

2014 ANNUAL BIOLOGICAL MONITORING REPORT  
FORMER FORT ORD, CALIFORNIA

WORLDWIDE ENVIRONMENTAL REMEDIATION SERVICES  
CONTRACT NO. W912DY-10-D-0024

Submitted to:

U.S. Army Corps of Engineers  
Sacramento District  
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Sacramento, California 95814

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February 2015

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## ***List of Acronyms and Abbreviations***

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|       |   |
|-------|---|
| Army  | U.S. Department of the Army                           |
| BLL   | Black Legless Lizard                                  |
| BMP   | Best Management Practice                              |
| CIPC  | California Invasive Plant Council                     |
| CRLF  | California Red-Legged Frog                            |
| CTS   | California Tiger Salamander                           |
| DGM   | Digital Geophysical Mapping                           |
| DD&A  | Denise Duffy & Associates, Inc.                       |
| ESA   | Endangered Species Act                                |
| HA    | Historical Area                                       |
| HMP   | Habitat Management Plan                               |
| HRP   | Habitat Restoration Plan                              |
| MEC   | Munitions and Explosives of Concern                   |
| OE    | Ordnance and Explosives                               |
| USACE | U.S. Army Corps of Engineers                          |
| USFWS | U.S. Fish and Wildlife Service                        |
| WERS  | Worldwide Environmental Remediation Services Contract |

## **1.0 Introduction**

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This report was prepared by Denise Duffy & Associates (DD&A) as a subcontractor to Gilbane under the Worldwide Environmental Remediation Services (WERS) No. W912DY-10-D-0024. This report contains results of the 2014 biological monitoring surveys which are required as part of the *Installation-Wide Multispecies Habitat Management Plan (HMP) for Former Fort Ord, California* (U.S. Army Corps of Engineers [USACE], 1997). The U.S. Department of the Army's (Army's) decision to close and dispose of the Fort Ord military base was considered a major federal action that could affect listed species under the Endangered Species Act (ESA). The U.S. Fish and Wildlife Service (USFWS) issued a Final Biological Opinion on the disposal and reuse of former Fort Ord requiring that a HMP be developed and implemented to reduce the incidental take of listed species and loss of habitat that supports these species. The HMP was prepared to assess impacts on vegetation and wildlife resources and provide mitigation for their loss associated with the disposal and reuse of former Fort Ord (USACE, 1997).

### **1.1 Background**

The HMP establishes guidelines for the conservation and management of species and habitats on former Fort Ord lands by identifying lands that are available for development, lands that have some restrictions with development, and habitat reserve areas. The intent of the plan is to establish large, contiguous habitat conservation areas and corridors to compensate for future development in other areas of the former base. The HMP identifies what type of activities can occur on each parcel at former Fort Ord. The HMP sets the standards to assure the long-term viability of former Fort Ord's biological resources in the context of base reuse, so that no further mitigation should be necessary for impacts to species and habitats considered in the HMP. This plan has been approved by the USFWS; the HMP, deed restrictions, and Memoranda of Agreement between the Army and various land recipients provide the legal mechanism to assure HMP implementation. It is a legally binding document, and all recipients of former Fort Ord lands are required to abide by its management requirements and procedures.

In addition to the HMP, five Biological Opinions and one amendment have been issued by the USFWS, as a result of consultation with the Army, which contain additional mitigation measures and recommendations relating to biological monitoring at former Fort Ord cleanup sites (USFWS, 1999, 2002, 2005, 2007 [amendment], 2011, and 2014).

Habitat types identified in the HMP and Biological Opinions are:

- Central maritime chaparral
- Wetlands and vernal ponds
- Other habitats where listed species are known or suspected to occur (including coastal scrub, coast live oak woodlands, and grasslands with a significant native component of grasses or forb)

Special-status species listed in the HMP and Biological Opinions are:

- Sand gilia (*Gilia tenuiflora arenaria*)
- Monterey spineflower (*Chorizanthe pungens* var. *pungens*)
- Robust spineflower (*C. robusta* var. *robusta*)
- Seaside bird's-beak (*Cordylanthus rigidus* ssp. *littoralis*)
- Hooker's manzanita (*Arctostaphylos hookeri* ssp. *hookeri*)
- Sandmat manzanita (*A. pumila*)
- Monterey manzanita (*A. montereyensis*)
- Monterey ceanothus (*Ceanothus cuneatus* var. *rigidus*)
- Eastwood's goldenbush (*Ericameria fasciculata*)
- Yadon's piperia (*Piperia yadonii*)
- Contra Costa goldfields (*Lasthenia conjugens*)
- California black legless lizard (*Anniella pulchra nigra*; BLL)
- California tiger salamander (*Ambystoma californiense*; CTS)
- California red-legged frog (*Rana draytonii*, CRLF)
- California linderiella (*Linderiella occidentalis*)

Sand gilia, Monterey spineflower, and Seaside bird's-beak are annual herb species that may occur within maritime chaparral, coastal scrub, grasslands, or disturbed areas. Hooker's manzanita, sandmat manzanita, Monterey manzanita, Monterey ceanothus, Eastwood's goldenbush are perennial shrub species that typically occur in maritime chaparral, but individuals may also be found mixed with oak woodland or coastal scrub habitats. Yadon's piperia is a perennial herb that is typically found in maritime chaparral and Monterey pine habitats. The BLL is an HMP-recognized rare variety of the California legless lizard (*A. pulchra*) that inhabits areas with sandy soils on the former Fort Ord. The CTS, CRLF, California linderiella, and Contra Costa goldfields are typically found in vernal or seasonal ponds on the former Fort Ord. The CTS may also be found aestivating in small mammal burrows or under logs in upland areas within two kilometers of vernal ponds.

The HMP also outlines avoidance and mitigation measures, such as habitat restoration, which are necessary if Army's cleanup activities significantly impact protected species or habitats. These cleanup activities include munitions remediation, soil remediation, groundwater remediation, and

other related environmental cleanup operations within Fort Ord lands designated as Habitat Reserve. To determine whether mitigation measures would be needed to restore populations of affected HMP-listed species, the HMP requires that a baseline biological survey is conducted prior to work operations within a proposed cleanup site to establish whether protected species are present and map the locations and quantify abundance, and to avoid and minimize impacts. The HMP also requires monitoring consistent with existing Biological Opinions during and after completion of the cleanup operations to determine whether work activities have significantly impacted rare species or habitat. Monitoring data are compared to a site's baseline data to determine if recovery or restoration of the protected habitat (maritime chaparral, wetlands, etc.) and associated species are proceeding toward baseline conditions.

## **1.2 Report Content**

This report includes the results of biological monitoring performed by Gilbane in 2014 and a description of the mitigations and avoidance measures, biological trainings, HMP species encounters, and other habitat and species protection measures required by the HMP and the Biological Opinions. Work was conducted by Gilbane in 2014 at the following sites:

- **Soil remediation sites:** Former Historical Areas 34 and 37.
- **Munitions remediation sites:** Units 1, 2, 3, 4, 6, 7, 10, 21, and 33; the Watkins Gate Burn Area unburned areas and 100-foot buffer area; and the Phase C fuel breaks.



## **2.0 Site 39 - Soil Remediation Activities**

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There are several former ranges on the former Fort Ord, referred to as Historical Areas (HAs), where soil remediation for lead or munitions-related contamination was necessary. Soil remediation activities at several HAs were completed in previous years and no soil remediation work was conducted in any un-remediated HAs in 2014. However, site re-contouring and erosion control work was conducted at two of the Site 39 ranges in 2014, HA 34 and HA 37 (Figure 2-1 to Figure 2-3), in support of the restoration activities being completed by another Army contractor.

### **2.1 Baseline Vegetation Monitoring**

To protect sensitive habitats and rare, threatened, or endangered species that could be impacted by these activities, baseline monitoring surveys are conducted prior to remediation. Baseline surveys consist of shrub transect surveys to characterize the maritime chaparral vegetation communities on the sites and in the surrounding areas, and surveys to identify locations and population size of the HMP annual species - sand gilia, Monterey spineflower, and Seaside bird's-beak. In 2014, work was only conducted in HAs where baseline vegetation data has been collected in previous years, and no additional baseline vegetation monitoring was required. Baseline data has been recorded for these sites in the 2008 Annual Biological Monitoring Report (USACE, 2009). Habitat restoration and follow-up monitoring of HAs is being conducted by another Army contractor to document the recovery of HMP species and habitat. As such, the results of the monitoring are being submitted by that Army contractor under a separate report.

### **2.2 HMP Species Mitigation and Avoidance**

Avoidance and minimization measures were implemented during site re-contouring and erosion control activities in order to reduce impacts to HMP species and sensitive habitats. Mitigation measures for soil remediation areas are specifically addressed in the HMP, in the 1999 Biological Opinion (USFWS, 1999), and in the *Wetland Monitoring and Restoration Plan for Munitions and Contaminated Soil Remedial Activities at Former Fort Ord* (USACE, 2006). These measures are summarized as follows:

- Only previously established access routes and staging areas were used at each site to minimize impacts to surrounding habitats and HMP species to the greatest extent feasible. Existing roads and trails; pre-existing paved, graded, or disturbed areas; and areas known to be unoccupied by HMP annual species (based on previous surveys) were used for access, staging, and soil stockpiling wherever available.
- CTS avoidance and minimization measures were implemented from November through June or when adjacent vernal ponds were wet. Regular ground checks were made during the rainy season, flooded detention basins were dip-netted prior to excavation and

pumping, and employee briefings were conducted to ensure that the field staff followed the protocols for CTS avoidance and reporting.

- Work was stopped and excavation areas were surveyed by the Project Biologist and workers trained to identify CTS, if substantial rainfall occurred (greater than 0.5 inches of rain in a 24-hour period). Work activities resumed once the Project Biologist and the search crew determined that no CTS had dispersed into the area. Workers were also encouraged to conduct morning inspections for CTS under equipment following all rain events.
- Excavation areas and soil stockpiles were protected from erosion using appropriate erosion control materials (straw wattles and silt fencing).
- Erosion problems within areas of HA 34 were treated by a combination of light grading, woven coir fabric, rock socks and gabions, and rip-rap.
- HA 37 was treated for erosion control and preparation for future plant restoration<sup>1</sup>. The excavation area was re-contoured using heavy equipment to grade the excavation edges into the surrounding area and direct the flow of stormwater through the site. Erosion control included planting with sterile barley and crimping straw into the soil. Planting and seeding with native plants was implemented by another Army contractor to restore the habitat. Habitat restoration plans are provided in the *Final, Habitat Restoration Plan, Site 39 Inland Ranges, Former Fort Ord, California* (HRP; Army, 2009).

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<sup>1</sup> Please note that site re-contouring and erosion control activities at HA-37 were initiated at the end of 2013 and continued into the beginning of 2014. As such, these activities are also discussed in the *2013 Annual Biological Monitoring Report Former Fort Ord, California* (USACE, 2014).

### 3.0 Other Biological Support Activities in 2014

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#### 3.1 Munitions Remediation Activities - HMP Species Mitigation and Avoidance

During 2014, munitions and explosives of concern (MEC) remediation activities within the Fort Ord Impact Area were conducted within Units 1, 2, 3, 6, 7, 10, 21, and 33; the Watkins Gate Burn Area unburned areas and 100-foot buffer area; and the Phase C fuel breaks (Figure 3-1). Activities within these areas included prescribed burning, mastication and pruning of vegetation, surface MEC removal, target removal, fence removal and replacement, digital geophysical mapping (DGM), subsurface MEC removal where necessary, and vehicle use to support these activities. Mitigation measures to reduce impacts to protected species and sensitive habitats during MEC remedial actions are described in the HMP (USACE, 1997) and five Biological Opinions provided by the USFWS to address Army clean-up activities (USFWS, 1999, 2002, 2005, 2007 [amendment], 2011, and 2014). Mitigation and other environmental protection measures that were implemented during this project are summarized here:

- *Minimize Disturbance Associated with OE Removal:* Disturbances were limited to those required for the above-mentioned activities. As required by the HMP, existing roads were used (with the exception of where it was necessary to traverse the site using tracked vehicles in order to access excavation sites, remove piles of debris, remove vegetation, and conduct the DGM portion of the MEC removal process). Access roads, staging areas, and other appurtenant facilities were sited to avoid impacts to HMP plant and wildlife species. However, populations of Monterey spineflower were identified within Units 2, 3, 7, 10, and the Watkins Gate Burn Area unburned areas. While MEC removal and DGM activities were necessary within the Monterey spineflower population areas, no equipment or personnel were permitted within these areas from approximately March (approximate time of germination) through June (approximate time of seed-set). During this period, the Monterey spineflower population areas were flagged off and a map of the locations was provided to all supervisors and field personnel. No subsurface MEC removal was conducted within the Monterey spineflower population areas.
- *Avoid Disturbance of Sand Gilia and Seaside Bird's-Beak Populations:* Populations of Seaside bird's-beak were observed within Unit 3 during baseline surveys and within fuel breaks along Riso Ridge Road during surveys conducted in 2014 prior to subsurface investigations. Populations of sand gilia were identified during baseline surveys within Units 3 and 10, and the Watkins Gate Burn Area unburned areas. While MEC removal and DGM activities were necessary within population areas, no equipment or personnel were permitted within these areas from the approximate time of germination through the approximate time of seed-set for each species. Additionally, although mastication was scheduled within the entirety of Unit 3, the area supporting the population of Seaside

bird's-beak was re-evaluated in the interest of providing maximum protection to the species, and a determination was made that mastication was not necessary. Further, areas where Seaside bird's-beak was observed in the fuel breaks were avoided during subsurface investigations. No subsurface MEC removal was conducted within the Seaside bird's-beak or sand gilia population areas.

- *Conduct Employee Education Program:* Natural resource protection training for all supervisors and field personnel was conducted by the Project Biologist prior to working on the site. Please refer to Section 3.3 for an outline of the content of the Employee Education Program. In addition to the training, a Habitat Checklist was prepared by the Project Biologist prior to each activity that outlined specific avoidance and minimization measures, which were communicated to the project supervisors prior to work initiation in preparatory meetings.
- *Minimize and Compensate for Impacts to California Linderiella, California Tiger Salamander, and Red-legged frog:* Supervisors and field personnel were trained during the Employee Education Program to identify CTS and CRLF, and they were informed of the potential for these species to occur within the project site and the established protocol if any individuals were encountered. Please refer to Section 3.2.1 for a description of all CTS encounters in 2014. Dewatering and repair of an inundated detention basin were required for erosion control HA 34. To ensure no CTS or CRLF were present within the detention basin, the Project Biologist conducted an aquatic survey using a dipnet in the morning prior to dewatering. No CTS, CRLF, or other amphibian species were captured during the survey. Additionally, work within the vernal pool areas was only permitted during the dry season. In 2014 the only work conducted by Gilbane within vernal pools was DGM surveys within Pond 10. These surveys were completed using manual equipment and no heavy equipment was utilized. No excavation was necessary within the vernal pool areas, and therefore, no restoration of habitat for these three species was necessary.
- *Minimize Impacts to Black Legless Lizard:* Supervisors and field personnel were trained during the Employee Education Program to identify BLL, and they were informed of the potential for this species to occur within the project site and the established protocol if any individuals were encountered. Please refer to Section 3.2.2 for a description of all BLL encounters in 2014.
- *Invasive Weed Control:* In order to reduce the spread of invasive weeds, existing roads were used to the greatest extent feasible and decontamination was required prior following work in infested areas. Please refer to Section 3.3 below for an overview of measures implemented to reduce the spread of invasive weeds.

- *Erosion Control:* To reduce erosion concerns on bare mineral soils, normal vehicle access was restricted to existing roads and established access routes. Tracked vehicles were used to conduct vegetation removal and DGM surveys over the site. Gilbane monitored the work sites for potential erosion problems, and a final inspection was conducted at the conclusion of work at each site by the Project Biologist. In areas where subsurface MEC removal was conducted in fuelbreaks on steep slopes, water bars and StrawNet pelletized straw mulch were installed to reduce erosion.

## **3.2 HMP Species Encounters**

### **3.2.1 California Tiger Salamander Encounters**

There were no CTS encounters by Gilbane on the former Fort Ord in 2014.

### **3.2.2 Black Legless Lizard Encounters**

There were no BLL encounters by Gilbane on the former Fort Ord in 2014.

## **3.3 Employee Education**

New Gilbane employees and subcontract workers receive training on Fort Ord natural resource protection prior to starting work. In 2014, Gilbane provided training to ten new employees on natural resource protection.

Training includes the following topics:

- Identification of sensitive HMP-protected habitats and HMP species specific to the work area. Habitats covered in the training include maritime chaparral, vernal ponds, and wetlands. Species covered include CTS, California linderiella, BLL, sand gilia, Monterey spineflower, Seaside bird's-beak, Yadon's piperia, Contra Costa goldfields, Monterey manzanita, sandmat manzanita, Hooker's manzanita, Eastwood's goldenbush, and Monterey ceanothus. Additional HMP species occurring within the dune habitats on Fort Ord are not included in the training, because work has been completed in these areas and these species will not be impacted by work in the inland ranges.
- Specific guidance for CTS protection, including the ability to recognize the species, the protocol for reporting all encounters to the Gilbane or Army biologists (who are permitted by USFWS to handle and relocate CTS), placing escape ramps or covering open trenches, and checking equipment and excavations for CTS during migration seasons.
- Instructions for minimizing all work impacts and work footprints, and for avoidance of areas flagged for sensitive species or habitats wherever marked in the field.
- Instructions for restricting vehicle movement and parking to roads, staging areas, and other designated work areas wherever possible.

- How to reduce soil disturbances in sensitive habitat, particularly areas containing seed bank or live individuals of HMP-listed plant species.
- How to reduce erosion problems and spread of invasive species.

### **3.4 Invasive Species Control**

Several invasive plant species are known to occur on the former Fort Ord, including iceplant (*Carpobrotus* sp.), French broom (*Genista monspessulana*), and jubata grass (*Cortaderia jubata*). These species spread rapidly and can severely degrade native habitats, if measures are not taken to control their spread. The Army has reviewed the California Invasive Plant Council's (CIPC's) *Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers* and has identified appropriate Best Management Practices (BMPs) that can be implemented during cleanup activities. Specifically, BMPs that are employed to the greatest extent practicable include: washing all vehicles and equipment that come from off of Fort Ord, including those of subcontractors; finding weed-free sources for fill and road base materials and straw that are imported from off-site; only using on-site sources for fill and road base materials that come from areas without invasive plant infestations; planning any off-road haul routes to avoid invasive plant populations; and cleaning boots, equipment, and vehicles that have been used in high infestation areas prior to moving to sites where invasive species populations are low or have not been identified. Additionally, each new work area is evaluated for the presence of invasive species, and the appropriate avoidance and minimization measures are identified prior to work initiation.

#### **3.4.1 Units 1, 2, and 3 Invasive Species Control**

In 2014 activities within Units 1, 2, and 3 included mastication and pruning of vegetation, surface MEC removal, target removal, DGM, and vehicle use to support these activities. Prior to initiation of these activities, the Project Biologist completed an evaluation of the presence or absence of invasive plant species within these units. The evaluation identified significant populations of jubata (pampas) grass (*Cortideria jubata*) within Unit 1 and a portion of Unit 2, and limited to no populations of jubata grass or other invasive plants however within Unit 3 and the remaining portion of Unit 2. Due to the presence of very dense chaparral within Unit 2, the extent of the jubata grass could not be identified until the completion of the mastication. Upon completion of the mastication of Unit 2, the Project Biologist mapped the extent of the densest populations of jubata grass (Figure 3-2). This map was utilized to inform personnel of the area where decontamination would be necessary following work. It was also utilized to guide the direction of the DGM surveys; the DGM towed array surveyed the infested areas first and then moved to the uninfested areas after decontaminating their equipment.

Decontamination by pressure washing was required on a daily basis for the DGM towed array. For the masticators, pressure washing was required prior to leaving Units 1 and 2, as the extent

of the jubata grass was not known until mastication was complete and the heavy equipment was stored on-site overnight. For vehicles, boots, and equipment, decontamination was conducted on a daily basis (or more if personnel left the units multiple times per day) using brushes. If any caked-on soils or materials remained that could not be removed with a brush, boots and equipment were washed with water at the Gilbane Compound; however, vehicles were required to be pressure-washed on site.

## 4.0 References

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- USFWS, 2011. Biological Opinion for the Former Fort Ord Vegetation Clearance Activities and Transfer of Parcel E29b.3.1 - 8-8-11-F-39 (AR BW-2579)
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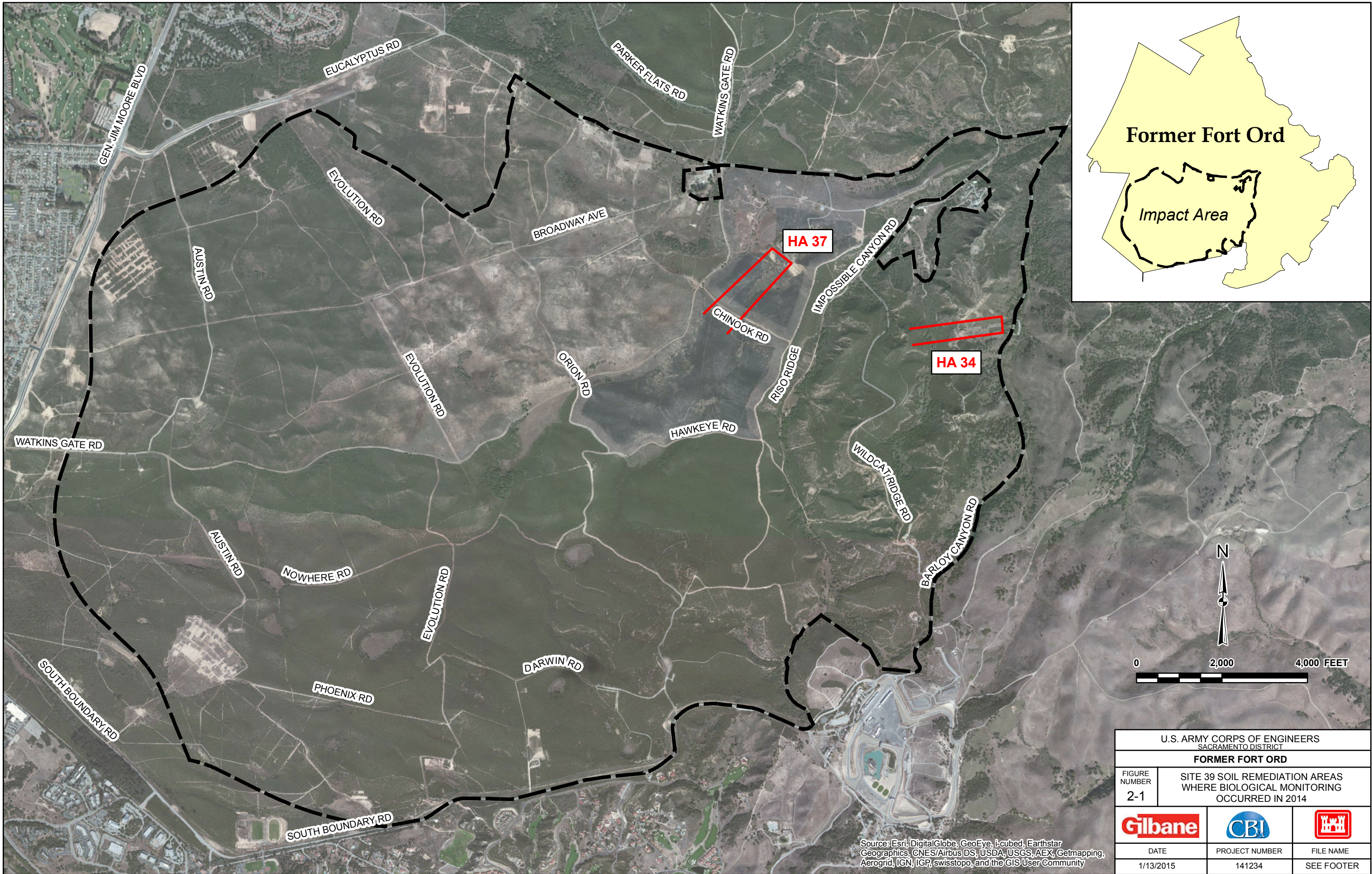
## *Figures*

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| <b>Figure 3-2</b> | <b>Unit 2 Jubata Grass Area</b>   |





Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar  
Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping,  
Aerogrid, IGN, IGP, swisstopo, and the GIS User Community




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| U.S. ARMY CORPS OF ENGINEERS<br>SACRAMENTO DISTRICT                                   |   |   |
| FORMER FORT ORD   |   |   |
| FIGURE<br>NUMBER<br>2-1   | SITE 39 SOIL REMEDIATION AREAS<br>WHERE BIOLOGICAL MONITORING<br>OCCURRED IN 2014     |   |
|  |  |  |
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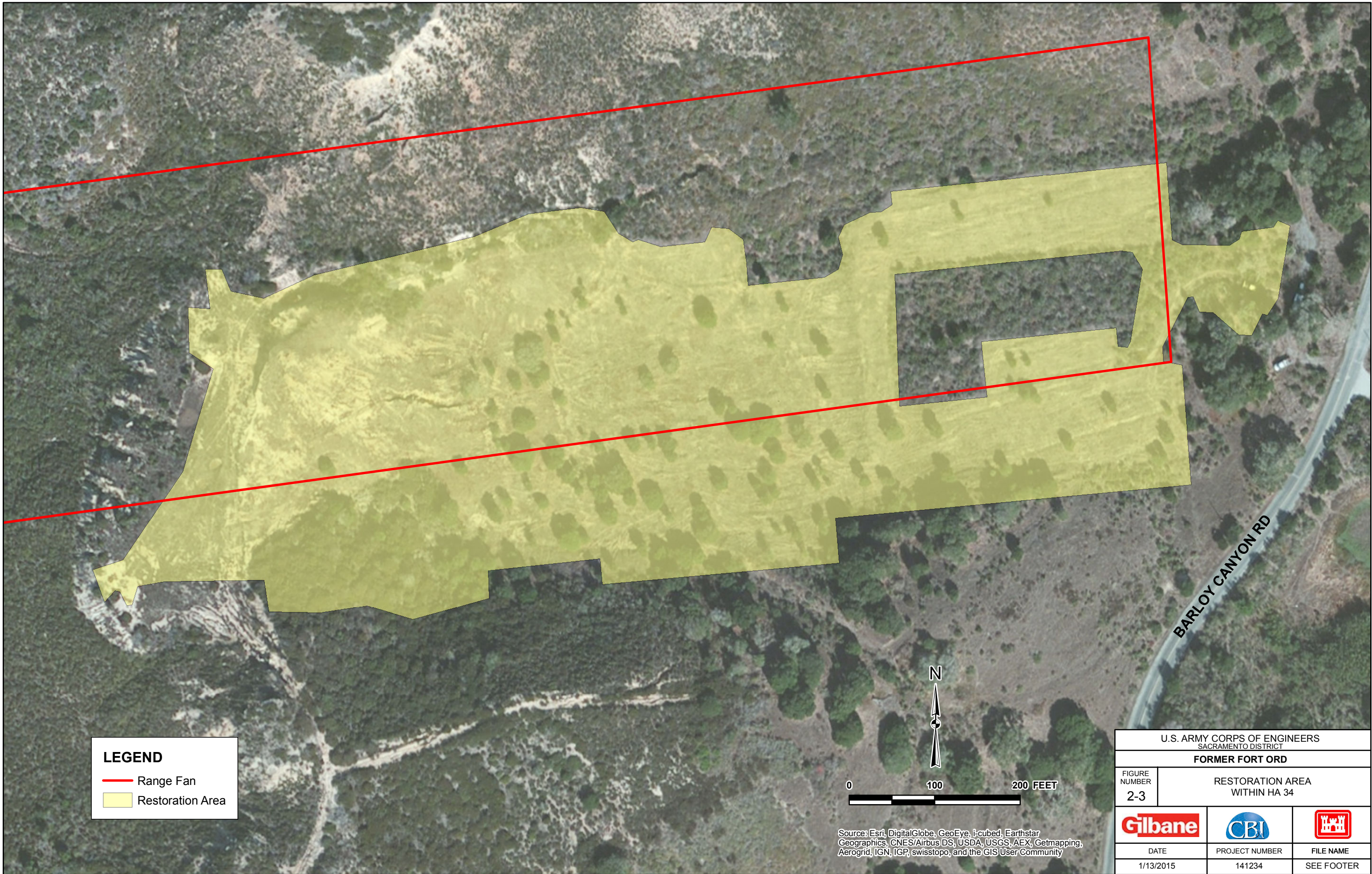


**LEGEND**

- Haul Route
- Range Fan
- Restoration Area
- Pond

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|---|---|---|
| U.S. ARMY CORPS OF ENGINEERS<br>SACRAMENTO DISTRICT                                   |   |   |
| FORMER FORT ORD   |   |   |
| FIGURE<br>NUMBER<br>2-2   | RESTORATION AREAS<br>WITHIN HA 37   |   |
|  |  |  |
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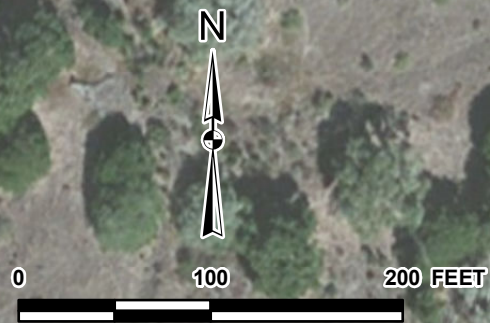







**LEGEND**

— Range Fan

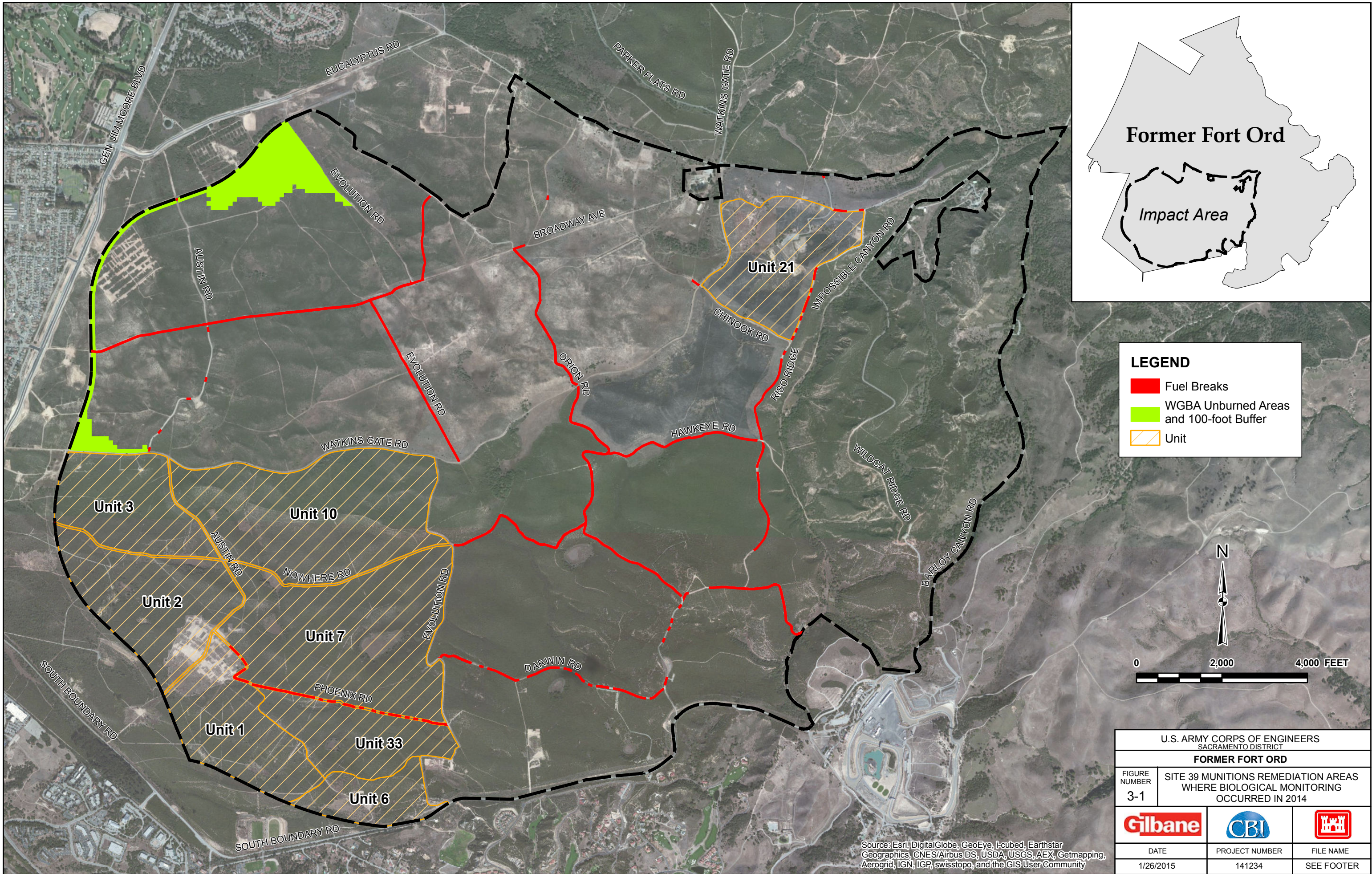
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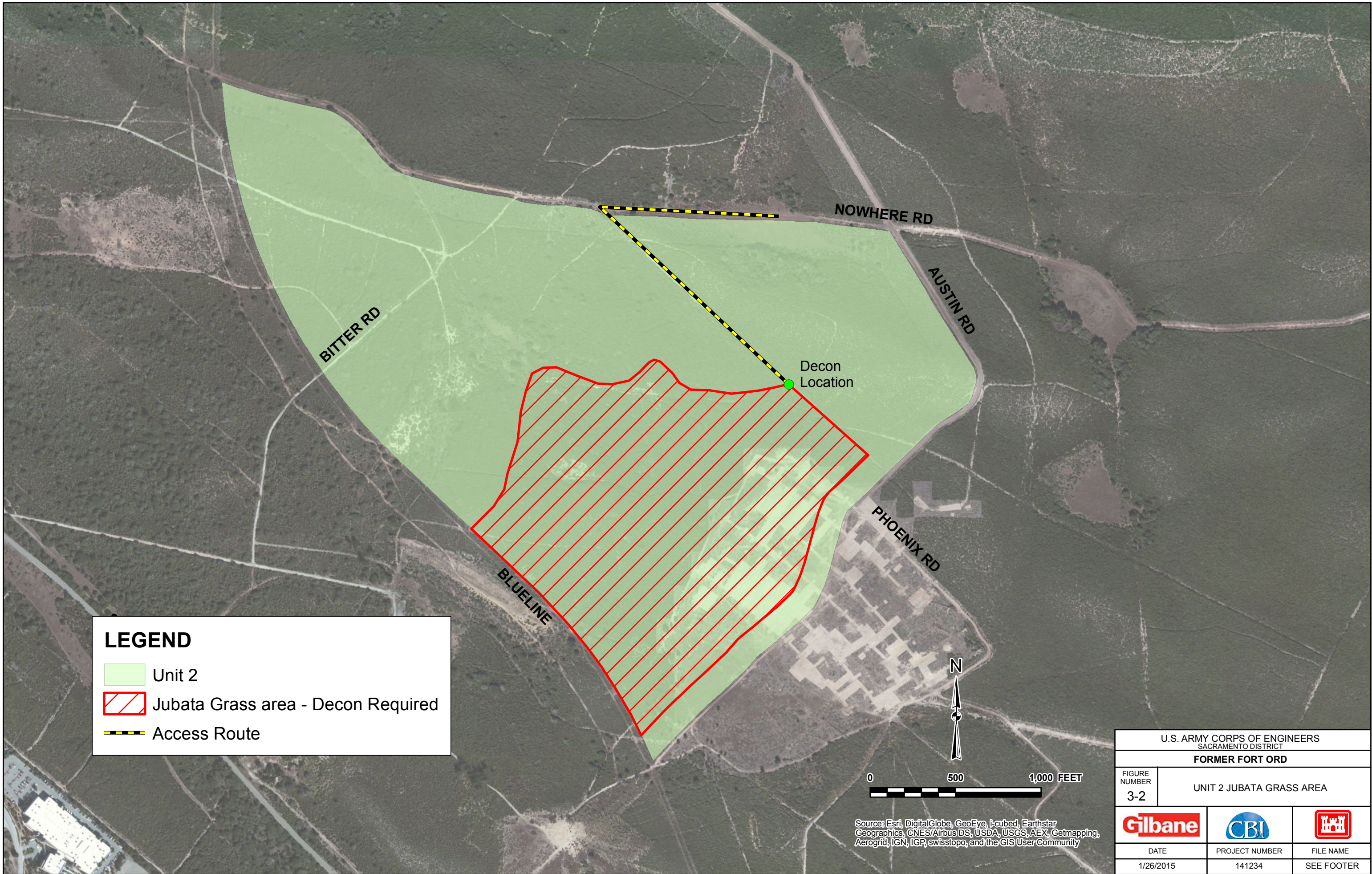
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| U.S. ARMY CORPS OF ENGINEERS<br>SACRAMENTO DISTRICT                                   |   |   |
| FORMER FORT ORD   |   |   |
| FIGURE<br>NUMBER  | RESTORATION AREA<br>WITHIN HA 34  |   |
| 2-3   |   |   |
|  |  |  |
| DATE  | PROJECT NUMBER  | FILE NAME   |
| 1/13/2015   | 141234  | SEE FOOTER  |















**LEGEND**

 Unit 2

 Jubata Grass area - Decon Required

 Access Route

Source: Esri, DigitalGlobe, GeoEye, I-cubed, Earthstar  
Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping,  
Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

|   |   |   |
|---|---|---|
| U.S. ARMY CORPS OF ENGINEERS<br>SACRAMENTO DISTRICT                                   |   |   |
| FORMER FORT ORD   |   |   |
| FIGURE<br>NUMBER<br>3-2   | UNIT 2 JUBATA GRASS AREA  |   |
|  |  |  |
| DATE<br>1/26/2015   | PROJECT NUMBER<br>141234  | FILE NAME<br>SEE FOOTER   |