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July 24 2015

Mr. George Chow
Department of Toxic Substances Control
700 Heinz Avenue
Berkeley, CA 94710-0052

Subject: Transmittal of the Final Remedial Design and Implementation Plan
Phase 1 Area, Lendrum Court Site
Presidio of San Francisco

Dear Mr. Chow:

Enclosed for your review and approval is the *Phase 1 Remedial Design and Implementation Plan, Lendrum Court, Presidio of San Francisco,* dated July 2015, prepared by TRC Solutions for the Presidio Trust. This final draft incorporates comments received from DTSC on preliminary drafts. An electronic copy has been posted on the Trust SharePoint Site under Regulatory Exchange and a hard copy has been placed in the US mail. Additionally, electronic copies are being sent to Mr. Perry Myers and Mr. Peter Ganthungu of your office.

Please give me a call if you have any questions or wish to discuss. I can be reached at (415) 561-5421.

Sincerely,

Nina Larssen

Nina Larssen
Remediation Project Manager

Cc: Perry Myers, DTSC, (Electronic copy)
Peter Gathungu, DTSC (Electronic copy)
Bruce Handel, USCOE (Electronic copy)
Eileen Fanelli, TRC Solutions

Attachment

PHASE 1
REMEDIAL DESIGN AND IMPLEMENTATION PLAN
LENDRUM COURT
PRESIDIO OF SAN FRANCISCO, CALIFORNIA

THE PRESIDIO TRUST
103 Montgomery Street, P.O. Box 29052
San Francisco, California 94129-0052

TRC Project No. 229649

July 2015

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PHASE 1
REMEDIAL DESIGN AND IMPLEMENTATION PLAN
LENDRUM COURT
PRESIDIO OF SAN FRANCISCO, CALIFORNIA

July 22, 2015

Prepared for

THE PRESIDIO TRUST
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ACRONYMS

AB	Aggregate Base
ADMMP	Air and Dust Monitoring and Mitigation Plan
BMPs	best management practices
CCR	Construction Completion Report
CD	compact disc
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CGP	Construction General Permit
CHG	California Registered Certified Hydrogeologist
CI	Construction Inspector
CM	Construction Manager
COCs	chemicals of concern
CQA	Construction Quality Assurance
CQAP	Construction Quality Assurance Plan
CRP	Community Relations Plan
cy	cubic yards
DG	Decomposed granite
DTSC	California Environmental Protection Agency Department of Toxic Substances Control
EKI	Erler & Kalinowski, Inc.
FS	Factor of Safety
RAW	Removal Action Work Plan
HASP	Health and Safety Plan
ICs	Institutional Controls
IS	Initial Study
LUCs	Land Use Controls
MEC	Munitions or Explosives of Concern
MOA	Memorandum of Agreement
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
OM&M	Operations, Monitoring and Maintenance

OMMP	Operations, Monitoring, and Maintenance Plan
PAHs	polycyclic aromatic hydrocarbons
PE	California Registered Professional Engineer
PG	California Registered Professional Geologist
PI	Plasticity Index
PM	particulate matter
Presidio	Presidio of San Francisco
RAOs	remedial action objectives
RCRA	Resource Conservation and Recovery Act
RDIP	Remedial Design Implementation Plan
RWQCB	Regional Water Quality Control Board
Site	Lendrum Court
SMP	Soil Management Plan
SWRCB	State Water Resources Control Board
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
TEQ	toxic equivalency
TPZ	Tree Protection Zone
Trust	Presidio Trust
VMP	Vegetation Management Plan

1.0 INTRODUCTION

TRC Solutions (TRC) on behalf Presidio Trust (Trust) has prepared this Draft Remedial Design Implementation Plan (RDIP), which describes processes and procedures to implement Phase 1 remedial actions at Lendrum Court (Site; Phase 1 area), at the Presidio of San Francisco, California (Presidio) (Figure 1). Shallow soil at the Site is impacted by polycyclic aromatic hydrocarbons (PAHs), heavy metals, and dioxins and furans. The *Removal Action Work Plan* (RAW) prepared by TRC on behalf of the Trust was approved by the lead oversight agency, California Environmental Protection Agency, Department of Toxic Substance Control (DTSC). The RAW evaluated several remedial alternative mitigation strategies and selected; *consolidation, capping, with land use controls and post-remediation monitoring*, as the preferred remedy.

This RDIP addresses Phase 1 cleanup of the residential area as described in the Final RAW (TRC, 2015b) (Figure 2). The Phase 2 cleanup of the Historic Forest area will be presented in a future RDIP.

1.1 OBJECTIVES OF REMEDIAL DESIGN IMPLEMENTATION PLAN

The objectives of this RDIP are to present the technical and operational plans and engineering designs for implementation of the selected remedy for the Site. This RDIP will be used in conjunction with remedial design drawings and technical specifications to construct and implement the remedial action at Lendrum Court.

1.2 PROJECT OVERVIEW

The remedial actions described in this RDIP are in accordance with the selected remedy presented in the approved RAW for Lendrum Court, prepared by TRC on behalf of the Trust (TRC, 2015b).

1.2.1 Site Location

Lendrum Court is located in the northwest corner of the Presidio, north of Doyle Drive, in the North Fort Scott Area (Figure 1). Army-era debris and incinerator ash are present in subsurface soils in the area of Buildings 1257, 1258, 1259, 1278, 1279, 1280, and 1282, which surround Lendrum Court. The area generally slopes to the northeast (with a moderate to steep drop in elevation) in a series of terraces, likely graded as building pads for the residential units and parking lot area. The sloping areas between the terraces are generally landscaped with grass and shrubs. The northeastern slope, behind buildings 1259, 1278, and 1279, is Historic Forest with a thick understory of small statured trees and shrubs.

1.2.2 Remedial Unit

Several phases of site investigation were conducted at the Site in response to tenant complaints of glass fragments in soil surrounding the residential buildings. These investigations identified a soil layer containing debris beneath much of the Lendrum Court area, where bits of glass and debris had been brought to the surface as a result of gopher activity. The layer, where present, is first encountered at depths of approximately 0.5 to 2.5 feet beneath overburden soil in the central part of Lendrum Court and is exposed at the ground surface in the area of the Historic Forest east of Building 1278. The debris thickness varies from approximately 3 inches to 5 feet over an approximate 2.4 acre area (Figure 3).

The chemicals of concern (COCs) in soil identified in the RAW (TRC, 2015b) that pose a potential risks to human health and/or the environment are listed below:

Soil Description	Polycyclic Aromatic Hydrocarbons (PAHs)	Metals	Dioxins/Furans
Debris Filled Area	Benzo[a]pyrene Benzo[a]pyrene Equivalents Dibenzo[a,h]anthracene	Arsenic Barium Copper Lead Zinc	2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) toxic equivalency (TEQ)
Outside Debris Fill Area	None	Lead	TCDD TEQ

1.2.4 Selected Remedial Action

The RAW provided an analysis of remedial alternatives for Lendrum Court (TRC, 2015b) and identified consolidation and capping with land use controls (LUCs) and post-remediation monitoring as the preferred remedy. This alternative combines multiple remedial technologies including; removal and/or consolidation of Army-era debris and incinerator ash from the shallow

sub-surface soil, placement of a protective soil cover layer, implementation of Institutional Controls (ICs) through the use of LUCs, and implementation of a post-remediation Operations, Monitoring, and Maintenance Plan (OMMP) to monitor the capped portions of the Site.

As described in the RAW, the site will be addressed in two phases of remedial construction. This RDIP addresses contamination within the vicinity of the buildings surrounding Lendrum Court (Phase 1 area; landscape area), as shown on Figure 2. The Site areas requiring LUCs will be based on the estimated extent of soil containing COCs at concentrations above Site cleanup levels. Contaminated material that cannot be consolidated within the capped area limits will be excavated, characterized, and transported for off-site disposal at a licensed landfill facility. Confirmation samples will be collected from areas designated for clean closure to confirm that COCs are not present above Site cleanup levels.

Construction activities will be conducted in a manner to avoid and/or mitigate potential impacts to the Site's ecological resources.

1.3 REPORT ORGANIZATION

This RDIP has been prepared in accordance with the DTSC's Guidance Document *Environmental Oversight Agreement* (DTSC RDIP Guidance; DTSC, 2004). The remainder of this RDIP is organized as follows:

- Section 2: Remedial Action – Provides a more detailed description of remedial actions to be implemented as part of Phase 1.
- Section 3: Remedial Design – Provides details on design elements of the remedial action and describes the planned activities required to implement the remedy in the Phase 1 area, including project requirements, design basis, and construction requirements.
- Section 4: Long-Term Monitoring – Provides details on long-term cap inspection activities.
- Section 5: Land Use Controls – Identifies the limits of the remediation area and outlines site-specific restrictions and requirements associated with the future operation and maintenance of the Site. Provides details on preserving the integrity of the cap and limits future land use activities.
- Section 6: Project Documentation, Reporting, and Schedule – Provides an overview of documentation, reporting, and scheduling activities to be performed during remedial action implementation.
- Section 7: References – Provides a list of documents referenced in this RDIP.

Figures, tables, and appendices are included at the end of this RDIP.

2.0 REMEDIAL ACTION

The following subsection describes the Phase 1 remedial action and implementation approach for Lendrum Court. LUCs will be implemented as described in the *California Environmental Quality Act Initial Study* (CEQA IS: Appendix G of the RAW; TRC 2015b).

2.1 DESCRIPTION OF REMEDIAL ACTION OBJECTIVES (RAOS)

Considering the current and planned future land use and the Presidio-Wide Cleanup Levels Document, the RAOs for Lendrum Court are:

- **Protection of human health and the environment consistent with the intended future land use:** As required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the remedial alternatives considered must be protective of human health and the environment. Protection of human health and the environment can be met in several ways, including cleanup of COCs to meet the applicable Site-specific Lendrum Court cleanup levels or using LUCs to prevent exposure to COCs.
- **Cost-effective cleanup of the site:** Cost-effectiveness is an objective addressed by identifying remedial alternatives that meet all remedial objectives for the least cost. In practice, not all remedial alternatives meet all remedial objectives equally; therefore, the most cost-effective alternative is not necessarily the least cost alternative.
- **Compliance with ARARs:** Remedial alternatives are evaluated for their ability to meet chemical-, location-, and action-specific requirements that include specific regulations or advisories applicable to the Presidio.

2.2 DESCRIPTION OF REMEDIAL ACTION AND IMPLEMENTATION APPROACH

The selected remedial action at the Site includes excavation and disposal of organic-rich topsoil, re-grading and compaction of contaminated soil and debris, and capping in place; in support of the effort the project also involves site preparation, securing existing utilities and roadways, and site restoration activities. The following presents an outline of the project activities and sequencing of work activities to implement the remedy for the Phase 1 area:

<u>SITE PREPARATION:</u>

- Mobilization of construction personnel, field equipment, and materials to the Site.
- Stake and delineate work areas and equipment and soil stockpile staging areas.

- Establish traffic flow routes.
- Establish Site security, which will include placement of fencing and gates to restrict access to work areas.
- Clearing and grubbing of existing vegetation.
- Delineate tree protection zones (TPZ), which will extend radially 20 feet from the trunk of trees that are intended to be retained during Phase 1 remedial construction.
- Site demolition to include removal of designated hard scape areas such as concrete patios, stairways, and asphalt walkways, as designated on project plans.
- Secure and safeguard existing utilities that exist within work areas; utilities will be protected in-place.
- Establish lines of communication between stakeholders.

ENVIRONMENAL PROTECTION and PUBLIC SAFETY:

- Public outreach and communication in conformance with the approved Community Outreach Plan for Lendrum Court (TRC 2015a).
- Establish storm water management BMPs and set up dust monitoring stations. Implementation of erosion control measures in substantial conformance with California's General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (General Permit) Order No. 2009-0009-DWQ [National Pollutant Discharge Elimination System (NPDES) No. CAS000002] as amended by Orders 2010-0014-DWQ and 2012-006-DWQ issued by the State Water Resources Control Board (SWRCB).
- Dust monitoring.
- Installation of dust mitigation engineering controls established in accordance with Best Management Practices (BMPs) used at the Presidio, including taping of windows nearby to the work zones, covering exposed soils or spraying exposed soils with an all-natural, biodegradable dust control product (e.g., Posi-Cube), establishing surface water runoff and erosion controls, and regular street sweeping of paved roads.
- Installation of temporary exclusion fencing around the active work areas.
- Establishment of traffic control signage and devices as needed at points of entry to public roadways.

REMEDY IMPLEMENTATION - Top Soil Excavation, Waste Consolidation, and Capping:

- Excavate the organic-rich topsoil, which is estimated to extend 4 to 6 inches below existing grade.

- Characterize, transport, and dispose of the excavated organic-rich top soil material to permitted disposal facilities.
- Removal of impacted soil from clean closure areas and consolidation of waste to areas designated to be capped; this step will involve the handling of potential hazardous waste materials; material handling must minimize the creation of dust or placement of soil stockpiles that may result in materials escaping the designate work areas.
- Stockpiling, characterization, transport and disposal of excess excavated material to approved landfills.
- Re-grading and compaction of the excavated surface to form the foundation layer (i.e., rough grade) for the cap. The preferred soil borrow for the cap construction is native soil material from Lawrence Berkeley National Labs, which is classified as gravelly loam.
- Confirmation Soil Sampling and Analytical Testing:
    - Sampling and testing of the soil during excavation to confirm that remedial cleanup levels are attained in clean closure areas.
    - Sampling stockpiles of excavated material for disposal.
- Construct protective soil cap:
    - Install protective gopher wire across area designated for soil capping. The gopher wire must be covered by a minimum of 1.5 feet of cap material below final grades.
    - Place and test compact borrow soil over area designated for capping. Soil to be placed and compacted in 8-inch lifts per recommendation of Geotechnical Engineer (GE).
    - The tree located within the island of Lendrum Court is intended to be retained during Phase 1 remedial construction. Within the island area, cap construction will consist of removing existing surficial plant litter, placement of gopher wire, and placement of mulch on top of the gopher wire. Cap design around this tree is presented in Detail 1 on Sheet C-113 (Appendix A) and discussed in Appendix I.
    - The trees located near the northeast corner of Building 1278 are intended to be preserved during Phase 1 remedial construction. Cap construction within the modified TPZ[1] for these trees will consist of excavating 6 to 8 inches utilizing hand tools or small track mounted equipment and placing 6 to 8 inches of clean imported soil underlain by gopher wire. Cap design around these trees is

[1] Modified TPZs were designed based on tree-specific features such as species and anticipated rooting patterns.

presented in Detail 2 on Sheet C-113 (Appendix A) and discussed in Appendix I.

- On the backside of Buildings 1259, 1278, and 1279 (i.e., east side of Buildings 1259 and 1278 and northeast side of Building 1279; beneath the second story decks), aggregate base (AB) pads will serve as the protective cap. As shown in Detail 1 on Sheet C-119, the cap in this area will consist of 6-inches of compacted AB placed on top of 6-inches of clean imported soil and underlain with gopher wire and geotextile fabric. The AB pads will be bordered by a one-foot wide, 6-inch deep layer of ¾-inch gravel to minimize the potential for erosion caused by downspouts discharging onto the AB pads.

SITE RESTORATION and PROJECT CLOSE OUT:

- Construction of hardscape elements (patios, sidewalks, building drainage curbs, and pathways).
- Construction of irrigation system to support revegetation of project area.
- Planting in accordance with the Trust's Management Plan (PTMP; Trust, 2002), and landscaping plans for Lendrum Court.
- Contractor demobilization, which will involve the removal of construction equipment and materials from the project site.
- Prepare Construction Completion Report, and obtain Owner and Regulatory agency buy-off that project has been completed to design specifications.

POST-CLOSURE OPERATIONS AND MAINTENANCE:

- Upon completion of the construction phase, implement Post-Closure Operations and Maintenance Plan.

In addition to the project plans and specifications, several support documents are included as appendices to this RDIP. The support documents include;

- Construction Storm Water Pollution Protection Plan (Appendix C).
- Project-specific Health and Safety Plan (Appendix D).
- Construction Air and Dust Monitoring and Mitigation Plan (Appendix E).
- Construction Quality Assurance Plan (Appendix F).
- Confirmation Soil Sampling and Analysis Plan (Appendix G).
- Project Schedule (Appendix H).
- Memorandum on Trees to be Preserved During Phase 1 Construction (Appendix I).

3.0 REMEDIAL DESIGN

This section describes the various elements of the remedial design for the Phase 1 area, which is shown of Figure 2. Key elements of the remedial design include: top soil removal by excavation, consolidation and compaction of contaminated soil and debris to designated capping areas, re-grading and compaction of waste soil to form foundation for placement of the soil cap, re-vegetation of soil cap, placement of erosion control measures to protect final grades from potential soil erosion, and requirements for site access and site management. Remedial design drawings and technical specifications for the project are included in Appendix A. Excavation, compaction, and re-grading activities, including earthwork adjacent to existing structures, will be conducted in accordance with the recommendations presented in the Geotechnical Evaluation (Appendix B of this RDIP).

3.1 PROJECT REQUIREMENTS

The Phase 1 remedial action will be conducted in an area adjacent to residential housing units and natural resources, including established trees and adjacent forest. As such, several project constraints exist to protect sensitive areas. The Lendrum Court remedial design plans have been constructed to account for the following items which are summarized below and presented in Table 1:

- Public safety and community outreach;
- Environmental controls (i.e., dust, stormwater and erosion controls);
- Slope stability and site grading;
- Irrigation and landscape improvements; and
- Protection of natural resources.

3.2 DESIGN BASIS

This section describes the various elements of the remedial design for the Phase 1 area, which is shown of Figure 2. Remedial design drawings and technical specifications are included in Appendix A. Soil excavation, compaction, and re-grading activities, including earthwork adjacent to existing structures, will be conducted in accordance with the recommendations presented in the Geotechnical Evaluation (Appendix B).

3.2.1 Limits of Work

The Phase 1 project limits are shown on Figure 2. This area encompasses (1) the residential portion of the site, where Army-Era incinerator waste is present and the cap will be constructed, and (2) the adjacent areas for supporting construction operations, including staging and storage areas.

3.2.2 Grading Approach and Plans

The final grading contours for Lendrum Court are designed to be stable, promote surface water runoff, and support vegetation as the landscaped portion of the neighborhood. The grades were developed considering: (1) surrounding topography, (2) existing waste fill, (3) slope stability requirements, (4) constructability requirements for the rough grade and final cover, (5) minimum required gradients for adequate drainage, and (6) excavations into serpentinite bedrock should be avoided to the extent practicable.

The existing grade, rough grade, and final grades are presented on Sheets C-101, C-105, and C-106 (Appendix A), respectively. Beyond the above criteria, specific elements of the grading plans include:

- Realignment of the asphalt concrete/aggregate base (AC/AB) path, located in the northwestern portion of the Site;
- Demolition and reconstruction of the curb in front of Buildings 1259 and 1278 to create an additional parking space;
- New concrete patios and sidewalks that will serve as a cap;
- AB pads behind Buildings 1259, 1278 and 1279;
- Alternative cap features around the trees to be retained;
- Cap conformance with the serpentinite bedrock outcrop, located in the southern portion of the Phase 1 area near the intersection of Lendrum Court and Armistead Road; and
- Landscape features including a new decomposed granite (DG) path and raised planter boxes.

3.2.3 Geotechnical Evaluation

Existing site soil conditions have been investigated and evaluated by TRC and the findings and recommendations are presented in Geotechnical Evaluation (Appendix B). The Geotechnical Evaluation includes: a discussion of existing geological and site soil conditions, evaluation of potential geological hazards, the results of a slope stability analysis, and earthwork recommendations. The recommendations presented in the Geotechnical Evaluation were used to

develop the remedial design and are reflected in the design drawings and specifications. Throughout the project, the Contractor will implement construction activities in accordance with the recommendations in the Geotechnical Evaluation report. A summary of the primary considerations and recommendations presented in the Geotechnical Evaluation are outlined below in the following subsections.

3.2.3.1 Existing Site Conditions

Site conditions were evaluated based on a review of available documents and observations from a field investigation performed by TRC on April 23, 2015. The field investigation consisted of a surface reconnaissance and a subsurface exploration program using hand auger drilling equipment. A summary of the primary observations is provided below:

- Subsurface conditions in the Phase 1 landscape area generally consisted of medium stiff to stiff lean clay soil. The clay soil included varying amounts of sand and gravel.
- The approximate extent of the serpentinite bedrock outcrop near the southern portion of the Phase 1 area was mapped (see estimated location of bedrock outcrop shown on Figures 4 and 5).
- Laboratory testing was performed to evaluate the natural moisture content of nine soil samples by Method ASTM D2216.
- A Plasticity Index (PI) test was performed on one representative lean clay soil sample (Method ASTM D4318). The test resulted in a PI of 17, indicating low to moderate plasticity and expansive potential of the near surface soils.
- During the April 23, 2015 field investigation, samples were collected to evaluate the extent to which naturally occurring asbestos (NOA) was present in overburden soils. The analytical results of this sampling are presented and discussed in the Air and Dust Monitoring and Mitigation Plan (Appendix E).

3.2.3.2 Geologic Hazards

The Geotechnical Evaluation discusses the potential for the Site to be effected by geological hazards including: fault ruptures, ground shaking, liquefaction, dry seismic settlement, lateral spreading, and landslides. The Site is located in an area of high seismicity, therefore, the Site could experience strong shaking during a seismic event. However, based on current information, TRC's professional opinion is that there is a low risk of fault rupture, liquefaction, dry seismic settlement, lateral spreading, or landslides at the Site during a seismic event. If a seismic event were to result in formation of sags, reversal of drainage gradients, slumping or cracking of the

soil cap, then maintenance will be required to re-establish positive flow off of the Site and or repair breaches in the cap.

3.2.3.3 Earthwork Recommendations

Earthwork activities during remedial construction at the Site will include: site preparation and clearing; excavation; consolidation and compaction; re-grading; and cap placement. A summary of the primary recommendations pertaining to the remedial design are provided below:

- Prior to re-grading surfaces, exposed surface soils in the areas to receive fill should be scarified to a maximum depth of 6 inches, moisture conditioned, and compacted.
- Disturbance of bedrock at the site should be avoided to the extent practicable.
- Side slopes of excavations in building and pavement areas should be sloped at inclinations no greater than 3H:1V (horizontal:vertical).
- Subdrains should be installed as directed by engineer in any areas where seepage is observed.
- Fill should be placed in lifts no greater than eight-inch lifts in uncompacted thickness.
- Soil at depths greater than 18 inches below final grade should be compacted to a minimum of 90 percent relative compaction at optimum moisture content.
- Import fill material for use in the soil cap should be inorganic and have a PI between 10 and 20. TRC's objective is to identify a source of import soil that contains no rocks or lumps larger than 3-inch in diameter; however, rocks or lumps up to 6-inch in diameter are permitted (Appendix B). Additionally, no more than 15 percent of the rocks or lumps should exceed 2½-inch in diameter.

With the exception of bedrock outcroppings, the maximum inclination of the final soil cap will be 2H:1V; however, a maximum slope of 2½H:1V is preferred. A representative from TRC's geotechnical group should observe and test the geotechnical aspects of the grading and earthwork for general conformance with the recommendations detailed in the Geotechnical Evaluation (Appendix B).

3.2.3.4 Slope Stability Analysis

Static and seismic slope stability analyses were performed for the proposed slopes. For this analysis, stability was expressed as a factor of safety (FS) that is calculated for static and seismic conditions. The stability of the proposed fill slope was evaluated using the computer program Slope/W (released 2012) and the following input parameters: slope geometry, soil layer thickness, soil type, soil unit weights, soil strength parameters, and groundwater conditions.

The slope stability analyses indicate the FS for static and seismic conditions at 2.58 and 1.52, respectively. These FS exceed the minimum FS values for static and seismic conditions recommended by The Southern California Earthquake Center for proposed developments at 1.5 and 1.15, respectively, (DMG SP 117A, 2008). Based on the Geotechnical Evaluation, the final grades presented in the design drawings (Appendix A) are acceptable.

3.2.4 Surface Water Management

The proposed remediation activities are scheduled for the summer and fall 2015, which is considered the dry season. As such, significant storm events are not anticipated during this phase of work. Regardless, stormwater BMPs discussed in the SWPPP (Appendix C) will be implemented prior to construction. Before the rainy season, gutters and downspouts for the buildings located within the Site would be inspected, cleaned, and repaired, as needed, and crushed rock will be placed beneath downspout exits to promote energy dissipation.

For the first year following Phase 1 construction, monitoring will be performed in substantial conformance with the State Water Resources Control Board (SWRCB) General Permit (discussed in Section 3.3.1.1.), where monitoring activities will occur: (1) quarterly, and (2) before and after each rain event of 0.5 inches or more. In the second year, monitoring (cap inspections only) will be performed quarterly and will be discontinued at the end of the second winter season, after which only long-term cap OM&M will continue.

3.2.5 Conformance Between Phase 1 and 2 Areas

At the interface between the Phase 1 and Phase 2 (Historic Forest) areas in the western portion of the Site, the soil cover constructed in the Phase 1 area will be keyed in at the base of the engineered slope. Details depicting the key design in this area are shown on the design drawings in Appendix A.

Construction activities (e.g., excavation and grading) will not extend into the Phase 2 area during 2015. Remedial activities in the Phase 2 area are planned for summer and fall 2016 and will include tying the soil cap from the Phase 2 area in with the Phase 1 soil cap.

3.3 CONSTRUCTION REQUIREMENTS

3.3.1 Pre-Construction Activities

Pre-construction activities include development of project plans, specifications, and support documents (presented as appendices of this RDIP), establishing administrative and engineered

project controls, obtaining regulatory and stakeholder approvals, and providing public outreach and education regarding implementation of remedial actions at Lendrum Court.

3.3.1.1 Regulatory Approvals

Prior to construction, the Trust will receive necessary approvals from DTSC, the state lead regulatory agency for remedial actions at the Site. DTSC review and approval of the following key components of the remedial action is required:

- Lendrum Court RAW (TRC, 2015b).
- Lendrum Court CEQA IS (RAW Appendix G; TRC, 2015b).
- This RDIP prior to commencement of field activities.

During execution of the remedial action, the Trust will implement erosion control and storm water management measures in substantial conformance with the National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) for Storm Water Discharges Associated with Construction Activity, Order No. 2009-0009-DWQ, NPDES No. CAS000002 as amended by 2010-0014-DWQ and 2012-006-DWQ. This CGP, enforced by the State Water Resources Control Board (SWRCB), regulates pollutant discharges in surface or storm water associated with construction activities. TRC has prepared a SWPPP for Phase 1 remedial construction at Lendrum Court, which is presented in Appendix C of this RDIP. The Contractor will perform construction in accordance with the SWPPP; however, as a federal agency implementing a remedial action under CERCLA, the Trust will not submit a Notice of Intent (NOI) for coverage under the State of California's CGP. The goal of the Trust is to complete grading activities and installation of site stabilization measures prior to the wet weather season, which begins approximately around October 1. In the event that work extends past October 1, 2015, additional BMPs will be employed to prior to wet weather or predicted storms. Prior to the start of construction, the Trust will:

- Notify DTSC two (2) weeks prior to commencing with construction activities;
- Conduct a project kickoff meeting attended by the Trust, U.S. Army, DTSC, and other stakeholders to coordinate remedial construction activities;
- Obtain an excavation permit from the Trust;
- Review and approve the Contractor's submittals; and
- Provide a schedule that shows coordination with other concurrent construction activities in the vicinity of the Site.

Any conditions, restrictions, and/or requirements imposed by the above activities will be incorporated by addendum into the scope of remedial activities described in this RDIP.

3.3.1.2 Protection of Resources

A reconnaissance-level survey of the Site was conducted by H.T. Harvey & Associates on April 2 and 3, 2015 to (1) assess existing biotic habitats and general wildlife communities, (2) assess the Site for its potential to support special-status plant and animal species and their habitats, and (3) identify potential jurisdictional habitats, such as Waters of the U.S./State and riparian habitat. Prior to conducting fieldwork, H. T. Harvey & Associates ecologists collected and reviewed information concerning threatened, endangered, and other special-status species and habitats of concern from several sources.

The results of the survey indicated that no special-status plant species have the potential to occur on the Site. H.T. Harvey & Associates' analysis concluded that one special-status animal species, the olive-sided flycatcher, could potentially utilize the Site for breeding, but remedial activities would not have a substantial adverse effect on regional populations (Appendix G of the RAW; TRC 2015b).

The Site is located along the Pacific Flyway for birds, therefore, migratory birds have the potential to be present at the Site. If vegetation removal/clearing and grubbing were to occur during the bird breeding season (February 1st through August 31st), birds could be nesting and nests could be either physically disturbed/destroyed or indirectly disturbed by remedial activities. Vegetation will be removed at the onset of each phase of work and will be performed outside of bird nesting season to the extent practicable. If tree removal or vegetation clearance is performed during bird nesting season, to ensure compliance with the Migratory Bird Treaty Act and California Fish and Game Code, a pre-construction nest survey will be performed prior to vegetation clearance. If active nests are found, an appropriate buffer (typically 300 feet for raptors and 100 feet for non-raptors) will be established around active nests.

H.T. Harvey & Associates performed a tree survey at the Site on April 8, 2015. Results of the tree survey included: species, diameter at breast height and coordinate data. Within the Phase 1 area, the tree located within the island of Lendrum Court and the trees located near the northeast corner of Building 1278 are intended to be protected in place. The other eleven trees existing in the Phase 1 area will be removed (Figure 2). Trees located within the Phase 2 area of the Site are intended to be retained during Phase 1 remedial construction.

The Trust and its Contractor(s) will monitor implementation of the remedial action and identify natural resources to be protected following established Trust protocols and procedures. These protocols and procedures will be discussed at a pre-construction kickoff meeting.

3.3.1.3 Health and Safety

A project-specific Health and Safety Plan (HASP) for implementation of the remedial action at the Site is presented in Appendix D. Within the specifications included in the Contract Documents for Phase 1 remedial construction, the Trust will require the Contractor to prepare a HASP as part of project submittals and develop and implement health and safety protocols that, at a minimum, conform to the general requirements of Federal and State Occupational Safety and Health Administration standards for hazardous waste operations. The Contractor will take responsibility for all job-site safety issues, safety orders, laws and regulations, training, and medical monitoring of personnel. The Contractor's HASP will reflect a commitment to exercise extreme care when handling or disposing of materials or substances that are identified as hazardous substances.

A copy of the Contractor's HASP will be available within the work area at all times and will apply to all personnel working at or visiting the Site, including, but not limited to, the Contractor's employees, suppliers, vendors, truck drivers, and the Trust's representatives. The Contractor's Project Health and Safety Representative will verify that site workers and visitors are in compliance with applicable health and safety requirements, and take action to ensure compliance where deficiencies are identified.

3.3.1.4 Traffic, Pedestrian, and Parking Management

Access by residents to parking areas and their homes will be maintained throughout the construction. Parking may be periodically restricted in the North Fort Scott neighborhood to support construction activities. Site workers will not be permitted to park non-construction vehicles within the neighborhood.

All roads in the vicinity of the site would remain accessible to the public throughout the duration of the project. Access and haul routes for the project are shown on Figure 6. The contractor will mobilize equipment and workers to the project staging area, which would be fenced to exclude the public. Access to the Site will be established from the staging area (located at the overlook and parking area at the junction of Lendrum Court and Lincoln Boulevard) and the storage area (located on the South side of Armistead Road) (Figure 7).

Traffic control signage and devices would be established at points of entry to public roadways, and flaggers would be utilized, as necessary, to control traffic during peak transit hours. At a minimum, traffic control staff will be employed on all haul days to coordinate traffic in the local area. Figure 7 presents a Traffic and Signage Plan, which shows the location of signs that will be posted during construction. Additional signage and/or flagmen will be intermittently used to coordinate access to specific areas of the Site during construction. The segment of the asphalt pedestrian path located northwest of Building 1257 will be intermittently closed during construction. The portion of the pedestrian path located beyond the limits of the site will remain accessible to the public by a detour route via Armistead Road and Lendrum Court. During periods of closure, signage will be posted as shown in Figure 7.

Informational signs for the project will be prepared by the Trust and posted at appropriate locations within the project area.

3.3.1.5 Air and Dust Mitigation and Monitoring Plan

Construction activities associated with implementation of remediation at the Site will involve equipment and vehicles traveling over dirt surfaces and soil removal and handling. These activities generate dust in the form of particulate matter (PM). To mitigate fugitive emissions of PM and maintain acceptable levels of PM in air at the perimeter of the Site, the Contractor will implement standard BMPs in accordance with the Air and Dust Monitoring and Mitigation Plan (ADMMP), included as Appendix E. The ADMMP describes the strategies for dust management and air monitoring during remedial construction activities at the Site and identifies protocols to achieve the following objectives:

- Identify action levels intended to be protective of public and worker health;
- Assess the need for and effectiveness of dust control measures;
- Document air quality during onsite earthmoving activities; and
- Identify BMPs for dust mitigation during remedial construction at the Site.

Action levels presented in the ADMMP for maximum concentrations of respirable particulate matter, lead, PAHs, and dioxins/furans are intended to be protective of adverse health impacts to workers and nearby off-site receptors. BMPs for dust control are expected to mitigate the risks of inhalation, ingestion, and skin contact with particulate matter and target compounds. Recommendations for baseline and construction air monitoring are detailed in the ADMMP.

3.3.1.6 Public Outreach

On behalf of the Trust, TRC prepared a *Community Relations Plan for Lendrum Court* as a supplement to the *Community Relations Plan (CRP), Presidio of San Francisco, California*, which was published in 2001 to describe the communication program being implemented at the Presidio. Key elements of the 2001 CRP include support and involvement of the Presidio Restoration Advisory Board (RAB); public meetings, workshops, and presentations; public comment periods; factsheets, newsletters and media outreach; and information repositories. The *Community Relations Plan for Lendrum Court* was approved by DTSC on May 19, 2015 (TRC, 2015a).

The *Community Relations Plan for Lendrum Court* describes the communication plan for exchanging information between the Trust and the public, including neighborhood groups and the greater Presidio community, during the investigation and cleanup activities at Lendrum Court in the Presidio of San Francisco, California. The goal of this plan is to promote communication, cooperation, and understanding between the Trust, who is responsible for the cleanup activities, and the public, who are affected by these activities. Moreover, the Plan is prepared to ensure that interested parties and the general public receive accurate, timely, and pertinent information, and are provided an opportunity to comment on and share their concerns about the environmental remediation activities at Lendrum Court. The Lendrum Court Community Involvement Program includes:

- Notification via email to neighbors of the North Fort Scott, Lendrum Court and Pilots Row neighborhoods regarding Trust and DTSC activities relative to site cleanup.
- Continued community meetings and presentations updating the public on the status of site investigation and remediation activities.
- Posting of key regulatory communications, reports, and public meeting minutes on the Trust's website.
- A minimum public comment period of 30 days for the remedy selection document.
- Maintenance of a publically accessible website to keep the public informed about Lendrum Court and to post available documents including reports, DTSC comments on cleanup-related documents, meeting summaries, and presentations; the website address is: http://www.presidio.gov/about/Pages/Lendrum-Court-Remediation.aspx.

In addition, targeted signage and flyers detailing project purpose, closure areas, detour routes, alternative parking areas, and contact information for the project will be available in several areas around the project area.

3.3.1.7 Utility Evaluation

Prior to construction activities, the construction areas will be marked with white paint according to Underground Services Alert (USA) requirements, and USA will be notified at least three business days (i.e., 72 hours) prior to the start of excavation or demolition activities at the Site. The USA ticket will be maintained as long as work continues at the site and will be updated, as necessary. In addition, The Contractor will also obtain a Dig Permit from the Trust Permitting Department prior to any excavation or demolition activities. The locations of underground utilities, including storm drains, water, sewer and gas lines, will be confirmed prior to excavating in the vicinity of these utilities.

All existing utilities identified at the Site will be protected in place during construction. Temporary water and gas outages may be required for safety purposes. Overhead electrical and communication lines will require protection during tree work or movement of large construction equipment in the vicinity of these utilities. Storm drain inlets will be protected during all construction activities, as specified in the SWPPP (Appendix C). Utility access boxes and manholes will be elevated, as necessary, to conform to final grades.

3.3.2 Construction Activities

The following sections describe the construction activities that must be completed prior to remediation Lendrum Court. Remedial construction activities will be conducted in accordance with California Code of Regulations, Title 8, including but not limited to section 5192 and applicable DTSC guidance.

3.3.2.1 Temporary Facilities, Exclusion Zones, and Fencing

The Trust will hire a qualified Contractor to implement the remedy. The Contractor will supply a trailer to be installed at the staging area shown on Figure 7 or at a location agreed to by the Trust. Temporary utility services required for the project will be provided by the Contractor though coordination with Trust Permitting Department and submittal of a Utility Service Application. Trust utility services may include temporary water, sewer, and electricity during construction or for landscaping and/or forestry irrigation. Additionally, the Contractor will mobilize, maintain and regularly service, temporary sanitary facilities that will be sufficient for the project crew, including the Trust representatives and other stakeholders.

Remediation work in the Phase 1 area would be performed utilizing a segmented approach to reduce the impact to the residents of the neighborhood. Prior to the start of construction activities

in a given portion of the Site, the post and cable fencing that was installed as a temporary measure to deter pedestrian traffic will be replaced by more prominent construction fencing to restrict access. Warning signs will be posted on the protective fencing to notify the public of construction activities. Project staging or storage areas, including areas of temporary soil stockpiles, will be fenced to exclude the public. Temporary soil stockpiles will be covered to prevent wind or water erosion. Within the fenced areas, the Contractor will establish an appropriate exclusion zone, decontamination zone, and support zone. These zones will be detailed in the Contractor's HASP.

3.3.2.2 Decontamination Activities

All vehicles, equipment, and personnel will be decontaminated prior to exiting established exclusion zones. Contaminants such as accumulated soil, dust, and other contamination from equipment will be removed at the decontamination station(s). Onsite management and off-site disposal of decontamination wastes, such as wash water and contaminated protective equipment used by onsite personnel, will be described in the Contractor HASP. A Decontamination Plan will be prepared by the Contractor for the proposed soil removal activities as part of submittals and will describe specific procedures to be used during soil removal activities to reduce the potential for contaminants to be transported off-site. Rumble strips or a tire washing facility would be established to ensure that vehicles leaving the site and staging areas do not carry soil onto public roads. In addition, all equipment and tools used at the site will be cleaned of all soil, plant parts, and other potentially harmful materials prior to being brought onto the site.

3.3.2.3 Construction Quality Assurance (CQA)

3.3.2.3.1 Introduction and Purpose

A Construction Quality Assurance (CQA) program provides definition of the materials and procedures to be used during construction and assures regulatory agencies that construction materials will be tested, installed, and monitored in accordance with the design plans and technical specifications, accepted civil engineering practices, and applicable CQA requirements.

On behalf of the Trust, TRC has prepared a Construction Quality Assurance Plan (CQAP), which is presented in Appendix F. The purpose of the CQAP is to:

- Provide clarification as to the roles and responsibilities of participating parties, structure of meetings to be held during construction, and general inspection and documentation procedures;
- Establish procedures that will assure work activities are performed in accordance with the

project design to achieve performance requirements; and

- Include requirements for construction procedures, CQA oversight, field and laboratory testing.

3.3.2.4 Construction Monitoring

Construction monitoring activities will be performed to facilitate Site safety. Specific monitoring programs that will be employed during construction include monitoring for munitions and explosives of concern (MEC), natural resources, and dust. Pre- and post- construction dust monitoring is discussed in Sections 3.3.1.5., and MEC and natural resource monitoring is detailed below.

3.3.2.4.1 Munitions and Explosives of Concern (MEC)

If a MEC or potential MEC is discovered during the construction activities, the Contractor will cease work in the affected area, remove personnel from the affected area, and contact the Trust Project Manager. The Project Manager will contact the following authorities in the order shown:

1.) Trust Safety and Occupational Health Manager; and
2.) U.S. Army.

The Trust Project Manager will coordinate with the US Army, in accordance with the Memorandum of Agreement (MOA) between the Trust and the Army (Trust and DOD, 1999). The Contractor will resume work only upon authorization from the Trust.

3.3.2.4.2 Natural Resource Monitoring

Migratory birds, trees, and other vegetative resources have been identified as the natural resources that exist or have the potential to exist at the Site. To mitigate impacts to natural resources, the following construction monitoring protocols will be implemented during remedial construction:

Migratory Birds – The bird breeding season for the Site is from February 1st through August 31st (Appendix G of the RAW; TRC 2015b).

- As discussed in Section 3.3.1.2, if vegetation clearance is performed during bird breeding season, a pre-construction nesting survey will be performed prior to tree removal or vegetation clearance.

- Where tree removal is required within the Phase 1 area, removal of trees will be coordinated with Trust forestry and natural resource staff to avoid potential disruption to nesting or migrating birds.
- Removal of vegetation will be coordinated to reduce potential disruption to nesting or migrating birds. Remaining vegetation will be controlled to keep it 6 inches in height or less throughout the limits of work to avoid creating areas attractive to birds for nesting.

Trees – Within the Phase 1 area, the tree located within the island of Lendrum Court and the trees located near the northeast corner of Building 1278 are intended to be protected in place. Additionally, trees located within the Phase 2 area of the Site are intended to be retained during Phase 1 remedial construction.

- All work performed within a TPZ, which extends radially 20 feet from the trunk of the tree, will be overseen by an arborist. Excavations within this area will be limited to hand digging, air spading or excavation using a mini-track excavator.

Other Vegetative Resources – Vegetation removed during clearing and grubbing activities will be off hauled as green waste. Following remedial actions, vegetation will planted in the soil capped areas in accordance with the Vegetation Management Plan (VMP; Trust and NPS, 2001) and consist of a mix of native and landscape plants. Where practicable, planting elements of the conceptual landscape plan for Lendrum Court will be retained.

3.3.2.5 Excavation, Waste Consolidation and Grading

Excavation, consolidation and grading will alter the current site topography in some areas and result in development of new site topography, which may affect surface drainage. The current and final grades at the Site are shown on Figures 2 and 5, respectively. Additionally, the rough grade (i.e., ground surface elevation prior to cap placement) is shown on Figure 4.

In the areas designated for clean closure areas (shown on Figure 5), soil will be excavated and consolidated within the areas designated for capping. Confirmation soil samples will be collected from the clean closure areas as described in the Confirmation Sampling and Analysis Plan (CSAP), which is presented in Appendix G. To the extent specified in the CSAP, excavation will continue in the clean closure areas until confirmation samples indicate that remaining soil meets remedial goals for clean closure.

Excavation will be accomplished using front-end loaders, bulldozers, or backhoes, where equipment usage will depend on site grades, access, and equipment restriction zones. The excavated material will be placed in areas identified for consolidation of impacted soils or

stockpiled for future consolidation or disposal off-site. The Contractor will prepare and maintain staging facilities for stockpiling excavated contaminated soil, concrete and/or asphalt debris. These stockpiles may be unlined in areas yet to be excavated, but will be covered with weighted plastic (Visqueen®) at the end of each work day. Contaminated soil stockpiles will not be sited within any of the identified exclusion zones (e.g., TPZs) or outside of the limits of the site boundary or the established staging area, which are shown on Figures 2 and 7, respectively. Stockpiles will be covered with weighted plastic (Visqueen®) at the end of each work day or as needed to control dust. Additionally, stockpiles outside of the excavation area will be lined with heavy plastic. Adequate runoff control measures will also be implemented as described in the SWPPP (Appendix C). Stockpiling activities will not take place on rainy days or immediately prior to predicted precipitation. The Trust will require the Contractor, through the specifications included in the Contract Documents for Lendrum Court, to prepare a Soil Management Plan (SMP) as part of project submittals and develop and implement soil management protocols. The Contractor's SMP will address excavation, stockpiling, loading, and transportation of contaminated soil as well as storage of waste material generated by the contractor during construction. The Contractor will be responsible for transport and disposal of solid waste generated during remedial activities in accordance with the pertinent sections of Title 27 of the California Code of Regulations, which addresses proper management of solid wastes.

Soils stockpiled for off-site disposal will be transferred to the haul trucks using front-end loaders. All vehicles carrying waste will be tarped before leaving the Site. For design purposes, TRC has assumed that 18 cubic yards (cy) capacity dump trucks would be used to transport soil for off-site disposal. Due to the segmented construction approach, excavation activities at the Site will be performed intermittently over an estimated 12 week period. Excavated asphalt and organic-rich soil will be hauled off-site to a landfill licensed to receive the material, and miscellaneous excavated debris will be recycled as practicable.

Prior to hauling off-site, the soils deemed unfit for onsite consolidation would be characterized for purposes of selecting appropriate landfills for disposal. The Trust currently is planning to dispose of Class I non-Resource Conservation and Recovery Act (RCRA) waste from the Site at Buttonwillow Landfill, in Kern County. Class II and Class III waste is planned to be disposed at Potrero Hills Landfill, in Solano County. If additional or alternate landfills are selected for off-site disposal after a contractor has been selected for the remedial action, the Trust would notify DTSC of the alternate landfill prior to transport of material off-site. Disposal will be documented with appropriate manifests, weight tickets, and bills of lading. These documents will be scanned and included in the construction completion report (CCR) on a compact disc (CD).

In addition to facilitating the logistics of stockpile management and soil confirmation sampling, the Contractor will develop the specific strategy to be employed to manage water encountered during earthwork activities (groundwater is not expected at this Site) as part of the Contractor's means and methods; however, the Contractor will be required to use a strategy and techniques consistent with protection of natural resources. Throughout construction, the Contractor will implement all activities in accordance with recommendations presented in the Geotechnical Evaluation (Appendix B).

Irrigation lines will be placed as shallow as reasonable for their protection and respective size. Although it is preferred that irrigation lines be placed within the clean cap soil, some irrigation lines may need to be placed beneath the cap (i.e., within the contaminated soil and debris). If this is necessary, the irrigation lines will be installed within a corridor of clean fill, as practicable.

As discussed in Section 3.3.2.2, vehicles, equipment, and personnel will be decontaminated prior to exiting the Site or staging areas.

3.3.2.6 Engineered Soil Cover Construction

In the landscaped area, the cap will include both hardscape and vegetated soil caps. Hardscape areas include: building foundations, asphalt roadways and paths, concrete sidewalks, building drainage curbs and patios (Figure 5). In planned open space areas, a soil cap constructed of clean imported soil will be constructed over the in-situ and consolidated contaminated soil and debris. The soil cap will be vegetated to limit future potential for erosion. The cap will also consist of a protective gopher wire mesh placed at its base to prevent gophers from bringing waste materials to the surface. The gopher wire will serve as a demarcation between the soil cap and the layer of contaminated soil and debris. Cap construction within the traffic island of Lendrum Court will consist of removal of existing surficial plant litter and placement of gopher wire overlain by mulch.

When sourcing soil for backfill of remediation sites, the Trust’s preference is to use native Presidio soils, if possible. The MacArthur Meadow area is a planned future wetland restoration site scheduled for construction at approximately the same time as Lendrum Court Phase 1 remediation. Excess soil from the MacArthur Meadow area may be imported for the cover.

As specified in the Geotechnical Evaluation (Appendix B), import soil used for cap construction should meet the following requirements:

- Ideally contains no rocks or lumps larger than 3-inch in diameter; however, rocks or lumps up to 6-inch in diameter are permitted. Additionally, no more than 15 percent of the rocks or lumps should exceed 2½-inch in diameter;

- Corrosion potential of the soil should be considered. Analytical results for soil resistivity, which is a measure of how easily electrical current flows through soils, will be used to evaluate the corrosivity of the soil; and
- Soil should be inorganic, have a Plasticity Index between 10 and 20, and contain sufficient binder to reduce the potential for sidewall caving of utility trenches.

In addition, soil imported for cap construction will be analyzed for environmental constituents of concern and horticultural parameters.

The final grading plan for the Site is presented on Figure 5. With the exception of bedrock outcroppings, the maximum inclination of the final soil cap will be 2H:1V; however, a maximum slope of 2½H:1V is preferred. Prior to placement of capping materials (i.e., soil cap or pavement), exposed surface soils will be scarified to a maximum depth of 6 inches, moisture conditioned, and compacted in accordance with the recommendations presented in the Geotechnical Evaluation Report (Appendix B). The finished compacted subgrade should be firm and non-yielding under the weight of compaction equipment. Testing for geotechnical conformance is described in the technical specifications and CQA Plan (Appendix A and F, respectively).

Management of backfill soil during construction will be described in the SMP, which will be prepared by the Contractor. This plan addresses receiving, stockpiling, transporting and grading of clean backfill material. Clean soil for the cap may be temporarily stored in unlined stockpiles within the staging area, but will be covered with weighted plastic at the end of each work day. The plastic cover will serve to reduce dust leaving the Site and to prevent contact of rain water with the stockpiled soil.

As discussed in Section 3.3.2.5, irrigation lines will preferentially be placed within the clean cap soil to prevent exposure to contaminated soils or debris during irrigation system maintenance and repair. Irrigation system features are described in Section 3.3.3.4, and construction of the system will be coordinated with Trust maintenance crews. The soil cap would be vegetated with a mix of native and landscape plants, as detailed in Section 3.3.3.4. Soil may be amended during placement or prior to planting as needed to support vegetation.

Upon completion of the cap, a land surveyor will perform an as-built survey of the post-excavation graded topography.

3.3.2.7 Dust Mitigation and Monitoring

Dust Mitigation and Monitoring was discussed in Section 3.3.1.5, and the ADMMP is presented in Appendix E.

3.3.2.8 Storm Water Pollution Prevention Plan and Erosion Control Measures

Storm water management and erosion control was discussed in Section 3.2.4, and the construction SWPPP is presented in Appendix C. SWPPP inspections and maintenance will be performed for two years following site remediation to monitor the for soil erosion and performance of the protective cap.

3.3.2.8.1 Construction Best Management Practices

The SWPPP, included in Appendix C of this RDIP, may be modified to include specific construction BMPs to be employed by the Contractor during construction. However, it is anticipated that the Contractor will install and maintain the following BMPs during earthwork activities:

- Temporary cover on exposed soil slopes.
- Weed-free straw waddles along the top of slopes and along slope contours.
- Silt fencing along the project perimeter to address soil erosion and prevent off-site migration.
- Other soil stabilization measures that include use of binders, straw, biodegradable mats, and other methods as necessary, taking into consideration the soil conditions and slope.
- Sediment tracking controls such as tire sweeping/washing and road sweeping; dust control including vehicle speed restrictions and the use of water on access routes; and drainage inlet protection as needed, including sand bags around drainage inlets and filter fabric within inlets.

The Contractor's decontamination requirements, as described in this RDIP, will also provide sediment tracking controls. Storm drains in the vicinity of the access routes will be equipped with drainage inlet protection.

Dust control practices will be implemented as described in Section 3.3.1.5. Stockpile management will also include dust control measures consistent with this RDIP and will require daily covering of stockpiles with plastic sheeting.

Non-stormwater BMPs and stockpile management will be implemented in accordance with the SWPPP to address materials and equipment storage and handling within the limits of work.

3.3.2.8.2 Post-Construction Best Management Practices

Following placement of fill material and grading activities, the Contractor will winterize the Site by installing the following erosion control measures:

- Weed-free erosion control blankets, hydroseed, hydromulch, and/or erosion control mulch on exposed soil slopes.
- Weed-free straw waddles along slope contours.

During final site stabilization, the Contractor will vegetate the slopes in accordance with the drawings and specifications. The CQA personnel will monitor the planting operation. The Trust's Forestry Manager, landscape architects, and natural resource staff will direct planting as appropriate.

3.3.3 Post-Construction Activities

Post-construction activities include the tasks required to finalize the remedial action, restore the Site to stable conditions, and prepare the Site for long-term operation and monitoring of the remedy and restoration activities following construction. These activities include: demobilization of the contractor's construction equipment, facilities, and site controls; restoration of vegetation and installation of post-construction best management practices; and implementation of the soil cap OMMP.

3.3.3.1 Winterization

Winterization measures will be implemented to manage stormwater and control erosion during the rainy season. Site winterization will occur following grading, consolidation and capping activities and prior to re-landscaping. BMPs such as placing crushed rock under gutter downspouts to promote energy dissipation and the use of straw waddle at the toe of a slope to control erosion, would be implemented as directed in the SWPPP (Appendix C). Following significant winter storm events, the soil cap will be inspected for damage.

3.3.3.2 Demobilization

The Contractor(s) will demobilize from the Site in the following sequence of operations:

- Clean project area and adjacent areas, if impacted, of debris and materials used and generated during the remedial action.
- Install winterization stormwater management and erosion control measures, as identified in the SWPPP (Appendix C).

- Remove temporary gates, fences, barricades and signage.
- Remove temporary facilities, including trailers, decontamination pads, parking areas, etc.
- Repair roadways or objects damaged by remediation activities.
- Repair any utilities damage during construction activities.

Prior to the Contractor's demobilization activities, the Trust will perform a final walk through of the Site with the DTSC and the Contractor. A punch list of remaining activities will be prepared for the Contractor to implement during the demobilization phase of the project.

3.3.3.3 Site Stabilization

After remedial construction is completed at the Site, soil on disturbed and backfilled areas will be stabilized in accordance with the final site design (Appendix A). Measures to stabilize the soil would include using binders, straw, biodegradable mats, and other methods as necessary, taking into account the nature of the soil and slope. Site restoration will involve revegetation of new soil slopes consistent with the VMP. Stormwater BMPs detailed in the SWPPP (Appendix C) may be integrated with the site restoration to address erosion control during the plant establishment period.

3.3.3.4 Vegetation Plan and Erosion Control

The Contractor will install erosion and sediment migration control measures in accordance with the SWPPP (Appendix C). The Trust will monitor post-construction erosion on exposed soil surfaces and graded slopes. Installation of BMPs may include:

- Native mulch;
- Straw ground cover;
- Erosion control blankets;
- Straw waddles;
- All-natural and biodegradable soil protection products (e.g., Posi-Cube); and
- Re-vegetation in accordance with the planting plans.

Sterile, weed-free rice straw products will be used where straw ground cover, erosion control blankets, and/or straw waddles are proposed.

An irrigation system will be installed at the Site and will consist of drip lines for trees and large shrubs, temporary stick up sprinkler heads for landscape plants, and quick couplers. Once landscape plants are established, the stick up sprinkler heads would be cut down. The quick couplers will allow for future spot watering as part of implementing the Cap OMMP.

Site restoration activities, including re-vegetation in accordance with the VMP, will be implemented following completion of remedial actions. An irrigation system will be installed, and erosion control measures implemented. Soil will be amended during cap placement or prior to planting, as needed to support vegetation. Vegetation planted at the site would include both native and non-native landscape plants. The planting plans are presented in Appendix A.

3.3.3.4.1 Vegetation Phase Monitoring

The Trust or its subcontractor will conduct inspections of plantings within the landscaped areas of the Site. Monitoring will vary from once to twice per month to assess the overall effectiveness of the Site erosion control measures and health of the plantings during the first wet season. As the plant establishment improves through the summer and based on observed field conditions, monitoring frequency will decline to quarterly during the summer months. Field observations may require removal, modification, or maintenance of the erosion control features installed to maintain graded slopes during the plant establishment phase. The Trust will maintain a record of the inspections and any corrective actions implemented during this phase of site restoration monitoring.

Following the substantial establishment of vegetation, it is expected that site erosion control measures will not be maintained, as the restored vegetation will serve to minimize erosion on the slopes. Site inspections will be performed periodically, with more frequent inspections during the winter/wet season than during the summer/dry season. Formal inspections will cease once the Site has achieved the desired conditions. Monitoring activities for the two years following Phase 1 construction are discussed in Section 3.2.6. After two years, long term monitoring would be implemented per the OMMP (Section 4.0).

4.0 LONG-TERM MONITORING PROGRAM

Long-term monitoring and maintenance of the cover system would be performed in accordance with the Cap OMMP to ensure ongoing compliance with RAOs. Annual SWPPP inspections will be conducted in perpetuity. To verify that remedial measures implemented at the Site continue to meet all RAOs, DTSC will review remedial performance every five years. The Five-Year Review will address remedial performance in the Phase 1 and 2 areas. The major elements to be evaluated and technically assessed during the Five-Year Review include:

- Cap integrity;
- Stormwater and erosion control;

- Tree and plant health; and
- Irrigation system performance.

The first five-year review will be completed in 2020.

5.0 LAND USE CONTROLS

LUCs are ICs that provide a legal framework governing future land use, preserve the integrity of the cover, provide soil management requirements, restrict use of cap areas for the growing of crops, and health and safety protocols for operations and maintenance work that may penetrate the Cap (including both hardscape or soil cover areas).

The Trust has prepared a Land Use Controls Master Reference Report (LUCMRR; EKI, 2006) to serve as the implementation and enforcement plan to ensure that the LUCs in place in Area B of the Presidio are maintained to protect public health and the environment.

Whenever the Trust transfers real property that is subject to LUCs and resource use restrictions to another federal agency, the transfer documents shall require that the federal transferee include the LUCs, and applicable resource use restrictions in its resource use plan or equivalent resource use mechanism. The Trust shall advise the recipient federal agency of all obligations contained in the decision documents, including the obligation that a State Land Use Covenant will be executed and recorded pursuant to 22 CCR Section 67391.1 in the event the federal agency transfers the property to a non-federal agency.

If at any point, the Trust is given authority to transfer real property subject to resource use restrictions and LUCs to a non-federal entity, it will provide information to that entity in the draft deed and transfer documents regarding necessary resource use restrictions and LUCs, including the obligation that a State Land Use Covenant will be executed and recorded pursuant to 22 CCR Section 67391.1. The signed deed will include LUCs and resource use restrictions equivalent to those contained in the State Land Use Covenant and applicable decision documents.

The Trust will provide notice to DTSC and the Regional Water Quality Control Board (RWQCB) at least six (6) months prior to any transfer or sale of any site within the Presidio so that DTSC and the RWQCB can be involved in discussions to ensure that appropriate provisions are included in the transfer terms or conveyance documents to maintain effective LUCs. If it is not possible for the facility to notify DTSC and the RWQCB at least six months prior to any transfer or sale, then the facility will notify DTSC and RWQCB as soon as possible but no later than 60 days prior to the transfer or sale of any property subject to LUCs. In addition to the land transfer notice and

discussion provisions above, the Trust further agrees to provide DTSC and the RWQCB with similar notice, within the same time frames, as to federal-to-federal transfer of property. The Trust shall provide a copy of the executed deed or transfer documents to DTSC and the RWQCB.

The LUCs will also restrict groundwater use in the immediate area only if COC concentrations in groundwater are above regulatory drinking water levels, restrict uncontrolled irrigation on the surface and restrict digging through the constructed cap that is inconsistent with standard operations and maintenance. Protocols for cover maintenance and intrusive work within and below the cover are outlined in a site-specific OMMP. A land use control addendum will be prepared for the site and incorporated into the Trust LUCMRR (EKI, 2006).

6.0 PROJECT DOCUMENTATION, REPORTING, AND SCHEDULE

The following sections identify the means and methods for documentation, reporting, and scheduling the Lendrum Court remedial action.

6.1 PROJECT DOCUMENTATION

Project documentation will be recorded, maintained, and disseminated in accordance with the CQA Plan, which is presented as Appendix F. The project-designated CQA Manager will store, maintain, and distribute project documents.

6.2 CONSTRUCTION COMPLETION REPORT

The CCR will summarize and present data collected during the remedial actions, including:

- Detailed summary of the remedial action completed.
- Tabulated air and dust monitoring field forms and analytical data.
- Tabulated confirmation soil sample analytical data.
- A visitor contact log maintained by the Contractor.
- As-built site drawings.
- Copies of any laboratory analytical reports and chain-of-custody records.
- Summary tables of any waste manifests and supporting waste disposal information.
- Photographic documentation of the field work.
- The CQA report will include support documents as appendices to demonstrate compliance with the CQA plan.

A draft of the CCR will be provided to the Trust and DTSC for review and comment, prior to final submittal of the CCR. The final CCR will be signed and stamped by a California Registered Professional Engineer (PE).

6.3 PRESIDIO-WIDE CLEANUP LEVEL OBJECTIVES

The soil cleanup levels for Lendrum Court are based on the criteria established in the Cleanup Level Document (EKI, 2002). The Cleanup Level Document presents cleanup levels for soil, sediment, groundwater, and surface water that are protective of human health and ecological habitat at the Presidio. The cleanup levels were developed under DTSC guidance and are anticipated to be applied to new decision documents for the Presidio. These cleanup levels are presented in Table 2.

Confirmation sampled collected during excavation will be compared against Presidio-wide cleanup levels to ensure that remediation goals are met and the soil with COCs in excess of remediation standards is removed from the areas not being capped.

6.4 SCHEDULE

The remediation contractor is scheduled to mobilize to the site in August 2015 for the landscape/residential phase (Phase 1), with the remedial action work expected to require approximately 18 weeks and be complete by December 2015. Revegetation and restoration work may be completed concurrently with remediation and will likely extend 2 to 4 weeks after remedial construction is complete.

Project updates will be provided to DTSC on a weekly basis. The project schedule, including contractor mobilization and field work, is included as Appendix H of this RDIP. The CCR will be submitted to DTSC within four months of completion of all construction-related activities, including site stabilization, landscape, and erosion control activities.

7.0 REFERENCES

DTSC, 2004. *Environmental Oversight Agreement.* April.

Southern California Earthquake Center (DMG SP 117A, 2008), 2002, *Recommended Procedures for Implementation of DMG Special Publication 117A, Guidelines for Analyzing and Mitigating Landslide Hazards in California*.

Erler & Kalinowski (EKI), 2002. *Development of Presidio-Wide Cleanup Levels for Soil, Sediment, Groundwater, and Surface Water, Presidio of San Francisco, California.* October.

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Presidio Trust and United States Department of Defense (US DOD), Department of the Army, *Memorandum of Agreement Regarding Environmental Remediation of Presidio of San Francisco*, May 24.

Presidio Trust (Trust), 2001a. *Community Relations Plan, Presidio of San Francisco, California*, June.

Presidio Trust (Trust), 2001b. United States Department of the Interior, National Park Service (NPS), 2015a. *Vegetation Management Plan and Environmental Assessment, Presidio of San Francisco, California*. December.

Presidio Trust (Trust), 2002. *Presidio Trust Management Plan (PTMP).*

State Water Resources Control Board, 2010. Order 2010-0014-DWQ, NPDES CGP No. CAS000002: National Pollutant Discharges Elimination System (NPDES) California CGP for Storm Water Discharge Associated with Construction and Land Disturbing Activities. Available on-line at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml.

TRC, 2015a. *Community Relations Plan for Lendrum Supplement to the Community Relations Plan for the Presidio of San Francisco, California*. May 19.

TRC, 2015b. *Removal Action Work Plan, Lendrum Court, Presidio of San Francisco, California*. July.

TABLES

TABLE 1
DESIGN ELEMENTS AND PROPOSED DESIGN CRITERIA FOR REMEDIAL CONSTRUCTION
Lendrum Court – Phase 1
Presidio of San Francisco, California

Design Elements	Design Criteria and Assumptions

Limits of Work	• The limits of work are shown on Phase 1 RDIP Figures 1 and 2. This area encompasses:
	  • The area of Army-era incinerator waste debris.
	  • The immediately adjacent landscape zones, contiguous to waste debris areas but not adjacent to landscape improvement projects implemented independently by the Presidio Trust Planning department (Trust Planning) along Armistead Road.
	  • The area containing aerial deposited lead (ADL) immediately adjacent to Highway 101, identified as cells J1 through J4 in the Remedial Investigation (RI) Report.
	  ▪ This area will be remediated independently from the Army-era incinerator waste debris.
	  ▪ Remediation will be coordinated with Caltrans and DTSC, and interim measures will be implemented as necessary.

Limits of the Constructed Cap	• The extent of the constructed cap will be limited to the areas where debris has been identified or soil samples contained COCs above screening levels in the Remedial Investigation (RI). This area is shown on Figure 3 of the Phase 1 RDIP.
	• Isolated debris and areas where soil samples exceed the upper confidence limit (UCL) for lead, but are not collocated with Army-era debris, will be addressed by spot excavations and consolidation of waste/soil into the area of the constructed cap.
	  • Primary areas for consolidation include the toe of slope area in the Historic Forest, west side of Building 1258, and the northwest side of Building 1257.
	• The cover will be designed and constructed in two phases; Phase 1 and Phase 2.
	  • Phase 1 will cover the landscape residential area as shown on Figure 2 of the Phase 1 RDIP.
	  • Approximate limits of the constructed cap in Phase I (landscape/residential areas) include:
	  ▪ Grade break to the north and east of Buildings 1259, 1278, and 1279;
	  ▪ Hardscape edges of Lendrum Court;
	  ▪ AC path realignment at the northwestern edge of the Site;
	  ▪ The southernmost footpath to access of Building 1280; and
	  ▪ The front (west side) of Buildings 1257 and 1258. Remedial investigation results suggest that the landscape areas from the front (west side) of Buildings 1257 and 1258 to Armistead Road will not require a cap, but a cap would be required on the other three sides (i.e., north, south and east sides) of these two buildings.
	  • Phase 2 will cover the historic forest area as shown on Figure 2 of the Phase 1 RDIP.
	  • Interim controls will remain in-place until Phase 2 remedial construction is implemented.
	• Cover will not be placed in areas where bedrock outcrops are visible or are less than 6 inches below ground surface. The estimated area where serpentinite bedrock is less than 6 inches below ground surface is shown on Phase 1 RDIP Figures 4 and 5.

Grading Approach and Plans **General**	• Cap thicknesses will vary within the Phase 1 area based on protection of tree roots and human receptors. • Nesting bird surveys will need to be performed prior to field work that requires the trimming, clearing/grubbing, or removal of vegetation or trees. **Guidance Documents/References:** • *EKI Remedial Investigation (May, 2015)* • *Phase 1 RDIP Figures and Design Drawings (Appendix A)* • *North Fort Scott Site Improvements – Phase I (RHAA, 12/11/2014)*

TABLE 1
DESIGN ELEMENTS AND PROPOSED DESIGN CRITERIA FOR REMEDIAL CONSTRUCTION
Lendrum Court – Phase 1
Presidio of San Francisco, California

Design Elements	Design Criteria and Assumptions

Grading Approach and Plans in Landscape Area (Phase 1)
• Cover slope stability and grades
• Cover thickness in residential/landscape area
• Import source material
• Plans for re-vegetation of site and retention of existing vegetation
	• Cover Slope Stability
	  • With the exception of bedrock outcroppings, preference for slopes no steeper than 2.5H:1V (horizontal:vertical) and a maximum inclination of 2H:1V.
	  • Soil compaction ranges as specified in the Geotechnical Evaluation, which is included as Appendix B of the Phase 1 RDIP.
	• Protective soil cap construction to include:
	  • Installation of protective gopher wire across area designated for soil capping. The gopher wire will be covered by a minimum of 1.5 feet of cap material below final grades.
	  • Placement and testing of compacted borrow soil over area designated for capping. Soil to be placed using maximum 8-inch lifts and compacted to specified relative density. .
	  • The tree located within the island of Lendrum Court is intended to be retained during Phase 1 remedial construction. Within the island area, cap construction will consist of removing existing surficial plant litter, placement of gopher wire, and placement of mulch on top of the gopher wire.
	  • The trees located near the northeast corner of Building 1278 are intended to be preserved during Phase 1 remedial construction. Cap construction within the modified TPZ will consist of excavating 6 to 8 inches utilizing hand tools or small track mounted equipment and placing 6 to 8 inches of clean imported soil underlain by gopher wire.
	  • On the backside of Buildings 1259, 1278, and 1279, aggregate base (AB) pads will serve as the protective cap. The cap in these areas will consist of 6-inches of compacted AB placed on top of 6-inches of clean imported soil and underlain with gopher wire and geotextile fabric. The AB pads will be bordered by a one-foot wide, 6-inch deep layer of ¾-inch gravel to minimize the potential for erosion caused by downspouts discharging onto the AB pads.
	• Import Source
	  • The preferred soil borrow for the cap construction is native soil material from Lawrence Berkeley National Labs, which is classified as gravelly loam.
	  • Import soil may be amended during placement or prior to planting as needed to support new vegetation
	  • Import soil not used during Phase 1 may be stockpiled by Trust for use by Trust Remediation during Phase 2 remedial construction in summer 2016.
	• Final Planting Plans
	  • With the exception of the tree located within the island in Lendrum Court and the trees near the northeastern corner of Building 1278, trees within the Phase 1 area will not be retained.
	  • Existing shrubs in landscaped area will be removed as needed to construct a cap.
	  • Trust Planning will provide final plant palette for landscaped area.
	  • At proposed new tree locations, a 2-ft by 2-ft by 3-ft deep area will be excavated and backfilled with clean soil. No gopher wire will be placed within these cleared areas.
	  • Areas outside the cap will be designed by Trust Planning.

TABLE 1
DESIGN ELEMENTS AND PROPOSED DESIGN CRITERIA FOR REMEDIAL CONSTRUCTION
Lendrum Court – Phase 1
Presidio of San Francisco, California

Design Elements	Design Criteria and Assumptions

Conformance with RHAA Conceptual Landscape Plan (8/6/2014)	• To the extent practical, retain grading, surfacing, and planting elements of the conceptual landscape plan identified in the RHAA conceptual design drawings dated August 6, 2014 (notes added 11/5/2014).
	  • Footpath across site is to be constructed of decomposed granite (DG), (2) be 5 feet wide, and (3) have an approximately 2% cross slope toward Lendrum Court for drainage purposes.
	  • Asphalt Concrete (AC) Path: Realignment of AC path to the west to serve as western boundary of the debris fill remedial cover.
	  • Trails and paths do not need to be ADA compliant, but overly steep grades should be avoided where possible.
	  • Several sets of stairs are shown on the conceptual plan. Plans for the following stairs to be designed and construct as part of Phase I remedial construction:
	  ▪ Stairs at the southern end of the DG path are assumed to be DG box steps; and
	  ▪ Demolition and replacement of the existing concrete stairs near the northwestern boundary of the Site that connect the AC Path and Lendrum Court.
	Trust Planning to provide additional direction if there are further requirements for these steps.
	  • Steps adjacent to concrete patios, patio screens, and other fencing associated with patios to be completed by others.
	  • Design for concrete patios will be identical to those presented in other North Fort Scott Area designs, Park Planning to provide electronic versions of these files to optimize design efficiency.
	  • Final grading plans for the site will be evaluated to determine if the proposed graded bench for raised planter will fit as shown in the conceptual design. If space is available, raised planters will be installed by Trust Planning as a community garden.
	  • The tree located in the island of Lendrum Court and the trees near the northeastern corner of Building 1278 will be retained during Phase 1 remedial construction.
	  • Other than the realignment of the AC path and existing patios, all existing hardscape to remain.

Irrigation	• Trust Planning design documents for the other North Fort Scott community landscape shall be used as a guide for the Lendrum court irrigation design.
	  • Trees and large shrubs will be irrigated with drip lines
	  • Other areas will be irrigated with stick up sprinkler heads that are tied off and cut down once landscape plants are established
	• The depth of the irrigations lines will be as shallow as is reasonable for their respective size and protection.
	• Irrigation lines will be placed within the cap material as practicable.
	• Irrigation lines not within the cap will be placed in a clean corridor as practicable.
	• Quick disconnect couplers will be installed to allow future spot watering as part of cap OM&M

Final SWPPP and Erosion Control Measures	• Site will be covered with erosion control blankets and straw wattles in substantive conformance with RWQCB General Construction Permit requirements. • SWPPP inspection and maintenance will be completed by the Presidio Trust Remediation department (Trust Remediation) or its representative(s) for two years following site remediation. OM&M inspections by Trust Remediation or its representative(s) will be conducted as outlined below under Operations & Maintenance.

TABLE 1
DESIGN ELEMENTS AND PROPOSED DESIGN CRITERIA FOR REMEDIAL CONSTRUCTION
Lendrum Court – Phase 1
Presidio of San Francisco, California

Design Elements	Design Criteria and Assumptions

Public Safety
• Laydown and staging areas
• Construction timing and phasing
• Community outreach
• Dust mitigation
	• A Community Relations Plan for Lendrum Court Improvements, a supplement to the Community Relations Plan for the Presidio of San Francisco, was approved by DTSC on May 19, 2015. The purpose of this plan is to keep the community informed of ongoing and planned activities and receive feedback.
	  • Adjacent neighbors within 100 feet of the work area will be included as affected parties.
	  • Tenant relocation will not be required to implement the work.
	  • Public meetings will be held to present the results of the RI, discuss the RAW, and prior to initiation of field activities.
	• There will be two primary construction Phases for this work; Phase 1 and Phase 2.
	  • Phase 1 will be implemented in the landscape area, as discussed in the Phase 1 RDIP.
	  • Phase 2 will be the Historic Forest area.
	  • Additional sub-phasing will likely be required to maintain resident access to the buildings and parking areas.
	  • Overlap of some phasing areas is anticipated to account for relocation of soils and temporary stockpiling.
	• Approximate staging and laydown areas were identified in the RAW, which was distributed for public comment. The area near the intersection of Lincoln Boulevard and Lendrum Court will be used for contractor staging, as shown on Figure 7 of the Phase 1 RDIP.
	• Construction work times will be established in coordination with stakeholders, and the residential nature of the Site will be taken into consideration.
	• A site-specific Storm Water Pollution Protection Plan (SWPPP) that includes consideration of erosion controls and a site-specific Air and Dust Monitoring and Mitigation Plan (ADMMP) have been prepared to maintain a safe environment for workers and residents during Phase 1 remedial construction. These plans are included as appendices to the Phase 1 RDIP (Appendix C and E, respectively).

Utilities
• Protection of existing utilities
• Construction of new utilities
	• All existing utilities at the site will be protected in place during construction.
	  • Overhead electrical and communication lines will need protection during tree work or movement of large construction equipment occurring in the vicinity of these overhead utilities.
	  • Underground water and gas lines will need to be confirmed prior to excavation in the vicinity, and temporary outages may be required for safety purposes.
	  • Underground storm drain and sewer lines will need to be confirmed prior to excavation in the vicinity. Drain inlets will be protected during all construction activities as specified in the SWPPP.
	  • If grading increases the elevations at utility access boxes and manholes, access boxes and/or manholes will be elevated to match the new grades.
	• Construction of the irrigation system to be coordinated with Trust maintenance crews.
	• Fire hydrants in the work area will be made available for use during construction for dust control, and a water meter will be provided by Trust Utility Department.

TABLE 2
SOIL CLEANUP LEVELS FOR CHEMICALS OF CONCERN
Lendrum Court - Phase 1
Presidio of San Francisco, California

Chemicals of Concern	Chemical of Concern for Landscaped/ Residential Area? [a]	Chemical of Concern for Historic Forest/Recreational Area? [b]	Applicable Cleanup Levels [c] Human Health Soil PRGs	Recreational	Ecological PRGs		Background Level		Regional Background / Ambient Levels [d]	Site-Specific Cleanup Levels	
			Residential		Buffer Zone	Special-Status	Serpentinite Lithology	Colma Formation		Landscaped / Residential Area[e]	Historic Forest / Recreational Area[f]
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Metals											
Arsenic	Yes	No	0.36	0.88	64	10	5.4	6.2	11	6.2	--
Barium	Yes	No	5,000	12,000	500	320	230	180	1,500	500	--
Copper	Yes	No	--	--	120	30	85	49	76	120	--
Lead	Yes	Yes	80	180	300	160	66	7.5	48	80	160
Zinc	Yes	No	22,000	52,000	50	4	160	79	150	160	--
Polycyclic Aromatic Hydrocarbons (PAHs)											
Benzo(a)pyrene	Yes	No	0.046	0.11	40	30	--	--	0.92 to 1.5	0.046	--
Benzo(a)pyrene equivalent	Yes	No	0.046	0.11	40	30	--	--	0.92 to 1.5	0.046	--
Dibenzo(a)anthracene	Yes	No	0.046	0.11	40	30	--	--	0.92 to 1.5	0.046	--
Dioxin and Furans (values are in pg/g)											
TCDD TEQ	Yes	Yes	3.5	8.2	--	--	--	--	7 to 20	3.5	8.2

Abbreviations:
-- = not available / applicable
mg/kg = milligrams per kilogram
pg/g = picograms per gram
TCDD TEQ = 2,3,7,8-tetrachlorodibenzo-p-dioxin toxic equivalency

Footnotes:

[a] Chemicals of Concern as listed in EKI's Table 6A provided in Appendix A.

[b] Chemicals of Concern as listed in EKI's Table 6B provided in Appendix A.

[c] Applicable cleanup levels from the following sources:
Table 7-2 of EKI's 2002 (with updates through 2013) *Development of Presidio-Wide Cleanup Levels for Soil, Sediment, Groundwater, and Surface Water* . Presidio of San Francisco
Lead Residential: Office of Environmental Health Hazard Assessment's (OEHHA) September 2009 *Revised California Human Health Screening Levels for Lead* .
Lead Recreational: March 18, 2015 Personal Communication between Eileen Fanelli, TRC, and Department of Toxic Substances Control.
TCDD TEQ Human Health Soil PRGs: MACTEC's 2007 *Technical Memorandum, Human Health Soil Preliminary Remediation Goals and Toxic Equivalency Values for Dioxins and Furans Presidio of San Francisco, California.*

[d] Regional background and ambient levels from the following sources:
Arsenic: D.J. Duverge's 2011 *Establishing Background Arsenic in Soil of the Urbanized San Francisco Bay Region,* Master of Science in Geosciences.
Metals: Upper Estimate Regional Background from Table 4-Comparison of Background Values to Other Background Estimates from Lawrence Berkeley National Laboratory (LBNL) 2009 *Analysis of Background Distributions of Metals in the Soil at Lawrence Berkeley National Laboratory*
PAHs: ENVIRON et. al. 2002 *Background Levels of Polycyclic Aromatic Hydrocarbons in Northern California Surface Soil* . D. Diamond, D. Baskin, D. Brown, L. Lund, J. Najita, and I Javandel, June 2002 Revised April 2009
TCDD TEQ: California Department of Food and Agriculture (CDFA) 2004 *Evaluation of Heavy Metals and Dioxin in Inorganic Commercial Fertilizers.*

[e] The cleanup levels for the landscaped/residential areas are the lower of the residential and ecological buffer zone. If the applicable residential human health or ecological buffer-zone cleanup level is less than the background level, the greater of the two background threshold levels was selected as the cleanup level.

[f] The cleanup levels for the Historic Forest/recreational area are the lower of the residential and ecological buffer zone. If the applicable recreational human health or ecological special-status cleanup level is less than the background level, the greater of the two background threshold levels was selected as the cleanup level.

TABLE 3
ESTIMATED MATERIAL QUANTITIES FOR REMEDIAL CONSTRUCTION
Lendrum Court - Phase 1
Presidio of San Francisco, California

Activity	Description	Unit	Approximate Quantity (a.)
Remedial Grading			
Alternate Access Route	Located behind Building 1259 per design drawings. Remove vegetation, install filter fabric and a 4-inch layer of gravel base to serve as access route.	SF	1250
Clearing & Grubbing (Vegetation Removal)	Remove all vegetative materials from areas to be graded or excavated. Transport and dispose of vegetative materials at an appropriate off-site facility, where vegetation shall be disposed of as green waste.	ACRE	1.15
Asphalt Pavement Demolition	Demolish, load, transport, and dispose of existing asphalt in areas where excavation or grading work will be required. Recycle where possible, else legally dispose of asphalt pavement at an off-site landfill.	SF	500
Patio, Staircase, and Sidewalk Demolition	Demolish, load, transport, and dispose of concrete patios and sidewalks in areas where excavation will be required. Recycle where possible, else legally dispose of materials at an off-site landfill.	SF	475
Remedial Excavation	Excavate and stockpile for disposal the top 4 to 6 inches of material or any other material unsuitable for reuse or that can not be consolidated elsewhere onsite. (volume in loose cubic yards)	CY	1,450
Hotspot Removal	Excavate soil from hotspot area that is designated for clean closure (in front of building 1258).	CY	80
Rough Grading	Grade the site to planned remedial elevations and prep surface for cap construction. Includes excavation, consolidation, compaction and grading of soils across the site. Project phasing shall be coordinated with this activity to reduce the amount of temporarily stockpiled material. (900 CY of in place cut, 825 CY in place fill)	CY	1,725
Off-Site Disposal	Load off contaminated materials to trucks for disposal (volume in loose cubic yards)	CY	1,450

TABLE 3
ESTIMATED MATERIAL QUANTITIES FOR REMEDIAL CONSTRUCTION
Lendrum Court - Phase 1
Presidio of San Francisco, California

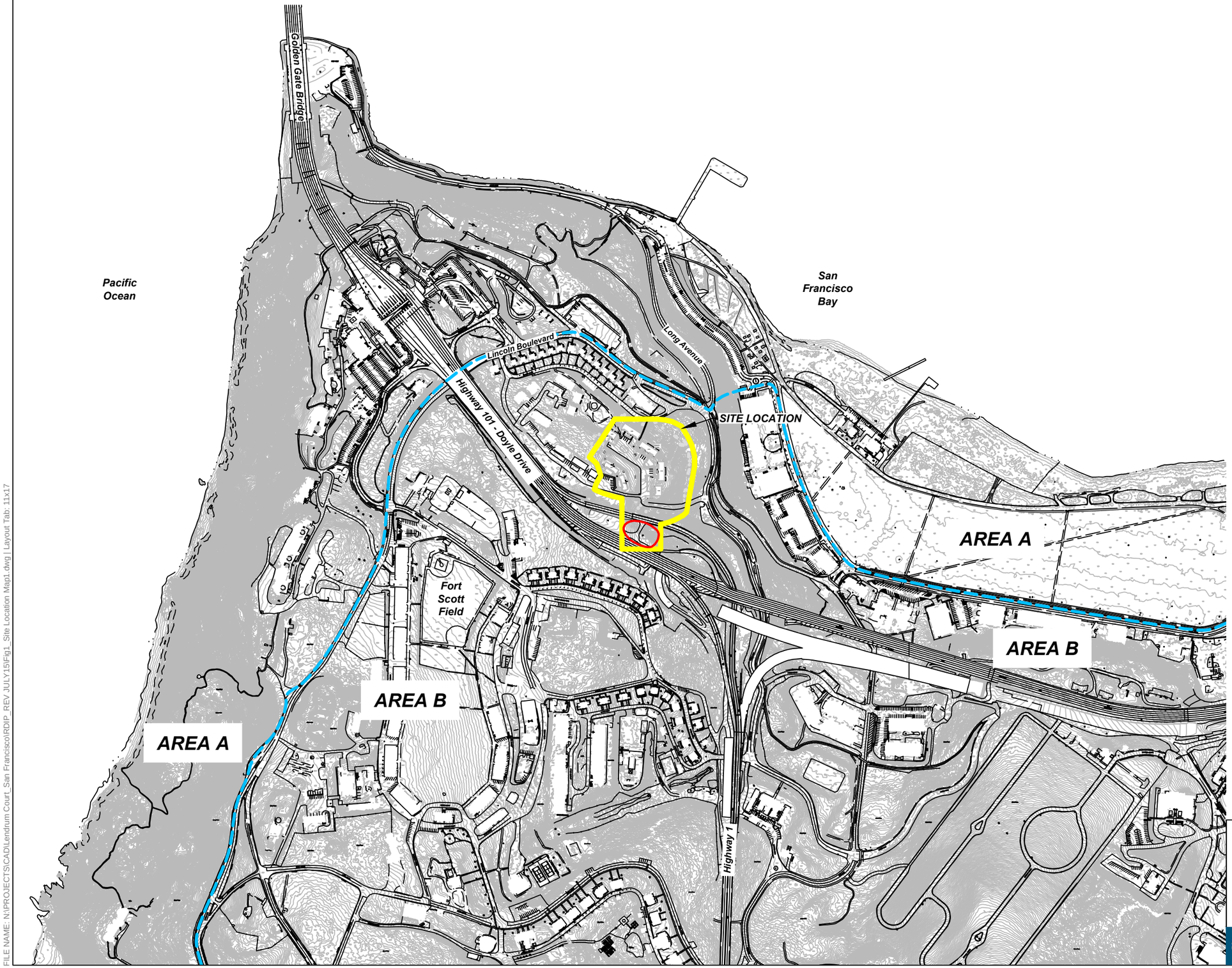
Activity	Description	Unit	Approximate Quantity (a.)
Soil Cap Placement			
Gopher Wire	Sixteen-gauge gopher wire consisting of 0.5"x0.5" galvanized welded wire coated in PVC. Gopher wire to be placed at the base of the constructed cap in all landscape areas.	SF	51,000
Load and Haul Trust-Furnished Import Fill	Load and haul Trust-supplied material from within the Presidio. Assume others will process and stockpile the usable soil such that no further augmentation is required to render it acceptable as backfill. Assume others have sampled soil for geotechnical and environmental considerations. Quantity is in loose CY.	CY	4,325
Import Fill	Source, screen, purchase, and import soil from an off-site source. Placement and compaction of imported fill to final grades. Cap to have compacted minimum thickness of 18-inches.	CY	
Finish Grading	Fine grade and finish areas to final planned grades.	ACRE	1.15
Hardscape Cap Placement			
Asphalt Foot Path	Install an asphalt foot path as shown on the design drawings (2.5 inch AC over 6 inch AB).	SF	600
Asphalt Road	Install an asphalt road as shown on the design drawings.	SF	100
Curbing	Install curbing as shown on the design drawings.	LF	25
New Patios	Install new concrete patios as shown on the design drawings.	SF	2,125
New Sidewalks	Supply and install new concrete sidewalks/paths as shown on the design drawings.	SF	300
AB Pad	Install AB Pad slab behind Buildings 1279, 1278, and 1259 as shown on the Drawings.	SF	1,725
Concrete Drains	Install concrete drains adjacent to buildings in the Phase 1 area as shown on the Drawings.	LF	170
Gravel for Drain Discharge Areas	Import and placement of 3/4-inch gravel/drain rock for drain discharge areas in the Phase 1 area.	CY	12

TABLE 3
ESTIMATED MATERIAL QUANTITIES FOR REMEDIAL CONSTRUCTION
Lendrum Court - Phase 1
Presidio of San Francisco, California

Activity	Description	Unit	Approximate Quantity (a.)
Landscape Features			
DG Path	Install 6-inch DG material into path and stairs as shown on the design drawings.	SF	820
Irrigation System	Install an irrigation system per the design drawings and technical specifications, where construction activities and materials would include: trenching, materials, bedding, joints, fittings, timers, electricity, electric connects, backfilling, and compaction.	SF	51,000
Landscape Planting	Install landscape plants as shown on drawings.	ACRE	1.15
Site Stabilization Materials			
Straw	across all exposed soil	SF	48,000
Erosion Control Blankets	across all exposed soil	SF	48,000
Site Stabilization Materials (continued)			
Fiber Rolls (Straw Wattle)	Located as directed in the SWPPP (9-inch diameter)	LF	3,300

Abbreviations:
AB = Asphalt Base
CY = Cubic Yards
DG = Decomposed Granite
LF = Linear Feet
SF = Square Feet
SWPPP = Stormwater Pollution Prevention Plan
TPZ = Tree Protection Zone

FIGURES



LEGEND

- Lendrum Court area
- Approximate former incinerator area
- Area A / B boundary

N

SCALE (FEET)

0 500 1,000

SITE LOCATION MAP
July 22, 2015
Lendrum Court and Incinerator Area
The Presidio Trust
San Francisco, California

TRC | 229649 | **FIGURE 1**

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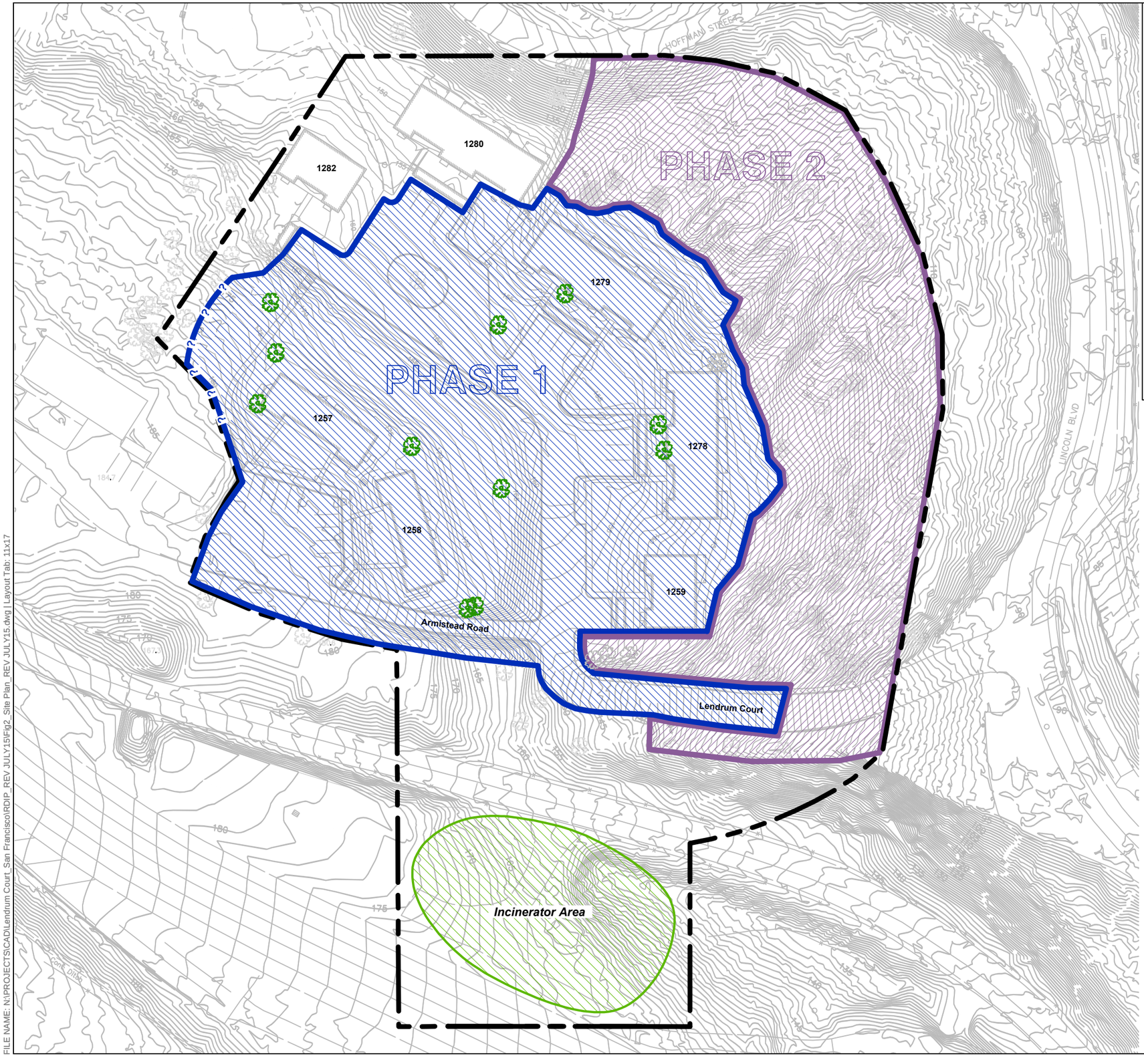

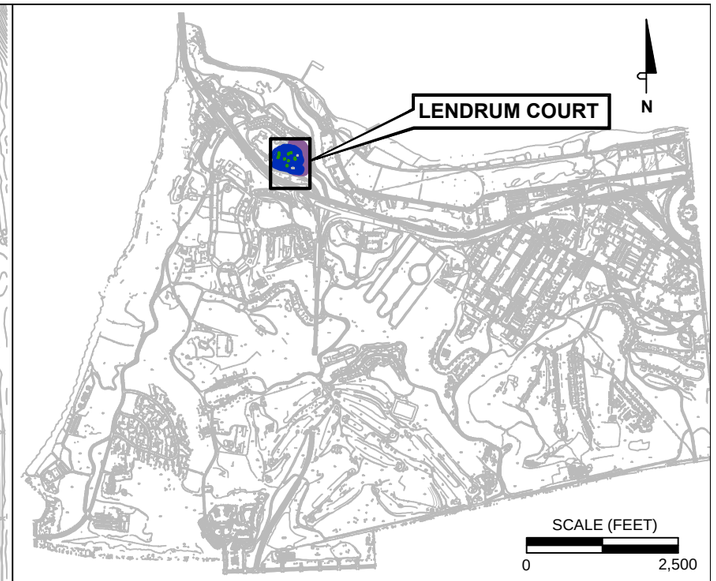

LEGEND

- Approximate site boundary
- Phase 1 remedial action area (approximate)
- Phase 2 remedial action area (approximate)
- Protective in current configuration
- Existing contour elevation (145)
- Tree intended to be preserved during Phase 1 remedial construction
- Tree to be removed

NOTE:
Areas beneath pavement not mapped by EKI (2015) as containing debris are consequently assumed to contain debris for purposes of establishing a land use control (LUC) boundary.

N

SCALE (FEET)
0 70 140

SOURCE: Base plan by Erler & Kalinowski, Inc., November 2014.

SITE PLAN
July 22, 2015

Lendrum Court and Incinerator Area
The Presidio Trust
San Francisco, California

TRC | 229649 | **FIGURE 2**

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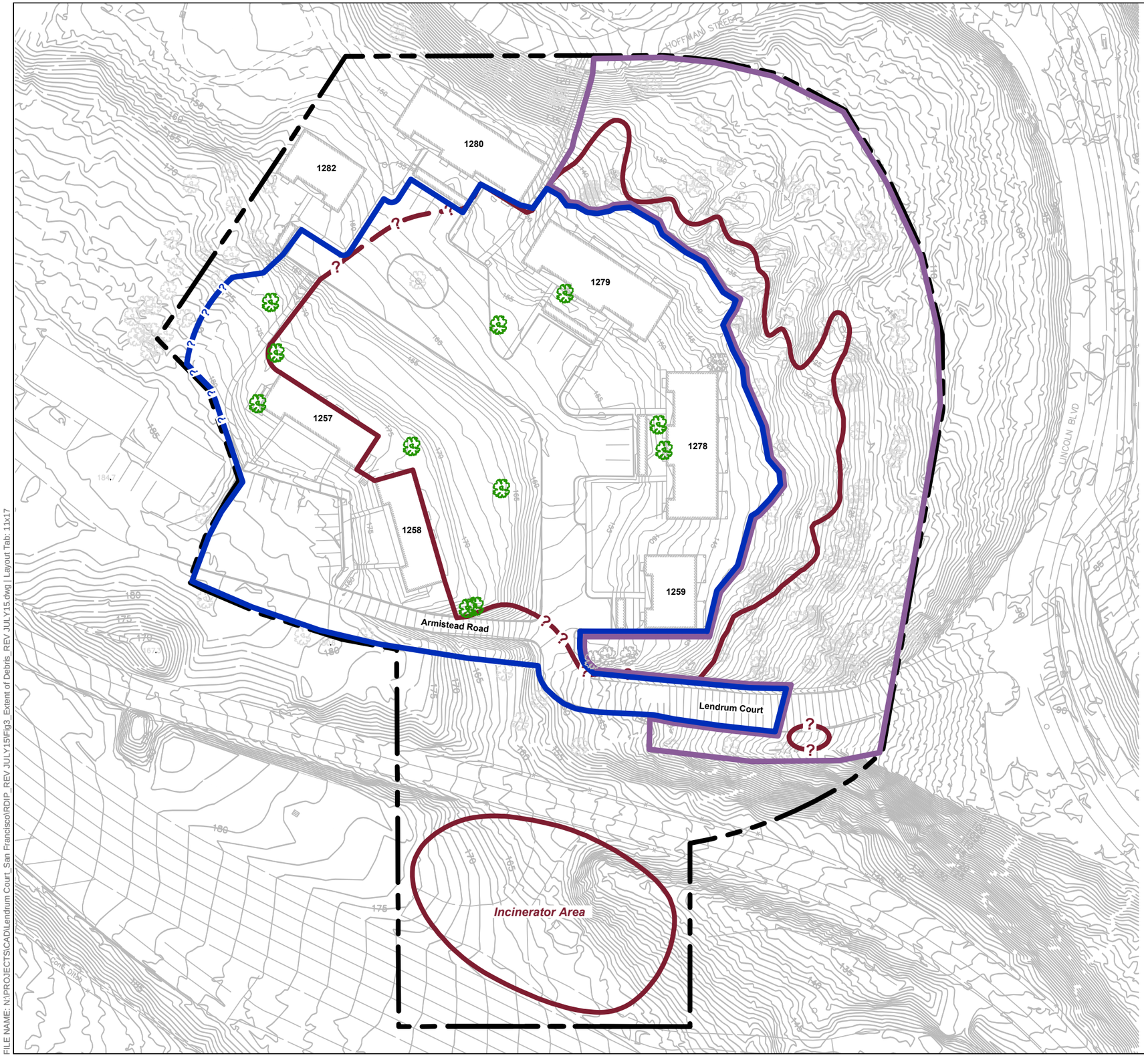


LEGEND

- Approximate site boundary
- Phase 1 remedial action area (approximate)
- Phase 2 remedial action area (approximate)
- Approximate extent of debris, queried where uncertain
  NOTE: Extent of debris outline from EKI, Inc. (April 2015) Remedial Investigation Summary Report
- 145 — Existing contour elevation
- Tree intended to be preserved during Phase 1 remedial construction
- Tree to be removed

N

SCALE (FEET)

0 70 140

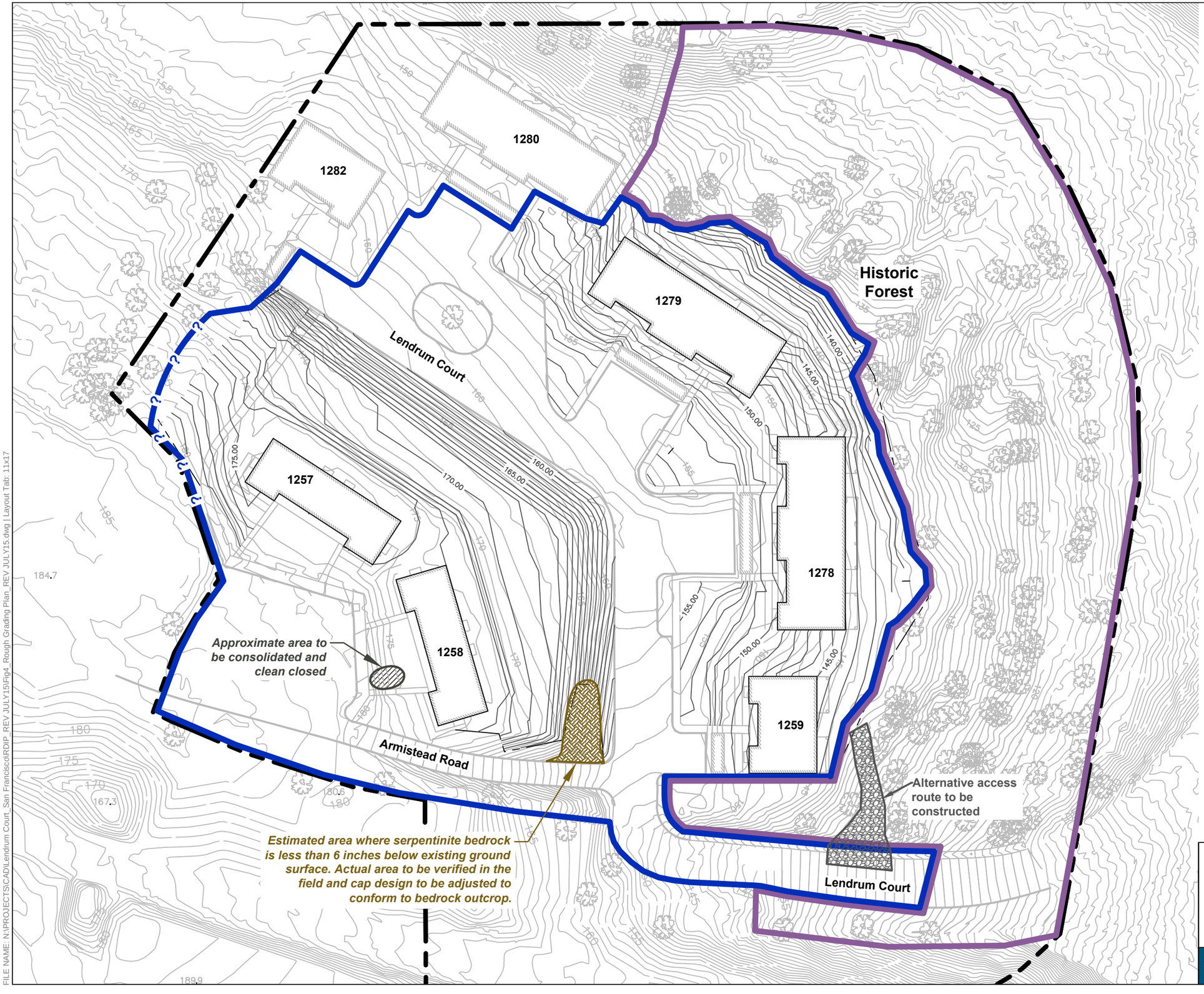
SOURCE: Base plan by Erler & Kalinowski, Inc., November 2014.

EXTENT OF DEBRIS
July 22, 2015

Lendrum Court and Incinerator Area
The Presidio Trust
San Francisco, California

TRC | 229649 | **FIGURE 3**

FILE NAME: N:\PROJECTS\CAD\Lendrum Court_San Francisco\RDIP_REV JULY15\Fig3_Extent of Debris_REV JULY15.dwg | Layout Tab: 11x17



LEGEND

- Approximate site boundary
- Phase 1 remedial action area (approximate)
- Phase 2 remedial action area (approximate)
- 145 — Existing contour elevation
- 150.00 — Rough grade contour elevation
- Tree intended to be preserved

N

SCALE (FEET)

0 50 100

SOURCE: Base plan by Erler & Kalinowski, Inc., November 2014.

ROUGH GRADING PLAN
July 22, 2015

Lendrum Court Area
The Presidio Trust
San Francisco, California

TRC | 229649 | **FIGURE 4**

FILE NAME: N:\PROJECTS\CAD\Lendrum Court_San Francisco\RDIP_REV JULY15\Fig4_Rough Grading Plan_REV JULY15.dwg | Layout Tab: 11x17

1280
1282
1279
1257
1258
1278
1259
Historic Forest
Lendrum Court
Armistead Road
Lendrum Court
Estimated area where serpentinite bedrock is less than 6 inches below existing ground surface. Actual area to be verified in the field and cap design to be adjusted to conform to bedrock outcrop.
Interim exclusion fencing with steel posting

LEGEND

- Approximate site boundary
- Phase 1 remedial action area (approximate)
- Phase 2 remedial action area (approximate)
- 145 — Existing contour elevation
- 14.00 — Final grade contour elevation
- Approximate limits of cap in landscaped areas
- Approximate areas of building that serve as cap
- Areas of asphalt, pavement and hardscape that serve as cap
- Approximate areas to be consolidated and clean closed
- New concrete patios, sidewalks and stairs
- New decomposed granite path
- New asphalt path
- New aggregate base cap
- Tree intended to be preserved during Phase I remedial construction

NOTE:
Tree protection zones extend 20 feet radially from the trunk of each tree. An arborist is required to oversee any work performed within tree protection zones.

N

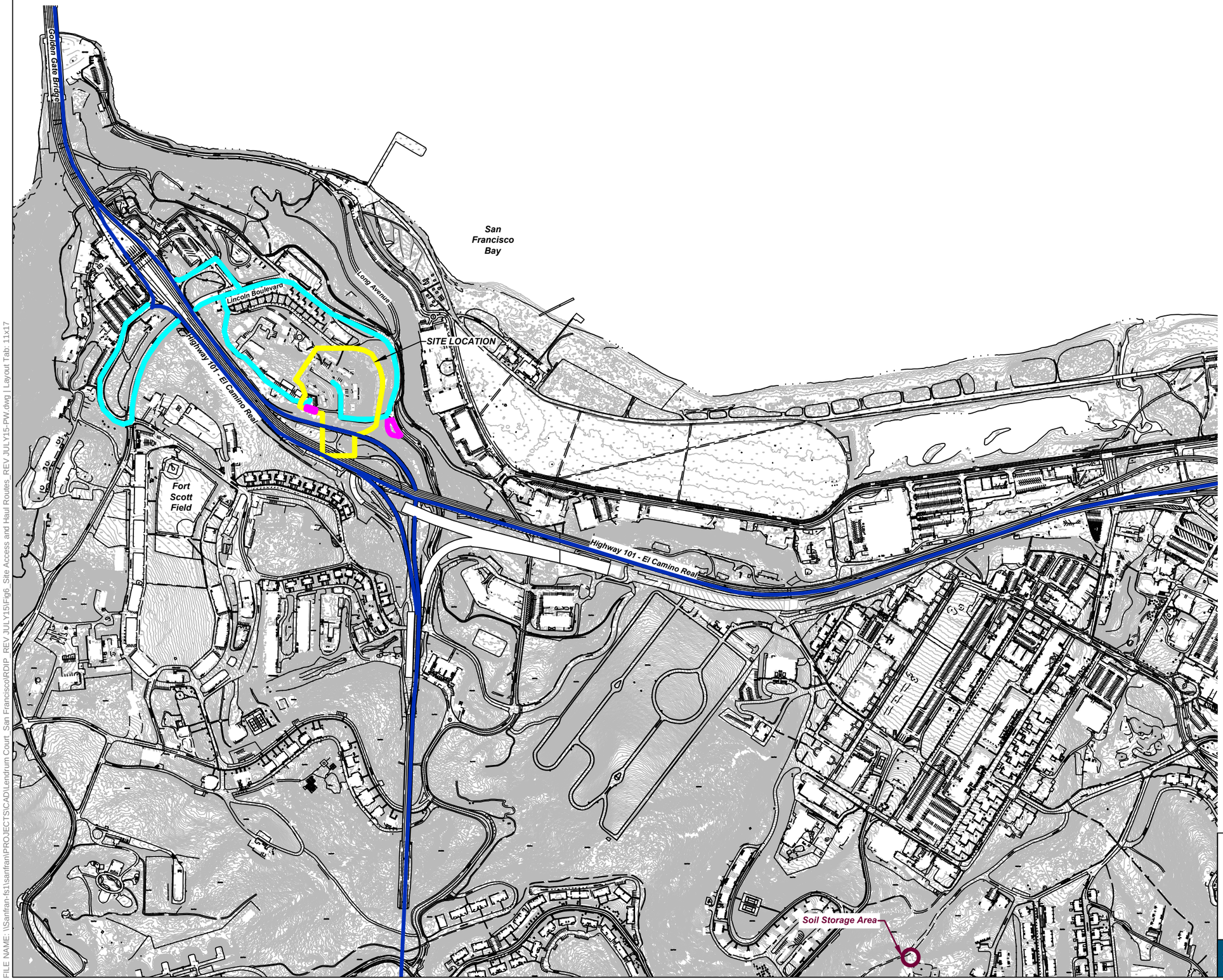
SCALE (FEET)
0 50 100

SOURCE: Base plan by Erler & Kalinowski, Inc., November 2014.

FINAL GRADING PLAN
July 22, 2015
Lendrum Court Area
The Presidio Trust
San Francisco, California

TRC | 229649 | **FIGURE 5**

FILE NAME: \\Sanfran-fs1\sanfran\PROJECTS\CAD\Lendrum Court_San Francisco\RDIP_REV JUL'Y15\Fig5_Final Grading Plan_REV JULY15-PW.dwg | Layout Tab: 11x17



LEGEND

- Potential truck haul route for soil import and export
- Proposed staging/storage area
- Proposed site access routes

N

SCALE (FEET)

0 600 1,200

SITE ACCESS AND HAUL ROUTES
July 22, 2015

Lendrum Court and Incinerator Area
The Presidio Trust
San Francisco, California

TRC | 229649 | **FIGURE 6**

FILE NAME: \\Sanfran-fs1\sanfran\PROJECTS\CAD\Lendrum Court_San Francisco\RDIP_REV JULY15\Fig6_Site Access and Haul Routes_REV JULY15-PW.dwg | Layout Tab: 11x17

LEGEND

- Approximate site boundary
- Existing contour elevation
- Existing tree
- Construction fencing
- PATH CLOSED DURING CONSTRUCTION — Custom pedestrian warning sign provided by contractor
- Traffic sign placement (shown facing left)
- CAUTION — SC15 (CA)
- TRUCKS ENTERING EXITING — C44 (CA)

NOTE: Traffic signs from California Manual on Uniform Traffic Control Devices - Temporary Traffic Control, 2012 Edition.

N

SCALE (FEET)

0 60 120

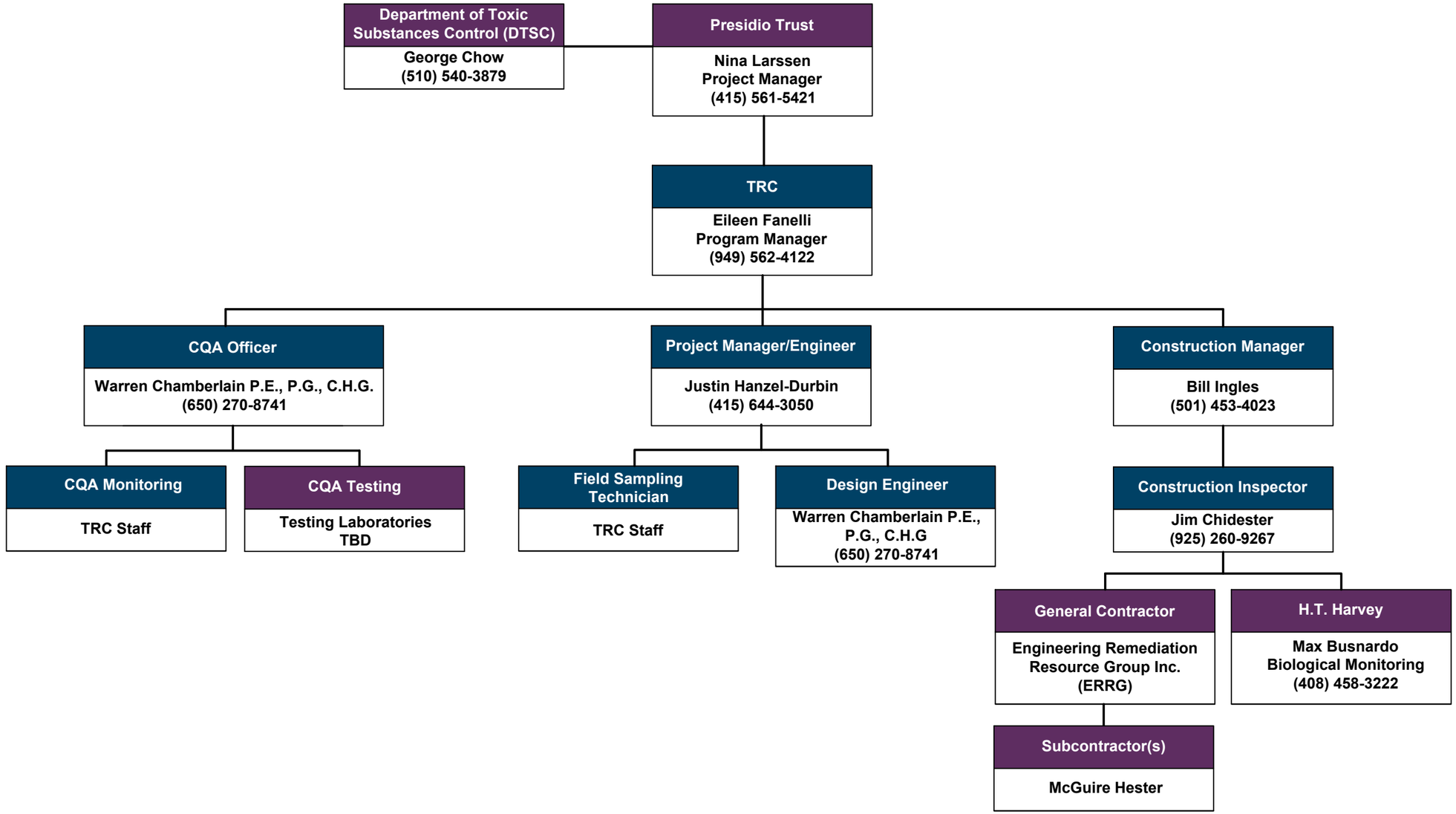
SOURCE: Base plan by Erler & Kalinowski, Inc., November 2014.

LAYDOWN AND STAGING AREAS
July 22, 2015

Lendrum Court and Incinerator Area
The Presidio Trust
San Francisco, California

TRC | 229649 | **FIGURE 7**

FILE NAME: N:\PROJECTS\CAD\Lendrum Court_San Francisco\RDIP_REV JULY15\Fig7_Laydown and Staging Areas_REV JULY15.dwg | Layout Tab: 11x17



PROJECT TEAM
ORGANIZATIONAL CHART
July 22, 2015
Lendrum Court Area
The Presidio Trust
San Francisco, California

TRC | 229649 | **FIGURE 8**