)	2.00	EA	0.00	0.00	0.00	0.00
USR TF-MT-009 Secondary containment for 550 gallon gasoline or diesel tanks. (Note: Vendor quote from The Tank Depot, July 2015.)	1.00	EA	0.00	0.00	0.00	0.00
USR TF-MT-010 Secondary containment for 1,000 gallon gasoline or diesel tanks. (Note: Vendor quote from The Tank Depot, July 2015.)	1.00	EA	0.00	0.00	0.00	0.00
USR U-MT-TF-400 Water cooler rental (Note: Vendor quote from Culligan Water, Savannah, Georgia, October 2012. \$40 per year plus \$25 deposit.)	624.00	MO	0.00	0.00	0.00	0.00
USR U-MT-TF-401 Water cooler water - 5 gallon bottle (Note: Vendor quote from Culligan Water, Savannah, Georgia, October 2012. \$5 one time delivery fee.)	1,248.00	EA	0.00	0.00	0.00	0.00
USR U-MT-TF-450 Dumpster - delivery or pickup (Note: Vendor quote from ABC Waste, October 2012.)	1.00	EA	0.00	0.00	0.00	0.00
USR U-MT-TF-451 Dumpster service, 4 CY (Note: Vendor quote from ABC Waste, October 2012. Includes 6% surcharge for fuel.)	312.00	MO	0.00	0.00	0.00	0.00
USR U-MT-TF-100 Temporary electrical hookup (Note: Per estimator.)	2.00	EA	0.00	0.00	0.00	0.00
USR U-MT-TF-101 Temporary telephone hookup (Note: Per estimator)	2.00	EA	0.00	0.00	0.00	0.00
4.05.36.01 Removal of Temporary Construction Facilities	1.00	LS	120.00	48.00	24.00	24.00
USR U-MT-TF-201 Office trailer teardown and removal (Note: Per estimator)	1.00	LS	0.00	0.00	0.00	0.00
USR USR-LE-EW-SR-001 Remove and restore temporary staging area	24.00	HR	120.00	48.00	24.00	24.00
4.05.00 Mobilization and Demobilization	1.00	LS	722.00	736.00	416.00	416.00
4.05.01.01 Site Mobilization	1.00	LS	317.00	346.00	196.00	196.00
USR USR-MB-LE-001 Mobilization or demobilization of heavy equipment	5.00	EA	75.00	100.00	50.00	50.00
USR USR-MB-LE-002 Mobilization or demobilization of medium equipment	10.00	EA	150.00	200.00	100.00	100.00

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR USR-MB-LE-003 Mobilization or demobilization of self-propelled equipment	3.00	EA	60.00	30.00	30.00	30.00
USR USR-MB-LE-004 Oversize/overwidth load hauling permits (Note: Per estimator)	8.00	EA	0.00	0.00	0.00	0.00
USR U-MB-LE-100 Pre-construction video survey of road (Note: Assumes haul roads would be video surveyed to document road conditions prior to job start. Includes allowance for video camera and placing video on DVDs with multiple copies.)	1.00	LS	32.00	16.00	16.00	16.00
4.05.36 Site Demobilization	1.00	LS	405.00	390.00	220.00	220.00
4.05.36.04 Equipment Demobilization	1.00	LS	285.00	330.00	180.00	180.00
USR USR-MB-LE-001 Mobilization or demobilization of heavy equipment	5.00	EA	75.00	100.00	50.00	50.00
USR USR-MB-LE-002 Mobilization or demobilization of medium equipment	10.00	EA	150.00	200.00	100.00	100.00
USR USR-MB-LE-003 Mobilization or demobilization of self-propelled equipment	3.00	EA	60.00	30.00	30.00	30.00
USR USR-MB-LE-004 Oversize/overwidth load hauling permits (Note: Per estimator)	8.00	EA	0.00	0.00	0.00	0.00
4.05.36.01.9x Site Cleanup	1.00	LS	120.00	60.00	40.00	40.00
(Note: Includes general site cleanup and removal of erosion/sediment control after the completion of construction. This does not include the removal of the construction staging pad as it will be left in place for future work.)						
USR MDM-06 Site Cleanup (Note: Assume 5 days)	5.00	DAY	120.00	60.00	40.00	40.00
4.9x Best Management Practices	1.00	LS	578,252.36	145,533.49	558,130.49	558,130.49
8.01.01 SWPPP Implementation and Maintenance	1.00	LS	2,680.00	0.00	0.00	0.00
8.01.01.03 SWPPP Preparation	1.00	LS	184.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	8.00	HR	8.00	0.00	0.00	0.00
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	120.00	HR	120.00	0.00	0.00	0.00
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	16.00	HR	16.00	0.00	0.00	0.00
FOP FC-FLDRT Field Draftsmen (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	40.00	HR	40.00	0.00	0.00	0.00
8.01.01.9x SWPPP Oversight and Maintenance	312.00	MO	2,496.00	0.00	0.00	0.00
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	2,496.00	HR	2,496.00	0.00	0.00	0.00
4.05.02 Temporary Erosion and Sediment Control	1.00	LS	17,347.36	13,146.49	7,663.49	7,663.49
4.05.02.04 Silt Fence	243,660.00	LF	6,155.62	2,051.87	2,051.87	2,051.87
USR SP-ESC-MT-001 Erosion control, silt fence, polypropylene, ideal conditions, 3' high (Note: Material cost from RS Means CostWorks number 31 25 1416 1100.)	243,660.00	LF	0.00	0.00	0.00	0.00
USR SP-ESC-LE-001 Silt Fence Installation (Note: Productivity from Means CostWorks 2015 number 31 25 1416 1100.)	243,660.00	LF	6,155.62	2,051.87	2,051.87	2,051.87
4.05.02.04 Wattles	2,500.00	LF	150.00	50.00	50.00	50.00
USR SP-ESC-LE-100 Wattle Installation	2,500.00	LF	150.00	50.00	50.00	50.00
USR SP-ESC-MT-100 Wattle (Note: Vendor quote, Impact Absorbents, July 2015. Cost based on 1 pallet (300 feet of 9" x 25' segments). Includes wood stake every 4'.)	2,500.00	LF	0.00	0.00	0.00	0.00
4.05.02.04 Sediment Trap	10.00	EA	93.33	46.67	46.67	46.67
USR EW-EX-LE-002 Excavating sediment trap	700.00	BCY	93.33	46.67	46.67	46.67
4.05.02.04 Rock Filter Dam	10.00	EA	50.91	25.45	25.45	25.45
USR EW-RP-LE-004 Rock filter dam placement	700.00	LCY	50.91	25.45	25.45	25.45

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR EW-MT-103 Rock Filter Dam Material (Note: Based on previous work. Includes delivery.)	1,100.00	TON	0.00	0.00	0.00	0.00
4.05.02.04 Track-Out Prevention	10.00	EA	6.50	6.50	6.50	6.50
USR TF-LE-002 Spread gravel with dozer	350.00	LCY	3.50	3.50	3.50	3.50
USR TF-LE-003 Compact gravel material with roller	300.00	ECY	3.00	3.00	3.00	3.00
USR EW-MT-005 3/8" max flex aggregate (Note: Vendor quote from previous work, March 2015. Includes delivery.)	580.00	TON	0.00	0.00	0.00	0.00
4.05.02.05 Temporary Seeding	150.00	ACR	75.00	150.00	75.00	75.00
(Note: Assumes temporary seasonal seeding for erosion control.)						
USR SR-SD-LE-002B Temporary Seeding	150.00	ACR	75.00	150.00	75.00	75.00
USR SR-SD-MT-010 Temporary seeding (Note: Vendor quote, outsidepride.com, July 2015. Based 4 lbs per acre of native seed mix.)	150.00	ACR	0.00	0.00	0.00	0.00
4.05.02.9x Inspection and Maintenance	312.00	MO	10,816.00	10,816.00	5,408.00	5,408.00
USR SP-ESC-LE-008 Inspection and maintenance of erosion and sediment control measures.	5,408.00	HR	10,816.00	10,816.00	5,408.00	5,408.00
USR SP-ESC-MT-007 Erosion and sediment control maintenance allowance (Note: Per estimator)	1,352.00	WK	0.00	0.00	0.00	0.00
4.05.9x Existing Tree Protection	100.00	EA	6,561.00	75.00	75.00	75.00
4.05.9x Arborist and Care for Existing Trees	312.00	MO	6,336.00	0.00	0.00	0.00
HTW HO-STFSCI Staff Scientist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	6,336.00	HR	6,336.00	0.00	0.00	0.00
4.05.9x Tree Protection Fencing	100.00	EA	225.00	75.00	75.00	75.00
USR FN-SF-LE-001 Safety fence installation	10,000.00	LF	150.00	50.00	50.00	50.00
USR FN-SF-LE-002 Safety fence removal	10,000.00	LF	75.00	25.00	25.00	25.00
USR FN-SF-MT-001 Orange safety fence (Note: Vendor quote, Grainger, June 2015.)	10,000.00	LF	0.00	0.00	0.00	0.00
USR FN-SF-MT-002 5-foot steel t-post (Note: Vendor quote, Blain's Farm and Fleet, June 2015.)	2,000.00	EA	0.00	0.00	0.00	0.00
4.16.04 Dust Control	312.00	MO	52,000.00	104,000.00	52,000.00	52,000.00
USR TR-LE-005 Dust control	52,000.00	HR	52,000.00	104,000.00	52,000.00	52,000.00
USR TR-MT-100 Water for Dust Control (Note: Based on current pricing for 16,000 gallons per day (0.049 ac-ft/day or 21.4 CCF/day). Assumes \$1,480 per ac-ft for base fee and \$2,960 per ac-ft for penalty. Unit cost assumes penalty would be incurred for exceeding the district's allotment.)	148,720.00	CCF	0.00	0.00	0.00	0.00
4.07.08.02 Air Monitoring	312.00	MO	0.00	0.00	0.00	0.00
USR SFTY-05 PM10 Dust Monitor (Note: Thermo Scientific ADR-1500. Vendor Quote: Field Environmental, 2014. Monthly Rental)	312.00	MO	0.00	0.00	0.00	0.00
USR AIRWE-M Weather Station, monthly rental - M (Note: Davis Vantage Pro Weather Station. Vendor Quote: Pine Environmental, 2014. Monthly Rental)	312.00	MO	0.00	0.00	0.00	0.00
USR PM-M Air Sample Analysis - Particulate Matter - M (Note: Vendor Quote: Test America, 2013.)	312.00	EA	0.00	0.00	0.00	0.00
4.05.01.03.12 Decontamination/Wash Station	1.00	LS	54,080.00	0.00	54,080.00	54,080.00
4.05.01.03.12 Decontamination/Wash Station Purchase and Setup	1.00	EA	0.00	0.00	0.00	0.00
USR TR-MT-900 Above ground steel wash rack w/water collection, treatment and storage for re-use (Note: Vendor quote, Riveer, July 2015. Includes wash water containment, collection, treatment and storage system. Total length is 42' x 18' with 6' side walls.)	1.00	EA	0.00	0.00	0.00	0.00
4.05.01.03.12 Decontamination/Wash Station Operation	312.00	MO	54,080.00	0.00	54,080.00	54,080.00
USR TR-LE-100 Decontamination/Wash Station	54,080.00	HR	54,080.00	0.00	54,080.00	54,080.00

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR TR-MT-910 Replacement bag filter for wash station (Note: Vendor quote, Riveer, July 2015.)	936.00	EA	0.00	0.00	0.00	0.00
4.05.9x Street Sweeping	312.00	MO	27,040.00	27,040.00	27,040.00	27,040.00
USR TR-LE-004 Street sweeper	27,040.00	HR	27,040.00	27,040.00	27,040.00	27,040.00
8.01.03.11 Traffic Control	1.00	LS	418,544.00	1,272.00	417,272.00	417,272.00
8.01.03.11 Preconstruction Video Survey	1.00	LS	32.00	16.00	16.00	16.00
USR TR-LE-003 Preconstruction video survey of roadway	16.00	HR	32.00	16.00	16.00	16.00
USR TR-MT-800 Preconstruction video survey of roadway (Note: Per estimator)	1.00	LS	0.00	0.00	0.00	0.00
8.01.03.11 Traffic Control Signs and Barricades	1.00	LS	2,512.00	1,256.00	1,256.00	1,256.00
(Note: Includes setup signs and maintenance during construction.)						
USR TR-LE-002 Setup signs and barricades (Note: Productivity per estimator)	16.00	EA	16.00	8.00	8.00	8.00
USR TR-LE-001 Traffic control sign and barricade maintenance (Note: Assumes 4 hour per month)	1,248.00	HR	2,496.00	1,248.00	1,248.00	1,248.00
USR TR-MT-005 Be Prepared To Stop, CW3-4, 36" x 36" (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	8.00	EA	0.00	0.00	0.00	0.00
USR TR-MT-006 Flag Man Sign, CW20-7, 36" x 36" (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	8.00	EA	0.00	0.00	0.00	0.00
USR TR-MT-009 Economy stand for aluminum diamond-shaped signs, 48" to 60" signs (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	16.00	EA	0.00	0.00	0.00	0.00
8.01.03.11 Traffic Control	312.00	MO	416,000.00	0.00	416,000.00	416,000.00
USR TR-LE-006 Traffic Control Flagmen	416,000.00	HR	416,000.00	0.00	416,000.00	416,000.00
Multiple ECES Codes Excavation and Hauling	881,000.00	BCY	611,308.90	1,137,779.76	584,021.14	584,021.14
Multiple ECES Codes Low-Hazard and Moderate-Hazard Soil	769,000.00	BCY	442,084.53	818,978.82	421,220.20	421,220.20
4.05.9x Construction Survey and Staking	131.00	ACR	1,310.00	524.00	524.00	524.00
0.2 SUR-02 Surveying Crew	131.00	ACR	1,310.00	524.00	524.00	524.00
4.05.05.01 Excavation	769,000.00	BCY	40,156.66	20,078.33	20,078.33	20,078.33
USR EW-EX-A5-100 Excavation - Non-Hazardous/Non-Radioactive Waste	769,000.00	BCY	40,156.66	20,078.33	20,078.33	20,078.33
4.32.11.05 Hauling	1,153,500.00	TON	397,758.62	795,517.24	397,758.62	397,758.62
USR EW-HL-A5-100 Hauling - Non-Hazardous/Non-Radioactive Waste	1,153,500.00	TON	397,758.62	795,517.24	397,758.62	397,758.62
4.07.11 Confirmation Sampling	11,437.00	EA	2,859.25	2,859.25	2,859.25	2,859.25
USR EW-CS-001 Confirmation sampling	11,437.00	EA	2,859.25	2,859.25	2,859.25	2,859.25
4.08.04 Sample Analysis	11,437.00	EA	0.00	0.00	0.00	0.00
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	11,437.00	EA	0.00	0.00	0.00	0.00
Multiple ECES Codes Hazardous Soil	2,000.00	BCY	6,607.01	12,306.71	6,306.71	6,306.71
4.05.9x Construction Surveying and Staking	0.30	ACR	3.00	1.20	1.20	1.20
USR SUR-02 Surveying Crew	0.30	ACR	3.00	1.20	1.20	1.20
4.05.05.01 Excavation	2,000.00	BCY	597.01	298.51	298.51	298.51
USR EW-EX-A5-200 Excavation - RCRA Hazardous Waste	2,000.00	BCY	597.01	298.51	298.51	298.51
4.32.11.05 Hauling	3,000.00	TON	6,000.00	12,000.00	6,000.00	6,000.00
USR DS-900 End-Dump-Sized Liner Bag (Note: Vendor quote, US Ecology, July 2015. Required for a "sealed" container.)	130.00	EA	0.00	0.00	0.00	0.00
USR EW-HL-A5-200 Hauling - RCRA Hazardous Waste	3,000.00	TON	6,000.00	12,000.00	6,000.00	6,000.00

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
4.07.11 Confirmation Sampling	28.00	EA	7.00	7.00	7.00	7.00
USR EW-CS-001 Confirmation sampling	28.00	EA	7.00	7.00	7.00	7.00
4.08.04 Sample Analysis	28.00	EA	0.00	0.00	0.00	0.00
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	28.00	EA	0.00	0.00	0.00	0.00
Multiple ECES Codes LLW/MLLW Soil	110,000.00	BCY	162,617.36	306,494.23	156,494.23	156,494.23
4.05.9x Construction Surveying and Staking	18.70	ACR	187.00	74.80	74.80	74.80
USR SUR-02 Surveying Crew	18.70	ACR	187.00	74.80	74.80	74.80
4.05.05.01 Excavation	110,000.00	BCY	12,021.86	6,010.93	6,010.93	6,010.93
USR EW-EX-A5-400 Excavation - Low-level Radioactive Waste (LLW)	110,000.00	BCY	12,021.86	6,010.93	6,010.93	6,010.93
4.32.11.05 Hauling	165,000.00	TON	150,000.00	300,000.00	150,000.00	150,000.00
USR DS-900 End-Dump-Sized Liner Bag (Note: Vendor quote, US Ecology, July 2015. Required for a "sealed" container.)	7,174.00	EA	0.00	0.00	0.00	0.00
USR EW-HL-A5-400 Hauling - Low-level Radioactive Waste (LLW)	165,000.00	TON	150,000.00	300,000.00	150,000.00	150,000.00
4.07.11 Confirmation Sampling	1,634.00	EA	408.50	408.50	408.50	408.50
USR EW-CS-001 Confirmation sampling	1,634.00	EA	408.50	408.50	408.50	408.50
4.08.04 Sample Analysis	1,634.00	EA	0.00	0.00	0.00	0.00
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	1,634.00	EA	0.00	0.00	0.00	0.00
4.33.08.05 Disposal	1,321,500.00	TON	0.00	0.00	0.00	0.00
4.33.08.05 Low-Hazard and Moderate-Hazard Soil	1,153,500.00	TON	0.00	0.00	0.00	0.00
USR DS-100 Non-Hazardous/Non-Radioactive Waste Disposal (Note: Assume disposal at an applicable facility within 135 mile of the site. Assumed vendor quote from Waste Management Facilities, July 2015.)	1,153,500.00	TON	0.00	0.00	0.00	0.00
4.33.08.05 Hazardous Soil	3,000.00	TON	0.00	0.00	0.00	0.00
USR DS-200 RCRA Hazardous Waste Disposal (Note: Assumes disposal outside of California. Cost based on vendor quote from US Ecology, July 2015.)	3,000.00	TON	0.00	0.00	0.00	0.00
4.33.08.05 LLW/MLLW Soil	165,000.00	TON	0.00	0.00	0.00	0.00
USR DS-400 Low-level Radioactive Waste (LLW) Disposal (Note: Assumes disposal outside of California. Cost based on vendor quote from US Ecology, July 2015.)	165,000.00	TON	0.00	0.00	0.00	0.00
4.05.05 Backfill	660,750.00	ECY	181,496.03	307,602.38	41,003.97	41,003.97
4.05.05.06 Backfill from Offsite Sources	660,750.00	ECY	181,496.03	307,602.38	41,003.97	41,003.97
4.32.11.05 Import Fill Material	881,000.00	LCY	139,841.27	279,682.54	13,984.13	13,984.13
USR EW-HL-010 Haul Imported Soil	881,000.00	LCY	139,841.27	279,682.54	13,984.13	13,984.13
USR EW-MT-200 Borrow, common earth (Note: Based on average of the following RS Means CostWorks 2015 numbers: 31232 315 4000, 31232 315 7000, 31232 316 0035, and 31232 316 0020. \$/BCY cost converted to \$/LCY using 1.2 LCY per BCY)	881,000.00	LCY	0.00	0.00	0.00	0.00
USR EW-MT-210 Organic Amendment	881,000.00	LCY	0.00	0.00	0.00	0.00
4.05.05 Fill	660,750.00	ECY	41,654.76	27,919.84	27,019.84	27,019.84
USR EW-BM-LE-200 Fill - Spreading	881,000.00	LCY	20,976.19	13,984.13	13,984.13	13,984.13
USR SD-SP-LE-004B Site Grading - Rough	150.00	ACR	600.00	450.00	150.00	150.00
USR EW-BM-LE-202 Fill - Compaction	660,750.00	ECY	18,878.57	12,585.71	12,585.71	12,585.71
USR SD-SP-LE-005 Site Grading - Finish	150.00	ACR	1,200.00	900.00	300.00	300.00
- Quality Control and Testing	1.00	LS	0.00	0.00	0.00	0.00
USR SL-TEST-100 Backfill chemical testing (Note: Per estimator)	89.00	EA	0.00	0.00	0.00	0.00

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR SL-TEST-01 Soil testing, soil density, nuclear method, ASTM D2922 (Note: Cost from RS Means CostWorks 2015 item number 01 45 2350 4735.)	655.00	EA	0.00	0.00	0.00	0.00
4.05.02 Restoration	1.00	LS	1,246.25	993.36	395.93	395.93
4.05.02.05 Seeding	150.00	ACR	240.00	480.00	240.00	240.00
USR SR-SD-LE-002 Seeding	150.00	ACR	240.00	480.00	240.00	240.00
USR SR-SD-MT-011 Seeding, native grass and wildflower seed mix. (Note: Vendor quote, outsidepride.com, July 2015. Based 4 lbs per acre of native seed mix and 16 pounds per acre of native wildflower seed mix.)	150.00	ACR	0.00	0.00	0.00	0.00
4.05.08 Allowance for Street/Pavement Repair (Note: Quantity Assumed Per Estimator)	1.00	LS	1,006.25	513.36	155.93	155.93
4.05.08 Woolsey Canyon Road	2.50	MI	1,006.25	513.36	155.93	155.93
USR SR-PV-300 Hauling for asphalt cold milling and paving	4,015.00	LCY	234.80	234.80	78.27	78.27
USR SR-PV-410 Cold milling asphalt paving, profile grooving, asphalt pavement, 2" deep, load and sweep (Note: Based on English Cost Book number 320116715350.)	36,130.00	SY	224.81	96.35	32.12	32.12
USR SR-PV-510 Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick, no hauling included (Note: Based on English Cost Book number 321216130380.)	36,130.00	SY	546.65	182.22	45.55	45.55
USR SR-PV-MT-510 Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick (Note: Material cost from RS Means CostWorks 2015 number 32 12 1613 0380.)	36,130.00	SY	0.00	0.00	0.00	0.00

**Cleanup to Revised AOC Look-Up Table Values
Alternative**

**Cost Breakout Backup
Cleanup to Revised AOC LUT Values Alternative**

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost	Operating Cost (\$)			Number of years: 8			
			(\$)	(\$)	(\$)	Months	Monthly	Annual	\$ per Yr	UOM	Unit Cost	
Cleanup to Revised LUT Values Alternative												
4.9x General Conditions	1	LS	12,611,427	15,394,391	15,394,391	-	-	-	-	-	-	-
Multiple ECES Codes Workplans and Submittals	1	LS	296,970	362,503	362,503	-	-	-	-	-	-	-
4.02.01.01 Project Meetings and Updating Project Schedule	96	MO	117,754	143,739	143,739	12	1,497.28	17,967.38	-	-	-	-
4.03.01 Work Plans	1	LS	113,686	138,773	138,773	-	-	-	-	-	-	-
4.04.21 Submittals	1	LS	27,936	34,100	34,100	-	-	-	-	-	-	-
4.04.19 Post-RA Completion Report	1	LS	37,594	45,890	45,890	-	-	-	-	-	-	-
8.01.04 Home Office Personnel	96	MO	730,082	891,189	891,189	12	9,283.22	111,398.63	-	-	-	-
4.02.01.01.15 Job Site Personnel	96	MO	11,257,862	13,742,135	13,742,135	12	143,147.24	1,717,766.88	-	-	-	-
4.05.01.03 Temporary Facilities	96	MO	326,513	398,564	398,564	12	4,151.71	49,820.50	-	-	-	-
4.05.01.03.25 Project Sign	2	EA	2,926	3,571	3,571	-	-	-	-	-	-	-
4.05.01.03.21 Staging Area and Security Fencing	1	LS	31,644	38,627	38,627	-	-	-	-	-	-	-
4.05.01.03 Temporary Facilities	96	MO	278,905	340,451	340,451	12	3,546.36	42,556.38	-	-	-	-
4.05.36.01 Removal of Temporary Construction Facilities	1	LS	13,039	15,916	15,916	-	-	-	-	-	-	-
4.05.00 Mobilization and Demobilization	1	LS	110,272	134,606	134,606	-	-	-	-	-	-	-
4.05.01.01 Site Mobilization	1	LS	52,442	64,015	64,015	-	-	-	-	-	-	-
4.05.36 Site Demobilization	1	LS	57,830	70,591	70,591	-	-	-	-	-	-	-
4.05.36.04 Equipment Demobilization	1	LS	48,377	59,052	59,052	-	-	-	-	-	-	-
4.05.36.01.9x Site Cleanup	1	LS	9,453	11,539	11,539	-	-	-	-	-	-	-
4.9x Best Management Practices	1	LS	14,469,952	17,663,036	17,663,036	-	-	-	-	-	-	-
8.01.01 SWPPP Implementation and Maintenance	1	LS	70,312	85,828	85,828	-	-	-	-	-	-	-
8.01.01.03 SWPPP Preparation	1	LS	12,292	15,004	15,004	-	-	-	-	-	-	-
8.01.01.9x SWPPP Oversight and Maintenance	96	MO	58,021	70,824	70,824	12	737.75	8,853.00	-	-	-	-
4.05.02 Temporary Erosion and Sediment Control	1	LS	517,050	631,147	631,147	-	-	-	-	-	-	-
4.05.02.04 Silt Fence	55760	LF	130,825	159,694	159,694	-	-	-	-	-	-	-
4.05.02.04 Wattles	875	LF	5,480	6,689	6,689	-	-	-	-	-	-	-
4.05.02.04 Sediment Trap	4	EA	4,799	5,858	5,858	-	-	-	-	-	-	-
4.05.02.04 Rock Filter Dam	4	EA	11,962	14,602	14,602	-	-	-	-	-	-	-
4.05.02.04 Track-Out Prevention	4	EA	4,786	5,842	5,842	-	-	-	-	-	-	-
4.05.02.05 Temporary Seeding	36	ACR	8,134	9,929	9,929	-	-	-	4.5	ACR	275.81	-
4.05.02.9x Inspection and Maintenance	96	MO	351,064	428,533	428,533	12	4,463.89	53,566.63	-	-	-	-
4.05.9x Existing Tree Protection	35	EA	117,642	143,602	143,602	-	-	-	-	-	-	-
4.05.9x Arborist and Care for Existing Trees	96	MO	102,351	124,937	124,937	12	1,301.43	15,617.13	-	-	-	-
4.05.9x Tree Protection Fencing	35	EA	15,291	18,665	18,665	-	-	-	-	-	-	-
4.16.04 Dust Control	96	MO	2,367,363	2,889,769	2,889,769	12	30,101.76	361,221.13	-	-	-	-
4.07.08.02 Air Monitoring	96	MO	204,722	249,898	249,898	12	2,603.10	31,237.25	-	-	-	-
4.05.01.03.12 Decontamination/Wash Station	1	LS	1,293,389	1,578,801	1,578,801	-	-	-	-	-	-	-
4.05.01.03.12 Decontamination/Wash Station Purchase and Setup	1	EA	211,884	258,641	258,641	-	-	-	-	-	-	-
4.05.01.03.12 Decontamination/Wash Station Operation	96	MO	1,081,505	1,320,160	1,320,160	12	13,751.67	165,020.00	-	-	-	-
4.05.9x Street Sweeping	96	MO	1,573,330	1,920,517	1,920,517	12	20,005.39	240,064.63	-	-	-	-
8.01.03.11 Traffic Control	1	LS	8,326,143	10,163,473	10,163,473	-	-	-	-	-	-	-
8.01.03.11 Preconstruction Video Survey	1	LS	3,603	4,398	4,398	-	-	-	-	-	-	-
8.01.03.11 Traffic Control Signs and Barricades	1	LS	74,196	90,569	90,569	-	-	-	-	-	-	-
8.01.03.11 Traffic Control	96	MO	8,248,344	10,068,507	10,068,507	12	104,880.28	1,258,563.38	-	-	-	-
Multiple ECES Codes Excavation and Hauling	190000	BCY	45,951,164	56,091,207	56,091,207	-	-	-	23750	BCY	295.22	-
Multiple ECES Codes Low-Hazard and Moderate-Hazard Soil	78000	BCY	8,654,579	10,564,385	10,564,385	-	-	-	9750	BCY	135.44	-
4.05.9x Construction Survey and Staking	15	ACR	11,223	13,699	13,699	-	-	-	1.85	ACR	925.61	-
4.05.05.01 Excavation	78000	BCY	523,546	639,077	639,077	-	-	-	9750	BCY	8.19	-
4.32.11.05 Hauling	117000	TON	7,755,505	9,466,913	9,466,913	-	-	-	14625	TON	80.91	-
4.07.11 Confirmation Sampling	644	EA	20,699	25,267	25,267	-	-	-	81	EA	39.23	-
4.08.04 Sample Analysis	644	EA	343,606	419,430	419,430	-	-	-	81	EA	651.29	-
Multiple ECES Codes Hazardous Soil	2000	BCY	1,332,221	1,626,203	1,626,203	-	-	-	250	BCY	813.1	-
4.05.9x Construction Surveying and Staking	0.4	ACR	303	370	370	-	-	-	0.05	ACR	925	-
4.05.05.01 Excavation	2000	BCY	76,739	93,673	93,673	-	-	-	250	BCY	46.84	-
4.32.11.05 Hauling	3000	TON	1,244,997	1,519,730	1,519,730	-	-	-	375	TON	506.58	-
4.07.11 Confirmation Sampling	18	EA	579	706	706	-	-	-	2	EA	39.22	-
4.08.04 Sample Analysis	18	EA	9,604	11,723	11,723	-	-	-	2	EA	651.28	-
Multiple ECES Codes LLW/MLLW Soil	110000	BCY	35,964,363	43,900,619	43,900,619	-	-	-	13750	BCY	399.1	-
4.05.9x Construction Surveying and Staking	20.8	ACR	15,772	19,253	19,253	-	-	-	2.6	ACR	925.63	-
4.05.05.01 Excavation	110000	BCY	1,545,258	1,886,250	1,886,250	-	-	-	13750	BCY	17.15	-
4.32.11.05 Hauling	165000	TON	33,890,251	41,368,813	41,368,813	-	-	-	20625	TON	250.72	-
4.07.11 Confirmation Sampling	907	EA	29,152	35,585	35,585	-	-	-	113	EA	39.23	-
4.08.04 Sample Analysis	907	EA	483,930	590,719	590,719	-	-	-	113	EA	651.29	-
4.33.08.05 Disposal	285000	TON	19,063,742	21,017,775	21,017,775	-	-	-	35625	TON	73.75	-
4.33.08.05 Low-Hazard and Moderate-Hazard Soil	117000	TON	5,618,282	6,194,155	6,194,155	-	-	-	14625	TON	52.94	-
4.33.08.05 Hazardous Soil	3000	TON	240,098	264,707	264,707	-	-	-	375	TON	88.24	-
4.33.08.05 LLW/MLLW Soil	165000	TON	13,205,363	14,558,912	14,558,912	-	-	-	20625	TON	88.24	-
4.05.05 Backfill	142500	ECY	11,664,112	14,238,032	14,238,032	-	-	-	17812.5	ECY	99.92	-
4.05.05.06 Backfill from Offsite Sources	142500	ECY	11,664,112	14,238,032	14,238,032	-	-	-	17812.5	ECY	99.92	-
4.32.11.05 Import Fill Material	171000	LCY	10,498,955	12,815,759	12,815,759	-	-	-	21375	LCY	74.95	-
4.05.05 Fill	142500	ECY	1,137,970	1,389,085	1,389,085	-	-	-	17812.5	ECY	9.75	-
- Quality Control and Testing	1	LS	27,188	33,187	33,187	-	-	-	-	-	-	-
4.05.02 Restoration	1	LS	542,372	662,057	662,057	-	-	-	-	-	-	-
4.05.02.05 Seeding	36	ACR	24,941	30,445	30,445	-	-	-	4.5	ACR	845.69	-
4.05.08 Allowance for Street/Pavement Repair	1	LS	517,430	631,612	631,612	-	-	-	-	-	-	-
4.05.08 Woolsey Canyon Road	2.5	MI	517,430	631,612	631,612	-	-	-	-	MI	252644.8	-

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
CLEANUP TO REVISED AOC LOOK-UP TABLE VALUES ALTERNATIVE					
4.9x General Conditions	1.00	LS	12,611,427	15,394,391	15,394,391
Multiple ECES Codes Workplans and Submittals	1.00	LS	296,970	362,503	362,503
(Note: Includes project schedule, submittals, and work plans.)					
4.02.01.01 Project Meetings and Updating Project Schedule	96.00	MO	117,754	143,739	143,739
			<i>1,226.61</i>	<i>1,497.28</i>	<i>1,497.28</i>
FOP FA-PROJM Project Managers	520.00	HR	53,308	65,072	65,072
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FC-ENGCI Engineers, Civil	416.00	HR	34,571	42,199	42,199
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	832.00	HR	29,875	36,468	36,468
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
4.03.01 Work Plans	1.00	LS	113,686	138,773	138,773
FOP FA-PROJM Project Managers	80.00	HR	8,201	10,011	10,011
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FC-ENGCI Engineers, Civil	600.00	HR	49,862	60,864	60,864
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	120.00	HR	4,309	5,260	5,260
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FC-ENGQC Engineers, Quality Control	120.00	HR	10,908	13,315	13,315
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FD-SAENG Safety Engineers	240.00	HR	15,834	19,328	19,328
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
HTW HO-STFSCI Staff Scientist (HTW Projects)	440.00	HR	24,572	29,995	29,995
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
4.04.21 Submittals	1.00	LS	27,936	34,100	34,100
FOP FA-PROJM Project Managers	24.00	HR	2,460	3,003	3,003
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
			<i>83.10</i>	<i>101.44</i>	<i>101.44</i>

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	160.00	HR	13,296	16,231	16,231
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	40.00	HR	35.91 1,436	43.83 1,753	43.83 1,753
FOP FC-ENGQC Engineers, Quality Control (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	40.00	HR	90.90 3,636	110.96 4,438	110.96 4,438
FOP FD-SAENG Safety Engineers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	40.00	HR	65.97 2,639	80.53 3,221	80.53 3,221
HTW HO-STFSCI Staff Scientist (HTW Projects) (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	80.00	HR	55.85 4,468	68.17 5,454	68.17 5,454
4.04.19 Post-RA Completion Report	1.00	LS	37,594	45,890	45,890
FOP FA-PROJM Project Managers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	56.00	HR	102.52 5,741	125.14 7,008	125.14 7,008
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	300.00	HR	83.10 24,931	101.44 30,432	101.44 30,432
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	80.00	HR	35.91 2,873	43.83 3,507	43.83 3,507
FOP FC-ENGQC Engineers, Quality Control (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	24.00	HR	90.90 2,182	110.96 2,663	110.96 2,663
FOP FD-SAENG Safety Engineers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	8.00	HR	65.97 528	80.53 644	80.53 644
HTW HO-STFSCI Staff Scientist (HTW Projects) (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	24.00	HR	55.85 1,340	68.17 1,636	68.17 1,636
8.01.04 Home Office Personnel	96.00	MO	7,605.02 730,082	9,283.22 891,189	9,283.22 891,189
FOP FA-PROJM Project Managers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	6,656.00	HR	93.20 620,315	113.76 757,200	113.76 757,200
HTW HO-SECADM Secretarial/ Administrative (HTW Projects) (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	3,328.00	HR	32.98 109,766	40.26 133,989	40.26 133,989
			117,269.40	143,147.24	143,147.24

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.02.01.01.15 Job Site Personnel	96.00	MO	11,257,862	13,742,135	13,742,135
FOP FA-AGENS General Superintendents (P.M.) (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	16,640.00	HR	89.85 1,495,145	109.68 1,825,078	109.68 1,825,078
FOP FC-ENGPE Engineers, Project (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	16,640.00	HR	91.96 1,530,162	112.25 1,867,822	112.25 1,867,822
FOP FC-ENGQC Engineers, Quality Control (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	16,640.00	HR	82.64 1,375,091	100.87 1,678,532	100.87 1,678,532
FOP FD-SAENG Safety Engineers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	16,640.00	HR	59.98 998,007	73.21 1,218,237	73.21 1,218,237
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	6,656.00	HR	75.55 502,846	92.22 613,809	92.22 613,809
HTW HO-STFSCI Staff Scientist (HTW Projects) (Note: Average of biologist, archeologist, and arborist wage rate. Time based on estimated total for all three disciplines. Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	9,984.00	HR	50.77 506,881	61.97 618,735	61.97 618,735
FOP FC-FLABT Field Constr. QC./Lab Technician (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	16,640.00	HR	40.91 680,734	49.94 830,951	49.94 830,951
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	16,640.00	HR	32.64 543,188	39.85 663,053	39.85 663,053
USR U-MT-TF-300 Cell phone and air card (Note: Per estimator. Based on business plan rate for monthly talk and text plan, 4 GB data bundle, and 5 GB air card.)	864.00	MO	160.07 138,296	195.39 168,814	195.39 168,814
EP T50XX004 TRUCK, HIGHWAY, CONVENTIONAL, 1/2 TON PICKUP, 4X4	118,496.00	HR	29.43 3,487,513	35.93 4,257,103	35.93 4,257,103
4.05.01.03 Temporary Facilities	96.00	MO	3,401.17	4,151.71	4,151.71
4.05.01.03.25 Project Sign	2.00	EA	1,462.77	1,785.56	1,785.56
USR SI-LE-001 Project sign installation (Note: Productivity per estimator.)	2.00	EA	745.75 1,491	910.31 1,821	910.31 1,821
USR SI-MT-001 Project sign, high intensity reflectorized (Note: Material cost from RS Means CostWorks 2015 number 01 58 1350 0020 for a 4' x 5' project sign and from www.lowes.com for a \$5.97 for 4"x4"x8' pressure treated post. Material cost includes sign and 2 posts.)	2.00	EA	717.03 1,434	875.25 1,751	875.25 1,751

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.05.01.03.21 Staging Area and Security Fencing (Note: Assumes construction of staging area.)	1.00	LS	31,644	38,627	38,627
USR EW-MT-005 3/8" max flex aggregate (Note: **Vendor quote, Select Sand & Gravel, Mar/2015** Includes delivery.)	1,360.00	TON	26,094	31,852	31,852
USR TF-LE-002 Spread gravel with dozer	862.00	LCY	1,121	1,368	1,368
USR TF-LE-003 Compact gravel material with roller	741.00	ECY	1,181	1,442	1,442
USR FN-001 Temporary Fencing, chain link, 6' high, 11 ga (Note: Vendor quote from National Construction Rentals, May 2013. Cost includes installation and removal. Length of fence = Chain Link fence (560 lf) + Gate (2 x 20 lf). Escalated to Mar 2015.)	760.00	LF	2,838	3,465	3,465
USR FN-002 Temporary Fencing - Gate (Note: Vendor quote from National Construction Rentals, May 2013. Cost includes installation and removal. Escalated to Mar 2015.)	2.00	EA	410	500	500
4.05.01.03 Temporary Facilities	96.00	MO	278,905	340,451	340,451
USR TF-MT-001 Office Trailer, furnished, rent per month, 50' x 12', excl. hookups (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1320 0550.)	192.00	MO	82,978	101,288	101,288
USR TF-MT-002 Storage Boxes, rent per month, 40' x 8' (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1320 1350.)	96.00	MO	10,244	12,505	12,505
USR TF-MT-007 Rent toilet portable chemical (Note: Rental cost per RS Means CostWorks 2015 item number 01 54 3340 6410.)	384.00	MO	77,446	94,536	94,536
USR TF-MT-003 Field Office Expense, office equipment rental, average (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0100.)	96.00	MO	20,283	24,759	24,759
USR TF-MT-004 Field Office Expense, office supplies, average (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0120.)	96.00	MO	8,144	9,941	9,941
USR TF-MT-005 Field Office Expense, telephone bill; avg. bill/month, incl. long distance (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0140.)	192.00	MO	17,210	21,008	21,008
USR TF-MT-006 Field Office Expense, field office lights & HVAC (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1340 0160.)	192.00	MO	32,576	39,765	39,765
USR TF-MT-008 Office Trailer, delivery or pickup (Note: Cost per RS Means CostWorks 2015 number 01 52 1320 0890. Assumes 30 mile delivery or pickup distance, one-way, \$11.30 per mile per RS Means CostWorks 2015 number 01 52 1320 0800. Includes mob/demob for 2 office trailer and 1 storage box.)	2.00	EA	1,120	1,368	1,368

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR TF-MT-009 Secondary containment for 550 gallon gasoline or diesel tanks. (Note: Vendor quote from The Tank Depot, July 2015.)	1.00	EA	784.31 784	957.38 957	957.38 957
USR TF-MT-010 Secondary containment for 1,000 gallon gasoline or diesel tanks. (Note: Vendor quote from The Tank Depot, July 2015.)	1.00	EA	1,727.62 1,728	2,108.86 2,109	2,108.86 2,109
USR U-MT-TF-400 Water cooler rental (Note: Vendor quote from Culligan Water, Savannah, Georgia, October 2012. \$40 per year plus \$25 deposit.)	192.00	MO	5.78 1,110	7.06 1,356	7.06 1,356
USR U-MT-TF-401 Water cooler water - 5 gallon bottle (Note: Vendor quote from Culligan Water, Savannah, Georgia, October 2012. \$5 one time delivery fee.)	384.00	EA	4.80 1,844	5.86 2,251	5.86 2,251
USR U-MT-TF-450 Dumpster - delivery or pickup (Note: Vendor quote from ABC Waste, October 2012.)	1.00	EA	26.68 27	32.56 33	32.56 33
USR U-MT-TF-451 Dumpster service, 4 CY (Note: Vendor quote from ABC Waste, October 2012. Includes 6% surcharge for fuel.)	96.00	MO	88.23 8,470	107.70 10,339	107.70 10,339
USR U-MT-TF-100 Temporary electrical hookup (Note: Per estimator.)	2.00	EA	5,335.50 10,671	6,512.88 13,026	6,512.88 13,026
USR U-MT-TF-101 Temporary telephone hookup (Note: Per estimator.)	2.00	EA	2,134.20 4,268	2,605.15 5,210	2,605.15 5,210
4.05.36.01 Removal of Temporary Construction Facilities	1.00	LS	13,039	15,916	15,916
USR U-MT-TF-201 Office trailer teardown and removal (Note: Per estimator)	1.00	LS	907	1,107	1,107
USR USR-LE-EW-SR-001 Remove and restore temporary staging area	24.00	HR	505.49 12,132	617.04 14,809	617.04 14,809
4.05.00 Mobilization and Demobilization	1.00	LS	110,272	134,606	134,606
4.05.01.01 Site Mobilization	1.00	LS	52,442	64,015	64,015
USR USR-MB-LE-001 Mobilization or demobilization of heavy equipment	5.00	EA	2,708.60 13,543	3,306.31 16,532	3,306.31 16,532
USR USR-MB-LE-002 Mobilization or demobilization of medium equipment	10.00	EA	2,049.04 20,490	2,501.20 25,012	2,501.20 25,012
USR USR-MB-LE-003 Mobilization or demobilization of self-propelled equipment	3.00	EA	1,935.48 5,806	2,362.58 7,088	2,362.58 7,088
USR USR-MB-LE-004 Oversize/overwidth load hauling permits (Note: Per estimator)	8.00	EA	1,067.10 8,537	1,302.58 10,421	1,302.58 10,421
USR U-MB-LE-100 Pre-construction video survey of road (Note: Assumes haul roads would be video surveyed to document road conditions prior to job start. Includes allowance for video camera and placing video on DVDs with multiple copies.)	1.00	LS	4,066	4,963	4,963

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.05.36 Site Demobilization	1.00	LS	57,830	70,591	70,591
4.05.36.04 Equipment Demobilization	1.00	LS	48,377	59,052	59,052
USR USR-MB-LE-001 Mobilization or demobilization of heavy equipment	5.00	EA	2,708.60 13,543	3,306.31 16,532	3,306.31 16,532
USR USR-MB-LE-002 Mobilization or demobilization of medium equipment	10.00	EA	2,049.04 20,490	2,501.20 25,012	2,501.20 25,012
USR USR-MB-LE-003 Mobilization or demobilization of self-propelled equipment	3.00	EA	1,935.48 5,806	2,362.58 7,088	2,362.58 7,088
USR USR-MB-LE-004 Oversize/overwidth load hauling permits (Note: Per estimator)	8.00	EA	1,067.10 8,537	1,302.58 10,421	1,302.58 10,421
4.05.36.01.9x Site Cleanup (Note: Includes general site cleanup and removal of erosion/sediment control after the completion of construction. This does not include the removal of the construction staging pad as it will be left in place for future work.)	1.00	LS	9,453	11,539	11,539
USR MDM-06 Site Cleanup (Note: Assume 5 days)	5.00	DAY	1,890.59 9,453	2,307.79 11,539	2,307.79 11,539
4.9x Best Management Practices	1.00	LS	14,469,952	17,663,036	17,663,036
8.01.01 SWPPP Implementation and Maintenance	1.00	LS	70,312	85,828	85,828
8.01.01.03 SWPPP Preparation	1.00	LS	12,292	15,004	15,004
FOP FA-PROJM Project Managers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	8.00	HR	93.20 746	113.76 910	113.76 910
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	120.00	HR	75.55 9,066	92.22 11,066	92.22 11,066
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	16.00	HR	32.64 522	39.85 638	39.85 638
FOP FC-FLDRT Field Draftsmen (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	40.00	HR	48.95 1,958	59.76 2,390	59.76 2,390
8.01.01.9x SWPPP Oversight and Maintenance	96.00	MO	58,021	70,824	70,824
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	768.00	HR	75.55 58,021	92.22 70,824	92.22 70,824
4.05.02 Temporary Erosion and Sediment Control	1.00	LS	517,050	631,147	631,147
4.05.02.04 Silt Fence	55,760.00	LF	2.35 130,825	2.86 159,694	2.86 159,694
			0.21	0.25	0.25

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR SP-ESC-MT-001 Erosion control, silt fence, polypropylene, ideal conditions, 3' high (Note: Material cost from RS Means CostWorks number 31 25 1416 1100.)	55,760.00	LF	11,603	14,163	14,163
USR SP-ESC-LE-001 Silt Fence Installation (Note: Productivity from Means CostWorks 2015 number 31 25 1416 1100.)	55,760.00	LF	2.14 119,222	2.61 145,531	2.61 145,531
4.05.02.04 Wattles	875.00	LF	6.26 5,480	7.64 6,689	7.64 6,689
USR SP-ESC-LE-100 Wattle Installation	875.00	LF	5.08 4,443	6.20 5,424	6.20 5,424
USR SP-ESC-MT-100 Wattle (Note: Vendor quote, Impact Absorbents, July 2015. Cost based on 1 pallet (300 feet of 9" x 25' segments). Includes wood stake every 4'.)	875.00	LF	1.18 1,036	1.45 1,265	1.45 1,265
4.05.02.04 Sediment Trap	4.00	EA	1,199.68 4,799	1,464.42 5,858	1,464.42 5,858
USR EW-EX-LE-002 Excavating sediment trap	280.00	BCY	17.14 4,799	20.92 5,858	20.92 5,858
4.05.02.04 Rock Filter Dam	4.00	EA	2,990.52 11,962	3,650.44 14,602	3,650.44 14,602
USR EW-RP-LE-004 Rock filter dam placement	280.00	LCY	9.35 2,617	11.41 3,195	11.41 3,195
USR EW-MT-103 Rock Filter Dam Material (Note: Based on previous work. Includes delivery.)	450.00	TON	20.77 9,345	25.35 11,407	25.35 11,407
4.05.02.04 Track-Out Prevention	4.00	EA	1,196.55 4,786	1,460.59 5,842	1,460.59 5,842
USR TF-LE-002 Spread gravel with dozer	140.00	LCY	1.30 182	1.59 222	1.59 222
USR TF-LE-003 Compact gravel material with roller	120.00	ECY	1.59 191	1.95 233	1.95 233
USR EW-MT-005 3/8" max flex aggregate (Note: Vendor quote from previous work, March 2015. Includes delivery.)	230.00	TON	19.19 4,413	23.42 5,387	23.42 5,387
4.05.02.05 Temporary Seeding (Note: Assumes temporary seasonal seeding for erosion control.)	36.00	ACR	225.95 8,134	275.81 9,929	275.81 9,929
USR SR-SD-LE-002B Temporary Seeding	36.00	ACR	55.21 1,988	67.40 2,426	67.40 2,426
USR SR-SD-MT-010 Temporary seeding (Note: Vendor quote, outsidepride.com, July 2015. Based 4 lbs per acre of native seed mix.)	36.00	ACR	170.74 6,146	208.41 7,503	208.41 7,503

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.05.02.9x Inspection and Maintenance	96.00	MO	351,064	428,533	428,533
			3,656.92	4,463.89	4,463.89
USR SP-ESC-LE-008 Inspection and maintenance of erosion and sediment control measures.	1,664.00	HR	306,673	374,346	374,346
			184.30	224.97	224.97
USR SP-ESC-MT-007 Erosion and sediment control maintenance allowance (Note: Per estimator)	416.00	WK	44,391	54,187	54,187
			106.71	130.26	130.26
4.05.9x Existing Tree Protection	35.00	EA	117,642	143,602	143,602
			3,361.19	4,102.91	4,102.91
4.05.9x Arborist and Care for Existing Trees	96.00	MO	102,351	124,937	124,937
			1,066.16	1,301.42	1,301.42
HTW HO-STFSCI Staff Scientist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	2,016.00	HR	102,351	124,937	124,937
			50.77	61.97	61.97
4.05.9x Tree Protection Fencing	35.00	EA	15,291	18,665	18,665
			436.88	533.29	533.29
USR FN-SF-LE-001 Safety fence installation	3,500.00	LF	4,372	5,337	5,337
			1.25	1.52	1.52
USR FN-SF-LE-002 Safety fence removal	3,500.00	LF	2,186	2,669	2,669
			0.62	0.76	0.76
USR FN-SF-MT-001 Orange safety fence (Note: Vendor quote, Grainger, June 2015.)	3,500.00	LF	6,125	7,477	7,477
			1.75	2.14	2.14
USR FN-SF-MT-002 5-foot steel t-post (Note: Vendor quote, Blain's Farm and Fleet, June 2015.)	700.00	EA	2,607	3,182	3,182
			3.72	4.55	4.55
4.16.04 Dust Control	96.00	MO	2,367,363	2,889,769	2,889,769
			24,660.03	30,101.76	30,101.76
USR TR-LE-005 Dust control	16,000.00	HR	1,870,268	2,282,981	2,282,981
			116.89	142.69	142.69
USR TR-MT-100 Water for Dust Control (Note: Based on current pricing for 16,000 gallons per day (0.049 ac-ft/day or 21.4 CCF/day). Assumes \$1,480 per ac-ft for base fee and \$2,960 per ac-ft for penalty. Unit cost assumes penalty would be incurred for exceeding the district's allotment.)	45,760.00	CCF	497,094	606,788	606,788
			10.86	13.26	13.26
4.07.08.02 Air Monitoring	96.00	MO	204,722	249,898	249,898
			2,132.52	2,603.11	2,603.11
USR SFTY-05 PM10 Dust Monitor (Note: Thermo Scientific ADR-1500. Vendor Quote: Field Environmental, 2014. Monthly Rental)	96.00	MO	155,614	189,953	189,953
			1,620.98	1,978.68	1,978.68
			446.31	544.80	544.80

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR AIRWE-M Weather Station, monthly rental - M (Note: Davis Vantage Pro Weather Station.Vendor Quote: Pine Environmental, 2014. Monthly Rental)	96.00	MO	42,846	52,301	52,301
			65.23	79.63	79.63
USR PM-M Air Sample Analysis - Particulate Matter - M (Note: Vendor Quote: Test America, 2013.)	96.00	EA	6,262	7,644	7,644
4.05.01.03.12 Decontamination/Wash Station	1.00	LS	1,293,389	1,578,801	1,578,801
			211,884.44	258,640.98	258,640.98
4.05.01.03.12 Decontamination/Wash Station Purchase and Setup	1.00	EA	211,884	258,641	258,641
			211,884.44	258,640.98	258,640.98
USR TR-MT-900 Above ground steel wash rack w/water collection, treatment and storage for re-use (Note: Vendor quote, Riveer, July 2015. Includes wash water containment, collection, treatment and storage system. Total length is 42' x 18' with 6' side walls.)	1.00	EA	211,884	258,641	258,641
			11,265.67	13,751.67	13,751.67
4.05.01.03.12 Decontamination/Wash Station Operation	96.00	MO	1,081,505	1,320,160	1,320,160
			64.44	78.66	78.66
USR TR-LE-100 Decontamination/Wash Station	16,640.00	HR	1,072,285	1,308,906	1,308,906
			32.01	39.08	39.08
USR TR-MT-910 Replacement bag filter for wash station (Note: Vendor quote, Riveer, July 2015.)	288.00	EA	9,220	11,254	11,254
			16,388.86	20,005.39	20,005.39
4.05.9x Street Sweeping	96.00	MO	1,573,330	1,920,517	1,920,517
			189.10	230.83	230.83
USR TR-LE-004 Street sweeper	8,320.00	HR	1,573,330	1,920,517	1,920,517
8.01.03.11 Traffic Control	1.00	LS	8,326,143	10,163,473	10,163,473
8.01.03.11 Preconstruction Video Survey	1.00	LS	3,603	4,398	4,398
			158.48	193.45	193.45
USR TR-LE-003 Preconstruction video survey of roadway	16.00	HR	2,536	3,095	3,095
USR TR-MT-800 Preconstruction video survey of roadway (Note: Per estimator)	1.00	LS	1,067	1,303	1,303
8.01.03.11 Traffic Control Signs and Barricades	1.00	LS	74,196	90,569	90,569
(Note: Includes setup signs and maintenance during construction.)					
			92.07	112.38	112.38
USR TR-LE-002 Setup signs and barricades (Note: Productivity per estimator)	16.00	EA	1,473	1,798	1,798
			184.14	224.77	224.77
USR TR-LE-001 Traffic control sign and barricade maintenance (Note: Assumes 4 hour per month)	384.00	HR	70,708	86,311	86,311
			91.24	111.37	111.37
USR TR-MT-005 Be Prepared To Stop, CW3-4, 36" x 36" (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	8.00	EA	730	891	891
			91.24	111.37	111.37
USR TR-MT-006 Flag Man Sign, CW20-7, 36" x 36" (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	8.00	EA	730	891	891

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR TR-MT-009 Economy stand for aluminum diamond-shaped signs, 48" to 60" signs (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	16.00	EA	34.68 555	42.33 677	42.33 677
8.01.03.11 Traffic Control	96.00	MO	8,248,344	10,068,507	10,068,507
USR TR-LE-006 Traffic Control Flagmen	128,000.00	HR	64.44 8,248,344	78.66 10,068,507	78.66 10,068,507
Multiple ECES Codes Excavation and Hauling	190,000.00	BCY	45,951,164	56,091,207	56,091,207
Multiple ECES Codes Low-Hazard and Moderate-Hazard Soil	78,000.00	BCY	8,654,579	10,564,385	10,564,385
4.05.9x Construction Survey and Staking	14.80	ACR	11,223	13,699	13,699
0.2 SUR-02 Surveying Crew	14.80	ACR	758.28 11,223	925.61 13,699	925.61 13,699
4.05.05.01 Excavation	78,000.00	BCY	523,546	639,077	639,077
USR EW-EX-A5-100 Excavation - Non-Hazardous/Non-Radioactive Waste	78,000.00	BCY	6.71 523,546	8.19 639,077	8.19 639,077
4.32.11.05 Hauling	117,000.00	TON	7,755,505	9,466,913	9,466,913
USR EW-HL-A5-100 Hauling - Non-Hazardous/Non-Radioactive Waste	117,000.00	TON	66.29 7,755,505	80.91 9,466,913	80.91 9,466,913
4.07.11 Confirmation Sampling	644.00	EA	20,699	25,267	25,267
USR EW-CS-001 Confirmation sampling	644.00	EA	32.14 20,699	39.23 25,267	39.23 25,267
4.08.04 Sample Analysis	644.00	EA	343,606	419,430	419,430
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	644.00	EA	533.55 343,606	651.29 419,430	651.29 419,430
Multiple ECES Codes Hazardous Soil	2,000.00	BCY	1,332,221	1,626,203	1,626,203
4.05.9x Construction Surveying and Staking	0.40	ACR	303	370	370
USR SUR-02 Surveying Crew	0.40	ACR	758.28 303	925.61 370	925.61 370
			38.37	46.84	46.84

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.05.05.01 Excavation	2,000.00	BCY	76,739	93,673	93,673
USR EW-EX-A5-200 Excavation - RCRA Hazardous Waste	2,000.00	BCY	76,739	93,673	93,673
			38.37	46.84	46.84
			415.00	506.58	506.58
4.32.11.05 Hauling	3,000.00	TON	1,244,997	1,519,730	1,519,730
USR DS-900 End-Dump-Sized Liner Bag (Note: Vendor quote, US Ecology, July 2015. Required for a "sealed" container.)	130.00	EA	91,614	111,830	111,830
			704.72	860.23	860.23
USR EW-HL-A5-200 Hauling - RCRA Hazardous Waste	3,000.00	TON	1,153,383	1,407,900	1,407,900
			384.46	469.30	469.30
			32.14	39.23	39.23
4.07.11 Confirmation Sampling	18.00	EA	579	706	706
USR EW-CS-001 Confirmation sampling	18.00	EA	579	706	706
			32.14	39.23	39.23
			533.55	651.29	651.29
4.08.04 Sample Analysis	18.00	EA	9,604	11,723	11,723
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	18.00	EA	9,604	11,723	11,723
			533.55	651.29	651.29
			326.95	399.10	399.10
Multiple ECES Codes LLW/MLLW Soil	110,000.00	BCY	35,964,363	43,900,619	43,900,619
			758.28	925.61	925.61
4.05.9x Construction Surveying and Staking	20.80	ACR	15,772	19,253	19,253
USR SUR-02 Surveying Crew	20.80	ACR	15,772	19,253	19,253
			758.28	925.61	925.61
			14.05	17.15	17.15
4.05.05.01 Excavation	110,000.00	BCY	1,545,258	1,886,250	1,886,250
USR EW-EX-A5-400 Excavation - Low-level Radioactive Waste (LLW)	110,000.00	BCY	1,545,258	1,886,250	1,886,250
			14.05	17.15	17.15
			205.40	250.72	250.72
4.32.11.05 Hauling	165,000.00	TON	33,890,251	41,368,813	41,368,813
USR DS-900 End-Dump-Sized Liner Bag (Note: Vendor quote, US Ecology, July 2015. Required for a "sealed" container.)	7,174.00	EA	5,055,680	6,171,317	6,171,317
			704.72	860.23	860.23
			174.75	213.32	213.32
USR EW-HL-A5-400 Hauling - Low-level Radioactive Waste (LLW)	165,000.00	TON	28,834,571	35,197,495	35,197,495
			32.14	39.23	39.23
4.07.11 Confirmation Sampling	907.00	EA	29,152	35,585	35,585
USR EW-CS-001 Confirmation sampling	907.00	EA	29,152	35,585	35,585
			32.14	39.23	39.23

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.08.04 Sample Analysis	907.00	EA	483,930	590,719	590,719
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	907.00	EA	483,930	590,719	590,719
4.33.08.05 Disposal	285,000.00	TON	19,063,742	21,017,775	21,017,775
4.33.08.05 Low-Hazard and Moderate-Hazard Soil	117,000.00	TON	5,618,282	6,194,155	6,194,155
USR DS-100 Non-Hazardous/Non-Radioactive Waste Disposal (Note: Assume disposal at an applicable facility within 135 mile of the site. Assumed vendor quote from Waste Management Facilities, July 2015.)	117,000.00	TON	5,618,282	6,194,155	6,194,155
4.33.08.05 Hazardous Soil	3,000.00	TON	240,098	264,707	264,707
USR DS-200 RCRA Hazardous Waste Disposal (Note: Assumes disposal outside of California. Cost based on vendor quote from US Ecology, July 2015.)	3,000.00	TON	240,098	264,707	264,707
4.33.08.05 LLW/MLLW Soil	165,000.00	TON	13,205,363	14,558,912	14,558,912
USR DS-400 Low-level Radioactive Waste (LLW) Disposal (Note: Assumes disposal outside of California. Cost based on vendor quote from US Ecology, July 2015.)	165,000.00	TON	13,205,363	14,558,912	14,558,912
4.05.05 Backfill	142,500.00	ECY	11,664,112	14,238,032	14,238,032
4.05.05.06 Backfill from Offsite Sources	142,500.00	ECY	11,664,112	14,238,032	14,238,032
4.32.11.05 Import Fill Material	171,000.00	LCY	10,498,955	12,815,759	12,815,759
USR EW-HL-010 Haul Imported Soil	171,000.00	LCY	4,260,165	5,200,256	5,200,256
USR EW-MT-200 Borrow, common earth (Note: Based on average of the following RS Means CostWorks 2015 numbers: 31232 315 4000, 31232 315 7000, 31232 316 0035, and 31232 316 0020. \$/BCY cost converted to \$/LCY using 1.2 LCY per BCY)	171,000.00	LCY	4,778,997	5,833,578	5,833,578
USR EW-MT-210 Organic Amendment	171,000.00	LCY	1,459,793	1,781,925	1,781,925
4.05.05 Fill	142,500.00	ECY	1,137,970	1,389,085	1,389,085
USR EW-BM-LE-200 Fill - Spreading	171,000.00	LCY	641,224	782,723	782,723

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR SD-SP-LE-004B Site Grading - Rough	36.00	ACR	662.64 23,855	808.86 29,119	808.86 29,119
USR EW-BM-LE-202 Fill - Compaction	142,500.00	ECY	2.98 425,181	3.64 519,005	3.64 519,005
USR SD-SP-LE-005 Site Grading - Finish	36.00	ACR	1,325.27 47,710	1,617.72 58,238	1,617.72 58,238
- Quality Control and Testing	1.00	LS	27,188	33,187	33,187
USR SL-TEST-100 Backfill chemical testing (Note: Per estimator)	19.00	EA	1,067.10 20,275	1,302.58 24,749	1,302.58 24,749
USR SL-TEST-01 Soil testing, soil density, nuclear method, ASTM D2922 (Note: Cost from RS Means CostWorks 2015 item number 01 45 2350 4735.)	158.00	EA	43.75 6,913	53.41 8,438	53.41 8,438
4.05.02 Restoration	1.00	LS	542,372	662,057	662,057
4.05.02.05 Seeding	36.00	ACR	24,941	30,445	30,445
USR SR-SD-LE-002 Seeding	36.00	ACR	692.82 6,502	845.70 7,937	845.70 7,937
USR SR-SD-MT-011 Seeding, native grass and wildflower seed mix. (Note: Vendor quote, outsidepride.com, July 2015. Based 4 lbs per acre of native seed mix and 16 pounds per acre of native wildflower seed mix.)	36.00	ACR	180.61 18,439	220.46 22,509	220.46 22,509
4.05.08 Allowance for Street/Pavement Repair (Note: Quantity Assumed Per Estimator)	1.00	LS	517,430	631,612	631,612
4.05.08 Woolsey Canyon Road	2.50	MI	517,430	631,612	631,612
USR SR-PV-300 Hauling for asphalt cold milling and paving	4,015.00	LCY	206,972.11 39,312	252,644.65 47,986	252,644.65 47,986
USR SR-PV-410 Cold milling asphalt paving, profile grooving, asphalt pavement, 2" deep, load and sweep (Note: Based on English Cost Book number 320116715350.)	36,130.00	SY	9.79 37,585	11.95 45,879	11.95 45,879
USR SR-PV-510 Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick, no hauling included (Note: Based on English Cost Book number 321216130380.)	36,130.00	SY	1.04 59,777	1.27 72,968	1.27 72,968
USR SR-PV-MT-510 Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick (Note: Material cost from RS Means CostWorks 2015 number 32 12 1613 0380.)	36,130.00	SY	1.65 380,756	2.02 464,778	2.02 464,778

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
CLEANUP TO REVISED AOC LOOK-UP TABLE VALUES ALTERNATIVE	1.00	LS	559,842.87	626,187.53	385,750.25	385,750.25
4.9x General Conditions	1.00	LS	130,860.03	118,576.03	48.03	48.03
Multiple ECES Codes Workplans and Submittals	1.00	LS	4,244.00	0.00	0.00	0.00
(Note: Includes project schedule, submittals, and work plans.)						
4.02.01.01 Project Meetings and Updating Project Schedule	96.00	MO	1,768.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	520.00	HR	520.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	416.00	HR	416.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	832.00	HR	832.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
4.03.01 Work Plans	1.00	LS	1,600.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	80.00	HR	80.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	600.00	HR	600.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	120.00	HR	120.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGQC Engineers, Quality Control	120.00	HR	120.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FD-SAENG Safety Engineers	240.00	HR	240.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
HTW HO-STFSCI Staff Scientist (HTW Projects)	440.00	HR	440.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
4.04.21 Submittals	1.00	LS	384.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	24.00	HR	24.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	160.00	HR	160.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	40.00	HR	40.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGQC Engineers, Quality Control	40.00	HR	40.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FD-SAENG Safety Engineers	40.00	HR	40.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
HTW HO-STFSCI Staff Scientist (HTW Projects)	80.00	HR	80.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
4.04.19 Post-RA Completion Report	1.00	LS	492.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	56.00	HR	56.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	300.00	HR	300.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	80.00	HR	80.00	0.00	0.00	0.00

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGQC Engineers, Quality Control	24.00	HR	24.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FD-SAENG Safety Engineers	8.00	HR	8.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
HTW HO-STFSCI Staff Scientist (HTW Projects)	24.00	HR	24.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
8.01.04 Home Office Personnel	96.00	MO	9,984.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	6,656.00	HR	6,656.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
HTW HO-SECADM Secretarial/ Administrative (HTW Projects)	3,328.00	HR	3,328.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
4.02.01.01.15 Job Site Personnel	96.00	MO	116,480.00	118,496.00	0.00	0.00
FOP FA-AGENS General Superintendents (P.M.)	16,640.00	HR	16,640.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGPE Engineers, Project	16,640.00	HR	16,640.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGQC Engineers, Quality Control	16,640.00	HR	16,640.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FD-SAENG Safety Engineers	16,640.00	HR	16,640.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	6,656.00	HR	6,656.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
HTW HO-STFSCI Staff Scientist (HTW Projects)	9,984.00	HR	9,984.00	0.00	0.00	0.00
(Note: Average of biologist, archeologist, and arborist wage rate. Time based on estimated total for all three disciplines. Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-FLABT Field Constr. QC./Lab Technician	16,640.00	HR	16,640.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	16,640.00	HR	16,640.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
USR U-MT-TF-300 Cell phone and air card	864.00	MO	0.00	0.00	0.00	0.00
(Note: Per estimator. Based on business plan rate for monthly talk and text plan, 4 GB data bundle, and 5 GB air card.)						
EP T50XX004 TRUCK, HIGHWAY, CONVENTIONAL, 1/2 TON PICKUP, 4X4	118,496.00	HR	0.00	118,496.00	0.00	0.00
4.05.01.03 Temporary Facilities	96.00	MO	152.03	80.03	48.03	48.03
4.05.01.03.25 Project Sign	2.00	EA	16.00	16.00	8.00	8.00
USR SI-LE-001 Project sign installation	2.00	EA	16.00	16.00	8.00	8.00
(Note: Productivity per estimator.)						
USR SI-MT-001 Project sign, high intensity reflectorized	2.00	EA	0.00	0.00	0.00	0.00
(Note: Material cost from RS Means CostWorks 2015 number 01 58 1350 0020 for a 4' x 5' project sign and from www.lowes.com for a \$5.97 for 4"x4"x8' pressure treated post. Material cost includes sign and 2 posts.)						
4.05.01.03.21 Staging Area and Security Fencing	1.00	LS	16.03	16.03	16.03	16.03
(Note: Assumes construction of staging area.)						
USR EW-MT-005 3/8" max flex aggregate	1,360.00	TON	0.00	0.00	0.00	0.00
(Note: **Vendor quote, Select Sand & Gravel, Mar/2015** Includes delivery.)						
USR TF-LE-002 Spread gravel with dozer	862.00	LCY	8.62	8.62	8.62	8.62
USR TF-LE-003 Compact gravel material with roller	741.00	ECY	7.41	7.41	7.41	7.41

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR FN-001 Temporary Fencing, chain link, 6' high, 11 ga (Note: Vendor quote from National Construction Rentals, May 2013. Cost includes installation and removal. Length of fence = Chain Link fence (560 lf) + Gate (2 x 20 lf). Escalated to Mar 2015.)	760.00	LF	0.00	0.00	0.00	0.00
USR FN-002 Temporary Fencing - Gate (Note: Vendor quote from National Construction Rentals, May 2013. Cost includes installation and removal. Escalated to Mar 2015.)	2.00	EA	0.00	0.00	0.00	0.00
4.05.01.03 Temporary Facilities	96.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-001 Office Trailer, furnished, rent per month, 50' x 12', excl. hookups (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1320 0550.)	192.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-002 Storage Boxes, rent per month, 40' x 8' (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1320 1350.)	96.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-007 Rent toilet portable chemical (Note: Rental cost per RS Means CostWorks 2015 item number 01 54 3340 6410.)	384.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-003 Field Office Expense, office equipment rental, average (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0100.)	96.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-004 Field Office Expense, office supplies, average (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0120.)	96.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-005 Field Office Expense, telephone bill; avg. bill/month, incl. long distance (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0140.)	192.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-006 Field Office Expense, field office lights & HVAC (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1340 0160.)	192.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-008 Office Trailer, delivery or pickup (Note: Cost per RS Means CostWorks 2015 number 01 52 1320 0890. Assumes 30 mile delivery or pickup distance, one-way, \$11.30 per mile per RS Means CostWorks 2015 number 01 52 1320 0800. Includes mob/demob for 2 office trailer and 1 storage box.)	2.00	EA	0.00	0.00	0.00	0.00
USR TF-MT-009 Secondary containment for 550 gallon gasoline or diesel tanks. (Note: Vendor quote from The Tank Depot, July 2015.)	1.00	EA	0.00	0.00	0.00	0.00
USR TF-MT-010 Secondary containment for 1,000 gallon gasoline or diesel tanks. (Note: Vendor quote from The Tank Depot, July 2015.)	1.00	EA	0.00	0.00	0.00	0.00
USR U-MT-TF-400 Water cooler rental (Note: Vendor quote from Culligan Water, Savannah, Georgia, October 2012. \$40 per year plus \$25 deposit.)	192.00	MO	0.00	0.00	0.00	0.00
USR U-MT-TF-401 Water cooler water - 5 gallon bottle (Note: Vendor quote from Culligan Water, Savannah, Georgia, October 2012. \$5 one time delivery fee.)	384.00	EA	0.00	0.00	0.00	0.00
USR U-MT-TF-450 Dumpster - delivery or pickup (Note: Vendor quote from ABC Waste, October 2012.)	1.00	EA	0.00	0.00	0.00	0.00
USR U-MT-TF-451 Dumpster service, 4 CY (Note: Vendor quote from ABC Waste, October 2012. Includes 6% surcharge for fuel.)	96.00	MO	0.00	0.00	0.00	0.00
USR U-MT-TF-100 Temporary electrical hookup (Note: Per estimator.)	2.00	EA	0.00	0.00	0.00	0.00
USR U-MT-TF-101 Temporary telephone hookup (Note: Per estimator)	2.00	EA	0.00	0.00	0.00	0.00
4.05.36.01 Removal of Temporary Construction Facilities	1.00	LS	120.00	48.00	24.00	24.00
USR U-MT-TF-201 Office trailer teardown and removal (Note: Per estimator)	1.00	LS	0.00	0.00	0.00	0.00
USR USR-LE-EW-SR-001 Remove and restore temporary staging area	24.00	HR	120.00	48.00	24.00	24.00
4.05.00 Mobilization and Demobilization	1.00	LS	722.00	736.00	416.00	416.00
4.05.01.01 Site Mobilization	1.00	LS	317.00	346.00	196.00	196.00
USR USR-MB-LE-001 Mobilization or demobilization of heavy equipment	5.00	EA	75.00	100.00	50.00	50.00
USR USR-MB-LE-002 Mobilization or demobilization of medium equipment	10.00	EA	150.00	200.00	100.00	100.00

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR USR-MB-LE-003 Mobilization or demobilization of self-propelled equipment	3.00	EA	60.00	30.00	30.00	30.00
USR USR-MB-LE-004 Oversize/overwidth load hauling permits (Note: Per estimator)	8.00	EA	0.00	0.00	0.00	0.00
USR U-MB-LE-100 Pre-construction video survey of road (Note: Assumes haul roads would be video surveyed to document road conditions prior to job start. Includes allowance for video camera and placing video on DVDs with multiple copies.)	1.00	LS	32.00	16.00	16.00	16.00
4.05.36 Site Demobilization	1.00	LS	405.00	390.00	220.00	220.00
4.05.36.04 Equipment Demobilization	1.00	LS	285.00	330.00	180.00	180.00
USR USR-MB-LE-001 Mobilization or demobilization of heavy equipment	5.00	EA	75.00	100.00	50.00	50.00
USR USR-MB-LE-002 Mobilization or demobilization of medium equipment	10.00	EA	150.00	200.00	100.00	100.00
USR USR-MB-LE-003 Mobilization or demobilization of self-propelled equipment	3.00	EA	60.00	30.00	30.00	30.00
USR USR-MB-LE-004 Oversize/overwidth load hauling permits (Note: Per estimator)	8.00	EA	0.00	0.00	0.00	0.00
4.05.36.01.9x Site Cleanup	1.00	LS	120.00	60.00	40.00	40.00
(Note: Includes general site cleanup and removal of erosion/sediment control after the completion of construction. This does not include the removal of the construction staging pad as it will be left in place for future work.)						
USR MDM-06 Site Cleanup (Note: Assume 5 days)	5.00	DAY	120.00	60.00	40.00	40.00
4.9x Best Management Practices	1.00	LS	177,690.22	44,636.76	171,594.76	171,594.76
8.01.01 SWPPP Implementation and Maintenance	1.00	LS	952.00	0.00	0.00	0.00
8.01.01.03 SWPPP Preparation	1.00	LS	184.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	8.00	HR	8.00	0.00	0.00	0.00
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	120.00	HR	120.00	0.00	0.00	0.00
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	16.00	HR	16.00	0.00	0.00	0.00
FOP FC-FLDRT Field Draftsmen (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	40.00	HR	40.00	0.00	0.00	0.00
8.01.01.9x SWPPP Oversight and Maintenance	96.00	MO	768.00	0.00	0.00	0.00
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	768.00	HR	768.00	0.00	0.00	0.00
4.05.02 Temporary Erosion and Sediment Control	1.00	LS	4,867.47	3,882.51	2,200.51	2,200.51
4.05.02.04 Silt Fence	55,760.00	LF	1,408.67	469.56	469.56	469.56
USR SP-ESC-MT-001 Erosion control, silt fence, polypropylene, ideal conditions, 3' high (Note: Material cost from RS Means CostWorks number 31 25 1416 1100.)	55,760.00	LF	0.00	0.00	0.00	0.00
USR SP-ESC-LE-001 Silt Fence Installation (Note: Productivity from Means CostWorks 2015 number 31 25 1416 1100.)	55,760.00	LF	1,408.67	469.56	469.56	469.56
4.05.02.04 Wattles	875.00	LF	52.50	17.50	17.50	17.50
USR SP-ESC-LE-100 Wattle Installation	875.00	LF	52.50	17.50	17.50	17.50
USR SP-ESC-MT-100 Wattle (Note: Vendor quote, Impact Absorbents, July 2015. Cost based on 1 pallet (300 feet of 9" x 25' segments). Includes wood stake every 4'.)	875.00	LF	0.00	0.00	0.00	0.00
4.05.02.04 Sediment Trap	4.00	EA	37.33	18.67	18.67	18.67
USR EW-EX-LE-002 Excavating sediment trap	280.00	BCY	37.33	18.67	18.67	18.67
4.05.02.04 Rock Filter Dam	4.00	EA	20.36	10.18	10.18	10.18
USR EW-RP-LE-004 Rock filter dam placement	280.00	LCY	20.36	10.18	10.18	10.18

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR EW-MT-103 Rock Filter Dam Material (Note: Based on previous work. Includes delivery.)	450.00	TON	0.00	0.00	0.00	0.00
4.05.02.04 Track-Out Prevention	4.00	EA	2.60	2.60	2.60	2.60
USR TF-LE-002 Spread gravel with dozer	140.00	LCY	1.40	1.40	1.40	1.40
USR TF-LE-003 Compact gravel material with roller	120.00	ECY	1.20	1.20	1.20	1.20
USR EW-MT-005 3/8" max flex aggregate (Note: Vendor quote from previous work, March 2015. Includes delivery.)	230.00	TON	0.00	0.00	0.00	0.00
4.05.02.05 Temporary Seeding	36.00	ACR	18.00	36.00	18.00	18.00
(Note: Assumes temporary seasonal seeding for erosion control.)						
USR SR-SD-LE-002B Temporary Seeding	36.00	ACR	18.00	36.00	18.00	18.00
USR SR-SD-MT-010 Temporary seeding (Note: Vendor quote, outsidepride.com, July 2015. Based 4 lbs per acre of native seed mix.)	36.00	ACR	0.00	0.00	0.00	0.00
4.05.02.9x Inspection and Maintenance	96.00	MO	3,328.00	3,328.00	1,664.00	1,664.00
USR SP-ESC-LE-008 Inspection and maintenance of erosion and sediment control measures.	1,664.00	HR	3,328.00	3,328.00	1,664.00	1,664.00
USR SP-ESC-MT-007 Erosion and sediment control maintenance allowance (Note: Per estimator)	416.00	WK	0.00	0.00	0.00	0.00
4.05.9x Existing Tree Protection	35.00	EA	2,094.75	26.25	26.25	26.25
4.05.9x Arborist and Care for Existing Trees	96.00	MO	2,016.00	0.00	0.00	0.00
HTW HO-STFSCI Staff Scientist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	2,016.00	HR	2,016.00	0.00	0.00	0.00
4.05.9x Tree Protection Fencing	35.00	EA	78.75	26.25	26.25	26.25
USR FN-SF-LE-001 Safety fence installation	3,500.00	LF	52.50	17.50	17.50	17.50
USR FN-SF-LE-002 Safety fence removal	3,500.00	LF	26.25	8.75	8.75	8.75
USR FN-SF-MT-001 Orange safety fence (Note: Vendor quote, Grainger, June 2015.)	3,500.00	LF	0.00	0.00	0.00	0.00
USR FN-SF-MT-002 5-foot steel t-post (Note: Vendor quote, Blain's Farm and Fleet, June 2015.)	700.00	EA	0.00	0.00	0.00	0.00
4.16.04 Dust Control	96.00	MO	16,000.00	32,000.00	16,000.00	16,000.00
USR TR-LE-005 Dust control	16,000.00	HR	16,000.00	32,000.00	16,000.00	16,000.00
USR TR-MT-100 Water for Dust Control (Note: Based on current pricing for 16,000 gallons per day (0.049 ac-ft/day or 21.4 CCF/day). Assumes \$1,480 per ac-ft for base fee and \$2,960 per ac-ft for penalty. Unit cost assumes penalty would be incurred for exceeding the district's allotment.)	45,760.00	CCF	0.00	0.00	0.00	0.00
4.07.08.02 Air Monitoring	96.00	MO	0.00	0.00	0.00	0.00
USR SFTY-05 PM10 Dust Monitor (Note: Thermo Scientific ADR-1500. Vendor Quote: Field Environmental, 2014. Monthly Rental)	96.00	MO	0.00	0.00	0.00	0.00
USR AIRWE-M Weather Station, monthly rental - M (Note: Davis Vantage Pro Weather Station. Vendor Quote: Pine Environmental, 2014. Monthly Rental)	96.00	MO	0.00	0.00	0.00	0.00
USR PM-M Air Sample Analysis - Particulate Matter - M (Note: Vendor Quote: Test America, 2013.)	96.00	EA	0.00	0.00	0.00	0.00
4.05.01.03.12 Decontamination/Wash Station	1.00	LS	16,640.00	0.00	16,640.00	16,640.00
4.05.01.03.12 Decontamination/Wash Station Purchase and Setup	1.00	EA	0.00	0.00	0.00	0.00
USR TR-MT-900 Above ground steel wash rack w/water collection, treatment and storage for re-use (Note: Vendor quote, Riveer, July 2015. Includes wash water containment, collection, treatment and storage system. Total length is 42' x 18' with 6' side walls.)	1.00	EA	0.00	0.00	0.00	0.00
4.05.01.03.12 Decontamination/Wash Station Operation	96.00	MO	16,640.00	0.00	16,640.00	16,640.00
USR TR-LE-100 Decontamination/Wash Station	16,640.00	HR	16,640.00	0.00	16,640.00	16,640.00

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR TR-MT-910 Replacement bag filter for wash station (Note: Vendor quote, Riveer, July 2015.)	288.00	EA	0.00	0.00	0.00	0.00
4.05.9x Street Sweeping	96.00	MO	8,320.00	8,320.00	8,320.00	8,320.00
USR TR-LE-004 Street sweeper	8,320.00	HR	8,320.00	8,320.00	8,320.00	8,320.00
8.01.03.11 Traffic Control	1.00	LS	128,816.00	408.00	128,408.00	128,408.00
8.01.03.11 Preconstruction Video Survey	1.00	LS	32.00	16.00	16.00	16.00
USR TR-LE-003 Preconstruction video survey of roadway	16.00	HR	32.00	16.00	16.00	16.00
USR TR-MT-800 Preconstruction video survey of roadway (Note: Per estimator)	1.00	LS	0.00	0.00	0.00	0.00
8.01.03.11 Traffic Control Signs and Barricades	1.00	LS	784.00	392.00	392.00	392.00
(Note: Includes setup signs and maintenance during construction.)						
USR TR-LE-002 Setup signs and barricades (Note: Productivity per estimator)	16.00	EA	16.00	8.00	8.00	8.00
USR TR-LE-001 Traffic control sign and barricade maintenance (Note: Assumes 4 hour per month)	384.00	HR	768.00	384.00	384.00	384.00
USR TR-MT-005 Be Prepared To Stop, CW3-4, 36" x 36" (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	8.00	EA	0.00	0.00	0.00	0.00
USR TR-MT-006 Flag Man Sign, CW20-7, 36" x 36" (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	8.00	EA	0.00	0.00	0.00	0.00
USR TR-MT-009 Economy stand for aluminum diamond-shaped signs, 48" to 60" signs (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	16.00	EA	0.00	0.00	0.00	0.00
8.01.03.11 Traffic Control	96.00	MO	128,000.00	0.00	128,000.00	128,000.00
USR TR-LE-006 Traffic Control Flagmen	128,000.00	HR	128,000.00	0.00	128,000.00	128,000.00
Multiple ECES Codes Excavation and Hauling	190,000.00	BCY	213,789.06	401,571.90	205,227.07	205,227.07
Multiple ECES Codes Low-Hazard and Moderate-Hazard Soil	78,000.00	BCY	44,726.93	82,946.41	42,601.58	42,601.58
4.05.9x Construction Survey and Staking	14.80	ACR	148.00	59.20	59.20	59.20
0.2 SUR-02 Surveying Crew	14.80	ACR	148.00	59.20	59.20	59.20
4.05.05.01 Excavation	78,000.00	BCY	4,073.11	2,036.55	2,036.55	2,036.55
USR EW-EX-A5-100 Excavation - Non-Hazardous/Non-Radioactive Waste	78,000.00	BCY	4,073.11	2,036.55	2,036.55	2,036.55
4.32.11.05 Hauling	117,000.00	TON	40,344.83	80,689.66	40,344.83	40,344.83
USR EW-HL-A5-100 Hauling - Non-Hazardous/Non-Radioactive Waste	117,000.00	TON	40,344.83	80,689.66	40,344.83	40,344.83
4.07.11 Confirmation Sampling	644.00	EA	161.00	161.00	161.00	161.00
USR EW-CS-001 Confirmation sampling	644.00	EA	161.00	161.00	161.00	161.00
4.08.04 Sample Analysis	644.00	EA	0.00	0.00	0.00	0.00
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	644.00	EA	0.00	0.00	0.00	0.00
Multiple ECES Codes Hazardous Soil	2,000.00	BCY	6,605.51	12,304.61	6,304.61	6,304.61
4.05.9x Construction Surveying and Staking	0.40	ACR	4.00	1.60	1.60	1.60
USR SUR-02 Surveying Crew	0.40	ACR	4.00	1.60	1.60	1.60
4.05.05.01 Excavation	2,000.00	BCY	597.01	298.51	298.51	298.51
USR EW-EX-A5-200 Excavation - RCRA Hazardous Waste	2,000.00	BCY	597.01	298.51	298.51	298.51
4.32.11.05 Hauling	3,000.00	TON	6,000.00	12,000.00	6,000.00	6,000.00
USR DS-900 End-Dump-Sized Liner Bag (Note: Vendor quote, US Ecology, July 2015. Required for a "sealed" container.)	130.00	EA	0.00	0.00	0.00	0.00
USR EW-HL-A5-200 Hauling - RCRA Hazardous Waste	3,000.00	TON	6,000.00	12,000.00	6,000.00	6,000.00

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
4.07.11 Confirmation Sampling	18.00	EA	4.50	4.50	4.50	4.50
USR EW-CS-001 Confirmation sampling	18.00	EA	4.50	4.50	4.50	4.50
4.08.04 Sample Analysis	18.00	EA	0.00	0.00	0.00	0.00
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	18.00	EA	0.00	0.00	0.00	0.00
Multiple ECES Codes LLW/MLLW Soil	110,000.00	BCY	162,456.61	306,320.88	156,320.88	156,320.88
4.05.9x Construction Surveying and Staking	20.80	ACR	208.00	83.20	83.20	83.20
USR SUR-02 Surveying Crew	20.80	ACR	208.00	83.20	83.20	83.20
4.05.05.01 Excavation	110,000.00	BCY	12,021.86	6,010.93	6,010.93	6,010.93
USR EW-EX-A5-400 Excavation - Low-level Radioactive Waste (LLW)	110,000.00	BCY	12,021.86	6,010.93	6,010.93	6,010.93
4.32.11.05 Hauling	165,000.00	TON	150,000.00	300,000.00	150,000.00	150,000.00
USR DS-900 End-Dump-Sized Liner Bag (Note: Vendor quote, US Ecology, July 2015. Required for a "sealed" container.)	7,174.00	EA	0.00	0.00	0.00	0.00
USR EW-HL-A5-400 Hauling - Low-level Radioactive Waste (LLW)	165,000.00	TON	150,000.00	300,000.00	150,000.00	150,000.00
4.07.11 Confirmation Sampling	907.00	EA	226.75	226.75	226.75	226.75
USR EW-CS-001 Confirmation sampling	907.00	EA	226.75	226.75	226.75	226.75
4.08.04 Sample Analysis	907.00	EA	0.00	0.00	0.00	0.00
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	907.00	EA	0.00	0.00	0.00	0.00
4.33.08.05 Disposal	285,000.00	TON	0.00	0.00	0.00	0.00
4.33.08.05 Low-Hazard and Moderate-Hazard Soil	117,000.00	TON	0.00	0.00	0.00	0.00
USR DS-100 Non-Hazardous/Non-Radioactive Waste Disposal (Note: Assume disposal at an applicable facility within 135 mile of the site. Assumed vendor quote from Waste Management Facilities, July 2015.)	117,000.00	TON	0.00	0.00	0.00	0.00
4.33.08.05 Hazardous Soil	3,000.00	TON	0.00	0.00	0.00	0.00
USR DS-200 RCRA Hazardous Waste Disposal (Note: Assumes disposal outside of California. Cost based on vendor quote from US Ecology, July 2015.)	3,000.00	TON	0.00	0.00	0.00	0.00
4.33.08.05 LLW/MLLW Soil	165,000.00	TON	0.00	0.00	0.00	0.00
USR DS-400 Low-level Radioactive Waste (LLW) Disposal (Note: Assumes disposal outside of California. Cost based on vendor quote from US Ecology, July 2015.)	165,000.00	TON	0.00	0.00	0.00	0.00
4.05.05 Backfill	142,500.00	ECY	35,717.71	60,038.29	8,250.86	8,250.86
4.05.05.06 Backfill from Offsite Sources	142,500.00	ECY	35,717.71	60,038.29	8,250.86	8,250.86
4.32.11.05 Import Fill Material	171,000.00	LCY	27,142.86	54,285.71	2,714.29	2,714.29
USR EW-HL-010 Haul Imported Soil	171,000.00	LCY	27,142.86	54,285.71	2,714.29	2,714.29
USR EW-MT-200 Borrow, common earth (Note: Based on average of the following RS Means CostWorks 2015 numbers: 31232 315 4000, 31232 315 7000, 31232 316 0035, and 31232 316 0020. \$/BCY cost converted to \$/LCY using 1.2 LCY per BCY)	171,000.00	LCY	0.00	0.00	0.00	0.00
USR EW-MT-210 Organic Amendment	171,000.00	LCY	0.00	0.00	0.00	0.00
4.05.05 Fill	142,500.00	ECY	8,574.86	5,752.57	5,536.57	5,536.57
USR EW-BM-LE-200 Fill - Spreading	171,000.00	LCY	4,071.43	2,714.29	2,714.29	2,714.29
USR SD-SP-LE-004B Site Grading - Rough	36.00	ACR	144.00	108.00	36.00	36.00
USR EW-BM-LE-202 Fill - Compaction	142,500.00	ECY	4,071.43	2,714.29	2,714.29	2,714.29
USR SD-SP-LE-005 Site Grading - Finish	36.00	ACR	288.00	216.00	72.00	72.00
- Quality Control and Testing	1.00	LS	0.00	0.00	0.00	0.00
USR SL-TEST-100 Backfill chemical testing (Note: Per estimator)	19.00	EA	0.00	0.00	0.00	0.00

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR SL-TEST-01 Soil testing, soil density, nuclear method, ASTM D2922 (Note: Cost from RS Means CostWorks 2015 item number 01 45 2350 4735.)	158.00	EA	0.00	0.00	0.00	0.00
4.05.02 Restoration	1.00	LS	1,063.85	628.56	213.53	213.53
4.05.02.05 Seeding	36.00	ACR	57.60	115.20	57.60	57.60
USR SR-SD-LE-002 Seeding	36.00	ACR	57.60	115.20	57.60	57.60
USR SR-SD-MT-011 Seeding, native grass and wildflower seed mix. (Note: Vendor quote, outsidepride.com, July 2015. Based 4 lbs per acre of native seed mix and 16 pounds per acre of native wildflower seed mix.)	36.00	ACR	0.00	0.00	0.00	0.00
4.05.08 Allowance for Street/Pavement Repair (Note: Quantity Assumed Per Estimator)	1.00	LS	1,006.25	513.36	155.93	155.93
4.05.08 Woolsey Canyon Road	2.50	MI	1,006.25	513.36	155.93	155.93
USR SR-PV-300 Hauling for asphalt cold milling and paving	4,015.00	LCY	234.80	234.80	78.27	78.27
USR SR-PV-410 Cold milling asphalt paving, profile grooving, asphalt pavement, 2" deep, load and sweep (Note: Based on English Cost Book number 320116715350.)	36,130.00	SY	224.81	96.35	32.12	32.12
USR SR-PV-510 Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick, no hauling included (Note: Based on English Cost Book number 321216130380.)	36,130.00	SY	546.65	182.22	45.55	45.55
USR SR-PV-MT-510 Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick (Note: Material cost from RS Means CostWorks 2015 number 32 12 1613 0380.)	36,130.00	SY	0.00	0.00	0.00	0.00

**Conservation of Natural Resources Alternative -
Residential Cleanup Scenario**

Cost Breakout Backup
Conservation of Natural Resources Alternative – Residential Cleanup Scenario

Description	Quantity	UOM	CostToPrime (\$)	ContractCost (\$)	ProjectCost (\$)	Operating Cost (\$)			Number of years: 2		
						Months	Monthly	Annual	\$ per Yr	UOM	Unit Cost
Conservation of Natural Resources Alternative											
4.9x General Conditions	1	LS	3,339,043	4,075,869	4,075,869	-	-	-	-	-	-
Multiple ECES Codes Workplans and Submittals	1	LS	208,655	254,698	254,698	-	-	-	-	-	-
4.02.01.01 Project Meetings and Updating Project Schedule	24	MO	29,439	35,935	35,935	12	1,497.29	17,967.50	-	-	-
4.03.01 Work Plans	1	LS	113,686	138,773	138,773	-	-	-	-	-	-
4.04.21 Submittals	1	LS	27,936	34,100	34,100	-	-	-	-	-	-
4.04.19 Post-RA Completion Report	1	LS	37,594	45,890	45,890	-	-	-	-	-	-
8.01.04 Home Office Personnel	24	MO	182,520	222,797	222,797	12	9,283.21	111,398.50	-	-	-
4.02.01.01.15 Job Site Personnel	24	MO	2,816,585	3,438,120	3,438,120	12	143,255.00	1,719,060.00	-	-	-
4.05.01.03 Temporary Facilities	24	MO	131,293	160,253	160,253	12	6,677.21	80,126.50	-	-	-
4.05.01.03.25 Project Sign	2	EA	2,926	3,571	3,571	-	-	-	-	-	-
4.05.01.03.21 Staging Area and Security Fencing	1	LS	31,644	38,627	38,627	-	-	-	-	-	-
4.05.01.03 Temporary Facilities	24	MO	83,675	102,140	102,140	12	4,255.83	51,070.00	-	-	-
4.05.36.01 Removal of Temporary Construction Facilities	1	LS	13,039	15,916	15,916	-	-	-	-	-	-
4.05.00 Mobilization and Demobilization	1	LS	110,272	134,606	134,606	-	-	-	-	-	-
4.05.01.01 Site Mobilization	1	LS	52,442	64,015	64,015	-	-	-	-	-	-
4.05.36 Site Demobilization	1	LS	57,830	70,591	70,591	-	-	-	-	-	-
4.05.36.04 Equipment Demobilization	1	LS	48,377	59,052	59,052	-	-	-	-	-	-
4.05.36.01.9x Site Cleanup	1	LS	9,453	11,539	11,539	-	-	-	-	-	-
4.9x Best Management Practices	1	LS	3,836,552	4,683,164	4,683,164	-	-	-	-	-	-
8.01.01 SWPPP Implementation and Maintenance	1	LS	26,797	32,710	32,710	-	-	-	-	-	-
8.01.01.03 SWPPP Preparation	1	LS	12,292	15,004	15,004	-	-	-	-	-	-
8.01.01.9x SWPPP Oversight and Maintenance	24	MO	14,505	17,706	17,706	12	737.75	8,853.00	-	-	-
4.05.02 Temporary Erosion and Sediment Control	1	LS	159,753	195,006	195,006	-	-	-	-	-	-
4.05.02.04 Silt Fence	18200	LF	42,701	52,124	52,124	-	-	-	-	-	-
4.05.02.04 Wattles	875	LF	5,480	6,689	6,689	-	-	-	-	-	-
4.05.02.04 Sediment Trap	4	EA	4,799	5,858	5,858	-	-	-	-	-	-
4.05.02.04 Rock Filter Dam	4	EA	11,962	14,602	14,602	-	-	-	-	-	-
4.05.02.04 Track-Out Prevention	4	EA	4,786	5,842	5,842	-	-	-	-	-	-
4.05.02.05 Temporary Seeding	10	ACR	2,259	2,758	2,758	-	-	-	5	ACR	275.8
4.05.02.9x Inspection and Maintenance	24	MO	87,766	107,133	107,133	12	4,463.88	53,566.50	-	-	-
4.05.9x Existing Tree Protection	35	EA	44,534	54,361	54,361	-	-	-	-	-	-
4.05.9x Arborist and Care for Existing Trees	24	MO	29,243	35,696	35,696	12	1,487.33	17,848.00	-	-	-
4.05.9x Tree Protection Fencing	35	EA	15,291	18,665	18,665	-	-	-	-	-	-
4.16.04 Dust Control	24	MO	591,841	722,442	722,442	12	30,101.75	361,221.00	-	-	-
4.07.08.02 Air Monitoring	24	MO	51,181	62,475	62,475	12	2,603.13	31,237.50	-	-	-
4.05.01.03.12 Decontamination/Wash Station	1	LS	482,261	588,681	588,681	-	-	-	-	-	-
4.05.01.03.12 Decontamination/Wash Station Purchase and Setup	1	EA	211,884	258,641	258,641	-	-	-	-	-	-
4.05.01.03.12 Decontamination/Wash Station Operation	24	MO	270,376	330,040	330,040	12	13,751.67	165,020.00	-	-	-
4.05.9x Street Sweeping	24	MO	393,333	480,129	480,129	12	20,005.38	240,064.50	-	-	-
8.01.03.11 Traffic Control	1	LS	2,086,854	2,547,360	2,547,360	-	-	-	-	-	-
8.01.03.11 Preconstruction Video Survey	1	LS	3,603	4,398	4,398	-	-	-	-	-	-
8.01.03.11 Traffic Control Signs and Barricades	1	LS	21,165	25,835	25,835	-	-	-	-	-	-
8.01.03.11 Traffic Control	24	MO	2,062,086	2,517,127	2,517,127	12	104,880.29	1,258,563.50	-	-	-
Multiple ECES Codes Excavation and Hauling	52000	BCY	6,971,043	8,509,344	8,509,344	-	-	-	26000	BCY	163.64
Multiple ECES Codes Low-Hazard and Moderate-Hazard Soil	49000	BCY	5,318,380	6,491,987	6,491,987	-	-	-	24500	BCY	132.49
4.05.9x Construction Survey and Staking	9	ACR	7,128	8,701	8,701	-	-	-	4.7	ACR	925.64
4.05.05.01 Excavation	49000	BCY	328,895	401,472	401,472	-	-	-	24500	BCY	8.19
4.32.11.05 Hauling	73500	TON	4,872,048	5,947,163	5,947,163	-	-	-	36750	TON	80.91
4.07.11 Confirmation Sampling	195	EA	6,268	7,651	7,651	-	-	-	98	EA	39.24
4.08.04 Sample Analysis	195	EA	104,042	127,001	127,001	-	-	-	98	EA	651.29
Multiple ECES Codes Hazardous Soil	2000	BCY	1,327,130	1,619,988	1,619,988	-	-	-	1000	BCY	809.99
4.05.9x Construction Surveying and Staking	0.4	ACR	303	370	370	-	-	-	0.2	ACR	925
4.05.05.01 Excavation	2000	BCY	76,739	93,673	93,673	-	-	-	1000	BCY	46.84
4.32.11.05 Hauling	3000	TON	1,244,997	1,519,730	1,519,730	-	-	-	1500	TON	506.58
4.07.11 Confirmation Sampling	9	EA	289	353	353	-	-	-	5	EA	39.22
4.08.04 Sample Analysis	9	EA	4,802	5,862	5,862	-	-	-	5	EA	651.33
Multiple ECES Codes LLW/MLLW Soil	1000	BCY	325,533	397,368	397,368	-	-	-	500	BCY	397.37
4.05.9x Construction Surveying and Staking	0	ACR	152	185	185	-	-	-	0.1	ACR	925
4.05.05.01 Excavation	1000	BCY	14,048	17,148	17,148	-	-	-	500	BCY	17.15
4.32.11.05 Hauling	1500	TON	307,939	375,892	375,892	-	-	-	750	TON	250.59
4.07.11 Confirmation Sampling	6	EA	193	235	235	-	-	-	3	EA	39.17
4.08.04 Sample Analysis	6	EA	3,201	3,908	3,908	-	-	-	3	EA	651.33
4.33.08.05 Disposal	78000	TON	3,889,580	4,288,261	4,288,261	-	-	-	39000	TON	54.98
4.33.08.05 Low-Hazard and Moderate-Hazard Soil	73500	TON	3,529,433	3,891,200	3,891,200	-	-	-	36750	TON	52.94
4.33.08.05 Hazardous Soil	3000	TON	240,098	264,707	264,707	-	-	-	1500	TON	88.24
4.33.08.05 LLW/MLLW Soil	1500	TON	120,049	132,354	132,354	-	-	-	750	TON	88.24
4.05.05 Backfill	39000	ECY	3,194,530	3,899,467	3,899,467	-	-	-	19500	ECY	99.99
4.05.05.06 Backfill from Offsite Sources	39000	ECY	3,194,530	3,899,467	3,899,467	-	-	-	19500	ECY	99.99
4.32.11.05 Import Fill Material	46800	LCY	2,873,398	3,507,471	3,507,471	-	-	-	23400	LCY	74.95
4.05.05 Fill	39000	ECY	311,737	380,528	380,528	-	-	-	19500	ECY	9.76
- Quality Control and Testing	1	LS	9,395	11,468	11,468	-	-	-	-	-	-
4.05.02 Restoration	1	LS	524,358	640,069	640,069	-	-	-	-	-	-
4.05.02.05 Seeding	10	ACR	8,928	8,457	8,457	-	-	-	5	ACR	845.7
4.05.08 Allowance for Street/Pavement Repair	1	LS	517,430	631,612	631,612	-	-	-	-	-	-
4.05.08 Woolsey Canyon Road	2.5	MI	517,430	631,612	631,612	-	-	-	-	MI	252644.8

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
CONSERVATION OF NATURAL RESOURCES ALTERNATIVE – RESIDENTIAL CLEANUP SCENARIO					
4.9x General Conditions	1.00	LS	3,339,043	4,075,869	4,075,869
Multiple ECES Codes Workplans and Submittals	1.00	LS	208,655	254,698	254,698
(Note: Includes project schedule, submittals, and work plans.)					
4.02.01.01 Project Meetings and Updating Project Schedule	24.00	MO	29,439	35,935	35,935
FOP FA-PROJM Project Managers	130.00	HR	13,327	16,268	16,268
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FC-ENGCI Engineers, Civil	104.00	HR	8,643	10,550	10,550
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	208.00	HR	7,469	9,117	9,117
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
4.03.01 Work Plans	1.00	LS	113,686	138,773	138,773
FOP FA-PROJM Project Managers	80.00	HR	8,201	10,011	10,011
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FC-ENGCI Engineers, Civil	600.00	HR	49,862	60,864	60,864
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	120.00	HR	4,309	5,260	5,260
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FC-ENGQC Engineers, Quality Control	120.00	HR	10,908	13,315	13,315
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FD-SAENG Safety Engineers	240.00	HR	15,834	19,328	19,328
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
HTW HO-STFSCI Staff Scientist (HTW Projects)	440.00	HR	24,572	29,995	29,995
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
4.04.21 Submittals	1.00	LS	27,936	34,100	34,100
FOP FA-PROJM Project Managers	24.00	HR	2,460	3,003	3,003
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
			83.10	101.44	101.44

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	160.00	HR	13,296	16,231	16,231
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	40.00	HR	35.91 1,436	43.83 1,753	43.83 1,753
FOP FC-ENGQC Engineers, Quality Control (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	40.00	HR	90.90 3,636	110.96 4,438	110.96 4,438
FOP FD-SAENG Safety Engineers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	40.00	HR	65.97 2,639	80.53 3,221	80.53 3,221
HTW HO-STFSCI Staff Scientist (HTW Projects) (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	80.00	HR	55.85 4,468	68.17 5,454	68.17 5,454
4.04.19 Post-RA Completion Report	1.00	LS	37,594	45,890	45,890
FOP FA-PROJM Project Managers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	56.00	HR	102.52 5,741	125.14 7,008	125.14 7,008
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	300.00	HR	83.10 24,931	101.44 30,432	101.44 30,432
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	80.00	HR	35.91 2,873	43.83 3,507	43.83 3,507
FOP FC-ENGQC Engineers, Quality Control (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	24.00	HR	90.90 2,182	110.96 2,663	110.96 2,663
FOP FD-SAENG Safety Engineers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	8.00	HR	65.97 528	80.53 644	80.53 644
HTW HO-STFSCI Staff Scientist (HTW Projects) (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	24.00	HR	55.85 1,340	68.17 1,636	68.17 1,636
8.01.04 Home Office Personnel	24.00	MO	7,605.02 182,520	9,283.22 222,797	9,283.22 222,797
FOP FA-PROJM Project Managers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	1,664.00	HR	93.20 155,079	113.76 189,300	113.76 189,300
HTW HO-SECADM Secretarial/ Administrative (HTW Projects) (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	832.00	HR	32.98 27,442	40.26 33,497	40.26 33,497
			117,357.69	143,255.02	143,255.02

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.02.01.01.15 Job Site Personnel	24.00	MO	2,816,585	3,438,120	3,438,120
FOP FA-AGENS General Superintendents (P.M.) (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	4,160.00	HR	89.85 373,786	109.68 456,270	109.68 456,270
FOP FC-ENGPE Engineers, Project (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	4,160.00	HR	91.96 382,540	112.25 466,956	112.25 466,956
FOP FC-ENGQC Engineers, Quality Control (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	4,160.00	HR	82.64 343,773	100.87 419,633	100.87 419,633
FOP FD-SAENG Safety Engineers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	4,160.00	HR	59.98 249,502	73.21 304,559	73.21 304,559
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	1,664.00	HR	75.55 125,712	92.22 153,452	92.22 153,452
HTW HO-STFSCI Staff Scientist (HTW Projects) (Note: Average of biologist, archeologist, and arborist wage rate. Time based on estimated total for all three disciplines. Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	2,496.00	HR	50.77 126,720	61.97 154,684	61.97 154,684
FOP FC-FLABT Field Constr. QC./Lab Technician (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	4,160.00	HR	40.91 170,183	49.94 207,738	49.94 207,738
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	4,160.00	HR	32.64 135,797	39.85 165,763	39.85 165,763
USR U-MT-TF-300 Cell phone and air card (Note: Per estimator. Based on business plan rate for monthly talk and text plan, 4 GB data bundle, and 5 GB air card.)	216.00	MO	160.07 34,574	195.39 42,203	195.39 42,203
EP T50XX004 TRUCK, HIGHWAY, CONVENTIONAL, 1/2 TON PICKUP, 4X4	29,696.00	HR	29.43 873,997	35.93 1,066,862	35.93 1,066,862
4.05.01.03 Temporary Facilities	24.00	MO	131,283	160,253	160,253
4.05.01.03.25 Project Sign	2.00	EA	2,926	3,571	3,571
USR SI-LE-001 Project sign installation (Note: Productivity per estimator.)	2.00	EA	1,462.77 1,491	1,785.56 1,821	1,785.56 1,821
USR SI-MT-001 Project sign, high intensity reflectorized (Note: Material cost from RS Means CostWorks 2015 number 01 58 1350 0020 for a 4' x 5' project sign and from www.lowes.com for a \$5.97 for 4"x4"x8' pressure treated post. Material cost includes sign and 2 posts.)	2.00	EA	717.03 1,434	875.25 1,751	875.25 1,751

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.05.01.03.21 Staging Area and Security Fencing (Note: Assumes construction of staging area.)	1.00	LS	31,644	38,627	38,627
USR EW-MT-005 3/8" max flex aggregate (Note: **Vendor quote, Select Sand & Gravel, Mar/2015** Includes delivery.)	1,360.00	TON	26,094	31,852	31,852
USR TF-LE-002 Spread gravel with dozer	862.00	LCY	1,121	1,368	1,368
USR TF-LE-003 Compact gravel material with roller	741.00	ECY	1,181	1,442	1,442
USR FN-001 Temporary Fencing, chain link, 6' high, 11 ga (Note: Vendor quote from National Construction Rentals, May 2013. Cost includes installation and removal. Length of fence = Chain Link fence (560 lf) + Gate (2 x 20 lf). Escalated to Mar 2015.)	760.00	LF	2,838	3,465	3,465
USR FN-002 Temporary Fencing - Gate (Note: Vendor quote from National Construction Rentals, May 2013. Cost includes installation and removal. Escalated to Mar 2015.)	2.00	EA	410	500	500
4.05.01.03 Temporary Facilities	24.00	MO	83,675	102,140	102,140
USR TF-MT-001 Office Trailer, furnished, rent per month, 50' x 12', excl. hookups (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1320 0550.)	48.00	MO	20,744	25,322	25,322
USR TF-MT-002 Storage Boxes, rent per month, 40' x 8' (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1320 1350.)	24.00	MO	2,561	3,126	3,126
USR TF-MT-007 Rent toilet portable chemical (Note: Rental cost per RS Means CostWorks 2015 item number 01 54 3340 6410.)	96.00	MO	19,361	23,634	23,634
USR TF-MT-003 Field Office Expense, office equipment rental, average (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0100.)	24.00	MO	5,071	6,190	6,190
USR TF-MT-004 Field Office Expense, office supplies, average (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0120.)	24.00	MO	2,036	2,485	2,485
USR TF-MT-005 Field Office Expense, telephone bill; avg. bill/month, incl. long distance (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0140.)	48.00	MO	4,303	5,252	5,252
USR TF-MT-006 Field Office Expense, field office lights & HVAC (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1340 0160.)	48.00	MO	8,144	9,941	9,941
USR TF-MT-008 Office Trailer, delivery or pickup (Note: Cost per RS Means CostWorks 2015 number 01 52 1320 0890. Assumes 30 mile delivery or pickup distance, one-way, \$11.30 per mile per RS Means CostWorks 2015 number 01 52 1320 0800. Includes mob/demob for 2 office trailer and 1 storage box.)	2.00	EA	1,120	1,368	1,368

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR TF-MT-009 Secondary containment for 550 gallon gasoline or diesel tanks. (Note: Vendor quote from The Tank Depot, July 2015.)	1.00	EA	784.31 784	957.38 957	957.38 957
USR TF-MT-010 Secondary containment for 1,000 gallon gasoline or diesel tanks. (Note: Vendor quote from The Tank Depot, July 2015.)	1.00	EA	1,727.62 1,728	2,108.86 2,109	2,108.86 2,109
USR U-MT-TF-400 Water cooler rental (Note: Vendor quote from Culligan Water, Savannah, Georgia, October 2012. \$40 per year plus \$25 deposit.)	48.00	MO	5.78 278	7.06 339	7.06 339
USR U-MT-TF-401 Water cooler water - 5 gallon bottle (Note: Vendor quote from Culligan Water, Savannah, Georgia, October 2012. \$5 one time delivery fee.)	96.00	EA	4.80 461	5.86 563	5.86 563
USR U-MT-TF-450 Dumpster - delivery or pickup (Note: Vendor quote from ABC Waste, October 2012.)	1.00	EA	26.68 27	32.56 33	32.56 33
USR U-MT-TF-451 Dumpster service, 4 CY (Note: Vendor quote from ABC Waste, October 2012. Includes 6% surcharge for fuel.)	24.00	MO	88.23 2,117	107.70 2,585	107.70 2,585
USR U-MT-TF-100 Temporary electrical hookup (Note: Per estimator.)	2.00	EA	5,335.50 10,671	6,512.88 13,026	6,512.88 13,026
USR U-MT-TF-101 Temporary telephone hookup (Note: Per estimator.)	2.00	EA	2,134.20 4,268	2,605.15 5,210	2,605.15 5,210
4.05.36.01 Removal of Temporary Construction Facilities	1.00	LS	13,039	15,916	15,916
USR U-MT-TF-201 Office trailer teardown and removal (Note: Per estimator)	1.00	LS	907	1,107	1,107
USR USR-LE-EW-SR-001 Remove and restore temporary staging area	24.00	HR	505.49 12,132	617.04 14,809	617.04 14,809
4.05.00 Mobilization and Demobilization	1.00	LS	110,272	134,606	134,606
4.05.01.01 Site Mobilization	1.00	LS	52,442	64,015	64,015
USR USR-MB-LE-001 Mobilization or demobilization of heavy equipment	5.00	EA	2,708.60 13,543	3,306.31 16,532	3,306.31 16,532
USR USR-MB-LE-002 Mobilization or demobilization of medium equipment	10.00	EA	2,049.04 20,490	2,501.20 25,012	2,501.20 25,012
USR USR-MB-LE-003 Mobilization or demobilization of self-propelled equipment	3.00	EA	1,935.48 5,806	2,362.58 7,088	2,362.58 7,088
USR USR-MB-LE-004 Oversize/overwidth load hauling permits (Note: Per estimator)	8.00	EA	1,067.10 8,537	1,302.58 10,421	1,302.58 10,421
USR U-MB-LE-100 Pre-construction video survey of road (Note: Assumes haul roads would be video surveyed to document road conditions prior to job start. Includes allowance for video camera and placing video on DVDs with multiple copies.)	1.00	LS	4,066	4,963	4,963

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.05.36 Site Demobilization	1.00	LS	57,830	70,591	70,591
4.05.36.04 Equipment Demobilization	1.00	LS	48,377	59,052	59,052
USR USR-MB-LE-001 Mobilization or demobilization of heavy equipment	5.00	EA	2,708.60 13,543	3,306.31 16,532	3,306.31 16,532
USR USR-MB-LE-002 Mobilization or demobilization of medium equipment	10.00	EA	2,049.04 20,490	2,501.20 25,012	2,501.20 25,012
USR USR-MB-LE-003 Mobilization or demobilization of self-propelled equipment	3.00	EA	1,935.48 5,806	2,362.58 7,088	2,362.58 7,088
USR USR-MB-LE-004 Oversize/overwidth load hauling permits (Note: Per estimator)	8.00	EA	1,067.10 8,537	1,302.58 10,421	1,302.58 10,421
4.05.36.01.9x Site Cleanup (Note: Includes general site cleanup and removal of erosion/sediment control after the completion of construction. This does not include the removal of the construction staging pad as it will be left in place for future work.)	1.00	LS	9,453	11,539	11,539
USR MDM-06 Site Cleanup (Note: Assume 5 days)	5.00	DAY	1,890.59 9,453	2,307.79 11,539	2,307.79 11,539
4.9x Best Management Practices	1.00	LS	3,836,552	4,683,164	4,683,164
8.01.01 SWPPP Implementation and Maintenance	1.00	LS	26,797	32,710	32,710
8.01.01.03 SWPPP Preparation	1.00	LS	12,292	15,004	15,004
FOP FA-PROJM Project Managers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	8.00	HR	93.20 746	113.76 910	113.76 910
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	120.00	HR	75.55 9,066	92.22 11,066	92.22 11,066
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	16.00	HR	32.64 522	39.85 638	39.85 638
FOP FC-FLDRT Field Draftsmen (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	40.00	HR	48.95 1,958	59.76 2,390	59.76 2,390
8.01.01.9x SWPPP Oversight and Maintenance	24.00	MO	14,505	17,706	17,706
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	192.00	HR	75.55 14,505	92.22 17,706	92.22 17,706
4.05.02 Temporary Erosion and Sediment Control	1.00	LS	159,753	195,006	195,006
4.05.02.04 Silt Fence	18,200.00	LF	2.35 42,701	2.86 52,124	2.86 52,124
			0.21	0.25	0.25

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR SP-ESC-MT-001 Erosion control, silt fence, polypropylene, ideal conditions, 3' high (Note: Material cost from RS Means CostWorks number 31 25 1416 1100.)	18,200.00	LF	3,787	4,623	4,623
USR SP-ESC-LE-001 Silt Fence Installation (Note: Productivity from Means CostWorks 2015 number 31 25 1416 1100.)	18,200.00	LF	2.14 38,914	2.61 47,501	2.61 47,501
4.05.02.04 Wattles	875.00	LF	6.26 5,480	7.64 6,689	7.64 6,689
USR SP-ESC-LE-100 Wattle Installation	875.00	LF	5.08 4,443	6.20 5,424	6.20 5,424
USR SP-ESC-MT-100 Wattle (Note: Vendor quote, Impact Absorbents, July 2015. Cost based on 1 pallet (300 feet of 9" x 25' segments). Includes wood stake every 4'.)	875.00	LF	1.18 1,036	1.45 1,265	1.45 1,265
4.05.02.04 Sediment Trap	4.00	EA	1,199.68 4,799	1,464.42 5,858	1,464.42 5,858
USR EW-EX-LE-002 Excavating sediment trap	280.00	BCY	17.14 4,799	20.92 5,858	20.92 5,858
4.05.02.04 Rock Filter Dam	4.00	EA	2,990.52 11,962	3,650.44 14,602	3,650.44 14,602
USR EW-RP-LE-004 Rock filter dam placement	280.00	LCY	9.35 2,617	11.41 3,195	11.41 3,195
USR EW-MT-103 Rock Filter Dam Material (Note: Based on previous work. Includes delivery.)	450.00	TON	20.77 9,345	25.35 11,407	25.35 11,407
4.05.02.04 Track-Out Prevention	4.00	EA	1,196.55 4,786	1,460.59 5,842	1,460.59 5,842
USR TF-LE-002 Spread gravel with dozer	140.00	LCY	1.30 182	1.59 222	1.59 222
USR TF-LE-003 Compact gravel material with roller	120.00	ECY	1.59 191	1.95 233	1.95 233
USR EW-MT-005 3/8" max flex aggregate (Note: Vendor quote from previous work, March 2015. Includes delivery.)	230.00	TON	19.19 4,413	23.42 5,387	23.42 5,387
4.05.02.05 Temporary Seeding (Note: Assumes temporary seasonal seeding for erosion control.)	10.00	ACR	225.95 2,259	275.81 2,758	275.81 2,758
USR SR-SD-LE-002B Temporary Seeding	10.00	ACR	55.21 552	67.40 674	67.40 674
USR SR-SD-MT-010 Temporary seeding (Note: Vendor quote, outsidepride.com, July 2015. Based 4 lbs per acre of native seed mix.)	10.00	ACR	170.74 1,707	208.41 2,084	208.41 2,084

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.05.02.9x Inspection and Maintenance	24.00	MO	87,766	107,133	107,133
			3,656.92	4,463.89	4,463.89
USR SP-ESC-LE-008 Inspection and maintenance of erosion and sediment control measures.	416.00	HR	76,668	93,587	93,587
			184.30	224.97	224.97
USR SP-ESC-MT-007 Erosion and sediment control maintenance allowance (Note: Per estimator)	104.00	WK	11,098	13,547	13,547
			106.71	130.26	130.26
4.05.9x Existing Tree Protection	35.00	EA	44,534	54,361	54,361
			1,272.40	1,553.18	1,553.18
4.05.9x Arborist and Care for Existing Trees	24.00	MO	29,243	35,696	35,696
			1,218.46	1,487.34	1,487.34
HTW HO-STFSCI Staff Scientist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	576.00	HR	29,243	35,696	35,696
			50.77	61.97	61.97
4.05.9x Tree Protection Fencing	35.00	EA	15,291	18,665	18,665
			436.88	533.29	533.29
USR FN-SF-LE-001 Safety fence installation	3,500.00	LF	4,372	5,337	5,337
			1.25	1.52	1.52
USR FN-SF-LE-002 Safety fence removal	3,500.00	LF	2,186	2,669	2,669
			0.62	0.76	0.76
USR FN-SF-MT-001 Orange safety fence (Note: Vendor quote, Grainger, June 2015.)	3,500.00	LF	6,125	7,477	7,477
			1.75	2.14	2.14
USR FN-SF-MT-002 5-foot steel t-post (Note: Vendor quote, Blain's Farm and Fleet, June 2015.)	700.00	EA	2,607	3,182	3,182
			3.72	4.55	4.55
4.16.04 Dust Control	24.00	MO	591,841	722,442	722,442
			24,660.03	30,101.76	30,101.76
USR TR-LE-005 Dust control	4,000.00	HR	467,567	570,745	570,745
			116.89	142.69	142.69
USR TR-MT-100 Water for Dust Control (Note: Based on current pricing for 16,000 gallons per day (0.049 ac-ft/day or 21.4 CCF/day). Assumes \$1,480 per ac-ft for base fee and \$2,960 per ac-ft for penalty. Unit cost assumes penalty would be incurred for exceeding the district's allotment.)	11,440.00	CCF	124,274	151,697	151,697
			10.86	13.26	13.26
4.07.08.02 Air Monitoring	24.00	MO	51,181	62,475	62,475
			2,132.52	2,603.11	2,603.11
USR SFTY-05 PM10 Dust Monitor (Note: Thermo Scientific ADR-1500. Vendor Quote: Field Environmental, 2014. Monthly Rental)	24.00	MO	38,903	47,488	47,488
			1,620.98	1,978.68	1,978.68
			446.31	544.80	544.80

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR AIRWE-M Weather Station, monthly rental - M (Note: Davis Vantage Pro Weather Station. Vendor Quote: Pine Environmental, 2014. Monthly Rental)	24.00	MO	10,712	13,075	13,075
USR PM-M Air Sample Analysis - Particulate Matter - M (Note: Vendor Quote: Test America, 2013.)	24.00	EA	1,566	1,911	1,911
4.05.01.03.12 Decontamination/Wash Station	1.00	LS	482,261	588,681	588,681
4.05.01.03.12 Decontamination/Wash Station Purchase and Setup	1.00	EA	211,884	258,641	258,641
USR TR-MT-900 Above ground steel wash rack w/water collection, treatment and storage for re-use (Note: Vendor quote, Riveer, July 2015. Includes wash water containment, collection, treatment and storage system. Total length is 42' x 18' with 6' side walls.)	1.00	EA	211,884	258,641	258,641
4.05.01.03.12 Decontamination/Wash Station Operation	24.00	MO	270,376	330,040	330,040
USR TR-LE-100 Decontamination/Wash Station	4,160.00	HR	268,071	327,226	327,226
USR TR-MT-910 Replacement bag filter for wash station (Note: Vendor quote, Riveer, July 2015.)	72.00	EA	2,305	2,814	2,814
4.05.9x Street Sweeping	24.00	MO	393,333	480,129	480,129
USR TR-LE-004 Street sweeper	2,080.00	HR	393,333	480,129	480,129
8.01.03.11 Traffic Control	1.00	LS	2,086,854	2,547,360	2,547,360
8.01.03.11 Preconstruction Video Survey	1.00	LS	3,603	4,398	4,398
USR TR-LE-003 Preconstruction video survey of roadway	16.00	HR	2,536	3,095	3,095
USR TR-MT-800 Preconstruction video survey of roadway (Note: Per estimator)	1.00	LS	1,067	1,303	1,303
8.01.03.11 Traffic Control Signs and Barricades	1.00	LS	21,165	25,835	25,835
(Note: Includes setup signs and maintenance during construction.)					
USR TR-LE-002 Setup signs and barricades (Note: Productivity per estimator)	16.00	EA	1,473	1,798	1,798
USR TR-LE-001 Traffic control sign and barricade maintenance (Note: Assumes 4 hour per month)	96.00	HR	17,677	21,578	21,578
USR TR-MT-005 Be Prepared To Stop, CW3-4, 36" x 36" (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	8.00	EA	730	891	891
USR TR-MT-006 Flag Man Sign, CW20-7, 36" x 36" (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	8.00	EA	730	891	891

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR TR-MT-009 Economy stand for aluminum diamond-shaped signs, 48" to 60" signs (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	16.00	EA	34.68 555	42.33 677	42.33 677
8.01.03.11 Traffic Control	24.00	MO	2,062,086	2,517,127	2,517,127
USR TR-LE-006 Traffic Control Flagmen	32,000.00	HR	64.44 2,062,086	78.66 2,517,127	78.66 2,517,127
Multiple ECES Codes Excavation and Hauling	52,000.00	BCY	6,971,043	8,509,344	8,509,344
Multiple ECES Codes Low-Hazard and Moderate-Hazard Soil	49,000.00	BCY	5,318,380	6,491,987	6,491,987
4.05.9x Construction Survey and Staking	9.40	ACR	7,128	8,701	8,701
0.2 SUR-02 Surveying Crew	9.40	ACR	758.28 7,128	925.61 8,701	925.61 8,701
4.05.05.01 Excavation	49,000.00	BCY	328,895	401,472	401,472
USR EW-EX-A5-100 Excavation - Non-Hazardous/Non-Radioactive Waste	49,000.00	BCY	6.71 328,895	8.19 401,472	8.19 401,472
4.32.11.05 Hauling	73,500.00	TON	4,872,048	5,947,163	5,947,163
USR EW-HL-A5-100 Hauling - Non-Hazardous/Non-Radioactive Waste	73,500.00	TON	66.29 4,872,048	80.91 5,947,163	80.91 5,947,163
4.07.11 Confirmation Sampling	195.00	EA	6,268	7,651	7,651
USR EW-CS-001 Confirmation sampling	195.00	EA	32.14 6,268	39.23 7,651	39.23 7,651
4.08.04 Sample Analysis	195.00	EA	104,042	127,001	127,001
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	195.00	EA	533.55 104,042	651.29 127,001	651.29 127,001
Multiple ECES Codes Hazardous Soil	2,000.00	BCY	1,327,130	1,619,988	1,619,988
4.05.9x Construction Surveying and Staking	0.40	ACR	303	370	370
USR SUR-02 Surveying Crew	0.40	ACR	758.28 303	925.61 370	925.61 370
			38.37	46.84	46.84

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.05.05.01 Excavation	2,000.00	BCY	76,739	93,673	93,673
USR EW-EX-A5-200 Excavation - RCRA Hazardous Waste	2,000.00	BCY	76,739	93,673	93,673
			38.37	46.84	46.84
			415.00	506.58	506.58
4.32.11.05 Hauling	3,000.00	TON	1,244,997	1,519,730	1,519,730
USR DS-900 End-Dump-Sized Liner Bag (Note: Vendor quote, US Ecology, July 2015. Required for a "sealed" container.)	130.00	EA	91,614	111,830	111,830
			704.72	860.23	860.23
USR EW-HL-A5-200 Hauling - RCRA Hazardous Waste	3,000.00	TON	1,153,383	1,407,900	1,407,900
			384.46	469.30	469.30
			32.14	39.23	39.23
4.07.11 Confirmation Sampling	9.00	EA	289	353	353
USR EW-CS-001 Confirmation sampling	9.00	EA	289	353	353
			32.14	39.23	39.23
			533.55	651.29	651.29
4.08.04 Sample Analysis	9.00	EA	4,802	5,862	5,862
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	9.00	EA	4,802	5,862	5,862
			533.55	651.29	651.29
			325.53	397.37	397.37
Multiple ECES Codes LLW/MLLW Soil	1,000.00	BCY	325,533	397,368	397,368
			758.28	925.61	925.61
4.05.9x Construction Surveying and Staking	0.20	ACR	152	185	185
USR SUR-02 Surveying Crew	0.20	ACR	152	185	185
			758.28	925.61	925.61
			14.05	17.15	17.15
4.05.05.01 Excavation	1,000.00	BCY	14,048	17,148	17,148
USR EW-EX-A5-400 Excavation - Low-level Radioactive Waste (LLW)	1,000.00	BCY	14,048	17,148	17,148
			14.05	17.15	17.15
			205.29	250.59	250.59
4.32.11.05 Hauling	1,500.00	TON	307,939	375,892	375,892
USR DS-900 End-Dump-Sized Liner Bag (Note: Vendor quote, US Ecology, July 2015. Required for a "sealed" container.)	65.00	EA	45,807	55,915	55,915
			704.72	860.23	860.23
			174.75	213.32	213.32
USR EW-HL-A5-400 Hauling - Low-level Radioactive Waste (LLW)	1,500.00	TON	262,132	319,977	319,977
			32.14	39.23	39.23
			32.14	39.23	39.23
4.07.11 Confirmation Sampling	6.00	EA	193	235	235
USR EW-CS-001 Confirmation sampling	6.00	EA	193	235	235
			32.14	39.23	39.23
			193	235	235

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.08.04 Sample Analysis	6.00	EA	3,201	3,908	3,908
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	6.00	EA	3,201	3,908	3,908
4.33.08.05 Disposal	78,000.00	TON	3,889,580	4,288,261	4,288,261
4.33.08.05 Low-Hazard and Moderate-Hazard Soil	73,500.00	TON	3,529,433	3,891,200	3,891,200
USR DS-100 Non-Hazardous/Non-Radioactive Waste Disposal (Note: Assume disposal at an applicable facility within 135 mile of the site. Assumed vendor quote from Waste Management Facilities, July 2015.)	73,500.00	TON	3,529,433	3,891,200	3,891,200
4.33.08.05 Hazardous Soil	3,000.00	TON	240,098	264,707	264,707
USR DS-200 RCRA Hazardous Waste Disposal (Note: Assumes disposal outside of California. Cost based on vendor quote from US Ecology, July 2015.)	3,000.00	TON	240,098	264,707	264,707
4.33.08.05 LLW/MLLW Soil	1,500.00	TON	120,049	132,354	132,354
USR DS-400 Low-level Radioactive Waste (LLW) Disposal (Note: Assumes disposal outside of California. Cost based on vendor quote from US Ecology, July 2015.)	1,500.00	TON	120,049	132,354	132,354
4.05.05 Backfill	39,000.00	ECY	3,194,530	3,899,467	3,899,467
4.05.05.06 Backfill from Offsite Sources	39,000.00	ECY	3,194,530	3,899,467	3,899,467
4.32.11.05 Import Fill Material	46,800.00	LCY	2,873,398	3,507,471	3,507,471
USR EW-HL-010 Haul Imported Soil	46,800.00	LCY	1,165,940	1,423,228	1,423,228
USR EW-MT-200 Borrow, common earth (Note: Based on average of the following RS Means CostWorks 2015 numbers: 31232 315 4000, 31232 315 7000, 31232 316 0035, and 31232 316 0020. \$/BCY cost converted to \$/LCY using 1.2 LCY per BCY)	46,800.00	LCY	1,307,936	1,596,558	1,596,558
USR EW-MT-210 Organic Amendment	46,800.00	LCY	399,522	487,685	487,685
4.05.05 Fill	39,000.00	ECY	311,737	380,528	380,528
USR EW-BM-LE-200 Fill - Spreading	46,800.00	LCY	175,493	214,219	214,219

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR SD-SP-LE-004B Site Grading - Rough	10.00	ACR	662.64 6,626	808.86 8,089	808.86 8,089
USR EW-BM-LE-202 Fill - Compaction	39,000.00	ECY	2.98 116,365	3.64 142,044	3.64 142,044
USR SD-SP-LE-005 Site Grading - Finish	10.00	ACR	1,325.27 13,253	1,617.72 16,177	1,617.72 16,177
- Quality Control and Testing	1.00	LS	9,395	11,468	11,468
USR SL-TEST-100 Backfill chemical testing (Note: Per estimator)	7.00	EA	1,067.10 7,470	1,302.58 9,118	1,302.58 9,118
USR SL-TEST-01 Soil testing, soil density, nuclear method, ASTM D2922 (Note: Cost from RS Means CostWorks 2015 item number 01 45 2350 4735.)	44.00	EA	43.75 1,925	53.41 2,350	53.41 2,350
4.05.02 Restoration	1.00	LS	524,358	640,069	640,069
4.05.02.05 Seeding	10.00	ACR	6,928	8,457	8,457
USR SR-SD-LE-002 Seeding	10.00	ACR	692.82 1,806	845.70 2,205	845.70 2,205
USR SR-SD-MT-011 Seeding, native grass and wildflower seed mix. (Note: Vendor quote, outsidepride.com, July 2015. Based 4 lbs per acre of native seed mix and 16 pounds per acre of native wildflower seed mix.)	10.00	ACR	180.61 5,122	220.46 6,252	220.46 6,252
4.05.08 Allowance for Street/Pavement Repair (Note: Quantity Assumed Per Estimator)	1.00	LS	517,430	631,612	631,612
4.05.08 Woolsey Canyon Road	2.50	MI	517,430	631,612	631,612
USR SR-PV-300 Hauling for asphalt cold milling and paving	4,015.00	LCY	206,972.11 39,312	252,644.65 47,986	252,644.65 47,986
USR SR-PV-410 Cold milling asphalt paving, profile grooving, asphalt pavement, 2" deep, load and sweep (Note: Based on English Cost Book number 320116715350.)	36,130.00	SY	9.79 37,585	11.95 45,879	11.95 45,879
USR SR-PV-510 Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick, no hauling included (Note: Based on English Cost Book number 321216130380.)	36,130.00	SY	1.04 59,777	1.27 72,968	1.27 72,968
USR SR-PV-MT-510 Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick (Note: Material cost from RS Means CostWorks 2015 number 32 12 1613 0380.)	36,130.00	SY	1.65 380,756	2.02 464,778	2.02 464,778

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
CONSERVATION OF NATURAL RESOURCES ALTERNATIVE – RESIDENTIAL CLEANUP SCENARIO	1.00	LS	127,253.78	125,902.66	80,337.49	80,337.49
4.9x General Conditions	1.00	LS	34,686.03	29,776.03	48.03	48.03
Multiple ECES Codes Workplans and Submittals	1.00	LS	2,918.00	0.00	0.00	0.00
(Note: Includes project schedule, submittals, and work plans.)						
4.02.01.01 Project Meetings and Updating Project Schedule	24.00	MO	442.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	130.00	HR	130.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	104.00	HR	104.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	208.00	HR	208.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
4.03.01 Work Plans	1.00	LS	1,600.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	80.00	HR	80.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	600.00	HR	600.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	120.00	HR	120.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGQC Engineers, Quality Control	120.00	HR	120.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FD-SAENG Safety Engineers	240.00	HR	240.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
HTW HO-STFSCI Staff Scientist (HTW Projects)	440.00	HR	440.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
4.04.21 Submittals	1.00	LS	384.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	24.00	HR	24.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	160.00	HR	160.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	40.00	HR	40.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGQC Engineers, Quality Control	40.00	HR	40.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FD-SAENG Safety Engineers	40.00	HR	40.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
HTW HO-STFSCI Staff Scientist (HTW Projects)	80.00	HR	80.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
4.04.19 Post-RA Completion Report	1.00	LS	492.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	56.00	HR	56.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	300.00	HR	300.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	80.00	HR	80.00	0.00	0.00	0.00
FOP FC-ENGQC Engineers, Quality Control (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	24.00	HR	24.00	0.00	0.00	0.00
FOP FD-SAENG Safety Engineers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	8.00	HR	8.00	0.00	0.00	0.00
HTW HO-STFSCI Staff Scientist (HTW Projects) (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	24.00	HR	24.00	0.00	0.00	0.00
8.01.04 Home Office Personnel	24.00	MO	2,496.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	1,664.00	HR	1,664.00	0.00	0.00	0.00
HTW HO-SECADM Secretarial/ Administrative (HTW Projects) (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	832.00	HR	832.00	0.00	0.00	0.00
4.02.01.01.15 Job Site Personnel	24.00	MO	29,120.00	29,696.00	0.00	0.00
FOP FA-AGENS General Superintendents (P.M.) (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	4,160.00	HR	4,160.00	0.00	0.00	0.00
FOP FC-ENGPE Engineers, Project (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	4,160.00	HR	4,160.00	0.00	0.00	0.00
FOP FC-ENGQC Engineers, Quality Control (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	4,160.00	HR	4,160.00	0.00	0.00	0.00
FOP FD-SAENG Safety Engineers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	4,160.00	HR	4,160.00	0.00	0.00	0.00
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	1,664.00	HR	1,664.00	0.00	0.00	0.00
HTW HO-STFSCI Staff Scientist (HTW Projects) (Note: Average of biologist, archeologist, and arborist wage rate. Time based on estimated total for all three disciplines. Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	2,496.00	HR	2,496.00	0.00	0.00	0.00
FOP FC-FLABT Field Constr. QC./Lab Technician (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	4,160.00	HR	4,160.00	0.00	0.00	0.00
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	4,160.00	HR	4,160.00	0.00	0.00	0.00
USR U-MT-TF-300 Cell phone and air card (Note: Per estimator. Based on business plan rate for monthly talk and text plan, 4 GB data bundle, and 5 GB air card.)	216.00	MO	0.00	0.00	0.00	0.00
EP T50XX004 TRUCK, HIGHWAY, CONVENTIONAL, 1/2 TON PICKUP, 4X4	29,696.00	HR	0.00	29,696.00	0.00	0.00
4.05.01.03 Temporary Facilities	24.00	MO	152.03	80.03	48.03	48.03
4.05.01.03.25 Project Sign	2.00	EA	16.00	16.00	8.00	8.00
USR SI-LE-001 Project sign installation (Note: Productivity per estimator.)	2.00	EA	16.00	16.00	8.00	8.00
USR SI-MT-001 Project sign, high intensity reflectorized (Note: Material cost from RS Means CostWorks 2015 number 01 58 1350 0020 for a 4' x 5' project sign and from www.lowes.com for a \$5.97 for 4"x4"x8' pressure treated post. Material cost includes sign and 2 posts.)	2.00	EA	0.00	0.00	0.00	0.00
4.05.01.03.21 Staging Area and Security Fencing	1.00	LS	16.03	16.03	16.03	16.03
(Note: Assumes construction of staging area.)						
USR EW-MT-005 3/8" max flex aggregate (Note: **Vendor quote, Select Sand & Gravel, Mar/2015** Includes delivery.)	1,360.00	TON	0.00	0.00	0.00	0.00
USR TF-LE-002 Spread gravel with dozer	862.00	LCY	8.62	8.62	8.62	8.62

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR TF-LE-003 Compact gravel material with roller	741.00	ECY	7.41	7.41	7.41	7.41
USR FN-001 Temporary Fencing, chain link, 6' high, 11 ga (Note: Vendor quote from National Construction Rentals, May 2013. Cost includes installation and removal. Length of fence = Chain Link fence (560 lf) + Gate (2 x 20 lf). Escalated to Mar 2015.)	760.00	LF	0.00	0.00	0.00	0.00
USR FN-002 Temporary Fencing - Gate (Note: Vendor quote from National Construction Rentals, May 2013. Cost includes installation and removal. Escalated to Mar 2015.)	2.00	EA	0.00	0.00	0.00	0.00
4.05.01.03 Temporary Facilities	24.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-001 Office Trailer, furnished, rent per month, 50' x 12', excl. hookups (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1320 0550.)	48.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-002 Storage Boxes, rent per month, 40' x 8' (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1320 1350.)	24.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-007 Rent toilet portable chemical (Note: Rental cost per RS Means CostWorks 2015 item number 01 54 3340 6410.)	96.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-003 Field Office Expense, office equipment rental, average (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0100.)	24.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-004 Field Office Expense, office supplies, average (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0120.)	24.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-005 Field Office Expense, telephone bill; avg. bill/month, incl. long distance (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0140.)	48.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-006 Field Office Expense, field office lights & HVAC (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1340 0160.)	48.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-008 Office Trailer, delivery or pickup (Note: Cost per RS Means CostWorks 2015 number 01 52 1320 0890. Assumes 30 mile delivery or pickup distance, one-way, \$11.30 per mile per RS Means CostWorks 2015 number 01 52 1320 0800. Includes mob/demob for 2 office trailer and 1 storage box.)	2.00	EA	0.00	0.00	0.00	0.00
USR TF-MT-009 Secondary containment for 550 gallon gasoline or diesel tanks. (Note: Vendor quote from The Tank Depot, July 2015.)	1.00	EA	0.00	0.00	0.00	0.00
USR TF-MT-010 Secondary containment for 1,000 gallon gasoline or diesel tanks. (Note: Vendor quote from The Tank Depot, July 2015.)	1.00	EA	0.00	0.00	0.00	0.00
USR U-MT-TF-400 Water cooler rental (Note: Vendor quote from Culligan Water, Savannah, Georgia, October 2012. \$40 per year plus \$25 deposit.)	48.00	MO	0.00	0.00	0.00	0.00
USR U-MT-TF-401 Water cooler water - 5 gallon bottle (Note: Vendor quote from Culligan Water, Savannah, Georgia, October 2012. \$5 one time delivery fee.)	96.00	EA	0.00	0.00	0.00	0.00
USR U-MT-TF-450 Dumpster - delivery or pickup (Note: Vendor quote from ABC Waste, October 2012.)	1.00	EA	0.00	0.00	0.00	0.00
USR U-MT-TF-451 Dumpster service, 4 CY (Note: Vendor quote from ABC Waste, October 2012. Includes 6% surcharge for fuel.)	24.00	MO	0.00	0.00	0.00	0.00
USR U-MT-TF-100 Temporary electrical hookup (Note: Per estimator.)	2.00	EA	0.00	0.00	0.00	0.00
USR U-MT-TF-101 Temporary telephone hookup (Note: Per estimator)	2.00	EA	0.00	0.00	0.00	0.00
4.05.36.01 Removal of Temporary Construction Facilities	1.00	LS	120.00	48.00	24.00	24.00
USR U-MT-TF-201 Office trailer teardown and removal (Note: Per estimator)	1.00	LS	0.00	0.00	0.00	0.00
USR USR-LE-EW-SR-001 Remove and restore temporary staging area	24.00	HR	120.00	48.00	24.00	24.00
4.05.00 Mobilization and Demobilization	1.00	LS	722.00	736.00	416.00	416.00
4.05.01.01 Site Mobilization	1.00	LS	317.00	346.00	196.00	196.00
USR USR-MB-LE-001 Mobilization or demobilization of heavy equipment	5.00	EA	75.00	100.00	50.00	50.00

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR USR-MB-LE-002 Mobilization or demobilization of medium equipment	10.00	EA	150.00	200.00	100.00	100.00
USR USR-MB-LE-003 Mobilization or demobilization of self-propelled equipment	3.00	EA	60.00	30.00	30.00	30.00
USR USR-MB-LE-004 Oversize/overwidth load hauling permits	8.00	EA	0.00	0.00	0.00	0.00
(Note: Per estimator)						
USR U-MB-LE-100 Pre-construction video survey of road	1.00	LS	32.00	16.00	16.00	16.00
(Note: Assumes haul roads would be video surveyed to document road conditions prior to job start. Includes allowance for video camera and placing video on DVDs with multiple copies.)						
4.05.36 Site Demobilization	1.00	LS	405.00	390.00	220.00	220.00
4.05.36.04 Equipment Demobilization	1.00	LS	285.00	330.00	180.00	180.00
USR USR-MB-LE-001 Mobilization or demobilization of heavy equipment	5.00	EA	75.00	100.00	50.00	50.00
USR USR-MB-LE-002 Mobilization or demobilization of medium equipment	10.00	EA	150.00	200.00	100.00	100.00
USR USR-MB-LE-003 Mobilization or demobilization of self-propelled equipment	3.00	EA	60.00	30.00	30.00	30.00
USR USR-MB-LE-004 Oversize/overwidth load hauling permits	8.00	EA	0.00	0.00	0.00	0.00
(Note: Per estimator)						
4.05.36.01.9x Site Cleanup	1.00	LS	120.00	60.00	40.00	40.00
(Note: Includes general site cleanup and removal of erosion/sediment control after the completion of construction. This does not include the removal of the construction staging pad as it will be left in place for future work.)						
USR MDM-06 Site Cleanup	5.00	DAY	120.00	60.00	40.00	40.00
(Note: Assume 5 days)						
4.9x Best Management Practices	1.00	LS	44,920.34	11,270.46	43,009.46	43,009.46
8.01.01 SWPPP Implementation and Maintenance	1.00	LS	376.00	0.00	0.00	0.00
8.01.01.03 SWPPP Preparation	1.00	LS	184.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	8.00	HR	8.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	120.00	HR	120.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	16.00	HR	16.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-FLDRT Field Draftsmen	40.00	HR	40.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
8.01.01.9x SWPPP Oversight and Maintenance	24.00	MO	192.00	0.00	0.00	0.00
FOP FC-ENGCI Engineers, Civil	192.00	HR	192.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
4.05.02 Temporary Erosion and Sediment Control	1.00	LS	1,409.59	1,044.21	623.21	623.21
4.05.02.04 Silt Fence	18,200.00	LF	459.79	153.26	153.26	153.26
USR SP-ESC-MT-001 Erosion control, silt fence, polypropylene, ideal conditions, 3' high	18,200.00	LF	0.00	0.00	0.00	0.00
(Note: Material cost from RS Means CostWorks number 31 25 1416 1100.)						
USR SP-ESC-LE-001 Silt Fence Installation	18,200.00	LF	459.79	153.26	153.26	153.26
(Note: Productivity from Means CostWorks 2015 number 31 25 1416 1100.)						
4.05.02.04 Wattles	875.00	LF	52.50	17.50	17.50	17.50
USR SP-ESC-LE-100 Wattle Installation	875.00	LF	52.50	17.50	17.50	17.50
USR SP-ESC-MT-100 Wattle	875.00	LF	0.00	0.00	0.00	0.00
(Note: Vendor quote, Impact Absorbents, July 2015. Cost based on 1 pallet (300 feet of 9" x 25' segments). Includes wood stake every 4'.)						
4.05.02.04 Sediment Trap	4.00	EA	37.33	18.67	18.67	18.67
USR EW-EX-LE-002 Excavating sediment trap	280.00	BCY	37.33	18.67	18.67	18.67
4.05.02.04 Rock Filter Dam	4.00	EA	20.36	10.18	10.18	10.18

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR EW-RP-LE-004 Rock filter dam placement	280.00	LCY	20.36	10.18	10.18	10.18
USR EW-MT-103 Rock Filter Dam Material (Note: Based on previous work. Includes delivery.)	450.00	TON	0.00	0.00	0.00	0.00
4.05.02.04 Track-Out Prevention	4.00	EA	2.60	2.60	2.60	2.60
USR TF-LE-002 Spread gravel with dozer	140.00	LCY	1.40	1.40	1.40	1.40
USR TF-LE-003 Compact gravel material with roller	120.00	ECY	1.20	1.20	1.20	1.20
USR EW-MT-005 3/8" max flex aggregate (Note: Vendor quote from previous work, March 2015. Includes delivery.)	230.00	TON	0.00	0.00	0.00	0.00
4.05.02.05 Temporary Seeding	10.00	ACR	5.00	10.00	5.00	5.00
(Note: Assumes temporary seasonal seeding for erosion control.)						
USR SR-SD-LE-002B Temporary Seeding	10.00	ACR	5.00	10.00	5.00	5.00
USR SR-SD-MT-010 Temporary seeding (Note: Vendor quote, outsidepride.com, July 2015. Based 4 lbs per acre of native seed mix.)	10.00	ACR	0.00	0.00	0.00	0.00
4.05.02.9x Inspection and Maintenance	24.00	MO	832.00	832.00	416.00	416.00
USR SP-ESC-LE-008 Inspection and maintenance of erosion and sediment control measures.	416.00	HR	832.00	832.00	416.00	416.00
USR SP-ESC-MT-007 Erosion and sediment control maintenance allowance (Note: Per estimator)	104.00	WK	0.00	0.00	0.00	0.00
4.05.9x Existing Tree Protection	35.00	EA	654.75	26.25	26.25	26.25
4.05.9x Arborist and Care for Existing Trees	24.00	MO	576.00	0.00	0.00	0.00
HTW HO-STFSCI Staff Scientist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	576.00	HR	576.00	0.00	0.00	0.00
4.05.9x Tree Protection Fencing	35.00	EA	78.75	26.25	26.25	26.25
USR FN-SF-LE-001 Safety fence installation	3,500.00	LF	52.50	17.50	17.50	17.50
USR FN-SF-LE-002 Safety fence removal	3,500.00	LF	26.25	8.75	8.75	8.75
USR FN-SF-MT-001 Orange safety fence (Note: Vendor quote, Grainger, June 2015.)	3,500.00	LF	0.00	0.00	0.00	0.00
USR FN-SF-MT-002 5-foot steel t-post (Note: Vendor quote, Blain's Farm and Fleet, June 2015.)	700.00	EA	0.00	0.00	0.00	0.00
4.16.04 Dust Control	24.00	MO	4,000.00	8,000.00	4,000.00	4,000.00
USR TR-LE-005 Dust control	4,000.00	HR	4,000.00	8,000.00	4,000.00	4,000.00
USR TR-MT-100 Water for Dust Control (Note: Based on current pricing for 16,000 gallons per day (0.049 ac-ft/day or 21.4 CCF/day). Assumes \$1,480 per ac-ft for base fee and \$2,960 per ac-ft for penalty. Unit cost assumes penalty would be incurred for exceeding the district's allotment.)	11,440.00	CCF	0.00	0.00	0.00	0.00
4.07.08.02 Air Monitoring	24.00	MO	0.00	0.00	0.00	0.00
USR SFTY-05 PM10 Dust Monitor (Note: Thermo Scientific ADR-1500. Vendor Quote: Field Environmental, 2014. Monthly Rental)	24.00	MO	0.00	0.00	0.00	0.00
USR AIRWE-M Weather Station, monthly rental - M (Note: Davis Vantage Pro Weather Station. Vendor Quote: Pine Environmental, 2014. Monthly Rental)	24.00	MO	0.00	0.00	0.00	0.00
USR PM-M Air Sample Analysis - Particulate Matter - M (Note: Vendor Quote: Test America, 2013.)	24.00	EA	0.00	0.00	0.00	0.00
4.05.01.03.12 Decontamination/Wash Station	1.00	LS	4,160.00	0.00	4,160.00	4,160.00
4.05.01.03.12 Decontamination/Wash Station Purchase and Setup	1.00	EA	0.00	0.00	0.00	0.00
USR TR-MT-900 Above ground steel wash rack w/water collection, treatment and storage for re-use (Note: Vendor quote, Riveer, July 2015. Includes wash water containment, collection, treatment and storage system. Total length is 42' x 18' with 6' side walls.)	1.00	EA	0.00	0.00	0.00	0.00
4.05.01.03.12 Decontamination/Wash Station Operation	24.00	MO	4,160.00	0.00	4,160.00	4,160.00

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR TR-LE-100 Decontamination/Wash Station	4,160.00	HR	4,160.00	0.00	4,160.00	4,160.00
USR TR-MT-910 Replacement bag filter for wash station (Note: Vendor quote, Riveer, July 2015.)	72.00	EA	0.00	0.00	0.00	0.00
4.05.9x Street Sweeping	24.00	MO	2,080.00	2,080.00	2,080.00	2,080.00
USR TR-LE-004 Street sweeper	2,080.00	HR	2,080.00	2,080.00	2,080.00	2,080.00
8.01.03.11 Traffic Control	1.00	LS	32,240.00	120.00	32,120.00	32,120.00
8.01.03.11 Preconstruction Video Survey	1.00	LS	32.00	16.00	16.00	16.00
USR TR-LE-003 Preconstruction video survey of roadway	16.00	HR	32.00	16.00	16.00	16.00
USR TR-MT-800 Preconstruction video survey of roadway (Note: Per estimator)	1.00	LS	0.00	0.00	0.00	0.00
8.01.03.11 Traffic Control Signs and Barricades	1.00	LS	208.00	104.00	104.00	104.00
(Note: Includes setup signs and maintenance during construction.)						
USR TR-LE-002 Setup signs and barricades (Note: Productivity per estimator)	16.00	EA	16.00	8.00	8.00	8.00
USR TR-LE-001 Traffic control sign and barricade maintenance (Note: Assumes 4 hour per month)	96.00	HR	192.00	96.00	96.00	96.00
USR TR-MT-005 Be Prepared To Stop, CW3-4, 36" x 36" (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	8.00	EA	0.00	0.00	0.00	0.00
USR TR-MT-006 Flag Man Sign, CW20-7, 36" x 36" (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	8.00	EA	0.00	0.00	0.00	0.00
USR TR-MT-009 Economy stand for aluminum diamond-shaped signs, 48" to 60" signs (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	16.00	EA	0.00	0.00	0.00	0.00
8.01.03.11 Traffic Control	24.00	MO	32,000.00	0.00	32,000.00	32,000.00
USR TR-LE-006 Traffic Control Flagmen	32,000.00	HR	32,000.00	0.00	32,000.00	32,000.00
Multiple ECES Codes Excavation and Hauling	52,000.00	BCY	36,126.02	67,141.95	34,433.49	34,433.49
Multiple ECES Codes Low-Hazard and Moderate-Hazard Soil	49,000.00	BCY	28,046.32	52,055.38	26,710.55	26,710.55
4.05.9x Construction Survey and Staking	9.40	ACR	94.00	37.60	37.60	37.60
0.2 SUR-02 Surveying Crew	9.40	ACR	94.00	37.60	37.60	37.60
4.05.05.01 Excavation	49,000.00	BCY	2,558.75	1,279.37	1,279.37	1,279.37
USR EW-EX-A5-100 Excavation - Non-Hazardous/Non-Radioactive Waste	49,000.00	BCY	2,558.75	1,279.37	1,279.37	1,279.37
4.32.11.05 Hauling	73,500.00	TON	25,344.83	50,689.66	25,344.83	25,344.83
USR EW-HL-A5-100 Hauling - Non-Hazardous/Non-Radioactive Waste	73,500.00	TON	25,344.83	50,689.66	25,344.83	25,344.83
4.07.11 Confirmation Sampling	195.00	EA	48.75	48.75	48.75	48.75
USR EW-CS-001 Confirmation sampling	195.00	EA	48.75	48.75	48.75	48.75
4.08.04 Sample Analysis	195.00	EA	0.00	0.00	0.00	0.00
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	195.00	EA	0.00	0.00	0.00	0.00
Multiple ECES Codes Hazardous Soil	2,000.00	BCY	6,603.26	12,302.36	6,302.36	6,302.36
4.05.9x Construction Surveying and Staking	0.40	ACR	4.00	1.60	1.60	1.60
USR SUR-02 Surveying Crew	0.40	ACR	4.00	1.60	1.60	1.60
4.05.05.01 Excavation	2,000.00	BCY	597.01	298.51	298.51	298.51
USR EW-EX-A5-200 Excavation - RCRA Hazardous Waste	2,000.00	BCY	597.01	298.51	298.51	298.51
4.32.11.05 Hauling	3,000.00	TON	6,000.00	12,000.00	6,000.00	6,000.00
USR DS-900 End-Dump-Sized Liner Bag (Note: Vendor quote, US Ecology, July 2015. Required for a "sealed" container.)	130.00	EA	0.00	0.00	0.00	0.00

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR EW-HL-A5-200 Hauling - RCRA Hazardous Waste	3,000.00	TON	6,000.00	12,000.00	6,000.00	6,000.00
4.07.11 Confirmation Sampling	9.00	EA	2.25	2.25	2.25	2.25
USR EW-CS-001 Confirmation sampling	9.00	EA	2.25	2.25	2.25	2.25
4.08.04 Sample Analysis	9.00	EA	0.00	0.00	0.00	0.00
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	9.00	EA	0.00	0.00	0.00	0.00
Multiple ECES Codes LLW/MLLW Soil	1,000.00	BCY	1,476.43	2,784.22	1,420.58	1,420.58
4.05.9x Construction Surveying and Staking	0.20	ACR	2.00	0.80	0.80	0.80
USR SUR-02 Surveying Crew	0.20	ACR	2.00	0.80	0.80	0.80
4.05.05.01 Excavation	1,000.00	BCY	109.29	54.64	54.64	54.64
USR EW-EX-A5-400 Excavation - Low-level Radioactive Waste (LLW)	1,000.00	BCY	109.29	54.64	54.64	54.64
4.32.11.05 Hauling	1,500.00	TON	1,363.64	2,727.27	1,363.64	1,363.64
USR DS-900 End-Dump-Sized Liner Bag (Note: Vendor quote, US Ecology, July 2015. Required for a "sealed" container.)	65.00	EA	0.00	0.00	0.00	0.00
USR EW-HL-A5-400 Hauling - Low-level Radioactive Waste (LLW)	1,500.00	TON	1,363.64	2,727.27	1,363.64	1,363.64
4.07.11 Confirmation Sampling	6.00	EA	1.50	1.50	1.50	1.50
USR EW-CS-001 Confirmation sampling	6.00	EA	1.50	1.50	1.50	1.50
4.08.04 Sample Analysis	6.00	EA	0.00	0.00	0.00	0.00
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	6.00	EA	0.00	0.00	0.00	0.00
4.33.08.05 Disposal	78,000.00	TON	0.00	0.00	0.00	0.00
4.33.08.05 Low-Hazard and Moderate-Hazard Soil	73,500.00	TON	0.00	0.00	0.00	0.00
USR DS-100 Non-Hazardous/Non-Radioactive Waste Disposal (Note: Assume disposal at an applicable facility within 135 mile of the site. Assumed vendor quote from Waste Management Facilities, July 2015.)	73,500.00	TON	0.00	0.00	0.00	0.00
4.33.08.05 Hazardous Soil	3,000.00	TON	0.00	0.00	0.00	0.00
USR DS-200 RCRA Hazardous Waste Disposal (Note: Assumes disposal outside of California. Cost based on vendor quote from US Ecology, July 2015.)	3,000.00	TON	0.00	0.00	0.00	0.00
4.33.08.05 LLW/MLLW Soil	1,500.00	TON	0.00	0.00	0.00	0.00
USR DS-400 Low-level Radioactive Waste (LLW) Disposal (Note: Assumes disposal outside of California. Cost based on vendor quote from US Ecology, July 2015.)	1,500.00	TON	0.00	0.00	0.00	0.00
4.05.05 Backfill	39,000.00	ECY	9,777.14	16,432.86	2,258.57	2,258.57
4.05.05.06 Backfill from Offsite Sources	39,000.00	ECY	9,777.14	16,432.86	2,258.57	2,258.57
4.32.11.05 Import Fill Material	46,800.00	LCY	7,428.57	14,857.14	742.86	742.86
USR EW-HL-010 Haul Imported Soil	46,800.00	LCY	7,428.57	14,857.14	742.86	742.86
USR EW-MT-200 Borrow, common earth (Note: Based on average of the following RS Means CostWorks 2015 numbers: 31232 315 4000, 31232 315 7000, 31232 316 0035, and 31232 316 0020. \$/BCY cost converted to \$/LCY using 1.2 LCY per BCY)	46,800.00	LCY	0.00	0.00	0.00	0.00
USR EW-MT-210 Organic Amendment	46,800.00	LCY	0.00	0.00	0.00	0.00
4.05.05 Fill	39,000.00	ECY	2,348.57	1,575.71	1,515.71	1,515.71
USR EW-BM-LE-200 Fill - Spreading	46,800.00	LCY	1,114.29	742.86	742.86	742.86
USR SD-SP-LE-004B Site Grading - Rough	10.00	ACR	40.00	30.00	10.00	10.00
USR EW-BM-LE-202 Fill - Compaction	39,000.00	ECY	1,114.29	742.86	742.86	742.86
USR SD-SP-LE-005 Site Grading - Finish	10.00	ACR	80.00	60.00	20.00	20.00
- Quality Control and Testing	1.00	LS	0.00	0.00	0.00	0.00
USR SL-TEST-100 Backfill chemical testing	7.00	EA	0.00	0.00	0.00	0.00

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
(Note: Per estimator)						
USR SL-TEST-01 Soil testing, soil density, nuclear method, ASTM D2922	44.00	EA	0.00	0.00	0.00	0.00
(Note: Cost from RS Means CostWorks 2015 item number 01 45 2350 4735.)						
4.05.02 Restoration	1.00	LS	1,022.25	545.36	171.93	171.93
4.05.02.05 Seeding	10.00	ACR	16.00	32.00	16.00	16.00
USR SR-SD-LE-002 Seeding	10.00	ACR	16.00	32.00	16.00	16.00
USR SR-SD-MT-011 Seeding, native grass and wildflower seed mix.	10.00	ACR	0.00	0.00	0.00	0.00
(Note: Vendor quote, outsidepride.com, July 2015. Based 4 lbs per acre of native seed mix and 16 pounds per acre of native wildflower seed mix.)						
4.05.08 Allowance for Street/Pavement Repair	1.00	LS	1,006.25	513.36	155.93	155.93
(Note: Quantity Assumed Per Estimator)						
4.05.08 Woolsey Canyon Road	2.50	MI	1,006.25	513.36	155.93	155.93
USR SR-PV-300 Hauling for asphalt cold milling and paving	4,015.00	LCY	234.80	234.80	78.27	78.27
USR SR-PV-410 Cold milling asphalt paving, profile grooving, asphalt pavement, 2" deep, load and sweep	36,130.00	SY	224.81	96.35	32.12	32.12
(Note: Based on English Cost Book number 320116715350.)						
USR SR-PV-510 Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick, no hauling included	36,130.00	SY	546.65	182.22	45.55	45.55
(Note: Based on English Cost Book number 321216130380.)						
USR SR-PV-MT-510 Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick	36,130.00	SY	0.00	0.00	0.00	0.00
(Note: Material cost from RS Means CostWorks 2015 number 32 12 1613 0380.)						

**Conservation of Natural Resources Alternative -
Open Space Scenario**

Cost Breakout Backup
Conservation of Natural Resources Alternative – Open Space Scenario

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost	Operating Cost (\$)			Number of years: 2			
			(\$)	(\$)	(\$)	Months	Monthly	Annual	\$ per Yr	UOM	Unit Cost	
Conservation of Natural Resources Alternative												
4.9x General Conditions	1	LS	3,339,043	4,075,869	4,075,869	-	-	-	-	-	-	-
Multiple ECES Codes Workplans and Submittals	1	LS	208,655	254,698	254,698	-	-	-	-	-	-	-
4.02.01.01 Project Meetings and Updating Project Schedule	24	MO	29,439	35,935	35,935	12	1,497.29	17,967.50	-	-	-	-
4.03.01 Work Plans	1	LS	113,686	138,773	138,773	-	-	-	-	-	-	-
4.04.21 Submittals	1	LS	27,936	34,100	34,100	-	-	-	-	-	-	-
4.04.19 Post-RA Completion Report	1	LS	37,594	45,890	45,890	-	-	-	-	-	-	-
8.01.04 Home Office Personnel	24	MO	182,520	222,797	222,797	12	9,283.21	111,398.50	-	-	-	-
4.02.01.01.15 Job Site Personnel	24	MO	2,816,585	3,438,120	3,438,120	12	143,255.00	1,719,060.00	-	-	-	-
4.05.01.03 Temporary Facilities	24	MO	131,283	160,253	160,253	12	6,677.21	80,126.50	-	-	-	-
4.05.01.03.25 Project Sign	2	EA	2,926	3,571	3,571	-	-	-	-	-	-	-
4.05.01.03.21 Staging Area and Security Fencing	1	LS	31,644	38,627	38,627	-	-	-	-	-	-	-
4.05.01.03 Temporary Facilities	24	MO	83,675	102,140	102,140	12	4,255.83	51,070.00	-	-	-	-
4.05.36.01 Removal of Temporary Construction Facilities	1	LS	13,039	15,916	15,916	-	-	-	-	-	-	-
4.05.00 Mobilization and Demobilization	1	LS	110,272	134,606	134,606	-	-	-	-	-	-	-
4.05.01.01 Site Mobilization	1	LS	52,442	64,015	64,015	-	-	-	-	-	-	-
4.05.36 Site Demobilization	1	LS	57,830	70,591	70,591	-	-	-	-	-	-	-
4.05.36.04 Equipment Demobilization	1	LS	48,377	59,052	59,052	-	-	-	-	-	-	-
4.05.36.01.9x Site Cleanup	1	LS	9,453	11,539	11,539	-	-	-	-	-	-	-
4.9x Best Management Practices	1	LS	3,834,637	4,680,826	4,680,826	-	-	-	-	-	-	-
8.01.01 SWPPP Implementation and Maintenance	1	LS	26,797	32,710	32,710	-	-	-	-	-	-	-
8.01.01.03 SWPPP Preparation	1	LS	12,292	15,004	15,004	-	-	-	-	-	-	-
8.01.01.9x SWPPP Oversight and Maintenance	24	MO	14,505	17,706	17,706	12	737.75	8,853.00	-	-	-	-
4.05.02 Temporary Erosion and Sediment Control	1	LS	157,838	192,668	192,668	-	-	-	-	-	-	-
4.05.02.04 Silt Fence	17480	LF	41,012	50,062	50,062	-	-	-	-	-	-	-
4.05.02.04 Wattles	875	LF	5,480	6,689	6,689	-	-	-	-	-	-	-
4.05.02.04 Sediment Trap	4	EA	4,799	5,858	5,858	-	-	-	-	-	-	-
4.05.02.04 Rock Filter Dam	4	EA	11,962	14,602	14,602	-	-	-	-	-	-	-
4.05.02.04 Track-Out Prevention	4	EA	4,786	5,842	5,842	-	-	-	-	-	-	-
4.05.02.05 Temporary Seeding	9	ACR	2,034	2,482	2,482	-	-	-	4.5	ACR	275.78	-
4.05.02.9x Inspection and Maintenance	24	MO	87,766	107,133	107,133	12	4,463.88	53,566.50	-	-	-	-
4.05.9x Existing Tree Protection	35	EA	44,534	54,361	54,361	-	-	-	-	-	-	-
4.05.9x Arborist and Care for Existing Trees	24	MO	29,243	35,696	35,696	12	1,487.33	17,848.00	-	-	-	-
4.05.9x Tree Protection Fencing	35	EA	15,291	18,665	18,665	-	-	-	-	-	-	-
4.16.04 Dust Control	24	MO	591,841	722,442	722,442	12	30,101.75	361,221.00	-	-	-	-
4.07.08.02 Air Monitoring	24	MO	51,181	62,475	62,475	12	2,603.13	31,237.50	-	-	-	-
4.05.01.03.12 Decontamination/Wash Station	1	LS	482,261	588,681	588,681	-	-	-	-	-	-	-
4.05.01.03.12 Decontamination/Wash Station Purchase and Setup	1	EA	211,884	258,641	258,641	-	-	-	-	-	-	-
4.05.01.03.12 Decontamination/Wash Station Operation	24	MO	270,376	330,040	330,040	12	13,751.67	165,020.00	-	-	-	-
4.05.9x Street Sweeping	24	MO	393,333	480,129	480,129	12	20,005.38	240,064.50	-	-	-	-
8.01.03.11 Traffic Control	1	LS	2,086,854	2,547,360	2,547,360	-	-	-	-	-	-	-
8.01.03.11 Preconstruction Video Survey	1	LS	3,603	4,398	4,398	-	-	-	-	-	-	-
8.01.03.11 Traffic Control Signs and Barricades	1	LS	21,165	25,835	25,835	-	-	-	-	-	-	-
8.01.03.11 Traffic Control	24	MO	2,062,086	2,517,127	2,517,127	12	104,880.29	1,258,563.50	-	-	-	-
Multiple ECES Codes Excavation and Hauling	38200	BCY	5,328,894	6,504,820	6,504,820	-	-	-	19100	BCY	170.28	-
Multiple ECES Codes Low-Hazard and Moderate-Hazard Soil	36000	BCY	3,932,123	4,799,825	4,799,825	-	-	-	18000	BCY	133.33	-
4.05.9x Construction Survey and Staking	8	ACR	6,370	7,775	7,775	-	-	-	4.2	ACR	925.6	-
4.05.05.01 Excavation	36000	BCY	241,637	294,959	294,959	-	-	-	18000	BCY	8.19	-
4.32.11.05 Hauling	54000	TON	3,579,464	4,369,344	4,369,344	-	-	-	27000	TON	80.91	-
4.07.11 Confirmation Sampling	185	EA	5,946	7,258	7,258	-	-	-	93	EA	39.23	-
4.08.04 Sample Analysis	185	EA	98,707	120,488	120,488	-	-	-	93	EA	651.29	-
Multiple ECES Codes Hazardous Soil	2000	BCY	1,328,903	1,622,152	1,622,152	-	-	-	1000	BCY	811.08	-
4.05.9x Construction Surveying and Staking	0.5	ACR	379	463	463	-	-	-	0.25	ACR	926	-
4.05.05.01 Excavation	2000	BCY	76,739	93,673	93,673	-	-	-	1000	BCY	46.84	-
4.32.11.05 Hauling	3000	TON	1,244,997	1,519,730	1,519,730	-	-	-	1500	TON	506.58	-
4.07.11 Confirmation Sampling	12	EA	386	471	471	-	-	-	6	EA	39.25	-
4.08.04 Sample Analysis	12	EA	6,403	7,815	7,815	-	-	-	6	EA	651.25	-
Multiple ECES Codes LLW/MLLW Soil	200	BCY	67,867	82,844	82,844	-	-	-	100	BCY	414.22	-
4.05.9x Construction Surveying and Staking	0	ACR	76	93	93	-	-	-	0.05	ACR	930	-
4.05.05.01 Excavation	200	BCY	2,810	3,430	3,430	-	-	-	100	BCY	17.15	-
4.32.11.05 Hauling	300	TON	61,588	75,178	75,178	-	-	-	150	TON	250.59	-
4.07.11 Confirmation Sampling	6	EA	193	235	235	-	-	-	3	EA	39.17	-
4.08.04 Sample Analysis	6	EA	3,201	3,908	3,908	-	-	-	3	EA	651.33	-
4.33.08.05 Disposal	57300	TON	2,857,160	3,150,019	3,150,019	-	-	-	28650	TON	54.97	-
4.33.08.05 Low-Hazard and Moderate-Hazard Soil	54000	TON	2,593,053	2,858,841	2,858,841	-	-	-	27000	TON	52.94	-
4.33.08.05 Hazardous Soil	3000	TON	240,098	264,707	264,707	-	-	-	1500	TON	88.24	-
4.33.08.05 LLW/MLLW Soil	300	TON	24,010	26,471	26,471	-	-	-	150	TON	88.24	-
4.05.05 Backfill	28650	ECY	2,352,637	2,871,793	2,871,793	-	-	-	14325	ECY	100.24	-
4.05.05.06 Backfill from Offsite Sources	28650	ECY	2,352,637	2,871,793	2,871,793	-	-	-	14325	ECY	100.24	-
4.32.11.05 Import Fill Material	34400	LCY	2,112,070	2,578,141	2,578,141	-	-	-	17200	LCY	74.95	-
4.05.05 Fill	28650	ECY	232,370	283,647	283,647	-	-	-	14325	ECY	9.9	-
Quality Control and Testing	1	LS	8,196	10,005	10,005	-	-	-	-	-	-	-
4.05.02 Restoration	1	LS	523,666	639,223	639,223	-	-	-	-	-	-	-
4.05.02.05 Seeding	9	ACR	6,235	7,611	7,611	-	-	-	4.5	ACR	845.67	-
4.05.08 Allowance for Street/Pavement Repair	1	LS	517,430	631,612	631,612	-	-	-	-	-	-	-
4.05.08 Woolsey Canyon Road	2.5	MI	517,430	631,612	631,612	-	-	-	-	MI	252644.8	-

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
CONSERVATION OF NATURAL RESOURCES ALTERNATIVE – OPEN SPACE SCENARIO					
4.9x General Conditions	1.00	LS	3,339,043	4,075,869	4,075,869
Multiple ECES Codes Workplans and Submittals	1.00	LS	208,655	254,698	254,698
(Note: Includes project schedule, submittals, and work plans.)					
4.02.01.01 Project Meetings and Updating Project Schedule	24.00	MO	29,439	35,935	35,935
FOP FA-PROJM Project Managers	130.00	HR	13,327	16,268	16,268
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FC-ENGCI Engineers, Civil	104.00	HR	8,643	10,550	10,550
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	208.00	HR	7,469	9,117	9,117
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
4.03.01 Work Plans	1.00	LS	113,686	138,773	138,773
FOP FA-PROJM Project Managers	80.00	HR	8,201	10,011	10,011
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FC-ENGCI Engineers, Civil	600.00	HR	49,862	60,864	60,864
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	120.00	HR	4,309	5,260	5,260
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FC-ENGQC Engineers, Quality Control	120.00	HR	10,908	13,315	13,315
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
FOP FD-SAENG Safety Engineers	240.00	HR	15,834	19,328	19,328
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
HTW HO-STFSCI Staff Scientist (HTW Projects)	440.00	HR	24,572	29,995	29,995
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
4.04.21 Submittals	1.00	LS	27,936	34,100	34,100
FOP FA-PROJM Project Managers	24.00	HR	2,460	3,003	3,003
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)					
			83.10	101.44	101.44

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	160.00	HR	13,296	16,231	16,231
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	40.00	HR	35.91 1,436	43.83 1,753	43.83 1,753
FOP FC-ENGQC Engineers, Quality Control (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	40.00	HR	90.90 3,636	110.96 4,438	110.96 4,438
FOP FD-SAENG Safety Engineers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	40.00	HR	65.97 2,639	80.53 3,221	80.53 3,221
HTW HO-STFSCI Staff Scientist (HTW Projects) (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	80.00	HR	55.85 4,468	68.17 5,454	68.17 5,454
4.04.19 Post-RA Completion Report	1.00	LS	37,594	45,890	45,890
FOP FA-PROJM Project Managers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	56.00	HR	102.52 5,741	125.14 7,008	125.14 7,008
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	300.00	HR	83.10 24,931	101.44 30,432	101.44 30,432
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	80.00	HR	35.91 2,873	43.83 3,507	43.83 3,507
FOP FC-ENGQC Engineers, Quality Control (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	24.00	HR	90.90 2,182	110.96 2,663	110.96 2,663
FOP FD-SAENG Safety Engineers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	8.00	HR	65.97 528	80.53 644	80.53 644
HTW HO-STFSCI Staff Scientist (HTW Projects) (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	24.00	HR	55.85 1,340	68.17 1,636	68.17 1,636
8.01.04 Home Office Personnel	24.00	MO	7,605.02 182,520	9,283.22 222,797	9,283.22 222,797
FOP FA-PROJM Project Managers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	1,664.00	HR	93.20 155,079	113.76 189,300	113.76 189,300
HTW HO-SECADM Secretarial/ Administrative (HTW Projects) (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	832.00	HR	32.98 27,442	40.26 33,497	40.26 33,497
			117,357.69	143,255.02	143,255.02

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.02.01.01.15 Job Site Personnel	24.00	MO	2,816,585	3,438,120	3,438,120
FOP FA-AGENS General Superintendents (P.M.) (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	4,160.00	HR	89.85 373,786	109.68 456,270	109.68 456,270
FOP FC-ENGPE Engineers, Project (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	4,160.00	HR	91.96 382,540	112.25 466,956	112.25 466,956
FOP FC-ENGQC Engineers, Quality Control (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	4,160.00	HR	82.64 343,773	100.87 419,633	100.87 419,633
FOP FD-SAENG Safety Engineers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	4,160.00	HR	59.98 249,502	73.21 304,559	73.21 304,559
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	1,664.00	HR	75.55 125,712	92.22 153,452	92.22 153,452
HTW HO-STFSCI Staff Scientist (HTW Projects) (Note: Average of biologist, archeologist, and arborist wage rate. Time based on estimated total for all three disciplines. Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	2,496.00	HR	50.77 126,720	61.97 154,684	61.97 154,684
FOP FC-FLABT Field Constr. QC./Lab Technician (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	4,160.00	HR	40.91 170,183	49.94 207,738	49.94 207,738
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatcenter.com).)	4,160.00	HR	32.64 135,797	39.85 165,763	39.85 165,763
USR U-MT-TF-300 Cell phone and air card (Note: Per estimator. Based on business plan rate for monthly talk and text plan, 4 GB data bundle, and 5 GB air card.)	216.00	MO	160.07 34,574	195.39 42,203	195.39 42,203
EP T50XX004 TRUCK, HIGHWAY, CONVENTIONAL, 1/2 TON PICKUP, 4X4	29,696.00	HR	29.43 873,997	35.93 1,066,862	35.93 1,066,862
4.05.01.03 Temporary Facilities	24.00	MO	131,283	160,253	160,253
4.05.01.03.25 Project Sign	2.00	EA	2,926	3,571	3,571
USR SI-LE-001 Project sign installation (Note: Productivity per estimator.)	2.00	EA	1,462.77 1,491	1,785.56 1,821	1,785.56 1,821
USR SI-MT-001 Project sign, high intensity reflectorized (Note: Material cost from RS Means CostWorks 2015 number 01 58 1350 0020 for a 4' x 5' project sign and from www.lowes.com for a \$5.97 for 4"x4"x8' pressure treated post. Material cost includes sign and 2 posts.)	2.00	EA	717.03 1,434	875.25 1,751	875.25 1,751

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.05.01.03.21 Staging Area and Security Fencing (Note: Assumes construction of staging area.)	1.00	LS	31,644	38,627	38,627
USR EW-MT-005 3/8" max flex aggregate (Note: **Vendor quote, Select Sand & Gravel, Mar/2015** Includes delivery.)	1,360.00	TON	26,094	31,852	31,852
USR TF-LE-002 Spread gravel with dozer	862.00	LCY	1,121	1,368	1,368
USR TF-LE-003 Compact gravel material with roller	741.00	ECY	1,181	1,442	1,442
USR FN-001 Temporary Fencing, chain link, 6' high, 11 ga (Note: Vendor quote from National Construction Rentals, May 2013. Cost includes installation and removal. Length of fence = Chain Link fence (560 lf) + Gate (2 x 20 lf). Escalated to Mar 2015.)	760.00	LF	2,838	3,465	3,465
USR FN-002 Temporary Fencing - Gate (Note: Vendor quote from National Construction Rentals, May 2013. Cost includes installation and removal. Escalated to Mar 2015.)	2.00	EA	410	500	500
4.05.01.03 Temporary Facilities	24.00	MO	83,675	102,140	102,140
USR TF-MT-001 Office Trailer, furnished, rent per month, 50' x 12', excl. hookups (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1320 0550.)	48.00	MO	20,744	25,322	25,322
USR TF-MT-002 Storage Boxes, rent per month, 40' x 8' (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1320 1350.)	24.00	MO	2,561	3,126	3,126
USR TF-MT-007 Rent toilet portable chemical (Note: Rental cost per RS Means CostWorks 2015 item number 01 54 3340 6410.)	96.00	MO	19,361	23,634	23,634
USR TF-MT-003 Field Office Expense, office equipment rental, average (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0100.)	24.00	MO	5,071	6,190	6,190
USR TF-MT-004 Field Office Expense, office supplies, average (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0120.)	24.00	MO	2,036	2,485	2,485
USR TF-MT-005 Field Office Expense, telephone bill; avg. bill/month, incl. long distance (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0140.)	48.00	MO	4,303	5,252	5,252
USR TF-MT-006 Field Office Expense, field office lights & HVAC (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1340 0160.)	48.00	MO	8,144	9,941	9,941
USR TF-MT-008 Office Trailer, delivery or pickup (Note: Cost per RS Means CostWorks 2015 number 01 52 1320 0890. Assumes 30 mile delivery or pickup distance, one-way, \$11.30 per mile per RS Means CostWorks 2015 number 01 52 1320 0800. Includes mob/demob for 2 office trailer and 1 storage box.)	2.00	EA	1,120	1,368	1,368

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR TF-MT-009 Secondary containment for 550 gallon gasoline or diesel tanks. (Note: Vendor quote from The Tank Depot, July 2015.)	1.00	EA	784.31 784	957.38 957	957.38 957
USR TF-MT-010 Secondary containment for 1,000 gallon gasoline or diesel tanks. (Note: Vendor quote from The Tank Depot, July 2015.)	1.00	EA	1,727.62 1,728	2,108.86 2,109	2,108.86 2,109
USR U-MT-TF-400 Water cooler rental (Note: Vendor quote from Culligan Water, Savannah, Georgia, October 2012. \$40 per year plus \$25 deposit.)	48.00	MO	5.78 278	7.06 339	7.06 339
USR U-MT-TF-401 Water cooler water - 5 gallon bottle (Note: Vendor quote from Culligan Water, Savannah, Georgia, October 2012. \$5 one time delivery fee.)	96.00	EA	4.80 461	5.86 563	5.86 563
USR U-MT-TF-450 Dumpster - delivery or pickup (Note: Vendor quote from ABC Waste, October 2012.)	1.00	EA	26.68 27	32.56 33	32.56 33
USR U-MT-TF-451 Dumpster service, 4 CY (Note: Vendor quote from ABC Waste, October 2012. Includes 6% surcharge for fuel.)	24.00	MO	88.23 2,117	107.70 2,585	107.70 2,585
USR U-MT-TF-100 Temporary electrical hookup (Note: Per estimator.)	2.00	EA	5,335.50 10,671	6,512.88 13,026	6,512.88 13,026
USR U-MT-TF-101 Temporary telephone hookup (Note: Per estimator.)	2.00	EA	2,134.20 4,268	2,605.15 5,210	2,605.15 5,210
4.05.36.01 Removal of Temporary Construction Facilities	1.00	LS	13,039	15,916	15,916
USR U-MT-TF-201 Office trailer teardown and removal (Note: Per estimator)	1.00	LS	907	1,107	1,107
USR USR-LE-EW-SR-001 Remove and restore temporary staging area	24.00	HR	505.49 12,132	617.04 14,809	617.04 14,809
4.05.00 Mobilization and Demobilization	1.00	LS	110,272	134,606	134,606
4.05.01.01 Site Mobilization	1.00	LS	52,442	64,015	64,015
USR USR-MB-LE-001 Mobilization or demobilization of heavy equipment	5.00	EA	2,708.60 13,543	3,306.31 16,532	3,306.31 16,532
USR USR-MB-LE-002 Mobilization or demobilization of medium equipment	10.00	EA	2,049.04 20,490	2,501.20 25,012	2,501.20 25,012
USR USR-MB-LE-003 Mobilization or demobilization of self-propelled equipment	3.00	EA	1,935.48 5,806	2,362.58 7,088	2,362.58 7,088
USR USR-MB-LE-004 Oversize/overwidth load hauling permits (Note: Per estimator)	8.00	EA	1,067.10 8,537	1,302.58 10,421	1,302.58 10,421
USR U-MB-LE-100 Pre-construction video survey of road (Note: Assumes haul roads would be video surveyed to document road conditions prior to job start. Includes allowance for video camera and placing video on DVDs with multiple copies.)	1.00	LS	4,066	4,963	4,963

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.05.36 Site Demobilization	1.00	LS	57,830	70,591	70,591
4.05.36.04 Equipment Demobilization	1.00	LS	48,377	59,052	59,052
USR USR-MB-LE-001 Mobilization or demobilization of heavy equipment	5.00	EA	2,708.60 13,543	3,306.31 16,532	3,306.31 16,532
USR USR-MB-LE-002 Mobilization or demobilization of medium equipment	10.00	EA	2,049.04 20,490	2,501.20 25,012	2,501.20 25,012
USR USR-MB-LE-003 Mobilization or demobilization of self-propelled equipment	3.00	EA	1,935.48 5,806	2,362.58 7,088	2,362.58 7,088
USR USR-MB-LE-004 Oversize/overwidth load hauling permits (Note: Per estimator)	8.00	EA	1,067.10 8,537	1,302.58 10,421	1,302.58 10,421
4.05.36.01.9x Site Cleanup (Note: Includes general site cleanup and removal of erosion/sediment control after the completion of construction. This does not include the removal of the construction staging pad as it will be left in place for future work.)	1.00	LS	9,453	11,539	11,539
USR MDM-06 Site Cleanup (Note: Assume 5 days)	5.00	DAY	1,890.59 9,453	2,307.79 11,539	2,307.79 11,539
4.9x Best Management Practices	1.00	LS	3,834,637	4,680,826	4,680,826
8.01.01 SWPPP Implementation and Maintenance	1.00	LS	26,797	32,710	32,710
8.01.01.03 SWPPP Preparation	1.00	LS	12,292	15,004	15,004
FOP FA-PROJM Project Managers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	8.00	HR	93.20 746	113.76 910	113.76 910
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	120.00	HR	75.55 9,066	92.22 11,066	92.22 11,066
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	16.00	HR	32.64 522	39.85 638	39.85 638
FOP FC-FLDRT Field Draftsmen (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	40.00	HR	48.95 1,958	59.76 2,390	59.76 2,390
8.01.01.9x SWPPP Oversight and Maintenance	24.00	MO	14,505	17,706	17,706
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	192.00	HR	75.55 14,505	92.22 17,706	92.22 17,706
4.05.02 Temporary Erosion and Sediment Control	1.00	LS	157,838	192,668	192,668
4.05.02.04 Silt Fence	17,480.00	LF	41,012	50,062	50,062
			2.35 0.21	2.86 0.25	2.86 0.25

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR SP-ESC-MT-001 Erosion control, silt fence, polypropylene, ideal conditions, 3' high (Note: Material cost from RS Means CostWorks number 31 25 1416 1100.)	17,480.00	LF	3,637	4,440	4,440
USR SP-ESC-LE-001 Silt Fence Installation (Note: Productivity from Means CostWorks 2015 number 31 25 1416 1100.)	17,480.00	LF	2.14 37,374	2.61 45,622	2.61 45,622
4.05.02.04 Wattles	875.00	LF	6.26 5,480	7.64 6,689	7.64 6,689
USR SP-ESC-LE-100 Wattle Installation	875.00	LF	5.08 4,443	6.20 5,424	6.20 5,424
USR SP-ESC-MT-100 Wattle (Note: Vendor quote, Impact Absorbents, July 2015. Cost based on 1 pallet (300 feet of 9" x 25' segments). Includes wood stake every 4'.)	875.00	LF	1.18 1,036	1.45 1,265	1.45 1,265
4.05.02.04 Sediment Trap	4.00	EA	1,199.68 4,799	1,464.42 5,858	1,464.42 5,858
USR EW-EX-LE-002 Excavating sediment trap	280.00	BCY	17.14 4,799	20.92 5,858	20.92 5,858
4.05.02.04 Rock Filter Dam	4.00	EA	2,990.52 11,962	3,650.44 14,602	3,650.44 14,602
USR EW-RP-LE-004 Rock filter dam placement	280.00	LCY	9.35 2,617	11.41 3,195	11.41 3,195
USR EW-MT-103 Rock Filter Dam Material (Note: Based on previous work. Includes delivery.)	450.00	TON	20.77 9,345	25.35 11,407	25.35 11,407
4.05.02.04 Track-Out Prevention	4.00	EA	1,196.55 4,786	1,460.59 5,842	1,460.59 5,842
USR TF-LE-002 Spread gravel with dozer	140.00	LCY	1.30 182	1.59 222	1.59 222
USR TF-LE-003 Compact gravel material with roller	120.00	ECY	1.59 191	1.95 233	1.95 233
USR EW-MT-005 3/8" max flex aggregate (Note: Vendor quote from previous work, March 2015. Includes delivery.)	230.00	TON	19.19 4,413	23.42 5,387	23.42 5,387
4.05.02.05 Temporary Seeding (Note: Assumes temporary seasonal seeding for erosion control.)	9.00	ACR	225.95 2,034	275.81 2,482	275.81 2,482
USR SR-SD-LE-002B Temporary Seeding	9.00	ACR	55.21 497	67.40 607	67.40 607
USR SR-SD-MT-010 Temporary seeding (Note: Vendor quote, outsidepride.com, July 2015. Based 4 lbs per acre of native seed mix.)	9.00	ACR	170.74 1,537	208.41 1,876	208.41 1,876

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.05.02.9x Inspection and Maintenance	24.00	MO	87,766	107,133	107,133
			3,656.92	4,463.89	4,463.89
USR SP-ESC-LE-008 Inspection and maintenance of erosion and sediment control measures.	416.00	HR	76,668	93,587	93,587
			184.30	224.97	224.97
USR SP-ESC-MT-007 Erosion and sediment control maintenance allowance (Note: Per estimator)	104.00	WK	11,098	13,547	13,547
			106.71	130.26	130.26
4.05.9x Existing Tree Protection	35.00	EA	44,534	54,361	54,361
			1,272.40	1,553.18	1,553.18
4.05.9x Arborist and Care for Existing Trees	24.00	MO	29,243	35,696	35,696
			1,218.46	1,487.34	1,487.34
HTW HO-STFSCI Staff Scientist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	576.00	HR	29,243	35,696	35,696
			50.77	61.97	61.97
4.05.9x Tree Protection Fencing	35.00	EA	15,291	18,665	18,665
			436.88	533.29	533.29
USR FN-SF-LE-001 Safety fence installation	3,500.00	LF	4,372	5,337	5,337
			1.25	1.52	1.52
USR FN-SF-LE-002 Safety fence removal	3,500.00	LF	2,186	2,669	2,669
			0.62	0.76	0.76
USR FN-SF-MT-001 Orange safety fence (Note: Vendor quote, Grainger, June 2015.)	3,500.00	LF	6,125	7,477	7,477
			1.75	2.14	2.14
USR FN-SF-MT-002 5-foot steel t-post (Note: Vendor quote, Blain's Farm and Fleet, June 2015.)	700.00	EA	2,607	3,182	3,182
			3.72	4.55	4.55
4.16.04 Dust Control	24.00	MO	591,841	722,442	722,442
			24,660.03	30,101.76	30,101.76
USR TR-LE-005 Dust control	4,000.00	HR	467,567	570,745	570,745
			116.89	142.69	142.69
USR TR-MT-100 Water for Dust Control (Note: Based on current pricing for 16,000 gallons per day (0.049 ac-ft/day or 21.4 CCF/day). Assumes \$1,480 per ac-ft for base fee and \$2,960 per ac-ft for penalty. Unit cost assumes penalty would be incurred for exceeding the district's allotment.)	11,440.00	CCF	124,274	151,697	151,697
			10.86	13.26	13.26
4.07.08.02 Air Monitoring	24.00	MO	51,181	62,475	62,475
			2,132.52	2,603.11	2,603.11
USR SFTY-05 PM10 Dust Monitor (Note: Thermo Scientific ADR-1500. Vendor Quote: Field Environmental, 2014. Monthly Rental)	24.00	MO	38,903	47,488	47,488
			1,620.98	1,978.68	1,978.68
			446.31	544.80	544.80

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR AIRWE-M Weather Station, monthly rental - M (Note: Davis Vantage Pro Weather Station. Vendor Quote: Pine Environmental, 2014. Monthly Rental)	24.00	MO	10,712	13,075	13,075
USR PM-M Air Sample Analysis - Particulate Matter - M (Note: Vendor Quote: Test America, 2013.)	24.00	EA	1,566	1,911	1,911
4.05.01.03.12 Decontamination/Wash Station	1.00	LS	482,261	588,681	588,681
4.05.01.03.12 Decontamination/Wash Station Purchase and Setup	1.00	EA	211,884	258,641	258,641
USR TR-MT-900 Above ground steel wash rack w/water collection, treatment and storage for re-use (Note: Vendor quote, Riveer, July 2015. Includes wash water containment, collection, treatment and storage system. Total length is 42' x 18' with 6' side walls.)	1.00	EA	211,884	258,641	258,641
4.05.01.03.12 Decontamination/Wash Station Operation	24.00	MO	270,376	330,040	330,040
USR TR-LE-100 Decontamination/Wash Station	4,160.00	HR	268,071	327,226	327,226
USR TR-MT-910 Replacement bag filter for wash station (Note: Vendor quote, Riveer, July 2015.)	72.00	EA	2,305	2,814	2,814
4.05.9x Street Sweeping	24.00	MO	393,333	480,129	480,129
USR TR-LE-004 Street sweeper	2,080.00	HR	393,333	480,129	480,129
8.01.03.11 Traffic Control	1.00	LS	2,086,854	2,547,360	2,547,360
8.01.03.11 Preconstruction Video Survey	1.00	LS	3,603	4,398	4,398
USR TR-LE-003 Preconstruction video survey of roadway	16.00	HR	2,536	3,095	3,095
USR TR-MT-800 Preconstruction video survey of roadway (Note: Per estimator)	1.00	LS	1,067	1,303	1,303
8.01.03.11 Traffic Control Signs and Barricades	1.00	LS	21,165	25,835	25,835
(Note: Includes setup signs and maintenance during construction.)					
USR TR-LE-002 Setup signs and barricades (Note: Productivity per estimator)	16.00	EA	1,473	1,798	1,798
USR TR-LE-001 Traffic control sign and barricade maintenance (Note: Assumes 4 hour per month)	96.00	HR	17,677	21,578	21,578
USR TR-MT-005 Be Prepared To Stop, CW3-4, 36" x 36" (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	8.00	EA	730	891	891
USR TR-MT-006 Flag Man Sign, CW20-7, 36" x 36" (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	8.00	EA	730	891	891

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR TR-MT-009 Economy stand for aluminum diamond-shaped signs, 48" to 60" signs (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	16.00	EA	34.68 555	42.33 677	42.33 677
8.01.03.11 Traffic Control	24.00	MO	2,062,086	2,517,127	2,517,127
USR TR-LE-006 Traffic Control Flagmen	32,000.00	HR	64.44 2,062,086	78.66 2,517,127	78.66 2,517,127
Multiple ECES Codes Excavation and Hauling	38,200.00	BCY	5,328,894	6,504,820	6,504,820
Multiple ECES Codes Low-Hazard and Moderate-Hazard Soil	36,000.00	BCY	3,932,123	4,799,825	4,799,825
4.05.9x Construction Survey and Staking	8.40	ACR	6,370	7,775	7,775
0.2 SUR-02 Surveying Crew	8.40	ACR	758.28 6,370	925.61 7,775	925.61 7,775
4.05.05.01 Excavation	36,000.00	BCY	241,637	294,959	294,959
USR EW-EX-A5-100 Excavation - Non-Hazardous/Non-Radioactive Waste	36,000.00	BCY	6.71 241,637	8.19 294,959	8.19 294,959
4.32.11.05 Hauling	54,000.00	TON	3,579,464	4,369,344	4,369,344
USR EW-HL-A5-100 Hauling - Non-Hazardous/Non-Radioactive Waste	54,000.00	TON	66.29 3,579,464	80.91 4,369,344	80.91 4,369,344
4.07.11 Confirmation Sampling	185.00	EA	5,946	7,258	7,258
USR EW-CS-001 Confirmation sampling	185.00	EA	32.14 5,946	39.23 7,258	39.23 7,258
4.08.04 Sample Analysis	185.00	EA	98,707	120,488	120,488
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	185.00	EA	533.55 98,707	651.29 120,488	651.29 120,488
Multiple ECES Codes Hazardous Soil	2,000.00	BCY	1,328,903	1,622,152	1,622,152
4.05.9x Construction Surveying and Staking	0.50	ACR	379	463	463
USR SUR-02 Surveying Crew	0.50	ACR	758.28 379	925.61 463	925.61 463
			38.37	46.84	46.84

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.05.05.01 Excavation	2,000.00	BCY	76,739	93,673	93,673
USR EW-EX-A5-200 Excavation - RCRA Hazardous Waste	2,000.00	BCY	76,739	93,673	93,673
			38.37	46.84	46.84
			415.00	506.58	506.58
4.32.11.05 Hauling	3,000.00	TON	1,244,997	1,519,730	1,519,730
USR DS-900 End-Dump-Sized Liner Bag (Note: Vendor quote, US Ecology, July 2015. Required for a "sealed" container.)	130.00	EA	91,614	111,830	111,830
			704.72	860.23	860.23
USR EW-HL-A5-200 Hauling - RCRA Hazardous Waste	3,000.00	TON	1,153,383	1,407,900	1,407,900
			384.46	469.30	469.30
4.07.11 Confirmation Sampling	12.00	EA	386	471	471
USR EW-CS-001 Confirmation sampling	12.00	EA	386	471	471
			32.14	39.23	39.23
			32.14	39.23	39.23
4.08.04 Sample Analysis	12.00	EA	6,403	7,815	7,815
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	12.00	EA	6,403	7,815	7,815
			533.55	651.29	651.29
			533.55	651.29	651.29
Multiple ECES Codes LLW/MLLW Soil	200.00	BCY	67,867	82,844	82,844
			339.34	414.22	414.22
			758.28	925.61	925.61
4.05.9x Construction Surveying and Staking	0.10	ACR	76	93	93
USR SUR-02 Surveying Crew	0.10	ACR	76	93	93
			758.28	925.61	925.61
			76	93	93
4.05.05.01 Excavation	200.00	BCY	2,810	3,430	3,430
USR EW-EX-A5-400 Excavation - Low-level Radioactive Waste (LLW)	200.00	BCY	2,810	3,430	3,430
			14.05	17.15	17.15
			14.05	17.15	17.15
4.32.11.05 Hauling	300.00	TON	61,588	75,178	75,178
USR DS-900 End-Dump-Sized Liner Bag (Note: Vendor quote, US Ecology, July 2015. Required for a "sealed" container.)	13.00	EA	9,161	11,183	11,183
			704.72	860.23	860.23
USR EW-HL-A5-400 Hauling - Low-level Radioactive Waste (LLW)	300.00	TON	52,426	63,995	63,995
			174.75	213.32	213.32
			32.14	39.23	39.23
4.07.11 Confirmation Sampling	6.00	EA	193	235	235
USR EW-CS-001 Confirmation sampling	6.00	EA	193	235	235
			32.14	39.23	39.23
			32.14	39.23	39.23

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
4.08.04 Sample Analysis	6.00	EA	3,201	3,908	3,908
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	6.00	EA	3,201	3,908	3,908
4.33.08.05 Disposal	57,300.00	TON	2,857,160	3,150,019	3,150,019
4.33.08.05 Low-Hazard and Moderate-Hazard Soil	54,000.00	TON	2,593,053	2,858,841	2,858,841
USR DS-100 Non-Hazardous/Non-Radioactive Waste Disposal (Note: Assume disposal at an applicable facility within 135 mile of the site. Assumed vendor quote from Waste Management Facilities, July 2015.)	54,000.00	TON	2,593,053	2,858,841	2,858,841
4.33.08.05 Hazardous Soil	3,000.00	TON	240,098	264,707	264,707
USR DS-200 RCRA Hazardous Waste Disposal (Note: Assumes disposal outside of California. Cost based on vendor quote from US Ecology, July 2015.)	3,000.00	TON	240,098	264,707	264,707
4.33.08.05 LLW/MLLW Soil	300.00	TON	24,010	26,471	26,471
USR DS-400 Low-level Radioactive Waste (LLW) Disposal (Note: Assumes disposal outside of California. Cost based on vendor quote from US Ecology, July 2015.)	300.00	TON	24,010	26,471	26,471
4.05.05 Backfill	28,650.00	ECY	2,352,637	2,871,793	2,871,793
4.05.05.06 Backfill from Offsite Sources	28,650.00	ECY	2,352,637	2,871,793	2,871,793
4.32.11.05 Import Fill Material	34,400.00	LCY	2,112,070	2,578,141	2,578,141
USR EW-HL-010 Haul Imported Soil	34,400.00	LCY	857,016	1,046,133	1,046,133
USR EW-MT-200 Borrow, common earth (Note: Based on average of the following RS Means CostWorks 2015 numbers: 31232 315 4000, 31232 315 7000, 31232 316 0035, and 31232 316 0020. \$/BCY cost converted to \$/LCY using 1.2 LCY per BCY)	34,400.00	LCY	961,389	1,173,538	1,173,538
USR EW-MT-210 Organic Amendment	34,400.00	LCY	293,666	358,469	358,469
4.05.05 Fill	28,650.00	ECY	232,370	283,647	283,647
USR EW-BM-LE-200 Fill - Spreading	34,400.00	LCY	128,995	157,460	157,460

Description	Quantity	UOM	CostToPrime	ContractCost	ProjectCost
USR SD-SP-LE-004B Site Grading - Rough	9.00	ACR	662.64 5,964	808.86 7,280	808.86 7,280
USR EW-BM-LE-202 Fill - Compaction	28,650.00	ECY	2.98 85,484	3.64 104,347	3.64 104,347
USR SD-SP-LE-005 Site Grading - Finish	9.00	ACR	1,325.27 11,927	1,617.72 14,559	1,617.72 14,559
- Quality Control and Testing	1.00	LS	8,196	10,005	10,005
USR SL-TEST-100 Backfill chemical testing (Note: Per estimator)	6.00	EA	1,067.10 6,403	1,302.58 7,815	1,302.58 7,815
USR SL-TEST-01 Soil testing, soil density, nuclear method, ASTM D2922 (Note: Cost from RS Means CostWorks 2015 item number 01 45 2350 4735.)	41.00	EA	43.75 1,794	53.41 2,190	53.41 2,190
4.05.02 Restoration	1.00	LS	523,666	639,223	639,223
4.05.02.05 Seeding	9.00	ACR	6,235	7,611	7,611
USR SR-SD-LE-002 Seeding	9.00	ACR	692.82 1,625	845.70 1,984	845.70 1,984
USR SR-SD-MT-011 Seeding, native grass and wildflower seed mix. (Note: Vendor quote, outsidepride.com, July 2015. Based 4 lbs per acre of native seed mix and 16 pounds per acre of native wildflower seed mix.)	9.00	ACR	180.61 4,610	220.46 5,627	220.46 5,627
4.05.08 Allowance for Street/Pavement Repair (Note: Quantity Assumed Per Estimator)	1.00	LS	517,430	631,612	631,612
4.05.08 Woolsey Canyon Road	2.50	MI	517,430	631,612	631,612
USR SR-PV-300 Hauling for asphalt cold milling and paving	4,015.00	LCY	206,972.11 39,312	252,644.65 47,986	252,644.65 47,986
USR SR-PV-410 Cold milling asphalt paving, profile grooving, asphalt pavement, 2" deep, load and sweep (Note: Based on English Cost Book number 320116715350.)	36,130.00	SY	9.79 37,585	11.95 45,879	11.95 45,879
USR SR-PV-510 Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick, no hauling included (Note: Based on English Cost Book number 321216130380.)	36,130.00	SY	1.04 59,777	1.27 72,968	1.27 72,968
USR SR-PV-MT-510 Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick (Note: Material cost from RS Means CostWorks 2015 number 32 12 1613 0380.)	36,130.00	SY	1.65 380,756	2.02 464,778	2.02 464,778

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
CONSERVATION OF NATURAL RESOURCES ALTERNATIVE – OPEN SPACE SCENARIO	1.00	LS	116,069.20	105,533.94	71,531.59	71,531.59
4.9x General Conditions	1.00	LS	34,686.03	29,776.03	48.03	48.03
Multiple ECES Codes Workplans and Submittals	1.00	LS	2,918.00	0.00	0.00	0.00
(Note: Includes project schedule, submittals, and work plans.)						
4.02.01.01 Project Meetings and Updating Project Schedule	24.00	MO	442.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	130.00	HR	130.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	104.00	HR	104.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	208.00	HR	208.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
4.03.01 Work Plans	1.00	LS	1,600.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	80.00	HR	80.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	600.00	HR	600.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	120.00	HR	120.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGQC Engineers, Quality Control	120.00	HR	120.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FD-SAENG Safety Engineers	240.00	HR	240.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
HTW HO-STFSCI Staff Scientist (HTW Projects)	440.00	HR	440.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
4.04.21 Submittals	1.00	LS	384.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	24.00	HR	24.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	160.00	HR	160.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	40.00	HR	40.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGQC Engineers, Quality Control	40.00	HR	40.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FD-SAENG Safety Engineers	40.00	HR	40.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
HTW HO-STFSCI Staff Scientist (HTW Projects)	80.00	HR	80.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
4.04.19 Post-RA Completion Report	1.00	LS	492.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	56.00	HR	56.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	300.00	HR	300.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	80.00	HR	80.00	0.00	0.00	0.00

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGQC Engineers, Quality Control	24.00	HR	24.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FD-SAENG Safety Engineers	8.00	HR	8.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
HTW HO-STFSCI Staff Scientist (HTW Projects)	24.00	HR	24.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
8.01.04 Home Office Personnel	24.00	MO	2,496.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers	1,664.00	HR	1,664.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
HTW HO-SECADM Secretarial/ Administrative (HTW Projects)	832.00	HR	832.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
4.02.01.01.15 Job Site Personnel	24.00	MO	29,120.00	29,696.00	0.00	0.00
FOP FA-AGENS General Superintendents (P.M.)	4,160.00	HR	4,160.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGPE Engineers, Project	4,160.00	HR	4,160.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGQC Engineers, Quality Control	4,160.00	HR	4,160.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FD-SAENG Safety Engineers	4,160.00	HR	4,160.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-ENGCI Engineers, Civil	1,664.00	HR	1,664.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
HTW HO-STFSCI Staff Scientist (HTW Projects)	2,496.00	HR	2,496.00	0.00	0.00	0.00
(Note: Average of biologist, archeologist, and arborist wage rate. Time based on estimated total for all three disciplines. Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FC-FLABT Field Constr. QC./Lab Technician	4,160.00	HR	4,160.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist	4,160.00	HR	4,160.00	0.00	0.00	0.00
(Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)						
USR U-MT-TF-300 Cell phone and air card	216.00	MO	0.00	0.00	0.00	0.00
(Note: Per estimator. Based on business plan rate for monthly talk and text plan, 4 GB data bundle, and 5 GB air card.)						
EP T50XX004 TRUCK, HIGHWAY, CONVENTIONAL, 1/2 TON PICKUP, 4X4	29,696.00	HR	0.00	29,696.00	0.00	0.00
4.05.01.03 Temporary Facilities	24.00	MO	152.03	80.03	48.03	48.03
4.05.01.03.25 Project Sign	2.00	EA	16.00	16.00	8.00	8.00
USR SI-LE-001 Project sign installation	2.00	EA	16.00	16.00	8.00	8.00
(Note: Productivity per estimator.)						
USR SI-MT-001 Project sign, high intensity reflectorized	2.00	EA	0.00	0.00	0.00	0.00
(Note: Material cost from RS Means CostWorks 2015 number 01 58 1350 0020 for a 4' x 5' project sign and from www.lowes.com for a \$5.97 for 4"x4"x8' pressure treated post. Material cost includes sign and 2 posts.)						
4.05.01.03.21 Staging Area and Security Fencing	1.00	LS	16.03	16.03	16.03	16.03
(Note: Assumes construction of staging area.)						
USR EW-MT-005 3/8" max flex aggregate	1,360.00	TON	0.00	0.00	0.00	0.00
(Note: **Vendor quote, Select Sand & Gravel, Mar/2015** Includes delivery.)						
USR TF-LE-002 Spread gravel with dozer	862.00	LCY	8.62	8.62	8.62	8.62
USR TF-LE-003 Compact gravel material with roller	741.00	ECY	7.41	7.41	7.41	7.41

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR FN-001 Temporary Fencing, chain link, 6' high, 11 ga (Note: Vendor quote from National Construction Rentals, May 2013. Cost includes installation and removal. Length of fence = Chain Link fence (560 lf) + Gate (2 x 20 lf). Escalated to Mar 2015.)	760.00	LF	0.00	0.00	0.00	0.00
USR FN-002 Temporary Fencing - Gate (Note: Vendor quote from National Construction Rentals, May 2013. Cost includes installation and removal. Escalated to Mar 2015.)	2.00	EA	0.00	0.00	0.00	0.00
4.05.01.03 Temporary Facilities	24.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-001 Office Trailer, furnished, rent per month, 50' x 12', excl. hookups (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1320 0550.)	48.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-002 Storage Boxes, rent per month, 40' x 8' (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1320 1350.)	24.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-007 Rent toilet portable chemical (Note: Rental cost per RS Means CostWorks 2015 item number 01 54 3340 6410.)	96.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-003 Field Office Expense, office equipment rental, average (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0100.)	24.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-004 Field Office Expense, office supplies, average (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0120.)	24.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-005 Field Office Expense, telephone bill; avg. bill/month, incl. long distance (Note: Cost per RS Means CostWorks 2015 item number 01 52 1340 0140.)	48.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-006 Field Office Expense, field office lights & HVAC (Note: Rental cost per RS Means CostWorks 2015 item number 01 52 1340 0160.)	48.00	MO	0.00	0.00	0.00	0.00
USR TF-MT-008 Office Trailer, delivery or pickup (Note: Cost per RS Means CostWorks 2015 number 01 52 1320 0890. Assumes 30 mile delivery or pickup distance, one-way, \$11.30 per mile per RS Means CostWorks 2015 number 01 52 1320 0800. Includes mob/demob for 2 office trailer and 1 storage box.)	2.00	EA	0.00	0.00	0.00	0.00
USR TF-MT-009 Secondary containment for 550 gallon gasoline or diesel tanks. (Note: Vendor quote from The Tank Depot, July 2015.)	1.00	EA	0.00	0.00	0.00	0.00
USR TF-MT-010 Secondary containment for 1,000 gallon gasoline or diesel tanks. (Note: Vendor quote from The Tank Depot, July 2015.)	1.00	EA	0.00	0.00	0.00	0.00
USR U-MT-TF-400 Water cooler rental (Note: Vendor quote from Culligan Water, Savannah, Georgia, October 2012. \$40 per year plus \$25 deposit.)	48.00	MO	0.00	0.00	0.00	0.00
USR U-MT-TF-401 Water cooler water - 5 gallon bottle (Note: Vendor quote from Culligan Water, Savannah, Georgia, October 2012. \$5 one time delivery fee.)	96.00	EA	0.00	0.00	0.00	0.00
USR U-MT-TF-450 Dumpster - delivery or pickup (Note: Vendor quote from ABC Waste, October 2012.)	1.00	EA	0.00	0.00	0.00	0.00
USR U-MT-TF-451 Dumpster service, 4 CY (Note: Vendor quote from ABC Waste, October 2012. Includes 6% surcharge for fuel.)	24.00	MO	0.00	0.00	0.00	0.00
USR U-MT-TF-100 Temporary electrical hookup (Note: Per estimator.)	2.00	EA	0.00	0.00	0.00	0.00
USR U-MT-TF-101 Temporary telephone hookup (Note: Per estimator)	2.00	EA	0.00	0.00	0.00	0.00
4.05.36.01 Removal of Temporary Construction Facilities	1.00	LS	120.00	48.00	24.00	24.00
USR U-MT-TF-201 Office trailer teardown and removal (Note: Per estimator)	1.00	LS	0.00	0.00	0.00	0.00
USR USR-LE-EW-SR-001 Remove and restore temporary staging area	24.00	HR	120.00	48.00	24.00	24.00
4.05.00 Mobilization and Demobilization	1.00	LS	722.00	736.00	416.00	416.00
4.05.01.01 Site Mobilization	1.00	LS	317.00	346.00	196.00	196.00
USR USR-MB-LE-001 Mobilization or demobilization of heavy equipment	5.00	EA	75.00	100.00	50.00	50.00
USR USR-MB-LE-002 Mobilization or demobilization of medium equipment	10.00	EA	150.00	200.00	100.00	100.00

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR USR-MB-LE-003 Mobilization or demobilization of self-propelled equipment	3.00	EA	60.00	30.00	30.00	30.00
USR USR-MB-LE-004 Oversize/overwidth load hauling permits (Note: Per estimator)	8.00	EA	0.00	0.00	0.00	0.00
USR U-MB-LE-100 Pre-construction video survey of road (Note: Assumes haul roads would be video surveyed to document road conditions prior to job start. Includes allowance for video camera and placing video on DVDs with multiple copies.)	1.00	LS	32.00	16.00	16.00	16.00
4.05.36 Site Demobilization	1.00	LS	405.00	390.00	220.00	220.00
4.05.36.04 Equipment Demobilization	1.00	LS	285.00	330.00	180.00	180.00
USR USR-MB-LE-001 Mobilization or demobilization of heavy equipment	5.00	EA	75.00	100.00	50.00	50.00
USR USR-MB-LE-002 Mobilization or demobilization of medium equipment	10.00	EA	150.00	200.00	100.00	100.00
USR USR-MB-LE-003 Mobilization or demobilization of self-propelled equipment	3.00	EA	60.00	30.00	30.00	30.00
USR USR-MB-LE-004 Oversize/overwidth load hauling permits (Note: Per estimator)	8.00	EA	0.00	0.00	0.00	0.00
4.05.36.01.9x Site Cleanup	1.00	LS	120.00	60.00	40.00	40.00
(Note: Includes general site cleanup and removal of erosion/sediment control after the completion of construction. This does not include the removal of the construction staging pad as it will be left in place for future work.)						
USR MDM-06 Site Cleanup (Note: Assume 5 days)	5.00	DAY	120.00	60.00	40.00	40.00
4.9x Best Management Practices	1.00	LS	44,901.65	11,263.40	43,002.90	43,002.90
8.01.01 SWPPP Implementation and Maintenance	1.00	LS	376.00	0.00	0.00	0.00
8.01.01.03 SWPPP Preparation	1.00	LS	184.00	0.00	0.00	0.00
FOP FA-PROJM Project Managers (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	8.00	HR	8.00	0.00	0.00	0.00
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	120.00	HR	120.00	0.00	0.00	0.00
FOP FB-CLTYP Clerks, Typists, Bookkeepers & Receptionist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	16.00	HR	16.00	0.00	0.00	0.00
FOP FC-FLDRT Field Draftsmen (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	40.00	HR	40.00	0.00	0.00	0.00
8.01.01.9x SWPPP Oversight and Maintenance	24.00	MO	192.00	0.00	0.00	0.00
FOP FC-ENGCI Engineers, Civil (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	192.00	HR	192.00	0.00	0.00	0.00
4.05.02 Temporary Erosion and Sediment Control	1.00	LS	1,390.90	1,037.15	616.65	616.65
4.05.02.04 Silt Fence	17,480.00	LF	441.60	147.20	147.20	147.20
USR SP-ESC-MT-001 Erosion control, silt fence, polypropylene, ideal conditions, 3' high (Note: Material cost from RS Means CostWorks number 31 25 1416 1100.)	17,480.00	LF	0.00	0.00	0.00	0.00
USR SP-ESC-LE-001 Silt Fence Installation (Note: Productivity from Means CostWorks 2015 number 31 25 1416 1100.)	17,480.00	LF	441.60	147.20	147.20	147.20
4.05.02.04 Wattles	875.00	LF	52.50	17.50	17.50	17.50
USR SP-ESC-LE-100 Wattle Installation	875.00	LF	52.50	17.50	17.50	17.50
USR SP-ESC-MT-100 Wattle (Note: Vendor quote, Impact Absorbents, July 2015. Cost based on 1 pallet (300 feet of 9" x 25' segments). Includes wood stake every 4'.)	875.00	LF	0.00	0.00	0.00	0.00
4.05.02.04 Sediment Trap	4.00	EA	37.33	18.67	18.67	18.67
USR EW-EX-LE-002 Excavating sediment trap	280.00	BCY	37.33	18.67	18.67	18.67
4.05.02.04 Rock Filter Dam	4.00	EA	20.36	10.18	10.18	10.18
USR EW-RP-LE-004 Rock filter dam placement	280.00	LCY	20.36	10.18	10.18	10.18

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR EW-MT-103 Rock Filter Dam Material (Note: Based on previous work. Includes delivery.)	450.00	TON	0.00	0.00	0.00	0.00
4.05.02.04 Track-Out Prevention	4.00	EA	2.60	2.60	2.60	2.60
USR TF-LE-002 Spread gravel with dozer	140.00	LCY	1.40	1.40	1.40	1.40
USR TF-LE-003 Compact gravel material with roller	120.00	ECY	1.20	1.20	1.20	1.20
USR EW-MT-005 3/8" max flex aggregate (Note: Vendor quote from previous work, March 2015. Includes delivery.)	230.00	TON	0.00	0.00	0.00	0.00
4.05.02.05 Temporary Seeding	9.00	ACR	4.50	9.00	4.50	4.50
(Note: Assumes temporary seasonal seeding for erosion control.)						
USR SR-SD-LE-002B Temporary Seeding	9.00	ACR	4.50	9.00	4.50	4.50
USR SR-SD-MT-010 Temporary seeding (Note: Vendor quote, outsidepride.com, July 2015. Based 4 lbs per acre of native seed mix.)	9.00	ACR	0.00	0.00	0.00	0.00
4.05.02.9x Inspection and Maintenance	24.00	MO	832.00	832.00	416.00	416.00
USR SP-ESC-LE-008 Inspection and maintenance of erosion and sediment control measures.	416.00	HR	832.00	832.00	416.00	416.00
USR SP-ESC-MT-007 Erosion and sediment control maintenance allowance (Note: Per estimator)	104.00	WK	0.00	0.00	0.00	0.00
4.05.9x Existing Tree Protection	35.00	EA	654.75	26.25	26.25	26.25
4.05.9x Arborist and Care for Existing Trees	24.00	MO	576.00	0.00	0.00	0.00
HTW HO-STFSCI Staff Scientist (Note: Based on prevailing wage rates from Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com).)	576.00	HR	576.00	0.00	0.00	0.00
4.05.9x Tree Protection Fencing	35.00	EA	78.75	26.25	26.25	26.25
USR FN-SF-LE-001 Safety fence installation	3,500.00	LF	52.50	17.50	17.50	17.50
USR FN-SF-LE-002 Safety fence removal	3,500.00	LF	26.25	8.75	8.75	8.75
USR FN-SF-MT-001 Orange safety fence (Note: Vendor quote, Grainger, June 2015.)	3,500.00	LF	0.00	0.00	0.00	0.00
USR FN-SF-MT-002 5-foot steel t-post (Note: Vendor quote, Blain's Farm and Fleet, June 2015.)	700.00	EA	0.00	0.00	0.00	0.00
4.16.04 Dust Control	24.00	MO	4,000.00	8,000.00	4,000.00	4,000.00
USR TR-LE-005 Dust control	4,000.00	HR	4,000.00	8,000.00	4,000.00	4,000.00
USR TR-MT-100 Water for Dust Control (Note: Based on current pricing for 16,000 gallons per day (0.049 ac-ft/day or 21.4 CCF/day). Assumes \$1,480 per ac-ft for base fee and \$2,960 per ac-ft for penalty. Unit cost assumes penalty would be incurred for exceeding the district's allotment.)	11,440.00	CCF	0.00	0.00	0.00	0.00
4.07.08.02 Air Monitoring	24.00	MO	0.00	0.00	0.00	0.00
USR SFTY-05 PM10 Dust Monitor (Note: Thermo Scientific ADR-1500. Vendor Quote: Field Environmental, 2014. Monthly Rental)	24.00	MO	0.00	0.00	0.00	0.00
USR AIRWE-M Weather Station, monthly rental - M (Note: Davis Vantage Pro Weather Station. Vendor Quote: Pine Environmental, 2014. Monthly Rental)	24.00	MO	0.00	0.00	0.00	0.00
USR PM-M Air Sample Analysis - Particulate Matter - M (Note: Vendor Quote: Test America, 2013.)	24.00	EA	0.00	0.00	0.00	0.00
4.05.01.03.12 Decontamination/Wash Station	1.00	LS	4,160.00	0.00	4,160.00	4,160.00
4.05.01.03.12 Decontamination/Wash Station Purchase and Setup	1.00	EA	0.00	0.00	0.00	0.00
USR TR-MT-900 Above ground steel wash rack w/water collection, treatment and storage for re-use (Note: Vendor quote, Riveer, July 2015. Includes wash water containment, collection, treatment and storage system. Total length is 42' x 18' with 6' side walls.)	1.00	EA	0.00	0.00	0.00	0.00
4.05.01.03.12 Decontamination/Wash Station Operation	24.00	MO	4,160.00	0.00	4,160.00	4,160.00
USR TR-LE-100 Decontamination/Wash Station	4,160.00	HR	4,160.00	0.00	4,160.00	4,160.00

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR TR-MT-910 Replacement bag filter for wash station (Note: Vendor quote, Riveer, July 2015.)	72.00	EA	0.00	0.00	0.00	0.00
4.05.9x Street Sweeping	24.00	MO	2,080.00	2,080.00	2,080.00	2,080.00
USR TR-LE-004 Street sweeper	2,080.00	HR	2,080.00	2,080.00	2,080.00	2,080.00
8.01.03.11 Traffic Control	1.00	LS	32,240.00	120.00	32,120.00	32,120.00
8.01.03.11 Preconstruction Video Survey	1.00	LS	32.00	16.00	16.00	16.00
USR TR-LE-003 Preconstruction video survey of roadway	16.00	HR	32.00	16.00	16.00	16.00
USR TR-MT-800 Preconstruction video survey of roadway (Note: Per estimator)	1.00	LS	0.00	0.00	0.00	0.00
8.01.03.11 Traffic Control Signs and Barricades	1.00	LS	208.00	104.00	104.00	104.00
(Note: Includes setup signs and maintenance during construction.)						
USR TR-LE-002 Setup signs and barricades (Note: Productivity per estimator)	16.00	EA	16.00	8.00	8.00	8.00
USR TR-LE-001 Traffic control sign and barricade maintenance (Note: Assumes 4 hour per month)	96.00	HR	192.00	96.00	96.00	96.00
USR TR-MT-005 Be Prepared To Stop, CW3-4, 36" x 36" (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	8.00	EA	0.00	0.00	0.00	0.00
USR TR-MT-006 Flag Man Sign, CW20-7, 36" x 36" (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	8.00	EA	0.00	0.00	0.00	0.00
USR TR-MT-009 Economy stand for aluminum diamond-shaped signs, 48" to 60" signs (Note: Vendor Quote, TrafficSignStore.com, July 2015.)	16.00	EA	0.00	0.00	0.00	0.00
8.01.03.11 Traffic Control	24.00	MO	32,000.00	0.00	32,000.00	32,000.00
USR TR-LE-006 Traffic Control Flagmen	32,000.00	HR	32,000.00	0.00	32,000.00	32,000.00
Multiple ECES Codes Excavation and Hauling	38,200.00	BCY	27,532.94	51,122.97	26,229.55	26,229.55
Multiple ECES Codes Low-Hazard and Moderate-Hazard Soil	36,000.00	BCY	20,630.84	38,261.18	19,640.49	19,640.49
4.05.9x Construction Survey and Staking	8.40	ACR	84.00	33.60	33.60	33.60
0.2 SUR-02 Surveying Crew	8.40	ACR	84.00	33.60	33.60	33.60
4.05.05.01 Excavation	36,000.00	BCY	1,879.90	939.95	939.95	939.95
USR EW-EX-A5-100 Excavation - Non-Hazardous/Non-Radioactive Waste	36,000.00	BCY	1,879.90	939.95	939.95	939.95
4.32.11.05 Hauling	54,000.00	TON	18,620.69	37,241.38	18,620.69	18,620.69
USR EW-HL-A5-100 Hauling - Non-Hazardous/Non-Radioactive Waste	54,000.00	TON	18,620.69	37,241.38	18,620.69	18,620.69
4.07.11 Confirmation Sampling	185.00	EA	46.25	46.25	46.25	46.25
USR EW-CS-001 Confirmation sampling	185.00	EA	46.25	46.25	46.25	46.25
4.08.04 Sample Analysis	185.00	EA	0.00	0.00	0.00	0.00
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	185.00	EA	0.00	0.00	0.00	0.00
Multiple ECES Codes Hazardous Soil	2,000.00	BCY	6,605.01	12,303.51	6,303.51	6,303.51
4.05.9x Construction Surveying and Staking	0.50	ACR	5.00	2.00	2.00	2.00
USR SUR-02 Surveying Crew	0.50	ACR	5.00	2.00	2.00	2.00
4.05.05.01 Excavation	2,000.00	BCY	597.01	298.51	298.51	298.51
USR EW-EX-A5-200 Excavation - RCRA Hazardous Waste	2,000.00	BCY	597.01	298.51	298.51	298.51
4.32.11.05 Hauling	3,000.00	TON	6,000.00	12,000.00	6,000.00	6,000.00
USR DS-900 End-Dump-Sized Liner Bag (Note: Vendor quote, US Ecology, July 2015. Required for a "sealed" container.)	130.00	EA	0.00	0.00	0.00	0.00
USR EW-HL-A5-200 Hauling - RCRA Hazardous Waste	3,000.00	TON	6,000.00	12,000.00	6,000.00	6,000.00

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
4.07.11 Confirmation Sampling	12.00	EA	3.00	3.00	3.00	3.00
USR EW-CS-001 Confirmation sampling	12.00	EA	3.00	3.00	3.00	3.00
4.08.04 Sample Analysis	12.00	EA	0.00	0.00	0.00	0.00
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	12.00	EA	0.00	0.00	0.00	0.00
Multiple ECES Codes LLW/MLLW Soil	200.00	BCY	297.09	558.28	285.56	285.56
4.05.9x Construction Surveying and Staking	0.10	ACR	1.00	0.40	0.40	0.40
USR SUR-02 Surveying Crew	0.10	ACR	1.00	0.40	0.40	0.40
4.05.05.01 Excavation	200.00	BCY	21.86	10.93	10.93	10.93
USR EW-EX-A5-400 Excavation - Low-level Radioactive Waste (LLW)	200.00	BCY	21.86	10.93	10.93	10.93
4.32.11.05 Hauling	300.00	TON	272.73	545.45	272.73	272.73
USR DS-900 End-Dump-Sized Liner Bag (Note: Vendor quote, US Ecology, July 2015. Required for a "sealed" container.)	13.00	EA	0.00	0.00	0.00	0.00
USR EW-HL-A5-400 Hauling - Low-level Radioactive Waste (LLW)	300.00	TON	272.73	545.45	272.73	272.73
4.07.11 Confirmation Sampling	6.00	EA	1.50	1.50	1.50	1.50
USR EW-CS-001 Confirmation sampling	6.00	EA	1.50	1.50	1.50	1.50
4.08.04 Sample Analysis	6.00	EA	0.00	0.00	0.00	0.00
USR EW-CS-100 Confirmation sample analysis (Note: Per Estimator)	6.00	EA	0.00	0.00	0.00	0.00
4.33.08.05 Disposal	57,300.00	TON	0.00	0.00	0.00	0.00
4.33.08.05 Low-Hazard and Moderate-Hazard Soil	54,000.00	TON	0.00	0.00	0.00	0.00
USR DS-100 Non-Hazardous/Non-Radioactive Waste Disposal (Note: Assume disposal at an applicable facility within 135 mile of the site. Assumed vendor quote from Waste Management Facilities, July 2015.)	54,000.00	TON	0.00	0.00	0.00	0.00
4.33.08.05 Hazardous Soil	3,000.00	TON	0.00	0.00	0.00	0.00
USR DS-200 RCRA Hazardous Waste Disposal (Note: Assumes disposal outside of California. Cost based on vendor quote from US Ecology, July 2015.)	3,000.00	TON	0.00	0.00	0.00	0.00
4.33.08.05 LLW/MLLW Soil	300.00	TON	0.00	0.00	0.00	0.00
USR DS-400 Low-level Radioactive Waste (LLW) Disposal (Note: Assumes disposal outside of California. Cost based on vendor quote from US Ecology, July 2015.)	300.00	TON	0.00	0.00	0.00	0.00
4.05.05 Backfill	28,650.00	ECY	7,205.94	12,093.38	1,664.78	1,664.78
4.05.05.06 Backfill from Offsite Sources	28,650.00	ECY	7,205.94	12,093.38	1,664.78	1,664.78
4.32.11.05 Import Fill Material	34,400.00	LCY	5,460.32	10,920.63	546.03	546.03
USR EW-HL-010 Haul Imported Soil	34,400.00	LCY	5,460.32	10,920.63	546.03	546.03
USR EW-MT-200 Borrow, common earth (Note: Based on average of the following RS Means CostWorks 2015 numbers: 31232 315 4000, 31232 315 7000, 31232 316 0035, and 31232 316 0020. \$/BCY cost converted to \$/LCY using 1.2 LCY per BCY)	34,400.00	LCY	0.00	0.00	0.00	0.00
USR EW-MT-210 Organic Amendment	34,400.00	LCY	0.00	0.00	0.00	0.00
4.05.05 Fill	28,650.00	ECY	1,745.62	1,172.75	1,118.75	1,118.75
USR EW-BM-LE-200 Fill - Spreading	34,400.00	LCY	819.05	546.03	546.03	546.03
USR SD-SP-LE-004B Site Grading - Rough	9.00	ACR	36.00	27.00	9.00	9.00
USR EW-BM-LE-202 Fill - Compaction	28,650.00	ECY	818.57	545.71	545.71	545.71
USR SD-SP-LE-005 Site Grading - Finish	9.00	ACR	72.00	54.00	18.00	18.00
- Quality Control and Testing	1.00	LS	0.00	0.00	0.00	0.00
USR SL-TEST-100 Backfill chemical testing (Note: Per estimator)	6.00	EA	0.00	0.00	0.00	0.00

Cost Report Backup

Description	Quantity	UOM	ManHours	EQHours	CrewHours	Duration
USR SL-TEST-01 Soil testing, soil density, nuclear method, ASTM D2922 (Note: Cost from RS Means CostWorks 2015 item number 01 45 2350 4735.)	41.00	EA	0.00	0.00	0.00	0.00
4.05.02 Restoration	1.00	LS	1,020.65	542.16	170.33	170.33
4.05.02.05 Seeding	9.00	ACR	14.40	28.80	14.40	14.40
USR SR-SD-LE-002 Seeding	9.00	ACR	14.40	28.80	14.40	14.40
USR SR-SD-MT-011 Seeding, native grass and wildflower seed mix. (Note: Vendor quote, outsidepride.com, July 2015. Based 4 lbs per acre of native seed mix and 16 pounds per acre of native wildflower seed mix.)	9.00	ACR	0.00	0.00	0.00	0.00
4.05.08 Allowance for Street/Pavement Repair (Note: Quantity Assumed Per Estimator)	1.00	LS	1,006.25	513.36	155.93	155.93
4.05.08 Woolsey Canyon Road	2.50	MI	1,006.25	513.36	155.93	155.93
USR SR-PV-300 Hauling for asphalt cold milling and paving	4,015.00	LCY	234.80	234.80	78.27	78.27
USR SR-PV-410 Cold milling asphalt paving, profile grooving, asphalt pavement, 2" deep, load and sweep (Note: Based on English Cost Book number 320116715350.)	36,130.00	SY	224.81	96.35	32.12	32.12
USR SR-PV-510 Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick, no hauling included (Note: Based on English Cost Book number 321216130380.)	36,130.00	SY	546.65	182.22	45.55	45.55
USR SR-PV-MT-510 Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick (Note: Material cost from RS Means CostWorks 2015 number 32 12 1613 0380.)	36,130.00	SY	0.00	0.00	0.00	0.00

Attachment G

Calculations



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 WRKSHT NO.: QTO-01

Description: General assumptions that apply to all alternatives. Changes to these assumptions will impact the calculations for all alternatives. Assumptions are based on previous work of similar scope or values cited in literature.

GENERAL ASSUMPTIONS

Schedule Assumptions

Number of federal/state holidays per year, DY/YR: 10
 Base Year of Estimate, YR: 2018
 Estimated Duration of Area IV Building Demolition, YR: 2 *Per EIS*
 Estimated End Year of Area IV Building Demolition, YR: 2020
 Estimated Start Year of Area IV Soil Remediation, YR: 2021

Sampling/Testing Rates

Confirmation Sampling

Field duplicates, %: 10%

Excavation Bottom

	<u>AOC LUT Alt</u>	<u>Revised LUT</u>	<u>Conser. Res</u>
Quadrant length, FT:	25	40	50
Quadrant width, FT:	25	40	50
Excavation bottom confirmation sampling frequency, SF/EA:	625	1600	2500

Excavation Sidewalls

Sidewall confirmation sample frequency, LF/EA: 25 40 50

Backfill Sampling

Chemical testing frequency for backfill, LCY/EA: 10,000

Geotechnical Testing

Compaction testing frequency for backfill, SF/EA: 10,000

Dust Control Assumptions

Water usage, gallons per day, GAL/DY: 16,000 *Based on Boeing usage*

Disposal Assumptions

One-way travel distance for disposal of Low and Moderate Hazard Soil, MI: 135 *Average of 2 facilities (Chiquita & Westmorland)*

One-way travel distance for disposal of Hazardous Soil, MI: 780 *Energy Solutions, Utah*

One-way travel distance for disposal of LLW/MLLW Soil, MI: 300 *NNSS, Nevada*

Est. maximum weight per hauling truck, TON/EA: 20
 Est. maximum weight per hauling truck for radionuclides > LUTV, TON/EA: 20
 Est. maximum weight per containerized hauling truck, TON/EA: 20

Est. maximum weight per intermodal container, TON/EA: 25
 Soil volume capacity of intermodal container, LCY/EA: 19.20

Backfill Assumptions

Assumed percentage of excavation volume to backfill, %: 75%

Assumed percentage of backfill volume from onsite sandstone, %: 0%



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Description: General assumptions that apply to all alternatives. Changes to these assumptions will impact the calculations for all alternatives. Assumptions are based on previous work of similar scope or values cited in literature.

Material Property Assumptions

- BCY - bank cubic yard - in place volume prior to excavation
- LCY - loose cubic yards - volume after excavation
- ECY - embankment cubic yards (aka compacted cubic yards) - volume after compaction
- LB - pounds

Common Earth Bulking Factor:	1.20	Conversion from BCY to LCY
Common Earth Compaction Factor:	0.90	Conversion from BCY to ECY
Common Earth Compaction Factor:	0.75	Conversion from LCY to ECY
Unit weight of common earth, LB/BCY:	3000	Based on EIS
Unit weight of common earth, TON/BCY:	1.5	
Unit weight of common earth, LB/LCY:	2500	
Unit weight of common earth, TON/LCY:	1.3	
Sand Bulking Factor:	1.12	Conversion from BCY to LCY
Sand Compaction Factor:	0.95	Conversion from BCY to ECY
Sand Compaction Factor:	0.85	Conversion from LCY to ECY
Density of Sand (dry), LB/BCY:	2,673	CAT Handbook
Density of Sand (dry), LB/LCY:	2,387	Calculated
Gravel Bulking Factor:	1.12	Conversion from BCY to LCY
Gravel Compaction Factor:	0.95	Conversion from BCY to ECY
Gravel Compaction Factor:	0.86	Conversion from LCY to ECY
Density of Gravel (pitrun), LB/BCY:	3,650	CAT Handbook
Density of Gravel (pitrun), LB/LCY:	3,259	Calculated
Riprap Bulking Factor:	1.50	Conversion from BCY to LCY
Riprap Compaction Factor:	1.30	Conversion from BCY to ECY
Riprap Compaction Factor:	0.87	Conversion from LCY to ECY
Density of riprap, LB/BCY:	4,400	CAT Handbook
Density of riprap, LB/LCY:	2,933	Calculated
Sandstone Bulking Factor:	1.67	Calculated, Conversion from ECY to LCY
Density of sandstone, LB/BCY:	4,250	CAT Handbook
Density of sandstone, LB/LCY:	2,550	CAT Handbook
Concrete Demolition Debris Bulking Factor:	1.30	Conversion from BCY to LCY
Density of Concrete Debris, LB/LCY:	1,855	
Density of Concrete Debris, TON/LCY:	0.93	
Density of Concrete Debris, TON/CY:	2.00	
Density of Asphalt, TON/CY:	2.05	

Escalation of Materials

	<u>Date</u>	<u>Fiscal QYR</u>	<u>Index</u>	
Date of Vendor Quotes and Cost Index:	7/15/2015	4Q15	803.77	USACE Civil Works Construction Cost Index System (CWCCIS); EM 1110-2-1304 (31 Mar 18)
Estimate Preparation date and Cost Index:	9/11/2018	4Q18	857.66	
Escalation Rate, %:			6.71%	



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Description: Volume of soil per waste category per alternative.

CLEANUP TO THE AOC LUT VALUES ALTERNATIVE

Impacted area, AC: 150 Source: EIS, Table 7-4

Waste Characteristic	Volume (BCY)
Low Hazard Soil (718,000 CY) and Moderate Hazard Soil (51,000 CY)	769,000
Hazardous Soil	2,000
LLW/MLLW Soil	110,000
Total:	881,000

Estimated Total Number of Trucks: 49,800 Backfill
 Estimated Total Number of Trucks: 57,500 Waste

CLEANUP TO REVISED AOC LUT VALUES ALTERNATIVE

Impacted area, AC: 36 Source: EIS, Table 7-4

Waste Characteristic	Volume (BCY)
Low Hazard Soil (28,000 CY) and Moderate Hazard Soil (50,000 CY)	78,000
Hazardous Soil	2,000
LLW/MLLW Soil	110,000
Total:	190,000

Estimated Total Number of Trucks: 9,700 Backfill
 Estimated Total Number of Trucks: 12,400 Waste

CONSERVATION OF NATURAL RESOURCES ALTERNATIVE – RESIDENTIAL CLEANUP SCENARIO

Impacted area, AC: 10 Source: EIS, Table 7-4

Waste Characteristic	Volume (BCY)
Low Hazard Soil (0 CY) and Moderate Hazard Soil (49,000 CY)	49,000
Hazardous Soil	2,000
LLW/MLLW Soil	1,000
Total:	52,000

Estimated Total Number of Trucks: 2,700 Backfill
 Estimated Total Number of Trucks: 3,400 Waste

CONSERVATION OF NATURAL RESOURCES ALTERNATIVE – OPEN SPACE SCENARIO

Impacted area, AC: 9 Source: EIS, Table 7-4

Waste Characteristic	Volume (BCY)
Low Hazard Soil (0 CY) and Moderate Hazard Soil (36,000 CY)	36,000
Hazardous Soil	2,000
LLW/MLLW Soil	200
Total:	38,200

Estimated Total Number of Trucks: 2,000 Backfill
 Estimated Total Number of Trucks: 2,500 Waste



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CHECKED BY: JDG
 DATE CHECKED: 9/17/2018

DETERMINATION OF TRUCK SPLIT FOR RESTRICTED HAULING ALTERNATIVES

Assumptions

Est. maximum weight per hauling truck, TON/EA: 23 See QTO-01 Number of hauling days, DAY: 250
 Est. maximum weight per hauling truck for radionuclides > LUTV, TON/EA: 23 See QTO-01
 Est. maximum weight per containerized hauling truck, TON/EA: 20 See QTO-01
 Percentage of excavated volume from offsite backfill, %: 75% See QTO-01

CLEANUP TO THE AOC LUT VALUES ALTERNATIVE

Estimated Time Frame, YR: 26 See EIS

	TON	TON/YR	
Low and Moderate Hazard Soil, TON:	1,153,500	44,365	See QTO-ALT-2
Hazardous Soil, TON:	3,000	115	See QTO-ALT-2
Low and Moderate Hazard Soil, and Hazardous Soil Subtotal, TON:	1,156,500	44,481	
LLW/MLLW Soil, TON:	165,000	6,346	See QTO-ALT-2
LLW/MLLW Soil Subtotal, TON:	165,000	6,346	
Total, TON:	1,321,500	50,827	

Estimated backfill from offsite sources, TON: 1,145,300 44,050 See QTO-ALT-2
 Impacted area, AC: 150 5.8 See QTO-02

Year	Low and Moderate Hazard Soil				Hazardous Soil				LLW/MLLW Soil			
	Excavation		Container		Excavation		Container		Excavation		Container	
	Y/N	Tons/Year	Y/N	Trucks/Year	Y/N	Tons/Year	Y/N	Trucks/Year	Y/N	Tons/Year	Y/N	Trucks/Year
2019	N	0	N	0	N	0	N	0	N	0	N	0
2020	N	0	N	0	N	0	N	0	N	0	N	0
2021	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2022	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2023	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2024	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2025	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2026	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2027	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2028	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2029	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2030	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2031	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2032	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2033	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2034	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2035	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2036	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2037	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2038	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2039	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2040	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2041	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2042	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2043	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2044	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2045	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276
2046	Y	44,365	N	1,929	Y	115	N	5	Y	6,346	N	276



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DETERMINATION OF TRUCK SPLIT FOR RESTRICTED HAULING ALTERNATIVES

Year	Backfill				Estimated Time MO	Estimated Trucks/Year	Estimated Trucks/Day
	Excavation		Container				
	Y/N	Tons/Year	Y/N	Trucks/Year			
2019	N	0	N	0	0	0	0
2020	N	0	N	0	0	0	0
2021	Y	44,050	N	1,915	12	4,125	17
2022	Y	44,050	N	1,915	12	4,125	17
2023	Y	44,050	N	1,915	12	4,125	17
2024	Y	44,050	N	1,915	12	4,125	17
2025	Y	44,050	N	1,915	12	4,125	17
2026	Y	44,050	N	1,915	12	4,125	17
2027	Y	44,050	N	1,915	12	4,125	17
2028	Y	44,050	N	1,915	12	4,125	17
2029	Y	44,050	N	1,915	12	4,125	17
2030	Y	44,050	N	1,915	12	4,125	17
2031	Y	44,050	N	1,915	12	4,125	17
2032	Y	44,050	N	1,915	12	4,125	17
2033	Y	44,050	N	1,915	12	4,125	17
2034	Y	44,050	N	1,915	12	4,125	17
2035	Y	44,050	N	1,915	12	4,125	17
2036	Y	44,050	N	1,915	12	4,125	17
2037	Y	44,050	N	1,915	12	4,125	17
2038	Y	44,050	N	1,915	12	4,125	17
2039	Y	44,050	N	1,915	12	4,125	17
2040	Y	44,050	N	1,915	12	4,125	17
2041	Y	44,050	N	1,915	12	4,125	17
2042	Y	44,050	N	1,915	12	4,125	17
2043	Y	44,050	N	1,915	12	4,125	17
2044	Y	44,050	N	1,915	12	4,125	17
2045	Y	44,050	N	1,915	12	4,125	17
2046	Y	44,050	N	1,915	12	4,125	17
					312		



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DETERMINATION OF TRUCK SPLIT FOR RESTRICTED HAULING ALTERNATIVES

Year	Low and Moderate Hazard Soil					Hazardous Soil					LLW/MLLW Soil				
	Excavation, Hauling and Disposal					Excavation, Hauling and Disposal					Excavation, Hauling and Disposal				
	Excavation BCY	Area AC	Conf. Sam. EA	Hauling TON	Disposal TON	Excavation BCY	Area AC	Conf. Sam. EA	Hauling TON	Disposal TON	Excavation BCY	Area AC	Conf. Sam. EA	Hauling TON	Disposal TON
2019	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2020	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2021	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2022	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2023	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2024	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2025	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2026	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2027	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2028	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2029	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2030	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2031	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2032	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2033	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2034	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2035	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2036	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2037	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2038	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2039	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2040	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2041	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2042	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2043	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2044	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2045	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346
2046	29,577	5.0	244	44,365	44,365	77	0.1	24	115	115	4,231	0.7	70	6,346	6,346

Year	Total				
	Excavation, Hauling and Disposal				
	Excavation BCY	Area AC	Conf. Sam. EA	Hauling TON	Disposal TON
2019	0	0.0	0	0	0
2020	0	0.0	0	0	0
2021	33,885	5.8	338	50,827	50,827
2022	33,885	5.8	338	50,827	50,827
2023	33,885	5.8	338	50,827	50,827
2024	33,885	5.8	338	50,827	50,827
2025	33,885	5.8	338	50,827	50,827
2026	33,885	5.8	338	50,827	50,827
2027	33,885	5.8	338	50,827	50,827
2028	33,885	5.8	338	50,827	50,827
2029	33,885	5.8	338	50,827	50,827
2030	33,885	5.8	338	50,827	50,827
2031	33,885	5.8	338	50,827	50,827
2032	33,885	5.8	338	50,827	50,827
2033	33,885	5.8	338	50,827	50,827
2034	33,885	5.8	338	50,827	50,827
2035	33,885	5.8	338	50,827	50,827
2036	33,885	5.8	338	50,827	50,827
2037	33,885	5.8	338	50,827	50,827
2038	33,885	5.8	338	50,827	50,827
2039	33,885	5.8	338	50,827	50,827
2040	33,885	5.8	338	50,827	50,827
2041	33,885	5.8	338	50,827	50,827
2042	33,885	5.8	338	50,827	50,827
2043	33,885	5.8	338	50,827	50,827
2044	33,885	5.8	338	50,827	50,827
2045	33,885	5.8	338	50,827	50,827
2046	33,885	5.8	338	50,827	50,827
881,010	151	8,788	1,321,500	1,321,500	



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 DATE CHECKED: 9/17/2018

DETERMINATION OF TRUCK SPLIT FOR RESTRICTED HAULING ALTERNATIVES

Year	Total Backfill Volume ECY	Backfill									
		Onsite Source				Offsite Source				Testing	
		Amount		TON	Area ACR	Amount		TON	Area ACR	Backfill	Compaction
ECY	LCY	ECY	LCY			EA	EA				
2019	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0
2021	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2022	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2023	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2024	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2025	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2026	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2027	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2028	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2029	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2030	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2031	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2032	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2033	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2034	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2035	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2036	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2037	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2038	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2039	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2040	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2041	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2042	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2043	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2044	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2045	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
2046	29,400	0	0	0	0	29,400	35,300	44,050	5.8	4	26
Total	764,400		0	0	0.0	764,400	917,800	1,145,300	150.8	104	676



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 DATE CHECKED: 3/1/16 - 4/20/16
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CHECKED BY: JDG
 DATE CHECKED: 9/17/2018

DETERMINATION OF TRUCK SPLIT FOR RESTRICTED HAULING ALTERNATIVES

CLEANUP TO REVISED AOC LUT VALUES ALTERNATIVE

Estimated time frame, YR: **8** See EIS

	TOTAL	TON/YR	
Low and Moderate Hazard Soil, TON:	117,000	14,625	See QTO-ALT-3
Hazardous Soil, TON:	3,000	375	See QTO-ALT-3
Low and Moderate Hazard Soil, and Hazardous Soil Subtotal, TON:	120,000	15,000	
LLW/MLLW Soil, TON:	165,000	20,625	See QTO-ALT-3
LLW/MLLW Soil Subtotal, TON:	165,000	20,625	
Total, TON:	285,000	35,625	

Estimated backfill from offsite sources, TON: 222,400 27,800 See QTO-ALT-3
 Impacted area, AC: 36 5 See QTO-02

Year	Low and Moderate Hazard Soil				Hazardous Soil				LLW/MLLW Soil			
	Excavation		Container	Trucks/Year	Excavation		Container	Trucks/Year	Excavation		Container	Trucks/Year
	Y/N	Tons/Year	Y/N		Y/N	Tons/Year	Y/N		Y/N	Tons/Year	Y/N	
2019	N	0	N	0	N	0	N	0	N	0	N	0
2020	N	0	N	0	N	0	N	0	N	0	N	0
2021	Y	14,625	N	636	Y	375	N	16	Y	20,625	N	897
2022	Y	14,625	N	636	Y	375	N	16	Y	20,625	N	897
2023	Y	14,625	N	636	Y	375	N	16	Y	20,625	N	897
2024	Y	14,625	N	636	Y	375	N	16	Y	20,625	N	897
2025	Y	14,625	N	636	Y	375	N	16	Y	20,625	N	897
2026	Y	14,625	N	636	Y	375	N	16	Y	20,625	N	897
2027	Y	14,625	N	636	Y	375	N	16	Y	20,625	N	897
2028	Y	14,625	N	636	Y	375	N	16	Y	20,625	N	897
2029	N	0	N	0	N	0	N	0	N	0	N	0
2030	N	0	N	0	N	0	N	0	N	0	N	0

Year	Backfill				Estimated Time MO	Trucks/Year	Trucks/Day
	Excavation		Container	Trucks/Year			
	Y/N	Tons/Year	Y/N				
2019	N	0	N	0	0	0	0
2020	N	0	N	0	0	0	0
2021	Y	27,800	N	1,209	12	2,758	12
2022	Y	27,800	N	1,209	12	2,758	12
2023	Y	27,800	N	1,209	12	2,758	12
2024	Y	27,800	N	1,209	12	2,758	12
2025	Y	27,800	N	1,209	12	2,758	12
2026	Y	27,800	N	1,209	12	2,758	12
2027	Y	27,800	N	1,209	12	2,758	12
2028	Y	27,800	N	1,209	12	2,758	12
2029	N	0	N	0	0	0	0
2030	N	0	N	0	0	0	0
					96		



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DETERMINATION OF TRUCK SPLIT FOR RESTRICTED HAULING ALTERNATIVES

Year	Low and Moderate Hazard Soil					Hazardous Soil					LLW/MLLW Soil				
	Excavation, Hauling and Disposal					Excavation, Hauling and Disposal					Excavation, Hauling and Disposal				
	Excavation BCY	Area AC	Conf. Sam. EA	Hauling TON	Disposal TON	Excavation BCY	Area AC	Conf. Sam. EA	Hauling TON	Disposal TON	Excavation BCY	Area AC	Conf. Sam. EA	Hauling TON	Disposal TON
2019	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2020	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2021	9,750	1.8	124	14,625	14,625	250	0.0	0	375	375	13,750	2.6	157	20,625	20,625
2022	9,750	1.8	124	14,625	14,625	250	0.0	0	375	375	13,750	2.6	157	20,625	20,625
2023	9,750	1.8	124	14,625	14,625	250	0.0	0	375	375	13,750	2.6	157	20,625	20,625
2024	9,750	1.8	124	14,625	14,625	250	0.0	0	375	375	13,750	2.6	157	20,625	20,625
2025	9,750	1.8	124	14,625	14,625	250	0.0	0	375	375	13,750	2.6	157	20,625	20,625
2026	9,750	1.8	124	14,625	14,625	250	0.0	0	375	375	13,750	2.6	157	20,625	20,625
2027	9,750	1.8	124	14,625	14,625	250	0.0	0	375	375	13,750	2.6	157	20,625	20,625
2028	9,750	1.8	124	14,625	14,625	250	0.0	0	375	375	13,750	2.6	157	20,625	20,625
2029	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2030	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0

Year	Total				
	Excavation, Hauling and Disposal				
	Excavation BCY	Area AC	Conf. Sam. EA	Hauling TON	Disposal TON
2019	0	0.0	0	0	0
2020	0	0.0	0	0	0
2021	23,750	4	281	35,625	35,625
2022	23,750	4	281	35,625	35,625
2023	23,750	4	281	35,625	35,625
2024	23,750	4	281	35,625	35,625
2025	23,750	4	281	35,625	35,625
2026	23,750	4	281	35,625	35,625
2027	23,750	4	281	35,625	35,625
2028	23,750	4	281	35,625	35,625
2029	0	0	0	0	0
2030	0	0	0	0	0
Total	190,000	35.2	2,248	285,000	285,000

Year	Total Backfill Volume ECY	Backfill									Testing	
		Onsite Source				Offsite Source				Backfill EA	Compaction EA	
		Amount ECY	LCY	TON	Area ACR	Amount ECY	LCY	TON	Area ACR			
2019	0	0	0	0	0	0	0	0	0	0	0	
2020	0	0	0	0	0	0	0	0	0	0	0	
2021	18,600	0	0	0	0	18,600	22,400	27,800	4.5	3	20	
2022	18,600	0	0	0	0	18,600	22,400	27,800	4.5	3	20	
2023	18,600	0	0	0	0	18,600	22,400	27,800	4.5	3	20	
2024	18,600	0	0	0	0	18,600	22,400	27,800	4.5	3	20	
2025	18,600	0	0	0	0	18,600	22,400	27,800	4.5	3	20	
2026	18,600	0	0	0	0	18,600	22,400	27,800	4.5	3	20	
2027	18,600	0	0	0	0	18,600	22,400	27,800	4.5	3	20	
2028	18,600	0	0	0	0	18,600	22,400	27,800	4.5	3	20	
2029	0	0	0	0	0	0	0	0	0	0	0	
2030	0	0	0	0	0	0	0	0	0	0	0	
Total	148,800	0	0	0	0.0	148,800	179,200	222,400	36.0	24	160	



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DETERMINATION OF TRUCK SPLIT FOR RESTRICTED HAULING ALTERNATIVES

CONSERVATION OF NATURAL RESOURCES ALTERNATIVE – RESIDENTIAL CLEANUP SCENARIO

Estimated time frame, YR: **2** See EIS

	TOTAL	TON/YR	
Low and Moderate Hazard Soil, TON:	73,500	36,750	See QTO-ALT-4
Hazardous Soil, TON:	3,000	1,500	See QTO-ALT-4
Low and Moderate Hazard Soil, and Hazardous Soil Subtotal, TON:	76,500	38,250	
LLW/MLLW Soil, TON:	1,500	750	See QTO-ALT-4
LLW/MLLW Soil Subtotal, TON:	1,500	750	
Total, TON:	78,000	39,000	

Estimated backfill from offsite sources, TON: 61,000 30,500 See QTO-ALT-4
 Impacted area, AC: 10 5 See QTO-02

Year	Low and Moderate Hazard Soil				Hazardous Soil				LLW/MLLW Soil			
	Excavation		Container	Trucks/Year	Excavation		Container	Trucks/Year	Excavation		Container	Trucks/Year
	Y/N	Tons/Year	Y/N		Y/N	Tons/Year	Y/N		Y/N	Tons/Year	Y/N	
2019	N	0	N	0	N	0	N	0	N	0	N	0
2020	N	0	N	0	N	0	N	0	N	0	N	0
2021	Y	36,750	N	1,598	Y	1,500	N	65	Y	750	N	33
2022	Y	36,750	N	1,598	Y	1,500	N	65	Y	750	N	33
2023	N	0	N	0	N	0	N	0	N	0	N	0
2024	N	0	N	0	N	0	N	0	N	0	N	0
2025	N	0	N	0	N	0	N	0	N	0	N	0
2026	N	0	N	0	N	0	N	0	N	0	N	0
2027	N	0	N	0	N	0	N	0	N	0	N	0
2028	N	0	N	0	N	0	N	0	N	0	N	0
2029	N	0	N	0	N	0	N	0	N	0	N	0
2030	N	0	N	0	N	0	N	0	N	0	N	0

Year	Backfill				Estimated Time MO	Trucks/Year	Trucks/Day
	Excavation		Container	Trucks/Year			
	Y/N	Tons/Year	Y/N				
2019	N	0	N	0	0	0	0
2020	N	0	N	0	0	0	0
2021	Y	30,500	N	1,326	12	3,022	13
2022	Y	30,500	N	1,326	12	3,022	13
2023	N	0	N	0	0	0	0
2024	N	0	N	0	0	0	0
2025	N	0	N	0	0	0	0
2026	N	0	N	0	0	0	0
2027	N	0	N	0	0	0	0
2028	N	0	N	0	0	0	0
2029	N	0	N	0	0	0	0
2030	N	0	N	0	0	0	0
					24		



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DETERMINATION OF TRUCK SPLIT FOR RESTRICTED HAULING ALTERNATIVES

Year	Low and Moderate Hazard Soil					Hazardous Soil					LLW/MLLW Soil				
	Excavation, Hauling and Disposal					Excavation, Hauling and Disposal					Excavation, Hauling and Disposal				
	Excavation BCY	Area AC	Conf. Sam. EA	Hauling TON	Disposal TON	Excavation BCY	Area AC	Conf. Sam. EA	Hauling TON	Disposal TON	Excavation BCY	Area AC	Conf. Sam. EA	Hauling TON	Disposal TON
2019	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2020	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2021	24,500	4.7	233	36,750	36,750	1,000	0.2	35	1,500	1,500	500	0.1	24	750	750
2022	24,500	4.7	233	36,750	36,750	1,000	0.2	35	1,500	1,500	500	0.1	24	750	750
2023	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2024	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2025	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2026	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2027	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2028	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2029	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2030	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0

Year	Total				
	Excavation, Hauling and Disposal				
	Excavation BCY	Area AC	Conf. Sam. EA	Hauling TON	Disposal TON
2019	0	0.0	0	0	0
2020	0	0.0	0	0	0
2021	26,000	5	292	39,000	39,000
2022	26,000	5	292	39,000	39,000
2023	0	0	0	0	0
2024	0	0	0	0	0
2025	0	0	0	0	0
2026	0	0	0	0	0
2027	0	0	0	0	0
2028	0	0	0	0	0
2029	0	0	0	0	0
2030	0	0	0	0	0
Total	52,000	10	584	78,000	78,000

Year	Total Backfill Volume ECY	Backfill									
		Onsite Source				Offsite Source				Testing	
		Amount ECY	LCY	TON	Area ACR	Amount ECY	LCY	TON	Area ACR	Backfill EA	Compaction EA
2019	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0
2021	20,400	0	0	0	0	20,400	24,500	30,500	5	3	22
2022	20,400	0	0	0	0	20,400	24,500	30,500	5	3	22
2023	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0	0
Total	40,800	0	0	0	0.0	40,800	49,000	61,000	10.0	6	44



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DETERMINATION OF TRUCK SPLIT FOR RESTRICTED HAULING ALTERNATIVES

CONSERVATION OF NATURAL RESOURCES ALTERNATIVE – OPEN SPACE SCENARIO

Estimated time frame, YR: **2** See EIS

	TOTAL	TON/YR	
Low and Moderate Hazard Soil, TON:	54,000	27,000	See QTO-ALT-5
Hazardous Soil, TON:	3,000	1,500	See QTO-ALT-5
Low and Moderate Hazard Soil, and Hazardous Soil Subtotal, TON:	57,000	28,500	
LLW/MLLW Soil, TON:	300	150	See QTO-ALT-5
LLW/MLLW Soil Subtotal, TON:	300	150	
Total, TON:	57,300	28,650	

Estimated backfill from offsite sources, TON: 44,900 22,450 See QTO-ALT-5
 Impacted area, AC: 9 4.5 See QTO-02

Year	Low and Moderate Hazard Soil				Hazardous Soil				LLW/MLLW Soil			
	Excavation		Container		Excavation		Container		Excavation		Container	
	Y/N	Tons/Year	Y/N	Trucks/Year	Y/N	Tons/Year	Y/N	Trucks/Year	Y/N	Tons/Year	Y/N	Trucks/Year
2019	N	0	N	0	N	0	N	0	N	0	N	0
2020	N	0	N	0	N	0	N	0	N	0	N	0
2021	Y	27,000	N	1,174	Y	1,500	N	65	Y	150	N	7
2022	Y	27,000	N	1,174	Y	1,500	N	65	Y	150	N	7
2023	N	0	N	0	N	0	N	0	N	0	N	0
2024	N	0	N	0	N	0	N	0	N	0	N	0
2025	N	0	N	0	N	0	N	0	N	0	N	0
2026	N	0	N	0	N	0	N	0	N	0	N	0
2027	N	0	N	0	N	0	N	0	N	0	N	0
2028	N	0	N	0	N	0	N	0	N	0	N	0
2029	N	0	N	0	N	0	N	0	N	0	N	0
2030	N	0	N	0	N	0	N	0	N	0	N	0

Year	Backfill				Estimated Time MO	Trucks/Year	Trucks/Day
	Excavation		Container				
	Y/N	Tons/Year	Y/N	Trucks/Year			
2019	N	0	N	0	0	0	0
2020	N	0	N	0	0	0	0
2021	Y	22,450	N	976	12	2,222	9
2022	Y	22,450	N	976	12	2,222	9
2023	N	0	N	0	0	0	0
2024	N	0	N	0	0	0	0
2025	N	0	N	0	0	0	0
2026	N	0	N	0	0	0	0
2027	N	0	N	0	0	0	0
2028	N	0	N	0	0	0	0
2029	N	0	N	0	0	0	0
2030	N	0	N	0	0	0	0
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DETERMINATION OF TRUCK SPLIT FOR RESTRICTED HAULING ALTERNATIVES

Year	Low and Moderate Hazard Soil					Hazardous Soil					LLW/MLLW Soil				
	Excavation, Hauling and Disposal					Excavation, Hauling and Disposal					Excavation, Hauling and Disposal				
	Excavation BCY	Area AC	Conf. Sam. EA	Hauling TON	Disposal TON	Excavation BCY	Area AC	Conf. Sam. EA	Hauling TON	Disposal TON	Excavation BCY	Area AC	Conf. Sam. EA	Hauling TON	Disposal TON
2019	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2020	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2021	18,000	4.2	216	27,000	27,000	1,000	0.2	35	1,500	1,500	100	0.1	24	150	150
2022	18,000	4.2	216	27,000	27,000	1,000	0.2	35	1,500	1,500	100	0.1	24	150	150
2023	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2024	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2025	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2026	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2027	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2028	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2029	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
2030	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0

Year	Total				
	Excavation, Hauling and Disposal				
	Excavation BCY	Area AC	Conf. Sam. EA	Hauling TON	Disposal TON
2019	0	0.0	0	0	0
2020	0	0.0	0	0	0
2021	19,100	5	275	28,650	28,650
2022	19,100	5	275	28,650	28,650
2023	0	0	0	0	0
2024	0	0	0	0	0
2025	0	0	0	0	0
2026	0	0	0	0	0
2027	0	0	0	0	0
2028	0	0	0	0	0
2029	0	0	0	0	0
2030	0	0	0	0	0
Total	38,200	9	550	57,300	57,300

Year	Total Backfill Volume ECY	Backfill									
		Onsite Source				Offsite Source				Testing	
		Amount		Area ACR	Amount		Area ACR	Backfill EA	Compaction EA		
		ECY	LCY		TON	LCY				TON	
2019	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0
2021	15,000	0	0	0	0	15,000	18,000	22,450	4.5	2	20
2022	15,000	0	0	0	0	15,000	18,000	22,450	4.5	2	20
2023	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0	0
Total	30,000	0	0	0	0.0	30,000	36,000	44,900	9.0	4	40



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CLEANUP TO THE AOC LUT VALUES ALTERNATIVE

Assumed Work Days and Hours

Days per work week for office staff, DY/WK:	5
Hours per workday for office staff, HR/DY:	8
Days per work week for site staff, DY/WK:	5
Hours per workday for site staff, HR/DY:	8

Assumed number of work days per year, DY/YR: 250 *Incorporates 10 federal holidays per year*

Assumed Duration of Project

Estimated duration of construction project, MO:	312	<i>See QTO-03</i>
Estimated duration of construction project, YR:	26	
Estimated duration of construction project, WK:	1352	
Estimated duration of construction project, DY:	9490	<i>Calendar Days</i>
Estimated duration of construction project, DY:	6500	<i>Work days (based on 5 days per week, except 10 federal/state holidays.)</i>

Project Schedule, Submittals, Work Plans and Administrative BMPs

Project Schedules and Progress Meetings

Estimated project time, MO:	312
Estimated project time, WK:	1352

Project Progress Meetings

Estimated time per week, HR/WK:	1
Project Manager, HR:	1352
Office Clerk, HR:	1352

Update Project Schedule

Estimated time per week, HR/WK:	1	
Project Manager, HR:	338	<i>Assumes 1/4 of the time of the civil engineer</i>
Project Engineer, HR:	1352	
Office Clerk, HR:	1352	
Project Manager, HR:	1690	
Project Engineer, HR:	1352	
Office Clerk, HR:	2704	

Work Plans and Submittals

Work Plans

Project Management, HR:	80
Project Engineer, HR:	600
Office Clerk, HR:	120
Quality Control Engineer, HR:	120
Health and Safety Engineer, HR:	240
Staff Scientist, HR:	440
Arborist, HR:	120
Archeologist, HR:	160
Biologist, HR:	160



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Submittals

Project Management, HR:	24
Project Engineer, HR:	160
Office Clerk, HR:	40
Quality Control Engineer, HR:	40
Health and Safety Engineer, HR:	40
Staff Scientist, HR:	80
Arborist, HR:	16
Archeologist, HR:	40
Biologist, HR:	24

Post-RA Completion Report

Project Management, HR:	56
Project Engineer, HR:	300
Office Clerk, HR:	80
Quality Control Engineer, HR:	24
Health and Safety Engineer, HR:	8
Staff Scientist, HR:	24
Arborist, HR:	8
Archeologist, HR:	8
Biologist, HR:	8

Total

Project Management, HR:	160
Project Engineer, HR:	1060
Office Clerk, HR:	240
Quality Control Engineer, HR:	184
Health and Safety Engineer, HR:	288
Staff Scientist, HR:	544
Arborist, HR:	144
Archeologist, HR:	208
Biologist, HR:	192

Total Project Schedule, Submittals, and Work Plans

Project Management, HR:	1850
Project Engineer, HR:	2412
Office Clerk, HR:	2944
Quality Control Engineer, HR:	184
Health and Safety Engineer, HR:	288
Staff Scientist, HR:	544
Arborist, HR:	144
Archeologist, HR:	208
Biologist, HR:	192

Mobilization/Demobilization

	<u>Mob</u>	<u>Demob</u>	<u>Total</u>
Mob/Demob heavy equipment, EA:	5	5	10
Mob/Demob medium equipment, EA:	10	10	20
Mob/Demob self-propelled equipment, EA:	3	3	6

Assumed one-way trip time for locally-sourced equipment, HR: 3

Mobilize and demobilize heavy equipment, EA:	10	<u>Man/EQ Hours</u>	<u>Total</u>
Truck Driver, Heavy, HR:		1	30
Truck and Trailer, HR:		1	30
Oversized/overwidth load hauling permits, EA:		N/A	10



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Mobilize and demobilize medium equipment, EA:	20	<u>Man/EQ Hours</u>	<u>Total</u>
Truck Driver, Heavy, HR:		1	60
Truck and Trailer, HR:		1	60
Mobilize and demobilize self-propelled equipment, EA:	6	<u>Man/EQ Hours</u>	<u>Total</u>
Truck Driver, Light, HR:		1	18
Pickup Truck, HR:		1	18
Oversized/overwidth load hauling permits, EA:		N/A	6

General Conditions - Temporary Facilities

Project Sign

Number of project signs, EA:	2
Height of sign, FT:	4
Width of sign, FT:	8
Area of sign, SF:	64

Fencing and Equipment and Material Laydown Area

Assumed length for equipment laydown area, FT:	200
Assumed width of equipment laydown area, FT:	200
Area for equipment laydown area, SF:	40,000

Total fenced in length, LF:	800
Number of gates for equipment laydown area:	2
Width per gate, FT:	20
Length of chainlink fence needed, LF:	760

Thickness of gravel for equipment laydown area, IN:	6
Volume of gravel needed, ECY:	741
Volume of gravel needed, LCY:	862
Gravel needed, TON:	1360

*Rounded up to nearest whole number
 Rounded up to nearest ten*

Total 6' chainlink fence needed, LF:	760
Number of 6' chainlink gates, EA:	2
Volume of gravel needed, LCY:	862

Office Trailers and Office Equipment

- Assumes that an office trailer will be required for both the contractor and lead agency.

Office Trailer/Storage Box Delivery, EA:	2
--	---

	<u>Number</u>	<u>Duration</u>	
Contractor Office Trailer, MO:	1	312	<i>Office and conference/lunch trailers</i>
Lead Agency Office Trailer, MO:	1	312	
Total Office Trailer:	624		
Contractor Storage Box, MO:	1	312	<i>Male and female portable toilets provided</i>
Portable Toilet, MO:	4	1248	
Hand Wash Station, MO:	2	624	
Office Equipment for Contractor Office Trailer, MO:	1	312	<i>Fax machine, copier, etc. - contractor only</i>
Office Supplies for Contractor Office Trailer, MO:	1	312	
Water cooler, MO:	2	624	<i>General supplies - contractor only</i>
Water cooler bottles, EA:	4	1248	
Telephone/Internet for Office Trailer, MO:	2	624	
Electricity for Office Trailer, MO:	2	624	<i>Assume 4 bottles per month.</i>

Dumpster delivery or pickup, EA:	1
Dumpster service, MO:	312



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Description: Cleanup to AOC Look-Up Table (LUT) Values Alternative cost estimate backup calculations

Secondary containment for 550 gallon gasoline or diesel tanks, EA: **1**
 Secondary containment for 1,000 gallon gasoline or diesel tanks, EA: **1**
 Temporary Electrical Hookup, EA: **2**
 Temporary Telephone Hookup, EA: **2**

Removal of Temporary Construction Facilities

Assumed time for removal of temporary construction facilities, DY: **3**
Number of crew hours, HR: 24

General Cleanup Crew

Duration over which general cleanup needed, MO: 312
 Number of hours per day average, HR/DY: **2**
 General cleanup, HR: **13,520**

Surveying

Estimated percentage of time where surveyor is needed, %: **50%**
 Number of weeks for surveyor, WK: 676
 Total number of days, DY: **3380** *Rounded up to nearest whole number*

Personnel

Total Duration of Project, MO: **312**

	<u>DY/WK</u>	<u>Days</u>	<u>Hours</u>	<u>Truck?</u>	<u>Hours</u>	<u>Cell/Card</u>	<u>Months</u>
Project Man. - home office:	2	2704	21,632	N	0	N	0
Office Clerk - home office:	1	1352	10,816	N	0	N	0
Site Superintendent:	5	6760	54,080	Y	54,080	Y	312
Field Engineer:	5	6760	54,080	Y	54,080	Y	312
Quality Control Engineer:	5	6760	54,080	Y	54,080	Y	312
SHSO:	5	6760	54,080	Y	54,080	Y	312
Geotechnical Engineer:	2	2704	21,632	Y	21,632	Y	312
					237,952		1,560
Biologist:	1.5	2028	16,224	Y	16,224	Y	312
Archeologist:	1.5	2028	16,224	Y	16,224	Y	312
Arborist:	<i>Captured Under Existing Tree Protection</i>			Y	6,336	Y	312
Staff Scientist:			32,448		38,784		936
Field Technician:	5	6760	54,080	Y	54,080	Y	312
Office Clerk - job site:	5	6760	54,080	Y	54,080	N	0
					108,160		312
				Total	384,896		2,808

Site Preparation and Implementation of Structural BMPs

Estimated impacted area, AC: 150 *See QTO-02*
 Estimated impacted area, SF: 6,534,000
 Estimated perimeter, LF: 9,062 *Assumes circular area*



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Sediment and Erosion Control

Silt Fence

Silt Fence, LF: 54,372
Silt Fence, LF: 54,380 *Rounded up to nearest 10*
Estimated silt fence maintenance per week, HR/WK: 3
Estimated percentage of silt fence to be replaced, %/WK: 0.25%
Silt fence replacement, LF/WK: 140 *Rounded up to nearest 10*
Silt fence replacement, LF: 189,280 *For the entire duration of project*
Total silt fence, LF: 243,660

Wattles

Number of wattle locations, EA: 100 *Assumed by estimator*
Length per location, LF: 25 *Assumed by estimator*
Straw bales, LF: 2500

Sediment Trap

Sediment trap, EA: 10 *Assumed by estimator*
Sediment trap length, FT: 25
Sediment trap width, FT: 25
Sediment trap depth, FT: 3
Excavation volume of sediment trap, CF/EA: 1875
Excavation volume of sediment trap, BCY/EA: 70
Excavation volume of sediment trap, CF: 18750
Excavation volume of sediment trap, BCY: 700 *Rounded up to nearest 10*
Excavation volume of sediment trap, LCY: 840 *Rounded up to nearest 10*

Rock Filter Dam

Rock filter dam width, EA: 10 *Assumed by estimator*
Rock filter dam volume, CF/EA: 1,500 *Assumed based on previous work*
Rock filter dam volume, ECY: 600 *Rounded up to nearest 10*
Rock filter dam volume, LCY: 700 *Rounded up to nearest 10*
Rock filter dam, TON: 1100

Track-Out Prevention

Number of track-out prevention areas, EA: 10 *Assumed by estimator*
Gravel pad width, FT: 30
Gravel pad length, FT: 50
Gravel pad thickness, IN: 6
Gravel pad thickness, FT: 0.5
Gravel pad, ECF/EA: 750
Gravel pad, ECY: 300 *Rounded up to nearest 10*
Gravel pad, LCY: 350 *Rounded up to nearest 10*
Gravel pad, TON: 580 *Rounded up to nearest 10*

Temporary Seeding

Temporary seeding, AC: 150



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Inspection and Maintenance

Estimated silt fence maintenance per week, HR/WK: **4** *Assumed by estimator*
 Number of days for maintenance, DY: 6500 *Based on total work time*
 Number of weeks for maintenance, WK: **1352**
 Silt fence maintenance, HR: **5408** *Assume weekly maintenance for duration*

Existing Tree Protection

Tree Protection Measures

Number of trees, EA: **100**
 Exclusion fence per tree, LF/EA: **100**
 Total amount of safety exclusion fence, LF: **10,000** *Orange Safety Fence*
 Number of steel t-posts, LF/EA: **5**
 Number of steel t-posts, EA: **2,000**

Arborist and Care for Existing Trees

Initial Assessment, HR: **60**
 Monthly Assessments, HR/MO: **12**
 Monthly Assessments, HR: 3744 *312 months @ 12 hours per month*
 Establishment Period, HR/MO: **8**
 Establishment Period, HR: 2496 *312 months @ 8 hours per month*
 Post Construction Assessment, HR: **36**
 Total hours for arborist, HR: **6336**

Dust Control

Duration over which dust control needed, MO: **312**
 Number of hours per day average, HR/DY: 8
 Number of hours per week average, HRWK: **40**
 Dust control, HR: **52,000**
 Water usage, GAL/DY: 16,000 *See QTO-01*
 Water usage, GAL/WK: 80,000
 Water usage, CCF/WK: 110 *Rounded up to nearest 100 ccf*
 Total Water usage, GAL: 104,000,000
 Water usage, CCF/MO: 477
 Total Water usage, CCF: **148,720**

Air Monitoring

Duration over which air monitoring is needed, MO: **312**
 Number of samples per month, EA/MO: **1**
 PM-10 monitor, MO: **312**
 Weather station, MO: **312**
 Number of samples, EA: **312**

Decontamination/Wash Station

Duration over which decontamination/wash station needed, MO: **312**
 Number of hours per day average, HR/DY: 8
 Number of hours per week average, HR/WK: 40
 Decontamination/wash station, HR: **54,080**



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Assumed life of bag filter, WK/EA: 2
 Estimated monthly bag filter usage, EA/MO: 3
 Number of bag filters used, EA: 936

Street Sweeping

Duration over which street sweeping needed, MO: 312
 Number of hours per day average, HR/DY: 4
 Number of hours per week average, HR/WK: 20
 Street sweeping, HR: 27,040

Traffic Control

Preconstruction Video Survey

Preconstruction Video Survey, HR: 16 Assumed

Traffic Control Signs and Barricades

Be Prepared To Stop, EA: 8 CW3-4, 36-in x 36-in, 4 areas, 2 signs per area.
 Flag Man Sign, EA: 8 CW20-7, 36-in x 36-in, 2 areas, 2 signs per area.
 Sign stand, EA: 16
 Traffic sign maintenance per day, HR/MO: 4
 Traffic control sign and barricade maintenance, HR: 1,248

Traffic Control

Number of areas where flagman is needed, EA: 4
 Number of flagmen per area, EA/EA: 2
 Hauling days, DY: 6,500
 Flagmen hours, HR: 416,000

Excavation

Low Hazard Soil (718,000 CY) and Moderate Hazard Soil (51,000 CY)

Excavation

Low and Moderate Hazard Soil, BCY: 769,000
 Low and Moderate Hazard Soil, LCY: 922,800
 Low and Moderate Hazard Soil, TON: 1,153,500

Number of truck roundtrips, EA: 50,151 See PD-ALT-2 for productivity calculations.
 Number of days, DAY: 2,508 See PD-ALT-2 for productivity calculations.
 Number of trucks per day, EA/DAY: 20 See PD-ALT-2 for productivity calculations.

Confirmation Sampling

Excavation area, AC: 131.0 Estimated from total impacted area
 Excavation area, SF: 5,706,360

Excavation bottom confirmation sampling frequency, SF/EA: 625
 Estimated number of bottom samples, EA: 9131

Total excavation perimeter, LF: 31,640 Assumed. Incorporates sampling points at 4
 Sidewall confirmation sample frequency, LF/EA: 25 depths along the excavation perimeter.
 Side wall samples, EA: 1266

Estimated number of confirmation samples, EA: 10397



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Field duplicates, EA: **1040** *Assume 10% of total samples*
 Total number of confirmation samples, EA: **11437**
 Field Technician, HR: **2860** *Assumes 4 samples per hour*
 Miscellaneous Sampling Supplies, LS: **1**

Hazardous Soil

Excavation

Hazardous Soil, BCY: **2,000**
 Hazardous Soil, LCY: **2,400**
 Hazardous Soil, TON: **3,000**
 Number of truck roundtrips, EA: **130** *See PD-ALT-2 for productivity calculations.*
 Number of days, DAY: **38** *See PD-ALT-2 for productivity calculations.*
 Number of trucks per day, EA/DAY: **4** *See PD-ALT-2 for productivity calculations.*

Confirmation Sampling

Excavation area, AC: **0.3** *Estimated from total impacted area*
 Excavation area, SF: **13,068**
 Excavation bottom confirmation sampling frequency, SF/EA: **625**
 Estimated number of bottom samples, EA: **21**
 Total excavation perimeter, LF: **84** *Assumed. Incorporates sampling points at 4 depths along the excavation perimeter.*
 Sidewall confirmation sample frequency, LF/EA: **25**
 Side wall samples, EA: **4**
 Estimated number of confirmation samples, EA: **25**
 Field duplicates, EA: **3** *Assume 10% of total samples*
 Total number of confirmation samples, EA: **28**
 Field Technician, HR: **7** *Assumes 4 samples per hour*
 Miscellaneous Sampling Supplies, LS: **1**

LLW/MLLW Soil

Excavation

LLW/MLLW Soil, BCY: **110,000**
 LLW/MLLW Soil, LCY: **132,000**
 LLW/MLLW Soil, TON: **165,000**
 Number of truck roundtrips, EA: **7,173** *See PD-ALT-2 for productivity calculations.*
 Number of days, DAY: **750** *See PD-ALT-2 for productivity calculations.*
 Number of trucks per day, EA/DAY: **10** *See PD-ALT-2 for productivity calculations.*

Confirmation Sampling

Excavation area, AC: **18.7** *Estimated from total impacted area*
 Excavation area, SF: **814,572**
 Excavation bottom confirmation sampling frequency, SF/EA: **625**
 Estimated number of bottom samples, EA: **1304**



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Total excavation perimeter, LF: **4,524** *Assumed. Incorporates sampling points at 4 depths along the excavation perimeter.*
 Sidewall confirmation sample frequency, LF/EA: 25
 Side wall samples, EA: 181
 Estimated number of confirmation samples, EA: **1485**
 Field duplicates, EA: **149** *Assume 10% of total samples*
 Total number of confirmation samples, EA: **1634**
 Field Technician, HR: **409** *Assumes 4 samples per hour*
 Miscellaneous Sampling Supplies, LS: **1**

Totals

Total excavation volume, BCY: **881,000**
 Total excavation volume, LCY: **1,057,200**
 Total disposal, TON: **1,321,500**
 Total number of truck roundtrips, EA: **57,455**
 Total number of days, DAY: **3,296**

Backfill

Assumptions

Assumed percentage of excavation volume to backfill, %: 75%
 Assumed percentage of backfill volume from onsite sandstone, %: 0%

Low Hazard Soil (718,000 CY) and Moderate Hazard Soil (51,000 CY)

Total excavation volume, BCY: 769,000
 Estimated backfill volume needed, ECY: 576,750
 Backfill from onsite sandstone, ECY: 0 *Rounded up to nearest 100*
 Backfill from onsite sandstone, LCY: 0 *Rounded up to nearest 100*
 Backfill from onsite sandstone, TON: 0 *Rounded up to nearest 100*
 Backfill from offsite source, ECY: 576,750
 Backfill from offsite source, LCY: 769,000 *Rounded up to nearest 100*
 Backfill from offsite source, TON: 999,700 *Rounded up to nearest 100*
 Offsite backfill chemical testing, EA: 77 *Rounded up to nearest 1*
 Backfill area, SF: 5,706,360
 Backfill area, AC: 131
 Number of geotechnical tests, EA: 571

Hazardous Soil

Total excavation volume, BCY: 2,000
 Estimated backfill volume needed, ECY: 1,500
 Backfill from onsite sandstone, ECY: 0 *Rounded up to nearest 100*
 Backfill from onsite sandstone, LCY: 0 *Rounded up to nearest 100*
 Backfill from onsite sandstone, TON: 0 *Rounded up to nearest 100*
 Backfill from offsite source, ECY: 1,500
 Backfill from offsite source, LCY: 2,000 *Rounded up to nearest 100*
 Backfill from offsite source, TON: 2,600 *Rounded up to nearest 100*



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Offsite backfill chemical testing, EA: 1 *Rounded up to nearest 1*
 Backfill area, SF: 13,068
 Backfill area, AC: 0.3
 Number of geotechnical tests, EA: 2

LLW/MLLW Soil

Total excavation volume, BCY: 110,000
 Estimated backfill volume needed, ECY: 82,500
 Backfill from onsite sandstone, ECY: 0 *Rounded up to nearest 100*
 Backfill from onsite sandstone, LCY: 0 *Rounded up to nearest 100*
 Backfill from onsite sandstone, TON: 0 *Rounded up to nearest 100*
 Backfill from offsite source, ECY: 82,500
 Backfill from offsite source, LCY: 110,000 *Rounded up to nearest 100*
 Backfill from offsite source, TON: 143,000 *Rounded up to nearest 100*
 Offsite backfill chemical testing, EA: 11 *Rounded up to nearest 1*
 Backfill area, SF: 814,572
 Backfill area, AC: 18.7
 Number of geotechnical tests, EA: 82

Totals

Total backfill, ECY: **660,750**
 Total backfill area, AC: **150**
 Backfill from onsite sandstone, ECY: **0**
 Backfill from onsite sandstone, LCY: **0**
 Backfill from onsite sandstone, TON: **0**
 Backfill from offsite source, ECY: **660,750**
 Backfill from offsite source, LCY: **881,000**
 Backfill from offsite source, TON: **1,145,300**
 Offsite backfill chemical testing, EA: **89**
 Number of geotechnical tests, EA: **655**



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Description: Cleanup to AOC Look-Up Table (LUT) Values Alternative cost estimate backup calculations

Restoration

Seeding

Seed Mix , AC: **150**

Street Repairs

Woolsey Canyon Road

Length of road impacted, MI:	2.5	<i>From site entrance to Valley Cir Blvd.</i>
Number of lanes, EA:	2	<i>Per EIS</i>
Assumed width per lane, FT/EA:	12	<i>Per EIS</i>
Lane pavement, SF:	316,800	
Additional area not otherwise accounted for, SF:	8,300	<i>Turnouts - Estimated from aerial map</i>
Total area of pavement, SF:	325,100	
Total area of pavement, MSF:	325	
Total area of pavement, SY:	36,130	<i>Rounded up to nearest 10</i>
Assumed depth of cold milling, IN:	2	
Volume of cold milled material, CF:	54183	<i>Rounded to nearest whole number</i>
Volume of cold milled material, CY:	2007	<i>Rounded to nearest whole number</i>
Assumed depth of pavement wearing course, IN:	2	
Volume of pavement material, CF:	54195	<i>Rounded to nearest whole number</i>
Volume of pavement material, CY:	2008	<i>Rounded to nearest whole number</i>
Total volume to haul, CY:	4,015	



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Description: Excavation and hauling productivity determinations for Cleanup to AOC Look-Up Table (LUT) Values Alternative

Productivity Determinations - Excavation and Hauling for Offsite Disposal

Low Hazard Soil (718,000 CY) and Moderate Hazard Soil (51,000 CY)

<u>Excavator Productivity Determination</u>			<u>Hauling Productivity Determination</u>			<u>Summary</u>			
Hours per Shift, HR/DY:	8		Hours per Shift, HR/DY:	8		Excavator	3	38.3	BCY/HR
Material bulking factor:	1.20		Material Bulking Factor:	1.20		Highway Haul Trucks	20	46.0	LCY/HR
Assumed Bucket Capacity, CY:	3		Assumed Payload Capacity, LCY:	20				57.5	TON/HR
Work Efficiency, %:	85%		Assumed Payload Capacity, TON:	25					
Operator Ability Correction Factor:	0.9		Work Efficiency, %:	80%		Total number of roundtrip trucks	50,151		EA
Bucket Fill Factor, %:	90%		Estimated haul distance, MI:	135		Estimated time to complete	2,508		DY
			Payload Fill Factor:	90.0%		Number of trucks per day	20		EA/DY
Excavator Model Assumed: CAT 345B									
Bucket Size	3	CY	Assumed Payload Capacity	15.00	BCY/truck				
Bucket Fill Factor	90%	%		18.00	LCY/truck				
Bucket Payload	2.7	CY		23	TON/truck				
Load Time	5.4	SEC	Adjusted Loader (1) Productivity	232.1	LCY/HR				
Swing Time Loaded	4.8	SEC	Load Time per Truck	4.7	MIN				
Dump Time	2.4	SEC	Assumed Average Haul Speed	40	MPH				
Swing Time Unloaded	4.2	SEC	On Road Haul Time	202.5	MIN				
Truck Exchange	15	SEC	Dump and Maneuver Time	1.0	MIN				
Total	31.8	SEC/cycle	Assumed Average Return Speed	50	MPH				
Cycle Time Per Excavator	0.530	MIN/cycle	On Road Return Time	162.0	MIN				
	0.0089	HR/cycle	Cycle Time per Truck	370.2	MIN/cycle				
Ideal Cycles Per Day	899	Cyc/Exc/DY		6.17	HR/cycle				
Ideal Loader Productivity	303.4	LCY/HR	Ideal Cycles Per Day	1.3	Cyc/Truck/DY				
	252.8	BCY/HR	Ideal Productivity per Truck	2.9	LCY/HR				
Operator Ability Correction Factor	0.9			3.7	TON/HR				
Work Efficiency	85%	%	Work Efficiency	80%	%				
Adjusted Loader Productivity	232.1	LCY/HR	Adjusted Productivity per Truck	2.3	LCY/HR				
	193.4	BCY/HR		2.9	TON/HR				
Number of Excavators Anticipated	3		Number of Haul Trucks Anticipated	20					
Total Excavator Productivity	696.3	LCY/HR	Total Hauling Productivity	46.0	LCY/HR				
	580.2	BCY/HR		58.0	TON/HR				
Volume to Excavate	769,000	BCY	Volume to Export	922,800	LCY				
	922,800	LCY		1,153,500	TON				
Excavation Time	1,326	HR	Hauling Time	20,061	HR				
Haul Time	20,061	HR	Load Time	1,326	HR				
Est total time to completion	20,061	HR	Est total time to completion	20,061	HR				
	2,508	DY		2,508	DY				
Excavator productivity	38.3	BCY/HR	Hauling productivity	46.0	LCY/HR	2.3	Per Truck		
	46.0	LCY/HR		57.5	TON/HR	2.9	Per Truck		



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Productivity Determinations - Excavation and Hauling for Offsite Disposal

Hazardous Soil

<u>Excavator Productivity Determination</u>	<u>Hauling Productivity Determination</u>	<u>Summary</u>	<u>Number</u>	<u>Prod</u>	<u>Units</u>
Hours per Shift, HR/DY: 8	Hours per Shift, HR/DY: 8	Excavator	1	6.7	BCY/HR
Material bulking factor: 1.20	Material Bulking Factor: 1.20	Highway Haul Trucks	20	8.0	LCY/HR
Assumed Bucket Capacity, CY: 3	Assumed Payload Capacity, LCY: 20			10.0	TON/HR
Work Efficiency, %: 85%	Assumed Payload Capacity, TON: 25				
Operator Ability Correction Factor: 0.9	Work Efficiency, %: 80%	Total number of roundtrip trucks	130		EA
Bucket Fill Factor, %: 90%	Estimated haul distance, MI: 780	Estimated time to complete	38		DY
	Payload Fill Factor: 90.0%	Number of trucks per day	4		EA/DY
Excavator Model Assumed: CAT 345B					
Bucket Size 3 CY	Assumed Payload Capacity 15.00 BCY/truck				
Bucket Fill Factor 90% %	18.00 LCY/truck				
Bucket Payload 2.7 CY	23 TON/truck				
Load Time 5.4 SEC	Adjusted Loader (1) Productivity 232.1 LCY/HR				
Swing Time Loaded 4.8 SEC	Load Time per Truck 4.7 MIN				
Dump Time 2.4 SEC	Assumed Average Haul Speed 40 MPH				
Swing Time Unloaded 4.2 SEC	On Road Haul Time 1170.0 MIN				
Truck Exchange 15 SEC	Dump and Maneuver Time 1.0 MIN				
Total 31.8 SEC/cycle	Assumed Average Return Speed 50 MPH				
Cycle Time Per Excavator 0.530 MIN/cycle	On Road Return Time 936.0 MIN				
0.0089 HR/cycle	Cycle Time per Truck 2111.7 MIN/cycle				
Ideal Cycles Per Day 899 Cyc/Exc/DY	35.2 HR/cycle				
Ideal Loader Productivity 303.4 LCY/HR	Ideal Cycles Per Day 0.2 Cyc/Truck/DY				
252.8 BCY/HR	Ideal Productivity per Truck 0.5 LCY/HR				
Operator Ability Correction Factor 0.9	0.6 TON/HR				
Work Efficiency 85% %	Work Efficiency 80% %				
Adjusted Loader Productivity 232.1 LCY/HR	Adjusted Productivity per Truck 0.4 LCY/HR				
193.4 BCY/HR	0.4 TON/HR				
Number of Excavators Anticipated 1	Number of Haul Trucks Anticipated 20				
Total Excavator Productivity 232.1 LCY/HR	Total Hauling Productivity 8.0 LCY/HR				
193.4 BCY/HR	8.0 TON/HR				
Volume to Excavate 2,000 BCY	Volume to Export 2,400 LCY				
2,400 LCY	3,000 TON				
Excavation Time 11 HR	Hauling Time 300 HR				
Haul Time 300 HR	Load Time 11 HR				
Est total time to completion 300 HR	Est total time to completion 300 HR				
38 DY	38 DY				
Excavator productivity 6.7 BCY/HR	Hauling productivity 8.0 LCY/HR	0.4	Per Truck		
Excavator productivity 8.0 LCY/HR	10.0 TON/HR	0.5	Per Truck		



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Productivity Determinations - Excavation and Hauling for Offsite Disposal

LLW/MLLW Soil

Excavator Productivity Determination

Hours per Shift, HR/DY: 8
 Material bulking factor: 1.20
 Assumed Bucket Capacity, CY: 3
 Work Efficiency, %: 85%
 Operator Ability Correction Factor: 0.9
 Bucket Fill Factor, %: 90%

Hauling Productivity Determination

Hours per Shift, HR/DY: 8
 Material Bulking Factor: 1.20
 Assumed Payload Capacity, LCY: 20
 Assumed Payload Capacity, TON: 25
 Work Efficiency, %: 80%
 Estimated haul distance, MI: 300
 Payload Fill Factor: 90.0%

Summary

	Number	Prod	Units
Excavator	1	18.3	BCY/HR
Highway Haul Trucks	20	22.0	LCY/HR
		27.5	TON/HR
Total number of roundtrip trucks	7,173		EA
Estimated time to complete	750		DY
Number of trucks per day	10		EA/DY

Excavator Model Assumed: **CAT 345B**

Bucket Size	3	CY
Bucket Fill Factor	90%	%
Bucket Payload	2.7	CY
Load Time	5.4	SEC
Swing Time Loaded	4.8	SEC
Dump Time	2.4	SEC
Swing Time Unloaded	4.2	SEC
Truck Exchange	15	SEC
Total	31.8	SEC/cycle
Cycle Time Per Excavator	0.530	MIN/cycle
	0.0089	HR/cycle
Ideal Cycles Per Day	899	Cyc/Exc/DY
Ideal Loader Productivity	303.4	LCY/HR
	252.8	BCY/HR
Operator Ability Correction Factor	0.9	
Work Efficiency	85%	%
Adjusted Loader Productivity	232.1	LCY/HR
	193.4	BCY/HR

Assumed Payload Capacity	15.00	BCY/truck
	18.00	LCY/truck
	23	TON/truck
Adjusted Loader (1) Productivity	232.1	LCY/HR
Load Time per Truck	4.7	MIN
Assumed Average Haul Speed	40	MPH
On Road Haul Time	450.0	MIN
Dump and Maneuver Time	1.0	MIN
Assumed Average Return Speed	50	MPH
On Road Return Time	360.0	MIN
Cycle Time per Truck	815.7	MIN/cycle
	13.6	HR/cycle
Ideal Cycles Per Day	0.6	Cyc/Truck/DY
Ideal Productivity per Truck	1.4	LCY/HR
	1.7	TON/HR
Work Efficiency	80%	%
Adjusted Productivity per Truck	1.1	LCY/HR
	1.3	TON/HR

Number of Excavators Anticipated	1	
Total Excavator Productivity	232.1	LCY/HR
	193.4	BCY/HR

Number of Haul Trucks Anticipated	20	
Total Hauling Productivity	22.0	LCY/HR
	26.0	TON/HR

Volume to Excavate	110,000	BCY
	132,000	LCY

Volume to Export	132,000	LCY
	165,000	TON

Excavation Time	569	HR
Haul Time	6,000	HR

Hauling Time	6,000	HR
Load Time	569	HR

Est total time to completion	6,000	HR
	750	DY

Est total time to completion	6,000	HR
	750	DY

Excavator productivity	18.3	BCY/HR
Excavator productivity	22.0	LCY/HR

Hauling productivity	22.0	LCY/HR	1.1	Per Truck
	27.5	TON/HR	1.4	Per Truck



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Productivity Determinations - Hauling, Spreading and Compacting General Backfill

Hauling Productivity Determination

Hours per Shift, HR/DY: 8
 Material Bulking Factor: 1.20
 Assumed Payload Capacity, LCY: 20
 Assumed Payload Capacity, TON: 25
 Work Efficiency, %: 80%
 Estimated haul distance, MI: 50
 Payload Fill Factor: 90.0%

Assumed Payload Capacity BCY/truck 15.00
 LCY/truck 18.00
 TON/truck 23

Load Time per Truck MIN 1.0
 Assumed Average Haul Speed MPH 40
 On Road Haul Time MIN 75.0
 Dump and Maneuver Time MIN 1.0
 Assumed Average Return Speed MPH 50
 On Road Return Time MIN 60.0
 Cycle Time per Truck MIN/cycle 137.0
 HR/cycle 2.29
 Ideal Cycles Per Day Cyc/Truck/DY 3.5
 Ideal Productivity per Truck LCY/HR 7.9
 TON/HR 9.8
 Work Efficiency % 80%
 Adjusted Productivity per Truck LCY/HR 6.3
 TON/HR 7.8

Number of Haul Trucks Anticipated 10
 Total Hauling Productivity LCY/HR 63.0
 TON/HR 78.0

Volume to Import LCY 881,000
 TON 1,145,300

Hauling Time HR 13,984
 Spread Time HR 1,725
 Compaction Time HR 1,647

Est total time to completion HR 13,984
 DY 1,748

Hauling productivity LCY/HR 63.0
 TON/HR 81.9

Dozer Productivity Determination

Hours per Shift, HR: 8
 Work Efficiency, %: 90%
 Dozing Distance, FT: 300
 Slot Dozing Correction Factor: 1.15
 Visibility Correction Factor: 1.0
 Weight Correction Factor: 87%

Dozer Model Assumed: CAT D7R - Strt. Blade

Work Efficiency % 90%
 Operator Type Average
 Operator Ability Correction Factor Factor 0.75
 Grade % Slope 2%
 Grade Factor 0.9
 Material Type Loose
 Material Correction Factor Factor 1.2
 Slot Dozing Correction Factor Factor 1.15
 Visibility Correction Factor Factor 1.0
 Weight Correction Factor Factor 0.87
 Combined Prod. Correction Factor Factor 0.73
 Ideal Dozer Productivity LCY/HR 175.0
 Adjusted Dozer Productivity LCY/HR 127.8

Number of Dozers Anticipated 4
 Total Dozer Productivity LCY/HR 511.0
 LCY/DY 4088.0

Volume to Spread LCY 881,000

Spread Time HR 1,725
 Hauling Time HR 13,984
 Compaction Time HR 1,647

Est total time to completion HR 13,984

Spreading productivity LCY/HR 63.0

Compactor Productivity Determination

Hours per Shift, HR: 8
 Work Efficiency, %: 90%
 Average Speed, MPH: 2
 Lift Thickness, IN: 6
 Number of Passes: 6

Compactor Model Assumed: CAT CP-563

Compactor Width IN 84
 CAT - Wide Area Productivity ECY/HR 626
 Assumed speed MPH 4
 Assumed thickness IN 12
 Assumed number of passes EA 6
 Work Efficiency % 90%
 Average Speed MPH 2
 Travel Speed Efficiency % 95%
 Lift Thickness IN 6.0
 Number of Passes EA 6
 Compacted Width per Pass FT 7.0
 Actual speed/assumed speed (Fs) 0.5
 Actual thickness/assumed thickness (Ft) 0.5
 Assumed passes/actual passes (Fp) 1.0
 Adjusted Compactor Productivity ECY/HR 133.8

Number of Compactors Anticipated 3
 Total Compactor Productivity ECY/HR 401.4
 ECY/DY 3211.4

Volume to Compact ECY 660,750

Compaction Time HR 1,647
 Hauling Time HR 13,984
 Spread Time HR 1,725

Est total time to completion HR 13,984

Compaction productivity ECY/HR 47.3



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Description: Cleanup to Revised LUT Values Alternative cost estimate backup calculations

CLEANUP TO REVISED AOC LUT VALUES ALTERNATIVE

Assumed Work Days and Hours

Days per work week for office staff, DY/WK:	5
Hours per workday for office staff, HR/DY:	8
Days per work week for site staff, DY/WK:	5
Hours per workday for site staff, HR/DY:	8

Assumed number of work days per year, DY/YR: 250 *Incorporates 10 federal holidays per year*

Assumed Duration of Project

Estimated duration of construction project, MO:	96	<i>See QTO-03</i>
Estimated duration of construction project, YR:	8	
Estimated duration of construction project, WK:	416	
Estimated duration of construction project, DY:	2920	<i>Calendar Days</i>
Estimated duration of construction project, DY:	2000	<i>Work days (based on 5 days per week, except 10 federal holidays.)</i>

Project Schedule, Submittals, Work Plans and Administrative BMPs

Project Schedules and Progress Meetings

Estimated project time, MO:	96
Estimated project time, WK:	416

Project Progress Meetings

Estimated time per week, HR/WK:	1
Project Manager, HR:	416
Office Clerk, HR:	416

Update Project Schedule

Estimated time per week, HR/WK:	1	
Project Manager, HR:	104	<i>Assumes 1/4 of the time of the civil engineer</i>
Project Engineer, HR:	416	
Office Clerk, HR:	416	
Project Manager, HR:	520	
Project Engineer, HR:	416	
Office Clerk, HR:	832	

Work Plans and Submittals

Work Plans

Project Management, HR:	80
Project Engineer, HR:	600
Office Clerk, HR:	120
Quality Control Engineer, HR:	120
Health and Safety Engineer, HR:	240
Staff Scientist, HR:	440
Arborist, HR:	120
Archeologist, HR:	160
Biologist, HR:	160



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Description: Cleanup to Revised LUT Values Alternative cost estimate backup calculations

Submittals

Project Management, HR:	24
Project Engineer, HR:	160
Office Clerk, HR:	40
Quality Control Engineer, HR:	40
Health and Safety Engineer, HR:	40
Staff Scientist, HR:	80
Arborist, HR:	16
Archeologist, HR:	40
Biologist, HR:	24

Post-RA Completion Report

Project Management, HR:	56
Project Engineer, HR:	300
Office Clerk, HR:	80
Quality Control Engineer, HR:	24
Health and Safety Engineer, HR:	8
Staff Scientist, HR:	24
Arborist, HR:	8
Archeologist, HR:	8
Biologist, HR:	8

Total

Project Management, HR:	160
Project Engineer, HR:	1060
Office Clerk, HR:	240
Quality Control Engineer, HR:	184
Health and Safety Engineer, HR:	288
Staff Scientist, HR:	544
Arborist, HR:	144
Archeologist, HR:	208
Biologist, HR:	192

Total Project Schedule, Submittals, and Work Plans

Project Management, HR:	680
Project Engineer, HR:	1476
Office Clerk, HR:	1072
Quality Control Engineer, HR:	184
Health and Safety Engineer, HR:	288
Staff Scientist, HR:	544
Arborist, HR:	144
Archeologist, HR:	208
Biologist, HR:	192

Mobilization/Demobilization

	<u>Mob</u>	<u>Demob</u>	<u>Total</u>
Mob/Demob heavy equipment, EA:	5	5	10
Mob/Demob medium equipment, EA:	10	10	20
Mob/Demob self-propelled equipment, EA:	3	3	6

Assumed one-way trip time for locally-sourced equipment, HR: 3

Mobilize and demobilize heavy equipment, EA:	10	<u>Man/EQ Hours</u>	<u>Total</u>
Truck Driver, Heavy, HR:		1	30
Truck and Trailer, HR:		1	30
Oversized/overwidth load hauling permits, EA:		N/A	10



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Mobilize and demobilize medium equipment, EA: 20

	<u>Man/EQ Hours</u>	<u>Total</u>
Truck Driver, Heavy, HR:	1	60
Truck and Trailer, HR:	1	60

Mobilize and demobilize self-propelled equipment, EA: 6

	<u>Man/EQ Hours</u>	<u>Total</u>
Truck Driver, Light, HR:	1	18
Pickup Truck, HR:	1	18
Oversized/overwidth load hauling permits, EA:	N/A	6

General Conditions - Temporary Facilities

Project Sign

Number of project signs, EA:	1
Height of sign, FT:	4
Width of sign, FT:	8
Area of sign, SF:	32

Fencing and Equipment and Material Laydown Area

Assumed length for equipment laydown area, FT:	200
Assumed width of equipment laydown area, FT:	200
Area for equipment laydown area, SF:	40,000

Total fenced in length, LF:	800
Number of gates for equipment laydown area:	2
Width per gate, FT:	20
Length of chainlink fence needed, LF:	760

Thickness of gravel for equipment laydown area, IN:	6
Volume of gravel needed, ECY:	741
Volume of gravel needed, LCY:	862
Gravel needed, TON:	1360

*Rounded up to nearest whole number
 Rounded up to nearest ten*

Total 6' chainlink fence needed, LF: 760
Number of 6' chainlink gates, EA: 2
Volume of gravel needed, LCY: 862

Office Trailers and Office Equipment

- Assumes that an office trailer will be required for both the contractor and lead agency.

Office Trailer/Storage Box Delivery, EA: 2

	<u>Number</u>	<u>Duration</u>	
Contractor Office Trailer, MO:	1	96	<i>Office and conference/lunch trailers</i>
Lead Agency Office Trailer, MO:	1	96	
Total Office Trailer:		192	
Contractor Storage Box, MO:	1	96	<i>Male and female portable toilets provided</i>
Portable Toilet, MO:	4	384	
Hand Wash Station, MO:	2	192	
Office Equipment for Contractor Office Trailer, MO:	1	96	<i>Fax machine, copier, etc. - contractor only</i>
Office Supplies for Contractor Office Trailer, MO:	1	96	<i>General supplies - contractor only</i>
Water cooler, MO:	2	192	
Water cooler bottles, EA:	4	384	<i>Assume 4 bottles per month.</i>
Telephone/Internet for Office Trailer, MO:	2	192	
Electricity for Office Trailer, MO:	2	192	



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Dumpster delivery or pickup, EA: **1**
 Dumpster service, MO: **96**

Secondary containment for 550 gallon gasoline or diesel tanks, EA: **1**
 Secondary containment for 1,000 gallon gasoline or diesel tanks, EA: **1**

Temporary Electrical Hookup, EA: **2**
 Temporary Telephone Hookup, EA: **2**

Removal of Temporary Construction Facilities

Assumed time for removal of temporary construction facilities, DY: **3**
Number of crew hours, HR: 24

General Cleanup Crew

Duration over which general cleanup needed, MO: 96
 Number of hours per day average, HR/DY: **2**
 General cleanup, HR: **4,160**

Surveying

Estimated percentage of time where surveyor is needed, %: **50%**

Number of weeks for surveyor, WK: 208
 Total number of days, DY: **1040** *Rounded up to nearest whole number*

Personnel

Total Duration of Project, MO: **96**

	<u>DY/WK</u>	<u>Days</u>	<u>Hours</u>	<u>Truck?</u>	<u>Hours</u>	<u>Cell/Card</u>	<u>Months</u>
Project Man. - home office:	2	832	6,656	N	0	N	0
Office Clerk - home office:	1	416	3,328	N	0	N	0
Site Superintendent:	5	2080	16,640	Y	16,640	Y	96
Field Engineer:	5	2080	16,640	Y	16,640	Y	96
Quality Control Engineer:	5	2080	16,640	Y	16,640	Y	96
SHSO:	5	2080	16,640	Y	16,640	Y	96
Geotechnical Engineer:	2	832	6,656	Y	6,656	Y	96
					73,216		480
Biologist:	1.5	624	4,992	Y	4,992	Y	96
Archeologist:	1.5	624	4,992	Y	4,992	Y	96
Arborist:	<i>Captured Under Existing Tree Protection</i>			Y	2,016	Y	96
Staff Scientist:			9,984		12,000		288
Field Technician:	5	2080	16,640	Y	16,640	Y	96
Office Clerk - job site:	5	2080	16,640	Y	16,640	N	0
					33,280		96
				Total	118,496		864

Site Preparation and Implementation of Structural BMPs

Estimated impacted area, AC: 36 *See QTO-02*
 Estimated impacted area, SF: 1,568,160

Estimated perimeter, LF: 4,440 *Assumes circular area*



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Description: Cleanup to Revised LUT Values Alternative cost estimate backup calculations

Sediment and Erosion Control

Silt Fence

Silt Fence, LF: 26,640
 Silt Fence, LF: 26,640 *Rounded up to nearest 10*
 Estimated silt fence maintenance per week, HR/WK: 3
 Estimated percentage of silt fence to be replaced, %/WK: 0.25%
 Silt fence replacement, LF/WK: 70 *Rounded up to nearest 10*
 Silt fence replacement, LF: 29,120 *For the entire duration of project*
 Total silt fence, LF: 55,760

Wattles

Number of wattle locations, EA: 35 *Assumed by estimator*
 Length per location, LF: 25 *Assumed by estimator*
 Straw bales, LF: 875

Sediment Trap

Sediment trap, EA: 4 *Assumed by estimator*
 Sediment trap length, FT: 25
 Sediment trap width, FT: 25
 Sediment trap depth, FT: 3
 Excavation volume of sediment trap, CF/EA: 1875
 Excavation volume of sediment trap, BCY/EA: 70
 Excavation volume of sediment trap, CF: 7500
 Excavation volume of sediment trap, BCY: 280 *Rounded up to nearest 10*
 Excavation volume of sediment trap, LCY: 340 *Rounded up to nearest 10*

Rock Filter Dam

Rock filter dam width, EA: 4 *Assumed by estimator*
 Rock filter dam volume, CF/EA: 1,500 *Assumed based on previous work*
 Rock filter dam volume, ECF: 240 *Rounded up to nearest 10*
 Rock filter dam volume, LCY: 280 *Rounded up to nearest 10*
 Rock filter dam, TON: 450

Track-Out Prevention

Number of track-out prevention areas, EA: 4 *Assumed by estimator*
 Gravel pad width, FT: 30
 Gravel pad length, FT: 50
 Gravel pad thickness, IN: 6
 Gravel pad thickness, FT: 0.5
 Gravel pad, ECF/EA: 750
 Gravel pad, ECF: 120 *Rounded up to nearest 10*
 Gravel pad, LCY: 140 *Rounded up to nearest 10*
 Gravel pad, TON: 230 *Rounded up to nearest 10*

Temporary Seeding

Temporary seeding, AC: 36



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Inspection and Maintenance

Estimated silt fence maintenance per week, HR/WK: **4** *Assumed by estimator*
 Number of days for maintenance, DY: 2000 *Based on total work time*
 Number of weeks for maintenance, WK: **416**
 Silt fence maintenance, HR: **1664** *Assume weekly maintenance for duration*

Existing Tree Protection

Tree Protection Measures

Number of trees, EA: **35**
 Exclusion fence per tree, LF/EA: **100**
 Total amount of safety exclusion fence, LF: **3,500** *Orange Safety Fence*
 Number of steel t-posts, LF/EA: **5**
 Number of steel t-posts, EA: **700**

Arborist and Care for Existing Trees

Initial Assessment, HR: **60**
 Monthly Assessments, HR/MO: **12**
 Monthly Assessments, HR: 1152 *96 months @ 12 hours per month*
 Establishment Period, HR/MO: **8**
 Establishment Period, HR: 768 *96 months @ 8 hours per month*
 Post Construction Assessment, HR: **36**
 Total hours for arborist, HR: **2016**

Dust Control

Duration over which dust control needed, MO: **96**
 Number of hours per day average, HR/DY: 8
 Number of hours per week average, HRWK: **40**
 Dust control, HR: **16,000**
 Water usage, GAL/DY: 16,000 *See QTO-01*
 Water usage, GAL/WK: 80,000
 Water usage, CCF/WK: 110 *Rounded up to nearest 100 ccf*
 Total Water usage, GAL: 32,000,000
 Water usage, CCF/MO: 477
 Total Water usage, CCF: **45,760**

Air Monitoring

Duration over which air monitoring is needed, MO: **96**
 Number of samples per month, EA/MO: **1**
 PM-10 monitor, MO: **96**
 Weather station, MO: **96**
 Number of samples, EA: **96**

Decontamination/Wash Station

Duration over which decontamination/wash station needed, MO: **96**
 Number of hours per day average, HR/DY: 8
 Number of hours per week average, HR/WK: 40
 Decontamination/wash station, HR: **16,640**



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Assumed life of bag filter, WK/EA: 2
 Estimated monthly bag filter usage, EA/MO: 3
 Number of bag filters used, EA: 288

Street Sweeping

Duration over which street sweeping needed, MO: 96
 Number of hours per day average, HR/DY: 4
 Number of hours per week average, HR/WK: 20
 Street sweeping, HR: 8,320

Traffic Control

Preconstruction Video Survey

Preconstruction Video Survey, HR: 16 Assumed

Traffic Control Signs and Barricades

Be Prepared To Stop, EA: 8 CW3-4, 36-in x 36-in, 4 areas, 2 signs per area.
 Flag Man Sign, EA: 8 CW20-7, 36-in x 36-in, 2 areas, 2 signs per area.
 Sign stand, EA: 16
 Traffic sign maintenance per day, HR/MO: 4
 Traffic control sign and barricade maintenance, HR: 384

Traffic Control

Number of areas where flagman is needed, EA: 4
 Number of flagmen per area, EA/EA: 2
 Hauling days, DY: 2,000
 Flagmen hours, HR: 128,000

Excavation

Low Hazard Soil (28,000 CY) and Moderate Hazard Soil (50,000 CY)

Excavation

Low and Moderate Hazard Soil, BCY: 78,000
 Low and Moderate Hazard Soil, LCY: 93,600
 Low and Moderate Hazard Soil, TON: 117,000

Number of truck roundtrips, EA: 5,087 See PD-ALT-3 for productivity calculations.
 Number of days, DAY: 255 See PD-ALT-3 for productivity calculations.
 Number of trucks per day, EA/DAY: 20 See PD-ALT-3 for productivity calculations.

Confirmation Sampling

Excavation area, AC: 14.8 Estimated from total impacted area
 Excavation area, SF: 644,688

Excavation bottom confirmation sampling frequency, SF/EA: 1600
 Estimated number of bottom samples, EA: 403

Total excavation perimeter, LF: 7,292 Assumed. Incorporates sampling points at 4
 Sidewall confirmation sample frequency, LF/EA: 40 depths along the excavation perimeter.
 Side wall samples, EA: 182

Estimated number of confirmation samples, EA: 585



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Description: Cleanup to Revised LUT Values Alternative cost estimate backup calculations

Field duplicates, EA: **59** *Assume 10% of total samples*
 Total number of confirmation samples, EA: **644**
 Field Technician, HR: **162** *Assumes 4 samples per hour*
 Miscellaneous Sampling Supplies, LS: **1**

Hazardous Soil

Excavation

Hazardous Soil, BCY: **2,000**
 Hazardous Soil, LCY: **2,400**
 Hazardous Soil, TON: **3,000**
 Number of truck roundtrips, EA: **130** *See PD-ALT-3 for productivity calculations.*
 Number of days, DAY: **38** *See PD-ALT-3 for productivity calculations.*
 Number of trucks per day, EA/DAY: **4** *See PD-ALT-3 for productivity calculations.*

Confirmation Sampling

Excavation area, AC: **0.4** *Estimated from total impacted area*
 Excavation area, SF: **17,424**
 Excavation bottom confirmation sampling frequency, SF/EA: **1600**
 Estimated number of bottom samples, EA: **11**
 Total excavation perimeter, LF: **188** *Assumed. Incorporates sampling points at 4 depths along the excavation perimeter.*
 Sidewall confirmation sample frequency, LF/EA: **40**
 Side wall samples, EA: **5**
 Estimated number of confirmation samples, EA: **16**
 Field duplicates, EA: **2** *Assume 10% of total samples*
 Total number of confirmation samples, EA: **18**
 Field Technician, HR: **5** *Assumes 4 samples per hour*
 Miscellaneous Sampling Supplies, LS: **1**

LLW/MLLW Soil

Excavation

LLW/MLLW Soil, BCY: **110,000**
 LLW/MLLW Soil, LCY: **132,000**
 LLW/MLLW Soil, TON: **165,000**
 Number of truck roundtrips, EA: **7,174** *See PD-ALT-3 for productivity calculations.*
 Number of days, DAY: **750** *See PD-ALT-3 for productivity calculations.*
 Number of trucks per day, EA/DAY: **10** *See PD-ALT-3 for productivity calculations.*

Confirmation Sampling

Excavation area, AC: **20.8** *Estimated from total impacted area*
 Excavation area, SF: **906,048**
 Excavation bottom confirmation sampling frequency, SF/EA: **1600**
 Estimated number of bottom samples, EA: **567**



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Total excavation perimeter, LF:	10,284	<i>Assumed. Incorporates sampling points at 4 depths along the excavation perimeter.</i>
Sidewall confirmation sample frequency, LF/EA:	40	
Side wall samples, EA:	257	
Estimated number of confirmation samples, EA:	824	
Field duplicates, EA:	83.00	<i>Assume 10% of total samples</i>
Total number of confirmation samples, EA:	907	
Field Technician, HR:	227	<i>Assumes 4 samples per hour</i>
Miscellaneous Sampling Supplies, LS:	1	

Totals

Total excavation volume, BCY:	190,000
Total excavation volume, LCY:	228,000
Total disposal, TON:	285,000
Total number of truck roundtrips, EA:	12,391
Total number of days, DAY:	1,043

Backfill

Assumptions

Assumed percentage of excavation volume to backfill, %: 75%

Assumed percentage of backfill volume from onsite sandstone, %: 0%

Low Hazard Soil (28,000 CY) and Moderate Hazard Soil (50,000 CY)

Total excavation volume, BCY:	78,000
Estimated backfill volume needed, ECY:	58,500

Backfill from onsite sandstone, ECY:	0	<i>Rounded up to nearest 100</i>
Backfill from onsite sandstone, LCY:	0	<i>Rounded up to nearest 100</i>
Backfill from onsite sandstone, TON:	0	<i>Rounded up to nearest 100</i>

Backfill from offsite source, ECY:	58,500	
Backfill from offsite source, LCY:	70,200	<i>Rounded up to nearest 100</i>
Backfill from offsite source, TON:	91,300	<i>Rounded up to nearest 100</i>

Offsite backfill chemical testing, EA: 8 *Rounded up to nearest 1*

Backfill area, SF:	644,688
Backfill area, AC:	14.8

Number of geotechnical tests, EA: 65

Hazardous Soil

Total excavation volume, BCY:	2,000
Estimated backfill volume needed, ECY:	1,500

Backfill from onsite sandstone, ECY:	0	<i>Rounded up to nearest 100</i>
Backfill from onsite sandstone, LCY:	0	<i>Rounded up to nearest 100</i>
Backfill from onsite sandstone, TON:	0	<i>Rounded up to nearest 100</i>

Backfill from offsite source, ECY:	1,500	
Backfill from offsite source, LCY:	1,800	<i>Rounded up to nearest 100</i>
Backfill from offsite source, TON:	2,400	<i>Rounded up to nearest 100</i>



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Offsite backfill chemical testing, EA: 1 *Rounded up to nearest 1*
 Backfill area, SF: 17,424
 Backfill area, AC: 0.4
 Number of geotechnical tests, EA: 2

LLW/MLLW Soil

Total excavation volume, BCY: 110,000
 Estimated backfill volume needed, ECY: 82,500
 Backfill from onsite sandstone, ECY: 0 *Rounded up to nearest 100*
 Backfill from onsite sandstone, LCY: 0 *Rounded up to nearest 100*
 Backfill from onsite sandstone, TON: 0 *Rounded up to nearest 100*
 Backfill from offsite source, ECY: 82,500
 Backfill from offsite source, LCY: 99,000 *Rounded up to nearest 100*
 Backfill from offsite source, TON: 128,700 *Rounded up to nearest 100*
 Offsite backfill chemical testing, EA: 10 *Rounded up to nearest 1*
 Backfill area, SF: 906,048
 Backfill area, AC: 20.8
 Number of geotechnical tests, EA: 91

Totals

Total backfill, ECY: **142,500**
 Total backfill area, AC: **36**
 Backfill from onsite sandstone, ECY: **0**
 Backfill from onsite sandstone, LCY: **0**
 Backfill from onsite sandstone, TON: **0**
 Backfill from offsite source, ECY: **142,500**
 Backfill from offsite source, LCY: **171,000**
 Backfill from offsite source, TON: **222,400**
 Offsite backfill chemical testing, EA: **19**
 Number of geotechnical tests, EA: **158**



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Description: Cleanup to Revised LUT Values Alternative cost estimate backup calculations

Restoration

Seeding

Seed Mix , AC: **36**

Street Repairs

Woolsey Canyon Road

Length of road impacted, MI:	2.5	<i>From site entrance to Valley Cir Blvd.</i>
Number of lanes, EA:	2	<i>Per EIS</i>
Assumed width per lane, FT/EA:	12	<i>Per EIS</i>
Lane pavement, SF:	316,800	
Additional area not otherwise accounted for, SF:	8,300	<i>Turnouts - Estimated from aerial map</i>
Total area of pavement, SF:	325,100	
Total area of pavement, MSF:	325	
Total area of pavement, SY:	36,130	<i>Rounded up to nearest 10</i>
Assumed depth of cold milling, IN:	2	
Volume of cold milled material, CF:	54183	<i>Rounded to nearest whole number</i>
Volume of cold milled material, CY:	2007	<i>Rounded to nearest whole number</i>
Assumed depth of pavement wearing course, IN:	2	
Volume of pavement material, CF:	54195	<i>Rounded to nearest whole number</i>
Volume of pavement material, CY:	2008	<i>Rounded to nearest whole number</i>
Total volume to haul, CY:	4,015	



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Description: Excavation and hauling productivity determinations for Cleanup to Revised AOC LUT Values Alternative

Productivity Determinations - Excavation and Hauling for Offsite Disposal

Low Hazard Soil (28,000 CY) and Moderate Hazard Soil (50,000 CY)

Excavator Productivity Determination

Hours per Shift, HR/DY: 8
 Material bulking factor: 1.20
 Assumed Bucket Capacity, CY: 3
 Work Efficiency, %: 85%
 Operator Ability Correction Factor: 0.9
 Bucket Fill Factor, %: 90%

Hauling Productivity Determination

Hours per Shift, HR/DY: 8
 Material Bulking Factor: 1.20
 Assumed Payload Capacity, LCY: 20
 Assumed Payload Capacity, TON: 25
 Work Efficiency, %: 80%
 Estimated haul distance, MI: 135
 Payload Fill Factor: 90.0%

Summary

	Number	Prod	Units
Excavator	1	38.3	BCY/HR
Highway Haul Trucks	20	46.0	LCY/HR
		57.5	TON/HR
Total number of roundtrip trucks	5,087		EA
Estimated time to complete	255		DY
Number of trucks per day	20		EA/DY

Excavator Model Assumed: CAT 345B

Bucket Size	3	CY
Bucket Fill Factor	90%	%
Bucket Payload	2.7	CY
Load Time	5.4	SEC
Swing Time Loaded	4.8	SEC
Dump Time	2.4	SEC
Swing Time Unloaded	4.2	SEC
Truck Exchange	15	SEC
Total	31.8	SEC/cycle
Cycle Time Per Excavator	0.530	MIN/cycle
	0.0089	HR/cycle
Ideal Cycles Per Day	899	Cyc/Exc/DY
Ideal Loader Productivity	303.4	LCY/HR
	252.8	BCY/HR
Operator Ability Correction Factor	0.9	
Work Efficiency	85%	%
Adjusted Loader Productivity	232.1	LCY/HR
	193.4	BCY/HR

Assumed Payload Capacity	15.00	BCY/truck
	18.00	LCY/truck
	23	TON/truck
Adjusted Loader (1) Productivity	232.1	LCY/HR
Load Time per Truck	4.7	MIN
Assumed Average Haul Speed	40	MPH
On Road Haul Time	202.5	MIN
Dump and Maneuver Time	1.0	MIN
Assumed Average Return Speed	50	MPH
On Road Return Time	162.0	MIN
Cycle Time per Truck	370.2	MIN/cycle
	6.17	HR/cycle
Ideal Cycles Per Day	1.3	Cyc/Truck/DY
Ideal Productivity per Truck	2.9	LCY/HR
	3.7	TON/HR
Work Efficiency	80%	%
Adjusted Productivity per Truck	2.3	LCY/HR
	2.9	TON/HR

Number of Excavators Anticipated	1	
Total Excavator Productivity	232.1	LCY/HR
	193.4	BCY/HR

Number of Haul Trucks Anticipated	20	
Total Hauling Productivity	46.0	LCY/HR
	58.0	TON/HR

Volume to Excavate	78,000	BCY
	93,600	LCY

Volume to Export	93,600	LCY
	117,000	TON

Excavation Time	404	HR
Haul Time	2,035	HR

Hauling Time	2,035	HR
Load Time	404	HR

Est total time to completion	2,035	HR
	255	DY

Est total time to completion	2,035	HR
	255	DY

Excavator productivity	38.3	BCY/HR
	46.0	LCY/HR

Hauling productivity	46.0	LCY/HR	2.3	Per Truck
	57.5	TON/HR	2.9	Per Truck



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Productivity Determinations - Excavation and Hauling for Offsite Disposal

Hazardous Soil

Excavator Productivity Determination

Hours per Shift, HR/DY: 8
 Material bulking factor: 1.20
 Assumed Bucket Capacity, CY: 3
 Work Efficiency, %: 85%
 Operator Ability Correction Factor: 0.9
 Bucket Fill Factor, %: 90%

Hauling Productivity Determination

Hours per Shift, HR/DY: 8
 Material Bulking Factor: 1.20
 Assumed Payload Capacity, LCY: 20
 Assumed Payload Capacity, TON: 25
 Work Efficiency, %: 80%
 Estimated haul distance, MI: 780
 Payload Fill Factor: 90.0%

Summary

	Number	Prod	Units
Excavator	1	6.7	BCY/HR
Highway Haul Trucks	20	8.0	LCY/HR
		10.0	TON/HR
Total number of roundtrip trucks	130		EA
Estimated time to complete	38		DY
Number of trucks per day	4		EA/DY

Excavator Model Assumed: **CAT 345B**

Bucket Size	3	CY
Bucket Fill Factor	90%	%
Bucket Payload	2.7	CY
Load Time	5.4	SEC
Swing Time Loaded	4.8	SEC
Dump Time	2.4	SEC
Swing Time Unloaded	4.2	SEC
Truck Exchange	15	SEC
Total	31.8	SEC/cycle
Cycle Time Per Excavator	0.530	MIN/cycle
	0.0089	HR/cycle
Ideal Cycles Per Day	899	Cyc/Exc/DY
Ideal Loader Productivity	303.4	LCY/HR
	252.8	BCY/HR
Operator Ability Correction Factor	0.9	
Work Efficiency	85%	%
Adjusted Loader Productivity	232.1	LCY/HR
	193.4	BCY/HR

Assumed Payload Capacity	15.00	BCY/truck
	18.00	LCY/truck
	23	TON/truck
Adjusted Loader (1) Productivity	232.1	LCY/HR
Load Time per Truck	4.7	MIN
Assumed Average Haul Speed	40	MPH
On Road Haul Time	1170.0	MIN
Dump and Maneuver Time	1.0	MIN
Assumed Average Return Speed	50	MPH
On Road Return Time	936.0	MIN
Cycle Time per Truck	2111.7	MIN/cycle
	35.2	HR/cycle
Ideal Cycles Per Day	0.2	Cyc/Truck/DY
Ideal Productivity per Truck	0.5	LCY/HR
	0.6	TON/HR
Work Efficiency	80%	%
Adjusted Productivity per Truck	0.4	LCY/HR
	0.4	TON/HR

Number of Excavators Anticipated	1	
Total Excavator Productivity	232.1	LCY/HR
	193.4	BCY/HR

Number of Haul Trucks Anticipated	20	
Total Hauling Productivity	8.0	LCY/HR
	8.0	TON/HR

Volume to Excavate	2,000	BCY
	2,400	LCY

Volume to Export	2,400	LCY
	3,000	TON

Excavation Time	11	HR
Haul Time	300	HR

Hauling Time	300	HR
Load Time	11	HR

Est total time to completion	300	HR
	38	DY

Est total time to completion	300	HR
	38	DY

Excavator productivity	6.7	BCY/HR
Excavator productivity	8.0	LCY/HR

Hauling productivity	8.0	LCY/HR	0.4	Per Truck
	10.0	TON/HR	0.5	Per Truck



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Productivity Determinations - Excavation and Hauling for Offsite Disposal

LLW/MLLW Soil

Excavator Productivity Determination

Hours per Shift, HR/DY: 8
 Material bulking factor: 1.20
 Assumed Bucket Capacity, CY: 3
 Work Efficiency, %: 85%
 Operator Ability Correction Factor: 0.9
 Bucket Fill Factor, %: 90%

Hauling Productivity Determination

Hours per Shift, HR/DY: 8
 Material Bulking Factor: 1.20
 Assumed Payload Capacity, LCY: 20
 Assumed Payload Capacity, TON: 25
 Work Efficiency, %: 80%
 Estimated haul distance, MI: 300
 Payload Fill Factor: 90.0%

Summary

	Number	Prod	Units
Excavator	1	18.3	BCY/HR
Highway Haul Trucks	20	22.0	LCY/HR
		27.5	TON/HR
Total number of roundtrip trucks	7,174		EA
Estimated time to complete	750		DY
Number of trucks per day	10		EA/DY

Excavator Model Assumed: **CAT 345B**

Bucket Size	3	CY
Bucket Fill Factor	90%	%
Bucket Payload	2.7	CY
Load Time	5.4	SEC
Swing Time Loaded	4.8	SEC
Dump Time	2.4	SEC
Swing Time Unloaded	4.2	SEC
Truck Exchange	15	SEC
Total	31.8	SEC/cycle
Cycle Time Per Excavator	0.530	MIN/cycle
	0.0089	HR/cycle
Ideal Cycles Per Day	899	Cyc/Exc/DY
Ideal Loader Productivity	303.4	LCY/HR
	252.8	BCY/HR
Operator Ability Correction Factor	0.9	
Work Efficiency	85%	%
Adjusted Loader Productivity	232.1	LCY/HR
	193.4	BCY/HR

Assumed Payload Capacity	15.00	BCY/truck
	18.00	LCY/truck
	23	TON/truck
Adjusted Loader (1) Productivity	232.1	LCY/HR
Load Time per Truck	4.7	MIN
Assumed Average Haul Speed	40	MPH
On Road Haul Time	450.0	MIN
Dump and Maneuver Time	1.0	MIN
Assumed Average Return Speed	50	MPH
On Road Return Time	360.0	MIN
Cycle Time per Truck	815.7	MIN/cycle
	13.6	HR/cycle
Ideal Cycles Per Day	0.6	Cyc/Truck/DY
Ideal Productivity per Truck	1.4	LCY/HR
	1.7	TON/HR
Work Efficiency	80%	%
Adjusted Productivity per Truck	1.1	LCY/HR
	1.3	TON/HR

Number of Excavators Anticipated	1	
Total Excavator Productivity	232.1	LCY/HR
	193.4	BCY/HR

Number of Haul Trucks Anticipated	20	
Total Hauling Productivity	22.0	LCY/HR
	26.0	TON/HR

Volume to Excavate	110,000	BCY
	132,000	LCY

Volume to Export	132,000	LCY
	165,000	TON

Excavation Time	569	HR
Haul Time	6,000	HR

Hauling Time	6,000	HR
Load Time	569	HR

Est total time to completion	6,000	HR
	750	DY

Est total time to completion	6,000	HR
	750	DY

Excavator productivity	18.3	BCY/HR
Excavator productivity	22.0	LCY/HR

Hauling productivity	22.0	LCY/HR	1.1	Per Truck
	27.5	TON/HR	1.4	Per Truck



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Description: Excavation and hauling productivity determinations for Cleanup to Revised AOC LUT Values Alternative



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Description: Excavation and hauling productivity determinations for Cleanup to Revised AOC LUT Values Alternative

Productivity Determinations - Hauling, Spreading and Compacting General Backfill

Hauling Productivity Determination

Hours per Shift, HR/DY: 8
 Material Bulking Factor: 1.20
 Assumed Payload Capacity, LCY: 20
 Assumed Payload Capacity, TON: 25
 Work Efficiency, %: 80%
 Estimated haul distance, MI: 50
 Payload Fill Factor: 90.0%

Dozer Productivity Determination

Hours per Shift, HR: 8
 Work Efficiency, %: 90%
 Dozing Distance, FT: 300
 Slot Dozing Correction Factor: 1.15
 Visibility Correction Factor: 1.0
 Weight Correction Factor: 87%

Compactor Productivity Determination

Hours per Shift, HR: 8
 Work Efficiency, %: 90%
 Average Speed, MPH: 2
 Lift Thickness, IN: 6
 Number of Passes: 6

Dozer Model Assumed: **CAT D7R - Strt. Blade**

Work Efficiency % 90%
 Operator Type Average
 Operator Ability Correction Factor Factor 0.75
 Grade % Slope 2%
 Grade Factor 0.9
 Material Type Loose
 Material Correction Factor Factor 1.2
 Slot Dozing Correction Factor Factor 1.15
 Visibility Correction Factor Factor 1.0
 Weight Correction Factor Factor 0.87
 Combined Prod. Correction Factor Factor 0.73
 Ideal Dozer Productivity LCY/HR 175.0
 Adjusted Dozer Productivity LCY/HR 127.8

Compactor Model Assumed: **CAT CP-563**

Compactor Width IN 84
 CAT - Wide Area Productivity ECY/HR 626
 Assumed speed MPH 4
 Assumed thickness IN 12
 Assumed number of passes EA 6
 Work Efficiency % 90%
 Average Speed MPH 2
 Travel Speed Efficiency % 95%
 Lift Thickness IN 6.0
 Number of Passes EA 6
 Compacted Width per Pass FT 7.0
 Actual speed/assumed speed (Fs) 0.5
 Actual thickness/assumed thickness (Ft) 0.5
 Assumed passes/actual passes (Fp) 1.0
 Adjusted Compactor Productivity ECY/HR 133.8

Assumed Payload Capacity BCY/truck 15.00
 LCY/truck 18.00
 TON/truck 23
 Load Time per Truck MIN 1.0
 Assumed Average Haul Speed MPH 40
 On Road Haul Time MIN 75.0
 Dump and Maneuver Time MIN 1.0
 Assumed Average Return Speed MPH 50
 On Road Return Time MIN 60.0
 Cycle Time per Truck MIN/cycle 137.0
 HR/cycle 2.29
 Ideal Cycles Per Day Cyc/Truck/DY 3.5
 Ideal Productivity per Truck LCY/HR 7.9
 TON/HR 9.8
 Work Efficiency % 80%
 Adjusted Productivity per Truck LCY/HR 6.3
 TON/HR 7.8

Number of Haul Trucks Anticipated 10
 Total Hauling Productivity LCY/HR 63.0
 TON/HR 78.0

Volume to Import LCY 171,000
 TON 222,400

Hauling Time HR 2,714
 Spread Time HR 1,339
 Compaction Time HR 1,065

Est total time to completion HR 2,714
 DY 340

Hauling productivity LCY/HR 63.0
 TON/HR 81.9

Number of Dozers Anticipated 1
 Total Dozer Productivity LCY/HR 127.8
 LCY/DY 1022.0

Volume to Spread LCY 171,000

Spread Time HR 1,339
 Hauling Time HR 2,714
 Compaction Time HR 1,065

Est total time to completion HR 2,714

Spreading productivity LCY/HR 63.0

Number of Compactors Anticipated 1
 Total Compactor Productivity ECY/HR 133.8
 ECY/DY 1070.5

Volume to Compact ECY 142,500

Compaction Time HR 1,065
 Hauling Time HR 2,714
 Spread Time HR 1,339

Est total time to completion HR 2,714

Compaction productivity ECY/HR 52.5



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

CONSERVATION OF NATURAL RESOURCES ALTERNATIVE – RESIDENTIAL CLEANUP SCENARIO

Assumed Work Days and Hours

Days per work week for office staff, DY/WK:	5
Hours per workday for office staff, HR/DY:	8
Days per work week for site staff, DY/WK:	5
Hours per workday for site staff, HR/DY:	8

Assumed number of work days per year, DY/YR: 250 *Incorporates 10 federal holidays per year*

Assumed Duration of Project

Estimated duration of construction project, MO:	24	<i>See QTO-03</i>
Estimated duration of construction project, YR:	2	
Estimated duration of construction project, WK:	104	
Estimated duration of construction project, DY:	730	<i>Calendar Days</i>
Estimated duration of construction project, DY:	500	<i>Work days (based on 5 days per week, except 10 federal holidays.)</i>

Project Schedule, Submittals, Work Plans and Administrative BMPs

Project Schedules and Progress Meetings

Estimated project time, MO:	24
Estimated project time, WK:	104

Project Progress Meetings

Estimated time per week, HR/WK:	1
Project Manager, HR:	104
Office Clerk, HR:	104

Update Project Schedule

Estimated time per week, HR/WK:	1	
Project Manager, HR:	26	<i>Assumes 1/4 of the time of the civil engineer</i>
Project Engineer, HR:	104	
Office Clerk, HR:	104	
Project Manager, HR:	130	
Project Engineer, HR:	104	
Office Clerk, HR:	208	

Work Plans and Submittals

Work Plans

Project Management, HR:	80
Project Engineer, HR:	600
Office Clerk, HR:	120
Quality Control Engineer, HR:	120
Health and Safety Engineer, HR:	240
Staff Scientist, HR:	440
Arborist, HR:	120
Archeologist, HR:	160
Biologist, HR:	160



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Submittals

Project Management, HR:	24
Project Engineer, HR:	160
Office Clerk, HR:	40
Quality Control Engineer, HR:	40
Health and Safety Engineer, HR:	40
Staff Scientist, HR:	80
Arborist, HR:	16
Archeologist, HR:	40
Biologist, HR:	24

Post-RA Completion Report

Project Management, HR:	56
Project Engineer, HR:	300
Office Clerk, HR:	80
Quality Control Engineer, HR:	24
Health and Safety Engineer, HR:	8
Staff Scientist, HR:	24
Arborist, HR:	8
Archeologist, HR:	8
Biologist, HR:	8

Total

Project Management, HR:	160
Project Engineer, HR:	1060
Office Clerk, HR:	240
Quality Control Engineer, HR:	184
Health and Safety Engineer, HR:	288
Staff Scientist, HR:	544
Arborist, HR:	144
Archeologist, HR:	208
Biologist, HR:	192

Total Project Schedule, Submittals, and Work Plans

Project Management, HR:	290
Project Engineer, HR:	1164
Office Clerk, HR:	448
Quality Control Engineer, HR:	184
Health and Safety Engineer, HR:	288
Staff Scientist, HR:	544
Arborist, HR:	144
Archeologist, HR:	208
Biologist, HR:	192

Mobilization/Demobilization

	<u>Mob</u>	<u>Demob</u>	<u>Total</u>
Mob/Demob heavy equipment, EA:	5	5	10
Mob/Demob medium equipment, EA:	10	10	20
Mob/Demob self-propelled equipment, EA:	3	3	6

Assumed one-way trip time for locally-sourced equipment, HR: 3

Mobilize and demobilize heavy equipment, EA:	10	<u>Man/EQ Hours</u>	<u>Total</u>
Truck Driver, Heavy, HR:		1	30
Truck and Trailer, HR:		1	30
Oversized/overwidth load hauling permits, EA:		N/A	10



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Mobilize and demobilize medium equipment, EA: 20

	<u>Man/EQ Hours</u>	<u>Total</u>
Truck Driver, Heavy, HR:	1	60
Truck and Trailer, HR:	1	60

Mobilize and demobilize self-propelled equipment, EA: 6

	<u>Man/EQ Hours</u>	<u>Total</u>
Truck Driver, Light, HR:	1	18
Pickup Truck, HR:	1	18
Oversized/overwidth load hauling permits, EA:	N/A	6

General Conditions - Temporary Facilities

Project Sign

Number of project signs, EA:	1
Height of sign, FT:	4
Width of sign, FT:	8
Area of sign, SF:	32

Fencing and Equipment and Material Laydown Area

Assumed length for equipment laydown area, FT:	200
Assumed width of equipment laydown area, FT:	200
Area for equipment laydown area, SF:	40,000

Total fenced in length, LF:	800
Number of gates for equipment laydown area:	2
Width per gate, FT:	20
Length of chainlink fence needed, LF:	760

Thickness of gravel for equipment laydown area, IN:	6
Volume of gravel needed, ECY:	741
Volume of gravel needed, LCY:	862
Gravel needed, TON:	1360

*Rounded up to nearest whole number
 Rounded up to nearest ten*

Total 6' chainlink fence needed, LF: 760
Number of 6' chainlink gates, EA: 2
Volume of gravel needed, LCY: 862

Office Trailers and Office Equipment

- Assumes that an office trailer will be required for both the contractor and lead agency.

Office Trailer/Storage Box Delivery, EA: 2

	<u>Number</u>	<u>Duration</u>	
Contractor Office Trailer, MO:	1	24	<i>Office and conference/lunch trailers</i>
Lead Agency Office Trailer, MO:	1	24	
Total Office Trailer:		48	
Contractor Storage Box, MO:	1	24	<i>Male and female portable toilets provided</i>
Portable Toilet, MO:	4	96	
Hand Wash Station, MO:	2	48	
Office Equipment for Contractor Office Trailer, MO:	1	24	<i>Fax machine, copier, etc. - contractor only</i>
Office Supplies for Contractor Office Trailer, MO:	1	24	
Water cooler, MO:	2	48	<i>General supplies - contractor only</i>
Water cooler bottles, EA:	4	96	
Telephone/Internet for Office Trailer, MO:	2	48	
Electricity for Office Trailer, MO:	2	48	<i>Assume 4 bottles per month.</i>



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Dumpster delivery or pickup, EA: **1**
 Dumpster service, MO: **24**

Secondary containment for 550 gallon gasoline or diesel tanks, EA: **1**
 Secondary containment for 1,000 gallon gasoline or diesel tanks, EA: **1**

Temporary Electrical Hookup, EA: **2**
 Temporary Telephone Hookup, EA: **2**

Removal of Temporary Construction Facilities

Assumed time for removal of temporary construction facilities, DY: **3**
Number of crew hours, HR: 24

General Cleanup Crew

Duration over which general cleanup needed, MO: **24**
 Number of hours per day average, HR/DY: **2**
 General cleanup, HR: **1,040**

Surveying

Estimated percentage of time where surveyor is needed, %: **50%**

Number of weeks for surveyor, WK: **52**
 Total number of days, DY: **260** *Rounded up to nearest whole number*

Personnel

Total Duration of Project, MO: **24**

	<u>DY/WK</u>	<u>Days</u>	<u>Hours</u>	<u>Truck?</u>	<u>Hours</u>	<u>Cell/Card</u>	<u>Months</u>
Project Man. - home office:	2	208	1,664	N	0	N	0
Office Clerk - home office:	1	104	832	N	0	N	0
Site Superintendent:	5	520	4,160	Y	4,160	Y	24
Field Engineer:	5	520	4,160	Y	4,160	Y	24
Quality Control Engineer:	5	520	4,160	Y	4,160	Y	24
SHSO:	5	520	4,160	Y	4,160	Y	24
Geotechnical Engineer:	2	208	1,664	Y	1,664	Y	24
					18,304		120
Biologist:	1.5	156	1,248	Y	1,248	Y	24
Archeologist:	1.5	156	1,248	Y	1,248	Y	24
Arborist:	<i>Captured Under Existing Tree Protection</i>			Y	576	Y	24
Staff Scientist:			2,496		3,072		72
Field Technician:	5	520	4,160	Y	4,160	Y	24
Office Clerk - job site:	5	520	4,160	Y	4,160	N	0
					8,320		24
				Total	29,696		216

Site Preparation and Implementation of Structural BMPs

Estimated impacted area, AC: **10** *See QTO-02*
 Estimated impacted area, SF: **435,600**

Estimated perimeter, LF: **2,340** *Assumes circular area*



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Sediment and Erosion Control

Silt Fence

Silt Fence, LF: 14,040
 Silt Fence, LF: 14,040 *Rounded up to nearest 10*
 Estimated silt fence maintenance per week, HR/WK: 3
 Estimated percentage of silt fence to be replaced, %/WK: 0.25%
 Silt fence replacement, LF/WK: 40 *Rounded up to nearest 10*
 Silt fence replacement, LF: 4,160 *For the entire duration of project*
 Total silt fence, LF: 18,200

Wattles

Number of wattle locations, EA: 35 *Assumed by estimator*
 Length per location, LF: 25 *Assumed by estimator*
 Straw bales, LF: 875

Sediment Trap

Sediment trap, EA: 4 *Assumed by estimator*
 Sediment trap length, FT: 25
 Sediment trap width, FT: 25
 Sediment trap depth, FT: 3
 Excavation volume of sediment trap, CF/EA: 1875
 Excavation volume of sediment trap, BCY/EA: 70
 Excavation volume of sediment trap, CF: 7500
 Excavation volume of sediment trap, BCY: 280 *Rounded up to nearest 10*
 Excavation volume of sediment trap, LCY: 340 *Rounded up to nearest 10*

Rock Filter Dam

Rock filter dam width, EA: 4 *Assumed by estimator*
 Rock filter dam volume, CF/EA: 1,500 *Assumed based on previous work*
 Rock filter dam volume, ECF: 240 *Rounded up to nearest 10*
 Rock filter dam volume, LCY: 280 *Rounded up to nearest 10*
 Rock filter dam, TON: 450

Track-Out Prevention

Number of track-out prevention areas, EA: 4 *Assumed by estimator*
 Gravel pad width, FT: 30
 Gravel pad length, FT: 50
 Gravel pad thickness, IN: 6
 Gravel pad thickness, FT: 0.5
 Gravel pad, ECF/EA: 750
 Gravel pad, ECF: 120 *Rounded up to nearest 10*
 Gravel pad, LCY: 140 *Rounded up to nearest 10*
 Gravel pad, TON: 230 *Rounded up to nearest 10*

Temporary Seeding

Temporary seeding, AC: 10



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Inspection and Maintenance

Estimated silt fence maintenance per week, HR/WK: **4** *Assumed by estimator*
 Number of days for maintenance, DY: 500 *Based on total work time*
 Number of weeks for maintenance, WK: **104**
 Silt fence maintenance, HR: **416** *Assume weekly maintenance for duration*

Existing Tree Protection

Tree Protection Measures

Number of trees, EA: **35**
 Exclusion fence per tree, LF/EA: **100**
 Total amount of safety exclusion fence, LF: **3,500** *Orange Safety Fence*
 Number of steel t-posts, LF/EA: **5**
 Number of steel t-posts, EA: **700**

Arborist and Care for Existing Trees

Initial Assessment, HR: **60**
 Monthly Assessments, HR/MO: **12**
 Monthly Assessments, HR: 288 *24 months @ 12 hours per month*
 Establishment Period, HR/MO: **8**
 Establishment Period, HR: 192 *24 months @ 8 hours per month*
 Post Construction Assessment, HR: **36**
 Total hours for arborist, HR: **576**

Dust Control

Duration over which dust control needed, MO: **24**
 Number of hours per day average, HR/DY: 8
 Number of hours per week average, HRWK: **40**
 Dust control, HR: **4,000**
 Water usage, GAL/DY: 16,000 *See QTO-01*
 Water usage, GAL/WK: 80,000
 Water usage, CCF/WK: 110 *Rounded up to nearest 100 ccf*
 Total Water usage, GAL: 8,000,000
 Water usage, CCF/MO: 477
 Total Water usage, CCF: **11,440**

Air Monitoring

Duration over which air monitoring is needed, MO: **24**
 Number of samples per month, EA/MO: **1**
 PM-10 monitor, MO: **24**
 Weather station, MO: **24**
 Number of samples, EA: **24**

Decontamination/Wash Station

Duration over which decontamination/wash station needed, MO: **24**
 Number of hours per day average, HR/DY: 8
 Number of hours per week average, HR/WK: 40
 Decontamination/wash station, HR: **4,160**



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Assumed life of bag filter, WK/EA: 2
 Estimated monthly bag filter usage, EA/MO: 3
 Number of bag filters used, EA: 72

Street Sweeping

Duration over which street sweeping needed, MO: 24
 Number of hours per day average, HR/DY: 4
 Number of hours per week average, HR/WK: 20
 Street sweeping, HR: 2,080

Traffic Control

Preconstruction Video Survey

Preconstruction Video Survey, HR: 16 Assumed

Traffic Control Signs and Barricades

Be Prepared To Stop, EA: 8 CW3-4, 36-in x 36-in, 4 areas, 2 signs per area.
 Flag Man Sign, EA: 8 CW20-7, 36-in x 36-in, 2 areas, 2 signs per area.
 Sign stand, EA: 16
 Traffic sign maintenance per day, HR/MO: 4
 Traffic control sign and barricade maintenance, HR: 96

Traffic Control

Number of areas where flagman is needed, EA: 4
 Number of flagmen per area, EA/EA: 2
 Hauling days, DY: 500
 Flagmen hours, HR: 32,000

Excavation

Low Hazard Soil (0 CY) and Moderate Hazard Soil (49,000 CY)

Excavation

Low and Moderate Hazard Soil, BCY: 49,000
 Low and Moderate Hazard Soil, LCY: 58,800
 Low and Moderate Hazard Soil, TON: 73,500

Number of truck roundtrips, EA: 3,196 See PD-ALT-4 for productivity calculations.
 Number of days, DAY: 160 See PD-ALT-4 for productivity calculations.
 Number of trucks per day, EA/DAY: 20 See PD-ALT-4 for productivity calculations.

Confirmation Sampling

Excavation area, AC: 9.4 Estimated from total impacted area
 Excavation area, SF: 409,464

Excavation bottom confirmation sampling frequency, SF/EA: 2500
 Estimated number of bottom samples, EA: 1

Total excavation perimeter, LF: 8,820 Assumed. Incorporates sampling points at 4
 Sidewall confirmation sample frequency, LF/EA: 50 depths along the excavation perimeter.
 Side wall samples, EA: 176



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Estimated number of confirmation samples, EA: **177**
 Field duplicates, EA: **18** *Assume 10% of total samples*
 Total number of confirmation samples, EA: **195**
 Field Technician, HR: **49** *Assumes 4 samples per hour*
 Miscellaneous Sampling Supplies, LS: **1**

Hazardous Soil

Excavation

Hazardous Soil, BCY: **2,000**
 Hazardous Soil, LCY: **2,400**
 Hazardous Soil, TON: **3,000**
 Number of truck roundtrips, EA: **130** *See PD-ALT-4 for productivity calculations.*
 Number of days, DAY: **38** *See PD-ALT-4 for productivity calculations.*
 Number of trucks per day, EA/DAY: **4** *See PD-ALT-4 for productivity calculations.*

Confirmation Sampling

Excavation area, AC: **0.4** *Estimated from total impacted area*
 Excavation area, SF: **17,424**
 Excavation bottom confirmation sampling frequency, SF/EA: **2500**
 Estimated number of bottom samples, EA: **1**
 Total excavation perimeter, LF: **360** *Assumed. Incorporates sampling points at 4 depths along the excavation perimeter.*
 Sidewall confirmation sample frequency, LF/EA: **50**
 Side wall samples, EA: **7**
 Estimated number of confirmation samples, EA: **8**
 Field duplicates, EA: **1** *Assume 10% of total samples*
 Total number of confirmation samples, EA: **9**
 Field Technician, HR: **3** *Assumes 4 samples per hour*
 Miscellaneous Sampling Supplies, LS: **1**

LLW/MLLW Soil

Excavation

LLW/MLLW Soil, BCY: **1,000**
 LLW/MLLW Soil, LCY: **1,200**
 LLW/MLLW Soil, TON: **1,500**
 Number of truck roundtrips, EA: **65** *See PD-ALT-4 for productivity calculations.*
 Number of days, DAY: **7** *See PD-ALT-4 for productivity calculations.*
 Number of trucks per day, EA/DAY: **10** *See PD-ALT-4 for productivity calculations.*

Confirmation Sampling

Excavation area, AC: **0.2** *Estimated from total impacted area*
 Excavation area, SF: **8,712**
 Excavation bottom confirmation sampling frequency, SF/EA: **2500**
 Estimated number of bottom samples, EA: **1**



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Total excavation perimeter, LF:	180	<i>Assumed. Incorporates sampling points at 4 depths along the excavation perimeter.</i>
Sidewall confirmation sample frequency, LF/EA:	50	
Side wall samples, EA:	4	
Estimated number of confirmation samples, EA:	5	
Field duplicates, EA:	1.00	<i>Assume 10% of total samples</i>
Total number of confirmation samples, EA:	6	
Field Technician, HR:	2	<i>Assumes 4 samples per hour</i>
Miscellaneous Sampling Supplies, LS:	1	

Totals

Total excavation volume, BCY:	52,000
Total excavation volume, LCY:	62,400
Total disposal, TON:	78,000
Total number of truck roundtrips, EA:	3,391
Total number of days, DAY:	205

Backfill

Assumptions

Assumed percentage of excavation volume to backfill, %:	75%
Assumed percentage of backfill volume from onsite sandstone, %:	0%

Low Hazard Soil (0 CY) and Moderate Hazard Soil (49,000 CY)

Total excavation volume, BCY:	49,000	
Estimated backfill volume needed, ECY:	36,750	
Backfill from onsite sandstone, ECY:	0	<i>Rounded up to nearest 100</i>
Backfill from onsite sandstone, LCY:	0	<i>Rounded up to nearest 100</i>
Backfill from onsite sandstone, TON:	0	<i>Rounded up to nearest 100</i>
Backfill from offsite source, ECY:	36,750	
Backfill from offsite source, LCY:	44,100	<i>Rounded up to nearest 100</i>
Backfill from offsite source, TON:	57,400	<i>Rounded up to nearest 100</i>
Offsite backfill chemical testing, EA:	5	<i>Rounded up to nearest 1</i>
Backfill area, SF:	409,464	
Backfill area, AC:	9.4	
Number of geotechnical tests, EA:	41	

Hazardous Soil

Total excavation volume, BCY:	2,000	
Estimated backfill volume needed, ECY:	1,500	
Backfill from onsite sandstone, ECY:	0	<i>Rounded up to nearest 100</i>
Backfill from onsite sandstone, LCY:	0	<i>Rounded up to nearest 100</i>
Backfill from onsite sandstone, TON:	0	<i>Rounded up to nearest 100</i>
Backfill from offsite source, ECY:	1,500	
Backfill from offsite source, LCY:	1,800	<i>Rounded up to nearest 100</i>
Backfill from offsite source, TON:	2,400	<i>Rounded up to nearest 100</i>



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Offsite backfill chemical testing, EA: 1 *Rounded up to nearest 1*

Backfill area, SF: 17,424
 Backfill area, AC: 0.4

Number of geotechnical tests, EA: 2

LLW/MLLW Soil

Total excavation volume, BCY: 1,000
 Estimated backfill volume needed, ECY: 750

Backfill from onsite sandstone, ECY: 0 *Rounded up to nearest 100*
 Backfill from onsite sandstone, LCY: 0 *Rounded up to nearest 100*
 Backfill from onsite sandstone, TON: 0 *Rounded up to nearest 100*

Backfill from offsite source, ECY: 750
 Backfill from offsite source, LCY: 900 *Rounded up to nearest 100*
 Backfill from offsite source, TON: 1,200 *Rounded up to nearest 100*

Offsite backfill chemical testing, EA: 1 *Rounded up to nearest 1*

Backfill area, SF: 8,712
 Backfill area, AC: 0.2

Number of geotechnical tests, EA: 1

Totals

Total backfill, ECY: **39,000**
 Total backfill area, AC: **10**

Backfill from onsite sandstone, ECY: **0**
 Backfill from onsite sandstone, LCY: **0**
 Backfill from onsite sandstone, TON: **0**

Backfill from offsite source, ECY: **39,000**
 Backfill from offsite source, LCY: **46,800**
 Backfill from offsite source, TON: **61,000**

Offsite backfill chemical testing, EA: **7**

Number of geotechnical tests, EA: **44**



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Restoration

Seeding

Seed Mix , AC: **10**

Street Repairs

Woolsey Canyon Road

Length of road impacted, MI:	2.5	<i>From site entrance to Valley Cir Blvd.</i>
Number of lanes, EA:	2	<i>Per EIS</i>
Assumed width per lane, FT/EA:	12	<i>Per EIS</i>
Lane pavement, SF:	316,800	
Additional area not otherwise accounted for, SF:	8,300	<i>Turnouts - Estimated from aerial map</i>
Total area of pavement, SF:	325,100	
Total area of pavement, MSF:	325	
Total area of pavement, SY:	36,130	<i>Rounded up to nearest 10</i>
Assumed depth of cold milling, IN:	2	
Volume of cold milled material, CF:	54183	<i>Rounded to nearest whole number</i>
Volume of cold milled material, CY:	2007	<i>Rounded to nearest whole number</i>
Assumed depth of pavement wearing course, IN:	2	
Volume of pavement material, CF:	54195	<i>Rounded to nearest whole number</i>
Volume of pavement material, CY:	2008	<i>Rounded to nearest whole number</i>
Total volume to haul, CY:	4,015	



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Description: Excavation and hauling productivity determinations for Conservation of Natural Resources Alternative – Residential Cleanup Scenario

Productivity Determinations - Excavation and Hauling for Offsite Disposal

Low Hazard Soil (0 CY) and Moderate Hazard Soil (49,000 CY)

Excavator Productivity Determination

Hours per Shift, HR/DY: 8
 Material bulking factor: 1.20
 Assumed Bucket Capacity, CY: 3
 Work Efficiency, %: 85%
 Operator Ability Correction Factor: 0.9
 Bucket Fill Factor, %: 90%

Hauling Productivity Determination

Hours per Shift, HR/DY: 8
 Material Bulking Factor: 1.20
 Assumed Payload Capacity, LCY: 20
 Assumed Payload Capacity, TON: 25
 Work Efficiency, %: 80%
 Estimated haul distance, MI: 135
 Payload Fill Factor: 90.0%

Summary

	Number	Prod	Units
Excavator	1	38.3	BCY/HR
Highway Haul Trucks	20	46.0	LCY/HR
		57.5	TON/HR
Total number of roundtrip trucks	3,196		EA
Estimated time to complete	160		DY
Number of trucks per day	20		EA/DY

Excavator Model Assumed: CAT 345B

Bucket Size	3	CY
Bucket Fill Factor	90%	%
Bucket Payload	2.7	CY
Load Time	5.4	SEC
Swing Time Loaded	4.8	SEC
Dump Time	2.4	SEC
Swing Time Unloaded	4.2	SEC
Truck Exchange	15	SEC
Total	31.8	SEC/cycle
Cycle Time Per Excavator	0.530	MIN/cycle
	0.0089	HR/cycle
Ideal Cycles Per Day	899	Cyc/Exc/DY
Ideal Loader Productivity	303.4	LCY/HR
	252.8	BCY/HR
Operator Ability Correction Factor	0.9	
Work Efficiency	85%	%
Adjusted Loader Productivity	232.1	LCY/HR
	193.4	BCY/HR

Assumed Payload Capacity	15.00	BCY/truck
	18.00	LCY/truck
	23	TON/truck
Adjusted Loader (1) Productivity	232.1	LCY/HR
Load Time per Truck	4.7	MIN
Assumed Average Haul Speed	40	MPH
On Road Haul Time	202.5	MIN
Dump and Maneuver Time	1.0	MIN
Assumed Average Return Speed	50	MPH
On Road Return Time	162.0	MIN
Cycle Time per Truck	370.2	MIN/cycle
	6.17	HR/cycle
Ideal Cycles Per Day	1.3	Cyc/Truck/DY
Ideal Productivity per Truck	2.9	LCY/HR
	3.7	TON/HR
Work Efficiency	80%	%
Adjusted Productivity per Truck	2.3	LCY/HR
	2.9	TON/HR

Number of Excavators Anticipated	1	
Total Excavator Productivity	232.1	LCY/HR
	193.4	BCY/HR

Number of Haul Trucks Anticipated	20	
Total Hauling Productivity	46.0	LCY/HR
	58.0	TON/HR

Volume to Excavate	49,000	BCY
	58,800	LCY

Volume to Export	58,800	LCY
	73,500	TON

Excavation Time	254	HR
Haul Time	1,278	HR

Hauling Time	1,278	HR
Load Time	254	HR

Est total time to completion	1,278	HR
	160	DY

Est total time to completion	1,278	HR
	160	DY

Excavator productivity	38.3	BCY/HR
	46.0	LCY/HR

Hauling productivity	46.0	LCY/HR	2.3	Per Truck
	57.5	TON/HR	2.9	Per Truck



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Productivity Determinations - Excavation and Hauling for Offsite Disposal

Hazardous Soil

Excavator Productivity Determination

Hours per Shift, HR/DY: 8
 Material bulking factor: 1.20
 Assumed Bucket Capacity, CY: 3
 Work Efficiency, %: 85%
 Operator Ability Correction Factor: 0.9
 Bucket Fill Factor, %: 90%

Hauling Productivity Determination

Hours per Shift, HR/DY: 8
 Material Bulking Factor: 1.20
 Assumed Payload Capacity, LCY: 20
 Assumed Payload Capacity, TON: 25
 Work Efficiency, %: 80%
 Estimated haul distance, MI: 780
 Payload Fill Factor: 90.0%

Summary

	Number	Prod	Units
Excavator	1	6.7	BCY/HR
Highway Haul Trucks	20	8.0	LCY/HR
		10.0	TON/HR
Total number of roundtrip trucks	130		EA
Estimated time to complete	38		DY
Number of trucks per day	4		EA/DY

Excavator Model Assumed: CAT 345B

Bucket Size	3	CY
Bucket Fill Factor	90%	%
Bucket Payload	2.7	CY
Load Time	5.4	SEC
Swing Time Loaded	4.8	SEC
Dump Time	2.4	SEC
Swing Time Unloaded	4.2	SEC
Truck Exchange	15	SEC
Total	31.8	SEC/cycle
Cycle Time Per Excavator	0.530	MIN/cycle
	0.0089	HR/cycle
Ideal Cycles Per Day	899	Cyc/Exc/DY
Ideal Loader Productivity	303.4	LCY/HR
	252.8	BCY/HR
Operator Ability Correction Factor	0.9	
Work Efficiency	85%	%
Adjusted Loader Productivity	232.1	LCY/HR
	193.4	BCY/HR

Assumed Payload Capacity	15.00	BCY/truck
	18.00	LCY/truck
	23	TON/truck
Adjusted Loader (1) Productivity	232.1	LCY/HR
Load Time per Truck	4.7	MIN
Assumed Average Haul Speed	40	MPH
On Road Haul Time	1170.0	MIN
Dump and Maneuver Time	1.0	MIN
Assumed Average Return Speed	50	MPH
On Road Return Time	936.0	MIN
Cycle Time per Truck	2111.7	MIN/cycle
	35.2	HR/cycle
Ideal Cycles Per Day	0.2	Cyc/Truck/DY
Ideal Productivity per Truck	0.5	LCY/HR
	0.6	TON/HR
Work Efficiency	80%	%
Adjusted Productivity per Truck	0.4	LCY/HR
	0.4	TON/HR

Number of Excavators Anticipated	1	
Total Excavator Productivity	232.1	LCY/HR
	193.4	BCY/HR

Number of Haul Trucks Anticipated	20	
Total Hauling Productivity	8.0	LCY/HR
	8.0	TON/HR

Volume to Excavate	2,000	BCY
	2,400	LCY

Volume to Export	2,400	LCY
	3,000	TON

Excavation Time	11	HR
Haul Time	300	HR

Hauling Time	300	HR
Load Time	11	HR

Est total time to completion	300	HR
	38	DY

Est total time to completion	300	HR
	38	DY

Excavator productivity	6.7	BCY/HR
Excavator productivity	8.0	LCY/HR

Hauling productivity	8.0	LCY/HR	0.4	Per Truck
	10.0	TON/HR	0.5	Per Truck



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Productivity Determinations - Excavation and Hauling for Offsite Disposal

LLW/MLLW Soil

Excavator Productivity Determination

Hours per Shift, HR/DY: 8
 Material bulking factor: 1.20
 Assumed Bucket Capacity, CY: 3
 Work Efficiency, %: 85%
 Operator Ability Correction Factor: 0.9
 Bucket Fill Factor, %: 90%

Hauling Productivity Determination

Hours per Shift, HR/DY: 8
 Material Bulking Factor: 1.20
 Assumed Payload Capacity, LCY: 20
 Assumed Payload Capacity, TON: 25
 Work Efficiency, %: 80%
 Estimated haul distance, MI: 300
 Payload Fill Factor: 90.0%

Summary

	Number	Prod	Units
Excavator	1	18.3	BCY/HR
Highway Haul Trucks	20	22.0	LCY/HR
		27.5	TON/HR
Total number of roundtrip trucks	65		EA
Estimated time to complete	7		DY
Number of trucks per day	10		EA/DY

Excavator Model Assumed: CAT 345B

Bucket Size	3	CY
Bucket Fill Factor	90%	%
Bucket Payload	2.7	CY
Load Time	5.4	SEC
Swing Time Loaded	4.8	SEC
Dump Time	2.4	SEC
Swing Time Unloaded	4.2	SEC
Truck Exchange	15	SEC
Total	31.8	SEC/cycle
Cycle Time Per Excavator	0.530	MIN/cycle
	0.0089	HR/cycle
Ideal Cycles Per Day	899	Cyc/Exc/DY
Ideal Loader Productivity	303.4	LCY/HR
	252.8	BCY/HR
Operator Ability Correction Factor	0.9	
Work Efficiency	85%	%
Adjusted Loader Productivity	232.1	LCY/HR
	193.4	BCY/HR

Assumed Payload Capacity	15.00	BCY/truck
	18.00	LCY/truck
	23	TON/truck
Adjusted Loader (1) Productivity	232.1	LCY/HR
Load Time per Truck	4.7	MIN
Assumed Average Haul Speed	40	MPH
On Road Haul Time	450.0	MIN
Dump and Maneuver Time	1.0	MIN
Assumed Average Return Speed	50	MPH
On Road Return Time	360.0	MIN
Cycle Time per Truck	815.7	MIN/cycle
	13.6	HR/cycle
Ideal Cycles Per Day	0.6	Cyc/Truck/DY
Ideal Productivity per Truck	1.4	LCY/HR
	1.7	TON/HR
Work Efficiency	80%	%
Adjusted Productivity per Truck	1.1	LCY/HR
	1.3	TON/HR

Number of Excavators Anticipated	1	
Total Excavator Productivity	232.1	LCY/HR
	193.4	BCY/HR

Number of Haul Trucks Anticipated	20	
Total Hauling Productivity	22.0	LCY/HR
	26.0	TON/HR

Volume to Excavate	1,000	BCY
	1,200	LCY

Volume to Export	1,200	LCY
	1,500	TON

Excavation Time	6	HR
Haul Time	55	HR

Hauling Time	55	HR
Load Time	6	HR

Est total time to completion	55	HR
	7	DY

Est total time to completion	55	HR
	7	DY

Excavator productivity	18.3	BCY/HR
Excavator productivity	22.0	LCY/HR

Hauling productivity	22.0	LCY/HR	1.1	Per Truck
	27.5	TON/HR	1.4	Per Truck



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

CONSERVATION OF NATURAL RESOURCES ALTERNATIVE – OPEN SPACE SCENARIO

Assumed Work Days and Hours

Days per work week for office staff, DY/WK:	5
Hours per workday for office staff, HR/DY:	8
Days per work week for site staff, DY/WK:	5
Hours per workday for site staff, HR/DY:	8

Assumed number of work days per year, DY/YR: 250 *Incorporates 10 federal holidays per year*

Assumed Duration of Project

Estimated duration of construction project, MO:	24	<i>See QTO-03</i>
Estimated duration of construction project, YR:	2	
Estimated duration of construction project, WK:	104	
Estimated duration of construction project, DY:	730	<i>Calendar Days</i>
Estimated duration of construction project, DY:	500	<i>Work days (based on 5 days per week, except 10 federal holidays.)</i>

Project Schedule, Submittals, Work Plans and Administrative BMPs

Project Schedules and Progress Meetings

Estimated project time, MO:	24
Estimated project time, WK:	104

Project Progress Meetings

Estimated time per week, HR/WK:	1
Project Manager, HR:	104
Office Clerk, HR:	104

Update Project Schedule

Estimated time per week, HR/WK:	1	
Project Manager, HR:	26	<i>Assumes 1/4 of the time of the civil engineer</i>
Project Engineer, HR:	104	
Office Clerk, HR:	104	
Project Manager, HR:	130	
Project Engineer, HR:	104	
Office Clerk, HR:	208	

Work Plans and Submittals

Work Plans

Project Management, HR:	80
Project Engineer, HR:	600
Office Clerk, HR:	120
Quality Control Engineer, HR:	120
Health and Safety Engineer, HR:	240
Staff Scientist, HR:	440
Arborist, HR:	120
Archeologist, HR:	160
Biologist, HR:	160



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Submittals

Project Management, HR:	24
Project Engineer, HR:	160
Office Clerk, HR:	40
Quality Control Engineer, HR:	40
Health and Safety Engineer, HR:	40
Staff Scientist, HR:	80
Arborist, HR:	16
Archeologist, HR:	40
Biologist, HR:	24

Post-RA Completion Report

Project Management, HR:	56
Project Engineer, HR:	300
Office Clerk, HR:	80
Quality Control Engineer, HR:	24
Health and Safety Engineer, HR:	8
Staff Scientist, HR:	24
Arborist, HR:	8
Archeologist, HR:	8
Biologist, HR:	8

Total

Project Management, HR:	160
Project Engineer, HR:	1060
Office Clerk, HR:	240
Quality Control Engineer, HR:	184
Health and Safety Engineer, HR:	288
Staff Scientist, HR:	544
Arborist, HR:	144
Archeologist, HR:	208
Biologist, HR:	192

Total Project Schedule, Submittals, and Work Plans

Project Management, HR:	290
Project Engineer, HR:	1164
Office Clerk, HR:	448
Quality Control Engineer, HR:	184
Health and Safety Engineer, HR:	288
Staff Scientist, HR:	544
Arborist, HR:	144
Archeologist, HR:	208
Biologist, HR:	192

Mobilization/Demobilization

	<u>Mob</u>	<u>Demob</u>	<u>Total</u>
Mob/Demob heavy equipment, EA:	5	5	10
Mob/Demob medium equipment, EA:	10	10	20
Mob/Demob self-propelled equipment, EA:	3	3	6

Assumed one-way trip time for locally-sourced equipment, HR: 3

Mobilize and demobilize heavy equipment, EA:	10	<u>Man/EQ Hours</u>	<u>Total</u>
Truck Driver, Heavy, HR:		1	30
Truck and Trailer, HR:		1	30
Oversized/overwidth load hauling permits, EA:		N/A	10



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Mobilize and demobilize medium equipment, EA: 20

	<u>Man/EQ Hours</u>	<u>Total</u>
Truck Driver, Heavy, HR:	1	60
Truck and Trailer, HR:	1	60

Mobilize and demobilize self-propelled equipment, EA: 6

	<u>Man/EQ Hours</u>	<u>Total</u>
Truck Driver, Light, HR:	1	18
Pickup Truck, HR:	1	18
Oversized/overwidth load hauling permits, EA:	N/A	6

General Conditions - Temporary Facilities

Project Sign

Number of project signs, EA:	1
Height of sign, FT:	4
Width of sign, FT:	8
Area of sign, SF:	32

Fencing and Equipment and Material Laydown Area

Assumed length for equipment laydown area, FT:	200
Assumed width of equipment laydown area, FT:	200
Area for equipment laydown area, SF:	40,000

Total fenced in length, LF:	800
Number of gates for equipment laydown area:	2
Width per gate, FT:	20
Length of chainlink fence needed, LF:	760

Thickness of gravel for equipment laydown area, IN:	6
Volume of gravel needed, ECY:	741
Volume of gravel needed, LCY:	862
Gravel needed, TON:	1360

*Rounded up to nearest whole number
 Rounded up to nearest ten*

Total 6' chainlink fence needed, LF: 760
Number of 6' chainlink gates, EA: 2
Volume of gravel needed, LCY: 862

Office Trailers and Office Equipment

- Assumes that an office trailer will be required for both the contractor and lead agency.

Office Trailer/Storage Box Delivery, EA: 2

	<u>Number</u>	<u>Duration</u>	
Contractor Office Trailer, MO:	1	24	<i>Office and conference/lunch trailers</i>
Lead Agency Office Trailer, MO:	1	24	
Total Office Trailer:		48	
Contractor Storage Box, MO:	1	24	<i>Male and female portable toilets provided</i>
Portable Toilet, MO:	4	96	
Hand Wash Station, MO:	2	48	
Office Equipment for Contractor Office Trailer, MO:	1	24	<i>Fax machine, copier, etc. - contractor only</i>
Office Supplies for Contractor Office Trailer, MO:	1	24	
Water cooler, MO:	2	48	<i>General supplies - contractor only</i>
Water cooler bottles, EA:	4	96	
Telephone/Internet for Office Trailer, MO:	2	48	
Electricity for Office Trailer, MO:	2	48	<i>Assume 4 bottles per month.</i>



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Dumpster delivery or pickup, EA: **1**
 Dumpster service, MO: **24**

Secondary containment for 550 gallon gasoline or diesel tanks, EA: **1**
 Secondary containment for 1,000 gallon gasoline or diesel tanks, EA: **1**

Temporary Electrical Hookup, EA: **2**
 Temporary Telephone Hookup, EA: **2**

Removal of Temporary Construction Facilities

Assumed time for removal of temporary construction facilities, DY: **3**
Number of crew hours, HR: 24

General Cleanup Crew

Duration over which general cleanup needed, MO: **24**
 Number of hours per day average, HR/DY: **2**
 General cleanup, HR: **1,040**

Surveying

Estimated percentage of time where surveyor is needed, %: **50%**

Number of weeks for surveyor, WK: **52**
 Total number of days, DY: **260** *Rounded up to nearest whole number*

Personnel

Total Duration of Project, MO: **24**

	<u>DY/WK</u>	<u>Days</u>	<u>Hours</u>	<u>Truck?</u>	<u>Hours</u>	<u>Cell/Card</u>	<u>Months</u>
Project Man. - home office:	2	208	1,664	N	0	N	0
Office Clerk - home office:	1	104	832	N	0	N	0
Site Superintendent:	5	520	4,160	Y	4,160	Y	24
Field Engineer:	5	520	4,160	Y	4,160	Y	24
Quality Control Engineer:	5	520	4,160	Y	4,160	Y	24
SHSO:	5	520	4,160	Y	4,160	Y	24
Geotechnical Engineer:	2	208	1,664	Y	1,664	Y	24
					18,304		120
Biologist:	1.5	156	1,248	Y	1,248	Y	24
Archeologist:	1.5	156	1,248	Y	1,248	Y	24
Arborist:	<i>Captured Under Existing Tree Protection</i>			Y	576	Y	24
Staff Scientist:			2,496		3,072		72
Field Technician:	5	520	4,160	Y	4,160	Y	24
Office Clerk - job site:	5	520	4,160	Y	4,160	N	0
					8,320		24
			Total		29,696		216

Site Preparation and Implementation of Structural BMPs

Estimated impacted area, AC: **9** *See QTO-02*
 Estimated impacted area, SF: **392,040**

Estimated perimeter, LF: **2,220** *Assumes circular area*



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Sediment and Erosion Control

Silt Fence

Silt Fence, LF: 13,320
Silt Fence, LF: 13,320 *Rounded up to nearest 10*
Estimated silt fence maintenance per week, HR/WK: 3
Estimated percentage of silt fence to be replaced, %/WK: 0.25%
Silt fence replacement, LF/WK: 40 *Rounded up to nearest 10*
Silt fence replacement, LF: 4,160 *For the entire duration of project*
Total silt fence, LF: 17,480

Wattles

Number of wattle locations, EA: 35 *Assumed by estimator*
Length per location, LF: 25 *Assumed by estimator*
Straw bales, LF: 875

Sediment Trap

Sediment trap, EA: 4 *Assumed by estimator*
Sediment trap length, FT: 25
Sediment trap width, FT: 25
Sediment trap depth, FT: 3
Excavation volume of sediment trap, CF/EA: 1875
Excavation volume of sediment trap, BCY/EA: 70
Excavation volume of sediment trap, CF: 7500
Excavation volume of sediment trap, BCY: 280 *Rounded up to nearest 10*
Excavation volume of sediment trap, LCY: 340 *Rounded up to nearest 10*

Rock Filter Dam

Rock filter dam width, EA: 4 *Assumed by estimator*
Rock filter dam volume, CF/EA: 1,500 *Assumed based on previous work*
Rock filter dam volume, ECF: 240 *Rounded up to nearest 10*
Rock filter dam volume, LCY: 280 *Rounded up to nearest 10*
Rock filter dam, TON: 450

Track-Out Prevention

Number of track-out prevention areas, EA: 4 *Assumed by estimator*
Gravel pad width, FT: 30
Gravel pad length, FT: 50
Gravel pad thickness, IN: 6
Gravel pad thickness, FT: 0.5
Gravel pad, ECF/EA: 750
Gravel pad, ECF: 120 *Rounded up to nearest 10*
Gravel pad, LCY: 140 *Rounded up to nearest 10*
Gravel pad, TON: 230 *Rounded up to nearest 10*

Temporary Seeding

Temporary seeding, AC: 9



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Inspection and Maintenance

Estimated silt fence maintenance per week, HR/WK: **4** *Assumed by estimator*
 Number of days for maintenance, DY: **500** *Based on total work time*
 Number of weeks for maintenance, WK: **104**
 Silt fence maintenance, HR: **416** *Assume weekly maintenance for duration*

Existing Tree Protection

Tree Protection Measures

Number of trees, EA: **35**
 Exclusion fence per tree, LF/EA: **100**
 Total amount of safety exclusion fence, LF: **3,500** *Orange Safety Fence*
 Number of steel t-posts, LF/EA: **5**
 Number of steel t-posts, EA: **700**

Arborist and Care for Existing Trees

Initial Assessment, HR: **60**
 Monthly Assessments, HR/MO: **12**
 Monthly Assessments, HR: **288** *24 months @ 12 hours per month*
 Establishment Period, HR/MO: **8**
 Establishment Period, HR: **192** *24 months @ 8 hours per month*
 Post Construction Assessment, HR: **36**
 Total hours for arborist, HR: **576**

Dust Control

Duration over which dust control needed, MO: **24**
 Number of hours per day average, HR/DY: **8**
 Number of hours per week average, HRWK: **40**
 Dust control, HR: **4,000**
 Water usage, GAL/DY: **16,000** *See QTO-01*
 Water usage, GAL/WK: **80,000**
 Water usage, CCF/WK: **110** *Rounded up to nearest 100 ccf*
 Total Water usage, GAL: **8,000,000**
 Water usage, CCF/MO: **477**
 Total Water usage, CCF: **11,440**

Air Monitoring

Duration over which air monitoring is needed, MO: **24**
 Number of samples per month, EA/MO: **1**
 PM-10 monitor, MO: **24**
 Weather station, MO: **24**
 Number of samples, EA: **24**

Decontamination/Wash Station

Duration over which decontamination/wash station needed, MO: **24**
 Number of hours per day average, HR/DY: **8**
 Number of hours per week average, HR/WK: **40**
 Decontamination/wash station, HR: **4,160**



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Assumed life of bag filter, WK/EA: 2
 Estimated monthly bag filter usage, EA/MO: 3
 Number of bag filters used, EA: 72

Street Sweeping

Duration over which street sweeping needed, MO: 24
 Number of hours per day average, HR/DY: 4
 Number of hours per week average, HR/WK: 20
 Street sweeping, HR: 2,080

Traffic Control

Preconstruction Video Survey

Preconstruction Video Survey, HR: 16 Assumed

Traffic Control Signs and Barricades

Be Prepared To Stop, EA: 8 CW3-4, 36-in x 36-in, 4 areas, 2 signs per area.
 Flag Man Sign, EA: 8 CW20-7, 36-in x 36-in, 2 areas, 2 signs per area.
 Sign stand, EA: 16
 Traffic sign maintenance per day, HR/MO: 4
 Traffic control sign and barricade maintenance, HR: 96

Traffic Control

Number of areas where flagman is needed, EA: 4
 Number of flagmen per area, EA/EA: 2
 Hauling days, DY: 500
 Flagmen hours, HR: 32,000

Excavation

Low Hazard Soil (0 CY) and Moderate Hazard Soil (36,000 CY)

Excavation

Low and Moderate Hazard Soil, BCY: 36,000
 Low and Moderate Hazard Soil, LCY: 43,200
 Low and Moderate Hazard Soil, TON: 54,000

Number of truck roundtrips, EA: 2,348 See PD-ALT-5 for productivity calculations.
 Number of days, DAY: 118 See PD-ALT-5 for productivity calculations.
 Number of trucks per day, EA/DAY: 20 See PD-ALT-5 for productivity calculations.

Confirmation Sampling

Excavation area, AC: 8.4 Estimated from total impacted area
 Excavation area, SF: 365,904

Excavation bottom confirmation sampling frequency, SF/EA: 2500
 Estimated number of bottom samples, EA: 1

Total excavation perimeter, LF: 8,368 Assumed. Incorporates sampling points at 4
 Sidewall confirmation sample frequency, LF/EA: 50 depths along the excavation perimeter.
 Side wall samples, EA: 167



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Estimated number of confirmation samples, EA: **168**
 Field duplicates, EA: **17** *Assume 10% of total samples*
 Total number of confirmation samples, EA: **185**
 Field Technician, HR: **47** *Assumes 4 samples per hour*
 Miscellaneous Sampling Supplies, LS: **1**

Hazardous Soil

Excavation

Hazardous Soil, BCY: **2,000**
 Hazardous Soil, LCY: **2,400**
 Hazardous Soil, TON: **3,000**
 Number of truck roundtrips, EA: **130** *See PD-ALT-5 for productivity calculations.*
 Number of days, DAY: **38** *See PD-ALT-5 for productivity calculations.*
 Number of trucks per day, EA/DAY: **4** *See PD-ALT-5 for productivity calculations.*

Confirmation Sampling

Excavation area, AC: **0.5** *Estimated from total impacted area*
 Excavation area, SF: **21,780**
 Excavation bottom confirmation sampling frequency, SF/EA: **2500**
 Estimated number of bottom samples, EA: **1**
 Total excavation perimeter, LF: **464** *Assumed. Incorporates sampling points at 4 depths along the excavation perimeter.*
 Sidewall confirmation sample frequency, LF/EA: **50**
 Side wall samples, EA: **9**
 Estimated number of confirmation samples, EA: **10**
 Field duplicates, EA: **2** *Assume 10% of total samples*
 Total number of confirmation samples, EA: **12**
 Field Technician, HR: **4** *Assumes 4 samples per hour*
 Miscellaneous Sampling Supplies, LS: **1**

LLW/MLLW Soil

Excavation

LLW/MLLW Soil, BCY: **200**
 LLW/MLLW Soil, LCY: **240**
 LLW/MLLW Soil, TON: **300**
 Number of truck roundtrips, EA: **13** *See PD-ALT-5 for productivity calculations.*
 Number of days, DAY: **2** *See PD-ALT-5 for productivity calculations.*
 Number of trucks per day, EA/DAY: **7** *See PD-ALT-5 for productivity calculations.*

Confirmation Sampling

Excavation area, AC: **0.1** *Estimated from total impacted area*
 Excavation area, SF: **4,356**
 Excavation bottom confirmation sampling frequency, SF/EA: **2500**
 Estimated number of bottom samples, EA: **1**



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Total excavation perimeter, LF:	48	<i>Assumed. Incorporates sampling points at 4</i>
Sidewall confirmation sample frequency, LF/EA:	50	<i>depths along the excavation perimeter.</i>
Side wall samples, EA:	4	
Estimated number of confirmation samples, EA:	5	
Field duplicates, EA:	1.00	<i>Assume 10% of total samples</i>
Total number of confirmation samples, EA:	6	
Field Technician, HR:	2	<i>Assumes 4 samples per hour</i>
Miscellaneous Sampling Supplies, LS:	1	

Totals

Total excavation volume, BCY:	38,200
Total excavation volume, LCY:	45,840
Total disposal, TON:	57,300
Total number of truck roundtrips, EA:	2,491
Total number of days, DAY:	158

Backfill

Assumptions

Assumed percentage of excavation volume to backfill, %:	75%
Assumed percentage of backfill volume from onsite sandstone, %:	0%

Low Hazard Soil (0 CY) and Moderate Hazard Soil (36,000 CY)

Total excavation volume, BCY:	36,000	
Estimated backfill volume needed, ECY:	27,000	
Backfill from onsite sandstone, ECY:	0	<i>Rounded up to nearest 100</i>
Backfill from onsite sandstone, LCY:	0	<i>Rounded up to nearest 100</i>
Backfill from onsite sandstone, TON:	0	<i>Rounded up to nearest 100</i>
Backfill from offsite source, ECY:	27,000	
Backfill from offsite source, LCY:	32,400	<i>Rounded up to nearest 100</i>
Backfill from offsite source, TON:	42,200	<i>Rounded up to nearest 100</i>
Offsite backfill chemical testing, EA:	4	<i>Rounded up to nearest 1</i>
Backfill area, SF:	365,904	
Backfill area, AC:	8.4	
Number of geotechnical tests, EA:	37	

Hazardous Soil

Total excavation volume, BCY:	2,000	
Estimated backfill volume needed, ECY:	1,500	
Backfill from onsite sandstone, ECY:	0	<i>Rounded up to nearest 100</i>
Backfill from onsite sandstone, LCY:	0	<i>Rounded up to nearest 100</i>
Backfill from onsite sandstone, TON:	0	<i>Rounded up to nearest 100</i>
Backfill from offsite source, ECY:	1,500	
Backfill from offsite source, LCY:	1,800	<i>Rounded up to nearest 100</i>
Backfill from offsite source, TON:	2,400	<i>Rounded up to nearest 100</i>



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Offsite backfill chemical testing, EA: 1 *Rounded up to nearest 1*
 Backfill area, SF: 21,780
 Backfill area, AC: 0.5
 Number of geotechnical tests, EA: 3

LLW/MLLW Soil

Total excavation volume, BCY: 200
 Estimated backfill volume needed, ECY: 150
 Backfill from onsite sandstone, ECY: 0 *Rounded up to nearest 100*
 Backfill from onsite sandstone, LCY: 0 *Rounded up to nearest 100*
 Backfill from onsite sandstone, TON: 0 *Rounded up to nearest 100*
 Backfill from offsite source, ECY: 150
 Backfill from offsite source, LCY: 200 *Rounded up to nearest 100*
 Backfill from offsite source, TON: 300 *Rounded up to nearest 100*
 Offsite backfill chemical testing, EA: 1 *Rounded up to nearest 1*
 Backfill area, SF: 4,356
 Backfill area, AC: 0.1
 Number of geotechnical tests, EA: 1

Totals

Total backfill, ECY: **28,650**
 Total backfill area, AC: **9**
 Backfill from onsite sandstone, ECY: **0**
 Backfill from onsite sandstone, LCY: **0**
 Backfill from onsite sandstone, TON: **0**
 Backfill from offsite source, ECY: **28,650**
 Backfill from offsite source, LCY: **34,400**
 Backfill from offsite source, TON: **44,900**
 Offsite backfill chemical testing, EA: **6**
 Number of geotechnical tests, EA: **41**



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Description: Conservation of Natural Resources Alternative cost estimate backup calculations

Restoration

Seeding

Seed Mix , AC: 9

Street Repairs

Woolsey Canyon Road

Length of road impacted, MI:	2.5	From site entrance to Valley Cir Blvd.
Number of lanes, EA:	2	Per EIS
Assumed width per lane, FT/EA:	12	Per EIS
Lane pavement, SF:	316,800	
Additional area not otherwise accounted for, SF:	8,300	Turnouts - Estimated from aerial map
Total area of pavement, SF:	325,100	
Total area of pavement, MSF:	325	
Total area of pavement, SY:	36,130	Rounded up to nearest 10
Assumed depth of cold milling, IN:	2	
Volume of cold milled material, CF:	54183	Rounded to nearest whole number
Volume of cold milled material, CY:	2007	Rounded to nearest whole number
Assumed depth of pavement wearing course, IN:	2	
Volume of pavement material, CF:	54195	Rounded to nearest whole number
Volume of pavement material, CY:	2008	Rounded to nearest whole number
Total volume to haul, CY:	4,015	



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Description: Excavation and hauling productivity determinations for Conservation of Natural Resources Alternative – Residential Cleanup Scenario

Productivity Determinations - Excavation and Hauling for Offsite Disposal

Low Hazard Soil (0 CY) and Moderate Hazard Soil (36,000 CY)

Excavator Productivity Determination

Hours per Shift, HR/DY: 8
 Material bulking factor: 1.20
 Assumed Bucket Capacity, CY: 3
 Work Efficiency, %: 85%
 Operator Ability Correction Factor: 0.9
 Bucket Fill Factor, %: 90%

Hauling Productivity Determination

Hours per Shift, HR/DY: 8
 Material Bulking Factor: 1.20
 Assumed Payload Capacity, LCY: 20
 Assumed Payload Capacity, TON: 25
 Work Efficiency, %: 80%
 Estimated haul distance, MI: 135
 Payload Fill Factor: 90.0%

Summary

	Number	Prod	Units
Excavator	1	38.3	BCY/HR
Highway Haul Trucks	20	46.0	LCY/HR
		57.5	TON/HR
Total number of roundtrip trucks	2,348		EA
Estimated time to complete	118		DY
Number of trucks per day	20		EA/DY

Excavator Model Assumed: CAT 345B

Bucket Size	3	CY
Bucket Fill Factor	90%	%
Bucket Payload	2.7	CY
Load Time	5.4	SEC
Swing Time Loaded	4.8	SEC
Dump Time	2.4	SEC
Swing Time Unloaded	4.2	SEC
Truck Exchange	15	SEC
Total	31.8	SEC/cycle
Cycle Time Per Excavator	0.530	MIN/cycle
	0.0089	HR/cycle
Ideal Cycles Per Day	899	Cyc/Exc/DY
Ideal Loader Productivity	303.4	LCY/HR
	252.8	BCY/HR
Operator Ability Correction Factor	0.9	
Work Efficiency	85%	%
Adjusted Loader Productivity	232.1	LCY/HR
	193.4	BCY/HR

Assumed Payload Capacity	15.00	BCY/truck
	18.00	LCY/truck
	23	TON/truck
Adjusted Loader (1) Productivity	232.1	LCY/HR
Load Time per Truck	4.7	MIN
Assumed Average Haul Speed	40	MPH
On Road Haul Time	202.5	MIN
Dump and Maneuver Time	1.0	MIN
Assumed Average Return Speed	50	MPH
On Road Return Time	162.0	MIN
Cycle Time per Truck	370.2	MIN/cycle
	6.17	HR/cycle
Ideal Cycles Per Day	1.3	Cyc/Truck/DY
Ideal Productivity per Truck	2.9	LCY/HR
	3.7	TON/HR
Work Efficiency	80%	%
Adjusted Productivity per Truck	2.3	LCY/HR
	2.9	TON/HR

Number of Excavators Anticipated	1	
Total Excavator Productivity	232.1	LCY/HR
	193.4	BCY/HR
Volume to Excavate	36,000	BCY
	43,200	LCY
Excavation Time	187	HR
Haul Time	939	HR
Est total time to completion	939	HR
	118	DY
Excavator productivity	38.3	BCY/HR
	46.0	LCY/HR

Number of Haul Trucks Anticipated	20	
Total Hauling Productivity	46.0	LCY/HR
	58.0	TON/HR
Volume to Export	43,200	LCY
	54,000	TON
Hauling Time	939	HR
Load Time	187	HR
Est total time to completion	939	HR
	118	DY
Hauling productivity	46.0	LCY/HR
	57.5	TON/HR

2.3	Per Truck
2.9	Per Truck



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Description: Excavation and hauling productivity determinations for Conservation of Natural Resources Alternative – Residential Cleanup Scenario

Productivity Determinations - Excavation and Hauling for Offsite Disposal

Hazardous Soil

Excavator Productivity Determination

Hours per Shift, HR/DY: 8
 Material bulking factor: 1.20
 Assumed Bucket Capacity, CY: 3
 Work Efficiency, %: 85%
 Operator Ability Correction Factor: 0.9
 Bucket Fill Factor, %: 90%

Hauling Productivity Determination

Hours per Shift, HR/DY: 8
 Material Bulking Factor: 1.20
 Assumed Payload Capacity, LCY: 20
 Assumed Payload Capacity, TON: 25
 Work Efficiency, %: 80%
 Estimated haul distance, MI: 780
 Payload Fill Factor: 90.0%

Summary

	Number	Prod	Units
Excavator	1	6.7	BCY/HR
Highway Haul Trucks	20	8.0	LCY/HR
		10.0	TON/HR
Total number of roundtrip trucks	130		EA
Estimated time to complete	38		DY
Number of trucks per day	4		EA/DY

Excavator Model Assumed: **CAT 345B**

Bucket Size	3	CY
Bucket Fill Factor	90%	%
Bucket Payload	2.7	CY
Load Time	5.4	SEC
Swing Time Loaded	4.8	SEC
Dump Time	2.4	SEC
Swing Time Unloaded	4.2	SEC
Truck Exchange	15	SEC
Total	31.8	SEC/cycle
Cycle Time Per Excavator	0.530	MIN/cycle
	0.0089	HR/cycle
Ideal Cycles Per Day	899	Cyc/Exc/DY
Ideal Loader Productivity	303.4	LCY/HR
	252.8	BCY/HR
Operator Ability Correction Factor	0.9	
Work Efficiency	85%	%
Adjusted Loader Productivity	232.1	LCY/HR
	193.4	BCY/HR

Assumed Payload Capacity	15.00	BCY/truck
	18.00	LCY/truck
	23	TON/truck
Adjusted Loader (1) Productivity	232.1	LCY/HR
Load Time per Truck	4.7	MIN
Assumed Average Haul Speed	40	MPH
On Road Haul Time	1170.0	MIN
Dump and Maneuver Time	1.0	MIN
Assumed Average Return Speed	50	MPH
On Road Return Time	936.0	MIN
Cycle Time per Truck	2111.7	MIN/cycle
	35.2	HR/cycle
Ideal Cycles Per Day	0.2	Cyc/Truck/DY
Ideal Productivity per Truck	0.5	LCY/HR
	0.6	TON/HR
Work Efficiency	80%	%
Adjusted Productivity per Truck	0.4	LCY/HR
	0.4	TON/HR

Number of Excavators Anticipated	1	
Total Excavator Productivity	232.1	LCY/HR
	193.4	BCY/HR

Number of Haul Trucks Anticipated	20	
Total Hauling Productivity	8.0	LCY/HR
	8.0	TON/HR

Volume to Excavate	2,000	BCY
	2,400	LCY

Volume to Export	2,400	LCY
	3,000	TON

Excavation Time	11	HR
Haul Time	300	HR

Hauling Time	300	HR
Load Time	11	HR

Est total time to completion	300	HR
	38	DY

Est total time to completion	300	HR
	38	DY

Excavator productivity	6.7	BCY/HR
Excavator productivity	8.0	LCY/HR

Hauling productivity	8.0	LCY/HR	0.4	Per Truck
	10.0	TON/HR	0.5	Per Truck



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CHECKED BY: JDG
 DATE CHECKED: 9/17/2018

Description: Excavation and hauling productivity determinations for Conservation of Natural Resources Alternative – Residential Cleanup Scenario

Productivity Determinations - Excavation and Hauling for Offsite Disposal

LLW/MLLW Soil

Excavator Productivity Determination

Hours per Shift, HR/DY: 8
 Material bulking factor: 1.20
 Assumed Bucket Capacity, CY: 3
 Work Efficiency, %: 85%
 Operator Ability Correction Factor: 0.9
 Bucket Fill Factor, %: 90%

Hauling Productivity Determination

Hours per Shift, HR/DY: 8
 Material Bulking Factor: 1.20
 Assumed Payload Capacity, LCY: 20
 Assumed Payload Capacity, TON: 25
 Work Efficiency, %: 80%
 Estimated haul distance, MI: 300
 Payload Fill Factor: 90.0%

Summary

	Number	Prod	Units
Excavator	1	18.3	BCY/HR
Highway Haul Trucks	20	22.0	LCY/HR
		27.5	TON/HR
Total number of roundtrip trucks	13		EA
Estimated time to complete	2		DY
Number of trucks per day	7		EA/DY

Excavator Model Assumed: **CAT 345B**

Bucket Size	3	CY
Bucket Fill Factor	90%	%
Bucket Payload	2.7	CY
Load Time	5.4	SEC
Swing Time Loaded	4.8	SEC
Dump Time	2.4	SEC
Swing Time Unloaded	4.2	SEC
Truck Exchange	15	SEC
Total	31.8	SEC/cycle
Cycle Time Per Excavator	0.530	MIN/cycle
	0.0089	HR/cycle
Ideal Cycles Per Day	899	Cyc/Exc/DY
Ideal Loader Productivity	303.4	LCY/HR
	252.8	BCY/HR
Operator Ability Correction Factor	0.9	
Work Efficiency	85%	%
Adjusted Loader Productivity	232.1	LCY/HR
	193.4	BCY/HR

Assumed Payload Capacity	15.00	BCY/truck
	18.00	LCY/truck
	23	TON/truck
Adjusted Loader (1) Productivity	232.1	LCY/HR
Load Time per Truck	4.7	MIN
Assumed Average Haul Speed	40	MPH
On Road Haul Time	450.0	MIN
Dump and Maneuver Time	1.0	MIN
Assumed Average Return Speed	50	MPH
On Road Return Time	360.0	MIN
Cycle Time per Truck	815.7	MIN/cycle
	13.6	HR/cycle
Ideal Cycles Per Day	0.6	Cyc/Truck/DY
Ideal Productivity per Truck	1.4	LCY/HR
	1.7	TON/HR
Work Efficiency	80%	%
Adjusted Productivity per Truck	1.1	LCY/HR
	1.3	TON/HR

Number of Excavators Anticipated	1	
Total Excavator Productivity	232.1	LCY/HR
	193.4	BCY/HR

Number of Haul Trucks Anticipated	20	
Total Hauling Productivity	22.0	LCY/HR
	26.0	TON/HR

Volume to Excavate	200	BCY
	240	LCY

Volume to Export	240	LCY
	300	TON

Excavation Time	2	HR
Haul Time	11	HR

Hauling Time	11	HR
Load Time	2	HR

Est total time to completion	11	HR
	2	DY

Est total time to completion	11	HR
	2	DY

Excavator productivity	18.3	BCY/HR
Excavator productivity	22.0	LCY/HR

Hauling productivity	22.0	LCY/HR	1.1	Per Truck
	27.5	TON/HR	1.4	Per Truck



PROJECT: SSFL Area IV Soils FFS
JOB NO.: 94489 1204.003.305.03051
CLIENT: DOE

COMPUTED BY: AIS
DATE: 2/29/2016

REVISED BY: AIS
DATE: 7/2/2018

CHECKED BY: DJL / EEW
DATE CHECKED: 01/15 / 04/216
WRKSH T NO.: PD-ALT-5

CHECKED BY: JDG
DATE CHECKED: 9/17/2018

Description: Excavation and hauling productivity determinations for Conservation of Natural Resources Alternative – Residential Cleanup Scenario

Attachment H

Cost Estimate Backup

TABLE LCC-AERFT

ANNUAL ESCALATION RATE FACTORS TABLE

Site:	SSFL Area IV/NBZ
Location:	Ventura County, California
Document:	Basis of Estimate, Detailed Remedial Action Alternative Cost Estimates
Project/Program Life-Cycle Stage:	Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]
Cost Estimate Classification:	Class 4, Study or Feasibility (Level of Definition: 1% to 15%)
Base Year:	2018
Date of Estimate:	September 2018

Escalation Rate (Percent)¹:	2.40%	Used for years 2016 through 2018
---	--------------	----------------------------------

Escalation Rate (Percent)¹:	3.00%	Used for years 2019 and beyond
---	--------------	--------------------------------

Calendar Year	Escalation Factor	Calendar Year	Escalation Factor	Calendar Year	Escalation Factor
0	2018	1.0000	36	2054	2.8983
1	2019	1.0300	37	2055	2.9852
2	2020	1.0609	38	2056	3.0748
3	2021	1.0927	39	2057	3.1670
4	2022	1.1255	40	2058	3.2620
5	2023	1.1593	41	2059	3.3599
6	2024	1.1941	42	2060	3.4607
7	2025	1.2299	43	2061	3.5645
8	2026	1.2668	44	2062	3.6715
9	2027	1.3048	45	2063	3.7816
10	2028	1.3439	46	2064	3.8950
11	2029	1.3842	47	2065	4.0119
12	2030	1.4258	48	2066	4.1323
13	2031	1.4685	49	2067	4.2562
14	2032	1.5126	50	2068	4.3839
15	2033	1.5580	51	2069	4.5154
16	2034	1.6047	52	2070	4.6509
17	2035	1.6528	53	2071	4.7904
18	2036	1.7024	54	2072	4.9341
19	2037	1.7535	55	2073	5.0821
20	2038	1.8061	56	2074	5.2346
21	2039	1.8603	57	2075	5.3917
22	2040	1.9161	58	2076	5.5534
23	2041	1.9736	59	2077	5.7200
24	2042	2.0328	60	2078	5.8916
25	2043	2.0938	61	2079	6.0684
26	2044	2.1566	62	2080	6.2504
27	2045	2.2213	63	2081	6.4379
28	2046	2.2879	64	2082	6.6311
29	2047	2.3566	65	2083	6.8300
30	2048	2.4273	66	2084	7.0349
31	2049	2.5001	67	2085	7.2459
32	2050	2.5751	68	2086	7.4633
33	2051	2.6523	69	2087	7.6872
34	2052	2.7319	70	2088	7.9178
35	2053	2.8139	71	2089	8.1554

Notes:

¹ The calculated escalation was applied to determine future cost as described in the DOE Cost Estimating Guide, DOE G 413.3-21A.

TABLE SPV-ADRFT

ANNUAL NOMINAL DISCOUNT RATE FACTORS TABLE

Site: SSFL Area IV/NBZ
Location: Ventura County, California
Phase: Critical Decision (CD)-1 [Approve Alternative Selection and Cost Range]
Base Year: 2018

Nominal Discount Rate (Percent):		2.60%								
Year	Discount Factor ¹	Year	Discount Factor ¹	Year	Discount Factor ¹	Year	Discount Factor ¹	Year	Discount Factor ¹	
0	2018	1.0000		36	2054	0.3969		72	2090	0.1575
1	2019	0.9747		37	2055	0.3869		73	2091	0.1535
2	2020	0.9500		38	2056	0.3771		74	2092	0.1497
3	2021	0.9259		39	2057	0.3675		75	2093	0.1459
4	2022	0.9024		40	2058	0.3582		76	2094	0.1422
5	2023	0.8796		41	2059	0.3491		77	2095	0.1386
6	2024	0.8573		42	2060	0.3403		78	2096	0.1351
7	2025	0.8355		43	2061	0.3316		79	2097	0.1316
8	2026	0.8144		44	2062	0.3232		80	2098	0.1283
9	2027	0.7937		45	2063	0.3150		81	2099	0.1250
10	2028	0.7736		46	2064	0.3071		82	2100	0.1219
11	2029	0.7540		47	2065	0.2993		83	2101	0.1188
12	2030	0.7349		48	2066	0.2917		84	2102	0.1158
13	2031	0.7163		49	2067	0.2843		85	2103	0.1128
14	2032	0.6981		50	2068	0.2771		86	2104	0.1100
15	2033	0.6804		51	2069	0.2701		87	2105	0.1072
16	2034	0.6632		52	2070	0.2632		88	2106	0.1045
17	2035	0.6464		53	2071	0.2566		89	2107	0.1018
18	2036	0.6300		54	2072	0.2501		90	2108	0.0993
19	2037	0.6140		55	2073	0.2437		91	2109	0.0967
20	2038	0.5985		56	2074	0.2375		92	2110	0.0943
21	2039	0.5833		57	2075	0.2315		93	2111	0.0919
22	2040	0.5685		58	2076	0.2257		94	2112	0.0896
23	2041	0.5541		59	2077	0.2199		95	2113	0.0873
24	2042	0.5401		60	2078	0.2144		96	2114	0.0851
25	2043	0.5264		61	2079	0.2089		97	2115	0.0829
26	2044	0.5131		62	2080	0.2036		98	2116	0.0808
27	2045	0.5001		63	2081	0.1985		99	2117	0.0788
28	2046	0.4874		64	2082	0.1935		100	2118	0.0768
29	2047	0.4750		65	2083	0.1885				
30	2048	0.4630		66	2084	0.1838				
31	2049	0.4513		67	2085	0.1791				
32	2050	0.4398		68	2086	0.1746				
33	2051	0.4287		69	2087	0.1702				
34	2052	0.4178		70	2088	0.1658				
35	2053	0.4072		71	2089	0.1616				

Notes:

1 The nominal discount rate of 2.6 percent was used for calculating present worth (PW) cost. Nominal discount rates are based on the Appendix C (Revised November 2017 for Calendar Year 2018) of OMB Circular A-94.

2 PW was calculated as described in Appendix F of the DOE Cost Estimating Guide, DOE G 413.3-21A.

<u>Disposal Facility</u>	<u>Waste Accepted</u>	<u>Facility Location/Address</u>	<u>Contact Info</u>	<u>Cost</u>	<u>Waste Acceptance Limit</u>	<u>Trucking</u>	<u>Required Tests</u>
Antelope Valley Recycling and Disposal Facility, WM Facility	NonHaz	1200 W. City Ranch Rd., Palmdale, CA 93551	Mike: (310) 200-5271; Rob: (714) 322-3322	\$45/ton for soils to used for daily cover; \$150/ton for Area IV Soils;	None	Trucking provided by the facility and are adequately available.	Certified for "release for unrestricted use" from CDHS for soils coming from Area IV.
McKittrick Waste Landfill, WM Facility	NonHaz	56533 Highway 58 W, McKittrick, CA 93251					
Kettleman Hill, MW Facility	Haz	35251 Old Skyline Road Kettleman City, CA, 93239					
Chiquita Canyon Landfill, Waste Connections Facility	NonHaz, Class II/III	29201 Henry Mayo Dr., Castaic, CA 91384	(661) 257-3655, Justin: (661) 388-3013 http://www.chiquitacanyon.com/	\$17/ton	None	Will e-mail me the options or contact	TPH, Title 22 Metals, VOCs
Mesquite Regional Landfill (MRL), Sanitation Districts of Los Angeles County Facility	NonHaz	6330 California 78, Brawley, CA 92227	(760) 337-5552, Michele Ochs http://www.mrlf.org/	---	Facility Not Yet Open. 20,000 tons/day, Permit for 200 trucks/day.	Will e-mail me the options or contact	
Buttonwillow Landfill, Clean Harbors' Facility	Haz, LLW/MLLW	2500 W Lokern Rd., Buttonwillow, CA 93206	(661) 762-6200; John Winwood (winwood.john@cleanharbors.com): (562) 305-8078 http://clark.cleanharbors.com/ttServerRoot/Download/12381_FINAL_Buttonwillow_CA_Facility_FS_030108.pdf	\$40/ton for haz soils and LLW soils; \$45/ton for trucking.	None	Trucking provided by the facility and are adequately available. BTI-Trucking is their sub.	TPH, Title 22 Metals, VOCs. Certified for "release for unrestricted use" especially for LLW/MLLW
Westmorland Landfill, Clean Harbors' Facility	Haz, LLW/MLLW	5295 S Garvey Road, Westmorland, CA92281	http://clark.cleanharbors.com/ttServerRoot/Download/12543_FINAL_Westmorland_CA_Facility_FS_010507.pdf				
US Ecology (USE)	Haz, LLW/MLLW	20400 Lemley Rd., Grand View, ID 83624	(208) 834-2275; Chad Hyslop (chad.hyslop@usecology.com); Cell: (208) 794-3415 https://www.usecology.com/Locations/All-Locations/US-Ecology-Idaho.aspx	Quote Attached	None	Trucking provided by the facility and are adequately available.	



251 E Front St., Suite 400, Boise, ID 83702
P 800.590.5220 F 208.331.7900

July 13, 2015

Abhay I. Sonawané, P.E. | Environmental Engineer
CDM Smith Inc. - Consulting and Engineering Division
9200 Ward Parkway, Suite 500 | Kansas City, MO | 64114
Phone: 816.412.3165 | Fax: 816.444.8232 | Email: sonawaneai@cdmsmith.com

Via email to: sonawaneai@cdmsmith.com

RE: Budgetary estimate for transport, treatment and disposal of Santa Susana waste

Dear Mr. Sonawané;

Attached please find our budgetary proposal for transportation, treatment and disposal of waste from remediation at the USDOE Santa Susana Field Laboratory.

US Ecology operates two full-service facilities that are ideally suited to provide treatment and disposal of this waste:

- **US Ecology Nevada (Beatty, NV):** Our Nevada RCRA treatment, storage and disposal facility can accept containerized and bulk shipments of hazardous and non-hazardous materials, including debris, solids, and liquids for stabilization, encapsulation, and chemical oxidation treatment.
- **US Ecology Idaho (Grand View, ID):** Our Idaho facility is a RCRA treatment, storage and disposal facility that can also accept Low-Level Waste and Mixed Low-Level Waste by both truck and rail. Our facility also has a full permit to accept containerized and bulk shipments of hazardous and non-hazardous materials, including debris, solids, and liquids for stabilization, encapsulation, and chemical oxidation treatment. Our Idaho facility has accepted DOE radioactive waste in the past.

With these capabilities we can provide a proven solution for this material. Our pricing is:

BUDGETARY PRICING

Generator: US Department of Energy

Billing Customer: To Be Determined

Waste Volumes:

- Volume of Hazardous Waste Soil: 73,500 tons
- Volume of LLW Soil: 70,500 tons
- Volume of MLLW Soil: 66,000 tons

US Ecology Disposal Sites: US Ecology Nevada (USEN) and US Ecology Idaho (USEI), as indicated:

Transportation Pricing (Budgetary):

To USEN:

- End dump to Beatty, NV: \$82 to \$90 per ton

To USEI:

- End dump to Grand View, ID: \$178 to \$188 per ton
- Bags in gondolas to Grand View, ID (assume flatbed front dray and transfer to gon): \$140 to \$150/ton
- Intermodal by rail to Grand View, ID (assume flatbed front dray and transfer to rail): \$140 to \$150/ton

Miscellaneous (Budgetary):

- End-dump-sized zippered liner bag (this would be used to satisfy the DOE requirement for a “sealed” container): \$545 to \$560 each (See Attachment 3)

Disposal Pricing (Budgetary):

USEN:

- Hazardous soil: \$75/ton
- Non-hazardous and non-radiological soil: \$35/ton (NOTE: USE can also provide disposal at other out-of-state non-haz non-rad partner landfills for additional savings)

USEI:

- LLW Soil: \$75/ton
- Mixed LLW Soil: \$175/ton

Our budgetary pricing is based on the following key assumptions:

KEY ASSUMPTIONS

- Volumes similar to those noted above and standard USE contract terms and conditions
- Gondola transport pricing includes IP-1, 9 cy, 12/ton lift bags (See Attachment 2)
- Transport vehicles are loaded by customer to the following minimums:
 - Two IP-1 lift bags per flatbed truck, 24 ton minimum per truck allowing USE to reach a 104 ton minimum per gondola railcar
 - 22 ton minimum per intermodal container
 - 23 ton minimum per end-dump truck
- Soil density assumed to be ~96 lbs/cuft
- Truck rate includes current Fuel Surcharge; any increase to be passed on at cost
- Rail rate does not include current Fuel Surcharge, which is ~\$200/gondola or \$32/intermodal
- Our transport pricing includes standard “slip liners” for intermodals and end-dumps. If the customer prefers zippered liners the cost is noted above. Diagrams of the zippered liners are found at Attachment 3.
- Budgetary “hazardous” pricing assumes waste is RCRA hazardous for metals only, requiring standard stabilization treatment additives/cost. Lower pricing is available for Cal-Haz only waste (not RCRA). Higher pricing may apply for TSCA waste, difficult to treat waste, debris, organics, etc.
- Budgetary “LLW” pricing assumes low-activity radiological waste, meeting Idaho’s WAC (See Attachment 1, Table C.4c), and assumes DOE “release” of material under DOE Order 458.1 or similar.

In addition to our pricing and full-service transportation service, our proposal also provides the following key benefits:

PROVEN

Our Idaho facility has full permits to dispose radioactive and mixed low-activity radioactive / hazardous materials. We have disposed more than 3,500,000 tons of radioactive materials since 1998. Examples include:

- **Weldon Springs Site Remedial Action Project** – Our Idaho facility has accepted shipments of radioactive material from this former clean-up project site in Missouri.
- **Preservation Air** – Disposal of high-activity Radium gauges from aircraft gauge warehouses in Southern California.
- **US Army Corps of Engineers “FUSRAP” Program (USACE FUSRAP)** – since 1998 US Ecology has been the primary disposal outlet for FUSRAP program

wastes. We have disposed over 3,000,000 tons of radioactive waste from this program alone.

- **Department Of Defense Projects (DOD)** – In the last 10 years US Ecology Idaho has disposed over 200,000 tons of radioactive soil from military bases nationwide.
- **Aberdeen Pulse Reactor (ARO)** – 91b material from the US Army Reactor Program
- **Shattuck Chemical Site (US EPA)** - More than 200,000 tons of radioactive materials
- **Pacific Gas & Electric (PG&E)** – Over the past 6 years US Ecology has accepted over 1,500 shipments from this nuclear power plant decommissioning project
- **Westinghouse Hematite (WEC HDP)** – currently ongoing, we have disposed over 135,000 tons of Special Nuclear Material from this former fuel manufacturing facility in Missouri.

US Ecology provides a proven radioactive materials disposal option for the Santa Susana project.

LIABILITY PROTECTION

US Ecology is a profitable, financially stable publicly-traded company [NASDAQ:ECOL] with almost 2,000 employees, strong earnings and a stable capital structure. Our strong financial structure, insurance and closure policies provide assurance and liability protection. More information on our financial condition can be found at: www.usecology.com.

TRANSPORTATION

US Ecology owns a fleet of 234 gondola railcars which are available for transport on this project. We also operate a fleet of intermodal railcars which can be utilized on this project. We provide full-service logistics and transportation services.

SAFETY

Each of our disposal facilities participates in OSHA's Voluntary Protection Programs. Both our Idaho and Nevada sites are OSHA VPP “Star” sites, the highest OSHA award available for an industry-leading safety program. We are committed to operating safely.

Thank you for the opportunity to provide budgetary pricing for this project. Please contact me at (208) 319-1604 with any questions.

Sincerely,



Chad Hyslop
Director of Sales - West
Direct (208) 319-1604
Cell (208) 794-3415
chad.hyslop@usecology.com

Attachment 1 – Idaho Waste Acceptance Criteria
Attachment 2 – IP-1 Lift Liner bag specification
Attachment 3 – End-dump liner bag specification

The budgetary pricing in this proposal is business confidential. Disclosure to the public or competitors would cause harm to USEI by providing competitive information that could be unfairly used against USEI on future commercial or government disposal bids. Disclosure to third parties without USEI's written consent is strictly prohibited.

Attachment 1 - Idaho Waste Acceptance Criteria

Attachment 2 - Manufacturers Specification for Lift Liner Bags

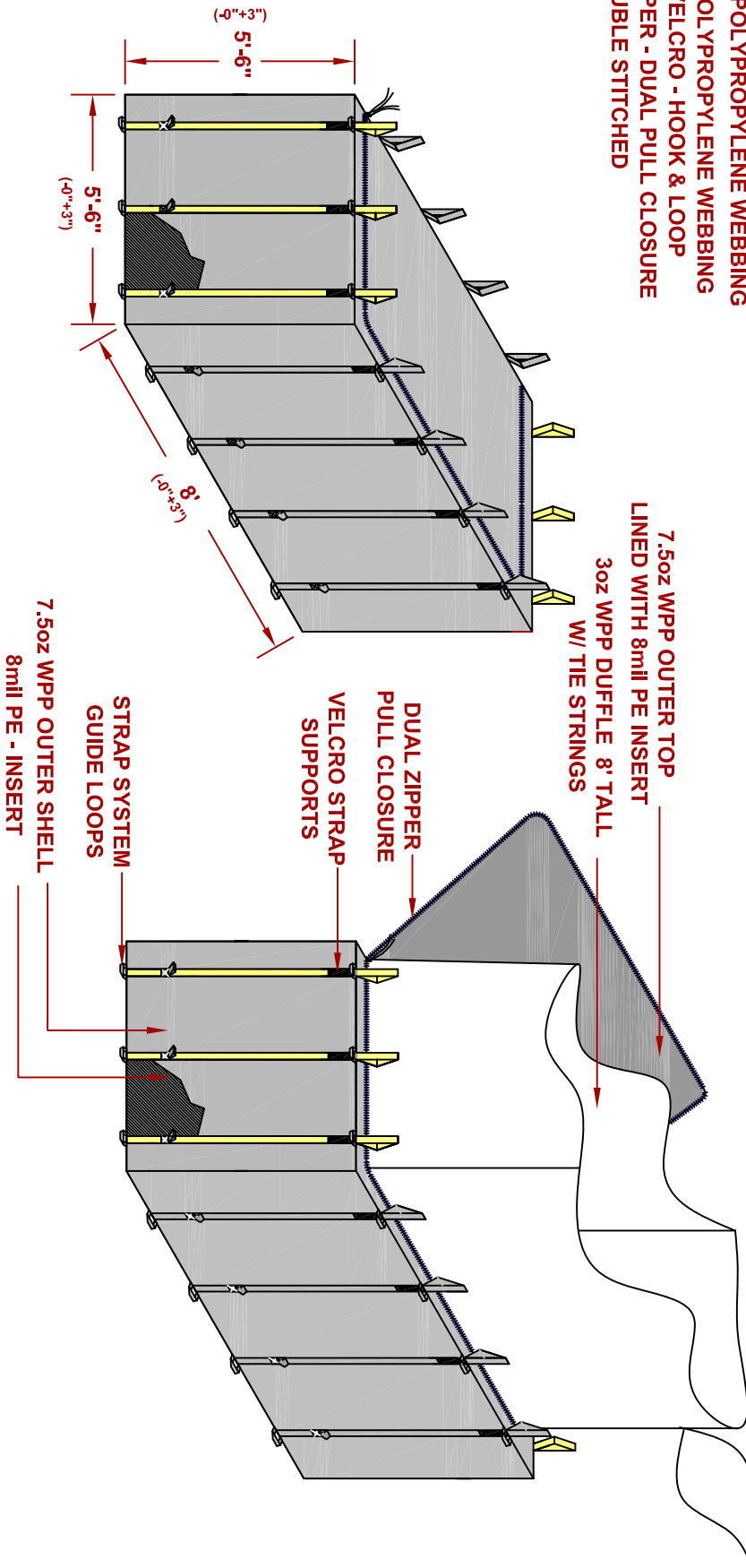
Attachment 3 – Manufacturers Specification for End-Dump Liner Bag

LP855-7.5L8 IP1

MTL'S:

- 7.5oz WPP - OUTER SHELL
- 8mil PE - INNER LINING INSERT
- 3oz WPP - DUFFLE
- 6000 DENIER THREAD - SEAMS
- T135 THREAD - ZIPPER
- 2" WHITE WEBBING OR YELLOW
- 1½" POLYPROPYLENE WEBBING
- ½" POLYPROPYLENE WEBBING
- 2" VELCRO - HOOK & LOOP
- ZIPPER - DUAL PULL CLOSURE
- DOUBLE STITCHED

IP1 CERTIFIED



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 BRITISH PATENT # GB2453305



Pactec, Inc.

US ECOLOGY

CUSTOMER APPROVAL

1-(800)-272-2832

SIGNATURE _____

DATE _____

CONTACT INFORMATION

NAME _____

PHONE # _____

Proprietary & Confidential

CUSTOMER NAME

US ECOLOGY

PACTEC ITEM CODE--

LP855-7.5L8 IP1

DESCRIPTION LP - 8' X 5'6" X 5'6"

SIZE A

SCALE N/A

DWG NO.

LP855-7.5L8 IP1

DRAWN BY

MDB

DATE DRAWN

7/7/15

REVISION

0.0

SHEET

1

OF

1

CLOSED VIEW

OPEN VIEW

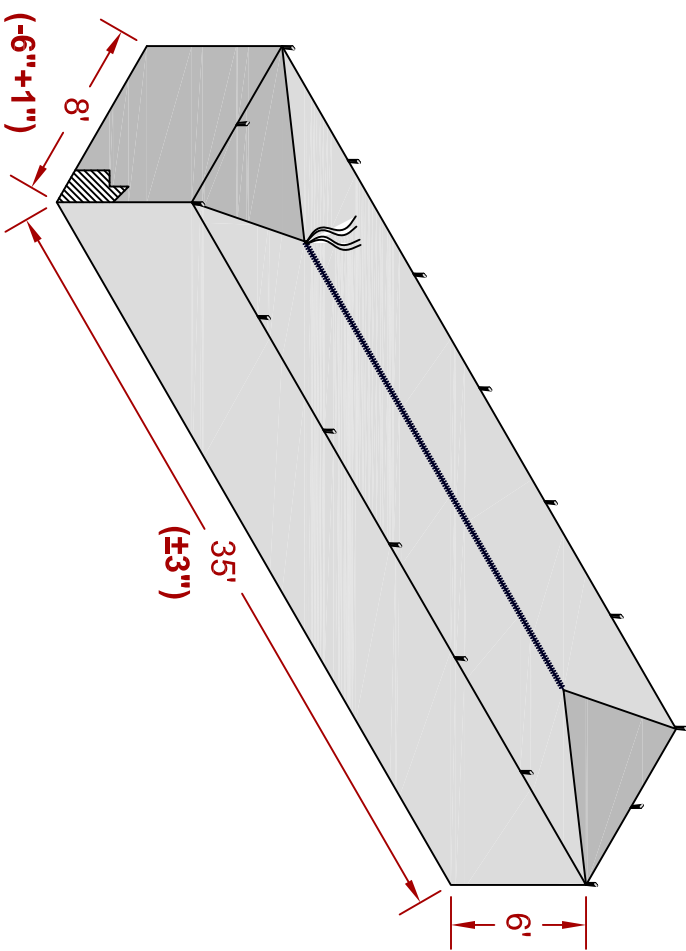
FINISHED

VP3586-7.5L6CZ

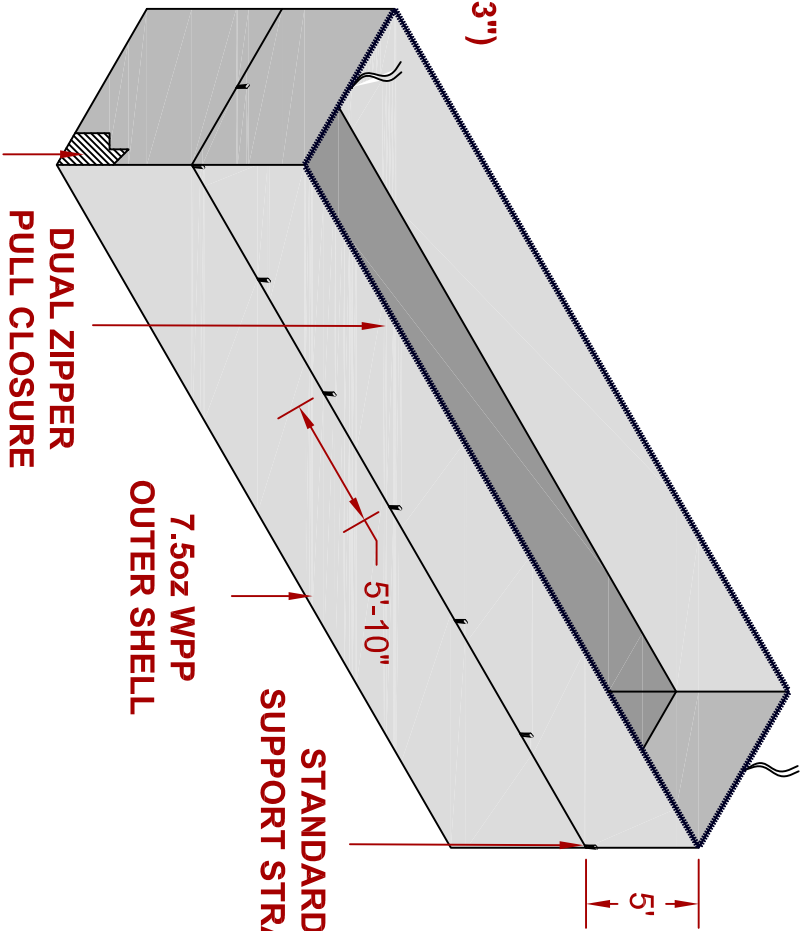
MTL'S:

- 7.5oz WPP - OUTER SHELL
- 6mil PE INNER LINING
- 2" SEATBELT WEBBING
- 1" NYLON WEBBING
- ZIPPER W/DUAL ZIPPER PULL CLOSURE

**6mil PE
INNER LINING
SEWED UNDER THE ZIPPER
LINES THE WHOLE VACPAC**



CLOSED VIEW



OPEN VIEW

FINISHED

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Pactec, Inc.

1-(800)-272-2832

US Ecology

CUSTOMER NAME
CUSTOMER ITEM CODE-

PACTEC ITEM CODE-

DESCRIPTION VACPAC 35' X 8' X 6' - CENTER ZIPPER CLOSURE

CUSTOMER APPROVAL _____ DATE _____
 SIGNATURE _____
 CONTACT INFORMATION _____
 NAME _____ PHONE # _____
 Proprietary & Confidential

SIZE	A	SCALE	N/A	DWG NO.	VP3586-7.5L6CZ
DRAWN BY	MJS	DATE DRAWN	7/6/13	REVISION	0.0
				SHEET	1 OF 1





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Straw Wattle for Erosion Control (Pallet of 12)

SKU: SB925

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Availability: In stock

\$300.00

Qty:

[Add to Cart](#)

This item cannot ship via UPS or FedEx. Checkout as normal and send a freight quote within one business day.

Product Description

These economical Straw Wattles reduce soil erosion and retain sediment on slopes to keep soil in place and around drain inlets to prevent sediment blockage. These straw wattles use netting that is high-density polyethylene and ethyl vinyl acetate with UV inhibitors. Dimensions are 9 in. x 2 ft. wattle, 300 ft. per pallet.

Please call for trucking rates or volume requests

- 100% Certified California Rice Straw wattles.
- Meets specifications for ESW and SID wattle.
- Netting is high-density polyethylene and ethyl vinyl acetate with UV inhibitors.
- Meets all California state specifications.

* Quoted shipping price valid for the contiguous United States only and is shipped Ground.

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Wood Stakes

SKU: WS1118

[Email to a Friend](#)

Availability: In stock

\$19.18 + \$14.99 shipping *

Qty:

[Add to Cart](#)



Product Description

For anchoring erosion control booms. 1" x 1" x 18". Wood stakes and staples allow your erosion control products to be more effective and a help you meet Best Management Practices. Stakes come 50 per bun

* Quoted shipping price valid for the contiguous United States only and is shipped U Ground.

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SKU: SB925

Straw Wattle for Erosion Control (Pallet of 12)

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Secondary Containment Sumps



Description	
<p>UltraTech Containment Sump for 275 Gallon Oval Tank (no drain) Size: 84 1/2" x 43 3/4" x 29" Part: UTI-2800 Ships From: OH Freight Calculator</p>	Online Price: \$428.99
<p>UltraTech Containment Sump for 275 Gallon Oval Tank (w/ drain) Size: 84 1/2" x 43 3/4" x 29" Part: UTI-2801 Ships From: OH Freight Calculator</p>	Online Price: \$444.99
<p>UltraTech Pull-Over Cover for 275 Gal Containment Sump Part: UTI-2810 Ships From: OH Freight Calculator</p>	Online Price: \$259.99
<p>UltraTech Containment Sump for 500-550 Gallon Tank (w/ drain) Size: 87" x 60" x 33" Part: UTI-2820 Ships From: OH Freight Calculator</p>	Online Price: \$752.99
<p>UltraTech Containment Sump for 500-550 Gallon Tank (no drain) Size: 87" x 60" x 33" Part: UTI-2823 Ships From: OH Freight Calculator</p>	Online Price: \$734.99
<p>UltraTech Containment Sump for 1000 Gallon Tank (no drain) Size: 148" x 63" x 33" Part: UTI-2830 Ships From: OH Get Freight Quote</p>	Online Price: \$1,618.99
<p>UltraTech Containment Sump for 1000 Gallon Tank (3/4" drain) Size: 148" x 63" x 33" Part: UTI-2831 Ships From: OH Get Freight Quote</p>	Online Price: \$1,638.99
<p>UltraTech Containment Sump for 1000 Gallon Tank (2" drain) Size: 148" x 63" x 33" Part: UTI-2832 Ships From: OH Get Freight Quote</p>	Online Price: \$1,649.99

Southwest Wildflower Seed Mix

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Southwest wildflower seed formulated for elevations below 7,000 feet in AZ, southern CA, southern NV and NM.

This wildflower seed mixture is specifically designed for areas which have special needs, the long, hot, dry summers or other similar conditions. This mix will do very well if planted in early to late spring. This wildflower mixture will also do well when planted as a dormant seeding in fall. The mix consists of annual and perennials. This mix should grow 36-48 inches tall and approximately consists of:

- 15% Baby's Breath, Annual
- 13% Candytuft, Annual
- 9% Flax, Scarlet
- 9% Bluebonnet, Texas
- 8% Cornflower, Blue
- 8% Flax, Blue
- 6% Coreopsis, Lance Leaved
- 6% Coneflower, Purple
- 6% Indian Blanket
- 3% Evening Primrose, Dwarf
- 2% Phlox, Annual
- 2% Poppy, Red Corn
- 2% Sage, Scarlet
- 1.50% Snapdragon, Spurred
- 1.50% Coneflower, Clasping
- 1.50% Coneflower, Prairie
- 1.50% Catchfly
- 1% Coreopsis, Plains
- 1% Sweet Alyssum, Tall White
- 1% Mint, Lemon
- 1% Sage, Blue
- 0.50% Evening Primrose, Showy
- 0.50% Black-eyed Susan

Seeding rate: 8 - 16 pounds per acre or 1 - 2 pounds per 5,000 square feet

Question: Why such a broad range on the seeding rate?

Answer: Wildflower seed planting applications vary tremendously from the back yard flower bed to the 5 acre meadow. Various seeding rates are needed depending on the type of application you are considering. For your specific application use this for your guideline:

- For a meadow look with scattered wildflowers using the lower end of the seeding rate
- For an average display with good coverage use the middle range of the seeding rate
- For a lush stand with almost solid wildflowers choose the upper end of the seeding rate

Place Your Order

Southwest Wildflower Seed Mix

<input type="button" value="-"/> 0 <input type="button" value="+"/>	1/4 LB	\$7.99
<input type="button" value="-"/> 0 <input type="button" value="+"/>	1/2 LB	\$14.99
<input type="button" value="-"/> 0 <input type="button" value="+"/>	1 LB	\$22.99
<input type="button" value="-"/> 0 <input type="button" value="+"/>	5 LBS	\$99.99



Planting Instructions

- Mixture Formulation
- Seed Quality
- Selecting a Mix
- Custom Mixtures
- Technical Advice
- Site Selection
- Planting Rates
- When to Plant
- Use of Grasses
- Site Preparation
- Seed Application
- Moisture
- Fertilization
- Weed Control
- What to Expect
- All Instructions

Category: [All Seeds](#) / [All Native Grass Seed](#) – Back to: [Xeriscape Native Grass Seed](#)

Southwest Native Grass Seed Mix

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Ground Cover Seeds

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Ornamental Grass Seeds

Pasture Seed

Vines & Climbers Seed

Wildflower Seed

Supplies Categories

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This native grass seed mixture of warm and cool-season grasses grows to a height of 12 to 36 inches. It may be planted alone or with a mixture of wildflowers.

This mixture contains:

- Sideoats Grama - *Bouteloua curtipendula*
- Blue Grama - *Bouteloua gracilis*
- Plains Bristlegrass - *Setaria vulpiseta*
- Alkali Sacaton - *Sporobolus airoides*
- Indian Ricegrass - *Achnatherum hymenoides*
- Spike Muhly - *Muhlenbergia wrightii*
- Sand Dropseed - *Sporobolus cryptandrus*

Seeding Rate

- 1/2 lbs/1,000 square feet
- 4 lbs./acre when planting with wildflowers
- 8 lbs./acre grass mix only

Planting

Planting times: the best time to plant grass mix is late spring to mid-summer. Plant in late spring or early summer if seeding with wildflowers.

Planting range: southern 1/4 of California, Arizona, New Mexico (except extreme eastern edge) and the western tip of Texas.

Place Your Order

Southwest Native Grass Seed Mix

0 1 LB \$39.99

0 5 LBS \$199.99

Add to Cart



GENERAL SERVICES ADMINISTRATION
FEDERAL ACQUISITION SERVICE (FAS)
AUTHORIZED FEDERAL PRICE LIST

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Schedule Title: Schedule 66, Scientific Equipment & Services

Contract Number: **GS-07F-5687P**

SIN 873-2: Chemical Testing and Analysis Services

SIN 873-4: Geotechnical & Thermal / Fire Testing and Analysis

Contract Period: Expires October 24, 2017

For more information on FAS Schedules, go to www.gsa.gov

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SIN 873-2 Page 20

SIN 873-4 Page 21

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Arrowboards (FAS), Trailer-Mount



Arrowboard (FAS) LED 25 Light, 40 watt, 2 Lead Acid batteries, Solar Tech SA1000-AB-0525 View More Details \$4,947.00

Quantity: [Add To Cart](#)

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Arrowboard (FAS) 15 Light, Solar Tech SA1000-AB-0515 View More Details \$4,874.00

Quantity: [Add To Cart](#)

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Arrowboard (FAS), Truck Mounted, 15 Light, 30" x 60" SA1505-1922-15 View More Details Call for price



Arrowboard (FAS), Truck Mounted, 25 Light, 30" x 60" SA1505-1922-25 View More Details Call for price



Arrowboard (FAS), Truck Mounted, 15 Light, 36" x 72" SA1505-1923-15 View More Details Call for price

Arrowboard (FAS), Truck Mounted, 25 Light, 36" x 72" SA1505-1923-25 View
More Details Call for price



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W3-4 BE PREPARED TO STOP

BE PREPARED TO STOP



MUTCD Code:
Color Scheme:
Usage Type:

W3-4
Black on Orange
Temporary Traffic Control
30" x 30"
36" x 36"
48" x 48"
60" x 60"

Common Size(s):

Sign Products Filter

Size:
 Material/Substrate:
 Reflectivity:

#	Size	Material/ Substrate	Reflectivity	Pricing	
1	30" x 30"	Aluminum (.063")	Engineer Grade (ASTM Type I)	\$52.50	Select Product...
2	30" x 30"	Aluminum (.063")	High Intensity (ASTM Type IV)	\$66.50	Select Product...
3	30" x 30"	Aluminum (.063")	Diamond Grade (ASTM Type IX)	\$84.00	Select Product...
4	30" x 30"	Aluminum (.080")	Engineer Grade (ASTM Type I)	\$59.50	Select Product...
5	30" x 30"	Aluminum (.080")	High Intensity (ASTM Type IV)	\$77.00	Select Product...
6	30" x 30"	Aluminum (.080")	Diamond Grade (ASTM Type IX)	\$91.00	Select Product...
7	36" x 36"	Aluminum (.063")	Engineer Grade (ASTM Type I)	\$67.50	Select Product...
8	36" x 36"	Aluminum (.063")	High Intensity (ASTM Type IV)	\$85.50	Select Product...
9	36" x 36"	Aluminum (.063")	Diamond Grade (ASTM Type IX)	\$108.00	Select Product...
10	36" x 36"	Aluminum (.080")	Engineer Grade (ASTM Type I)	\$76.50	Select Product...
11	36" x 36"	Aluminum (.080")	High Intensity (ASTM Type IV)	\$99.00	Select Product...
12	36" x 36"	Aluminum (.080")	Diamond Grade (ASTM Type IX)	\$117.00	Select Product...
13	48" x 48"	Aluminum (.063")	Engineer Grade (ASTM Type I)	\$120.00	Select Product...
14	48" x 48"	Aluminum (.063")	High Intensity (ASTM Type IV)	\$152.00	Select Product...
15	48" x 48"	Aluminum (.063")	Diamond Grade (ASTM Type IX)	\$192.00	Select Product...
16	48" x 48"	Aluminum (.080")	Engineer Grade (ASTM Type I)	\$136.00	Select Product...
17	48" x 48"	Aluminum (.080")	High Intensity (ASTM Type IV)	\$176.00	Select Product...
18	48" x 48"	Aluminum (.080")	Diamond Grade (ASTM Type IX)	\$208.00	Select Product...
19	60" x 60"	Aluminum (.080")	Engineer Grade (ASTM Type I)	\$212.50	Select Product...
20	60" x 60"	Aluminum (.080")	High Intensity (ASTM Type IV)	\$275.00	Select Product...
21	60" x 60"	Aluminum (.080")	Diamond Grade (ASTM Type IX)	\$325.00	Select Product...
22	60" x 60"	Aluminum (.080") Framed	Engineer Grade (ASTM Type I)	\$300.00	Select Product...
23	60" x 60"	Aluminum (.080") Framed	High Intensity (ASTM Type IV)	\$387.50	Select Product...
24	60" x 60"	Aluminum (.080") Framed	Diamond Grade (ASTM Type IX)	\$425.00	Select Product...



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G20-2 END ROAD WORK

END ROAD WORK



MUTCD Code:
Color Scheme:
Usage Type:

G20-2
Black on Orange
Temporary Traffic Control
36" x 18"

Common Size(s):

Sign Products Filter

Size: All Sizes

Material/Substrate: All Materials

Reflectivity: All Reflectivity

Go

#	Size	Material/ Substrate	Reflectivity	Pricing	
1	36" x 18"	Aluminum (.063")	Engineer Grade (ASTM Type I)	\$37.50	Select Product...
2	36" x 18"	Aluminum (.063")	High Intensity (ASTM Type IV)	\$47.50	Select Product...
3	36" x 18"	Aluminum (.063")	Diamond Grade (ASTM Type IX)	\$60.00	Select Product...
4	36" x 18"	Aluminum (.080")	Engineer Grade (ASTM Type I)	\$42.50	Select Product...
5	36" x 18"	Aluminum (.080")	High Intensity (ASTM Type IV)	\$55.00	Select Product...
6	36" x 18"	Aluminum (.080")	Diamond Grade (ASTM Type IX)	\$65.00	Select Product...



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C9A Flagger (California symbol)

Flagger (California symbol)



State Code:
Color Scheme:
Usage Type:

C9A
Black on Orange
Temporary Traffic Control
36" x 36"
48" x 48"

Common Size(s):

Sign Products Filter

Size:

Material/Substrate:

Reflectivity:

#	Size	Material/ Substrate	Reflectivity	Pricing	Select Product...
1	36" x 36"	Aluminum (.063")	Engineer Grade (ASTM Type I)	\$67.50	Select Product...
2	36" x 36"	Aluminum (.063")	High Intensity (ASTM Type IV)	\$85.50	Select Product...
3	36" x 36"	Aluminum (.063")	Diamond Grade (ASTM Type IX)	\$108.00	Select Product...
4	36" x 36"	Aluminum (.080")	Engineer Grade (ASTM Type I)	\$76.50	Select Product...
5	36" x 36"	Aluminum (.080")	High Intensity (ASTM Type IV)	\$99.00	Select Product...
6	36" x 36"	Aluminum (.080")	Diamond Grade (ASTM Type IX)	\$117.00	Select Product...
7	48" x 48"	Aluminum (.063")	Engineer Grade (ASTM Type I)	\$120.00	Select Product...
8	48" x 48"	Aluminum (.063")	High Intensity (ASTM Type IV)	\$152.00	Select Product...
9	48" x 48"	Aluminum (.063")	Diamond Grade (ASTM Type IX)	\$192.00	Select Product...
10	48" x 48"	Aluminum (.080")	Engineer Grade (ASTM Type I)	\$136.00	Select Product...
11	48" x 48"	Aluminum (.080")	High Intensity (ASTM Type IV)	\$176.00	Select Product...
12	48" x 48"	Aluminum (.080")	Diamond Grade (ASTM Type IX)	\$208.00	Select Product...



W20-1a ROAD WORK AHEAD

ROAD WORK AHEAD



State Code:
Color Scheme: Black on Orange
Usage Type: Temporary Traffic Control
Common Size(s): 36" x 36"

Sign Products Filter

Size: All Sizes
Material/Substrate: All Materials
Reflectivity: All Reflectivity
Go

#	Size	Material/ Substrate	Reflectivity	Pricing	Select Product...
1	36" x 36"	Aluminum (.063")	Engineer Grade (ASTM Type I)	\$67.50	Select Product...
2	36" x 36"	Aluminum (.063")	High Intensity (ASTM Type IV)	\$85.50	Select Product...
3	36" x 36"	Aluminum (.063")	Diamond Grade (ASTM Type IX)	\$108.00	Select Product...
4	36" x 36"	Aluminum (.080")	Engineer Grade (ASTM Type I)	\$76.50	Select Product...
5	36" x 36"	Aluminum (.080")	High Intensity (ASTM Type IV)	\$99.00	Select Product...
6	36" x 36"	Aluminum (.080")	Diamond Grade (ASTM Type IX)	\$117.00	Select Product...

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Attachment I

Labor Backup



PROJECT: SSFL Area IV Soils FFS
 JOB NO.: 94489.1204
 CLIENT: DOE

COMP. BY: AIS CHCKD BY: JN
 DATE: 1/12/2016 DATE CHCKD: 1/22/2016
 UPDATED: 7/10/2018 WRKST. NO.: LB-01

Description: Determination of base wage rates for management and engineering personnel (i.e., project manager, civil engineer, etc.) based on Foreign Labor Certification Data Center Online Wage Library (flcdatacenter.com) and obtained July 2018. Salary rates were used for hourly labor rate determination for the MII estimate. Payroll taxes and insurance are included in the MII estimate calculations.

Taxes, Insurance and Overhead

- Taxes, insurance, and overhead are included in the MII estimate.

Hourly Wage Calculations

Number of work hours per year: **2,080** *52 weeks x 40 hours per week*
 Benefits, %: **15.2%** *Average assumed benefits*
 Bonus, %: **6.5%** *Average assumed bonus*

<u>Source Tag</u>	<u>Labor Category</u>	<u>Salary</u>	<u>Year</u>	<u>Source</u>	<u>Source Code</u>	<u>Level</u>
FA-AGENS	General Superintendent (P.M.)	\$122,595	2018	FLCdatacenter.com	11-9021	4
HO-PRJMGR	Project Manager (HTW Projects)	\$127,150	2018	FLCdatacenter.com	11-9041	2
FB-CLTYP	Clerks, Typists, Bookkeepers & Receptionist	\$44,533	2018	FLCdatacenter.com	43-9061	4
FC-ENCGE	Geologist	\$101,358	2018	FLCdatacenter.com	19-2099	2
FC-ENGCI	Engineer, Civil	\$103,085	2018	FLCdatacenter.com	17-2051	3
FC-ENGPE	Engineers, Project	\$125,466	2018	FLCdatacenter.com	17-2199	4
FC-ENGQC	Engineer, Quality Control	\$112,757	2018	FLCdatacenter.com	17-2112	4
FC-FLDRT	Field Draftsmen	\$66,789	2018	FLCdatacenter.com	17-3031	3
FC-SURYC	Surveyors, Chief	\$90,584	2018	FLCdatacenter.com	17-1022	3
FC-SURYR	Surveyors	\$71,136	2018	FLCdatacenter.com	17-1022	1
FD-SAENG	Safety Engineers	\$81,827	2018	FLCdatacenter.com	17-2111	3
HO-CADD	Draftsman/CADD (HTW Projects)	\$55,370	2018	FLCdatacenter.com	17-3019	2
HO-FLDTCH	Field Technician (HTW Projects)	\$52,416	2018	FLCdatacenter.com	17-3025	3
HO-PRJSCI	Project Scientist (HTW Projects)	\$83,013	2018	FLCdatacenter.com	19-2041	2
HO-STFENG	Environmental Engineer (HTW Projects)	\$92,123	2018	FLCdatacenter.com	17-2081	3
HO-STFSCI	Staff Scientist (HTW Projects)	\$69,264	2018	FLCdatacenter.com	19-2041	1
	Archeologist	\$81,910	2018	FLCdatacenter.com	19-3091	3
	Biologist	\$80,621	2018	FLCdatacenter.com	19-1023	3
	Arborist (Forester)	\$83,699	2018	FLCdatacenter.com	19-1032	3

<u>Source Tag</u>	<u>Labor Category</u>	<u>Hourly</u>	<u>Benefits</u>	<u>Taxable Fringe</u>	<u>Non-Tax Fringe¹</u>
FA-AGENS	General Superintendent (P.M.)	\$58.94	\$12.79	\$12.79	\$0.00
HO-PRJMGR	Project Manager (HTW Projects)	\$61.13	\$13.27	\$13.27	\$0.00
FB-CLTYP	Clerks, Typists, Bookkeepers & Receptionist	\$21.41	\$4.65	\$4.65	\$0.00
FC-ENCGE	Geologist	\$48.73	\$10.57	\$10.57	\$0.00
FC-ENGCI	Engineer, Civil	\$49.56	\$10.75	\$10.75	\$0.00
FC-ENGPE	Engineers, Project	\$60.32	\$13.09	\$13.09	\$0.00
FC-ENGQC	Engineer, Quality Control	\$54.21	\$11.76	\$11.76	\$0.00
FC-FLDRT	Field Draftsmen	\$32.11	\$6.97	\$6.97	\$0.00
FC-SURYC	Surveyors, Chief	\$43.55	\$9.45	\$9.45	\$0.00
FC-SURYR	Surveyors	\$34.20	\$7.42	\$7.42	\$0.00
FD-SAENG	Safety Engineers	\$39.34	\$8.54	\$8.54	\$0.00
HO-CADD	Draftsman/CADD (HTW Projects)	\$26.62	\$5.78	\$5.78	\$0.00
HO-FLDTCH	Field Technician (HTW Projects)	\$25.20	\$5.47	\$5.47	\$0.00
HO-PRJSCI	Project Scientist (HTW Projects)	\$39.91	\$8.66	\$8.66	\$0.00
HO-STFENG	Environmental Engineer (HTW Projects)	\$44.29	\$9.61	\$9.61	\$0.00
HO-STFSCI	Staff Scientist (HTW Projects)	\$33.30	\$7.23	\$7.23	\$0.00

Notes:

1 - Non-taxable fringe is set at \$0.00 in MII per the U.S. Army Corps of Engineers



PROJECT: SSFL Area IV Soils FFS
 JOB NO.: 94489.1204
 CLIENT: DOE

COMP. BY: AIS CHCKD BY: JN
 DATE: 1/12/2016 DATE CHCKD: 1/22/2016
 UPDATED: 7/10/2018 WRKST. NO.: LB-02

Description: Determination of base wage rates for general construction personnel (i.e., labor, equipment operators, etc.) based on Davis-Bacon Heavy (CA25 - 07/13/2018) for Ventura County, California.

Taxes, Insurance and Overhead

- Taxes, insurance, and overhead are included in the MII estimate.

Fringe Assumption

Estimated fringe based on percentage of hourly wage: **30%**

<u>Source</u>		<u>Hourly</u>	<u>Fringe</u>	<u>Year</u>	<u>Source</u>
<u>Tag</u>	<u>Labor Category</u>				
B-SKILLWKR	Skilled Workers	-	-	-	Average of all construction workers
B-CARPNTER	Carpenters	\$39.83	\$15.50	2018	CARP-0409-001
B-CEMFINR	Cement Finishers	\$35.75	\$22.48	2018	PLAS0500-002
B-RODMAN	Rodmen, (Reinforcing)	\$36.00	\$30.15	2018	IRON0377-002
B-LABORER	Laborers, (Semi-Skilled)	\$34.29	\$18.24	2018	LABO0585-001, GR 3
B-EQOPRCRN	Equip. Operators Crane with Boom Pay	\$51.35	\$24.25	2018	ENGI0012-003, GR 13
B-EQOPRHVY	Equip. Operators, Heavy	\$48.68	\$24.25	2018	ENGI0012-003, GR 25
B-EQOPRMED	Equip. Operators, Medium	\$48.18	\$24.25	2018	ENGI0012-003, GR 21
B-EQOPRLT	Equip. Operators, Light	\$47.66	\$24.25	2018	ENGI0012-003, GR 5
B-EQOPROIL	Equip. Operators, Oilers / Grade Checker	\$44.00	\$24.25	2018	ENGI0012-003, GR 1
B-TRKDVRHV	Truck Drivers, Heavy	\$30.62	\$27.74	2018	TEAM0011-002, GR 8
B-TRKDVRLT	Truck Drivers, Light	\$30.09	\$27.74	2018	TEAM0011-002, GR 5

	<u>Labor Category</u>	<u>Hourly</u>	<u>Fringe</u>	<u>Year</u>	<u>Source</u>
B-SKILLWKR	Skilled Workers	\$40.59	\$23.92	-	Average of all construction workers
B-CARPNTER	Carpenters	\$39.83	\$15.50	2018	CARP-0409-001
B-CEMFINR	Cement Finishers	\$35.75	\$22.48	2018	PLAS0500-002
B-RODMAN	Rodmen, (Reinforcing)	\$36.00	\$30.15	2018	IRON0377-002
B-LABORER	Laborers, (Semi-Skilled)	\$34.29	\$18.24	2018	LABO0585-001, GR 3
B-EQOPRCRN	Equip. Operators Crane with Boom Pay	\$51.35	\$24.25	2018	ENGI0012-003, GR 13
B-EQOPRHVY	Equip. Operators, Heavy	\$48.68	\$24.25	2018	ENGI0012-003, GR 25
B-EQOPRMED	Equip. Operators, Medium	\$48.18	\$24.25	2018	ENGI0012-003, GR 21
B-EQOPRLT	Equip. Operators, Light	\$47.66	\$24.25	2018	ENGI0012-003, GR 5
B-EQOPROIL	Equip. Operators, Oilers / Grade Checker	\$44.00	\$24.25	2018	ENGI0012-003, GR 1
B-TRKDVRHV	Truck Drivers, Heavy	\$30.62	\$27.74	2018	TEAM0011-002, GR 8
B-TRKDVRLT	Truck Drivers, Light	\$30.09	\$27.74	2018	TEAM0011-002, GR 5



Wage Library

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updated
July 1, 2018](#)

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Area Code: [37100](#)
Area Title: Oxnard-Thousand Oaks-Ventura, CA MSA
OES/SOC Code: 11-9021
OES/SOC Title: Construction Managers
GeoLevel: 1
Level 1 Wage: \$34.14 hour - \$71,011 year
Level 2 Wage: \$42.41 hour - \$88,213 year
Level 3 Wage: \$50.67 hour - \$105,394 year
Level 4 Wage: \$58.94 hour - \$122,595 year
Mean Wage (H-2B): \$50.67 hour - \$105,394 year

This wage applies to the following O*Net occupations:

[11-9021.00 Construction Managers](#)

Plan, direct, or coordinate, usually through subordinate supervisory personnel, activities concerned with the construction and maintenance of structures, facilities, and systems. Participate in the conceptual development of a construction project and oversee its organization, scheduling, budgeting, and implementation. Includes managers in specialized construction fields, such as carpentry or plumbing.

[O*Net™ JobZone: 4](#)

[Education & Training Code: 5-Bachelor's degree](#)

For information on determining the proper occupation and wage level see the new [Prevailing Wage Guidance on the Skill Level page.](#)

The prevailing wage must be at, or above the federal or state or local minimum wage, whichever is higher. The federal minimum wage is \$7.25/hr effective July 24, 2009.



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Area Code: 37100
Area Title: Oxnard-Thousand Oaks-Ventura, CA MSA
OES/SOC Code: 11-9041
OES/SOC Title: Architectural and Engineering Managers
GeoLevel: 1
Level 1 Wage: \$49.51 hour - \$102,981 year
Level 2 Wage: \$61.13 hour - \$127,150 year
Level 3 Wage: \$72.76 hour - \$151,341 year
Level 4 Wage: \$84.38 hour - \$175,510 year
Mean Wage (H-2B): \$72.75 hour - \$151,320 year

This wage applies to the following O*Net occupations:

11-9041.00 Architectural and Engineering Managers

Plan, direct, or coordinate activities in such fields as architecture and engineering or research and development in these fields.

[O*Net™ JobZone: 5](#)

[Education & Training Code: 4-Work experience, plus a bachelor's or higher degree](#)

11-9041.01 Biofuels/Biodiesel Technology and Product Development Managers

Define, plan, or execute biofuels/biodiesel research programs that evaluate alternative feedstock and process technologies with near-term commercial potential.

[O*Net™ JobZone: 4](#)

[Education & Training Code: No Level Set](#)

For information on determining the proper occupation and wage level see the new [Prevailing Wage Guidance on the Skill Level page](#).

The prevailing wage must be at, or above the federal or state or local minimum wage, whichever is higher. The federal minimum wage is \$7.25/hr effective July 24, 2009.



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Area Code: 37100
Area Title: Oxnard-Thousand Oaks-Ventura, CA MSA
OES/SOC Code: 43-9061
OES/SOC Title: Office Clerks, General
GeoLevel: 1
Level 1 Wage: \$11.88 hour - \$24,710 year
Level 2 Wage: \$15.06 hour - \$31,325 year
Level 3 Wage: \$18.23 hour - \$37,918 year
Level 4 Wage: \$21.41 hour - \$44,533 year
Mean Wage (H-2B): \$18.24 hour - \$37,939 year

This wage applies to the following O*Net occupations:

43-9061.00 Office Clerks, General

Perform duties too varied and diverse to be classified in any specific office clerical occupation, requiring knowledge of office systems and procedures. Clerical duties may be assigned in accordance with the office procedures of individual establishments and may include a combination of answering telephones, bookkeeping, typing or word processing, stenography, office machine operation, and filing.

[O*Net™ JobZone: 2](#)
[Education & Training Code: No Level Set](#)

For information on determining the proper occupation and wage level see the new Prevailing Wage Guidance on the [Skill Level page](#).

The prevailing wage must be at, or above the federal or state or local minimum wage, whichever is higher. The federal minimum wage is \$7.25/hr effective July 24, 2009.



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Area Code: 37100
Area Title: Oxnard-Thousand Oaks-Ventura, CA MSA
OES/SOC Code: 19-2099
OES/SOC Title: Physical Scientists, All Other
GeoLevel: 1
Level 1 Wage: \$44.85 hour - \$93,288 year
Level 2 Wage: \$48.73 hour - \$101,358 year
Level 3 Wage: \$52.61 hour - \$109,429 year
Level 4 Wage: \$56.49 hour - \$117,499 year
Mean Wage (H-2B): \$52.61 hour - \$109,429 year

This wage applies to the following O*Net occupations:

19-2099.00 Physical Scientists, All Other

All physical scientists not listed separately.
[O*Net™ JobZone: NA](#)
[Education & Training Code: No Level Set](#)

19-2099.01 Remote Sensing Scientists and Technologists

Apply remote sensing principles and methods to analyze data and solve problems in areas such as natural resource management, urban planning, or homeland security. May develop new sensor systems, analytical techniques, or new applications for existing systems.
[O*Net™ JobZone: 5](#)
[Education & Training Code: No Level Set](#)

For information on determining the proper occupation and wage level see the new Prevailing Wage Guidance on the [Skill Level page](#).

The prevailing wage must be at, or above the federal or state or local minimum wage, whichever is higher. The federal minimum wage is \$7.25/hr effective July 24, 2009.



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Area Code: 37100
Area Title: Oxnard-Thousand Oaks-Ventura, CA MSA
OES/SOC Code: 17-2051
OES/SOC Title: Civil Engineers
GeoLevel: 1
Level 1 Wage: \$37.26 hour - \$77,501 year
Level 2 Wage: \$43.41 hour - \$90,293 year
Level 3 Wage: \$49.56 hour - \$103,085 year
Level 4 Wage: \$55.71 hour - \$115,877 year
Mean Wage (H-2B): \$49.56 hour - \$103,085 year

This wage applies to the following O*Net occupations:

17-2051.00 Civil Engineers

Perform engineering duties in planning, designing, and overseeing construction and maintenance of building structures, and facilities, such as roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, and water and sewage systems.

[O*Net™ JobZone: 4](#)

[Education & Training Code: 5-Bachelor's degree](#)

17-2051.01 Transportation Engineers

Develop plans for surface transportation projects, according to established engineering standards and state or federal construction policy. Prepare designs, specifications, or estimates for transportation facilities. Plan modifications of existing streets, highways, or freeways to improve traffic flow.

[O*Net™ JobZone: 4](#)

[Education & Training Code: No Level Set](#)

For information on determining the proper occupation and wage level see the new Prevailing Wage Guidance on the [Skill Level page](#).

The prevailing wage must be at, or above the federal or state or local minimum wage, whichever is higher. The federal minimum wage is \$7.25/hr effective July 24, 2009.



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Area Code: 37100
Area Title: Oxnard-Thousand Oaks-Ventura, CA MSA
OES/SOC Code: 17-2199
OES/SOC Title: Engineers, All Other
GeoLevel: 1
Level 1 Wage: \$28.09 hour - \$58,427 year
Level 2 Wage: \$38.83 hour - \$80,766 year
Level 3 Wage: \$49.58 hour - \$103,126 year
Level 4 Wage: \$60.32 hour - \$125,466 year
Mean Wage (H-2B): \$49.57 hour - \$103,106 year

This wage applies to the following O*Net occupations:

17-2199.00 Engineers, All Other

All engineers not listed separately.
[O*Net™ JobZone: NA](#)
[Education & Training Code: No Level Set](#)

17-2199.01 Biochemical Engineers

Develop usable, tangible products, using knowledge of biology, chemistry, or engineering. Solve problems related to materials, systems, or processes that interact with humans, plants, animals, microorganisms, or biological materials.
[O*Net™ JobZone: 4](#)
[Education & Training Code: No Level Set](#)

17-2199.02 Validation Engineers

Design or plan protocols for equipment or processes to produce products meeting internal and external purity, safety, and quality requirements.
[O*Net™ JobZone: 4](#)
[Education & Training Code: No Level Set](#)

17-2199.03 Energy Engineers

Design, develop, or evaluate energy-related projects or programs to reduce energy costs or improve energy efficiency during the designing, building, or



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Area Code: 37100
Area Title: Oxnard-Thousand Oaks-Ventura, CA MSA
OES/SOC Code: 17-2112
OES/SOC Title: Industrial Engineers
GeoLevel: 1
Level 1 Wage: \$29.72 hour - \$61,818 year
Level 2 Wage: \$37.88 hour - \$78,790 year
Level 3 Wage: \$46.05 hour - \$95,784 year
Level 4 Wage: \$54.21 hour - \$112,757 year
Mean Wage (H-2B): \$46.05 hour - \$95,784 year

This wage applies to the following O*Net occupations:

17-2112.00 Industrial Engineers

Design, develop, test, and evaluate integrated systems for managing industrial production processes, including human work factors, quality control, inventory control, logistics and material flow, cost analysis, and production coordination.

[O*Net™ JobZone: 4](#)
[Education & Training Code: 5-Bachelor's degree](#)

17-2112.01 Human Factors Engineers and Ergonomists

Design objects, facilities, and environments to optimize human well-being and overall system performance, applying theory, principles, and data regarding the relationship between humans and respective technology. Investigate and analyze characteristics of human behavior and performance as it relates to the use of technology.

[O*Net™ JobZone: 5](#)
[Education & Training Code: No Level Set](#)

For information on determining the proper occupation and wage level see the new Prevailing Wage Guidance on the [Skill Level page](#).

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Area Code: [37100](#)
Area Title: Oxnard-Thousand Oaks-Ventura, CA MSA
OES/SOC Code: 17-3031
OES/SOC Title: Surveying and Mapping Technicians
GeoLevel: 1
Level 1 Wage: \$17.46 hour - \$36,317 year
Level 2 Wage: \$24.79 hour - \$51,563 year
Level 3 Wage: \$32.11 hour - \$66,789 year
Level 4 Wage: \$39.44 hour - \$82,035 year
Mean Wage (H-2B): \$32.11 hour - \$66,789 year

This wage applies to the following O*Net occupations:

[17-3031.00 Surveying and Mapping Technicians](#)

Perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps.

[O*Net™ JobZone: NA](#)

[Education & Training Code: No Level Set](#)

[17-3031.01 Surveying Technicians](#)

Adjust and operate surveying instruments, such as the theodolite and electronic distance-measuring equipment, and compile notes, make sketches and enter data into computers.

[O*Net™ JobZone: 3](#)

[Education & Training Code: No Level Set](#)

[17-3031.02 Mapping Technicians](#)

Calculate mapmaking information from field notes, and draw and verify accuracy of topographical maps.



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Area Code: 37100
Area Title: Oxnard-Thousand Oaks-Ventura, CA MSA
OES/SOC Code: 17-1022
OES/SOC Title: Surveyors
GeoLevel: 1
Level 1 Wage: \$34.20 hour - \$71,136 year
Level 2 Wage: \$38.87 hour - \$80,850 year
Level 3 Wage: \$43.55 hour - \$90,584 year
Level 4 Wage: \$48.22 hour - \$100,298 year
Mean Wage (H-2B): \$43.55 hour - \$90,584 year

This wage applies to the following O*Net occupations:

17-1022.00 Surveyors

Make exact measurements and determine property boundaries. Provide data relevant to the shape, contour, gravitation, location, elevation, or dimension of land or land features on or near the earth's surface for engineering, mapmaking, mining, land evaluation, construction, and other purposes.

[O*Net™ JobZone: 4](#)
[Education & Training Code: 5-Bachelor's degree](#)

17-1022.01 Geodetic Surveyors

Measure large areas of the Earth's surface using satellite observations, global navigation satellite systems (GNSS), light detection and ranging (LIDAR), or related sources.

[O*Net™ JobZone: 4](#)
[Education & Training Code: No Level Set](#)

For information on determining the proper occupation and wage level see the new Prevailing Wage Guidance on the [Skill Level page](#).

The prevailing wage must be at, or above the federal or state or local minimum wage, whichever is higher. The federal minimum wage is \$7.25/hr effective July 24, 2009.



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Area Code: 37100
Area Title: Oxnard-Thousand Oaks-Ventura, CA MSA
OES/SOC Code: 17-3019
OES/SOC Title: Drafters, All Other
GeoLevel: 1
Level 1 Wage: \$19.70 hour - \$40,976 year
Level 2 Wage: \$26.62 hour - \$55,370 year
Level 3 Wage: \$33.55 hour - \$69,784 year
Level 4 Wage: \$40.47 hour - \$84,178 year
Mean Wage (H-2B): \$33.54 hour - \$69,763 year

This wage applies to the following O*Net occupations:

17-3019.00 Drafters, All Other

All drafters not listed separately.
[O*Net™ JobZone: NA](#)
[Education & Training Code: No Level Set](#)

For information on determining the proper occupation and wage level see the new
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The prevailing wage must be at, or above the federal or state or local minimum wage,
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Area Code: 37100
Area Title: Oxnard-Thousand Oaks-Ventura, CA MSA
OES/SOC Code: 17-3025
OES/SOC Title: Environmental Engineering Technicians
GeoLevel: 1
Level 1 Wage: \$16.68 hour - \$34,694 year
Level 2 Wage: \$20.94 hour - \$43,555 year
Level 3 Wage: \$25.20 hour - \$52,416 year
Level 4 Wage: \$29.46 hour - \$61,277 year
Mean Wage (H-2B): \$25.20 hour - \$52,416 year

This wage applies to the following O*Net occupations:

17-3025.00 Environmental Engineering Technicians

Apply theory and principles of environmental engineering to modify, test, and operate equipment and devices used in the prevention, control, and remediation of environmental problems, including waste treatment and site remediation, under the direction of engineering staff or scientist. May assist in the development of environmental remediation devices.

[O*Net™ JobZone: 4](#)

[Education & Training Code: No Level Set](#)

For information on determining the proper occupation and wage level see the new Prevailing Wage Guidance on the [Skill Level page](#).

The prevailing wage must be at, or above the federal or state or local minimum wage, whichever is higher. The federal minimum wage is \$7.25/hr effective July 24, 2009.



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Area Code: 37100
Area Title: Oxnard-Thousand Oaks-Ventura, CA MSA
OES/SOC Code: 19-2041
OES/SOC Title: Environmental Scientists and Specialists, Including Health
GeoLevel: 1
Level 1 Wage: \$33.30 hour - \$69,264 year
Level 2 Wage: \$39.91 hour - \$83,013 year
Level 3 Wage: \$46.51 hour - \$96,741 year
Level 4 Wage: \$53.12 hour - \$110,490 year
Mean Wage (H-2B): \$46.51 hour - \$96,741 year

This wage applies to the following O*Net occupations:

19-2041.00 Environmental Scientists and Specialists, Including Health

Conduct research or perform investigation for the purpose of identifying, abating, or eliminating sources of pollutants or hazards that affect either the environment or the health of the population. Using knowledge of various scientific disciplines, may collect, synthesize, study, report, and recommend action based on data derived from measurements or observations of air, food, soil, water, and other sources.

[O*Net™ JobZone: 4](#)

[Education & Training Code: 3-Master's degree](#)

19-2041.01 Climate Change Analysts

Research and analyze policy developments related to climate change. Make climate-related recommendations for actions such as legislation, awareness campaigns, or fundraising approaches.

[O*Net™ JobZone: 5](#)

[Education & Training Code: No Level Set](#)

19-2041.02 Environmental Restoration Planners

Collaborate with field and biology staff to oversee the implementation of restoration projects and to develop new products. Process and synthesize complex scientific data into practical strategies for restoration, monitoring or management.



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Area Code: 37100
Area Title: Oxnard-Thousand Oaks-Ventura, CA MSA
OES/SOC Code: 17-2081
OES/SOC Title: Environmental Engineers
GeoLevel: 1
Level 1 Wage: \$33.78 hour - \$70,262 year
Level 2 Wage: \$39.04 hour - \$81,203 year
Level 3 Wage: \$44.29 hour - \$92,123 year
Level 4 Wage: \$49.55 hour - \$103,064 year
Mean Wage (H-2B): \$44.29 hour - \$92,123 year

This wage applies to the following O*Net occupations:

17-2081.00 Environmental Engineers

Research, design, plan, or perform engineering duties in the prevention, control, and remediation of environmental hazards using various engineering disciplines. Work may include waste treatment, site remediation, or pollution control technology.

[O*Net™ JobZone: 5](#)
[Education & Training Code: 5-Bachelor's degree](#)

17-2081.01 Water/Wastewater Engineers

Design or oversee projects involving provision of potable water, disposal of wastewater and sewage, or prevention of flood-related damage. Prepare environmental documentation for water resources, regulatory program compliance, data management and analysis, and field work. Perform hydraulic modeling and pipeline design.

[O*Net™ JobZone: 4](#)
[Education & Training Code: No Level Set](#)

For information on determining the proper occupation and wage level see the new Prevailing Wage Guidance on the [Skill Level page](#).

The prevailing wage must be at, or above the federal or state or local minimum wage, whichever is higher. The federal minimum wage is \$7.25/hr effective July 24, 2009.



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Area Code: 37100
Area Title: Oxnard-Thousand Oaks-Ventura, CA MSA
OES/SOC Code: 17-2111
OES/SOC Title: Health and Safety Engineers, Except Mining Safety Engineers
and Inspectors
GeoLevel: 1
Level 1 Wage: \$22.83 hour - \$47,486 year
Level 2 Wage: \$31.09 hour - \$64,667 year
Level 3 Wage: \$39.34 hour - \$81,827 year
Level 4 Wage: \$47.60 hour - \$99,008 year
Mean Wage (H-2B): \$39.34 hour - \$81,827 year

This wage applies to the following O*Net occupations:

17-2111.00 Health and Safety Engineers, Except Mining Safety Engineers and Inspectors

Promote worksite or product safety by applying knowledge of industrial processes, mechanics, chemistry, psychology, and industrial health and safety laws. Includes industrial product safety engineers.

O*Net™ JobZone: NA

Education & Training Code: No Level Set

17-2111.01 Industrial Safety and Health Engineers

Plan, implement, and coordinate safety programs, requiring application of engineering principles and technology, to prevent or correct unsafe environmental working conditions.

O*Net™ JobZone: 4

Education & Training Code: 5-Bachelor's degree

17-2111.02 Fire-Prevention and Protection Engineers

Research causes of fires, determine fire protection methods, and design or recommend materials or equipment such as structural components or fire-detection equipment to assist organizations in safeguarding life and property against fire, explosion, and related hazards.



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Area Code: 37100
Area Title: Oxnard-Thousand Oaks-Ventura, CA MSA
OES/SOC Code: 19-1032
OES/SOC Title: Foresters
GeoLevel: 2
Level 1 Wage: \$24.29 hour - \$50,523 year
Level 2 Wage: \$32.27 hour - \$67,122 year
Level 3 Wage: \$40.24 hour - \$83,699 year
Level 4 Wage: \$48.22 hour - \$100,298 year
Mean Wage (H-2B): \$40.24 hour - \$83,699 year

This wage applies to the following O*Net occupations:

19-1032.00 Foresters

Manage public and private forested lands for economic, recreational, and conservation purposes. May inventory the type, amount, and location of standing timber, appraise the timber's worth, negotiate the purchase, and draw up contracts for procurement. May determine how to conserve wildlife habitats, creek beds, water quality, and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitor trees for healthy growth, and determine optimal harvesting schedules.

[O*Net™ JobZone: 4](#)

[Education & Training Code: 5-Bachelor's degree](#)

For information on determining the proper occupation and wage level see the new Prevaling Wage Guidance on the [Skill Level page](#).

The prevailing wage must be at, or above the federal or state or local minimum wage, whichever is higher. The federal minimum wage is \$7.25/hr effective July 24, 2009.



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Your search returned the following: [Print Format](#)

Area Code: 37100
Area Title: Oxnard-Thousand Oaks-Ventura, CA MSA
OES/SOC Code: 19-3091
OES/SOC Title: Anthropologists and Archeologists
GeoLevel: 1
Level 1 Wage: \$23.27 hour - \$48,402 year
Level 2 Wage: \$31.33 hour - \$65,166 year
Level 3 Wage: \$39.38 hour - \$81,910 year
Level 4 Wage: \$47.44 hour - \$98,675 year
Mean Wage (H-2B): \$39.39 hour - \$81,931 year

This wage applies to the following O*Net occupations:

19-3091.00 Anthropologists and Archeologists

Study the origin, development, and behavior of human beings. May study the way of life, language, or physical characteristics of people in various parts of the world. May engage in systematic recovery and examination of material evidence, such as tools or pottery remaining from past human cultures, in order to determine the history, customs, and living habits of earlier civilizations.

[O*Net™ JobZone: NA](#)
[Education & Training Code: No Level Set](#)

19-3091.01 Anthropologists

Research, evaluate, and establish public policy concerning the origins of humans; their physical, social, linguistic, and cultural development; and their behavior, as well as the cultures, organizations, and institutions they have created.

[O*Net™ JobZone: 5](#)
[Education & Training Code: 3-Master's degree](#)

19-3091.02 Archeologists

Conduct research to reconstruct record of past human life and culture from human remains, artifacts, architectural features, and structures recovered through excavation, underwater recovery, or other means of discovery.



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FLC Wage Results [New Quick Search](#) [New Search Wizard](#)

You selected the All Industries database for 7/2018 - 6/2019.

Your search returned the following: [Print Format](#)

Area Code: [37100](#)
Area Title: Oxnard-Thousand Oaks-Ventura, CA MSA
OES/SOC Code: 19-1023
OES/SOC Title: Zoologists and Wildlife Biologists
GeoLevel: 2
Level 1 Wage: \$24.31 hour - \$50,565 year
Level 2 Wage: \$31.54 hour - \$65,603 year
Level 3 Wage: \$38.76 hour - \$80,621 year
Level 4 Wage: \$45.99 hour - \$95,659 year
Mean Wage (H-2B): \$38.76 hour - \$80,621 year

This wage applies to the following O*Net occupations:

[19-1023.00 Zoologists and Wildlife Biologists](#)

Study the origins, behavior, diseases, genetics, and life processes of animals and wildlife. May specialize in wildlife research and management. May collect and analyze biological data to determine the environmental effects of present and potential use of land and water habitats.

[O*Net™ JobZone: 5](#)

[Education & Training Code: 5-Bachelor's degree](#)

For information on determining the proper occupation and wage level see the new Prevailing Wage Guidance on the [Skill Level page](#).

The prevailing wage must be at, or above the federal or state or local minimum wage, whichever is higher. The federal minimum wage is \$7.25/hr effective July 24, 2009.

General Decision Number: CA180025 07/13/2018 CA25

Superseded General Decision Number: CA20170025

State: California

Construction Types: Building, Heavy (Heavy and Dredging) and Highway

County: Ventura County in California.

BUILDING, DREDGING (does not include hopper dredge work), HEAVY (does not include water well drilling), AND HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018
1	01/12/2018
2	01/19/2018
3	01/26/2018
4	02/09/2018
5	05/04/2018
6	05/18/2018
7	06/15/2018
8	07/06/2018
9	07/13/2018

ASBE0005-002 07/03/2017

	Rates	Fringes
Asbestos Workers/Insulator (Includes the application of all insulating materials, protective coverings, coatings, and finishes to all types of mechanical systems).....	\$ 39.72	20.81
Fire Stop Technician (Application of Firestopping Materials for wall openings and penetrations in walls, floors, ceilings and curtain walls).....	\$ 26.96	17.81

ASBE0005-004 07/03/2017

	Rates	Fringes
Asbestos Removal worker/hazardous material handler (Includes preparation, wetting, stripping, removal, scrapping, vacuuming, bagging and disposing of all insulation materials from mechanical systems, whether they contain asbestos or not)....	\$ 19.26	11.27

BOIL0092-003 03/01/2018

	Rates	Fringes
BOILERMAKER.....	\$ 44.07	33.52

* BRCA0004-012 05/01/2018

	Rates	Fringes
BRICKLAYER; MARBLE SETTER.....	\$ 39.22	13.65

*The wage scale for prevailing wage projects performed in Blythe, China lake, Death Valley, Fort Irwin, Twenty-Nine Palms, Needles and 1-15 corridor (Barstow to the Nevada State Line) will be Three Dollars (\$3.00) above the standard San Bernardino/Riverside County hourly wage rate

BRCA0018-004 07/01/2017

	Rates	Fringes
MARBLE FINISHER.....	\$ 30.93	12.95
TILE FINISHER.....	\$ 25.98	11.23
TILE LAYER.....	\$ 37.76	16.37

BRCA0018-010 09/01/2017

	Rates	Fringes
TERRAZZO FINISHER.....	\$ 29.75	12.91
TERRAZZO WORKER/SETTER.....	\$ 36.75	13.82

CARP0409-001 07/01/2016

	Rates	Fringes
CARPENTER (1) Carpenter, Cabinet Installer, Insulation Installer, Hardwood Floor Worker and acoustical installer.....	\$ 39.83	15.50
(2) Millwright.....	\$ 40.90	15.50
(3) Piledrivermen/Derrick Bargeman, Bridge or Dock Carpenter, Heavy Framer, Rock Bargeman or Scowman, Rockslinger, Shingler		

(Commercial).....	\$ 40.53	15.50
(4) Pneumatic Nailer, Power Stapler.....	\$ 40.09	15.50
(5) Sawfiler.....	\$ 39.83	15.50
(6) Scaffold Builder.....	\$ 31.60	15.50
(7) Table Power Saw Operator.....	\$ 40.93	15.50

FOOTNOTE: Work of forming in the construction of open cut sewers or storm drains, on operations in which horizontal lagging is used in conjunction with steel H-Beams driven or placed in pre- drilled holes, for that portion of a lagged trench against which concrete is poured, namely, as a substitute for back forms (which work is performed by piledrivers): \$0.13 per hour additional.

 CARP0409-002 07/01/2016

	Rates	Fringes
Diver		
(1) Wet.....	\$ 712.48	17.03
(2) Standby.....	\$ 356.24	17.03
(3) Tender.....	\$ 348.24	17.03
(4) Assistant Tender.....	\$ 324.24	17.03

Amounts in "Rates" column are per day

 CARP0409-005 07/01/2015

	Rates	Fringes
Drywall		
DRYWALL INSTALLER/LATHER....	\$ 40.40	15.03
STOCKER/SCRAPPER.....	\$ 10.00	7.17

 CARP0409-008 08/01/2010

	Rates	Fringes
Modular Furniture Installer.....	\$ 17.00	7.41

 ELEC0952-001 01/01/2018

	Rates	Fringes
Electricians: (All work within 32 road miles from the nearest base point)		
Cable Splicer.....	\$ 41.49	26.56
Electrician Transportation Systems Technician Journeyman Wireman - Street Lighting & Traffic Signals.....	\$ 37.72	26.56
Transportation Systems Technician - Street Lighting & Traffic Signals..	\$ 38.23	26.97

ALL WORK MORE THAN 32 ROAD MILES FROM NEAREST BASE POINT:
 Add \$5.00 to the basic hourly rate. BASE POINTS: the main
 Post Office in the cities of Camarillo, Oak View, Oxnard,
 Santa Paula and Ventura.

ELEC0952-003 01/01/2018

COMMUNICATIONS AND SYSTEMS WORK

	Rates	Fringes
Communications System		
Installer.....	\$ 32.43	14.87
Technician.....	\$ 30.10	12.78

SCOPE OF WORK:

Installation, testing, service and maintenance of systems utilizing the transmission and/or transference of voice, sound, vision and digital for commercial, educational, security and entertainment purposes for the following: TV monitoring and surveillance, background-foreground music, intercom and telephone interconnect, inventory control systems, microwave transmission, multi-media, multiplex, nurse call systems, radio page, school intercom and sound, burglar alarms, fire alarm (see last paragraph below) and low voltage master clock systems in commercial buildings. Communication Systems that transmit or receive information and/or control systems that are intrinsic to the above listed systems; inclusion or exclusion of terminations and testings of conductors determined by their function; excluding all other data systems or multiple systems which include control function or power supply; excluding installation of raceway systems, conduit systems, line voltage work, and energy management systems. Does not cover work performed at China Lake Naval Ordnance Test Station. Fire alarm work shall be performed at the current inside wireman total cost package.

ELEV0018-001 01/01/2018

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 53.85	32.645

FOOTNOTE:

PAID VACATION: Employer contributes 8% of regular hourly rate as vacation pay credit for employees with more than 5 years of service, and 6% for 6 months to 5 years of service.
PAID HOLIDAYS: New Years Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, Friday after Thanksgiving, and Christmas Day.

ENGI0012-003 07/01/2017

	Rates	Fringes
OPERATOR: Power Equipment (All Other Work)		
GROUP 1.....	\$ 44.00	24.25
GROUP 2.....	\$ 44.78	24.25
GROUP 3.....	\$ 45.07	24.25
GROUP 4.....	\$ 46.56	24.25
GROUP 5.....	\$ 47.66	24.25
GROUP 6.....	\$ 46.78	24.25
GROUP 8.....	\$ 46.89	24.25
GROUP 9.....	\$ 47.99	24.25
GROUP 10.....	\$ 48.01	24.25

GROUP 11.....	\$ 48.11	24.25
GROUP 12.....	\$ 47.18	24.25
GROUP 13.....	\$ 47.28	24.25
GROUP 14.....	\$ 47.31	24.25
GROUP 15.....	\$ 47.39	24.25
GROUP 16.....	\$ 47.51	24.25
GROUP 17.....	\$ 47.68	24.25
GROUP 18.....	\$ 47.78	24.25
GROUP 19.....	\$ 47.89	24.25
GROUP 20.....	\$ 48.01	24.25
GROUP 21.....	\$ 48.18	24.25
GROUP 22.....	\$ 48.28	24.25
GROUP 23.....	\$ 48.39	24.25
GROUP 24.....	\$ 48.51	24.25
GROUP 25.....	\$ 48.68	24.25

OPERATOR: Power Equipment
(Cranes, Piledriving &
Hoisting)

GROUP 1.....	\$ 45.35	24.25
GROUP 2.....	\$ 46.13	24.25
GROUP 3.....	\$ 46.42	24.25
GROUP 4.....	\$ 46.56	24.25
GROUP 5.....	\$ 46.78	24.25
GROUP 6.....	\$ 46.89	24.25
GROUP 7.....	\$ 47.01	24.25
GROUP 8.....	\$ 47.18	24.25
GROUP 9.....	\$ 47.35	24.25
GROUP 10.....	\$ 48.35	24.25
GROUP 11.....	\$ 49.35	24.25
GROUP 12.....	\$ 50.35	24.25
GROUP 13.....	\$ 51.35	24.25

OPERATOR: Power Equipment
(Tunnel Work)

GROUP 1.....	\$ 41.80	23.35
GROUP 2.....	\$ 42.58	23.35
GROUP 3.....	\$ 42.87	23.35
GROUP 4.....	\$ 43.01	23.35
GROUP 5.....	\$ 43.23	23.35
GROUP 6.....	\$ 43.34	23.35
GROUP 7.....	\$ 43.46	23.35

PREMIUM PAY:

\$3.75 per hour shall be paid on all Power Equipment Operator work on the following Military Bases: China Lake Naval Reserve, Vandenberg AFB, Point Arguello, Seely Naval Base, Fort Irwin, Nebo Annex Marine Base, Marine Corp Logistics Base Yermo, Edwards AFB, 29 Palms Marine Base and Camp Pendleton

Workers required to suit up and work in a hazardous material environment: \$2.00 per hour additional. Combination mixer and compressor operator on gunite work shall be classified as a concrete mobile mixer operator.

SEE ZONE DEFINITIONS AFTER CLASSIFICATIONS

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Bargeman; Brakeman; Compressor operator; Ditch Witch, with seat or similar type equipment; Elevator operator-inside; Engineer Oiler; Forklift operator (includes loed, lull or similar types under 5 tons; Generator operator; Generator, pump or compressor plant operator; Pump operator; Signalman; Switchman

GROUP 2: Asphalt-rubber plant operator (nurse tank operator); Concrete mixer operator-skip type; Conveyor operator; Fireman; Forklift operator (includes loed, lull or similar types over 5 tons; Hydrostatic pump operator; oiler crusher (asphalt or concrete plant); Petromat laydown machine; PJU side dum jack; Screening and conveyor machine operator (or similar types); Skiploader (wheel type up to 3/4 yd. without attachment); Tar pot fireman; Temporary heating plant operator; Trenching machine oiler

GROUP 3: Asphalt-rubber blend operator; Bobcat or similar type (Skid steer); Equipment greaser (rack); Ford Ferguson (with dragtype attachments); Helicopter radioman (ground); Stationary pipe wrapping and cleaning machine operator

GROUP 4: Asphalt plant fireman; Backhoe operator (mini-max or similar type); Boring machine operator; Boxman or mixerman (asphalt or concrete); Chip spreading machine operator; Concrete cleaning decontamination machine operator; Concrete Pump Operator (small portable); Drilling machine operator, small auger types (Texoma super economatic or similar types - Hughes 100 or 200 or similar types - drilling depth of 30' maximum); Equipment greaser (grease truck); Guard rail post driver operator; Highline cableway signalman; Hydra-hammer-aero stomper; Micro Tunneling (above ground tunnel); Power concrete curing machine operator; Power concrete saw operator; Power-driven jumbo form setter operator; Power sweeper operator; Rock Wheel Saw/Trencher; Roller operator (compacting); Screed operator (asphalt or concrete); Trenching machine operator (up to 6 ft.); Vacuum or much truck

GROUP 5: Equipment Greaser (Grease Truck/Multi Shift).

GROUP 6: Articulating material hauler; Asphalt plant engineer; Batch plant operator; Bit sharpener; Concrete joint machine operator (canal and similar type); Concrete planer operator; Dandy digger; Deck engine operator; Derrickman (oilfield type); Drilling machine operator, bucket or auger types (Calweld 100 bucket or similar types - Watson 1000 auger or similar types - Texoma 330, 500 or 600 auger or similar types - drilling depth of 45' maximum); Drilling machine operator; Hydrographic seeder machine operator (straw, pulp or seed), Jackson track maintainer, or similar type; Kalamazoo Switch tamper, or similar type; Machine tool operator; Maginnis internal full slab vibrator, Mechanical berm, curb or gutter (concrete or asphalt); Mechanical finisher operator (concrete, Clary-Johnson-Bidwell or similar); Micro tunnel system (below ground); Pavement breaker operator (truck mounted); Road oil mixing machine operator; Roller operator (asphalt or finish), rubber-tired earth moving equipment (single engine, up to and including 25 yds. struck); Self-propelled tar pipelining machine operator; Skiploader operator (crawler and wheel type, over 3/4 yd. and up to and including 1-1/2 yds.); Slip form pump operator (power driven hydraulic lifting device for concrete forms); Tractor operator-bulldozer, tamper-scraper (single engine, up to 100 h.p. flywheel and similar types, up to and including D-5 and similar types); Tugger hoist operator (1 drum); Ultra high pressure waterjet cutting tool system operator; Vacuum blasting machine operator

GROUP 8: Asphalt or concrete spreading operator (tamping or finishing); Asphalt paving machine operator (Barber Greene

or similar type); Asphalt-rubber distribution operator; Backhoe operator (up to and including 3/4 yd.), small ford, Case or similar; Cast-in-place pipe laying machine operator; Combination mixer and compressor operator (gunite work); Compactor operator (self-propelled); Concrete mixer operator (paving); Crushing plant operator; Drill Doctor; Drilling machine operator, Bucket or auger types (Calweld 150 bucket or similar types - Watson 1500, 2000 2500 auger or similar types - Texoma 700, 800 auger or similar types - drilling depth of 60' maximum); Elevating grader operator; Grade checker; Gradall operator; Grouting machine operator; Heavy-duty repairman; Heavy equipment robotics operator; Kalamazoo balliste regulator or similar type; Kolman belt loader and similar type; Le Tourneau blob compactor or similar type; Loader operator (Athey, Euclid, Sierra and similar types); Mobark Chipper or similar; Ozzie padder or similar types; P.C. slot saw; Pneumatic concrete placing machine operator (Hackley-Presswell or similar type); Pumpcrete gun operator; Rock Drill or similar types; Rotary drill operator (excluding caisson type); Rubber-tired earth-moving equipment operator (single engine, caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. up to and including 50 cu. yds. struck); Rubber-tired earth-moving equipment operator (multiple engine up to and including 25 yds. struck); Rubber-tired scraper operator (self-loading paddle wheel type-John Deere, 1040 and similar single unit); Self-propelled curb and gutter machine operator; Shuttle buggy; Skiploader operator (crawler and wheel type over 1-1/2 yds. up to and including 6-1/2 yds.); Soil remediation plant operator; Surface heaters and planer operator; Tractor compressor drill combination operator; Tractor operator (any type larger than D-5 - 100 flywheel h.p. and over, or similar-bulldozer, tamper, scraper and push tractor single engine); Tractor operator (boom attachments), Traveling pipe wrapping, cleaning and bending machine operator; Trenching machine operator (over 6 ft. depth capacity, manufacturer's rating); trenching Machine with Road Miner attachment (over 6 ft depth capacity): Ultra high pressure waterjet cutting tool system mechanic; Water pull (compaction) operator

GROUP 9: Heavy Duty Repairman

GROUP 10: Drilling machine operator, Bucket or auger types (Calweld 200 B bucket or similar types-Watson 3000 or 5000 auger or similar types-Texoma 900 auger or similar types-drilling depth of 105' maximum); Dual drum mixer, dynamic compactor LDC350 (or similar types); Monorail locomotive operator (diesel, gas or electric); Motor patrol-blade operator (single engine); Multiple engine tractor operator (Euclid and similar type-except Quad 9 cat.); Rubber-tired earth-moving equipment operator (single engine, over 50 yds. struck); Pneumatic pipe ramming tool and similar types; Prestressed wrapping machine operator; Rubber-tired earth-moving equipment operator (single engine, over 50 yds. struck); Rubber tired earth moving equipment operator (multiple engine, Euclid, caterpillar and similar over 25 yds. and up to 50 yds. struck), Tower crane repairman; Tractor loader operator (crawler and wheel type over 6-1/2 yds.); Woods mixer operator (and similar Pugmill equipment)

GROUP 11: Heavy Duty Repairman - Welder Combination, Welder - Certified.

GROUP 12: Auto grader operator; Automatic slip form operator; Drilling machine operator, bucket or auger types (Calweld, auger 200 CA or similar types - Watson, auger 6000 or similar types - Hughes Super Duty, auger 200 or similar types - drilling depth of 175' maximum); Hoe ram or similar with compressor; Mass excavator operator less than 750 cu. yards; Mechanical finishing machine operator; Mobile form traveler operator; Motor patrol operator (multi-engine); Pipe mobile machine operator; Rubber-tired earth-moving equipment operator (multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck); Rubber-tired self-loading scraper operator (paddle-wheel-auger type self-loading - two (2) or more units)

GROUP 13: Rubber-tired earth-moving equipment operator operating equipment with push-pull system (single engine, up to and including 25 yds. struck)

GROUP 14: Canal liner operator; Canal trimmer operator; Remote-control earth-moving equipment operator (operating a second piece of equipment: \$1.00 per hour additional); Wheel excavator operator (over 750 cu. yds.)

GROUP 15: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine-up to and including 25 yds. struck)

GROUP 16: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (single engine, over 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 17: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine, Euclid, Caterpillar and similar, over 50 cu. yds. struck); Tandem tractor operator (operating crawler type tractors in tandem - Quad 9 and similar type)

GROUP 18: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, up to and including 25 yds. struck)

GROUP 19: Rotex concrete belt operator (or similar types); Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 cu. yds. struck); Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - multiple engine, up to and including 25 yds. struck)

GROUP 20: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, over 50 yds. struck); Rubber-tired

earth-moving equipment operator, operating in tandem (scrapers, belly dumps, and similar types in any combination, excluding compaction units - multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 21: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck)

GROUP 22: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, up to and including 25 yds. struck)

GROUP 23: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 yds. struck); Rubber-tired earth-moving equipment operator, operating with the tandem push-pull system (multiple engine, up to and including 25 yds. struck)

GROUP 24: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, over 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 25: Concrete pump operator-truck mounted; Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck)

CRANES, PILEDIVING AND HOISTING EQUIPMENT CLASSIFICATIONS

GROUP 1: Engineer oiler; Fork lift operator (includes loed, lull or similar types)

GROUP 2: Truck crane oiler

GROUP 3: A-frame or winch truck operator; Ross carrier operator (jobsite)

GROUP 4: Bridge-type unloader and turntable operator; Helicopter hoist operator

GROUP 5: Hydraulic boom truck; Stinger crane (Austin-Western or similar type); Tugger hoist operator (1 drum)

GROUP 6: Bridge crane operator; Cretor crane operator; Hoist operator (Chicago boom and similar type); Lift mobile operator; Lift slab machine operator (Vagtborg and similar types); Material hoist and/or manlift operator; Polar gantry crane operator; Self Climbing scaffold (or similar type); Shovel, backhoe, dragline, clamshell operator (over 3/4 yd. and up to 5 cu. yds. mrc); Tugger hoist operator

GROUP 7: Pedestal crane operator; Shovel, backhoe, dragline, clamshell operator (over 5 cu. yds. mrc); Tower crane repair; Tugger hoist operator (3 drum)

GROUP 8: Crane operator (up to and including 25 ton capacity); Crawler transporter operator; Derrick barge operator (up to and including 25 ton capacity); Hoist operator, stiff legs, Guy derrick or similar type (up to and including 25 ton capacity); Shovel, backhoe, dragline, clamshell operator (over 7 cu. yds., M.R.C.)

GROUP 9: Crane operator (over 25 tons and up to and including 50 tons mrc); Derrick barge operator (over 25 tons up to and including 50 tons mrc); Highline cableway operator; Hoist operator, stiff legs, Guy derrick or similar type (over 25 tons up to and including 50 tons mrc); K-crane operator; Polar crane operator; Self erecting tower crane operator maximum lifting capacity ten tons

GROUP 10: Crane operator (over 50 tons and up to and including 100 tons mrc); Derrick barge operator (over 50 tons up to and including 100 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 50 tons up to and including 100 tons mrc), Mobile tower crane operator (over 50 tons, up to and including 100 tons M.R.C.); Tower crane operator and tower gantry

GROUP 11: Crane operator (over 100 tons and up to and including 200 tons mrc); Derrick barge operator (over 100 tons up to and including 200 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 100 tons up to and including 200 tons mrc); Mobile tower crane operator (over 100 tons up to and including 200 tons mrc)

GROUP 12: Crane operator (over 200 tons up to and including 300 tons mrc); Derrick barge operator (over 200 tons up to and including 300 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 200 tons, up to and including 300 tons mrc); Mobile tower crane operator (over 200 tons, up to and including 300 tons mrc)

GROUP 13: Crane operator (over 300 tons); Derrick barge operator (over 300 tons); Helicopter pilot; Hoist operator, stiff legs, Guy derrick or similar type (over 300 tons); Mobile tower crane operator (over 300 tons)

TUNNEL CLASSIFICATIONS

GROUP 1: Skiploader (wheel type up to 3/4 yd. without attachment)

GROUP 2: Power-driven jumbo form setter operator

GROUP 3: Dinkey locomotive or motorperson (up to and including 10 tons)

GROUP 4: Bit sharpener; Equipment greaser (grease truck); Slip form pump operator (power-driven hydraulic lifting device for concrete forms); Tugger hoist operator (1 drum); Tunnel locomotive operator (over 10 and up to and including 30 tons)

GROUP 5: Backhoe operator (up to and including 3/4 yd.); Small Ford, Case or similar; Drill doctor; Grouting machine operator; Heading shield operator; Heavy-duty repairperson; Loader operator (Athey, Euclid, Sierra and similar types); Mucking machine operator (1/4 yd., rubber-tired, rail or track type); Pneumatic concrete placing machine operator

(Hackley-Presswell or similar type); Pneumatic heading shield (tunnel); Pumpcrete gun operator; Tractor compressor drill combination operator; Tugger hoist operator (2 drum); Tunnel locomotive operator (over 30 tons)

GROUP 6: Heavy Duty Repairman

GROUP 7: Tunnel mole boring machine operator

ENGINEERS ZONES

\$1.00 additional per hour for all of IMPERIAL County and the portions of KERN, RIVERSIDE & SAN BERNARDINO Counties as defined below:

That area within the following Boundary: Begin in San Bernardino County, approximately 3 miles NE of the intersection of I-15 and the California State line at that point which is the NW corner of Section 1, T17N, R14E, San Bernardino Meridian. Continue W in a straight line to that point which is the SW corner of the northwest quarter of Section 6, T27S, R42E, Mt. Diablo Meridian. Continue North to the intersection with the Inyo County Boundary at that point which is the NE corner of the western half of the northern quarter of Section 6, T25S, R42E, MDM. Continue W along the Inyo and San Bernardino County boundary until the intersection with Kern County, as that point which is the SE corner of Section 34, T24S, R40E, MDM. Continue W along the Inyo and Kern County boundary until the intersection with Tulare County, at that point which is the SW corner of the SE quarter of Section 32, T24S, R37E, MDM. Continue W along the Kern and Tulare County boundary, until that point which is the NW corner of T25S, R32E, MDM. Continue S following R32E lines to the NW corner of T31S, R32E, MDM. Continue W to the NW corner of T31S, R31E, MDM. Continue S to the SW corner of T32S, R31E, MDM. Continue W to SW corner of SE quarter of Section 34, T32S, R30E, MDM. Continue S to SW corner of T11N, R17W, SBM. Continue E along south boundary of T11N, SBM to SW corner of T11N, R7W, SBM. Continue S to SW corner of T9N, R7W, SBM. Continue E along south boundary of T9N, SBM to SW corner of T9N, R1E, SBM. Continue S along west boundary of R1E, SMB to Riverside County line at the SW corner of T1S, R1E, SBM. Continue E along south boundary of T1s, SBM (Riverside County Line) to SW corner of T1S, R10E, SBM. Continue S along west boundary of R10E, SBM to Imperial County line at the SW corner of T8S, R10E, SBM. Continue W along Imperial and Riverside county line to NW corner of T9S, R9E, SBM. Continue S along the boundary between Imperial and San Diego Counties, along the west edge of R9E, SBM to the south boundary of Imperial County/California state line. Follow the California state line west to Arizona state line, then north to Nevada state line, then continuing NW back to start at the point which is the NW corner of Section 1, T17N, R14E, SBM

\$1.00 additional per hour for portions of SAN LUIS OBISPO, KERN, SANTA BARBARA & VENTURA as defined below:

That area within the following Boundary: Begin approximately 5 miles north of the community of Cholame, on the Monterey County and San Luis Obispo County boundary at the NW corner of T25S, R16E, Mt. Diablo Meridian. Continue south along the west side of R16E to the SW corner of T30S, R16E, MDM. Continue E to SW corner of T30S, R17E, MDM. Continue S to SW corner of T31S, R17E, MDM. Continue E to SW corner of T31S, R18E, MDM. Continue S along West side of R18E, MDM as it crosses into San

Bernardino Meridian numbering area and becomes R30W. Follow the west side of R30W, SBM to the SW corner of T9N, R30W, SBM. Continue E along the south edge of T9N, SBM to the Santa Barbara County and Ventura County boundary at that point which is the SW corner of Section 34.T9N, R24W, SBM, continue S along the Ventura County line to that point which is the SW corner of the SE quarter of Section 32, T7N, R24W, SBM. Continue E along the south edge of T7N, SBM to the SE corner to T7N, R21W, SBM. Continue N along East side of R21W, SBM to Ventura County and Kern County boundary at the NE corner of T8N, R21W. Continue W along the Ventura County and Kern County boundary to the SE corner of T9N, R21W. Continue North along the East edge of R21W, SBM to the NE corner of T12N, R21W, SBM. Continue West along the north edge of T12N, SBM to the SE corner of T32S, R21E, MDM. [T12N SBM is a think strip between T11N SBM and T32S MDM]. Continue North along the East side of R21E, MDM to the Kings County and Kern County border at the NE corner of T25S, R21E, MDM, continue West along the Kings County and Kern County Boundary until the intersection of San Luis Obispo County. Continue west along the Kings County and San Luis Obispo County boundary until the intersection with Monterey County. Continue West along the Monterey County and San Luis Obispo County boundary to the beginning point at the NW corner of T25S, R16E, MDM.

\$2.00 additional per hour for INYO and MONO Counties and the Northern portion of SAN BERNARDINO County as defined below:

That area within the following Boundary: Begin at the intersection of the northern boundary of Mono County and the California state line at the point which is the center of Section 17, T10N, R22E, Mt. Diablo Meridian. Continue S then SE along the entire western boundary of Mono County, until it reaches Inyo County at the point which is the NE corner of the Western half of the NW quarter of Section 2, T8S, R29E, MDM. Continue SSE along the entire western boundary of Inyo County, until the intersection with Kern County at the point which is the SW corner of the SE 1/4 of Section 32, T24S, R37E, MDM. Continue E along the Inyo and Kern County boundary until the intersection with San Bernardino County at that point which is the SE corner of section 34, T24S, R40E, MDM. Continue E along the Inyo and San Bernardino County boundary until the point which is the NE corner of the Western half of the NW quarter of Section 6, T25S, R42E, MDM. Continue S to that point which is the SW corner of the NW quarter of Section 6, T27S, R42E, MDM. Continue E in a straight line to the California and Nevada state border at the point which is the NW corner of Section 1, T17N, R14E, San Bernardino Meridian. Then continue NW along the state line to the starting point, which is the center of Section 18, T10N, R22E, MDM.

REMAINING AREA NOT DEFINED ABOVE RECIEVES BASE RATE

 ENGI0012-004 08/01/2015

	Rates	Fringes
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OPERATOR: Power Equipment
 (DREDGING)

(1) Leverman.....	\$ 49.50	23.60
(2) Dredge dozer.....	\$ 43.53	23.60
(3) Deckmate.....	\$ 43.42	23.60

(4) Winch operator (stern winch on dredge).....	\$ 42.87	23.60
(5) Fireman-Oiler, Deckhand, Bargeman, Leveehand.....	\$ 42.33	23.60
(6) Barge Mate.....	\$ 42.94	23.60

IRON0377-002 01/01/2017

	Rates	Fringes
Ironworkers:		
Fence Erector.....	\$ 29.58	21.59
Ornamental, Reinforcing and Structural.....	\$ 36.00	30.15

PREMIUM PAY:

\$6.00 additional per hour at the following locations:

China Lake Naval Test Station, Chocolate Mountains Naval Reserve-Niland, Edwards AFB, Fort Irwin Military Station, Fort Irwin Training Center-Goldstone, San Clemente Island, San Nicholas Island, Susanville Federal Prison, 29 Palms - Marine Corps, U.S. Marine Base - Barstow, U.S. Naval Air Facility - Sealey, Vandenberg AFB

\$4.00 additional per hour at the following locations:

Army Defense Language Institute - Monterey, Fallon Air Base, Naval Post Graduate School - Monterey, Yermo Marine Corps Logistics Center

\$2.00 additional per hour at the following locations:

Port Hueneme, Port Mugu, U.S. Coast Guard Station - Two Rock

LABO0300-005 01/01/2018

	Rates	Fringes
Asbestos Removal Laborer.....	\$ 33.19	17.78

SCOPE OF WORK: Includes site mobilization, initial site cleanup, site preparation, removal of asbestos-containing material and toxic waste, encapsulation, enclosure and disposal of asbestos- containing materials and toxic waste by hand or with equipment or machinery; scaffolding, fabrication of temporary wooden barriers and assembly of decontamination stations.

LABO0345-001 07/02/2017

	Rates	Fringes
LABORER (GUNITE)		
GROUP 1.....	\$ 41.08	17.39
GROUP 2.....	\$ 40.13	17.39
GROUP 3.....	\$ 36.59	17.39

FOOTNOTE: GUNITE PREMIUM PAY: Workers working from a Bosn'n's Chair or suspended from a rope or cable shall

receive 40 cents per hour above the foregoing applicable classification rates. Workers doing gunite and/or shotcrete work in a tunnel shall receive 35 cents per hour above the foregoing applicable classification rates, paid on a portal-to-portal basis. Any work performed on, in or above any smoke stack, silo, storage elevator or similar type of structure, when such structure is in excess of 75'-0" above base level and which work must be performed in whole or in part more than 75'-0" above base level, that work performed above the 75'-0" level shall be compensated for at 35 cents per hour above the applicable classification wage rate.

GUNITE LABORER CLASSIFICATIONS

GROUP 1: Rodmen, Nozzlemen

GROUP 2: Gunmen

GROUP 3: Reboundmen

LAB00585-001 07/03/2017

	Rates	Fringes
LABORER (TUNNEL)		
GROUP 1.....	\$ 39.04	18.24
GROUP 2.....	\$ 39.36	18.24
GROUP 3.....	\$ 39.82	18.24
GROUP 4.....	\$ 40.51	18.24
LABORER		
GROUP 1.....	\$ 33.19	18.24
GROUP 2.....	\$ 33.74	18.24
GROUP 3.....	\$ 34.29	18.24
GROUP 4.....	\$ 35.84	18.24
GROUP 5.....	\$ 36.19	18.24

LABORER CLASSIFICATIONS

GROUP 1: Cleaning and handling of panel forms; Concrete screeding for rough strike-off; Concrete, water curing; Demolition laborer, the cleaning of brick if performed by a worker performing any other phase of demolition work, and the cleaning of lumber; Fire watcher, limber, brush loader, piler and debris handler; Flag person; Gas, oil and/or water pipeline laborer; Laborer, asphalt-rubber material loader; Laborer, general or construction; Laborer, general clean-up; Laborer, landscaping; Laborer, jetting; Laborer, temporary water and air lines; Material hose operator (walls, slabs, floors and decks); Plugging, filling of shee bolt holes; Dry packing of concrete; Railroad maintenance, repair track person and road beds; Streetcar and railroad construction track laborers; Rigging and signaling; Scaler; Slip form raiser; Tar and mortar; Tool crib or tool house laborer; Traffic control by any method; Window cleaner; Wire mesh pulling - all concrete pouring operations

GROUP 2: Asphalt shoveler; Cement dumper (on 1 yd. or larger mixer and handling bulk cement); Cesspool digger and installer; Chucktender; Chute handler, pouring concrete, the handling of the chute from readymix trucks, such as walls, slabs, decks, floors, foundation, footings, curbs, gutters and sidewalks; Concrete curer, impervious membrane and form oiler; Cutting torch operator (demolition); Fine

grader, highways and street paving, airport, runways and similar type heavy construction; Gas, oil and/or water pipeline wrapper - pot tender and form person; Guinea chaser; Headerboard person - asphalt; Laborer, packing rod steel and pans; Membrane vapor barrier installer; Power broom sweeper (small); Riprap stonepaver, placing stone or wet sacked concrete; Roto scraper and tiller; Sandblaster (pot tender); Septic tank digger and installer(lead); Tank scaler and cleaner; Tree climber, faller, chain saw operator, Pittsburgh chipper and similar type brush shredder; Underground laborer, including caisson bellower

GROUP 3: Buggymobile person; Concrete cutting torch; Concrete pile cutter; Driller, jackhammer, 2-1/2 ft. drill steel or longer; Dri-pak-it machine; Gas, oil and/or water pipeline wrapper, 6-in. pipe and over, by any method, inside and out; High scaler (including drilling of same); Hydro seeder and similar type; Impact wrench multi-plate; Kettle person, pot person and workers applying asphalt, lay-kold, creosote, lime caustic and similar type materials ("applying" means applying, dipping, brushing or handling of such materials for pipe wrapping and waterproofing); Operator of pneumatic, gas, electric tools, vibrating machine, pavement breaker, air blasting, come-alongs, and similar mechanical tools not separately classified herein; Pipelayer's backup person, coating, grouting, making of joints, sealing, caulking, diapering and including rubber gasket joints, pointing and any and all other services; Rock slinger; Rotary scarifier or multiple head concrete chipping scarifier; Steel headerboard and guideline setter; Tamper, Barko, Wacker and similar type; Trenching machine, hand-propelled

GROUP 4: Asphalt raker, lute person, ironer, asphalt dump person, and asphalt spreader boxes (all types); Concrete core cutter (walls, floors or ceilings), grinder or sander; Concrete saw person, cutting walls or flat work, scoring old or new concrete; Cribber, shorer, lagging, sheeting and trench bracing, hand-guided lagging hammer; Head rock slinger; Laborer, asphalt- rubber distributor boot person; Laser beam in connection with laborers' work; Oversize concrete vibrator operator, 70 lbs. and over; Pipelayer performing all services in the laying and installation of pipe from the point of receiving pipe in the ditch until completion of operation, including any and all forms of tubular material, whether pipe, metallic or non-metallic, conduit and any other stationary type of tubular device used for the conveying of any substance or element, whether water, sewage, solid gas, air, or other product whatsoever and without regard to the nature of material from which the tubular material is fabricated; No-joint pipe and stripping of same; Prefabricated manhole installer; Sandblaster (nozzle person), water blasting, Porta Shot-Blast

GROUP 5: Blaster powder, all work of loading holes, placing and blasting of all powder and explosives of whatever type, regardless of method used for such loading and placing; Driller: All power drills, excluding jackhammer, whether core, diamond, wagon, track, multiple unit, and any and all other types of mechanical drills without regard to the form of motive power; Toxic waste removal

TUNNEL LABORER CLASSIFICATIONS

GROUP 1: Batch plant laborer; Changehouse person; Dump

person; Dump person (outside); Swamper (brake person and switch person on tunnel work); Tunnel materials handling person; Nipper; Pot tender, using mastic or other materials (for example, but not by way of limitation, shotcrete, etc.)

GROUP 2: Chucktender, cabletender; Loading and unloading agitator cars; Vibrator person, jack hammer, pneumatic tools (except driller); Bull gang mucker, track person; Concrete crew, including rodder and spreader

GROUP 3: Blaster, driller, powder person; Chemical grout jet person; Cherry picker person; Grout gun person; Grout mixer person; Grout pump person; Jackleg miner; Jumbo person; Kemper and other pneumatic concrete placer operator; Miner, tunnel (hand or machine); Nozzle person; Operating of troweling and/or grouting machines; Powder person (primer house); Primer person; Sandblaster; Shotcrete person; Steel form raiser and setter; Timber person, retimber person, wood or steel; Tunnel Concrete finisher

GROUP 4: Diamond driller; Sandblaster; Shaft and raise work

LAB00585-003 07/01/2017

	Rates	Fringes
Brick Tender.....	\$ 31.36	17.82

LAB01184-001 07/01/2017

	Rates	Fringes
Laborers: (HORIZONTAL DIRECTIONAL DRILLING)		
(1) Drilling Crew Laborer...	\$ 34.65	13.20
(2) Vehicle Operator/Hauler.	\$ 34.82	13.20
(3) Horizontal Directional Drill Operator.....	\$ 36.67	13.20
(4) Electronic Tracking Locator.....	\$ 38.67	13.20
Laborers: (STRIPING/SLURRY SEAL)		
GROUP 1.....	\$ 35.86	16.21
GROUP 2.....	\$ 37.16	16.21
GROUP 3.....	\$ 39.17	16.21
GROUP 4.....	\$ 40.91	16.21

LABORERS - STRIPING CLASSIFICATIONS

GROUP 1: Protective coating, pavement sealing, including repair and filling of cracks by any method on any surface in parking lots, game courts and playgrounds; carstops; operation of all related machinery and equipment; equipment repair technician

GROUP 2: Traffic surface abrasive blaster; pot tender - removal of all traffic lines and markings by any method (sandblasting, waterblasting, grinding, etc.) and preparation of surface for coatings. Traffic control person: controlling and directing traffic through both conventional and moving lane closures; operation of all related machinery and equipment

GROUP 3: Traffic delineating device applicator: Layout and application of pavement markers, delineating signs, rumble and traffic bars, adhesives, guide markers, other traffic delineating devices including traffic control. This category includes all traffic related surface preparation (sandblasting, waterblasting, grinding) as part of the application process. Traffic protective delineating system installer: removes, relocates, installs, permanently affixed roadside and parking delineation barricades, fencing, cable anchor, guard rail, reference signs, monument markers; operation of all related machinery and equipment; power broom sweeper

GROUP 4: Striper: layout and application of traffic stripes and markings; hot thermo plastic; tape traffic stripes and markings, including traffic control; operation of all related machinery and equipment

LAB01414-001 08/02/2017

	Rates	Fringes
LABORER		
PLASTER CLEAN-UP LABORER....	\$ 32.50	18.29
PLASTER TENDER.....	\$ 35.05	18.29

Work on a swing stage scaffold: \$1.00 per hour additional.

* PAIN0036-007 07/01/2018

	Rates	Fringes
Painters:		
(1) Repaint Including Lead Abatement.....	\$ 24.40	14.82
(2) High Iron & Steel.....	\$ 31.04	15.44
(3) Journeyman Painter including Lead Abatement....	\$ 29.04	14.98
(4) Industrial.....	\$ 32.52	15.44
(5) All other work.....	\$ 29.04	14.98

REPAINT of any previously painted structure. Exceptions: work involving the aerospace industry, breweries, commercial recreational facilities, hotels which operate commercial establishments as part of hotel service, and sports facilities.

HIGH IRON & STEEL:

Aerial towers, towers, radio towers, smoke stacks, flag poles (any flag poles that can be finished from the ground with a ladder excluded), elevated water towers, steeples and domes in their entirety and any other extremely high and hazardous work, cooning steel, bos'n chair, or other similar devices, painting in other high hazardous work shall be classified as high iron & steel

PAIN0036-008 10/01/2017

	Rates	Fringes
DRYWALL FINISHER/TAPER.....	\$ 38.58	18.57

PAIN0036-015 06/01/2018

	Rates	Fringes
GLAZIER.....	\$ 42.15	25.83

FOOTNOTE: Additional \$1.25 per hour for work in a condor,
 from the third (3rd) floor and up Additional \$1.25 per
 hour for work on the outside of the building from a swing
 stage or any suspended contrivance, from the ground up

 PAIN1247-002 05/01/2018

	Rates	Fringes
SOFT FLOOR LAYER.....	\$ 33.85	14.56

 PLAS0200-009 08/02/2017

	Rates	Fringes
PLASTERER.....	\$ 41.26	14.46

 PLAS0500-002 07/01/2018

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 35.75	22.48

 PLUM0016-001 07/01/2017

	Rates	Fringes
PLUMBER/PIPEFITTER Plumber and Pipefitter All other work except work on new additions and remodeling of bars, restaurant, stores and commercial buildings not to exceed 5,000 sq. ft. of floor space and work on strip malls, light commercial, tenant improvement and remodel work.....	\$ 49.28	21.61
Work ONLY on new additions and remodeling of bars, restaurant, stores and commercial buildings not to exceed 5,000 sq. ft. of floor space.....	\$ 47.76	20.63
Work ONLY on strip malls, light commercial, tenant improvement and remodel work.....	\$ 36.91	18.96

 PLUM0078-001 07/01/2016

	Rates	Fringes
PLUMBER Landscape/Irrigation Fitter..	\$ 44.16	25.19
Sewer & Storm Drain Work....	\$ 44.16	25.19

ROOF0036-002 08/01/2017

	Rates	Fringes
ROOFER.....	\$ 37.07	16.17

FOOTNOTE: Pitch premium: Work on which employees are exposed to pitch fumes or required to handle pitch, pitch base or pitch impregnated products, or any material containing coal tar pitch, the entire roofing crew shall receive \$1.75 per hour "pitch premium" pay.

 SFCA0669-010 04/01/2017

DOES NOT INCLUDE PORT HUENEME, PORT MUGU, THE CITY OF SANTA PAULA, AND THAT PART OF VENTURA COUNTY WITHIN 25 MILES OF THE CITY LIMITS OF LOS ANGELES:

	Rates	Fringes
SPRINKLER FITTER..... (FIRE)	\$ 39.07	15.84

 SFCA0709-001 01/01/2018

PORT HUENEME, PORT MUGU, THE CITY OF SANTA PAULA, AND THAT PART OF VENTURA COUNTY WITHIN 25 MILES OF THE CITY LIMITS OF LOS ANGELES:

	Rates	Fringes
SPRINKLER FITTER (Fire).....	\$ 42.26	25.95

 SHEE0273-002 08/01/2017

	Rates	Fringes
SHEET METAL WORKER.....	\$ 42.28	28.33

HOLIDAYS: New Year's Day, Martin Luther King Day, President's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day & Friday after, Christmas Day

 TEAM0011-002 07/01/2017

	Rates	Fringes
TRUCK DRIVER		
GROUP 1.....	\$ 29.59	27.74
GROUP 2.....	\$ 29.74	27.74
GROUP 3.....	\$ 29.87	27.74
GROUP 4.....	\$ 30.06	27.74
GROUP 5.....	\$ 30.09	27.74
GROUP 6.....	\$ 30.12	27.74
GROUP 7.....	\$ 30.37	27.74
GROUP 8.....	\$ 30.62	27.74
GROUP 9.....	\$ 30.82	27.74
GROUP 10.....	\$ 31.12	27.74
GROUP 11.....	\$ 31.62	27.74
GROUP 12.....	\$ 32.05	27.74

WORK ON ALL MILITARY BASES:

PREMIUM PAY: \$3.00 per hour additional.

[29 palms Marine Base, Camp Roberts, China Lake, Edwards AFB, El Centro Naval Facility, Fort Irwin, Marine Corps Logistics Base at Nebo & Yermo, Mountain Warfare Training Center, Bridgeport, Point Arguello, Point Conception, Vandenberg AFB]

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1: Truck driver

GROUP 2: Driver of vehicle or combination of vehicles - 2 axles; Traffic control pilot car excluding moving heavy equipment permit load; Truck mounted broom

GROUP 3: Driver of vehicle or combination of vehicles - 3 axles; Boot person; Cement mason distribution truck; Fuel truck driver; Water truck - 2 axle; Dump truck, less than 16 yds. water level; Erosion control driver

GROUP 4: Driver of transit mix truck, under 3 yds.; Dumpcrete truck, less than 6-1/2 yds. water level

GROUP 5: Water truck, 3 or more axles; Truck greaser and tire person (\$0.50 additional for tire person); Pipeline and utility working truck driver, including winch truck and plastic fusion, limited to pipeline and utility work; Slurry truck driver

GROUP 6: Transit mix truck, 3 yds. or more; Dumpcrete truck, 6-1/2 yds. water level and over; Vehicle or combination of vehicles - 4 or more axles; Oil spreader truck; Dump truck, 16 yds. to 25 yds. water level

GROUP 7: A Frame, Swedish crane or similar; Forklift driver; Ross carrier driver

GROUP 8: Dump truck, 25 yds. to 49 yds. water level; Truck repair person; Water pull - single engine; Welder

GROUP 9: Truck repair person/welder; Low bed driver, 9 axles or over

GROUP 10: Dump truck - 50 yds. or more water level; Water pull - single engine with attachment

GROUP 11: Water pull - twin engine; Water pull - twin engine with attachments; Winch truck driver - \$1.25 additional when operating winch or similar special attachments

GROUP 12: Boom Truck 17K and above

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the

Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates

the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator

U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

