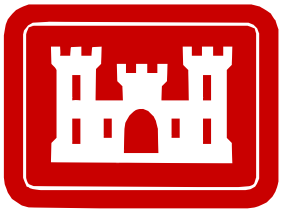
DRAFT
OU-1 FORT ORD NATURAL RESERVE WELL DESTRUCTION AND NORTHWEST TREATMENT SYSTEM DECOMMISSIONING WORK PLAN

FORMER FORT ORD, CALIFORNIA



Prepared for:

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Sacramento District
1325 J Street
Sacramento, CA 95814-2922

Contract No. W912DY-10-D-0023
Task Order CM10

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May 2017

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LIST OF ACRONYMS AND ABBREVIATIONS

AHA	Activity Hazard Analysis
APP	Accident Prevention Plan
bgs	below ground surface
BRAC	Base Realignment and Closure
BCT	BRAC Cleanup Team
CIH	Certified Industrial Hygienist
CTS	California tiger salamander
DCA	dichloroethane
DCE	dichloroethene
DDA	Denise Duffy & Associates, Inc.
EM	Environmental Monitor
EZ	exclusion zone
FONR	Fort Ord Natural Reserve
HA	Health Advisory
HGL	HydroGeoLogic, Inc.
MCEHD	Monterey County Environmental Health Department
MEK	methyl ethyl ketone
NWTS	Northwest Treatment System
OU	operable unit
PCE	tetrachloroethene
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
PPE	personal protective equipment
QCM	Quality Control Manager
ROD	Record of Decision
ROE	Right of Entry
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SZ	Support Zone
TCE	trichloroethane
UCSC	University of California Santa Cruz

USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound
WERS	Small Business Worldwide Environmental Remediation Services

OU-1 FORT ORD NATURAL RESERVE WELL DESTRUCTION AND NORTHWEST TREATMENT SYSTEM DECOMMISSIONING WORK PLAN FORMER FORT ORD, CALIFORNIA

1.0 INTRODUCTION

This Work Plan describes the methods and procedures to be used in destroying Operable Unit (OU)-1 groundwater monitoring, injection, and extraction wells and decommissioning of the associated Northwest Treatment System (NWTS). HydroGeoLogic, Inc. (HGL) prepared this Work Plan for the U.S. Army Corps of Engineers (USACE), Sacramento District under the Small Business Worldwide Environmental Remediation Services (WERS) contract No. W912DY-10-D-0023 CM11.

The regulatory agencies concurred in February 2017 (EPA, 2017) that OU-1 groundwater remediation is complete and no further monitoring or groundwater treatment is needed. In addition, these wells represent an ongoing maintenance responsibility for the USACE and a potential liability if they are vandalized. Consequently, the wells, pipeline, and treatment facility will be destroyed or decommissioned as part of the OU-1 closure effort. Well destruction and the pipeline / treatment plant decommissioning will not start until the following occurs:

- The Base Realignment and Closure (BRAC) Cleanup Team (BCT) has approved this Work Plan, including the site-specific well destruction methods identified on the well destruction permit applications. The BCT includes the US Environmental Protection Agency (EPA), the California Department of Toxic Substances Control, and the California Regional Water Resources Control Board.
- The Army and HGL have received the approved well destruction permits from Monterey County Environmental Health Department (MCEHD) and any local government permits specific to the work site(s).
- Property owners are notified concerning the upcoming work and schedule.

All wells to be destroyed, the pipelines and associated infrastructure, and the NWTS are located within the Fort Ord Natural Reserve (FONR), except well MW-B-02-A which is located on Marina Municipal Airport property adjacent to the FONR. The buried pipelines connecting the extraction and injection wells to the NWTS will be capped and left in place to minimize impact to the FONR habitat. These wells and the pipeline were constructed to remediate groundwater as part of the OU-1 cleanup effort at the former Fort Ord, CA.

HGL previously destroyed OU-1 wells within the FONR in 2011 and 2014. The procedures to be used in this current effort are identical to those described in the previously approved Work Plans (HGL, 2014; HGL, 2016) and have been repeated herein.

This Work Plan also describes the procedures and methods for completing the pipeline and NWTS decommissioning described in the contract performance work statement. The major work elements are summarized below:

- Demolish, remove, and dispose of the surface components and top one to five feet (depending on well location) of the well casing at each well site.
- Destroy wells in place by placing approved material directly into the remaining well casing throughout its total depth.
- Remove the above ground portions of pipelines that connect extraction wells to the NWTS and that connect the NWTS to the infiltration trenches and injection well.
- Cap and plug the end points of the buried pipelines while leaving the buried portion of the pipelines in place.
- Remove the pumps, tanks, treatment vessels, piping, valves and controls from the NWTS and properly dispose or recycle the materials.
- Leave in place the NWTS fence, power connection, containment basin, and lighting for future use by University of California at Santa Cruz (UCSC).

All debris generated from these efforts will be recycled or disposed at approved facilities. The wells to be destroyed are described in Section 2, the destruction permit applications are included in Appendix A, and the corresponding Monterey County well destruction permit template is presented in Appendix B. Health and safety requirements are summarized in Section 3.0 of this Work Plan and addressed in detail in Appendix C.

The proposed well destruction activities will fulfill state of California and Monterey County requirements for proper abandonment of inactive wells. The MCEHD will be notified 24 hours before sealing materials are placed in each well, and the BCT will be notified 72 hours before field activities begin. The BCT will also be notified of any significant complications encountered in the field, any deviations from the work plan, and any corrective measures taken in response to such occurrences.

2.0 PROJECT ACTIVITIES

This section describes the operational procedures and permit requirements to be followed in the performance of well destructions. The methods and procedures to be used in decommissioning the NWTS and associated pipelines are also described. Table 2.1 lists the wells to be destroyed. Figure 2.1 shows the general project area and Figure 2.2 shows the locations of the wells to be destroyed.

The USACE will obtain Right of Entry if needed and notify property owners to access to the well sites and treatment plant locations.

2.1 OBTAINING WELL DESTRUCTION PERMITS

Destruction activities will be conducted under approved permits from the MCEHD and will follow the guidelines and requirements in State of California Water Well Standards, Bulletin 74-81, Supplement 74-90, and ASTM International Standard 5299-99, Standard Guide for Decommissioning of Ground Water Wells, Vadose Zone Monitoring Devices, Boreholes and Other Devices for Environmental Activities.

Well destruction permit applications are attached (Appendix A) and require a signature from a U.S. Army representative and the licensed California well driller who will direct the work before submittal to MCEHD. The Comprehensive Environmental Response, Compensation, and Liability Act status of these basewide monitoring wells has historically warranted an exemption from county permit fees. Well destruction activities will not proceed before receipt of appropriate approved well destruction permits from MCEHD.

Waivers from the standard requirements will be requested to protect the sensitive plant habitat within the FONR for all wells except wells MW-OU1-27-A (E2) and MW-B-02-A (top right of Figure 2.2). For ease of reference, the alpha-numeric code (E2 in this example) after each well designation refers to its location on the grid on Figure 2.2. No waivers are anticipated for these two wells because they are in the grassland area. The waiver will be requested to remove the well casing to a depth of 1 foot below the ground surface rather than 5 feet as indicated in the MCEHD regulations. This waiver was requested and granted during the OU-1 well destruction efforts in 2011 and 2014.

2.2 WELL DESTRUCTION TEMPORARY CONSTRUCTION ACTIVITIES

Temporary construction activities that are part of well destruction activities include the following:

- Traffic Control Plan
- Notifications
- Support Facilities
- Security

2.2.1 Traffic Control Plan

The FONR is fenced along its entire perimeter and is accessed through locked gates. The FONR gates will be kept locked and HGL field staff will monitor the entrance to the work area to prevent unauthorized access. The standard entry point to the work area will be through the Northwest Boundary Road gate near the NWTS shown on Figure 2.3.

At well MW-B-02-A (top right of Figure 2.2) HGL will position equipment off the roadway and place traffic barriers across the road to prevent access from either direction. The barriers will be monitored by the HGL Field Supervisor. Work will stop and personnel moved to safe areas if necessary to allow traffic to pass. Minimal, if any, traffic is anticipated at this well location because the Northwest Boundary Road at this point leads only to the FONR Northwest Boundary Road gate with no other intersections.

2.2.2 Notifications

Notifications of the work start date will be made at least two weeks before the start of field activities to the following:

- Fort Ord BRAC Office
- UCSC
- Private property owners adjacent to well locations
- Marina Fire Department
- Marina Department of Public Works
- Marina Airport

The work area is non-residential.

2.2.3 Support Facilities

Support facilities include lockable containers, chemical toilets, and portable containment tanks and/or bins. Remediation is complete for OU-1 and no decontamination efforts are anticipated unless unexpected conditions are discovered when destroying the wells, decommissioning the NWTS, or capping the pipelines. If needed, decontamination facilities will consist of portable secondary containment for personnel and an equipment decontamination pad. Decontamination water will be collected in portable tanks for subsequent characterization and disposal or treatment at the OU-1 NWTS. The decontamination pad, if needed, will be installed adjacent to the NWTS (Figure 2.3). The support facilities and equipment staging area will be located at and adjacent to the OU-1 NWTS.

2.2.4 Biological Clearance and Protection

The project activities will be conducted in a manner consistent with the current biological opinions and guidance regarding conservation measures (USFWS, 2015). Compliance with these measures reduces or avoids impacts to species of concern on the project site. Guidance that will be followed for the project activities is as follows:

- *The 28 March 2015 Programmatic Biological Opinion for Cleanup and Property Transfer Actions Conducted at the Former Fort Ord, Monterey County, California (8-8-09-F-74). (USFWS, 2015)*
- *Guidance and direction from University of California FONR staff*
- *Installation-Wide Multispecies Habitat Management Plan (U.S. Army, 1997)*

To minimize the potential for impacts to sensitive species, each well destruction site in a Habitat Reserve, Habitat Reserve/FONR, Development with Reserve, or Restrictions location (as indicated in Table 2.1) will be evaluated before work begins to determine if the site is in an area of potentially sensitive habitat. In addition, all work will be conducted in accordance with the Environmental Protection Plan presented in Appendix D.

Qualified field personnel will perform the site evaluation in accordance with the Fort Ord Habitat Management Plan, (U.S. Army, 1997). For this project, Denise Duffy & Associates, Inc. (DDA) staff will perform the biological clearance and assessments under subcontract to HGL. If a well destruction site is located within an area of potentially sensitive habitat, then biological clearance will be conducted and conservation measures implemented.

The California tiger salamander (CTS) is a federally listed threatened species. If a well destruction site is in an area where the CTS is known to exist, then field personnel will conduct daily visual inspections before starting field activities. If a CTS is discovered, HGL shall immediately notify the Chenega Biologist supporting BRAC, the subcontracted biologist for the BRAC, and USFWS authorized personnel. Field activities will cease in the immediate vicinity of the CTS until the CTS is relocated by authorized personnel.

HGL will coordinate access and project activities with the Fort Ord BRAC Office and maintain site security. The DDA biologist will identify and mark acceptable access routes before equipment is mobilized to the work area. Some limited vegetation clearance is anticipated but will be implemented in a manner that protects existing oak trees and sensitive species. Tree branches may be trimmed as necessary to provide access. It is not anticipated that any trees will need to be removed; however, if tree removal is necessary HGL will coordinate with the BRAC biologist and other relevant parties as needed to ensure that the removal is accomplished in an acceptable manner.

HGL, DDA, and UCSC personnel will conduct an on-site briefing for all staff involved in well destruction or decommissioning activities before fieldwork begins at sites within the FONR. Although encounters are very unlikely, protected animal species (such as the federally threatened CTS) and response measures will be described. This briefing will ensure that all field crew members understand the requirements, conservation and security measures, and protocols presented in the HCL; the HCL will be enforced to protect species and critical habitat. Staging areas and access routes will be clearly delineated and shown to field personnel.

The following best management biological protection measures will be implemented:

- The DDA biologist will be familiar with the Fort Ord plant and wildlife identified in the Habitat Management Plan (U.S. Army, 1997) and approved by the BRAC Biologist. The DDA biologist will be on call during work activities.

- In case of an encounter with CTS, only a U.S. Fish and Wildlife Service (USFWS) approved biologist will handle and relocate the salamander.
- All equipment used in the well destruction and pipeline removal will be thoroughly washed before entering the FONR to minimize the potential for carrying non-native plant species into the FONR.
- The general environmentally proactive work practices and general conservation measures to minimize environmental impacts presented in Appendix D will be followed.
- A Habitat Checklist (this form is provided in Appendix D) will be completed before work begins.

2.2.5 Security

Site access will be controlled with the locked gates controlling access to the FONR property. Project personnel will control and monitor entrance into the work area around individual wells sites and pipeline segments being removed. Only HGL project personnel, subcontractor personnel (DDA, Cascade Drilling, and Telemetrix Incorporated), and authorized visitors with proper identification and health and safety training credentials will be allowed access into the work site. During performance of the work described in this work plan, HGL will meet the Cascade Drilling staff at the FONR NW entrance and escort them to the site. DDA and Telemetrix staff have routinely performed work within the FONR for over 10 years. HGL will meet vendors (equipment delivery, waste disposal) outside the FONR and escort them to the site as needed. Most, possibly all, of the subcontractor staff have worked for HGL on previous OU-1 projects and are known by sight. Evidence of company affiliation (company vehicle, confirmation from company employee known to HGL, or roster provided by the Subcontractor prior to arrival) will be required for new crew members.

All work within the FONR will occur on property owned by the University of California at Santa Cruz (UCSC), who allows "as-needed" access to Army, BRAC, HGL and other Army contractors. Visitors should make arrangements for permission and access through UCSC or the BRAC Office.

The police department for the City of Marina will be notified at least two weeks in advance when work will be performed within their jurisdictions and corresponding police presence in the area will be requested as necessary and appropriate.

2.3 WELL DESTRUCTION

Acceptable well destruction procedures include either (1) abandon in place by placing the sealing material directly into the well casing, or (2) over-drill and remove the well casing and place sealing materials in the borehole. In 2011 and 2014, HGL destroyed 73 wells within the OU-1 FONR area. In all cases, MCEHD approved using the first procedure listed above and the wells were successfully destroyed. There are no known obstructions at any well that would prevent successful abandonment in place. Consequently, the permit applications propose abandonment in place by introducing the sealing material directly into the well casing. The total depth at each well will be verified immediately before destruction begins. If an obstruction is found that would prevent successful placement of sealing material or if MCEHD does not approve the proposed

method at a given well, then the need for over-drilling the well will be analyzed by the project team and a work plan variance request detailing the over-drilling process and disposal of tailings at an approved facility will be submitted for regulatory approval before destroying the well. If over-drilling is used to destroy the well, disposal of the resulting soil would be addressed in the work plan variance.

Sealing material will consist of a 5 percent bentonite neat cement grout. The wells will be filled with a sufficient volume of cement grout to completely fill the well casing and force grout through the well screens and into the gravel pack and surrounding lithology. The wells will be filled from the bottom up using a tremie pipe to prevent dilution of the grout, avoid bridging, and ensure proper grout placement.

The well bores will be filled to within 5 feet or less below ground surface. The total amount of grout used to seal each well will be recorded. The existing concrete pad at each well site will be removed and the well casing will be removed to a depth of 5 feet below ground surface, except where a waiver has been granted by MCEHD to remove well casing to a shallower depth. No waiver requests for OU-1 wells to remove less than 5 feet of the well casing are planned. For wells with a water-level measuring pipe separate from the monitoring well, additional steps and precautions will be taken to ensure that the bottom of the well casing as well as the top of the measuring pipe are properly sealed with grout.

The well destruction sequence will proceed as follows:

- HGL will ensure that all power is disconnected from the nine extraction wells (identified in Table 2.1) and lockout/tagout protocols are in place before starting well destruction.
- The pumps, pipe and electric power connections, and associated control system components will be removed from the extraction wells before filling the well casing with the sealing material.
- The surface completion of each well will be removed, including well boxes or vaults, protective boxes, well pads, and bollards.
- If wells located within the FONR rare plant habitat are added to the project scope of work, the top 3 inches to 6 inches of surface soil will be removed and temporarily stored and segregated from all other excavated material. This stored/segregated soil will be used as the surface soil layer when re-grading the excavated area.
- If necessary, some portion of the aboveground casing may be cut off to facilitate destruction.
- The well will be sounded and its total depth checked immediately before destruction to identify any obstructions that may interfere with filling and sealing the casing and/or well screen. If encountered, obstructions will be removed before filling and sealing efforts begin.
- The entire well will be pressure filled with a 5 percent bentonite neat cement grout using a tremie pipe or equivalent method that will reduce the potential for bridging. If bentonite grout is used, the grout will be a minimum 9.1 pounds per gallon weight followed by a cement plug extending from land surface to a depth of not less than 2 feet below ground surface (bgs). In either case, the sealing material will be free of organic matter. Using

bentonite grout or cement is consistent with the approved impervious sealing materials described in Section 9, Subsection D, of the California Department of Water Resources Water Well Standards, which includes the following:

  - Neat cement
  - Sand-cement grout
  - Concrete
  - Bentonite clay
  - Well-proportioned mixes of silts, sands, and clays (or cement), and native soils that have a coefficient of permeability of less than 10 feet per year

- The sealing material will be placed under pressure using the tremie method starting from the bottom of the well and proceeding continuously upward until the casing is completely filled. The volume of sealing material placed will be monitored as the sealing operation proceeds and will be compared to the calculated volume of the well casing and screen. At a minimum, the volume of sealing material placed will equal the calculated volume of the well casing and screen.
- After setting and/or curing times have been met (as described in California Department of Water Resources Water Well Standards Section 9, Subsection D) the abandonment crew will excavate around the casing to remove the upper portion of the well casing. For any wells added to the project scope of work and located within the FONR rare plant habitat area, the well casing will be removed only to 1 foot bgs using hand excavation to clear the area. For the remaining wells, the uppermost 5 feet bgs of well casing will be removed.
- The casing excavation will be backfilled with native material and regraded to match the surrounding topography. The original topsoil that was removed and segregated will be used as the surface layer during the regrading effort.
- All debris (well casing, excess seal material, and trash) and surface components from the destroyed well (bollards, well pad, protective casing, and well boxes as well as pumps and piping) will be transported to the staging area(s) pending recycling or proper disposal.

2.4 PIPELINE CAPPING

HGL will cap the ends of the pipeline used in the OU-1 remediation effort (Figure 2.2). The injection vault and conduit will also be removed during this phase of work. The pipeline connects the extraction wells (identified in Table 2.1) to the NWTS facility. A summary of the materials to be demolished and disposed of is presented in Table 2.3.

2.4.1 Pipeline Capping Method

The pipelines shown on Figure 2.2 will be sealed on each end with approximately 1 linear foot of grout using a tremie pipe. The portion of the pipeline that is above ground surface will be removed using an excavator, backhoe, or hand tools. The remaining buried pipeline will be undisturbed and will remain in place. Any water remaining in the pipeline is derived from the extraction wells and the latest sample results show that water quality in the extraction well

discharge does not contain contamination above site cleanup levels. Consequently, this remaining water does not pose a threat to human or ecological health. If the pipeline contains residual water, the water will be allowed to drain into the ground prior to sealing the endpoints. Any soil removed during pipeline sealing activities will be used to fill in and regrade the excavated area. The excavated area will be completely closed at the end of each workday.

No trenching will take place during this field effort and the excavations to take place during pipeline capping will not exceed 4 feet in depth.

Debris will be segregated on site for recycling or disposal as nonhazardous material. Debris that is not recyclable or practical to recycle will be sent to a properly permitted landfill. All debris/recyclables will be loaded into a dump trailer(s) for transport; the load will be secured and covered, if necessary.

2.4.2 Injection Vault Removal Method

After the pipeline has been sealed, the injection vault and conduit will be removed using a backhoe or similar equipment. Excavations greater than 4 feet are not expected and no personnel are expected to require entry into the excavated area. The excavated area will be completely closed at the end of each work day and regraded to match the surrounding area. Due to the shallow nature of the vault and its' location in the grassland, no imported backfill is expected to be needed for this activity. Concrete and other debris associated with the removal effort will be transferred to a dump truck and disposed of at an approved facility.

2.5 OU-1 NWTS TREATMENT PLANT DECOMMISSIONING

The NWTS (Figure 2.2) is currently on standby but operable. The NWTS may be used to treat and dispose of decontamination water before it is decommissioned. Equipment and materials may be stored or staged on the adjacent gravel and grassy areas on the north and east sides of the NWTS. Decommissioning the NWTS includes removing the entire physical plant, associated piping, fixtures, system components, transfer pumps, carbon tanks, poly tanks, and debris. Components that will remain in place for future reuse by UCSC are the Pacific Gas and Electric transformer, electrical meter, outdoor lighting, fence, and concrete pad. The NWTS will remain operable until the pipeline capping and injection vault removal are completed and the well destruction activities are underway. Water remaining in the inlet tank will be pumped and treated through the carbon tank and discharged to the NWTS infiltration trench. Any residual water generated during the removal of the NWTS components will be discharged through the NWTS infiltration trench or to the ground surface.

Before demolition begins, all power will be disconnected and lockout/tagout protocols will be installed and used. The activated carbon contained in the carbon tanks will be sampled and removed from the tanks, then any residual water in the tanks will be drained. Spent carbon will be disposed of or recycled at an approved facility. Lifting straps will be attached to hooks permanently affixed to the top of the carbon tanks and to a telescopic forklift on the other end. One at a time, the tanks will be unbolted from the concrete pad and lifted out of the containment basin with the forklift. The tanks will be transferred to a trailer or roll off container. Personnel will remain at least 12 feet away from the tanks while they are in motion.

Two transfer pumps located within the containment basin will be unbolted from the concrete pads and lifted out of the basin using lifting straps and a telescopic forklift. Transfer pumps will then be loaded into a dump truck and disposed of at an approved facility.

The two poly tanks will be cut into pieces and/or crushed with a backhoe. The pieces will then be removed from the containment basin either manually or with the backhoe. The pieces will be recycled or disposed of at an approved facility.

Remaining debris will be removed from the basin and loaded into the roll off container(s) for disposal.

2.6 SITE MANAGEMENT

Management practices and construction techniques that will be employed to prevent or minimize site disturbance and environmental impact will be the same as those used successfully in previous construction and/or destruction within OU-1. Key elements of the management effort include the following:

- Field staff will undergo a training session before they begin work to acquaint them with the issues and procedures necessary to protect the FONR during construction.
- DDA will provide an Environmental Monitor (EM) approved by the BRAC Office. The EM will be available by telephone, email, or on site as needed during field activities to assist in responding to any unexpected issues or field questions.
- Close coordination with the Army BRAC Office, USACE, and UCSC FONR steward(s) will be maintained throughout the construction activity.
- Site access will be controlled to prevent unauthorized visitors.

All site areas will be managed to allow the property owner full access to the property as public health and safety mandates. The well destruction effort at MW-B-02-A (top right of Figure 2.2) will be conducted in a manner that does not interfere or impede with operations at the Marina Municipal Airport. Access to the work area will be through the NWTS access gate identified on Figure 2.3.

Equipment and material staging areas will be established in the grassland area adjacent to the NWTS. These areas were used for staging equipment and material in previous OU-1 construction projects. Excavated material from the removal of surface components and well casings will be temporarily stored in a dump trailer(s). Waste management will include controlling and disposing of normal litter, packing materials, excess material (cement or grout, for example), and related construction items.

2.7 SCHEDULE

HGL will notify the BRAC and MCEHD at least two weeks before beginning well destruction or demolition activities. A project schedule is shown on Figure 2.4.

A preliminary draft report documenting well destruction activities will be prepared and submitted to USACE within six weeks after completion of field tasks. The report will summarize the results of well destruction, pipeline capping, and NWTS decommissioning and will include

dates of well destruction and the estimated grout volume placed in well. Well destruction completion reports for submittal to MCEHD will also be included in this report. Draft, draft final, and final versions of this report will be prepared and submitted for regulatory review and approval. The well destruction completion report will be submitted concurrently with the site closure report, as per the regulatory agencies' request.

2.8 STORAGE, TRANSPORT AND DISPOSAL OF CONSTRUCTION DEBRIS

Construction debris anticipated to be generated during well demolition under this work plan includes approximately 20 feet of PVC pipe and electrical conduit, 9 submersible pumps, wellhead pumping controls, grout, traffic bollards, protective casing structures, and the top 1 to 5 feet of well casing from each well. Debris generated during the NWTS decommissioning portion of field activities includes four carbon tanks plus the carbon removed from the tanks, two transfer pumps, two poly tanks, the platforms that the tanks and pumps are attached to, and any piping, fixtures, and various other system components associated with the tanks and pumps. On-site accumulation of construction debris is not anticipated other than possible temporary storage during well destruction and decommissioning activities until appropriate disposition can be determined. Any on-site storage of construction debris will be maintained in an appropriate container(s) pending disposal in an approved landfill.

All rinsate and leftover water from well grouting activities will be contained in 55-gallon drums on site. During the well destruction effort and after field activities, the pH will be tested on-site by the field crew using an aqueous pH meter. If the pH is high enough to be considered a RCRA hazardous waste (greater than 12.5 or less than 2), the water will be disposed of accordingly. Otherwise, all rinsate and leftover grouting water will be taken to the existing Fort Ord groundwater treatment plant for processing.

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3.0 HEALTH AND SAFETY

The objective of the Site Safety and Health Plan (SSHP) is to ensure that safe working conditions exist during field activities. The work will be conducted in accordance with the detailed procedures in the former Ford Ord Accident Prevention Plan (APP) presented in Appendix C. The SSHP is included within the APP. In addition, an Activity Hazard Analysis (AHA) was prepared for each specific activity and this information is included in the SSHP. The AHA for each ongoing activity will be reviewed daily and updated as necessary to reflect changing or unexpected site conditions. An overview of the health and safety program is presented in the following sections.

3.1 HAZARD IDENTIFICATION

The chemicals of concern associated with the wells to be destroyed are the volatile organic compounds (VOCs) identified in the Fort Ord OU-1 Record of Decision. These VOCs are:

- 1,1- dichloroethane (DCA)
- 1,2-DCA
- 1,1- dichloroethene (DCE)
- Total 1,2-DCE
- 1,1,1-Trichloroethane (TCE)
- Benzene
- Chloroform
- Methyl Ethyl Ketone (MEK)
- Tetrachloroethene (PCE)
- TCE

The VOCs listed above were not detected in the most recent samples or were detected at concentrations below Aquifer Cleanup Levels (Table 2.2). The final sample collected from each of the eight wells of the attainment monitoring program (EW-OU1-53-A [F4], EW-OU1-52-A [F4], PZ-OU1-10-A1 [F3], IW-OU1-02-A [F3], MW-OU1-26-A [F3], MW-OU1-88-A [E3], PZ-OU1-49-A1 [E3], and MW-OU1-61-A [B2]) was collected on 11 December 2015. Well MW-B-02-A (top right of Figure 2.2) was only well sampled in June and August 2000 and was not analyzed for MEK. The remaining wells were sampled for the final time between September 2006 and September 2014, as shown in Table 2.2.

Samples from the eight wells that comprised the attainment monitoring network were also tested for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) in 2015. The results of these analyses are shown in Table 2.3. PFOA and PFOS concentrations in groundwater are not regulated; however, the U.S. Environmental Protection Agency (EPA) established a lifetime drinking water Health Advisory (HA) value of 70 nanograms per liter in groundwater for the total of the individual PFOA and PFOS concentrations. As shown in Table 2.3, the HA value was exceeded only at wells PZ-OU1-10-A1 (F3) and MW-OU1-88-A (E3).

The regulatory agencies concluded that OU-1 groundwater remediation is complete. However, as a precaution the wells will be allowed to vent for a minimum of 10 minutes before destruction activities begin and a photoionization detector will be used to test the air within the breathing zone for volatile constituents after that time. Workers will not be exposed to OU-1 groundwater during well destruction activities and will not be consuming OU-1 groundwater at any time during the project. Workers will wear appropriate personal protective equipment (PPE) to prevent contact with OU-1 groundwater during portions of the pipeline capping or NWTS decommissioning. Additional information on training requirements, and protective measures are

included in the SSHP. Hazards associated with heavy equipment, drill rigs, power tools, utilities, traffic, and mechanical hazards are also included in the APP/SSHP.

Biological hazards include ticks, poison oak, snakes, stinging insects, and large predators. Biological hazards are discussed in Section 3.3 of the SSHP. Sunburn is discussed in Section 3.3.8 of the SSHP.

3.2 WORK ZONES

The work zones will be based on the physical hazards presented by the well destruction and pipeline removal activities and will consist of the Exclusion Zone (EZ) and the Support Zone (SZ), as described below.

The EZ will be established based on the available work area and the areas required for equipment staging and soil handling. Appropriate signs, barriers, and/or barrier tape will be used to delineate this area.

The area immediately north of the NWTS (across the dirt road bordering the NWTS fence) and within the NWTS fence will serve as the SZ and will be used for parking vehicles, break trailers, sanitation facilities, potable water tanks, and receipt of deliveries. Work crews will meet at the SZ for daily briefings before starting work. Visitors will report to the NWTS access gate (Figure 2.3) and will sign the visitor log upon arrival.

The layout of the zones will be based on physical site characteristics and prevailing wind directions. Generally, EZs may be extended depending on site conditions, but not reduced.

3.3 PERSONAL PROTECTIVE EQUIPMENT

PPE for specific project activities is specified in the SSHP. PPE requirements are also addressed in activity specific AHAs included in the SSHP. Personnel who may come in contact with potentially contaminated groundwater or equipment will use Level D or modified Level D PPE.

3.4 SITE MONITORING

Site activities will be monitored for impacts from dust, water, noise, odors, or other potential issues. Engineering controls will be applied as necessary to minimize or eliminate impacts to adjacent areas from on-site activities or environmental conditions. The subcontractor Site Supervisor and/or Project Site Safety and Health Officer (SSHO) and the HGL SSHO have the authority to temporarily halt work if conditions create adverse impacts to site surroundings or the community.

Some disturbance to the existing soil or dirt roadways is unavoidable. Each well site will be inspected by the HGL SSHO and Field Supervisor before, at intervals during, and after well destruction activities. Significant road ruts or erosion sites attributed to the site activities will be corrected as soon as practical after identification.

3.5 DECONTAMINATION

Surface contaminants are not known to exist at the project sites. However, any vehicle taken into the FONR must be carefully inspected and cleaned to remove soil and/or vegetation before entering the FONR. Personnel are required to wash hands, face, and other exposed skin areas before leaving the work site for breaks or lunch. Paper towels and soap will be provided to personnel.

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4.0 CONTRACTOR QUALITY CONTROL

The work will be conducted following the contractor quality control procedures established in Section 4.3.

4.1 PROJECT ORGANIZATION

This section provides a brief description of the roles and responsibilities of personnel who will manage the project. A project organization chart is presented on Figure 4.1. Contact information for the project team is presented in the following table:

Position	Name	Telephone Number	Email Address
HGL Project Manager	Roy Evans	(303) 319-9808	revans@hgl.com
HGL Field Supervisor	Peter Arroyo	(209) 321-6255	abcdarroyo06@aol.com
HGL CIH, CSP	Stephen Davis	(865) 659-0499	sdavis@hgl.com
HGL Project CIH	Edie Scala-Hampson	(847) 409-6384	eshampson@comcast.net
Subcontractor SSHO	Amador Arroyo	(707) 507-9126	aarroyo@cascade-env.com
HGL SSHO/QCM	Megan Matteazzi	(303) 477-1923	mmatteazzi@hgl.com

4.1.1 Project Manager

The Project Manager, Roy Evans, is responsible for the quality and cost and schedule performance of all project activities, including those performed by subcontractors. The Project Manager is the primary point of contact with the USACE and regulatory agencies.

4.1.2 Field Supervisor /Quality Control Manager

The Field Supervisor, Peter Arroyo, is responsible for the day-to-day management of field activities including, but not limited to, the following:

- Detailed planning and scheduling
- Managing HGL resources and subcontractors
- Technical supervision of the work
- Tracking the project cost and schedule and implementing corrective measures when necessary

4.1.3 Certified Industrial Hygienist

The Project Certified Industrial Hygienist (CIH), Edie Scala-Hampson, is responsible for the development, implementation, and oversight of the APP/SSHP. The CIH will provide remote support to the SSHO during project activities.

4.1.4 Site Safety and Health Officer

The HGL SSHO, Megan Matteazzi, is responsible for monitoring project safety in accordance with the SSHP and applicable corporate health and safety procedures. Specific responsibilities include developing activity hazard analyses and monitoring well destruction and pipeline removal activities for compliance with the SSHP. The SSHO is responsible to the Field Supervisor in day-to-day operations, but reports functionally to the CIH. Ms. Matteazzi will also serve as the Quality Control Manager (QCM) and perform the duties described in Section 4.3.

The Subcontractor SSHO, Mr. Amador Arroyo of Cascade Drilling, LLP, is responsible for implementing the SSHP and applicable health and safety procedures for all field activities.

4.1.5 Project Subcontractors

All subcontracted work will be conducted in accordance with the requirements of the APP/SSHP at a minimum, and in accordance with the subcontractor's corporate safety program. Two subcontractors will be used:

- DDA will support biological issues related to protected species and habitat protection
- Cascade Drilling Limited Partnership will destroy the wells, remove the pipeline, dispose or recycle the demolition debris, and restore the site.

4.2 DEFINABLE FEATURES OF WORK

The definable features of work are as follows:

- Obtain permits
- Notify and coordinate with regulatory agencies and site owners regarding the destruction schedule
- Delineate the work area for well destruction and pipeline removal activities
- Destroy the wells and remove the pipeline identified in the Performance Work Statement
- Manage and dispose of construction debris
- Complete the Well Destruction and Pipeline Removal Report

4.3 QUALITY ASSURANCE/QUALITY CONTROL PROGRAM

Ms. Megan Matteazzi will be the on-site QCM during performance of the field activities. The Quality Control effort will implement a three-phase inspection program that includes Preparatory meeting/inspection, Initial/Follow-up meeting/inspection, and Final inspection. All parties

involved in the execution and oversight of the field work will be invited to the preparatory meeting. Written information will be provided before the preparatory meeting that describes the work to be performed, procedures to be followed, activity hazard analyses, lines of communication, and project roles and responsibilities. Any changes or modifications to the proposed work that arise from discussions during the preparatory meeting will be documented and approved by the participants.

All well destruction and treatment plan decommissioning activities will be photographed and documented in bound field notebooks and in daily reports to the HGL Project Manager. The HGL Project Manager or his designee will review daily reports to monitor progress and ensure that all field activities are performed in accordance with Work Plan requirements. Any deficiencies identified will be corrected in the field. At the completion of field activities at each location, the QCM will inspect the destroyed well or treatment plant site to determine that all destruction and decommissioning activities have been completed and that sites have been backfilled as required.

During well destruction, photographs will be taken of site conditions shortly before destruction begins, during destruction, and after the site is restored to pre-existing topography. Additional photographs will be taken as needed to document special occurrences, such as discovery of legless lizards or other species of special concern, and to show typical activities and impact prevention and conservation measures.

If special species of concern are encountered, environmental monitoring will be performed. The environmental monitoring will consist of field compliance monitoring performed by an EM at the affected sites. The Fort Ord BRAC Office will approve biologists who will act as EMs during the field activities on the FONR. The EM will be on site for the initiation of all new activities and for the pre-destruction inspection of the well sites and pipeline route. The purpose of this monitoring effort is to ensure that field personnel follow the environmental conservation /mitigation guidelines established for this project and that protected species will not be harmed by any project activity. These EMs will conduct most field compliance monitoring tasks.

Project deliverables, this Work Plan, and the well destruction and plant decommissioning completion report are subject to HGL's document review process. These reviews include senior technical review, editorial review, and project manager review. Any deficiencies identified during these reviews will be corrected before the deliverable is submitted to the client.

4.4 DELIVERABLES

Deliverables for this project include:

- the Work Plan, which will present methods and procedures for the well destructions and treatment plant decommissioning, including the APP/SSHP; and
- the Well Destruction and NWTS Decommissioning Report, which will include descriptions of the work and summarize the results of well destruction, including dates of well destruction and estimated grout volumes placed in wells.

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5.0 REFERENCES

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U.S. Fish and Wildlife Service (USFWS), 2015. Programmatic Biological Opinion for Cleanup and Property Transfer Actions Conducted at the Former Fort Ord, Monterey County, California (8-8-09-F-74). May 28. Administrative Record Series Number BW-2747*.

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TABLE(S)

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Table 2.1
Wells to be Destroyed

Existing Monitoring Well Identification	Northing Location Coordinate	Easting Location Coordinate	Well Type	Casing Diameter	Total Well Depth	Top of Screen	Bottom of Screen	Screen Length	Remarks
				inches	ft bgs	ft bgs	ft bgs	feet	
Remaining Wells on NW Boundary Road (5 Total)									
MW-OU1-67-A	2,145,146.910	5,746,128.750	Monitoring well	4.0	102.3	92.0	102	10	NW Boundary well
MW-OU1-57-A	2,145,064.165	5,745,918.771	Monitoring well	6.0	95.5	61.0	91.0	30	NW Boundary well
MW-OU1-58-A	2,145,135.397	5,746,101.889	Monitoring well	6.0	102.8	67.0	96.5	30	NW Boundary well
MW-OU1-61-A	2,145,093.660	5,746,002.560	Monitoring well	4.0	96.5	91.2	96.2	5	NW Boundary well
MW-OU1-68-A	2,145,206.490	5,746,264.480	Monitoring well	4.0	103.8	58.5	103.5	45	NW Boundary well
Marina Airport Property Well (1 Total)									
MW-B-02-A	2,146,530.206	5,749,507.454	Monitoring well	6.0	80.0	55.0	75.0	20	1977 Well (Airport Property)
Extraction Wells (9 Total)									
EW-OU1-60-A	2,145,082.110	5,745,974.440	Extraction well	6.0	95.7	55.2	95.2	40	Northwest boundary road location. Deteriorating well enclosures.
EW-OU1-62-A	2,145,176.620	5,746,197.950	Extraction well	6.0	100.9	60.4	100.4	40	
EW-OU1-63-A	2,145,039.090	5,745,859.970	Extraction well	6.0	91.5	51.0	91.0	40	
EW-OU1-66-A	2,145,111.140	5,746,043.900	Extraction well	6.0	101.6	56.1	101.1	45	
MW-OU1-46-AD	2,144,778.116	5,746,791.994	Extraction well	4.0	125.4	104.3	124.3	20	FONR well
EW-OU1-71-A	2,144,372.988	5,747,400.254	Extraction well	6.0	116.0	66.0	116.0	50	FONR well
IW-OU1-10-A	2,143,956.400	5,748,004.350	Extraction well	6.0	133.5	94.0	134.0	40	FONR well
MW-OU1-85-A	2,144,635.096	5,747,164.990	Extraction well	6.0	122.0	72.1	122.1	50	FONR well
MW-OU1-87-A	2,144,314.009	5,747,774.400	Extraction well	6.0	119.0	71.0	121.0	50	FONR well
Remaining FONR and Grassland Wells (20 Total)									
EW-OU1-53-A	2,143,778.418	5,748,369.881	Monitoring well	6.0	131.1	104.5	134.5	30	FONR well
EW-OU1-52-A	2,143,941.682	5,748,310.174	Monitoring well	6.0	124.5	84.5	114.5	30	FONR well
PZ-OU1-10-A1	2,143,978.280	5,747,981.540	Monitoring well	2.0	116.5	81.5	116.5	35	FONR well
IW-OU1-02-A	2,144,117.040	5,748,079.410	Monitoring well	6.0	133.5	88.0	128.0	40	FONR well
MW-OU1-26-A	2,144,141.800	5,747,960.000	Monitoring well	5.0	102.0	82.0	102.0	20	FONR well
MW-OU1-88-A	2,144,246.831	5,747,761.098	Monitoring well	4.0	122.0	72.0	122.0	50	FONR well
EW-OU1-49-A	2,144,355.179	5,747,796.775	Monitoring well	6.0	109.6	78.5	108.5	30	FONR well
PZ-OU1-49-A1	2,144,353.560	5,747,766.780	Monitoring well	2.0	122.3	91.5	121.5	30	FONR well
MW-OU1-86-A	2,144,285.082	5,747,414.248	Monitoring well	6.0	126.0	76.0	126.0	50	FONR well
MW-OU1-27-A	2,144,578.100	5,747,460.400	Monitoring well	5.0	89.8	55.0	85.0	30	Grassland well
EW-OU1-72-A	2,144,576.724	5,747,243.822	Monitoring well	6.0	108.5	61.0	111.0	50	FONR well
MW-OU1-84-A	2,144,683.376	5,746,730.867	Monitoring well	4.0	127.0	80.5	130.5	50	FONR well
MW-OU1-83-A	2,144,908.009	5,746,717.940	Monitoring well	4.0	123.0	73.0	123.0	50	FONR well
MW-OU1-82-A	2,144,952.025	5,746,360.764	Monitoring well	4.0	123.0	73.0	123.0	50	FONR well
MW-OU1-50-A	2,144,999.072	5,746,101.724	Monitoring well	4.0	111.2	80.0	110.0	30	FONR well
PZ-OU1-02-A1	2,144,099.970	5,748,088.780	Monitoring well	6.0	137.0	90.0	130.0	40	FONR well
MW-OU1-46-A	2,144,773.124	5,746,795.274	Monitoring well	5.0	105.0	75.0	105.0	30	FONR well
MW-OU1-59-A	2,144,852.762	5,746,195.379	Monitoring well	6.0	103.7	76.0	106.0	30	FONR well
IW-OU1-73-A	2,144,508.890	5,746,782.737	Injection Well	6.0	126.0	76.5	126.5	50	FONR well
IW-OU1-74-A	2,144,573.499	5,746,674.984	Injection Well	6.0	119.5	70.0	120.0	50	FONR well

Notes:
FONR = Fort Ord Natural Reserve
ft bgs = feet below ground surface

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Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
IW-OU1-10-A	Mar-05	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	2.3 A
		119	CHEM	ND A	ND A	ND A	ND A	0.65 A	ND A	ND A	ND A	ND A	**9.9 A**
		131	CHEM	ND A	ND A	ND A	ND A	0.60 A	ND A	ND A	ND A	ND A	**8.7 A**
		137	CHEM	ND A	ND A	ND A	ND A	0.57 A	ND A	ND A	ND A	ND A	**8.3 A**
	Jun-05	119	CHEM	ND A	ND A	ND A	ND A	0.78 A	ND A	ND A	ND A	ND A	**9.9 A**
		137	CHEM	ND A	ND A	ND A	ND A	0.72 A	ND A	ND A	ND A	ND A	**8.9 A**
	Sep-05	119	CHEM	ND A	ND A	ND A	ND A	0.70 A	ND A	ND A	ND A	ND A	**8.8 A**
	Mar-06	119	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.55 J/A	ND UJ/A	ND UJ/A	ND UJ-/A	ND UJ/A	**6.6 J/A**
		117		UJ/A	UJ/A	UJ/A	UJ/A	0.71 J/A	UJ/A	0.19 J/A	UJ-/A	UJ/A	**7.7 J/A**
	Jun-06		CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.41 J+/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	**5.1 J+/A**
	Sep-06	117	CHEM	ND A	ND A	ND A	ND A	0.80 A	ND A	0.21 J/A	ND A	ND A	**7.2 A**
	Dec-06	117	CHEM	ND A	ND A	ND A	ND A	0.68 A	ND A	0.16 J/A	ND A	ND UJ-/A	**5.9 A**
	Mar-07	117	CHEM	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	0.64 J-/A	ND UJ-/A	0.15 J-/A	ND A	ND UJ-/A	**5.9 J-/A**
	Sep-07	117	CHEM	ND A	ND A	ND A	ND A	0.64 A	ND A	0.20 J/A	ND A	ND A	**6.3 A**
	Mar-08	117	CHEM	ND A	ND A	ND A	ND A	0.81 A	ND A	ND A	ND A	ND A	**8.9 A**
	Oct-08	117	CHEM	ND A	ND A	ND A	ND A	0.82 A	ND A	0.26 J/A	ND A	ND A	**9.6 J/A**
	Mar-09	117	CHEM	ND A	ND A	ND A	ND A	0.70 A	ND A	0.24 J/A	ND A	ND A	**7.5 A**
	Sep-09	117	CHEM	ND A	0.068 J/A	ND A	ND A	1.135 J/A	0.011 J/A	0.33 J/A	ND A	ND A	**8.2 A**
	Mar-10	117	CHEM	ND A	ND A	ND A	ND A	0.47 J/A	ND A	0.16 J/A	ND A	ND A	**6.0 A**
	Sep-10	117	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.71 J/A	ND UJ/A	0.19 J/A	ND UJ/A	ND UJ/A	**7.7 J/A**
		129	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.56 J/A	ND UJ/A	0.18 J/A	ND UJ/A	ND UJ/A	**7.0 J/A**
		135	CHEM	ND A	ND A	ND A	ND A	0.6 A	ND A	0.18 J/A	ND A	ND A	**6.4 A**
	Sep-10	129		UJ/A	UJ/A	UJ/A	UJ/A	0.56 J/A	UJ/A	0.18 J/A	UJ/A	UJ/A	**7.0 J/A**
		135		ND A	ND A	ND A	ND A	0.6 A	ND A	0.18 J/A	ND A	ND A	**6.4 A**
	Dec-10	--	Port	ND A	ND A	ND A	ND A	0.55 A	ND A	0.16 J/A	ND A	ND A	**5.2 A**
	Mar-11	--	Port	ND A	ND A	ND A	ND A	0.37 J/A	ND A	0.15 J/A	ND A	ND A	**5.1 A**
	Jun-11	--	Port	ND A	ND A	ND A	ND A	0.35 J/A	ND A	0.14 J/A	ND A	ND A	4.2 A
	Sep-11	--	Port	ND A	ND A	ND A	ND A	0.25 J/A	ND A	0.14 J/A	ND A	ND A	4.5 A
	Dec-11	--	Port	ND A	ND A	ND A	ND A	0.27 J/A	ND A	ND A	ND A	ND A	3.8 A
	Mar-12	--	Port	ND A	ND A	ND A	ND A	0.15 J/A	ND A	0.14 J/A	ND A	ND A	3.7 A
	Dec-13	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	0.13 J/A	ND A	ND A	2.8 A
	Sep-14	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.13 J/J	ND U/A	ND U/A	2.2 A
MW-OU1-46-AD	Aug-04	111	CHEM	ND A	ND A	ND A	ND A	0.78 A	ND A	ND A	ND R/A	ND A	**14 A**
		121	CHEM	ND A	ND A	ND A	ND A	0.95 A	ND A	ND A	ND R/A	ND A	**27 A**
		121	DUP	ND A	ND A	ND A	ND A	0.89 A	ND A	ND A	ND R/A	ND A	**26 A**
	Dec-04	111	CHEM	ND A	ND A	ND A	ND A	0.92 A	ND A	ND A	ND A	ND A	**20 A**
		121	CHEM	ND A	ND A	ND A	ND A	1.6 A	ND A	ND A	ND A	ND A	**43 A**
		121	DUP	ND A	ND A	ND A	ND A	1.6 A	ND A	ND A	ND A	ND A	**45 A**
	Mar-05	121	CHEM	ND A	ND A	ND A	ND A	1.8 A	ND A	ND A	ND A	ND A	**36 A**
		121	DUP	ND A	ND A	ND A	ND A	1.8 A	ND A	ND A	ND A	ND A	**38 A**
	Jun-05	121	CHEM	ND A	ND A	ND A	ND A	1.9 A	ND A	0.26 J/A	ND A	ND A	**39 A**
		121	DUP	ND A	ND A	ND A	ND A	1.8 A	ND A	ND A	ND A	ND A	**34 A**
	Sep-05	121	CHEM	ND A	ND A	ND A	ND A	1.8 A	ND A	ND A	ND A	ND A	**28 A**

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
MW-OU1-46-AD (continued)	Dec-05	121	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	1.1 A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	**18 J/A**
		121	DUP	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.94 A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	**19 J/A**
	Mar-06	121	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	1.4 J/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	**24 J/A**
	Jun-06	121	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	1.3 J-/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ-/A	**20 J-/A**
	Sep-06	121	CHEM	ND A	ND A	ND A	ND A	2.0 A	ND A	0.15 J/A	ND A	ND A	**25 A**
		121	DUP	ND A	ND A	ND A	ND A	1.9 A	ND A	0.15 J/A	ND A	ND A	**24 A**
	Dec-06	121	CHEM	ND A	ND A	ND A	ND A	0.92 A	ND A	0.14 J/A	1.1 J/A	ND A	**18 A**
	Mar-07	121	CHEM	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	0.57 J-/A	ND UJ-/A	0.13 J-/A	ND A	ND UJ-/A	**14 J-/A**
	May-07	121	CHEM	ND A	ND A	ND A	ND A	0.31 J/A	ND A	ND A	ND A	ND A	**8.8 A**
		121	DUP	ND A	ND A	ND A	ND A	0.25 J/A	ND A	ND A	ND A	ND A	**9.1 A**
	Aug-07	121	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	**7.3 A**
		121	DUP	ND A	ND A	ND A	ND A	0.16 J/A	ND A	ND A	ND A	ND A	**6.6 A**
	Nov-07	--	Port	ND A	ND A	ND A	ND A	1.7 J/A	ND A	ND A	ND A	ND A	**14 A**
	Jan-08	--	Port	ND A	ND A	ND A	ND A	1.2 A	ND A	ND A	ND A	ND A	**8.2 A**
	Mar-08	--	Port	ND A	ND A	ND A	ND A	0.63 A	ND A	ND A	ND A	ND A	**5.8 A**
		--	DUP	ND A	ND A	ND A	ND A	0.71 A	ND A	ND A	ND A	ND A	**6.0 A**
	May-08	--	Port	ND A	ND A	ND A	ND A	0.74 A	ND A	ND A	ND A	ND A	**6.1 A**
	Jul-08	--	Port	ND A	ND A	ND A	ND A	0.37 J/A	ND A	ND A	ND A	ND A	3.4 A
	Sep-08	--	Port	ND A	ND A	ND A	ND A	0.30 J/A	ND A	ND A	ND A	ND A	2.9 J/A
	Dec-08	--	Port	ND A	ND A	ND A	ND A	0.21 J	ND A	ND A	ND A	ND A	1.6 A
	Jan-09	--	Port	ND A	ND A	ND A	ND A	0.12 J/A	ND A	ND A	ND A	ND A	1.2 A
	Mar-09	--	Port	ND A	ND A	ND A	ND A	0.13 J/A	ND A	ND A	ND A	ND A	1.2 A
	Jun-09	--	Port	ND A	ND A	ND A	ND A	0.13 J/A	ND A	ND A	ND A	ND A	1.5 A
	Sep-09	--	Port	ND A	ND A	ND A	ND A	0.078 J/A	ND A	0.079 J/A	ND A	ND A	0.78 A
	Mar-10	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.55 A
	Jun-10	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.40 A
	Sep-10	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.35 J/A
	Dec-10	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.28 J/A
	Mar-11	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.60 A
	Jun-11	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.63 A
	Sep-11	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.38 J/A
	Mar-12	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.23 J/A
EW-OU1-60-A	Jan-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
		--	DUP	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A
	Mar-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	0.12 J+/A	ND A	ND A	0.39 J/A
	Mar-07	--	DUP	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND A	ND UJ-/A	0.46 J-/A
	May-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Jul-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.32 J/A
	Nov-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Jan-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	0.12 J/A	ND A	ND A	ND A
	Mar-08	--	Port	ND A	ND A	ND A	ND A	ND A	**3.0 A**	ND A	ND A	ND A	0.29 J/A
	May-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Jul-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.78 A

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
EW-OU1-60-A (continued)	Sep-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	0.15 J/A	ND A	ND A	0.90 J/A
	Dec-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	0.16 J/A	ND A	ND A	0.82 J
	Jan-09	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.48 J/A
	Mar-09	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	0.14 J/A	ND A	ND A	0.95 A
	Jun-09	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	0.15 J/A	ND A	ND A	0.88 A
	Sep-09	--	Port	Not sampled (offline).									
	Mar-10	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Jun-10	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.86 A
	Sep-10	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.63 J/A
	Dec-10	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.72 A
	Mar-11	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	0.51 J/A	ND A	ND A	0.87 A
	Jun-11	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.76 A
	Sep-11	--	Port	ND A	ND A	ND A	ND A	ND A	0.16 J/A	ND A	ND A	ND A	0.57 A
	Jan-13	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A
	Mar-13	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A
	Sep-13	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.17 J/J
	Mar-14	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.22 J/J
	Sep-14	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.25 J/J
EW-OU1-62-A	Jun-06	--	Port	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND R/A	ND UJ/A	0.86 J+/A
	Jul-06	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND R/A	ND A	0.68 J+/A
	Jul-06	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND R/A	ND A	0.73 A
	Jul-06	--	Port	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.59 J/A
	Sep-06	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.2 A
	Nov-06	--	Port	ND UJ-/A	ND A	ND UJ-/A	ND A	ND A	ND A	ND UJ-/A	ND A	ND UJ-/A	1.0 J-/A
	Jan-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.62 A
	Mar-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.39 J/A
	May-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Jul-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Nov-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Jan-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Mar-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	May-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Jul-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Dec-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Jan-09	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Mar-09	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Jun-09	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND
	Sep-09	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	0.043 J/A	ND A	ND A	0.036 J/A
EW-OU1-63-A	Jun-06	--	Port	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND R/A	ND UJ/A	ND UJ/A
	Jul-06	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND R/A	ND A	1.9 J+/A
	Jul-06	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND R/A	ND A	2.3 A
	Jul-06	--	Port	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	2.7 J/A

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
EW-OU1-63-A (continued)	Sep-06	--	Port	ND A	ND A	ND A	ND A	0.20 J/A	ND A	ND A	ND A	ND A	2.6 A
	Nov-06	--	Port	ND UJ-/A	ND A	ND UJ-/A	ND A	ND A	ND A	ND UJ-/A	ND A	ND UJ-/A	0.87 J-/A
	Jan-07	--	Port	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.79 J/A
	Mar-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	0.18 J+/A	ND A	ND A	0.88 A
	May-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	0.13 J/A	ND A	ND A	0.85 A
	Jul-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.42 J/A
	Nov-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	0.13 J/A	ND A	ND A	ND A
	Jan-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Mar-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	May-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Jul-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	0.19 J/A	ND A	ND A	ND A
	Dec-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Jan-09	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Mar-09	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	0.16 J/A	ND A	ND A	ND A
	Jun-09	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-09	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	0.2 J/A	ND A	ND A	ND A
EW-OU1-66-A	Jun-06	--	Port	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND R/A	ND UJ/A	**7.2 J+/A**
	Jul-06	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND R/A	ND A	**7.0 J+/A**
	Jul-06	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND R/A	ND A	**6.3 A**
	Jul-06	--	Port	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.52 J/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	**11 J/A**
	Sep-06	--	Port	ND A	ND A	ND A	ND A	0.28 J/A	ND A	ND A	ND A	ND A	**6.4 A**
		--	DUP	ND A	ND A	ND A	ND A	0.29 J/A	ND A	ND A	ND A	ND A	**6.7 A**
	Nov-06	--	Port	ND UJ-/A	ND A	ND UJ-/A	ND A	0.33 J/A	ND A	ND UJ-/A	ND A	ND UJ-/A	**6.5 J-/A**
	Jan-07	--	Port	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.24 J/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	**5 J/A**
	Mar-07	--	Port	ND A	ND A	ND A	ND A	0.2 J/A	ND A	ND A	ND A	ND A	**5.3 A**
	May-07	--	Port	ND A	ND A	ND A	ND A	0.18 J/A	ND A	ND A	ND A	ND A	3.3 A
		--	DUP	ND A	ND A	ND A	ND A	0.16 J/A	ND A	ND A	ND A	ND A	3.3 A
	Jul-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	2.5 A
	Sep-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.8 A
		--	DUP	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.5 A
	Nov-07	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.7 A
	Jan-08	--	Port	ND A	ND A	ND A	ND A	0.11 J/A	ND A	ND A	ND A	ND A	1.2 A
	Mar-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.5 A
	May-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.8 A
	Jul-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.4 A
	Sep-08	--	Port	ND A	ND A	ND A	ND A	0.13 J/A	ND A	ND A	ND A	ND A	1.7 J/A
	Dec-08	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.91 J
	Jan-09	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.78 A
	Mar-09	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.86 A
	Jun-09	--	Port	ND A	ND A	ND A	ND A	0.14 J/A	ND A	ND A	ND A	ND A	1.7 A
	Sep-09	--	Port	ND A	ND A	ND A	ND A	0.032 J/A	ND A	0.078 J/A	ND A	ND A	1.1 A
	Mar-10	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.90 A

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
EW-OU1-66-A (continued)	Jun-10	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.58 A
	Sep-10	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.49 J/A
	Dec-10	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.42 J/A
	Mar-11	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.39 J/A	ND A	0.42 J/A
	Jun-11	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.36 J/A
	Sep-11	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.36 J/A
	Dec-11	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.27 J/A
	Mar-12	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.38 J/A
	Sep-12	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.19 J/A
	Mar-13	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.23 J/J
	Sep-13	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.31 J/J
	Mar-14	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U*/A	0.29 J/J
	Sep-14	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.26 J/J
EW-OU1-71-A	Nov-06	75.5	CHEM	ND A	ND A	ND A	ND A	0.78 A	ND A	0.15 J/A	ND A	ND A	**6.8 A**
		94	CHEM	ND A	ND A	ND A	ND A	0.85 A	ND A	0.13 J/A	ND A	ND A	**7.5 A**
		104	CHEM	ND A	ND A	ND A	ND A	0.98 A	ND A	0.18 J/A	ND A	ND A	**7.5 A**
		113.5	CHEM	ND A	ND A	ND A	ND A	0.93 A	ND A	0.18 J/A	ND A	ND A	**7.6 A**
	Aug-07	113.5	CHEM	ND A	ND A	ND A	ND A	1.1 A	ND A	0.19 J/A	ND A	ND A	**10 A**
	Nov-07	--	Port	ND A	ND A	ND A	ND A	1.6 A	ND A	0.19 J/A	ND A	ND A	**13 A**
	Jan-08	--	Port	ND A	ND A	ND A	ND A	1.4 A	ND A	0.18 J/A	ND A	ND A	**11 A**
	Mar-08	--	Port	ND A	ND A	ND A	ND A	1.5 A	ND A	0.21 J/A	ND A	ND A	**14 A**
	May-08	--	Port	ND A	ND A	ND A	ND A	2.1 A	ND A	0.24 J/A	ND A	ND A	**18 A**
	Jul-08	--	Port	ND A	ND A	ND A	ND A	1.5 A	ND A	0.19 J/A	ND A	ND A	**14 A**
	Sep-08	--	Port	ND A	ND A	ND A	ND A	1.6 A	ND A	0.24 J/A	ND A	ND A	**15 J/A**
	Dec-08	--	Port	ND A	ND A	ND A	ND A	1.3 A	ND A	0.19 J/A	ND A	ND A	**11 A**
	Jan-09	--	Port	ND A	ND A	ND A	ND A	1.2 A	ND A	0.17 J/A	ND A	ND A	**10 A**
	Mar-09	--	Port	ND A	ND A	ND A	ND A	1.2 A	ND A	0.18 J/A	ND A	ND A	**9.9 A**
	Jun-09	--	Port	ND A	ND A	ND A	ND A	1.1 A	ND A	0.19 J/A	ND A	ND A	**11 A**
	Sep-09	--	Port	ND A	0.028 J/A	ND A	ND A	1.046 J/A	ND A	0.19 J/A	ND A	ND A	**9.4 A**
	Mar-10	--	Port	ND A	ND A	ND A	ND A	0.79 A	ND A	0.16 J/A	ND A	ND A	**8.5 A**
	Jun-10	--	Port	ND A	ND A	ND A	ND A	0.53 A	ND A	0.14 J/A	ND A	ND A	**6.5 A**
	Sep-10	--	Port	ND A	ND A	ND A	ND A	0.46 J/A	ND A	0.14 J/A	ND A	ND A	**6.6 A**
	Dec-10	--	Port	ND A	ND A	ND A	ND A	0.35 J/A	ND A	ND A	ND A	ND A	**5.2 A**
	Mar-11	--	Port	ND A	ND A	ND A	ND A	0.28 J/A	ND A	0.12 J/A	0.43 J/A	ND A	4.6 A
	Jun-11	--	Port	ND A	ND A	ND A	ND A	0.29 J/A	ND A	ND A	ND A	ND A	4 A
	Sep-11	--	Port	ND A	ND A	ND A	ND A	0.21 J/A	ND A	ND A	ND A	ND A	4.2 A
	Dec-11	--	Port	ND A	ND A	ND A	ND A	0.19 J/A	ND A	0.13 J/A	ND A	ND A	3.7 A
	Mar-12	--	Port	ND A	ND A	ND A	ND A	0.22 J/A	ND A	0.13 J/A	ND A	ND A	3.8 A
	Sep-12	--	Port	ND A	ND A	ND A	ND A	0.23 J/A	ND A	ND A	ND A	ND A	4.4 A
	Sep-13	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	1.9 A
	Mar-14	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.89 A
	Sep-14	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.88 A

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
MW-OU1-85-A	Nov-06	79.5	CHEM	ND A	ND A	ND A	ND A	0.29 J/A	ND A	ND A	ND A	ND A	1.8 A
		93	CHEM	ND A	ND A	ND A	ND A	3.98 A	ND A	0.42 J/A	ND A	ND A	**52 A**
		107	CHEM	ND A	ND A	ND A	ND A	1.4 A	ND A	0.17 J/A	ND A	ND A	**14 A**
		120.5	CHEM	ND A	ND A	ND A	ND A	3.55 A	ND A	0.35 J/A	ND A	ND A	**42 A**
	Mar-07	93	CHEM	ND A	ND A	ND A	ND A	1.1 A	ND A	0.15 J/A	ND A	ND A	**10 A**
		120.5	CHEM	ND A	ND A	ND A	ND A	2.97 J/A	ND A	0.44 J/A	ND A	ND A	**43 A**
		120.5	DUP	ND A	ND A	ND A	ND A	2.63 J/A	ND A	0.38 J/A	ND A	ND A	**41 A**
	Aug-07	120.5	CHEM	ND A	ND A	ND A	ND A	1.6 A	ND A	0.17 J/A	ND A	ND A	**28 A**
	Nov-07	--	Port	ND A	ND A	ND A	ND A	2.3 A	ND A	0.16 J/A	ND A	ND A	**19 A**
	Jan-08	--	Port	ND A	ND A	ND A	ND A	1.0 A	ND A	ND A	ND A	ND A	**8.9 A**
	Mar-08	--	Port	ND A	ND A	ND A	ND A	0.74 A	ND A	ND A	ND A	ND A	**6.7 A**
	May-08	--	Port	ND A	ND A	ND A	ND A	0.26 J/A	ND A	ND A	ND A	ND A	2.5 A
	Jul-08	--	Port	ND A	ND A	ND A	ND A	0.52 A	ND A	ND A	ND A	ND A	4.4 A
	Sep-08	--	Port	ND A	ND A	ND A	ND A	0.54 A	ND A	ND A	ND A	ND A	4.3 J/A
	Dec-08	--	Port	ND A	ND A	ND A	ND A	0.33 J	ND A	ND A	ND A	ND A	2.6 A
	Jan-09	--	Port	ND A	ND A	ND A	ND A	0.29 J/A	ND A	ND A	ND A	ND A	2.2 A
	Mar-09	--	Port	ND A	ND A	ND A	ND A	0.29 J/A	ND A	ND A	ND A	ND A	2.1 A
	Jun-09	--	Port	ND A	ND A	ND A	ND A	0.3 J/A	ND A	ND A	ND A	ND A	2.4 A
	Sep-09	--	Port	ND A	ND A	ND A	ND A	0.22 J/A	ND A	0.8 J/A	ND A	ND A	1.7 A
	Mar-10	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.62 A
	Jun-10	--	Port	ND A	ND A	ND A	ND A	0.14 J/A	ND A	ND A	ND A	ND A	0.9 A
	Sep-10	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.83 A
	Dec-10	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.58 A
	Mar-11	--	Port	ND A	ND A	ND A	ND A	0.11 J/A	ND A	ND A	ND A	ND A	0.55 A
	Jun-11	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.78 A
	Sep-11	--	Port	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.1 A
	Mar-12	--	Port	ND A	ND A	ND A	ND A	0.15 J/A	ND A	0.13 J/A	ND A	ND A	0.7 A
MW-OU1-87-A	Nov-06	83.5	CHEM	ND UJ-/A	ND A	ND UJ-/A	ND A	2.2 A	ND A	0.2 J-/A	ND A	ND UJ-/A	**19 J-/A**
		101	CHEM	ND A	ND A	ND A	ND A	1.4 A	ND A	0.17 J/A	ND A	ND A	**15 A**
		115.5	CHEM	ND UJ-/A	ND A	ND UJ-/A	ND A	1.1 A	ND A	0.14 J-/A	1.2 J+/A	ND UJ-/A	**12 J-\A**
	Mar-07	83.5	CHEM	ND A	ND A	ND A	ND A	2.1 A	ND A	0.30 J/A	ND A	ND A	**21 A**
		115.5	CHEM	ND A	ND A	ND A	ND A	0.76 A	ND A	0.17 J/A	ND A	ND A	**11 A**
	Aug-07	83.5	CHEM	ND A	ND A	ND A	ND A	2.4 A	ND A	0.20 J/A	ND A	ND A	**20 A**
	Nov-07	--	Port	ND A	ND A	ND A	ND A	1.9 A	ND A	0.23 J/A	ND A	ND A	**16 A**
	Jan-08	--	Port	ND A	ND A	ND A	ND A	1.2 A	ND A	0.15 J/A	ND A	ND A	**11 A**
	Mar-08	--	Port	ND A	ND A	ND A	ND A	1.2 A	ND A	0.16 J/A	ND A	ND A	**11 A**
	May-08	--	Port	ND A	ND A	ND A	ND A	1.0 J/A	ND A	0.15 J/A	ND A	ND A	**9.7 A**
	Jul-08	--	Port	ND A	ND A	ND A	ND A	0.80 A	ND A	0.14 J/A	ND A	ND A	**9.1 A**
	Sep-08	--	Port	ND A	ND A	ND A	ND A	0.99 A	ND A	0.18 J/A	ND A	ND A	**9.3 J/A**
	Dec-08	--	Port	ND A	ND A	ND A	ND A	0.67 A	ND A	ND A	ND A	ND A	**5.8 A**
	Jan-09	--	Port	ND A	ND A	ND A	ND A	0.63 A	ND A	ND A	ND A	ND A	**5.9 A**
	Mar-09	--	Port	ND A	ND A	ND A	ND A	0.62 A	ND A	0.16 J/A	ND A	ND A	**5.8 A**
	Jun-09	--	Port	ND A	ND A	ND A	ND A	0.71 A	ND A	0.16 J/A	ND A	ND A	**6.9 A**
	Sep-09	--	Port	ND A	0.019 J/A	ND A	ND A	0.838 J/A	ND A	0.18 J/A	ND A	ND A	**6.8 A**

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
MW-OU1-87-A (continued)	Mar-10	--	Port	ND A	ND A	ND A	ND A	0.67 A	ND A	0.17 J/A	ND A	ND A	**7.2 A**
	Jun-10	--	Port	ND A	ND A	ND A	ND A	0.67 A	ND A	0.15 J/A	ND A	ND A	**7.4 A**
	Sep-10	--	Port	ND A	ND A	ND A	ND A	0.66 A	ND A	0.15 J/A	ND A	ND A	**7.7 A**
	Dec-10	--	Port	ND A	ND A	ND A	ND A	0.66 A	ND A	0.13 J/A	ND A	ND A	**6.9 A**
	Mar-11	--	Port	ND A	ND A	ND A	ND A	0.52 A	ND A	ND A	0.37 J/A	ND A	**6.0 A**
	Jun-11	--	Port	ND A	ND A	ND A	ND A	0.55 A	ND A	0.14 J/A	ND A	ND A	**6.1 A**
	Sep-11	--	Port	ND A	ND A	ND A	ND A	0.46 J/A	ND A	0.14 J/A	ND A	ND A	**6.2 A**
	Dec-11	--	Port	ND A	ND A	ND A	ND A	0.48 J/A	ND A	1.14 J/A	ND A	ND A	**5.1 A**
	Mar-12	--	Port	ND A	ND A	ND A	ND A	0.4 J/A	ND A	0.14 J/A	ND A	ND A	**5.5 A**
	Sep-12	--	Port	ND A	ND A	ND A	ND A	0.39 J/A	ND A	ND A	ND A	ND A	**5.3 A**
	Jan-13	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	0.35 J/J	ND U/A	ND U/A	ND U/A	ND U/A	**5.4 A**
	Mar-13	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	0.34 J/J	ND U/A	ND U/A	ND U/A	ND U/A	4.8 A
	Jun-13	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	0.31 J/J	ND U/A	ND U/A	ND U/A	ND U/A	4.4 A
	Sep-13	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	ND J/U	ND U/A	ND U/A	ND U/A	ND U/A	4.7 A
	Dec-13	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	0.19 J/J	ND U/A	ND U/A	ND U/A	ND U/A	4.2 A
	Mar-14	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	0.16 J/J	ND U/A	ND U/A	ND U/A	ND U/A	3.4 A
	Jun-14	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	40 J/J-	ND U/A	3.7 A
	Sep-14	--	Port	ND U/A	ND U/A	ND U/A	ND U/A	0.21 J/J	ND U/A	0.12 J/J	ND U/A	ND U/A	4.2 A
Remaining Wells on NW Boundary Road (5 total)													
MW-OU1-57-A	Dec-04	88	CHEM	ND A	ND A	ND A	ND A	1.3 A	ND A	ND A	11 J/A	ND A	**26 A**
		91	CHEM	ND A	ND A	ND A	ND A	1.2 A	ND A	ND A	2.5 J/A	ND A	**30 A**
	Jun-05	65	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	**5.2 A**
		91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	**7.7 A**
	Sep-05	65.5	CHEM	ND A	ND A	ND A	ND A	0.63 A	ND A	ND A	ND A	ND A	**6.4 A**
		69.5	CHEM	ND A	ND A	ND A	ND A	0.64 A	ND A	ND A	ND A	ND A	**6.8 A**
		91	CHEM	ND A	ND A	ND A	ND A	1.1 A	ND A	ND A	ND A	ND A	**12 A**
	Mar-06	66.5	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	1.2 J/A	ND UJ/A	ND UJ/A	ND UJ-/A	ND UJ/A	**14 J/A**
		91	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	2.3 J/A	ND UJ/A	ND UJ/A	ND UJ-/A	ND UJ/A	**24 J/A**
		65.5	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	1.6 J/A	ND UJ/A	ND UJ/A	ND UJ-/A	ND UJ/A	**19 J/A**
		91	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	3.1 J/A	ND UJ/A	ND UJ/A	ND UJ-/A	ND UJ/A	**36 J/A**
	Jun-06	82	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	2.2 J/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	**23 J/A**
	Aug-06	82	CHEM	ND A	ND A	ND A	ND A	0.46 J/A	ND A	ND A	ND A	ND A	**11 A**
		91	CHEM	ND A	ND A	ND A	ND A	0.56 J/A	ND A	ND A	ND A	ND A	**11 A**
		91	DUP	ND A	ND A	ND A	ND A	0.57 J/A	ND A	ND A	ND A	ND A	**12 A**
	Sep-06	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	2.3 J+/A	ND A	0.93 A
	Nov-06	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.32 J/A
	Jan-07	70	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
		82	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
		91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Mar-07	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Apr-07	70	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
		91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	0.12 J/A	ND A	ND A	ND A
	May-07	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-07	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Dec-07	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
MW-OU1-57-A (continued)	Mar-08	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Jun-08	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-08	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	0.13 J/A	ND A	ND A	ND A
	Dec-08	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Mar-09	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.63 J/A	ND A	ND A
	Sep-09	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	0.11 J/A	0.76 J/A	ND A	ND A
	May-10	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.49 J/A	ND A	ND A
		91	DUP	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.5 J/A	ND A	ND A
	Sep-10	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Mar-11	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-11	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Mar-12	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.43 J/A	ND A	ND A
	Sep-12	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Jan-13	91	CHEM	ND U/UJ	ND U/UJ	ND U/UJ	ND U/UJ	ND U/UJ	ND U/UJ	ND U/UJ	ND U/UJ	ND U/UJ	ND U/UJ
	Sep-14	91	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A
MW-OU1-58-A	Dec-04	80	CHEM	ND A	ND A	ND A	ND A	0.35 J/A	ND A	ND A	ND A	ND A	**27 A**
		92.5	CHEM	ND A	ND A	ND A	ND A	0.35 J/A	ND A	ND A	12 J/A	ND A	**22 A**
		96.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	9.9 J/A	ND A	**22 A**
	Mar-05	80	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	**5.4 A**
		92.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	**9.3 A**
		96.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	**8.3 A**
	Jun-05	97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	**8.7 A**
	Sep-05	68	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.6 A
	Sep-05	68	DUP	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.7 A
		76	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.4 A
	Dec-05	68	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ-/A	ND UJ/A	ND UJ/A
		76	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ-/A	ND UJ/A	ND UJ/A
	May-06	68	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.95 J/A
		87	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.72 J/A
		87	DUP	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.76 J/A
		97	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	4.2 J/A
	Aug-06	90	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	2.9 A
		97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	3.1 A
	Sep-06	97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	4.2 A
	Nov-06	87	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	3.1 A
		87	DUP	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	3.1 A
		97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	3.1 A
	Jan-07	73	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
		90	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
		97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	3.1 A
	Mar-07	97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	2.9 A
	Apr-07	73	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
		73	DUP	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
		97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	2.4 A
	May-07	97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	2.2 A
	Sep-07	97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.3 A

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
MW-OU1-58-A (continued)	Dec-07	97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.80 A
	Mar-08	97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.80 J/A	ND A	0.57 A
	Jun-08	97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.45 J/A
	Sep-08	97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.42 J/A
	Dec-08	97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.43 J/A
	Mar-09	97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.61 J/A	ND A	0.46 J/A
	Sep-09	97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	0.039 J/A	ND A	ND A	0.47 J/A
	May-10	97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.34 J/A
	Sep-10	97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.32 J/A
	Mar-11	97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.35 J/A
	Sep-11	97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.31 J/A
	Mar-12	97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.17 J/A
	Sep-12	97	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Jan-13	97	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.15 J/J
	Sep-14	97	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A
MW-OUI-61-A	May-06	94	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	**8.5 J/A**
	Aug-06	94	CHEM	ND A	ND A	ND A	ND A	0.36 J/A	ND A	ND A	ND A	ND A	**12 A**
		94	DUP	ND A	ND A	ND A	ND A	0.36 J/A	ND A	ND A	ND A	ND A	**12 A**
	Sep-06	94	CHEM	ND A	ND A	ND*	ND A	0.32 J/A	ND A	0.18 J/A	ND A	ND A	**7.3 A**
	Nov-06	94	CHEM	ND A	ND A	ND A	ND A	0.26 J/A	ND A	0.13 J/A	ND A	ND A	4.6 A
	Jan-07	94	CHEM	ND A	ND A	ND A	ND A	0.22 J/A	ND A	0.19 J/A	ND A	ND A	**5.0 A**
	Mar-07	94	CHEM	ND A	ND A	ND A	ND A	0.37 J/A	ND A	0.25 J+/A	ND A	ND A	**12 A**
	Apr-07	94	CHEM	ND A	ND A	ND A	ND A	0.37 J/A	ND A	0.16 J/A	ND A	ND A	**12 A**
	May-07	94	CHEM	ND A	ND A	ND A	ND A	0.27 J/A	ND A	ND A	ND A	ND A	**12 A**
	Sep-07	94	CHEM	ND A	ND A	ND A	ND A	0.34 J/A	ND A	0.13 J/A	ND A	ND A	**13 A**
		94	DUP	ND A	ND A	ND A	ND A	0.34 J/A	ND A	0.17 J/A	ND A	ND A	**13 A**
	Dec-07	94	CHEM	ND A	ND A	ND A	ND A	0.29 J/A	ND A	0.15 J/A	ND A	ND A	**13 A**
		94	DUP	ND A	ND A	ND A	ND A	0.26 J/A	ND A	0.15 J/A	ND A	ND A	**13 A**
	Mar-08	94	CHEM	ND A	ND A	ND A	ND A	0.36 J/A	ND A	0.18 J/A	0.71 J/A	ND A	**12 A**
		94	DUP	ND A	ND A	ND A	ND A	0.37 J/A	ND A	0.18 J/A	0.67 J/A	ND A	**12 A**
	Jun-08	94	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	**7.4 A**
	Sep-08	94	CHEM	ND A	ND A	ND A	ND A	0.20 J/A	ND A	0.13 J/A	ND A	ND A	**7.1 A**
		94	DUP	ND A	ND A	ND A	ND A	0.21 J/A	ND A	0.13 J/A	ND A	ND A	**7.0 A**
	Dec-08	94	CHEM	ND A	ND A	ND A	ND A	0.16 J/A	ND A	0.14 J/A	ND A	ND A	**5.6 A**
	Mar-09	94	CHEM	ND A	ND A	ND A	ND A	0.22 J/A	ND A	0.13 J/A	0.45 J/A	ND A	**7.0 A**
	Sep-09	94	CHEM	ND A	ND A	ND A	ND A	0.28 J/A	ND A	0.2 J/A	ND A	ND A	**9.9 A**
	Mar-10	94	CHEM	ND A	ND A	ND A	ND A	0.42 J/A	ND A	0.17 J/A	0.47 J/A	ND A	**15 A**
		94	DUP	ND A	ND A	ND A	ND A	0.43 J/A	ND A	0.14 J/A	0.46 J/A	ND A	**14 A**
	Sep-10	94	CHEM	ND A	ND A	ND A	ND A	0.25 J/A	ND A	0.15 J/A	ND A	ND A	**8.8 A**
		94	DUP	ND A	ND A	ND A	ND A	0.25 J/A	ND A	0.16 J/A	ND A	ND A	**8.9 A**
		97	CHEM	ND A	ND A	ND A	ND A	0.24 J/A	ND A	0.15 J/A	ND A	ND A	**8.7 A**
	Dec-10	94	CHEM	ND A	ND A	ND A	ND A	0.22 J/A	ND A	ND A	ND A	ND A	**7.5 A**
		94	DUP	ND A	ND A	ND A	ND A	0.27 J/A	ND A	ND A	ND A	ND A	0.17 J/A
	Mar-11	94	CHEM	ND A	ND A	ND A	ND A	0.24 J/A	ND A	0.18 J/A	ND A	ND A	**7.1 A**
	Jun-11	94	CHEM	ND A	ND A	ND A	ND A	0.24 J/A	ND A	0.13 J/A	ND A	ND A	**7.6 A**

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
MW-OUI-61-A (continued)	Sep-11	94	CHEM	ND A	ND A	ND A	ND A	0.13 J/A	ND A	0.15 J/A	ND A	ND A	**9.1 A**
	Oct-11	94	CHEM	ND A	ND A	ND A	ND A	0.53 A	ND A	ND A	0.73 J/A	ND A	**12 A**
	Dec-11	94	CHEM	ND A	ND A	ND A	ND A	0.98 A	ND A	0.23 J/A	ND A	ND A	**26 A**
	Mar-12	94	CHEM	ND A	ND A	ND A	ND A	0.95 A	ND A	0.27 J/A	ND A	ND A	**31 A**
		94	DUP	ND A	ND A	ND A	ND A	1.1 A	ND A	0.27 J/A	ND A	ND A	**32 A**
	Sep-12	94	CHEM	ND A	ND A	ND A	ND A	0.57 J/A	ND A	0.17 J/A	ND A	ND A	**19 A**
		94	DUP	ND A	ND A	ND A	ND A	0.61 J/A	ND A	0.2 J/A	ND A	0.15 J/A	**18 A**
	Jan-13	94	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Feb-13	94	CHEM	ND A	ND A	ND A	ND A	0.47 A	ND A	0.21 J/A	ND A	ND A	**15**
		94 DUP	DUP	ND A	ND A	ND A	ND A	0.5 A	ND A	0.18 J/A	ND A	ND A	**15**
	Mar-13	94	CHEM	ND A	ND A	ND A	ND A	0.53 A	ND A	0.14 U/A	ND A	ND A	**13**
		94 DUP	DUP	ND A	ND A	ND A	ND A	0.57 A	ND A	0.16 J/A	ND A	ND A	**13**
	Jun-13	94	CHEM	ND A	ND A	ND A	ND A	0.28 J/A	ND A	0.16 J/A	ND A	ND A	**7.4 A**
		94 DUP	DUP	ND A	ND A	ND A	ND A	0.26 J/A	ND A	0.12 J/A	ND A	ND A	**7.1 A**
	Sep-13	94	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	0.25 UJ/A	ND U/A	0.14 U/A	ND U/A	ND U/A	**6.7 U/A**
	Dec-13	94	CHEM	ND A	ND A	ND A	ND A	0.21 J/A	ND A	0.16 J/A	ND A	ND A	**6.3 A**
		94 DUP	DUP	ND A	ND A	ND A	ND A	0.2 J/A	ND A	0.16 J/A	ND A	ND A	**5.6 A**
	Mar-14	94	CHEM	ND A	ND A	ND A	ND A	0.22 J/A	ND A	0.12 J/A	ND A	ND A	**5.4 A**
		94 DUP	DUP	ND A	ND A	ND A	ND A	0.14 J/A	ND U/A	ND U/A	ND U/A	ND U/A	**5.4 A**
	Jun-14	94	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	**5.7 A**
		94 DUP	DUP	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	**5.4 A**
	Sep-14	94	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	0.15 J/J	ND U/A	ND U/A	ND U/A	ND U/A	4.7 A
		94 DUP	DUP	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	4 A
	Dec-14	94	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	4.2 U/A
		94 DUP	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	4.6 U/A
	May-15	94	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	3.9 U/A
		94 DUP	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	4.4 A
	Jul-15	94	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	4.4 A
		94 DUP	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	4.3 A
	Oct-15	94	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	3.7 A
		94 DUP	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	3.7 A
	Dec-15	94	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	3.4 A
		94 DUP	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	3.5 A
MW-OU1-67-A	May-06	100	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ-/A	ND UJ/A	3.3 J+/A
	Jun-06	96	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	1.4 J/A
		102	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	1.4 J/A
	Aug-06	96	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	2.2 A
		102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.1 J/A	ND A	2.3 A
	Sep-06	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	0.16 J/A	ND A	ND A	3.4 A
	Nov-06	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	0.13 J/A	ND A	ND A	3.1 A
	Jan-07	96	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	3.5 A
		102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	3.5 A
	Mar-07	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	0.15 J/A	ND A	ND A	3.7 A
	Apr-07	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	3.2 A
	May-07	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	0.13 J/A	ND A	ND A	3.2 A
	Sep-07	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	3.2 A

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
MW-OU1-67-A (continued)	Dec-07	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	2.3 A
	Mar-08	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	0.13 J/A	0.95 J/A	ND A	2.2 A
	Jun-08	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.9 A
	Sep-08	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.8 A
	Dec-08	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.4 A
	Mar-09	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	0.13 J/A	0.42 J/A	ND A	1.7 A
	Sep-09	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	0.15 J/A	ND A	ND A	1.4 A
	Sep-10	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.0 A
	Sep-11	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	0.12 J/A	ND A	ND A	0.63 A
MW-OU1-68-A	May-06	79	CHEM	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A
		79	DUP	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A
		89	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A
		104	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A
	Aug-06	98	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-06	98	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Nov-06	98	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Jan-07	74	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
		89	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
		98	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Mar-07	98	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Apr-07	98	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	May-07	98	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-07	98	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Dec-07	98	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Mar-08	98	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.92 J/A	ND A	ND A
	Jun-08	98	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-08	98	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Dec-08	98	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Mar-09	98	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
Marina Municipcal Airport Well (1 total)													
MW-B-02-A	Jun-00	--	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	NT	ND U/A	ND U/A
	Aug-00	--	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	NT	ND U/A	ND U/A
Remaining FONR and Grassland Wells (20 total)													
IW-OU1-02-A	Mar-05	118	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	3.9 A
		128	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	3.5 A
	Mar-06	119	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ-/A	ND UJ/A	2.9 J/A
	Mar-07	119	CHEM	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	0.27 J-/A	ND UJ-/A	ND UJ-/A	ND A	ND UJ-/A	4.6 J-/A
	Sep-07	119	CHEM	ND A	ND A	ND A	ND A	0.25 J/A	ND A	ND A	ND A	ND A	4.1 A
	Mar-08	119	CHEM	ND A	ND A	ND A	ND A	0.22 J/A	ND A	ND A	ND A	ND A	4.5 A
	Oct-08	119	CHEM	ND A	ND A	ND A	ND A	0.27 J/A	ND A	0.14 J/A	ND A	ND A	4.7 A
	Mar-09	119	CHEM	ND A	ND A	ND A	ND A	0.34 J/A	ND A	0.34 J/A	ND A	ND A	**5.2 A**
	Sep-09	119	CHEM	ND A	0.017 J/A	ND A	ND A	0.375 J/A	ND A	0.2 J/A	ND A	ND A	**5.1 A**
	Mar-10	119	CHEM	ND A	ND A	ND A	ND A	0.23 J/A	ND A	0.12 J/A	ND A	ND A	4.1 A
	Sep-10	119	CHEM	UJ/A	UJ/A	UJ/A	UJ/A	0.19 J/A	UJ/A	0.16 J/A	UJ/A	ND A	3.5 J/A

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
IW-OU1-02-A (continued)	Mar-11	119	CHEM	ND A	ND A	ND A	ND A	0.22 J/A	ND A	0.12 J/A	ND A	ND A	4.0 A
	Sep-11	113	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	3.7 A
		125	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	3.8 A
	May-15		CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	1.8 A
	Jul-15		CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	1.8 A
	Oct-15		CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	1.8 A
PZ-OU1-10-A1	Sep-10	114	CHEM	ND A	ND A	ND A	ND A	0.33 J/A	ND A	ND A	ND A	ND A	2.0 A
		125	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.32 J/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	3.3 J/A
		131	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	3.2 A
	Oct-10	114	CHEM	ND	ND	ND	ND	0.18 J	ND	ND	1.0 J	ND	1.3
		125	CHEM	ND	ND	ND	ND	0.18 J	ND	ND	0.9 J	ND	0.92
		131	CHEM	ND	ND	ND	ND	0.62	ND	0.12 J	0.9 J	ND	4.7
	Dec-10	131	CHEM	ND A	ND A	ND A	ND A	1.70 A	ND A	0.26 J/A	ND A	ND A	**16 A**
	Mar-11	131	CHEM	ND A	ND A	ND A	ND A	0.38 J	ND A	0.13 J	ND A	ND A	**5.9 A**
	Jun-11	131	CHEM	ND A	ND A	ND A	ND A	1.1 A	ND A	0.19 J/A	ND A	ND A	**14 A**
	Sep-11	114	CHEM	ND A	ND A	ND A	ND A	1.2 A	ND A	0.19 J/A	ND A	ND A	**12 A**
		131	CHEM	ND A	ND A	ND A	ND A	0.1 J/A	ND A	ND A	ND A	ND A	2.3 A
	Oct-11	125	CHEM	ND A	ND A	ND A	ND A	2.2 A	ND A	0.24 J/A	ND A	ND A	**17 A**
		131	CHEM	ND A	ND A	ND A	ND A	0.15 J/A	ND A	0.15 J/A	ND A	ND A	2.2 A
	Dec-11	131	CHEM	ND A	ND A	ND A	ND A	1.1 J/A	ND A	0.13 J/A	ND A	ND A	**8.8 A**
		125	CHEM	ND A	ND A	ND A	ND A	1.8 A	ND A	0.25 J	ND A	ND A	**13.0 A**
		125	DUP	ND A	ND A	ND A	ND A	0.98 A	ND A	0.17 J	ND A	ND A	**8.7 A**
	Mar-12	125	CHEM	ND A	ND A	ND A	ND A	1.6 A	ND A	0.2 J/A	ND A	ND A	**12.0 A**
	Sep-12	125	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.13 J/A	0.36 J/A
	Sep-13	125	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.17 J/J
	Sep-14	125	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	2.4 A
	May-15	125	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	0.13 J/J	ND U/A	ND U/A	ND U/A	ND U/A	3.3 A
	Jul-15	125	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.19 J/J	ND U/A	ND U/A	2.5 A
	Oct-15	125	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.19 J/J	ND U/A	ND U/A	2.0 A
	Dec-15	125	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.19 J/J	ND U/A	ND U/A	1.60 A
MW-OU1-26-A	Aug-98	--	CHEM	ND A	ND A	ND A	ND A	**27.2 A**	ND A	1.23 A	ND A	ND A	**114 A**
	Sep-98	--	CHEM	ND A	ND A	ND A	ND A	**15.8 A**	ND A	0.803 A	NR	ND A	**76.1 A**
		--	DUP	ND A	ND A	ND A	ND A	**16.1 A**	ND A	0.878 A	NR	ND A	**77.2 A**
	Apr-99	--	CHEM	ND A	ND A	ND A	ND A	**10.2 A**	ND A	ND U	ND A	ND A	**54.1 A**
	Jun-99	--	CHEM	ND A	ND A	ND A	ND A	5.54 A	ND A	ND J/U	NT	ND A	**37.7 A**
	Sep-99	--	CHEM	ND A	ND A	ND A	ND A	**6.72 A**	ND A	ND J/U	ND A	ND A	**39.2 A**
	Dec-99	--	CHEM	ND A	ND A	ND A	ND A	**11 A**	ND A	ND U	NT	ND A	**52.5 A**
	Feb-00	--	CHEM	ND A	ND A	ND A	ND A	**11.1 A**	ND A	ND J/U	NT	ND A	**53.6 J**
		--	DUP	ND A	ND A	ND A	ND A	**9.59 A**	ND A	ND J/U	NT	ND A	**45.7 A**
	Jun-00	--	CHEM	ND A	ND A	ND A	ND A	**7.33 A**	ND A	0.474 J/A	NT	ND A	**42.6 A**
		--	DUP	ND A	ND A	ND A	ND A	**6.23 A**	ND A	0.43 J/A	NT	ND A	**34.1 A**
	Aug-00	--	CHEM	ND A	ND A	ND A	ND A	**8.31 A**	**4.92 A**	0.542 A	NT	ND A	**48.2 A**
		--	DUP	ND A	ND A	ND A	ND A	**9.6 A**	**5.05 A**	0.548 A	NT	ND A	**49.1 A**
	Dec-00	--	CHEM	ND A	ND A	ND A	ND A	5.14 A	ND A	0.35 J/A	NT	ND A	**26.6 A**
		--	DUP	ND A	ND A	ND A	ND A	5.86 A	ND A	0.377 J/A	NT	ND A	**27.6 A**
		--	INLINE	ND A	ND A	ND A	ND A	5.54 A	ND A	0.392 J/A	NT	ND A	**28.5 A**

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
MW-OU1-26-A (continued)	Mar-01	--	CHEM	ND A	ND A	ND A	ND A	5.17	ND A	0.357 J/A	NT	ND A	**25 A**
		--	CHEM	ND	ND	ND	ND	**9.12**	ND	0.544	NT	ND	**42.3**
		--	CHEM	ND	ND	ND	ND	**10**	ND	0.568	NT	ND	**44.5**
		--	CHEM	ND	ND	ND	ND	**8.42**	ND	0.506	NT	ND A	**47.1**
		--	CHEM	ND	ND	ND	ND	**8.05**	ND	ND	NT	ND	**43.1**
	Mar-01	--	INLINE	ND	ND	ND	ND	**5.96**	ND	0.413	NT	ND	**28.5**
	May-01	--	CHEM	ND A	ND A	ND A	ND A	5.3 A	ND A	0.34	NT	ND A	**32 A**
		--	CHEM	ND A	ND A	ND A	ND A	**10 A**	ND A	0.6	NT	ND A	**45 A**
		--	CHEM	ND A	ND A	ND A	ND A	**11 A**	ND A	0.6	NT	ND A	**48 A**
		--	CHEM	ND A	ND A	ND A	ND A	**11 A**	ND A	0.63	NT	ND A	**49 A**
		--	CHEM	ND A	ND A	ND A	ND A	**9.8 A**	ND A	0.64	NT	ND A	**52 E/A**
	Sep-01	--	CHEM	ND A	ND A	ND A	ND A	**6.5 A**	ND A	0.49	NT	ND A	**36 A**
		--	DUP	ND A	ND A	ND A	ND A	**7.0 A**	ND A	0.48	NT	ND A	**39 A**
	Dec-01	88	CHEM	ND A	ND A	ND A	ND A	5.6 A	ND A	0.4	NT	ND A	**36 A**
	Dec-01	103	CHEM	ND A	ND A	ND A	ND A	5.3 A	ND A	0.38	NT	ND A	**34 A**
	Mar-02	92.6	CHEM	ND A	ND A	ND A	ND A	4.1 A	ND A	0.36	ND A	ND A	**32 A**
	Jun-02	97.6	CHEM	ND A	ND A	ND A	ND A	4.9 A	ND A	0.38	ND A	ND A	**34 A**
		97.6	DUP	ND A	ND A	ND A	ND A	5.7 A	ND A	0.44	ND A	ND A	**39 A**
	Sep-02	102.6	CHEM	ND A	ND A	ND A	ND A	**6.1 A**	ND A	0.45	ND A	ND A	**43 A**
	Dec-02	88	CHEM	ND A	ND A	ND A	ND A	5.6 A	ND A	0.4	ND R	ND A	**42 A**
	Mar-03	93	CHEM	ND A	ND A	ND A	ND A	4.9 A	ND A	0.38	ND A	ND A	**42 A**
	Jun-03	98	CHEM	ND A	ND A	ND A	ND A	NT	ND A	0.44	7.7 J/A	ND A	**33 A**
		98	DUP	ND A	ND A	ND A	ND A	NT	ND A	0.48	8.6 J/A	ND A	**37 A**
	Sep-03	103	CHEM	ND A	ND A	ND A	ND A	4.5 A	ND A	0.38	ND A	ND A	**33 A**
	Dec-03	88	CHEM	ND A	ND A	ND A	ND A	4.1 A	ND A	0.32	ND A	ND A	**31 A**
	Jun-04	93	CHEM	ND J/A	ND J/A	ND J/A	ND J/A	ND J/A	ND J/A	ND J/A	ND R/A	ND J/A	**16 J/A**
		93	DUP	ND J/A	ND J/A	ND J/A	ND J/A	ND J/A	ND J/A	0.36 J/A	ND R/A	ND J/A	**25 J/A**
	Sep-04	93	CHEM	ND A	ND A	ND A	ND A	2.4 A	ND A	ND A	ND R/A	ND A	**25 A**
		93	DUP	ND A	ND A	ND A	ND A	2.4 A	ND A	ND A	ND R/A	ND A	**25 A**
	Mar-05	93	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	**24 A**
	Sep-05	93	CHEM	ND A	ND A	ND A	ND A	2.2 A	ND A	ND A	ND A	ND A	**17 A**
	Mar-06	93	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	1.4 J/A	ND UJ/A	ND UJ/A	ND UJ-/A	ND UJ/A	**13 J/A**
		93	DUP	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	1.3 J/A	ND UJ/A	ND UJ/A	ND UJ-/A	ND UJ/A	**12 J/A**
	Jun-06	103	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.82 J+/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	**10 J+A**
	Sep-06	93	CHEM	ND A	ND A	ND A	ND A	1.5 A	ND A	0.18 J/A	ND A	ND A	**12 A**
		103	CHEM	ND A	ND A	ND A	ND A	1.3 A	ND A	0.14 J/A	ND A	ND A	**12 A**
	Mar-07	93	CHEM	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	1.1 J-/A	ND UJ-/A	ND UJ-/A	ND A	ND UJ-/A	**10 J-A**
	Sep-07	93	CHEM	ND A	ND A	ND A	ND A	0.92 A	ND A	ND A	ND A	ND A	**8.3 A**
	Mar-08	93	CHEM	ND A	ND A	ND A	ND A	0.77 A	ND A	0.12 J/A	ND A	ND A	**8.0 A**
	Oct-08	93	CHEM	ND A	ND A	ND A	ND A	0.71 A	ND A	ND A	ND A	ND A	**8.0 J/A**
	Mar-09	93	CHEM	ND A	ND A	ND A	ND A	0.73 A	ND A	0.15 J/A	ND A	ND A	**8.1 A**
	Sep-09	93	CHEM	ND A	0.016 J/A	ND A	ND A	0.785 J/A	ND A	0.2 J/A	ND A	ND A	**7.7 A**
	Mar-10	93	CHEM	ND A	ND A	ND A	ND A	0.56 A	ND A	ND A	ND A	ND A	**6.4 A**
	Sep-10	93	CHEM	ND A	ND A	ND A	ND A	0.54 A	ND A	0.13 J/A	ND A	ND A	**6.6 A**

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
MW-OU1-26-A (continued)	Mar-11	93	CHEM	ND A	ND A	ND A	ND A	0.56 A	ND A	0.18 J/A	ND A	ND A	**7.3 A**
	Jun-11	93	CHEM	ND A	ND A	ND A	ND A	0.55 A	ND A	0.19 J/A	0.4 J/A	ND A	**7 A**
	Sep-11	93	CHEM	ND A	ND A	ND A	ND A	0.44 J/A	ND A	0.15 J/A	ND A	ND A	**7.1 A**
		93	DUP	ND A	ND A	ND A	ND A	0.42 J/A	ND A	0.14 J/A	ND A	ND A	**7 A**
		103	CHEM	ND A	ND A	ND A	ND A	0.42 J/A	ND A	0.14 J/A	ND A	ND A	**7.1 A**
	Sep-12	93	CHEM	ND A	ND A	ND A	ND A	0.17 J/A	ND A	ND A	ND A	ND A	**5.2 A**
	Jan-13	93	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	0.2 J/J	ND U/A	ND U/A	ND U/A	ND U/A	4.5 A
	Feb-13	93	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	0.18 J/J	ND U/A	ND U/A	ND U/A	ND U/A	4.6 A
	Sep-13	93	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	3.6 A
		93	DUP	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	3.9 A
	Mar-14	93	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	2.5 A
	Sep-14	93	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	0.11 J/J	ND U/A	ND U/A	ND U/A	ND U/A	2.7 A
	May-15	93	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	0.15 J/J	ND U/A	ND U/A	ND U/A	ND U/A	2.5 A
	Jul-15	93	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	2.5 A
	Oct-15	93	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	0.15 J/J	ND U/A	ND U/A	ND U/A	ND U/A	2.3 A
	Dec-15	93	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	0.15 J/J	ND U/A	ND U/A	ND U/A	ND U/A	2.2 A
MW-OU1-27-A	Aug-98	--	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	3.69 A
	Sep-98	--	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	NR	ND A	4.64 A
	Apr-99	--	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.48 A
		--	DUP	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.989 A
	Jun-99	--	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	NT	ND A	**7.21 A**
		--	DUP	ND A	ND A	ND A	ND A	ND A	ND A	ND A	NT	ND A	**7.03 A**
	Sep-99	--	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.52 A
	Dec-99	--	CHEM	ND A	ND A	ND A	ND A	ND A	ND BJ/U	ND A	NT	ND A	**5.44 J**
	Feb-00	--	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	NT	ND A	4.33 A
	Jun-00	--	CHEM	ND A	ND A	ND A	ND A	ND A	0.113 J/A	ND A	NT	ND A	0.63 A
	Aug-00	--	CHEM	ND A	ND A	ND A	ND A	0.332 J/A	ND A	ND A	NT	ND A	**28.7 J-**
	Dec-00	--	CHEM	ND A	ND A	ND A	ND A	**6.37 A**	ND A	0.361 J/A	NT	ND A	**66.7 A**
	Mar-01	--	CHEM	ND A	ND A	ND A	ND A	**6.0 A**	ND A	0.285 J/A	NT	ND A	**40.5 A**
		--	DUP	ND A	ND A	ND A	ND A	NT	ND A	0.331 J/A	NT	ND A	**48.5 A**
	Jun-01	--	CHEM	ND A	ND A	ND A	ND A	**8.8 J+**	ND A	0.44 J/J+	NT	ND A	**38 J+**
		--	DUP	ND A	ND A	ND A	ND A	**11 J+**	ND A	0.54 J+	NT	ND A	**54 E/J+**
	Sep-01	--	CHEM	ND A	ND A	ND A	ND A	0.28 J/A	ND A	ND A	NT	ND A	1.6 A
	Dec-01	60	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	NT	ND A	0.34 J/A
		65	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	NT	ND A	4.2 A
		70	CHEM	ND A	ND A	ND A	ND A	**7.4 A**	ND A	0.55 A	NT	ND A	**49 A**
		75	CHEM	ND A	ND A	ND A	ND A	**6.4 A**	ND A	0.54 J/A	NT	ND A	**40 A**
		80	CHEM	ND A	ND A	ND A	ND A	**6.7 A**	ND A	0.5 J/A	NT	ND A	**43 A**
		85	CHEM	ND A	ND A	ND A	ND A	**7.7 A**	ND A	0.51 J/A	NT	ND A	**47 A**
	Mar-02	84.6	CHEM	ND A	ND A	ND A	ND A	**6.9 A**	ND A	0.53 A	ND A	ND A	**49 A**
	Jun-02	74.6	CHEM	ND A	ND A	ND A	ND A	**16 A**	ND A	ND A	ND A	ND A	**100 A**
	Jun-02	84.6	CHEM	ND A	ND A	ND A	ND A	**13 A**	ND A	ND A	ND A	ND A	**110 A**
	Sep-02	79.6	CHEM	ND A	ND A	ND A	ND A	**6.6 A**	ND A	ND A	ND A	ND A	**80 A**
		79.6	DUP	ND A	ND A	ND A	ND A	**7.3 A**	ND A	ND A	ND R	ND A	**86 A**

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
MW-OU1-27-A (continued)	Sep-02	84.6	CHEM	ND A	ND A	ND A	ND A	5.4 A	ND A	ND A	ND R	ND A	**72 A**
	Dec-02	72	CHEM	ND A	ND A	ND A	ND A	**6.1 A**	ND A	0.49 J/A	ND A	ND A	**57 A**
	Dec-02	87	CHEM	ND A	ND A	ND A	ND A	5.5 A	ND A	0.42 J/A	ND A	ND A	**69 A**
	Mar-03	77	CHEM	ND A	ND A	ND A	ND A	2.2 J/A	ND A	ND A	ND J	ND A	**72 J+**
		87	CHEM	ND A	ND A	ND A	ND A	1.0 A	ND A	ND A	ND J	ND A	**43 J+**
	Jun-03	82	CHEM	ND A	ND A	ND A	ND A	NT	ND A	ND A	5.1 J/A	ND A	**21 A**
		87	CHEM	ND A	ND A	ND A	ND A	NT	ND A	ND A	ND A	ND A	**18 A**
	Sep-03	72	CHEM	ND A	ND A	ND A	ND A	2.3 A	ND A	0.31 J/A	ND A	ND A	**46 A**
		72	DUP	ND A	ND A	ND A	ND A	2.4 A	ND A	0.35 J/A	ND A	ND A	**47 A**
	Sep-03	87	CHEM	ND A	ND A	ND A	ND A	0.32 J/J+	ND A	ND A	ND A	ND A	**17 J+**
	Dec-03	77	CHEM	ND A	ND A	ND A	ND A	0.54 A	ND A	ND A	ND A	ND A	**20 A**
		87	CHEM	ND A	ND A	ND A	ND A	0.46 J/A	ND A	ND A	ND A	ND A	**14 A**
	Mar-04	87	CHEM	ND A	ND A	ND A	ND A	0.4 J/A	ND A	ND A	13 UJ/A	ND A	**14 A**
		87	DUP	ND A	ND A	ND A	ND A	0.39 J/A	ND A	ND A	13 UJ/A	ND A	**14 A**
	Jun-04	60	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	15 J/A	ND A	2.0 A
	Jun-04	85	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	13 J/A	ND A	**11 A**
	Dec-04	85	CHEM	ND A	ND A	ND A	ND A	0.36 J/A	ND A	ND A	ND A	ND A	**20 A**
	Jun-05	85	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	**14 A**
	Dec-05	78	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	**9.4 J/A**
		85	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	**6.6 J/A**
	Jun-06	85	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND R/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ-/A	4.0 J-/A
	Dec-06	85	CHEM	ND A	ND A	ND A	ND A	0.64 A	ND A	ND A	ND A	ND A	**22 A**
	Mar-07	85	CHEM	ND A	ND A	ND A	ND A	0.47 J/A	ND A	0.18 J/A	ND A	ND A	**21 A**
	Sep-07	85	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	**5.2 A**
	Mar-08	85	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	4.0 A
	Sep-08	85	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.67 A
		85	DUP	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.76 A
	Mar-09	85	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.39 J/A
	Sep-09	85	CHEM	ND A	ND A	ND A	ND A	0.017 J/A	ND A	0.072 J/A	ND A	ND A	0.34 J/A
	Sep-10	85	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.37 J/A
	Mar-11	85	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.33 J/A
MW-OU1-46-A	Apr-01	--	CHEM	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND
	Jun-01	--	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	NT	ND A	ND A
	Sep-01	--	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	NT	ND A	ND A
	Dec-01	86	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	NT	ND A	ND A
	Dec-01	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	NT	ND A	ND A
	Dec-01	96	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	NT	ND A	ND A
	Dec-01	101	CHEM	ND A	ND A	ND UJ	ND A	ND A	ND A	ND A	NT	ND A	ND A
	Dec-01	106	CHEM	ND A	ND A	ND UJ	ND A	ND A	ND A	ND A	NT	ND A	ND A
	Mar-02	105.7	CHEM	ND A	ND A	ND UJ	ND A	ND A	ND A	ND A	ND UJ	ND A	ND A
	Jun-02	85.7	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	8.9 J/A	ND A	ND A
	Sep-02	90.7	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Dec-02	96	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Mar-03	101	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND J	ND A	ND A

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
MW-OU1-46-A (continued)	Jun-03	106	CHEM	ND A	ND A	ND A	ND A	NT	ND A	ND A	ND A	ND A	ND A
	Sep-03	86	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Dec-03	91	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Dec-03	91	DUP	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Mar-04	106	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	16 UJ/A	ND A	ND A
		106	DUP	ND A	ND A	ND A	ND A	ND A	ND A	ND A	15 UJ/A	ND A	ND A
	Jun-04	106	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	17 J/A	ND A	ND A
	Sep-04	106	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND R/A	ND A	ND A
	Dec-04	106	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.4 A
	Mar-05	95	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
		106	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Jun-05	106	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-05	106	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-06	106	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.1 J+/A	ND A	ND A
EW-OU1-49-A	Aug-04	80.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND R/A	ND A	**9.3 A**
		95.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND R/A	ND A	**20 A**
		110.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND R/A	ND A	**13 A**
	Sep-04	96	CHEM	ND A	ND A	ND A	ND A	0.76 A	ND A	ND A	ND R/A	ND A	**9.2 A**
	Dec-04	96	CHEM	ND A	ND A	ND A	ND A	0.97 A	ND A	ND A	ND A	ND A	**25 A**
	Mar-05	96	CHEM	ND A	ND A	ND A	ND A	0.90 A	ND A	ND A	ND A	ND A	**20 A**
	Jun-05	96	CHEM	ND A	ND A	ND A	ND A	0.85 A	ND A	ND A	ND A	ND A	**21 A**
	Dec-05	80	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.38 J+/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	**8.0 J+/A**
	Mar-06	80	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.48 J/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	**12 J+/A**
	Jun-06	80	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.42 J-/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ-/A	**8.9 J-/A**
	Oct-06	80	CHEM	ND A	ND A	ND A	ND A	0.46 J/A	ND A	ND A	1.8 J+/A	ND A	**9.9 A**
		80	DUP	ND A	ND A	ND A	ND A	0.40 J/A	ND A	ND A	1.3 J+/A	ND A	**10 A**
	Dec-06	80	CHEM	ND A	ND A	ND A	ND A	0.45 J/A	ND A	ND A	ND A	ND A	**8.3 A**
	Mar-07	80	CHEM	ND A	ND A	ND A	ND A	0.38 J/A	ND A	ND A	ND A	ND A	**8.5 A**
PZ-OU1-49-A1	Aug-04	79.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND R/A	ND A	**5.0 A**
		94.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND R/A	ND A	**24 A**
		109.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND R/A	ND A	**9.3 A**
	Sep-04	94	CHEM	ND A	ND A	ND A	ND A	3.5 A	ND A	ND A	ND R/A	ND A	**49 A**
		119.5	CHEM	ND A	ND A	ND A	ND A	0.34 J/A	ND A	ND A	ND R/A	ND A	**9.9 A**
		119.5	CHEM	ND A	ND A	ND A	ND A	0.32 J/A	ND A	ND A	ND R/A	ND A	**8.8 A**
	Dec-04	119.5	CHEM	ND A	ND A	ND A	ND A	0.47 J/A	ND A	ND A	ND A	ND A	**18 A**
	Mar-05	119.5	CHEM	ND A	ND A	ND A	ND A	0.41 J/A	ND A	ND A	ND A	ND A	**13 A**
		119.5	DUP	ND A	ND A	ND A	ND A	0.44 J/A	ND A	ND A	ND A	ND A	**14 A**
	Jun-05	120	CHEM	ND A	ND A	ND A	ND A	0.64 A	ND A	ND A	ND A	ND A	**15 A**
	Sep-05	119.5	CHEM	ND A	ND A	ND A	ND A	0.65 A	ND A	ND A	ND A	ND A	**13 A**
	Dec-05	119.5	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	**5.6 J/A**
	Mar-06	94	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.90 J/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	**15 J/A**
		119.5	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.37 J/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	**9.5 J/A**
	Jun-06	94	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.35 J-/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ-/A	**8.0 J-/A**
		119.5	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.42 J/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	**7.6 J/A**

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
PZ-OU1-49-A1 (continued)	Oct-06	94	CHEM	ND A	ND A	ND A	ND A	1.1 A	ND A	0.15 J/A	1.1 J+/A	ND A	**16 A**
		94	DUP	ND A	ND A	ND A	ND A	1.2 A	ND A	0.13 J/A	ND A	ND A	**17 A**
		119.5	CHEM	ND A	ND A	ND A	ND A	0.70 A	ND A	0.14 J/A	ND A	ND A	**14 A**
	Dec-06	94	CHEM	ND A	ND A	ND A	ND A	1.6 A	ND A	ND A	ND A	ND UJ-/A	**20 A**
		94	DUP	ND A	ND A	ND A	ND A	1.7 A	ND A	0.21 J/A	1.1 J/A	ND A	**22 A**
	Mar-07	94	CHEM	ND A	ND A	ND A	ND A	0.38 J/A	ND A	0.12 J/A	ND A	ND A	**9.4 A**
	Sep-07	94	CHEM	ND A	ND A	ND A	ND A	0.21 J/A	ND A	ND A	ND A	ND A	**5.5 A**
	Mar-08	94	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	**5.9 A**
	Oct-08	94	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	2.7 A
	Mar-09	94	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.1 A
	Sep-09	94	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.71 A
	Mar-10	94	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.61 A
	Sep-10	94	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.79 A
	Mar-11	94	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.56 J/A	ND A	0.64 A
	Sep-11	94	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.29 J/A
	Mar-12	94	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.27 J/A
	Sep-12	94	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	3.00 A	ND A	0.21 J/A
	Sep-13	94	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.77 A
	Sep-14	94	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	1.2 A
	May-15	94	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	1.8 U/A
	Jul-15	94	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	2 A
	Oct-15	94	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	2.2 A
	Dec-15	94	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	1.9 A
MW-OU1-50-A	Aug-04	83	CHEM	ND J/A	ND J/A	ND J/A	ND J/A	ND J/A	ND J/A	ND J/A	ND R/A	ND J/A	ND J/A
	Aug-04	93	CHEM	ND A	ND A	ND A	ND A	1.5 A	ND A	ND A	ND R/A	ND A	**27 A**
	Aug-04	103	CHEM	ND A	ND A	ND A	ND A	1.4 A	ND A	ND A	ND R/A	ND A	**27 A**
	Dec-04	93	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
		103	CHEM	ND A	ND A	ND A	ND A	1.6 A	ND A	ND A	ND A	ND A	**42 A**
	Mar-05	93	CHEM	ND A	ND A	ND A	ND A	0.89 A	ND A	ND A	ND A	ND A	**24 A**
		103.5	CHEM	ND A	ND A	ND A	ND A	1.0 A	ND A	ND A	ND A	ND A	**27 A**
	Jun-05	104	CHEM	ND A	ND A	ND A	ND A	0.89 A	ND A	ND A	ND A	ND A	**24 A**
	Sep-05	103.5	CHEM	ND A	ND A	ND A	ND A	0.81 A	ND A	ND A	ND A	ND A	**20 A**
	May-06	72	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	1.6 J/A
	May-06	93.5	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.64 J/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	**12 J/A**
		103.5	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.80 J/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	**16 J/A**
	Aug-06	103.5	CHEM	ND A	ND A	ND A	ND A	3.8 A	**1.4 J/A**	ND A	0.82 J/A	ND A	**42 A**
	Sep-06	103.5	CHEM	ND A	ND A	ND A	ND A	1.2 A	ND A	0.12 J/A	ND A	ND A	**16 A**
	Nov-06	103.5	CHEM	ND A	ND A	ND A	ND A	0.19 J/A	ND A	ND A	ND A	ND A	3.7 A
	Dec-06	103.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.4 J/A	ND A	2 A
	Jan-07	74	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
		90	CHEM	ND A	ND A	ND A	ND A	0.25 J/A	ND A	ND A	ND A	ND A	4 A
		103.5	CHEM	ND A	ND A	ND A	ND A	0.23 J/A	ND A	ND A	ND A	ND A	3.5 A
	Mar-07	103.5	CHEM	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	0.44 J-/A	ND UJ-/A	ND UJ-/A	ND A	ND UJ-/A	**5.1 J-/A**
		103.5	DUP	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	0.4 J-/A	ND UJ-/A	ND UJ-/A	ND A	ND UJ-/A	4.9 J-/A
	Apr-07	103.5	CHEM	ND A	ND A	ND A	ND A	0.79 A	ND A	ND A	ND A	ND A	**8.2 A**
	May-07	103.5	CHEM	ND A	ND A	ND A	ND A	1.4 A	ND A	0.14 J/A	ND A	ND A	**12 A**

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
MW-OU1-50-A (continued)	Sep-07	103.5	CHEM	ND A	ND A	ND A	ND A	1.3 A	ND A	0.16 J/A	ND A	ND A	**16 A**
		103.5	DUP	ND A	ND A	ND A	ND A	1.3 A	ND A	0.14 J/A	ND A	ND A	**15 A**
	Dec-07	103.5	CHEM	ND A	ND A	ND A	ND A	0.7 A	ND A	ND A	ND A	ND A	**13 A**
		103.5	DUP	ND A	ND A	ND A	ND A	0.7 A	ND A	ND A	ND A	ND A	**13 A**
	Mar-08	103.5	CHEM	ND A	ND A	ND A	ND A	0.48 J/A	ND A	ND A	1.3 J/A	ND A	**11 A**
	Jun-08	103.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	**10 A**
	Sep-08	103.5	CHEM	ND A	ND A	ND A	ND A	0.71 J/A	ND A	ND A	0.41 J/A	ND A	**11 A**
	Dec-08	103.5	CHEM	ND A	ND A	ND A	ND A	1.1 A	ND A	0.17 J/A	ND A	ND A	**11 A**
	Mar-09	103.5	CHEM	ND A	ND A	ND A	ND A	0.66 A	ND A	ND A	0.59 J/A	ND A	**6.6 A**
	Sep-09	103.5	CHEM	ND A	ND A	ND A	ND A	0.078 J/A	0.029 J/A	0.053 J/A	ND A	ND A	1.0 A
	Mar-10	103.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.36 J/A	ND A	0.43 J/A
	Sep-10	90	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.22 J/A
		103.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.31 J/A
	Mar-11	103.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.21 J/A
	Sep-11	103.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.21 J/A
	Sep-13	103.5	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A
EW-OU1-52-A	Sep-07	123	CHEM	ND A	ND A	ND A	ND A	0.27 J/A	ND A	ND A	1.2 J/A	ND A	3.9 A
	Oct-08	123	CHEM	ND A	ND A	ND A	ND A	0.32 J/A	ND A	0.12 J/A	ND A	ND A	4.2 A
	Sep-09	123	CHEM	ND A	0.016 J/A	ND A	ND A	0.54 A	ND A	0.18 J/A	ND A	ND A	**5.0 A**
	Sep-09	123	DUP	ND A	0.015 J/A	ND A	ND A	0.493 J/A	ND A	0.19 J/A	ND A	ND A	**5.0 A**
	Mar-10	123	CHEM	ND A	ND A	ND A	ND A	0.53 A	ND A	0.17 J/A	ND A	ND A	**6.5 A**
	Sep-10	123	CHEM	ND A	ND A	ND A	ND A	0.63 A	ND A	0.2 J/A	ND A	ND A	**7.3 A**
	Mar-11	123	CHEM	ND A	ND A	ND A	ND A	0.68 A	ND A	0.23 J/A	ND A	ND A	**7.8 A**
		123	DUP	ND A	ND A	ND A	ND A	0.70 A	ND A	0.26 J/A	ND A	ND A	**7.8 A**
	Jun-11	123	CHEM	ND A	ND A	ND A	ND A	0.57 A	ND A	0.14 J/A	ND A	ND A	**6.3 A**
	Sep-11	123	CHEM	ND A	ND A	ND A	ND A	0.41 J/A	ND A	0.15 J/A	ND A	ND A	**6.4 A**
	Sep-12	123	CHEM	ND A	ND A	ND A	ND A	0.16 J/A	ND A	0.13 J/A	ND A	ND A	4.2 A
	Sep-13	123	CHEM	ND A	ND A	ND A	ND A	0.35 UJ/A	ND A	0.16 UJ/A	ND A	ND A	4.9 U/A
	Sep-14	123	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	2.9 A
	May-15	112	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	0.24 U/A	ND U/A	ND U/A	ND U/A	ND U/A	3.8 A
	Jul-15	123	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.17 J/J	ND U/A	ND U/A	3.7 A
	Oct-15	123	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	0.13 J/J	ND U/A	0.12 J/J	ND U/A	ND U/A	3 A
	Dec-15	123	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	0.18 J/J	ND U/A	0.14 J/J	ND U/A	ND U/A	2.9 A
EW-OU1-53-A	Sep-07	131	CHEM	ND A	ND A	ND A	ND A	1.6 A	ND A	0.24 J/A	ND A	ND A	**12 A**
	Mar-08	131	CHEM	ND A	ND A	ND A	ND A	1.3 A	ND A	ND A	ND A	ND A	**12 A**
	Oct-08	131	CHEM	ND A	ND A	ND A	ND A	1.2 A	ND A	0.34 J/A	ND A	ND A	**11 A**
	Mar-09	131	CHEM	ND A	ND A	ND A	ND A	1.1 A	ND A	0.3 J/A	ND A	ND A	**10 A**
		131	DUP	ND A	ND A	ND A	ND A	1.2 A	ND A	0.28 J/A	ND A	ND A	**11 A**
	Sep-09	131	CHEM	ND A	0.066 J/A	ND A	ND A	1.244 J/A	0.032 J/A	0.45 J/A	0.69 J/A	ND A	**10 A**
	Mar-10	131	CHEM	ND A	ND A	ND A	ND A	0.69 A	ND A	0.22 J/A	ND A	ND A	**7.8 A**
	Sep-10	131	CHEM	ND A	ND A	ND A	ND A	0.56 A	ND A	0.2 J/A	ND A	ND A	**6.7 A**
		131	DUP	ND A	ND A	ND A	ND A	0.56 A	ND A	0.2 J/A	ND A	ND A	**6.5 A**
	Mar-11	131	CHEM	ND A	ND A	ND A	ND A	0.55 A	ND A	0.27 J/A	ND A	ND A	**6.2 A**
	Jun-11	131	CHEM	ND A	ND A	ND A	ND A	0.49 J/A	ND A	0.2 J/A	ND A	ND A	**5 A**
		131	DUP	ND A	ND A	ND A	ND A	0.44 J/A	ND A	0.19 J/A	ND A	ND A	**5.3 A**
	Sep-11	131	CHEM	ND A	ND A	ND A	ND A	0.33 J/A	ND A	0.2 J/A	ND A	ND A	4.9 A
	Sep-14	131	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.15 J/J	ND U/A	ND U/A	1.9 A

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
EW-OU1-53-A (continued)	May-15	131	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	1.6 A
	Jul-15	131	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.2 J/J	ND U/A	ND U/A	1.8 A
	Oct-15	131	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.14 J/A	ND U/A	ND U/A	1.3 A
	Dec-15	131	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.15 J/A	ND U/A	ND U/A	1.4 A
MW-OU1-59-A	Dec-04	78	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	12 J/A	ND A	ND A
		92	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	10 J/A	ND A	ND A
		100	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
		106	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	13 J/A	ND A	ND A
	Mar-05	106	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Jun-05	106	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-05	100	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Dec-05	100	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ-/A	ND UJ/A	ND UJ/A
		100	DUP	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ-/A	ND UJ/A	ND UJ/A
	Mar-06	106	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ-/A	ND UJ/A	ND UJ/A
	Jun-06	106	CHEM	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A
	Sep-06	106	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Dec-06	106	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND UJ-/A	ND A
	Mar-07	106	CHEM	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND A	ND UJ-/A	ND UJ-/A
	May-07	106	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-07	106	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-08	106	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
EW-OU1-72-A	Nov-06	71.5	CHEM	ND A	ND A	ND A	ND A	0.13 J/A	ND A	ND A	ND A	ND A	1.7 A
		88	CHEM	ND A	ND A	ND A	ND A	0.54 A	ND A	ND A	ND A	ND A	**6.7 A**
		102	CHEM	ND A	ND A	ND A	ND A	0.61 A	ND A	ND A	ND A	ND A	**6.9 A**
	Sep-07	102	CHEM	ND A	ND A	ND A	ND A	1.4 A	ND A	0.12 J/A	ND A	ND A	**12 A**
	Mar-08	102	CHEM	ND A	ND A	ND A	ND A	0.41 J/A	ND A	ND A	ND A	ND A	3.7 A
	Sep-08	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.80 A
	Mar-09	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.22 J/A
	Sep-09	102	CHEM	ND A	ND A	ND A	ND A	0.02 J/A	ND A	0.088 J/A	ND A	ND A	0.22 J/A
	Mar-10	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.41 J/A	ND A	0.15 J/A
	Sep-10	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.16 J/A
	Mar-11	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.15 J/A
	Oct-11	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.24 J/A
	Mar-12	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-12	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.41 J/A	ND A	0.15 J/A
	Sep-13	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.36 J/A
	Sep-14	102	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.78 A
MW-OU1-82-A	Nov-06	88	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.35 J/A
		100	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.48 J/A
		112	CHEM	ND A	ND A	ND A	ND A	0.14 J/A	ND A	ND A	ND A	ND A	4.3 A
		124	CHEM	ND A	ND A	ND A	ND A	0.15 J/A	ND A	ND A	ND A	ND A	4.3 A
		124	DUP	ND A	ND A	ND A	ND A	0.15 J/A	ND A	ND A	ND A	ND A	4.0 A
	Mar-07	124	CHEM	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND A	ND UJ-/A	2.7 J-/A
	Sep-07	124	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.1 A

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
MW-OU1-82-A (continued)	Mar-08	124	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.1 A
	Sep-08	124	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.1 A
	Mar-09	124	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.51 J/A	ND A	0.89 A
	Sep-09	124	CHEM	ND A	ND A	ND A	ND A	0.021 J/A	ND A	0.055 J/A	ND A	ND A	0.88 A
	Mar-10	124	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.35 J/A	ND A	1.4 A
	Sep-10	124	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.96 A
	Mar-11	124	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.94 A
	Sep-11	124	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.61 A
MW-OU1-83-A	Nov-06	87	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
		99.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
		112.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.1 A
		124.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	1.1 A
	Mar-07	124.5	CHEM	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND A	ND UJ-/A	0.61 J-/A
	Sep-07	124.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.54 A
	Mar-08	124.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-08	124.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.32 J/A
	Mar-09	124.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.48 J/A	ND A	0.35 J/A
	Sep-09	124.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	0.066 J/A	ND A	ND A	0.21 J/A
	Sep-10	124.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.16 J/A
	Sep-11	124.5	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.15 J/A
MW-OU1-84-A	Nov-06	93	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
		105.5	CHEM	ND A	ND A	ND A	ND A	0.54 A	ND A	ND A	ND A	ND A	4.3 A
		118.5	CHEM	ND A	ND A	ND A	ND A	1.5 A	ND A	0.18 J/A	1.3 J/A	ND A	**12 A**
		128	CHEM	ND A	ND A	ND A	ND A	1.7 A	ND A	0.16 J/A	ND A	ND A	**13 A**
	Mar-07	128	CHEM	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	2.1 J-/A	ND UJ-/A	0.20 J-/A	ND A	ND UJ-/A	**16 J-/A**
	Sep-07	128	CHEM	ND A	ND A	ND A	ND A	2.4 A	ND A	0.21 J/A	ND A	ND A	**21 A**
	Mar-08	128	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.21 J/A
	Sep-08	128	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Mar-09	128	CHEM	ND A	ND A	ND A	ND A	0.11 J/A	ND A	ND A	ND A	ND A	ND A
	Sep-09	128	CHEM	ND A	ND A	ND A	ND A	0.026 J/A	ND A	0.042 J/A	ND A	ND A	ND A
	Sep-10	128	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
	Sep-11	128	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A
MW-OU1-86-A	Nov-06	87	CHEM	ND UJ-/A	ND A	ND UJ-/A	ND A	ND A	ND A	0.13 J-/A	ND A	ND UJ-/A	0.35 J-/A
		99.5	CHEM	ND UJ-/A	ND A	ND UJ-/A	ND A	ND A	ND A	0.14 J-/A	ND A	ND UJ-/A	0.35 J-/A
		112	CHEM	ND UJ-/A	ND A	ND UJ-/A	ND A	ND A	ND A	0.15 J-/A	1.3 J+/A	ND UJ-/A	0.46 J-/A
		124.5	CHEM	ND UJ-/A	ND A	ND UJ-/A	ND A	ND A	ND A	0.14 J-/A	ND A	ND UJ-/A	ND UJ-/A
		124.5	DUP	ND UJ-/A	ND A	ND UJ-/A	ND A	ND A	ND A	0.19 J-/A	ND A	ND UJ-/A	ND UJ-/A
	Mar-07	112	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	0.18 J/A	ND A	ND A	0.44 J/A
	Sep-07	112	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	0.18 J/A	ND A	ND A	0.62 A
		112	DUP	ND A	ND A	ND A	ND A	ND A	ND A	0.16 J/A	ND A	ND A	0.64 A
	Mar-08	112	CHEM	ND A	ND A	ND A	ND A	0.28 J/A	ND A	ND A	ND A	ND A	1.9 A
	Oct-08	112	CHEM	ND A	ND A	ND A	ND A	0.36 J/A	ND A	0.18 J/A	ND A	ND A	2.4 A
	Mar-09	112	CHEM	ND A	ND A	ND A	ND A	0.26 J/A	ND A	0.14 J/A	ND A	ND A	2.6 A
	Sep-09	112	CHEM	0.013 J/A	0.029 J/A	ND A	ND A	0.43 J/A	ND A	0.26 J/A	ND A	ND A	2.6 A

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Location Identification	Sample Date	Sample Depth[1] (ft)	Sample Type	USEPA 8260B (µg/L)									
				1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL[2]				**200**	**5.0**	**6.0**	**0.5**	**6.0**	**1.0**	**2.0**	**1900**	**5.0**	**5.0**
Extraction Wells (9 total)													
MW-OU1-86-A (continued)	Mar-10	112	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	0.15 J/A	ND A	ND A	1.2 A
	Sep-10	112	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	0.14 J/A	ND A	ND A	1.0 A
	Mar-11	112	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	0.13 J/A	0.50 J/A	ND A	0.82 A
	Sep-11	112	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.72 A
	Mar-12	112	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.37 J/A	ND A	0.99 A
	Sep-12	112	CHEM	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	0.69 J/A
	Sep-14	112	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	0.13 J/A	ND U/A	ND U/A	0.42 J/A
MW-OU1-88-A	Nov-06	103.5	CHEM	ND UJ-/A	ND A	ND UJ-/A	ND A	1.2 A	ND A	0.15 J-/A	ND A	ND UJ-/A	**14 J-/A**
		114	CHEM	ND UJ-/A	ND A	ND UJ-/A	ND A	1.3 A	ND A	0.15 J-/A	ND A	ND UJ-/A	**14 J-/A**
		122	CHEM	ND UJ-/A	ND A	ND UJ-/A	ND A	1.3 A	ND A	0.17 J-/A	ND A	ND UJ-/A	**14 J-/A**
		122	DUP	ND UJ-/A	ND A	ND UJ-/A	ND A	1.4 A	ND A	0.18 J-/A	ND A	ND UJ-/A	**15 J-/A**
	Mar-07	122	CHEM	ND A	ND A	ND A	ND A	1.4 A	ND A	0.24 J/A	ND A	ND A	**15 A**
	Sep-07	122	CHEM	ND A	ND A	ND A	ND A	1.2 A	ND A	0.19 J/A	ND A	ND A	**13 A**
	Mar-08	122	CHEM	ND A	ND A	ND A	ND A	1.4 A	ND A	ND A	ND A	ND A	**15 A**
	Oct-08	122	CHEM	ND A	ND A	ND A	ND A	1.0 A	ND A	0.19 J/A	ND A	ND A	**11 J/A**
	Mar-09	122	CHEM	ND A	ND A	ND A	ND A	1.0 A	ND A	0.18 J/A	ND A	ND A	**9.9 A**
	Sep-09	122	CHEM	ND A	0.025 J/A	ND A	ND A	0.95 A	ND A	0.28 J/A	1.3 J/A	ND A	**8.7 A**
	Mar-10	122	CHEM	ND A	ND A	ND A	ND A	0.80 A	ND A	0.21 J/A	ND A	ND A	**7.0 A**
	Sep-10	122	CHEM	ND A	ND A	ND A	ND A	0.90 A	ND A	0.21 J/A	ND A	ND A	**9.9 A**
	Mar-11	122	CHEM	ND A	ND A	ND A	ND A	1.4 A	ND A	0.26 J/A	ND A	ND A	**13.0 A**
	Jun-11	122	CHEM	ND A	ND A	ND A	ND A	1.1 A	ND A	0.19 J/A	ND A	ND A	**11.0 A**
	Sep-11	103.5	CHEM	ND A	ND A	ND A	ND A	0.64 A	ND A	0.15 J/A	ND A	ND A	**9.0 A**
		114	CHEM	ND A	ND A	ND A	ND A	0.72 A	ND A	0.15 J/A	ND A	ND A	**9.2 A**
		122	CHEM	ND A	ND A	ND A	ND A	0.7 A	ND A	0.15 J/A	ND A	ND A	**9.1 A**
		122	DUP	ND A	ND A	ND A	ND A	0.74 A	ND A	0.15 J/A	ND A	ND A	**9.2 A**
	Dec-11	122	CHEM	ND A	ND A	ND A	ND A	0.78 A	ND A	0.18 J/A	ND A	ND A	**8.4 A**
	Mar-12	122	CHEM	ND A	ND A	ND A	ND A	0.84 A	ND A	0.19 J/A	ND A	ND A	**9.4 A**
	Sep-12	122	CHEM	ND A	ND A	ND A	ND A	0.81 J/A	ND A	0.17 J/A	ND A	ND A	**9.3 A**
	Jan-13	122	CHEM	ND A	ND A	ND A	ND A	0.65 J/A	ND A	0.16 J/A	ND A	ND A	**7.9 A**
		122	CHEM	ND A	ND A	ND A	ND A	0.36 J/A	ND A	0.14 J/A	ND A	ND A	**7.9 A**
	Feb-13	122	CHEM	ND A	ND A	ND A	ND A	0.71 J/A	ND A	0.16 J/A	ND A	ND A	**7.8 A**
	Mar-13	122	CHEM	ND A	ND A	ND A	ND A	0.54 J/A	ND A	0.13 J/A	ND A	ND A	**6.8 A**
	Jun-13	122	CHEM	ND A	ND A	ND A	ND A	0.45 J/A	ND A	0.16 J/A	ND A	ND A	**5.6 A**
	Sep-13	122	CHEM	ND A	ND A	ND A	ND A	0.46 UJ/A	ND A	0.19 UJ/A	ND A	ND A	**6.4 U/A**
	Dec-13	122	CHEM	ND A	ND A	ND A	ND A	0.31 J/A	ND A	0.17 J/A	ND A	ND A	**6.2 A**
	Mar-14	122	CHEM	ND A	ND A	ND A	ND A	0.21 J/A	ND A	ND A	ND A	ND A	4.6 A
	Jun-14	122	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	0.23 J/J	ND U/A	ND U/A	ND U/A	ND U/A	4.5 A
	Sep-14	122	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	0.27 J/J	ND U/A	ND U/A	ND U/A	ND U/A	4.7 A
	Dec-14	122	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	0.17 J/A	ND U/A	0.12 J/J	ND U/A	ND U/A	4.1 A
	May-15	122	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	0.17 J/A	ND U/A	ND U/A	ND U/A	ND U/A	4.0 A
	Jul-15	122	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	ND U/A	3.2 J/J-
	Oct-15	122	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	0.16 J/J	ND U/A	ND U/A	ND U/A	ND U/A	3.9 A
	Dec-15	122	CHEM	ND U/A	ND U/A	ND U/A	ND U/A	0.19 J/J	ND U/A	ND U/A	ND U/A	ND U/A	3.9 A

Table 2.2
Summary of Historical Analytical Results - 1986-2015

Notes:

Data was prepared using information from Fort Ord Data Integration System.

[1]A value indicates the depth a PDB sample was collected, 0 or - indicates another method of sampling was used.

[2]OU-1 Record of Decision (July 25, 1995).

Bold indicates results at or above the respective ACL.

1,1,1-TCA - 1,1,1-trichloroethane

1,1-DCA - 1,1-dichloroethane

1,1-DCE - 1,1-dichloroethene

1,2-DCA - 1,2-dichloroethane

1,2-DCE (total) - Total 1,2-dichloroethene

A - The result has undergone routine data validation.

ACL - aquifer cleanup levels

B - The analyte was found in an associated blank, as well as in the sample

CHEM - normal field sample

DUP - field duplicate sample

EFF - effluent

EW - extraction well

ft - feet

INF - influent

INTER - intermediate

J+ Data are qualified as estimated, with a high bias likely to occur. The associated value is the detected level. False positives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. The associated value is the detected level. False negatives are unlikely to have been reported.

J Data are qualified as estimated.

µg/L - micrograms per liter

MEK - methyl ethyl ketone

MW - monitoring well

ND - non-detect

NT - not tested

OU-1 - Operable Unit 1

PCE - tetrachloroethene

PZ - piezometer

R - Data are qualified as rejected.

TCE - trichloroethene

TS - treatment system

UJ- Data are qualified as estimated; with a low bias likely to occur. The associated value is the practical quantitation limit. False positives or false negatives are unlikely to occur.

UJ Data are qualified as estimated.

USEPA - U.S. Environmental Protection Agency

USEPA 8260B - method for volatile organic compound analysis.

Table 2.3
OU-1 Attainment Monitoring Summary of Analytical Results for PFOA and PFOS

Analyte	**PFOA**				**PFOS**				**Total PFOA and PFOS**			
Preliminary Health Advisory January 2009 - May 2016	**400 ng/L**				**200 ng/L**				**Not Applicable**			
Health Advisory 16 May 2016	**Not Applicable**								**70 ng/L**			
Sample Event #	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
Sample Date(s)	**5/11/2015**	**7/20/2015**	**10/5/2015**	**12/14/2015**	**5/11/2015**	**7/20/2015**	**10/5/2015**	**12/14/2015**	**5/11/2015**	**7/20/2015 & 7/24/2015**	**10/5/2015**	**12/14/2015**
Well Identification	**Groundwater Concentration in ng/L**											
EW-OU1-53-A	14 J-	13.0	9	13	UJ-	U	U	U	14 J-	13.0	9	13
EW-OU1-52-A	3 J-	4.0	4	5	UJ-	U	U	U	3 J-	4.0	4	5
PZ-OU1-10-A1*	120 J-	Not sampled			UJ-	Not sampled			120 J-	Not sampled		
IW-OU1-02-A	9 J-	10.0	7	9	UJ-	U	U	U	9 J-	10.0	7	9
MW-OU1-26-A	34 J-	44.0	42	39	7 J	12.0	15	12	41 J-	56.0	57	51
MW-OU1-88-A	270 J-	230.0	180	210	64 J-	62.0	37	33	334 J-	292.0	217	243
		260.0	*200*	*200*		*72.0*	*44*	*36*		*332.0*	*244*	*236*
PZ-OU1-49-A1	7 J-	8.0	9	11	UJ-	U	U	U	7 J-	8.0	9	11
MW-OU1-61-A	3 J-	*3.0*	*2 J*	*2*	UJ-	U	U	U	3 J-	3.0	2 J	2
	4 J-				*UJ-*				*4 J-*			

Notes:

* PZ-OU1-10-A1 was deleted from the sampling network for PFOA and PFOS after Event #1 because suspended aquifer material from a damaged screen was present in the sample.

italics = Field duplicate
ng/L = nanograms per liter
PFOA = perfluorooctanoic acid
PFOS = perfluorooctane sulfonate
TCE = trichloroethene
OU-1 = Operable Unit 1
U = Not detected
J- = Potential low bias in reported result
Red font indicates value exceeds May 2016 Health Advisory

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FIGURE(S)

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\\Gst-srv-01\hglgis\Ft_Ord_MSIW\
2016_Annual_GW_Monitoring\
(2-01)Parcel_map.mxd
4/24/2017 TB
Source: HGL
USGS aerial photo dated 9/7/1998

Legend

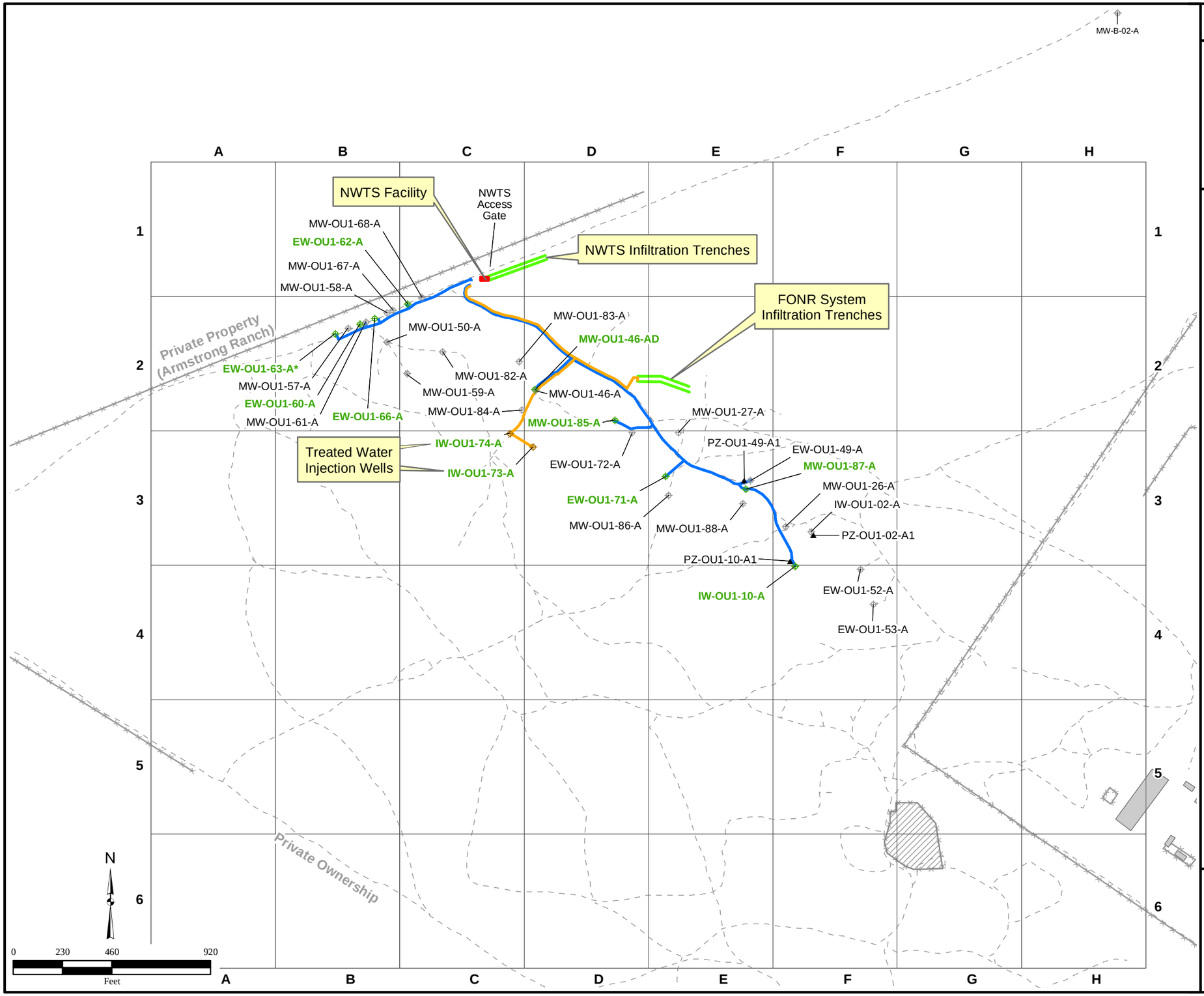
Land Parcel Boundary

OU-1 Area

Notes:
FONR=Fort Ord Natural Reserve
OU=Operable Unit
UCSC=University of California, Santa Cruz

Figure 2.1
OU-1 Remediation Area
Former Fort Ord, CA

Figure 2.2
Existing Wells in OU-1 FONR (2017)
Former Fort Ord, CA



Legend

- Monitoring Well
- Extraction Well
- Injection Well
- Piezometer or 2-Inch Well
- Trail/Unimproved Road
- Fence
- Treated Water Infiltration Trench
- Extraction Pipeline
- Treated Water Pipeline
- Former Fire Drill Area
- NWTS Facility

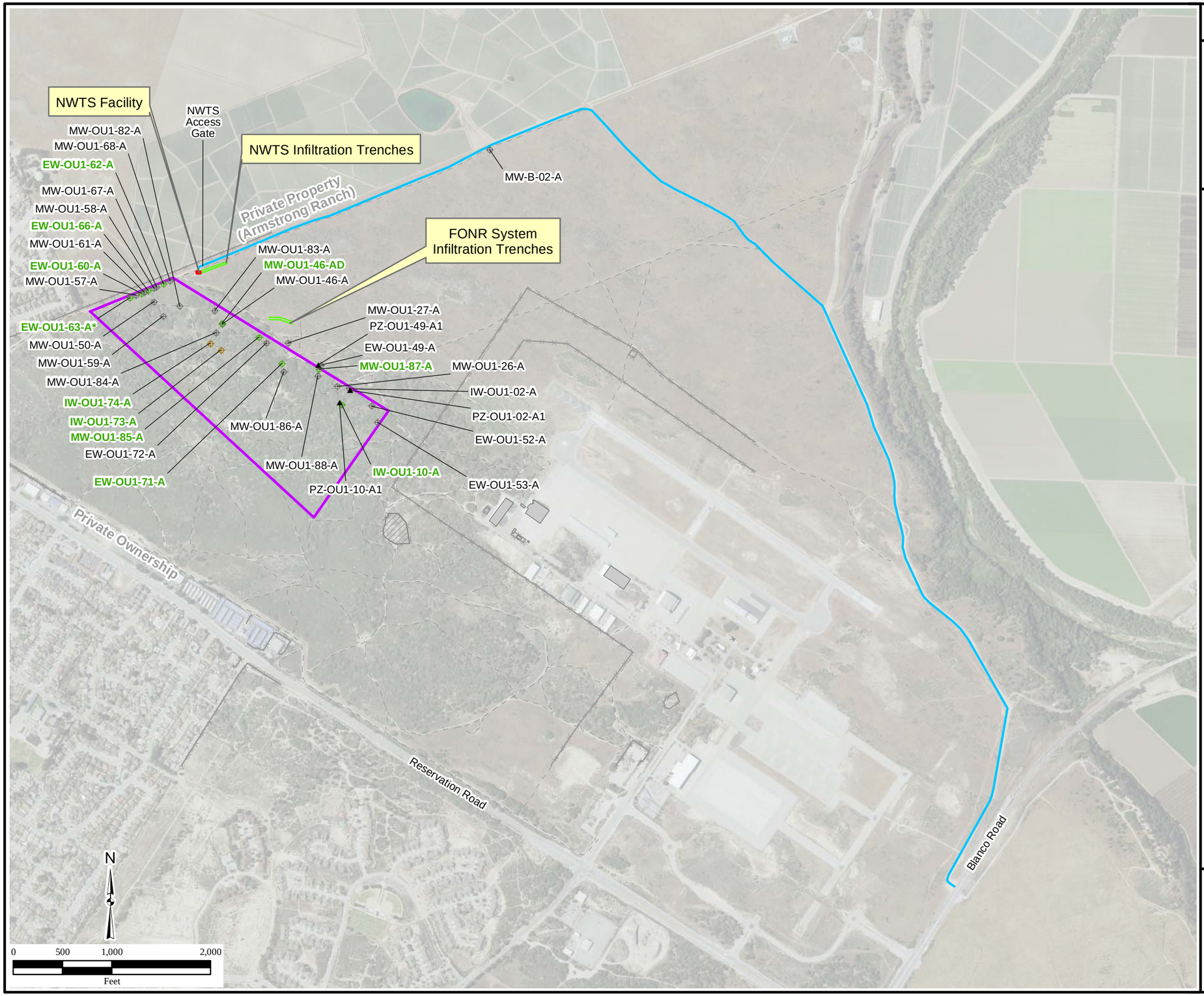
Notes:
FONR=Fort Ord Natural Reserve
NWTS=Northwest Treatment System
Well labels in green font indicate extraction or injection well.
All pumping suspended.

* Disconnected extraction well. No longer operable.

\\gst-srv-01\HGLGIS\Ft_Ord_MSIW\OU-1_CloseoutWP
(2-02)Existing_MW_Locations.mxd
4/27/2017 TB
Source: HGL

HydroGeoLogic, Inc

Figure 2.3
Site Layout
Former Fort Ord, CA



Legend

- Monitoring Well
- Extraction Well
- Injection Well
- Piezometer or 2-Inch Well
- Entry Route to FONR
- Fence
- Trail/Unimproved Road
- Treated Water Infiltration Trench
- Well Destruction Project Area
- Former Fire Drill Area
- NWTS Facility

Notes:
FONR=Fort Ord Natural Reserve
NWTS=Northwest Treatment System
Well labels in green font indicate extraction or injection well.
All pumping suspended.

* Disconnected extraction well. No longer operable.

\\gst-srv-01\HGLGIS\Ft_Ord_MSIW\OU-1_CloseoutWP
(2-03)Site_Layout.mxd
4/27/2017 TB
Source: HGL

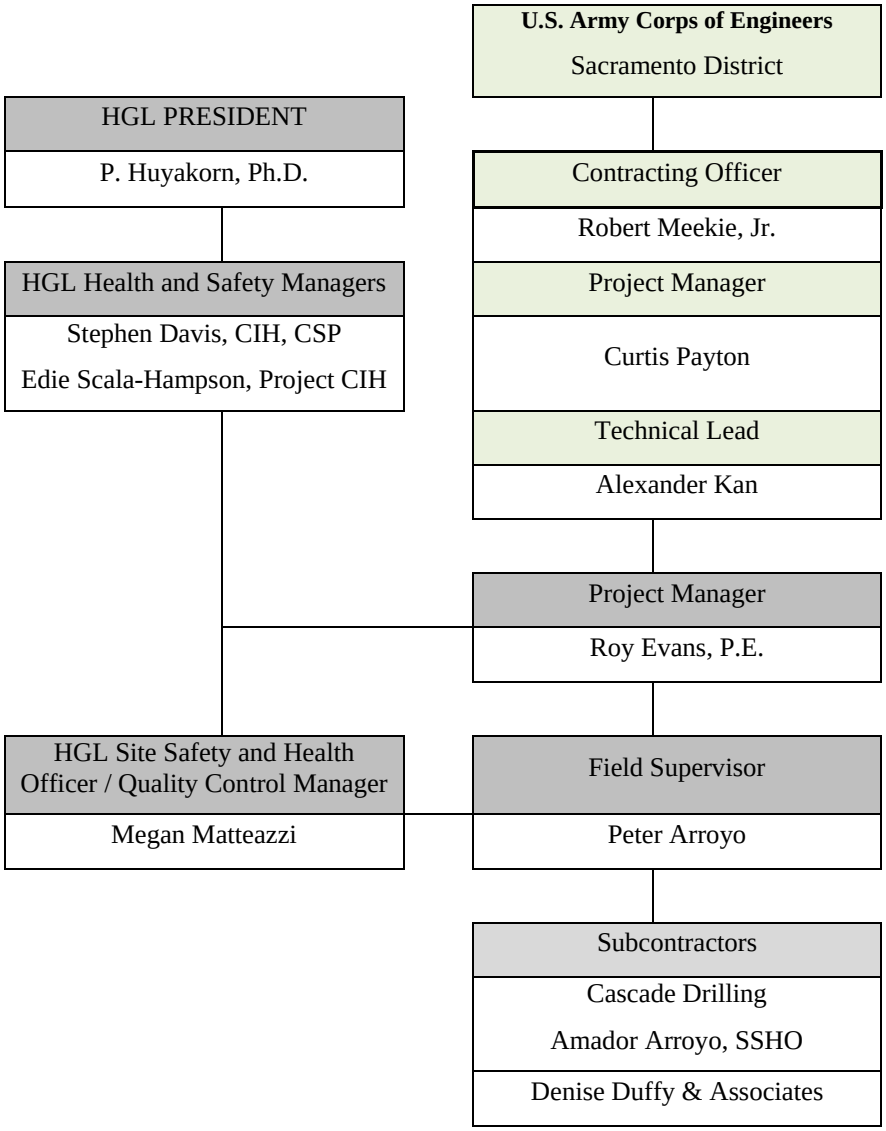
HydroGeoLogic, Inc

Figure 2.4
Fort Ord OU-1 Well Demolition, NWTS Decommissioning, & Closeout Schedule

Task #	Task Name	Estimated Start	Duration (calendar days)	Estimated Finish
1	Project Award	4/25/2017	0	4/25/2017
2.1	Well Demolition Work Plan			
	Draft Submittal	5/26/2017	0	5/26/2017
	Agency & Public Comment	5/26/2017	30	6/25/2017
	Draft Final	6/25/2017	14	7/9/2017
	Agency & Public Comment	7/9/2017	30	8/8/2017
	Final	8/8/2017	7	8/15/2017
2.2	Well Demolition *	7/10/2017	24	8/2/2017
2.3	NWTS Decommission	7/10/2017	21	7/30/2017
2.4	Baseline Habitat Survey			
	Perform Habitat Survey	3/31/2017	77	6/15/2017
	Rare Plant Seed Set	6/15/2017	14	6/29/2017
2.5	Site Closure Report			
	Preliminary Draft	8/3/2017	14	8/16/2017
	Army Comment	8/16/2017	60	10/15/2017
	Draft	10/15/2017	14	10/29/2017
	Agency & Public Comment	10/29/2017	30	11/28/2017
	Draft Final	11/28/2017	30	12/28/2017
	Agency & Public Comment	12/28/2017	30	1/27/2018
	Final	1/27/2018	7	2/3/2018

* Schedule assumes that well demolition starts after comments on Draft Work Plan are addressed

Figure 4.1 Project Organization



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OU-1 WELL DESTRUCTION AND NWTS DECOMMISSIONING WORK PLAN

APPENDIX A

WELL DESTRUCTION PERMITS AND BORING LOGS

(APPENDIX A SUBMITTED AS A SEPARATE DOCUMENT)

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MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # MW-OU1-67-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,145,146.910 5,746,128.750

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☒ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☒ Other See Well Log

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft):
Filter pack (ft):

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ☒-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-102.3
Materials to be used: Bentonite Grout
Location of screens or perforations: 92.0-102 ft
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara
Digitally signed by Laura McNamara
DN: cn=Laura McNamara, o=HydroGeoLogic, ou=Environmental Engineering, email=lmcnamara@hgl.com, c=US
Date: 2017.05.17 15:41:10 -07'00'

Circle one: Professional Geologist/Civil Engineer

Print Name: Laura McNamara

Certification Number: CH 6526

Mail your MW-SB application packet along with your check to:

Monterey County Health Dept. – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 · Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth/

HydroGeoLogic, Inc

Borehole ID: SB-OU1-67-A
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145146.91

Corresponding Well ID: MW-OU1-67-A
Date: 2/14/2006
Geologist: Dave Kremer, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 105.57
Easting(ft): 5746128.75

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
									Drilling began at 1410 hours on 2/14/2006.
5		***Poorly Graded Sand With Silt*** Dark brown (7.5Y/R 3/2), moist, very loose, fine to coarse grained sand with silt, sand subround, no cementation.	SP				0.0		10% Coarse Sand 70% Medium Sand 15% Fine Sand 5% Silt
10									
15		***Poorly Graded Sand*** Brown (7.5Y/R 4/3), slightly moist, very loose, fine to coarse grained sand, trace silt, sand subround, no cementation.	SP				0.0		10% Coarse Sand 70% Medium Sand >15% Fine Sand <5% Silt
20									
25		***Poorly Graded Sand*** Light yellowish brown (10YR 6/4), slightly moist, very loose, fine to coarse grained sand, subround, no cementation	SP				0.0		10% Coarse Sand 75% Medium Sand 15% Fine Sand
30									
35		***Poorly Graded Sand*** Yellowish brown (10YR 5/4), slightly moist very loose, fine to coarse grained sand subround, no cementation	SP				0.0		5% Coarse Sand 80% Medium Sand 15% Fine Sand
40									

Drilled By: WDC Exploration & Wells, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb. Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 8.625"
Total Depth Drilled: 103.5

Borehole ID: SB-OU1-67-A
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145146.91

Corresponding Well ID: MW-OU1-67-A
Date: 2/14/2006
Geologist: Dave Kremer, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 105.57
Easting(ft): 5746128.75

Subsurface Profile					Sample				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
45		***Poorly Graded Sand*** Yellowish brown (10YR 5/4), moist, very loose, fine to coarse grained sand, subround, no cementation.	SP				0.0		15% Coarse Sand 75% Medium Sand 10% Fine Sand
50									
55		***Poorly Graded Sand*** Yellowish brown (10YR 5/4), moist, loose, fine to coarse grained sand, subround, no cementation.	SP				0.0		10% Coarse Sand 75% Medium Sand 15% Fine Sand
60		***Poorly Graded Sand With Silt*** Yellowish brown (10YR 5/4), moist, loose, very fine to coarse grained sand with silt, sand subround, no cementation.	SP				0.0		10% Coarse Sand 50% Medium Sand 30% V. Fine to Fine Sand 10% Silt
65								▽	Water table about 68 feet bgs.
70		***Poorly Graded Sand With Silt*** Yellowish brown (10Y/R 5/4), wet, loose, fine to coarse grained sand with silt, sand subround, no cementation	SP				0.0		15% Coarse Sand 50% Medium sand 30% Fine Sand 5% Silt
75		***Poorly Graded Sand*** Brown (7 5YR 5/4), wet loose fine to coarse sand, subround, no cementation	SP				0 0		10% Coarse sand 70% Medium Sand 20% Fine Sand
80		***Poorly Graded Sand With Silt*** Brown (10YR 5/4) wet, loose, very fine to coarse sand with silt, sand subround no cedmentation.	SP			5/7/9	0.0		5% Coarse Sand 60% Medium Sand 25% V. Fine to Fine Sand 10% Silt

Drilled By: WDC Exploration & Wells, Inc
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb. Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8.625"
Total Depth Drilled: 103 5

HydroGeoLogic, Inc

Borehole ID: SB-OU1-67-A
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145146.91

Corresponding Well ID: MW-OU1-67-A
Date: 2/14/2006
Geologist: Dave Kremer, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 105.57
Easting(ft): 5746128.75

Subsurface Profile					Sample				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
85		***Poorly Graded Sand With Silt*** As above, wet.	SP			5/7/11	0.0		5% Coarse Sand 60% Medium Sand 25% V. Fine to Fine Sand 10% Silt
				17		6/8/10	0.0		20% V. Fine to Fine Sand 75% Silt 5% Clay
90		***Silt With Sand and Clay*** Brown (7.5YR 5/4), moist to wet, medium dense, very fine to fine grained sand with silt and clay, very low to low plasticity, no cementation.							
95		***Sandy Silt*** Gray (7.5YR 5/1), wet, medium dense, very fine grained sand with silt, no clay, low plasticity, no cementation.	ML			7/15/20	0.0		30% Very Fine Sand 70% Silt
100		***Clayey Silt With Sand*** Brown (10YR 5/3), moist, very stiff, silt and clay with very fine sand, low plasticity, no cementation.				5/12/15	0.0		15% V. Fine Sand 70% Silt 15% Clay
				3 2		8/18/20	0.0		40% Silt 60% Clay
105		***Silty Clay*** Very dark greenish gray (GLEY2 3/10BG), slightly moist, very stiff, low to moderate plasticity, no cementation.							TD 103.5 feet bgs at 1600 hours on 2/14/2006.
110									
115									
120									

Drilled By: WDC Exploration & Wells, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8.625"
Total Depth Drilled: 103.5
Sheet 3 of 3

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # MW-OU1-57-A

✓- **Monitoring Well -** *Fee $407.00 ea.* ☐-Construction ■-Abandonment/Destruction

✓- **Soil Boring -** *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,145,064.165 5,745,918.771

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ■ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ■ Other See Well Log

PROPOSED SPECIFICATIONS	
Depth (ft):	
Diameter (in):	
Width seal (in):	
Depth perforations:	

CASING	
Single/Double:	
Material:	
Type of joint:	
Gravel Pack (ft):	
Filter pack (ft):	

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ■-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

■ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-95.5 ft
Materials to be used: Bentonite Grout
Location of screens or perforations: 61.0-91.0 ft
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one: Professional Geologist/Civil Engineer

Print Name Laura McNamara

Certification Number CH 6528

Monterey County Health Dept. – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/Environmental/Health

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-2004-F **Corresponding Well ID:** MW-OU1-57-A
Project No: OMA009-201-01-07-02 **Date:** 10/24/2004
Project: Ft. Ord - OU1 - Phase 2 Drilling **Geologist:** Dave Kremer
Client: USACE **Checked By:** D. McCrumb, R.G.
Location: Former Fort Ord - OU1 **Ground Surface Elevation(ft msl):** 102.56
Northing(ft): 2145064.17 **Easting(ft):** 5745918.77

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
2									Drilling began at 0800 hrs. on 10/24/04
4									
6		***Poorly Graded Sand*** Brown (7.5YR 5/4), slightly moist, very loose, coarse to fine sand; no silt; no cementation					0.0		10% coarse 80% medium 10% fine
8									
10		***Poorly Graded Sand*** Light brown (7.5YR 6/4), slightly moist, very loose, coarse to fine sand; no silt; no cementation							5% coarse 85% medium 10% fine
12									
14									
16									10% coarse 80% medium 10% fine
18									
20		***Poorly Graded Sand*** Light brown (7.5YR 6/4), slightly moist, very loose, coarse to very fine sand; trace silt; no cementation	SP						5% coarse 80% medium 15% fine to very fine
22									
24									
26									5% coarse 80% medium 15% fine to very fine
28									
30				73					
32		***Well Graded Sand*** Light brown (7.5YR 6/4), slightly moist, very loose, subround to round, coarse to very fine sand, trace silt; no cementation	SW						40% coarse 30% medium 30% fine to very fine trace silt
34									
36									
38									
40									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 8"
Total Depth Drilled: 97'
Sheet 1 of 3

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-2004-F **Corresponding Well ID:** MW-OU1-57-A
Project No: OMA009-201-01-07-02 **Date:** 10/24/2004
Project: Ft. Ord - OU1 - Phase 2 Drilling **Geologist:** Dave Kremer
Client: USACE **Checked By:** D. McCrumb, R.G.
Location: Former Fort Ord - OU1 **Ground Surface Elevation(ft msl):** 102.56
Northing(ft): 2145064.17 **Easting(ft):** 5745918.77

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
42			SW	59					30% coarse 40% medium 30% fine to very fine
44		***Poorly Graded Sand*** Light brown (7.5YR 6/4), slightly moist, very loose, subround to round, coarse to very fine sand; no silt; no cementation							5% coarse 80% medium 15% fine to very fine
46									
48									
50									
52									
54									
56		***Poorly Graded Sand*** Light brown (7.5YR 6/4), slightly moist, very loose, subround to round, coarse to very fine sand; no silt; no cementation							5% coarse 80% medium 15% fine to very fine
58									
60									
62								▽	Saturated at 62 feet bgs.
64									
66		***Poorly Graded Sand*** Brown (7.5YR 5/3), saturated, very loose, subround to round, coarse to very fine sand, trace silt, no cementation							5% coarse 80% medium 15% fine to very fine trace silt
68									
70									5% coarse 60% medium 35% fine to very fine
72									
74				28					
76		***Sand with Silt*** Brown (7.5YR 5/4), saturated, loose, subround to round, coarse to very fine sand; silt; no cementation	SP / SM	25					5% coarse 60% medium 30% fine to very fine 5% silt
78			SM / ML						
80									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 97'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-2004-F
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145064.17

Corresponding Well ID: MW-OU1-57-A
Date: 10/24/2004
Geologist: Dave Kremer
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 102.56
Easting(ft): 5745918.77

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
82		***Silty Sand / Sandy Silt*** Brown (7.5YR 5/2), saturated, stiff, medium to very fine sand; silt; no clay; no cementation, non-plastic	SM / ML	19					10% medium 40% fine to very fine 50% silt no clay
84									
86		***Silt with Sand*** Brown (7.5YR 5/2), saturated, stiff, fine to very fine sand; silt; clay; no cementation, no to low plasticity	ML						20% fine to very fine 80% silt trace clay
88									
90		***Silt with Sand and Clay*** Greenish gray (Gley1 5/10Y), saturated, stiff, very fine sand; silt; clay; no cementation, no to low plasticity							20% fine to very fine 75% silt 5% clay
92				10					
94		***Clay with Silt*** Very dark greenish gray (Gley1 3/5G), moist to dry, very hard, silt/clay; no cementation, low - medium plasticity	CL						10% silt 90% clay
96				6	100	10/12/22			Total depth was reached at 1440 hrs. on 10/24/04
98									
100									
102									
104									
106									
108									
110									
112									
114									
116									
118									
120									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 97'
Sheet 3 of 3

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # MW-OU1-58-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ■-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,145,135.397 5,746,101.889

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 11142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ■ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ■ Other See Well Log

PROPOSED SPECIFICATIONS	
Depth (ft):	
Diameter (in):	
Width seal (in):	
Depth perforations:	

CASING	
Single/Double:	
Material:	
Type of joint.	
Gravel Pack (ft):	
Filter pack (ft):	

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ■-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

■ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-102.8 ft
Materials to be used: Bentonite Grout
Location of screens or perforations. 67.0-96.5 ft
Cleaning of well required. TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one: Professional Geologist/CWG/(Engineer)

Print Name Laura McNamara

Certification Number CH 6526

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/Environmental/Health

Monterey County Health Dept – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd Room B301
Salinas, CA 93906

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-2004-G **Corresponding Well ID:** MW-OU1-58-A
Project No: OMA009-201-01-07-02 **Date:** 10/26/2004
Project: Ft. Ord - OU1 - Phase 2 Drilling **Geologist:** Dave Kremer
Client: USACE **Checked By:** D. McCrumb, R.G.
Location: Former Fort Ord - OU1 **Ground Surface Elevation(ft msl):** 106.00
Northing(ft): 2145135.40 **Easting(ft):** 5746101.89

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
2									Drilling began at 0820 hrs. on 10/26/04
4									
6		***Sand with Silt*** Brown (7.5YR 5/4), moist, very loose, subround to round, coarse to very fine sand with silt, no cementation, non-plastic	SP / SM						20% coarse 45% medium 25% fine to very fine 10% silt
8							0.0		
10									
12									
14									
16		***Poorly Graded Sand with Silt*** Brown (7.5YR 5/3), moist to dry, very loose, subround to round, coarse to very fine sand with silt, no cementation							10% coarse 65% medium 20% fine to very fine 5% silt
18									
20							0.0		
22									
24				81					
26		***Poorly Graded Sand*** Light brown (7.5YR 6/4), moist to dry, very loose, subround to round, coarse to very fine; trace silt, no cementation	SP						10% coarse 70% medium 20% fine to very fine trace silt
28									
30				76			0.0		30% coarse 40% medium 30% fine to very fine
32		***Well Graded Sand*** Brown (7.5YR 5/3), moist to dry, very loose, subround to round, coarse to very fine sand; trace silt, no cementation							
34									
36									
38			SW						
40							0.0		

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 8"
Total Depth Drilled: 102'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-2004-G **Corresponding Well ID:** MW-OU1-58-A
Project No: OMA009-201-01-07-02 **Date:** 10/26/2004
Project: Ft. Ord - OU1 - Phase 2 Drilling **Geologist:** Dave Kremer
Client: USACE **Checked By:** D. McCrumb, R.G.
Location: Former Fort Ord - OU1 **Ground Surface Elevation(ft msl):** 106.00
Northing(ft): 2145135.40 **Easting(ft):** 5746101.89

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
42			SW						25% coarse 45% medium 30% fine to very fine
44									
46				60					
48		***Poorly Graded Sand*** Light brown (7.5YR 6/4), moist to dry, loose, subround to round, coarse to very fine sand, no cementation							15% coarse 60% medium 25% fine to very fine
50							0.0		
52			SP						
54									
56		***Poorly Graded Sand*** Light brown (7.5YR 6/4), moist, loose, subround to round, coarse to fine sand, no cementation							25% coarse 60% medium 15% fine
58									
60									
62									
64				41					
66		***Sand with Silt*** Light brown (7.5YR 6/4), saturated, loose, coarse to very fine sand with silt, no cementation, non-plastic	SP / SM					▽	Saturated at 65 feet bgs. 20% coarse 60% medium 15% fine to very fine 5% silt
68									
70							0.0		
72									
74				31					
76		***Poorly Graded Sand*** Brown (7.5YR 5/3), saturated, loose, subround to round, coarse to very fine sand, trace silt, no cementation	SP						10% coarse 70% medium 20% fine to very fine trace silt
78									
80							0.0		

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 102'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-2004-G
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145135.40

Corresponding Well ID: MW-OU1-58-A
Date: 10/26/2004
Geologist: Dave Kremer
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 106.00
Easting(ft): 5746101.89

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
82			SP						
84				21					
86		***Sand with Silt*** Brown (7.5YR 5/3), saturated, loose, subround to round, coarse to very fine sand with silt, no cementation, non-plastic	SP / SM						5% coarse 65% medium 25% fine to very fine 5% silt
88									
90							0.0		
92				13					
94		***Sandy Silt with Clay*** Brown (7.5YR 5/2), saturated, stiff, fine to very fine sand; silt; clay, no cementation, non-plastic	ML						30% fine to very fine 60% silt 10% clay
96				9					
98		***Silty Clay*** Very dark greenish gray (Gley1 3/5G), moist, very hard, silt/clay, no cementation, low to medium plasticity	CL						
100					100	8/15/17			20% silt 80% clay
102				4					Total depth was reached at 1000 on 10/26/04
104									
106									
108									
110									
112									
114									
116									
118									
120									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 102'
Sheet 3 of 3

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # MW-OU1-61-A

✓ - **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓ - **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,145,093.660 5,746,002.560

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☒ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☒ Other See Well Log

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft):
Filter pack (ft):

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ☒-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-96.5ft
Materials to be used: Bentonite Grout
Location of screens or perforations: 91.2-96.2 ft
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well, soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one Professional Geologist/Civil Engineer

Print Name Laura McNamara

Certification Number CH 6526

Monterey County Health Dept. – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/Environmental/Health

HydroGeoLogic, Inc

Borehole ID: SB-OU1-61-A
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145093.66

Corresponding Well ID: MW-OU1-61-A
Date: 2/14-15/2006
Geologist: Dan Fortier, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 104.26'
Easting(ft): 5746002.56

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
5		***Silty Sand*** Dark brown (7.5YR 3/2), dry, loose, 90% very fine to medium grained sand, 10% silt, sand round to subround, no cementation.	SM	97					Drilled to 5.0 feet bgs on 2/14/06 from 1645 to 1650 hours. Resumed drilling at 5.0 feet bgs at 0805 hours on 2/15/06.
10		***Poorly Graded Sand*** Yellowish brown (10Y/R 5/4), slightly moist, slightly dense, very fine to coarse grained, round to subround, no cementation.	SP				0.0		
20		As above, slightly moist.	SP				0.0		
30		As above, slightly moist.	SP				0.0		
40		As above, slightly moist.	SP				0.0		

Drilled By: WDC Exploration & Wells, Inc
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb. Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 10.25"
Total Depth Drilled: 96.5'

HydroGeoLogic, Inc

Borehole ID: SB-OU1-61-A
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145093.66

Corresponding Well ID: MW-OU1-61-A
Date: 2/14-15/2006
Geologist: Dan Fortier, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 104.26'
Easting(ft): 5746002.56

Subsurface Profile					Sample				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
45									
50		As above, moist.	SP				0.0		
55									
60		As above, moist to very moist.	SP				0.0		Changed soil bins at 60 feet bgs.
65								▽	Water Table about 65 feet bgs.
70		***Poorly Graded Sand*** Yellowish brown (10YR 5/4), wet, very fine to coarse grained, slightly dense, round to subround, no cementation.	SP				0.0		
75									
80		As above, wet.	SP				0.0		

Drilled By: WDC Exploration & Wells, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb. Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 10.25"
Total Depth Drilled: 96.5'

HydroGeoLogic, Inc

Borehole ID: SB-OU1-61-A
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145093.66

Corresponding Well ID: MW-OU1-61-A
Date: 2/14-15/2006
Geologist: Dan Fortier, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 104.26'
Easting(ft): 5746002.56

Subsurface Profile					Sample				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
			SP	21					
85		***Silty Sand*** Dark yellowish brown (10YR 4/4), wet, 80% very fine to medium sand, 20% silt, slightly dense.	SM	15	100	10/15/18	0.0		
90		***Clayey Silt*** Light reddish brown (5YR 6/3), slightly moist, 45% clay, 55% silt, slightly plastic, dense.	ML		10	20/24/28	0.0		
95				8	100	32/30/40	0.0		
100		***Clay*** Dark bluish gray (GLEY 4/1), slightly moist, very dense, very stiff, non-plastic.							TD 96.5 feet bgs at 0930 hours on 2/15/06.
105									
110									
115									
120									

Drilled By: WDC Exploration & Wells, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb. Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 10.25"
Total Depth Drilled: 96.5'
Sheet 3 of 3

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # MW-OU1-68-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ■-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,145,206.490 5,746,264.480

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 11142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ■ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ■ Other See Well Log

PROPOSED SPECIFICATIONS	
Depth (ft):	
Diameter (in):	
Width seal (in):	
Depth perforations:	

CASING	
Single/Double:	
Material:	
Type of joint:	
Gravel Pack (ft)	
Filter pack (ft):	

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use	☐-To be abandoned
☐-Inactive	☐-To supplement new well
■-Abandoned	☐-To be LEFT inactive
	☐-Irrigation (AG)

■ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-103.8 ft
Materials to be used: Bentonite Grout
Location of screens or perforations 58.5-103.5 f
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner: William K. Collins

Drilling Contractor Rick Alcantado

Laura McNamara

Circle one Professional Geologist/Civil Engineer

Print Name: Laura McNamara

Certification Number CH 6526

Monterey County Health Dept. – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/Environmental/Health

HydroGeoLogic, Inc

Borehole ID: SB-OU1-68-A
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145206.49

Corresponding Well ID: MW-OU1-68-A
Date: 2/13/2006
Geologist: Dave Kremer, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 108.39
Easting(ft): 5746264.48

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
									Drilling began at 1350 hours on 2/13/2006.
5		***Poorly Graded Sand*** Dark brown (7.5Y/R 3/2), moist, very loose, mostly medium sand with trace silt, sand subround, no cementation.	SP				0.0		90% Medium Sand >5% Fine Sand <5% Silt
10									
15		***Poorly Graded Sand With Silt*** Dark brown (7.5Y/R 3/2), moist, very loose, fine to medium grained sand, trace silt, sand subround, no cementation.	SP				0.0		75% Medium Sand 20% Fine Sand 5% Silt
20									
25		***Poorly Graded Sand*** Brown (7.5YR 5/4), slightly moist, fine to medium grained sand with trace silt, sand subround, no cementation.	SP				0.0		85% Medium Sand >10% Fine Sand <5% Silt
30									
35		***Poorly Graded Sand*** Brown (7.5YR 5/4), moist, fine to coarse grained sand with trace silt, sand subround, no cementation.	SP				0.0		5% Coarse Sand 80% Medium Sand >10% Fine Sand <5% Silt
40									

Drilled By: WDC Exploration & Wells, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 8.625"
Total Depth Drilled: 104.5

HydroGeoLogic, Inc

Borehole ID: SB-OU1-68-A
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145206.49

Corresponding Well ID: MW-OU1-68-A
Date: 2/13/2006
Geologist: Dave Kremer, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 108.39
Easting(ft): 5746264.48

Subsurface Profile					Sample				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
45		***Poorly Graded Sand*** Brown (7.5YR 4/4), moist, fine to medium grained sand with trace silt, sand subround, no cementation.	SP				0.0		70% Medium Sand >25% Fine Sand <5% Silt
50									
55		***Poorly Graded Sand*** Brown (7.5YR 4/4), moist, fine to coarse grained sand with trace silt, sand subround, no cementation.	SP				0.0		10% Coarse Sand 70% Medium Sand >15% Fine Sand <5% Silt
60		***Poorly Graded Sand With Silt*** Reddish brown (5YR 5/4), moist, loose, fine to coarse grained sand with silt, sand subround, no cementation.	SP				0.0		15% Coarse Sand 60% Medium Sand 15% Fine Sand 10% Silt
65								▽	Water table about 68 feet bgs.
70		***Poorly Graded Sand*** Yellowish brown (10Y/R 5/4), wet, loose, fine to coarse grained sand with trace silt, sand subround, no cementation	SP				0.0		5% Coarse Sand 80% Medium Sand >10% Fine Sand <5% Silt
75		***Poorly Graded Sand*** As above, wet	SP			12/15/16	0.0		
80		***Poorly Graded Sand With Silt*** Yellowish brown (10YR 5/4), wet, loose, very fine to coarse sand with silt, sand subround, no cementation.	SP			6/8/12	0.0		5% Coarse Sand 60% Medium Sand 25% Fine Sand 10% Silt

Drilled By: WDC Exploration & Wells, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb. Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8.625"
Total Depth Drilled: 104.5

HydroGeoLogic, Inc

Borehole ID: SB-OU1-68-A
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145206.49

Corresponding Well ID: MW-OU1-68-A
Date: 2/13/2006
Geologist: Dave Kremer, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 108.39
Easting(ft): 5746264.48

Subsurface Profile					Sample				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
				27					
85		***Silty Sand*** Brown (7.5YR 5/4), wet, fine to coarse grained sand, silt, no clay, medium dense, sand subround, no cementation.	SM	21		4/9/13	0.0		5% Coarse Sand 50% Medium Sand 30% Fine Sand 15% Silt
90		***Clayey Sandy Silt*** Brown (7.5YR 5/3), moist to wet, medium stiff, very fine to fine grained sand with silt and clay, low to medium plasticity, no cementation.	ML	16		4/7/13	0.0		30% V. Fine to Fine sand 60% Silt 10% Clay
			CL						50% Clay 50% Silt
95		***Silty Clay*** Brown (7.5YR 5/3), moist, medium stiff, low plasticity, no cementation.				4/6/12	0.0		
		Sandy Silt Grayish brown (10YR 5/2), moist, medium stiff, very fine to fine sand, silt, no clay, very low to no plasticity, no cementation.	ML	9		5/12/14	0.0		40% V. Fine to Fine Sand 60% Silt
100		***Silty Clay With Sand*** Grayish Brown (10YR 5/2), moist, stiff to very stiff, very fine sand, silt, clay, medium plasticity, no cementation.	CL	5		6/15/22	0.0		5% V. Fine to Fine Sand 45% Silt 50% Clay
105		***Silty Clay*** Black (5Y 2.5/1), slightly moist, very soft, medium plasticity, no cementation.	CL	4					50% Silt 50% Clay TD 104.5 feet bgs at 1510 hours on 2/13/2006.
110									
115									
120									

Drilled By: WDC Exploration & Wells, Inc
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8.625"
Total Depth Drilled: 104.5
Sheet 3 of 3

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111036000 Well # MW-B-02-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,146,530.206 5,749,507.454

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☒ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☒ Other See Well Log

Location of well Seals: (ft) ____

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft):
Filter pack (ft):

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use	☐-To be abandoned
☐-Inactive	☐-To supplement new well
☒-Abandoned	☐-To be LEFT inactive
	☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-80.0 ft
Materials to be used: Bentonite Grout
Location of screens or perforations. 55.0-75.0 ft
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner: William K. Collins

Drilling Contractor: Rick Alcantado

Laura McNamara

Circle one: Professional Geologist/Civil Engineer

Print Name: Laura McNamara

Certification Number: CH 6526

Monterey County Health Dept – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/Environmental/Health

CLIENT FORT ORD LOCATION FRITSCHE AIRFIELD ELEVATION R.P. 123.08

PROJECT NO M100SB1 BORING NO. AS-2 WATER LEVEL ELEV. 45.56

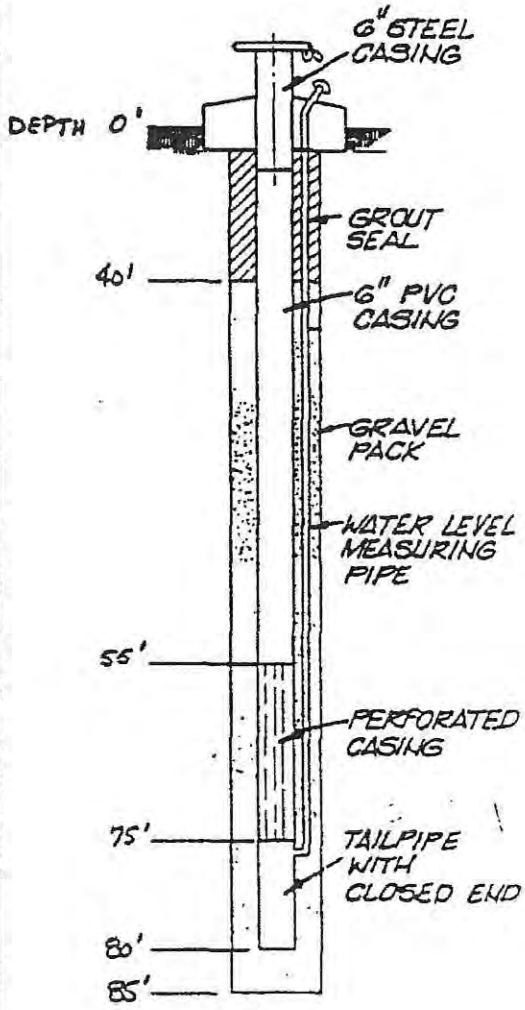
DRILLER JIM ALLEN GEOLOGIST KENT ROZELLE (TIME DATE) 9/19/77

BEGUN 1000 12/15/76 COMPLETED 1100 (TIME. DATE) 12/15/76 TOTAL DEPTH 85 ft.

MW-B-GZ-A

DEPTH	GRAPHIC LOG	DESCRIPTION
8		silty FINE SAND, BROWN
35		MEDIUM TO FINE SAND, BROWN few silts INTERMIXED
80		MEDIUM TO FINE SAND, BROWN, with A GRAY-BROWN silt INTERMIXED

WELL CONSTRUCTION



NOT TO SCALE

~~AS-2~~

CLIENT FORT ORD LOCATION FRITSCHE AIRFIELD ELEVATION R.P. 123.08

PROJECT NO M1005.81 BORING NO AS-2 WATER LEVEL ~~ELEV.~~ 45.56

DRILLER JIM ALLEN GEOLOGIST KENT ROZELLE (TIME DATE) 4/14/77

BEGUN 1000 12/15/76 COMPLETED 1100 (TIME. DATE) 12/15/76 TOTAL DEPTH 85 ft.

MW-B-02-A

DEPTH	GRAPHIC LOG	DESCRIPTION	WELL CONSTRUCTION
85		MEDIUM TO FINE SAND, WITH GRAY-BROWN SILT INTERMIXED	
		Bottom of Hole	
90			

AS-2

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # EW-OU1-60-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,145,082.110 5,745,974.440

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office		Consultant: HydroGeoLogic, Inc.		Driller: Cascade Drilling LP	
Address: P.O Box 5008		Address: 14142 Denver West Parkway, Bldg 51, Suite 225		Address: 120 S. 23rd Street	
City: Monterey		City: Lakewood		City: Richmond	
State: CA	Zip: 93944	State: CO	Zip: 80401	State: CA	Zip: 94804
Phone: 831-242-7920		Phone: 303-984-1167		Phone: 510-478-0858	

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:

1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
☒ Ground Water Monitoring
☐ Vapor Extraction
☐ Vadose Zone
☐ Piezometer
☐ Soil Boring/Core Sampling
☐ Cathodic Protection Well
☒ Other See Well Log

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft):
Filter pack (ft):

DRILLING METHOD
☐ Rotary
☐ Cable
☐ Dug
☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ☒-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-95.7 ft
Materials to be used: Bentonite Grout
Location of screens or perforations: 55.2-95.2 ft
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one: Professional Geologist/Civil Engineer (Engineer circled)
Print Name Laura McNamara
Certification Number CH 6526

Monterey County Health Dept – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth

HydroGeoLogic, Inc

Borehole ID: SB-OU1-60-A1
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145082.11

Corresponding Well ID: EW-OU1-60-A
Date: 2/16/2006
Geologist: Dan Fortier, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 103.84'
Easting(ft): 5745974.44

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
		Silty Sand Dark brown (7.5YR 3/2), dry, loose, sand very fine to medium grained, round to subround, no cementation.	SM	100					Drilling began at 1020 hours on 2/16/06.
5		***Poorly Graded Sand*** Light yellowish brown (10Y/R 6/4), slightly moist, slightly dense, very fine to coarse grained, round to subround, no cementation.	SP				0.0		
10									
15									
20		As above, slightly moist.	SP				0.0		
25									
30		As above, slightly moist.	SP				0.0		
35									
40		As above, slightly moist.	SP				0.0		

Drilled By: WDC Exploration & Wells, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 8.25"
Total Depth Drilled: 96.5'

HydroGeoLogic, Inc

Borehole ID: SB-OU1-60-A1
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145082.11

Corresponding Well ID: EW-OU1-60-A
Date: 2/16/2006
Geologist: Dan Fortier, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 103.84'
Easting(ft): 5745974.44

Subsurface Profile					Sample				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
45									
50		As above, moist.	SP				0.0		
55									
60		***Poorly Graded Sand*** Dark yellowish brown (10YR 4/4), very moist, very fine to coarse grained, slightly dense, round to subround, no cementation.	SP				0.0		Changed soil bins at 60 feet bgs.
								▽	Water table about 63 feet bgs.
65									
70		As above, wet.	SP				0.0		
75				26					
80		***Poorly Graded Sand With Silt***	SP						

Drilled By: WDC Exploration & Wells, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb. Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8.25"
Total Depth Drilled: 96.5'

HydroGeoLogic, Inc

Borehole ID: SB-OU1-60-A1
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145082.11

Corresponding Well ID: EW-OU1-60-A
Date: 2/16/2006
Geologist: Dan Fortier, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 103.84'
Easting(ft): 5745974.44

Subsurface Profile					Sample				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
85		***Poorly Graded Sand With Silt*** Yellowish brown (10YR 4/4), wet, slightly dense, 90% very fine to coarse grained sand, 10% silt, sand round to subround, no cementation.	SP	17	60	5/7/11	0.0		
					50	13/17/23	0.0		
90		***Clayey Silt*** Dark Yellowish brown (10YR 4/4), slightly moist, dense, slightly plastic.	ML		90	15/18/24	0.0		
95				7	100	12/20/48	0.0		
100		***Clay*** Very dark bluish gray (GLEY 3/1), very slightly moist, very dense, stiff, non-plastic.							TD 96.5 feet bgs at 1135 hours on 2/16/06.
105									
110									
115									
120									

Drilled By: WDC Exploration & Wells, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8.25"
Total Depth Drilled: 96.5'
Sheet 3 of 3

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # EW-OU1-62-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,145,176.620 5,746,197.950

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☒ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☒ Other See Well Log

Location of well Seals: (ft) ____

PROPOSED SPECIFICATIONS	
Depth (ft):	
Diameter (in):	
Width seal (in):	
Depth perforations:	

CASING	
Single/Double:	
Material:	
Type of joint:	
Gravel Pack (ft):	
Filter pack (ft):	

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use	☐-To be abandoned
☐-Inactive	☐-To supplement new well
☒-Abandoned	☐-To be LEFT inactive
	☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-100.9
Materials to be used: Bentonite Grout
Location of screens or perforations: 60.4-100.4 f
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one Professional Geologist/Civil Engineer

Print Name Laura McNamara

Certification Number CH 6526

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/Environmental/Health

Monterey County Health Dept – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

HydroGeoLogic, Inc

Borehole ID: SB-OU1-62-A
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145176.62

Corresponding Well ID: EW-OU1-62-A
Date: 2/16/2006
Geologist: Dave Kremer, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 106.44'
Easting(ft): 5746197.95

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
5		***Poorly Graded Sand With Silt*** Dark brown (7.5Y/R 3/2), moist, very loose, fine to coarse grained sand with silt, no cementation.	SP				0.0		Drilling began at 1000 hours on 2/16/06. 10% Coarse Sand 60% Medium Sand 20% Fine Sand 10% Silt
20		***Poorly Graded Sand*** Light yellowish brown (7.5Y/R 6/4), moist, loose, fine to coarse grained sand, subround, no cementation.	SP				0.0		10% Coarse Sand 80% Medium Sand 10% Fine Sand
30		Same as above.	SP				0.0		10% Coarse Sand 80% Medium Sand 10% Fine Sand
40									

Drilled By: WDC Exploration & Wells, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 8.625"
Total Depth Drilled: 104'

HydroGeoLogic, Inc

Borehole ID: SB-OU1-62-A
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145176.62

Corresponding Well ID: EW-OU1-62-A
Date: 2/16/2006
Geologist: Dave Kremer, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 106.44'
Easting(ft): 5746197.95

Subsurface Profile					Sample				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
45		***Poorly Graded Sand*** Brown (7.5YR 5/4), moist, loose, fine to coarse grained, subround, no cementation.	SP				0.0		25% Coarse Sand 50% Medium Sand 25% Fine Sand
50		***Poorly Graded Sand*** Brown (7.5YR 5/4), moist, fine to coarse grained, subround, no cementation.	SP				0.0		20% Coarse Sand 60% Medium Sand 20% Fine Sand
55									
60		As above, moist.	SP				0.0		15% Coarse Sand 50% Medium Sand 35% Fine Sand
65		***Poorly Graded Sand*** Brown (7.5YR 5/4), moist, loose, very fine to coarse grained, trace silt, subround, no cementation.						▽	15% Coarse Sand 50% Medium Sand >30% VF to Fine Sand <5% Silt Water table about 68 feet bgs.
70		***Poorly Graded Sand With Silt*** Brown (10Y/R 4/3), wet, loose, fine to coarse grained sand with silt, sand subround, no cementation.	SP				0.0		10% Coarse Sand 50% Medium Sand 35% Fine Sand 5% Silt
75		***Poorly Graded Sand*** Brown (7.5YR 4/3), wet, loose, fine to coarse grained sand, trace of silt, subround no cementation	SP				0.0		10% Coarse Sand 60% Medium Sand >25% Fine Sand <5% Silt
80									

Drilled By: WDC Exploration & Wells, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb. Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8.625"
Total Depth Drilled: 104'

HydroGeoLogic, Inc

Borehole ID: SB-OU1-62-A
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145176.62

Corresponding Well ID: EW-OU1-62-A
Date: 2/16/2006
Geologist: Dave Kremer, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 106.44'
Easting(ft): 5746197.95

Subsurface Profile					Sample				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
85		***Poorly Graded Sand With Silt*** Brown (7.5YR 4/3), wet, very fine to coarse grained sand with silt, sand subround, no cementation, no plasticity.	SP	18		7/10/10	0.0		5% Coarse Sand 50% Medium Sand 35% VF to Fine Sand 10% Silt
90		***Silt With Sand*** Brown (7.5YR 4/3), moist, sand is very fine grained, no clay, no cementation, no plasticity.	ML			3/10/14	0.0		15% Very Fine Sand 85% Silt
95		Same as above.				5/7/12	0.0		15% Very Fine Sand 85% Silt
100		***Silt With Clay & Sand*** Brown (7.5YR 4/3), moist, sand is very fine grained, silt with clay, no cementation, medium stiff, low plasticity.		6		7/14/15	0.0		10% Very Fine Sand 80% Silt 10% Clay
		Silty Clay Very dark greenish grey (GLEY 2 3/10BG), 60% Clay, 40% Silt.	CL	2			0.0		
105									TD 104 feet bgs at 1130 hours on 2/16/06.
110									
115									
120									

Drilled By: WDC Exploration & Wells, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8.625"
Total Depth Drilled: 104'
Sheet 3 of 3

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # EW-OU1-63-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,145,039,090 5,745,859.970

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☒ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☒ Other See Well Log

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft):
Filter pack (ft):

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ☒-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-91.5 ft
Materials to be used: Bentonite Grout
Location of screens or perforations: 51.0-91.0 ft
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one: Professional Geologist/Civil Engineer

Print Name: Laura McNamara

Certification Number: CH 6526

Monterey County Health Dept. – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth

HydroGeoLogic, Inc

Borehole ID: SB-OU1-63-A
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145039.09

Corresponding Well ID: EW-OU1-63-A
Date: 2/16/2006
Geologist: Dan Fortier, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 100.60'
Easting(ft): 5745859.97

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
0		***Silty Sand*** Dark brown (7.5YR 3/2), dry, loose, sand very fine to medium grained, round to subround, no cementation.	SM	95					Drilling began at 0825 hours on 2/16/06.
5									
10		***Poorly Graded Sand*** Light yellowish brown (10Y/R 6/4), slightly moist, slightly dense, very fine to coarse grained, round to subround, no cementation.	SP				0.0		
15									
20		As above, slightly moist.	SP				0.0		
25									
30		As above, slightly moist.	SP				0.0		
35									
40		As above, slightly moist.	SP				0.0		

Drilled By: WDC Exploration & Wells, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 8.25"
Total Depth Drilled: 91.5'

HydroGeoLogic, Inc

Borehole ID: SB-OU1-63-A
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145039.09

Corresponding Well ID: EW-OU1-63-A
Date: 2/16/2006
Geologist: Dan Fortier, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 100.60'
Easting(ft): 5745859.97

Subsurface Profile					Sample				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
45									
50		As above, moist.	SP				0.0		
55									
60		As above, very moist.	SP				0.0		Changed soil bins at 60 feet bgs.
65								▼	Water table about 65 feet bgs.
70		***Poorly Graded Sand*** Yellowish brown (10YR 5/4), wet, slightly dense, very fine to coarse grained sand, round to subround, no cementation	SP				0.0		
75				23					
80		***Poorly Graded Sand With Silt***	SP						

Drilled By: WDC Exploration & Wells, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8.25"
Total Depth Drilled: 91.5'

HydroGeoLogic, Inc

Borehole ID: SB-OU1-63-A
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145039.09

Corresponding Well ID: EW-OU1-63-A
Date: 2/16/2006
Geologist: Dan Fortier, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 100.60'
Easting(ft): 5745859.97

Subsurface Profile					Sample				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
		Poorly Graded Sand With Silt Brown (7.5YR 4/3), wet, 90% very fine to coarse grained sand, 10% silt, sand round to subround, no cementation.	SP	18			0.0		
85		***Clayey Silt*** Light Yellowish brown (2.5YR 6/3), moist, moderately dense, 55% silt, 45% clay, slightly plastic.	ML		50	18-22-26	0.0		
90				9	100	24-23-40	0.0		
95		***Clay*** Dark bluish gray (GLEY 4/1), very slightly moist, very dense, very stiff, non-plastic.							TD 91.5 feet bgs at 0915 hours on 2/16/06.
100									
105									
110									
115									
120									

Drilled By: WDC Exploration & Wells, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb. Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8.25"
Total Depth Drilled: 91.5'
Sheet 3 of 3

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # EW-OU1-66-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,145,111.140 5,746,043.900

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☒ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☒ Other See Well Log

PROPOSED SPECIFICATIONS	
Depth (ft):	
Diameter (in):	
Width seal (in):	
Depth perforations:	

CASING	
Single/Double:	
Material:	
Type of joint:	
Gravel Pack (ft):	
Filter pack (ft):	

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ☒-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-101.6
Materials to be used: Bentonite Grout
Location of screens or perforations: 56.1-101.1 f
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcantado

Laura McNamara

Circle one: Professional Geologist/Civil Engineer

Print Name Laura McNamara

Certification Number: CH 6526

Monterey County Health Dept. – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/Environmental/Hazmat

HydroGeoLogic, Inc

Borehole ID: SB-OU1-66-A
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145111.14

Corresponding Well ID: EW-OU1-66-A
Date: 2/16/2006
Geologist: Dave Kremer, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 104.88'
Easting(ft): 5746043.90

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
									Drilling began at 0810 hours on 2/16/2006.
5		***Poorly Graded Sand With Silt*** Dark brown (7.5Y/R 3/2), moist, very loose, very fine to coarse grained sand with silt, no cementation.	SP				0.0		10% Coarse Sand 60% Medium Sand 20% Fine Sand 10% Silt
10		***Poorly Graded Sand*** Brown (7.5Y/R 5/4), moist, very loose, fine to coarse grained sand, subround, no cementation.	SP				0.0		10% Coarse Sand 80% Medium Sand 10% Fine Sand
15									
20		As above, moist.	SP				0.0		10% Coarse Sand 80% Medium Sand 10% Fine Sand
25									
30		***Poorly Graded Sand*** Light yellowish brown (10YR 6/4), moist, loose, fine to coarse grained, subround, no cementation.	SP				0.0		10% Coarse Sand 80% Medium Sand 10% Fine Sand
35									
40									

Drilled By: WDC Exploration & Wells, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 8.625"
Total Depth Drilled: 104.5'

HydroGeoLogic, Inc

Borehole ID: SB-OU1-66-A
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145111.14

Corresponding Well ID: EW-OU1-66-A
Date: 2/16/2006
Geologist: Dave Kremer, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 104.88'
Easting(ft): 5746043.90

Subsurface Profile					Sample				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
45		***Poorly Graded Sand*** LIght brown (7.5YR 6/4), moist, loose, fine to coarse grained, subround, no cementation.	SP				0.0		20% Coarse Sand 70% Medium Sand 10% Fine Sand
50		As above, moist.	SP				0.0		20% Coarse Sand 70% Medium Sand 10% Fine Sand
55		***Poorly Graded Sand*** Brown (7 5YR 5/4), moist, loose, fine to coarse grained, subround, no cementation.	SP				0.0		10% Coarse Sand 70% Medium Sand >15% Fine Sand <5% Trace Silt
60									
65		***Poorly Graded Sand With Silt*** Light brown (7.5YR 6/4), moist, loose, very fine to coarse grained, with silt, no cementation.	SP				0.0	▽	10% Coarse Sand 60% Medium Sand 25% V. Fine to Fine Sand 5% Silt Water table about 67.5 feet bgs.
70		***Poorly Graded Sand With Silt*** Brown (7.5Y/R 5/4), wet, loose very fine to coarse grained sand with silt, sand subround no cementation	SP				0.0		10% Coarse Sand 70% Medium Sand 15% Fine Sand 5% Silt
75									
80		***Poorly Graded Sand With Silt*** Brown (7 5YR 5/4) wet, loose, fine to coarse grained sand with silt, sand subround no cementation	SP			3/8/11	0.0		20% Coarse Sand 50% Medium Sand 25% Fine Sand 5% Silt

Drilled By: WDC Exploration & Wells, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8.625"
Total Depth Drilled: 104.5'

HydroGeoLogic, Inc

Borehole ID: SB-OU1-66-A
Project No: OMA009-201-01-07-02
Project: Hydraulic Control Pilot Project
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2145111.14

Corresponding Well ID: EW-OU1-66-A
Date: 2/16/2006
Geologist: Dave Kremer, P. G.
Checked By: Michael J. Bombard, P. G.
Ground Surface Elevation(ft msl): 104.88'
Easting(ft): 5746043.90

Subsurface Profile					Sample				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
				23					
85		***Silty Sand*** Brown (7.5YR 4/3), wet, very fine to medium grained sand, silt, no clay, medium dense, no cementation, no plasticity.				8/10/14	0.0		40% Medium Sand 40% V. Fine to Fine Sand 20% Silt
90		***Silty Sand*** Brown (7.5YR 5/4), wet, very fine to medium grained sand, silt, no clay, medium dense, no cementation, no plasticity.	SM			8/12/20	0.0		10% Medium Sand 60% V. Fine to Fine Sand 30% Silt
95		Same as above, wet.		9		7/13/20	0.0		20% Medium Sand 60% V. Fine to Fine Sand 20% Silt
100		***Silt With Clay and Sand*** Brown (7.5YR 4/3), wet, sand is very fine grained, silt, some clay, no cementation, very stiff, very low plasticity.	ML	4		9/15/24	0.0		10% Very Fine Sand 85% Silt 5% Clay
105		***Silty Clay*** Very dark greenish gray (GLEY2 3/10BG), dry to slightly moist, very stiff, low plasticity, no cementation.	CL	0		10/16/26	0.0		40% Silt 60% Clay TD 104.5 feet at 0930 hours on 2/16/2006.
110									
115									
120									

Drilled By: WDC Exploration & Wells, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 85
Sampling Equipment: 140 lb. Downhole Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8.625"
Total Depth Drilled: 104.5'
Sheet 3 of 3

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # MW-OU1-46-AD

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,144,778.116 5,746,791.994

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☒ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☒ Other See Well Log

PROPOSED SPECIFICATIONS	
Depth (ft):	
Diameter (in):	
Width seal (in):	
Depth perforations:	

CASING	
Single/Double:	
Material:	
Type of joint:	
Gravel Pack (ft):	
Filter pack (ft):	

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ☒-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-125.4 ft
Materials to be used: Bentonite Grout
Location of screens or perforations: 104.3-124.3
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one Professional Geologist/~~Civil~~ Engineer

Print Name. Laura McNamara

Certification Number. CH 6526

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/Environmental Health

Monterey County Health Dept. – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-2004-C
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 1 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144778.12

Corresponding Well ID: MW-OU1-46-AD
Date: 6/30/2004
Geologist: D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 128.87
Easting(ft): 5746791.99

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
2									Drilling began at 0730 hrs. on 6/30/04
4									
6									
8			SM						
10		***Silty Sand*** Moderate yellowish brown, loose, dry, slightly dense, 80% fine to coarse sand, 20% silt							Surface grab sample.
12									
14				114					
16									
18									
20		***Poorly Graded Sand with Silt*** Light brown, loose, slightly moist, 90% fine to coarse sand, 10% silt							Surface grab sample.
22									
24									
26			SP/ SM						
28									
30		***Poorly Graded Sand with Silt*** Light brown, loose, slightly moist, 90% fine to coarse sand, 10% silt							Surface grab sample.
32									
34									
36									
38									
40									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 8"
Total Depth Drilled: 125'
Sheet 1 of 4

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-2004-C **Corresponding Well ID:** MW-OU1-46-AD
Project No: OMA009-201-01-07-02 **Date:** 6/30/2004
Project: Ft. Ord - OU1 - Phase 1 Drilling **Geologist:** D. Fortier
Client: USACE **Checked By:** D. McCrumb, R.G.
Location: Former Fort Ord - OU1 **Ground Surface Elevation(ft msl):** 128.87
Northing(ft): 2144778.12 **Easting(ft):** 5746791.99

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
42		***Poorly Graded Sand with Silt*** Light brown, loose, slightly moist, 90% fine to coarse sand, 10% silt							Surface grab sample.
44									
46									
48									
50		***Poorly Graded Sand with Silt*** Light brown, loose, slightly moist, 90% fine to coarse sand, 10% silt							Surface grab sample.
52									
54									
56									
58									
60		***Poorly Graded Sand with Silt*** Light brown, loose, slightly moist, 90% fine to coarse sand, 10% silt	SP/ SM						Surface grab sample.
62									
64									
66									
68									
70		***Poorly Graded Sand with Silt*** Moderate brown, slightly hard, slightly moist, 90% fine to coarse sand, 10% silt							Surface grab sample.
72									
74									
76									
78									
80							1.1		

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 13" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 125'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-2004-C
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 1 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144778.12

Corresponding Well ID: MW-OU1-46-AD
Date: 6/30/2004
Geologist: D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 128.87
Easting(ft): 5746791.99

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
82		***Poorly Graded Sand with Silt*** Moderate brown, slightly hard, slightly moist, 90% fine to coarse sand, 10% silt							Surface grab sample.
84									
86									
88								▼	Saturated at 88 feet bgs.
90		***Poorly Graded Sand with Silt*** Moderate yellowish brown, slightly hard, saturated, 90% fine to coarse sand, 10% silt			100		0.1		
92									
94									
96									
98									
100		***Poorly Graded Sand with Silt*** Dark yellowish brown, slightly hard, saturated, 90% fine to coarse sand, 10% silt	SP/ SM		100		0.4		PID = 0.4 (open hole).
102									
104									[MW-OU1-C grab groundwater sample; 109' - 119'].
106									
108									
110					100		0.6		PID = 0.2 (open hole).
112									
114									
116		***Poorly Graded Sand with Silt*** Light olive gray, slightly hard, saturated, 90% fine to coarse sand, 10% silt			100		0.6		
118									
120									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 125'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-2004-C
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 1 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144778.12

Corresponding Well ID: MW-OU1-46-AD
Date: 6/30/2004
Geologist: D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 128.87
Easting(ft): 5746791.99

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
122			SP/SM	6	100		0.4		PID = 0.0 (open hole).
124		***Clay with Silt*** Grayish orange to olive gray with depth, moist, stiff to very stiff with depth, 90% clay, 10% silt to medium sand	CL	4					Total depth was reached at 1000 hrs. on 6/30/04
126									
128									
130									
132									
134									
136									
138									
140									
142									
144									
146									
148									
150									
152									
154									
156									
158									
160									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 125'
Sheet 4 of 4

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # EW-OU1-71-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,144,372.988 5,747,400.254

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
☒ Ground Water Monitoring
☐ Vapor Extraction
☐ Vadose Zone
☐ Piezometer
☐ Soil Boring/Core Sampling
☐ Cathodic Protection Well
☒ Other See Well Log

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft):
Filter pack (ft):

DRILLING METHOD
☐ Rotary
☐ Cable
☐ Dug
☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use	☐-To be abandoned
☐-Inactive	☐-To supplement new well
☒-Abandoned	☐-To be LEFT inactive
	☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-116 ft
Materials to be used: Bentonite Grout
Location of screens or perforations. 66.0-116.0ft
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one Professional Geologist/C**# (Engineer)

Print Name: Laura McNamara

Certification Number: CH 6526

Monterey County Health Dept – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SB OU1-71A

Corresponding Well ID: EW-OU1-71-A

Sheet 1 of 3

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers
Drilling Company:	**Driller:**	**Date / Time Drilling Started:**	**Date / Time TD Reached:**
WDC	Ralph	24-Aug-06 / 10:30:00 A.M.	24-Aug-06 / 12:45 P.M.
Drilling Equipment:	**Sampling Device:**	**Geologist:**	**Checked By:**
CME 85	Calif. Mod. Split Spoon	J. Alt	Michael Bombard, P.G., C.HG.

Drilling Method: Auger		**Borehole Diameter:** 12 1/4 in.	**Total Depth Drilled:** 117 (ft)
Well Depth 116			
Screen: Dia. 6"	Length: 50 (ft) Type/Size: 0.01	**Water Level (bgs):**	
Casing: Dia. 6"	Length: 110 (ft) Type/Size: S. 80	first: (ft)	final: (ft)
Ground Surface Elevation (ft msl): 119.1		**Northing:** 2144372.988	**Easting:** 5747400.254

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		Silty Sand, dark brown (2.5YR 3/2), dry, organics.	SM						Drilling 8" 4" pilot hole with plugged augers to 80'
		Silty sand, reddish brown (2.5YR 4/4), dry, fine- to medium-grained, loose, some organic material.	SM						
10		Sand, Yellowish-brown (10YR 5/6), moist, loose, poorly sorted w no fines, sub-angular to sub-rounded.	SP				0.0		
20		As above	SP				0.0		
30		As above	SP				0.0		
40									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SB OU1-71A

Corresponding Well ID: EW-OU1-71-A

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		Sand, yellowish brown (10YR 5/6), dry, loose, poorly sorted, no fines, subangular to sub-rounded (same as above)	SP				0.0		
50		As above	SP				0.0		
60		As above	SP				0.0		
70		As above	SP				0.0	▽	
80									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SB OU1-71A

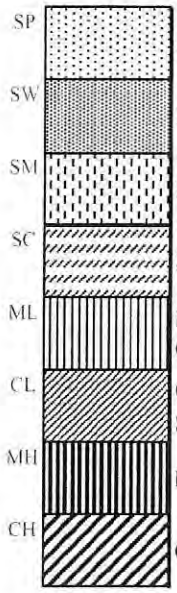
Corresponding Well ID: EW-OU1-71-A

Sheet 3 of 3

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		Sand, yellowish brown (10YR 5/4), wet, loose, poorly sorted, no fines, subangular to sub-rounded			100	5 7 11	0.0		No Odor
		As Above				9 11 12			No Odor
90		As Above				10 12 15	0.0		No Odor
		As Above				11 12 13			No Odor
100		As Above				11 14 16	0.0		No Odor
		Clayey Sand, grayish brown (7.5YR 7/2), wet, loose, very fine-grained.	SC			12 16 19			No Odor
		Sand, light brown (10YR 6/3), wet, loose, no fines.	SP			13 15 17	0.0		
110		Clay w/ sand, brown (10YR 6/4), wet, medium plasticity	CL						No Odor
		Sand, Light brown (10YR 6/3), wet, fine-grained, sub-rounded.	SP						No Odor
		Clay, blue green, moist, plastic Bottom of boring at 116.5'	CL						No Odor
120									

Boring and Well Log Legend



SP = Poorly-graded Sands, Clean Sands, Little or no fines

SW = Well-graded Sands, Gravelly Sands, Little or no fines

SM = Silty-Sands, Sand-Silt Mixtures

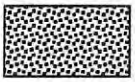
SC = Clayey Sands, Sand-Silt Mixtures

ML = Inorganic Silts and Very Fine Sands, Silty or Clayey Fine Sands or Clayey Silts with Slight Plasticity

CL = Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays

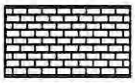
MH = Inorganic Silt, micaceous or diatomaceous fine Sand or Silty Soils

CH = Inorganic Clays of high plasticity, fat Clays

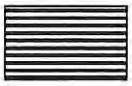


Gravels

Shale



Limestone



Well Screen

Groundwater Elevation

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # IW-OU1-10-A

✓- **Monitoring Well -** *Fee $407.00 ea.* ☐-Construction ■-Abandonment/Destruction

✓- **Soil Boring -** *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,143,956.400 5,748,004.350

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ■ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ■ Other See Well Log

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft):
Filter pack (ft):

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ■-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

■ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-133.5ft
Materials to be used: Bentonite Grout
Location of screens or perforations. 94.0-134.0ft
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one: Professional Geologist/Civil/Engineer

Print Name: Laura McNamara

Certification Number: CH 6526

Monterey County Health Dept – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/Environmental/Health

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-10-A **Corresponding Well ID:** IW-OU1-10-A
Project No: OMA009-201-01-07-02 **Date:** 10/21/2004
Project: Ft. Ord - OU1 - Phase 2 Drilling **Geologist:** Dave Kremer
Client: USACE **Checked By:** D. McCrumb, R.G.
Location: Former Fort Ord - OU1 **Ground Surface Elevation(ft msl):** 139.60
Northing(ft): 2143956.40 **Easting(ft):** 5748004.35

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
2		***Silty Sand*** Reddish black (2.5YR 2.5/1), dry, very loose, no cementation, organic matter present, subround to round, coarse to very fine sand; silt; no clay							Drilling began at 0950 hrs. on 10/21/04
4									
6							0.0		5% coarse 50% medium 25% fine to very fine 20% silt
8									
10		***Silty Sand*** Brown (7.5YR 4/2), dry, very loose, no cementation, non-plastic, less organic matter present, subround to round, coarse to fine sand; silt	SM				0.0		20% coarse 30% medium 30% fine to very fine 20% silt
12									
14									
16									30% coarse 25% medium 30% fine to very fine 15% silt
18									
20				120					
22		***Poorly Graded Sand*** Brown (7.5YR 5/3), dry, very loose, no cementation, non-plastic, subround to round, coarse to fine sand; trace silt	SP				0.0		10% coarse 70% medium 20% fine trace silt
24									
26									
28									
30				110					
32		***Poorly Graded Sand with Silt*** Brown (7.5YR 5/3), dry, very loose, subround to round, no cementation, non-plastic, coarse to very fine sand, silt, no clay					0.0		15% coarse 60% medium 20% fine - very fine 5% silt
34			SP / SM						
36									
38									
40							0.0		

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 8"
Total Depth Drilled: 142'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-10-A
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2143956.40

Corresponding Well ID: IW-OU1-10-A
Date: 10/21/2004
Geologist: Dave Kremer
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 139.60
Easting(ft): 5748004.35

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
42		***Sand with Silt*** Light brown (7.5YR 6/3), slightly moist, very loose, subround to round, no cementation, non-plastic, coarse to very fine sand; silt; no clay	SP / SM						20% coarse 50% medium 25% fine to very fine 5% silt
44									
46									
48									
50		***Poorly Graded Sand*** Light brown (7.5YR 6/3), slightly moist, very loose, subround to round, no cementation, coarse to very fine sand; silt, no clay					0.0		10% coarse 60% medium 25% fine to very fine 5% silt
52									
54									
56									
58									
60				80					
62		***Poorly Graded Sand*** Light brown (7.5YR 6/3), slightly moist, very loose, subround to round, no cementation, coarse to very fine sand; no silt	SP				0.0		
64									
66							0.0		15% coarse 65% medium 20% fine to very fine no silt
68									
70		***Poorly Graded Sand*** Light brown (7.5YR 6/3), slightly moist, very loose, subround to round, no cementation, coarse to very fine sand; no silt							
72									
74									
76							0.0		5% coarse 80% medium 15% fine to very fine
78									
80				60					

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 142'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-10-A **Corresponding Well ID:** IW-OU1-10-A
Project No: OMA009-201-01-07-02 **Date:** 10/21/2004
Project: Ft. Ord - OU1 - Phase 2 Drilling **Geologist:** Dave Kremer
Client: USACE **Checked By:** D. McCrumb, R.G.
Location: Former Fort Ord - OU1 **Ground Surface Elevation(ft msl):** 139.60
Northing(ft): 2143956.40 **Easting(ft):** 5748004.35

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
82		***Well Graded Sand*** Light brown (7.5YR 6/3), slightly moist, very loose, subround to round, no cementation, coarse to fine sand							40% coarse 30% medium 30% fine
84									
86							0.0		
88									
90			SW					▼	Saturated at 89 feet bgs. 30% coarse 40% medium 30% fine to very fine
92									
94									
96		***Well Graded Sand*** Light brown (7.5YR 6/3), saturated, very loose, subround to round, no cementation, coarse to fine sand, trace silt					0.0		
98									
100				40					
102		***Sand with Silt*** Brown (7.5YR 4/4), saturated, loose, subround to round, no cementation, non-plastic, coarse to very fine sand; silt			100	7/11/20			15% coarse 60% medium 20% fine to very fine 5% silt
104									
106									
108			SP / SM						
110		***Poorly Graded Sand with Silt*** Light brown (7.5YR 6/3), slightly moist, very loose, subround to round, no cementation, coarse to fine sand			100	4/4/7	0.0		5% coarse 70% medium 20% fine to very fine 5% silt
112									
114									
116									
118									
120				20					

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 142'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-10-A
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2143956.40

Corresponding Well ID: IW-OU1-10-A
Date: 10/21/2004
Geologist: Dave Kremer
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 139.60
Easting(ft): 5748004.35

Depth	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
122–124	***Clayey Sandy Silt*** Greenish gray (Gley1 5/10Y), moist, hard, no cementation, low plasticity, fine to very fine sand; silt; clay	ML	15	100	5/10/24			30% fine to very fine 50% silt 20% clay
126–128	***Sandy Silt*** Light greenish gray (Gley1 6/10Y), moist, hard, no cementation, no to low plasticity, fine to very fine sand; silt; trace clay	ML	12	100	5/16/27	0.0		45% fine to very fine 55% silt Trace Clay
130–132	***Poorly Graded Sand*** Brown (7.5YR 5/2), moist to saturated, very dense, subround to round, no cementation, coarse to fine sand	SP	5	100	24/42/50	0.0		20% coarse 65% medium 15% fine
134–136	***Clayey Silt with Sand*** Brown (7.5YR 5/3), moist to dry, stiff, no cementation, low to medium plasticity, very fine sand; silt; clay	ML	2	100	10/16/38			15% very fine sand 60% silt 25% clay
138–140	***Silty Clay*** Dark greenish gray (Gley1 4/10GY), moist, very stiff, no cementation, low plasticity, silt; clay	CL	-2	100	10/21/24			40% silt 60% clay
142–160								Total depth was reached at 1400 hrs. on 10/21/04

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 142'
Sheet 4 of 4

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # MW-OU1-85-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,144,635.096 5,747,164.990

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☒ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☒ Other See Well Log

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft):
Filter pack (ft):

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ☒-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-122.0 ft
Materials to be used: Bentonite Grout
Location of screens or perforations: 72.1-122.1ft
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner: William K. Collins

Drilling Contractor: Rick Alcartado

Laura McNamara

Circle one: Professional Geologist/Civil Engineer

Print Name: Laura McNamara

Certification Number: CH 6525

Monterey County Health Dept – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/Environmentalhealth

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-85A

Corresponding Well ID: MW-OU1-85-A Sheet 1 of 4

Project Name: Fort Ord OU1-FONR Drilling	**Project Number:** OMA009-201-01-07-02-01	**Location:** Fort Ord Natural Reserve	**Client:** US Army Corps of Engineers
Drilling Company: WDC	**Driller:** Gerald/Alberto	**Date / Time Drilling Started:** 31-Jul-06 / 11:45 A.M.	**Date / Time TD Reached:** 31-Jul-06 / 13:21
Drilling Equipment: CME 85	**Sampling Device:** Calif. Mod. Split Spoon	**Geologist:** J. Alt.	**Checked By:** Michael J. Bombard, P.G., C.HG.
Drilling Method: H.S. Auger		**Borehole Diameter:** 8"-12" in.	**Total Depth Drilled:** 122 (ft)
Well Depth 122		**Water Level (bgs):** first: 79.6 (ft)	final: (ft)
Screen: Dia. 6" Length: 50' (ft) Type/Size: 0.01"			
Casing: Dia. 6" Length: 72' (ft) Type/Size: S. 40			
Ground Surface Elevation (ft msl): 123.35	**Northing:** 2144635.096	**Easting:** 5747164.99	

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		Silty sand, very dark gray (10YR 3/1 to 7.5YR 3/1), dry, fine-grained sand, organic, loose.	SM	123.35					Slight Organic Odor
		Same as above	SM	118.35			0.0		PID on cuttings
									Gradational contact
10		Sand, yellowish-brown (10YR 7/4), moist, fine-grained, sub-angular to sub-rounded, no fines, ~85% quartz.	SP	113.35			0.0		PID on cuttings, no odor
20		As Above	SP	103.35			0.0		PID on cuttings
30		As Above	SP	93.35					PID on cuttings
40									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-85A

Corresponding Well ID: MW-OU1-85-A

Sheet 2 of 4

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As Above	SP	83.35			0.0		PID on cuttings
50		Sand, light yellowish-brown (2.5YR 6/3), moist, very fine to fine-grained (30%) sub-angular to sub-rounded.	SP	33.35			0.0		PID on cuttings
60		As Above	SP	63.35			0.0		PID on cuttings
70		As Above	SP	53.35			0.0		PID on cuttings
80								▼	First groundwater at 79.6' bgs

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-85A

Corresponding Well ID: MW-OU1-85-A

Sheet 3 of 4

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As Above	SP	43.35			0.0		PID on cuttings
90		Sand, yellowish brown (10YR 5/4), wet, very fine grained, sub-angular to sub-rounded, no fines, loose.	SP	33.35		3 6 15	0.0		No odor
		As Above		28.35	100	12 3 12	0.0		No odor
100		As Above		23.35		9 13 50/1	0.0		No odor
		Clayey sand, light olive brown (7.5 Y 5.4), moist, weakly cemented, very fine-grained sand. Streaks of limonite staining.	SC	18.35		10 50/3	0.0		Sharp Contact No odor
110		Sand, yellowish brown (10YR 5.4), wet, very fine-grained, loose, sub-angular to sub-rounded.	SP	13.35		11 20 50/2	0.0		No odor
		Sand as above, with thin (1-2") beds of silty clay	SP	8.35		4 11 13			
120									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-85A

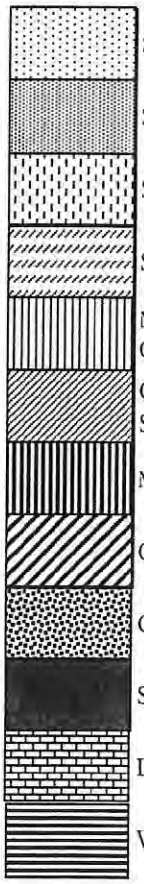
Corresponding Well ID: MW-OU1-85-A

Sheet 4 of 4

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		Sand as above, with thin (1/2-1") beds of silty clay.		3.35		13			
		Clay, grayish brown (2.5Y 5/2), moist, medium plasticity.		1.35		19 24			No odor
130									
140									
150									
160									

Boring and Well Log Legend



SP = Poorly-graded Sands, Clean Sands, Little or no fines

SW = Well-graded Sands, Gravelly Sands, Little or no fines

SM = Silty-Sands, Sand-Silt Mixtures

SC = Clayey Sands, Sand-Silt Mixtures

ML = Inorganic Silts and Very Fine Sands, Silty or Clayey Fine Sands or Clayey Silts with Slight Plasticity

CL = Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays

MH = Inorganic Silt, micaceous or diatomaceous fine Sand or Silty Soils

CH = Inorganic Clays of high plasticity, fat Clays

Gravels

Shale

Limestone

Well Screen

Groundwater Elevation

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # MW-OU1-87-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,144,314.009 5,747,774.400

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☒ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☒ Other See Well Log

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft):
Filter pack (ft):

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ☒-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-119.0 ft
Materials to be used: Bentonite Grout
Location of screens or perforations. 71.0-121.0ft
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one Professional Geologist/~~Civil~~ Engineer

Print Name Laura McNamara

Certification Number: CH 6526

Monterey County Health Dept – Environmental Health
Attn Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 Fax # (831) 755-8954
www.co.monterey.ca.us/health/environmental/health

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-87A

Corresponding Well ID: MW-OU1-87A Sheet 1 of 4

Project Name: Fort Ord OU1-FONR Drilling	**Project Number:** OMA009-201-01-07-02-01	**Location:** Fort Ord Natural Reserve	**Client:** US Army Corps of Engineers
Drilling Company: WDC	**Driller:** Gerald	**Date / Time Drilling Started:** 25-Jul-06 / 1:30 P.M.	**Date / Time TD Reached:** 26-Jul-06 / 3:30 P.M.
Drilling Equipment: Track Rig	**Sampling Device:** Calif. Mod. Split Spoon	**Geologist:** J. Alt	**Checked By:** Michael J. Bombard, P.G., C.HG.
Drilling Method: H.S. Auger		**Borehole Diameter:** 12 1/4 in.	**Total Depth Drilled:** 121.5 (ft)
Well Depth 120 1/2		**Water Level (bgs):**	
Screen: Dia. 6"	Length: 50 (ft) Type/Size: 0.01"	first: 78 (ft)	final: (ft)
Casing: Dia. 6"	Length: 68.5 (ft) Type/Size: S. 40		
Ground Surface Elevation (ft msl): 123.97		**Northing:** 2144314.009	**Easting:** 5747774.4

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		Silty sand, light brown (7.5 YR 3/4), dry, fine-grained.	SM	123.97					PID 0.0 on cuttings
10		Sand, yellowish-brown (10YR 6/4), moist, fine to medium-grained, sub-rounded to sub-angular, primarily quartz w/ ~20% feldspar, uncemented.	SP	113.97					PID 0.0 on cuttings
20		As Above	SP	103.97					PID 0.0 on cuttings
30		As Above	SP	93.97					PID 0.0 on cuttings

HGL HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-87A

Corresponding Well ID: MW-OU1-87A

Sheet 2 of 4

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As Above	SP	83.97					PID 0.0 on cuttings
50		As Above	SP	73.97					PID 0.0 on cuttings
60		As Above	SP	63.97					PID 0.0 on cuttings
70		As Above	SP	53.97					PID 0.0 on cuttings
								▽	First water at 78'
80									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-87A

Corresponding Well ID: MW-OU1-87A

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As Above	SP	43.97					PID 0.0 on cuttings
90		Sand, yellowish brown (10YR 5/6), saturated, fine-grained, poorly graded, sub-rounded to sub-angular, 70% Quartz, <1% scattered organics.	SP	33.97	4 12 13		0.0		7:26 10:10 A.M. No Odor
					10 17 37				
100		As Above		23.97	4 7 10		0.0		12:05 P.M. No Odor
		Sand, light brown (2.5YR 5/3), saturated, very fine-grained, subangular, no fines.	SW	18.97	31 50/2				No Odor
110		Silty clay, gray (2.5YR 5/4), plastic, w fine sand.	CL	14.97			0.0		No Odor
		Sand, light yellowish brown, saturated, fine-grained, subrounded to subangular	SP	8.97	6 24 50/5				No odor Fast drilling 115-120
120									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-87A

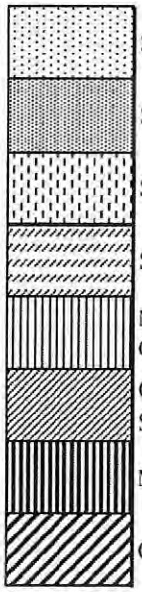
Corresponding Well ID: MW-OU1-87A

Sheet 4 of 4

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As Above	SP	3.97	8				
		Clay, gray (2.5YR 5/2), with silt, plastic.	CH	3.47	58 50/2				No Odor
130									
140									
150									
160									

Boring and Well Log Legend



SP = Poorly-graded Sands, Clean Sands, Little or no fines

SW = Well-graded Sands, Gravelly Sands, Little or no fines

SM = Silty-Sands, Sand-Silt Mixtures

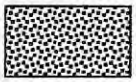
SC = Clayey Sands, Sand-Silt Mixtures

ML = Inorganic Silts and Very Fine Sands, Silty or Clayey Fine Sands or Clayey Silts with Slight Plasticity

CL = Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays

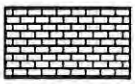
MH = Inorganic Silt, micaceous or diatomaceous fine Sand or Silty Soils

CH = Inorganic Clays of high plasticity, fat Clays

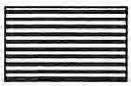


Gravels

Shale



Limestone



Well Screen

Groundwater Elevation

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING

One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # EW-OU1-53-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ■-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: _____

Physical Address of site: Coordinates: 2,143,778.418 5,748,369.881

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner	Consultant	Driller
Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:

1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING

- ■ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ■ Other See Well Log

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft):
Filter pack (ft):

DRILLING METHOD

- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other _____

Location of well Seals: (ft) _____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ■-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

■ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-131.1 ft

Materials to be used: Bentonite Grout

Location of screens or perforations: 104.5-134.5

Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Circle one Professional Geologist/~~Civil~~ Engineer (circled)

Print Name: Laura McNamara

Certification Number: CH 6526

Questions: (831) 755-4511 · Fax # (831) 755-8954

http://www.co.monterey.ca.us/health/EnvironmentalHealth

Monterey County Health Dept – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-53-A
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2143778.42

Corresponding Well ID: EW-OU1-53-A
Date: 10/12/2004
Geologist: J.D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 152.19
Easting(ft): 5748369.88

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
2									Drilling began at 0730 hrs. on 10/12/04
4									
6									
8									
10									
12									
14									
16									
18									
20		***Poorly Graded Sand*** Grayish orange, slightly moist, friable, slightly dense, well rounded, mostly fine to medium sand	SP						
22									
24									
26									
28									
30									
32									
34									
36									
38									
40									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 8"
Total Depth Drilled: 135'
Sheet 1 of 4

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-53-A
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2143778.42

Corresponding Well ID: EW-OU1-53-A
Date: 10/12/2004
Geologist: J.D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 152.19
Easting(ft): 5748369.88

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
42									
44									
46									
48									
50									
52									
54									
56									
58									
60		***Poorly Graded Sand*** Grayish orange, slightly moist, friable, slightly dense, well rounded, mostly fine to medium sand	SP						
62									
64									
66									
68									
70									
72									
74									
76									
78									
80									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 135'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-53-A
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2143778.42

Corresponding Well ID: EW-OU1-53-A
Date: 10/12/2004
Geologist: J.D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 152.19
Easting(ft): 5748369.88

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
82		***Poorly Graded Sand*** Grayish orange, slightly moist, friable, slightly dense, well rounded, mostly fine to medium sand							
84									
86									
88									
90		***Poorly Graded Sand*** Dark yellowish orange, slightly moist, slightly dense, well rounded, mostly fine to medium sand			90	27/22/30	0.0		
92									
94									
96		***Poorly Graded Sand*** Moderate yellowish brown, slightly moist to moist, slightly dense, well rounded, mostly fine to medium sand			100	22/22/27	0.0		
98									
100		***Poorly Graded Sand*** Moderate yellowish brown, moist to saturated, slightly dense, well rounded, mostly fine to medium sand	SP		95	26/25/30	0.0	▽	Saturated at 99 feet bgs.
102									
104									
106		***Poorly Graded Sand*** Moderate yellowish brown, saturated, slightly dense, well rounded, mostly fine to medium sand			100	22/27/32	0.0		
108									
110				42					
112		***Poorly Graded Sand with Silt*** Moderate to dark yellowish brown, saturated, slightly dense, 95% mostly very fine to medium sand and 5% silt	SP / SM		100	25/23/27	0.0		
114				37					
116		***Poorly Graded Sand*** Moderate yellowish brown, saturated, slightly dense, well rounded, mostly fine to medium sand	SP		95	20/27/31	0.0		
118									
120									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 135'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-53-A
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2143778.42

Corresponding Well ID: EW-OU1-53-A
Date: 10/12/2004
Geologist: J.D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 152.19
Easting(ft): 5748369.88

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
122		***Poorly Graded Sand*** Moderate yellowish brown, saturated, slightly dense, well rounded, mostly fine to medium sand	SP		95	22/24/28			
124									
126		***Poorly Graded Sand*** Pale brown, saturated, slightly dense, well rounded, mostly fine to medium sand			95	10/12/16	0.0		
128									
130				22					
132		***Clay*** Light olive gray with moderate brown and dark gray staining, slightly moist, very stiff, slightly plastic	CL		70	27/30/40	0.0		Total depth was reached at 1300 hrs. on 10/12/04
134				17					
136									
138									
140									
142									
144									
146									
148									
150									
152									
154									
156									
158									
160									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 135'
Sheet 4 of 4

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # EW-OU1-52-A

✓ - **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓ - **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,143,941.682 5,748,310.174

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☒ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☒ Other See Well Log

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft):
Filter pack (ft):

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ☒-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-124.5 ft
Materials to be used: Bentonite Grout
Location of screens or perforations. 84.5-114.5ft
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner: William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one: Professional Geologist/~~Civil~~ Engineer

Print Name: Laura McNamara

Certification Number: CH 6526

Monterey County Health Dept – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/Environmental/Health

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-52-A
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2143941.68

Corresponding Well ID: EW-OU1-52-A
Date: 10/24/2004
Geologist: J.D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 147.44
Easting(ft): 5748310.17

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
2									Drilling began at 0715 hrs. on 10/24/04
4									
6									
8									
10									
12									
14									
16									
18									
20		***Poorly Graded Sand*** Grayish orange, slightly moist, slightly dense, friable, well rounded, mostly fine to medium sand	SP						
22									
24									
26									
28									
30									
32									
34									
36									
38									
40									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 8"
Total Depth Drilled: 121.5'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-52-A
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2143941.68

Corresponding Well ID: EW-OU1-52-A
Date: 10/24/2004
Geologist: J.D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 147.44
Easting(ft): 5748310.17

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
42									
44									
46									
48									
50									
52									
54									
56									
58									
60		***Poorly Graded Sand*** Grayish orange, slightly moist, slightly dense, friable, well rounded, mostly fine to medium sand	SP						
62									
64									
66									
68									
70									
72									
74									
76									
78									
80									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

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4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 121.5'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-52-A
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2143941.68

Corresponding Well ID: EW-OU1-52-A
Date: 10/24/2004
Geologist: J.D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 147.44
Easting(ft): 5748310.17

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
82		***Poorly Graded Sand*** Grayish orange, slightly moist, slightly dense, friable, well rounded, mostly fine to medium sand							
84									
86									
88									
90		***Poorly Graded Sand*** Dark yellowish orange, moist, slightly dense, well rounded, mostly fine to medium sand			90	22/25/26	0.0		
92									
94									
96		***Poorly Graded Sand*** Dark yellowish orange, very moist, slightly dense, well rounded, mostly fine to medium sand			75	21/24/25	0.0		
98									
100		***Poorly Graded Sand*** Dark yellowish orange, saturated, slightly dense, well rounded, mostly fine to medium sand	SP		60	25/24/27	0.0	▽	Saturated at 99 feet bgs.
102									
104									
106		***Poorly Graded Sand*** Moderate yellowish brown, saturated, slightly dense, well rounded, mostly fine to medium sand			90	27/26/32	0.0		
108									
110				37					
112		***Poorly Graded Sand with Silt*** Moderate yellowish brown, saturated, slightly dense, sand well rounded, 90% very fine to medium sand, 10% silt	SP / SM		90	22/24/31	0.0		
114				32					
116		***Poorly Graded Sand*** Moderate yellowish brown, saturated, slightly dense, well rounded, fine to medium sand	SP		100	24/26/30	0.1		
118				28					
120			CL						

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 121.5'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-52-A
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2143941.68

Corresponding Well ID: EW-OU1-52-A
Date: 10/24/2004
Geologist: J.D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 147.44
Easting(ft): 5748310.17

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
122		***Clay with Sand*** Light olive gray, slightly moist, very dense, slightly plastic, 90% clay; 10% very fine sand	CL	26	100	45/50/50	0.0		Total depth was reached at 0945 hrs. on 10/24/04
124									
126									
128									
130									
132									
134									
136									
138									
140									
142									
144									
146									
148									
150									
152									
154									
156									
158									
160									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
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Sampling Equipment: 140 lb Hammer / 30" Drop - 18" CA Mod Split Spoon

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Boring Diameter: 8"
Total Depth Drilled: 121.5'
Sheet 4 of 4

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # PZ-OU1-10-A1

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,143,978.280 5,747,981.540

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☒ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☒ Other See Well Log

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft):
Filter pack (ft):

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use	☐-To be abandoned
☐-Inactive	☐-To supplement new well
☒-Abandoned	☐-To be LEFT inactive
	☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-116.5 ft
Materials to be used: Bentonite Grout
Location of screens or perforations. 81.5-116.5ft
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one Professional Geologist/Civil Engineer

Print Name Laura McNamara

Certification Number: CH 6526

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth

Monterey County Health Dept. – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-10-A1
Project No: OMA009-201-01-07-13
Project: September 2005 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2143978.28

Corresponding Well ID: PZ-OU1-10-A1
Date: 9/24/2005
Geologist: D. Fortier, P. G.
Checked By: M. Bombard, P. G.
Ground Surface Elevation(ft msl): 137.52
Easting(ft): 5747981.54

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
2									Drilling began at 1510 hrs. on 9/24/05
4									
6		***Silty Sand*** Grayish brown to dark yellowish brown, very loose, dry, slightly dense, 20% silt, 80% very fine to medium sand with trace coarse sand, subround to round, no cementation.	SM				0.0		
8									
10							0.0		
12									
14				123					
16							0.0		
18		***Poorly Graded Sand With Silt*** Moderate to dark yellowish brown, loose, dry, slightly dense, 10% silt, 90% very fine to medium sand with trace coarse sand, subround to round, no cementation.	SP						
20							0.0		
22									
24							0.0		
26									
28									Stopped drilling @ 30' MD at 1600 hrs. on 9/24/05
30		***Poorly Graded Sand With Silt*** As above	SP				0.0		Started drilling at 0830 hrs. on 9/25/05
32									
34									
36		***Poorly Graded Sand With Silt*** Moderate yellowish brown, loose slightly moist, slightly dense, 10% silt, 90% very fine to medium sand with trace coarse sand, subround to round					0.0		
38									
40			SP				0.0		

Drilled By: American Well Technologies, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 280 lb Power Hammer / 36" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 8.25"
Total Depth Drilled: 116.5'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-10-A1
Project No: OMA009-201-01-07-13
Project: September 2005 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2143978.28

Corresponding Well ID: PZ-OU1-10-A1
Date: 9/24/2005
Geologist: D. Fortier, P. G.
Checked By: M. Bombard, P. G.
Ground Surface Elevation(ft msl): 137.52
Easting(ft): 5747981.54

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
42		***Poorly Graded Sand With Silt*** As above.	SP						
44							0.0		
46									
48									
50		***Poorly Graded Sand With Silt*** As above.	SP				0.0		
52									
54									
56							0.0		
58		***Poorly Graded Sand With Silt*** Dark yellowish brown, loose, slightly moist, slightly dense, 10% silt, 90% very fine to medium sand with trace coarse sand, round to subround, no cementation.							
60			SP				0.0		
62									
64									
66							0.0		
68									
70		***Poorly Graded Sand With Silt*** As above.	SP				0.0		
72									
74									
76							0.0		
78		***Poorly Graded Sand With Silt*** Dark yellowish brown, moist, slightly dense, 10% silt, 90% very fine to medium sand with trace coarse sand, round to subround, no cementation.							
80			SP				0.0		

Drilled By: American Well Technologies, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 280 lb Power Hammer / 36" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8.25"
Total Depth Drilled: 116.5'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-10-A1
Project No: OMA009-201-01-07-13
Project: September 2005 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2143978.28

Corresponding Well ID: PZ-OU1-10-A1
Date: 9/24/2005
Geologist: D. Fortier, P. G.
Checked By: M. Bombard, P. G.
Ground Surface Elevation(ft msl): 137.52
Easting(ft): 5747981.54

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
82		***Poorly Graded Sand With Silt*** As above, moist.	SP						
84							0.0		
86									
88								▼	Water table about 88' bgs
90		***Poorly Graded Sand With Silt*** As above, saturated.	SP				0.0		
92									
94							0.0		
96									
98		***Poorly Graded Sand With Silt*** Dark yellowish brown, saturated,							
100		slightly dense, 10% silt, 90% very fine to medium sand with trace coarse	SP				0.0		
102		sand, round to subround, no cementation.							
104							0.0		
106									
108									
110		***Poorly Graded Sand With Silt*** As above, saturated.	SP		100	19 for 1.5 ft.	0.0		PID (Sample) 0.0 ppm [SB-10A1-110] 1135 hrs. Sieve analysis only.
112									
114				22			0.0		
116		***Sandy Clayey Silt*** Light olive gray, moist, moderately	ML	21	80	40 for 1.5 ft.			TD 116.5' at 1220 hrs. 9/25/05 in Channel Fill Unit
118		dense, 50% silt, 20% clay, 30% very fine to fine sand, no cementation.							
120									

Drilled By: American Well Technologies, Inc.
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 280 lb Power Hammer / 36" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8.25"
Total Depth Drilled: 116.5'
Sheet 3 of 3

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # IW-OU1-02-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ■-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,144,117.040 5,748,079.410

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
■ Ground Water Monitoring
☐ Vapor Extraction
☐ Vadose Zone
☐ Piezometer
☐ Soil Boring/Core Sampling
☐ Cathodic Protection Well
■ Other See Well Log

Location of well Seals: (ft) ____

PROPOSED SPECIFICATIONS	
Depth (ft):	
Diameter (in):	
Width seal (in):	
Depth perforations:	

CASING	
Single/Double:	
Material:	
Type of joint:	
Gravel Pack (ft):	
Filter pack (ft):	

DRILLING METHOD
☐ Rotary
☐ Cable
☐ Dug
☐ Other ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ■-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

■ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1- 133.5ft
Materials to be used: Bentonite Grout
Location of screens or perforations 88.0-128.0ft
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one: Professional Geologist/Civil Engineer

Print Name Laura McNamara

Certification Number CH 6528

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth/

Monterey County Health Dept – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-02-A
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144117.04

Corresponding Well ID: IW-OU1-02-A
Date: 11/5/2004
Geologist: J.D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 131.42
Easting(ft): 5748079.41

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
2									Drilling began at 0800 hrs. on 11/5/04
4									
6									
8									
10									
12									
14									
16									
18									
20			SP						
22									
24									
26									
28									
30		*Poorly Graded Sand* Grayish orange, slightly moist, slightly dense, loose, friable, fine to medium sand, well rounded					0.0		PID readings from cuttings.
32									
34									
36									
38									
40									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 8"
Total Depth Drilled: 135'
Sheet 1 of 4

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-02-A
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144117.04

Corresponding Well ID: IW-OU1-02-A
Date: 11/5/2004
Geologist: J.D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 131.42
Easting(ft): 5748079.41

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
42									
44									
46									
48									
50									
52									
54									
56									
58									
60		***Poorly Graded Sand*** Grayish orange, slightly moist, slightly dense, loose, friable, fine to medium sand, well rounded	SP						
62									
64									
66									
68									
70									
72									
74									
76									
78									
80									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 135'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-02-A
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144117.04

Corresponding Well ID: IW-OU1-02-A
Date: 11/5/2004
Geologist: J.D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 131.42
Easting(ft): 5748079.41

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
82									
84									
86									
88									
90								▼	Saturated at 90 feet bgs.
92									
94									
96		***Poorly Graded Sand*** Dark yellowish orange, saturated, slightly dense, fine to medium sand, well rounded							
98									
100			SP						
102									
104									
106									
108									
110									
112									
114									
116									
118				13					
120			SM						

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 135'
Sheet 3 of 4

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-02-A
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144117.04

Corresponding Well ID: IW-OU1-02-A
Date: 11/5/2004
Geologist: J.D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 131.42
Easting(ft): 5748079.41

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
122		***Silty Sand with Clay*** Moderate yellowish brown, saturated, moderately dense, very fine to fine sand, well rounded sand, 10% clay; 30% silt; 60% sand							
124							0.0		
126									
128				3					
130		***Clay*** Grayish blue, slightly moist, very dense, very stiff, slightly plastic	CL						
132									
134				-4			0.0		Total depth was reached at 1125 hrs. on 11/5/04
136									No split spoon samples due to 12 1/4" augers with wood plug. Drilled 5' sump to 135'.
138									
140									
142									
144									
146									
148									
150									
152									
154									
156									
158									
160									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 135'
Sheet 4 of 4

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # MW-OU1-26-A

✓- **Monitoring Well -** *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring -** *Fee $136.00 per site -* # of S.B.: ____

Physical Address of site: Coordinates: 2,144,141.800 5,747,960.000

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office		Consultant: HydroGeoLogic, Inc.		Driller: Cascade Drilling LP	
Address: P.O Box 5008		Address: 14142 Denver West Parkway, Bldg 51, Suite 225		Address: 120 S. 23rd Street	
City: Monterey		City: Lakewood		City: Richmond	
State: CA	Zip: 93944	State: CO	Zip: 80401	State: CA	Zip: 94804
Phone: 831-242-7920		Phone: 303-984-1167		Phone: 510-478-0858	

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:

1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☒ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☒ Other See Well Log

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft):
Filter pack (ft):

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ☒-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-102.0 ft
Materials to be used: Bentonite Grout
Location of screens or perforations: 82.0-102.0ft
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

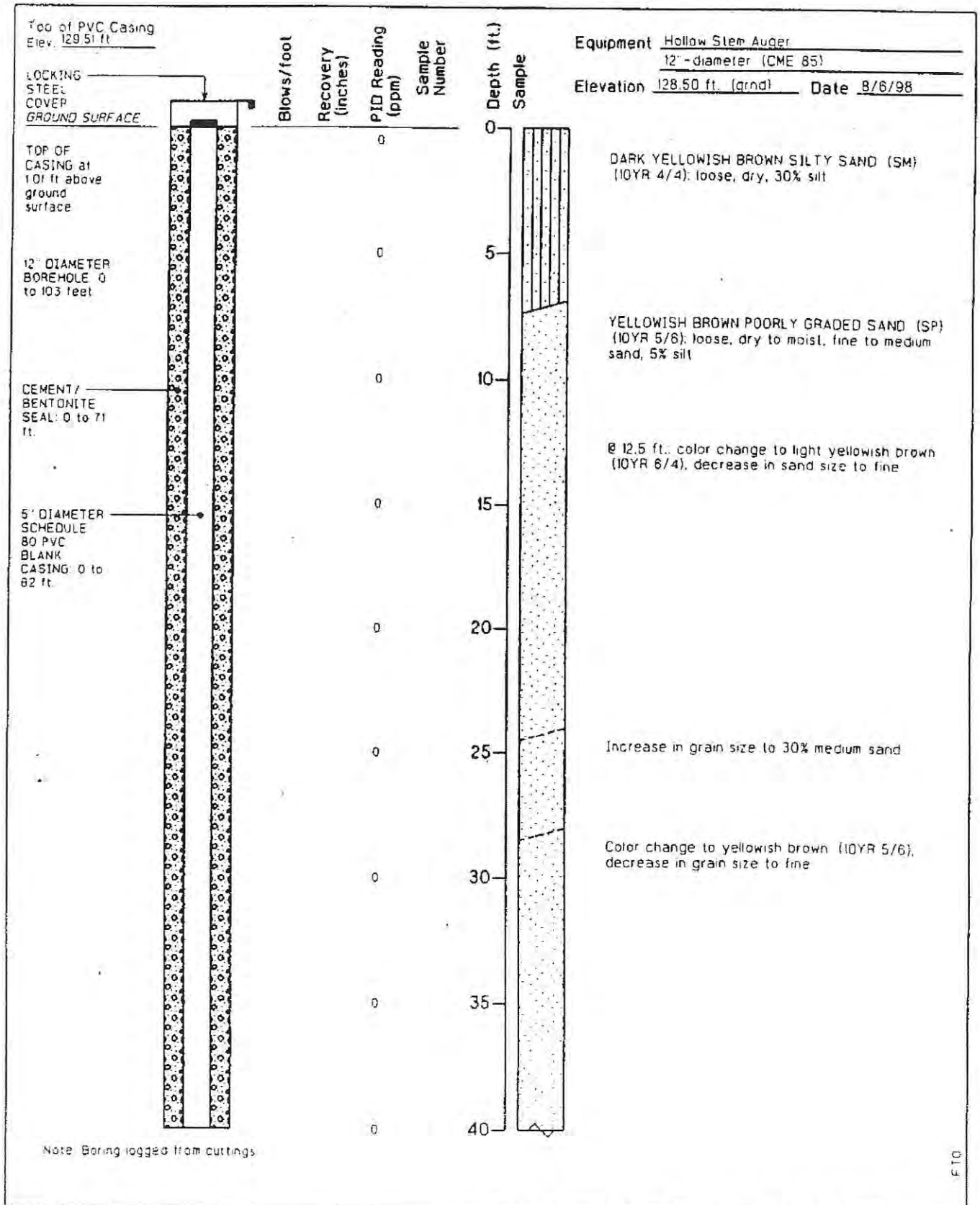
Circle one: Professional Geologist/Civil Engineer (circled: Engineer)

Print Name: Laura McNamara

Certification Number: CH 6526

Mail your MW/SB application and all attached to: Monterey County Health Dept. – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth/



Harding Lawson Associates
Engineering and Environmental Services

Log of Boring and Well Completion MW-OU1-28-A

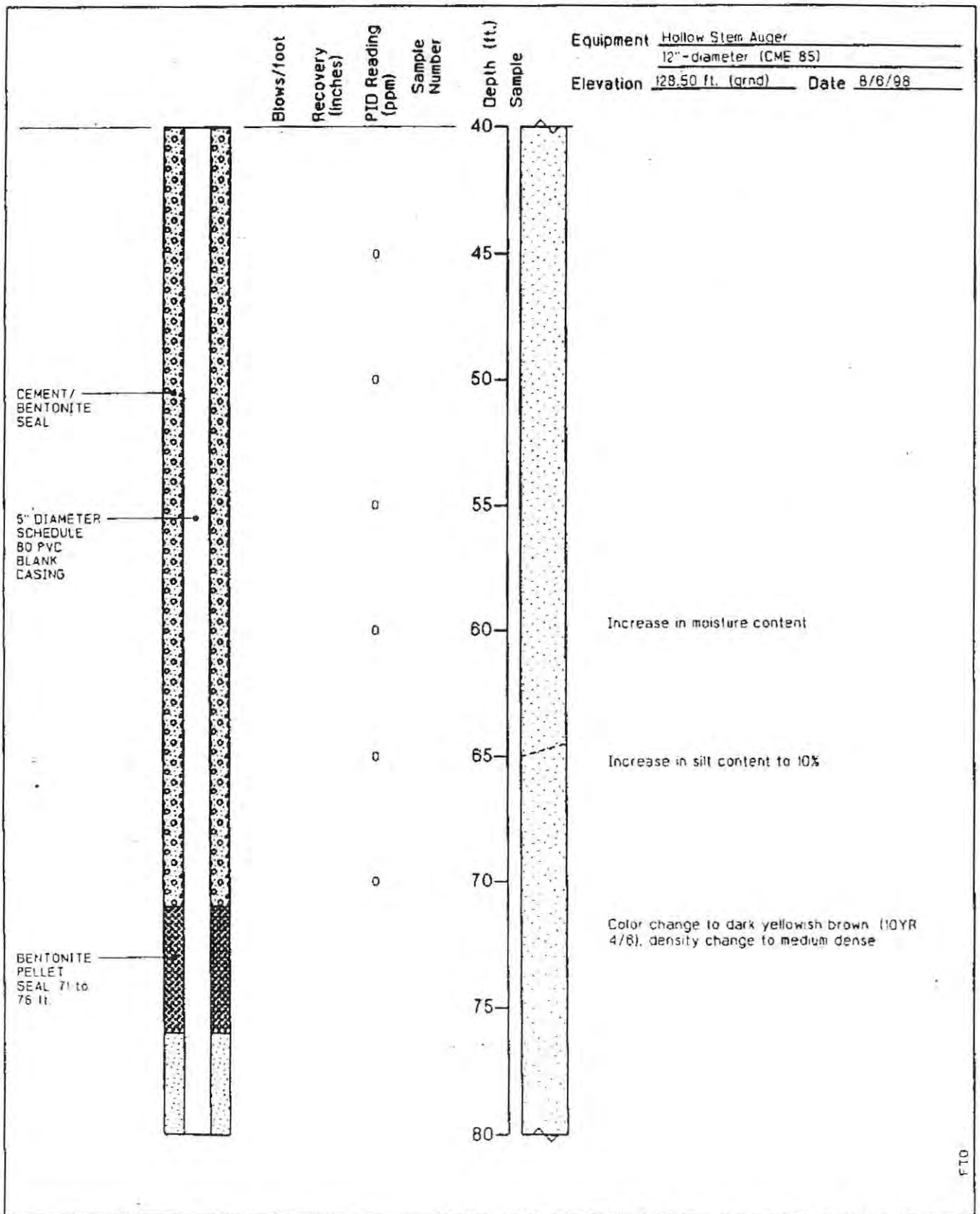
PLATE A2

Phase IV Plume Delineation Report
Operable Unit 1
Fort Ord, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
CEG	38269 00141		9/98	

Equipment Hollow Stem Auger
12"-diameter (CME 85)

Elevation 128.50 ft. (grnd) Date 8/6/98



Log of Boring and Well Completion MW-OU1-28-A

PLATE A2

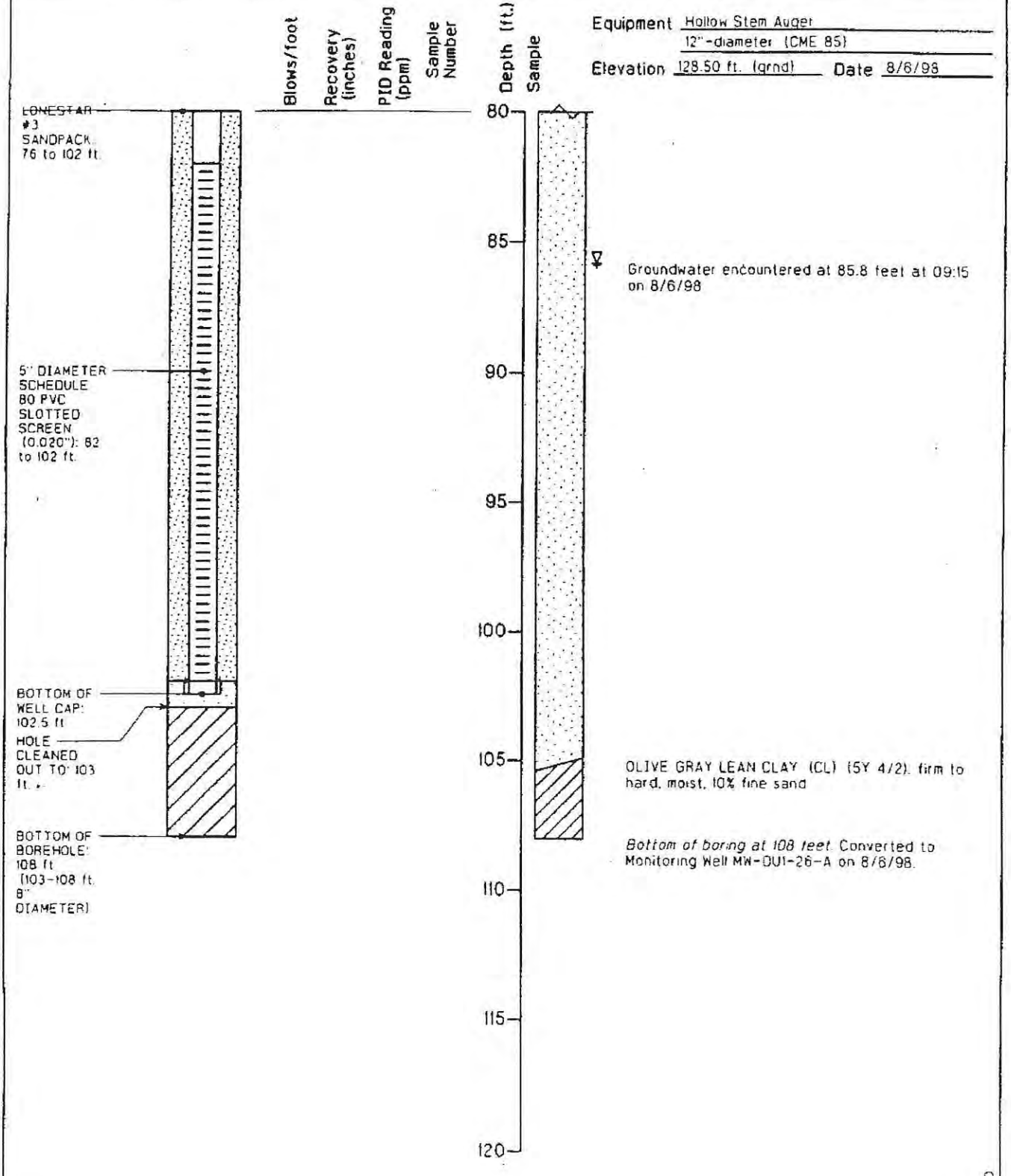
Harding Lawson Associates
Engineering and Environmental Services

Phase IV Plume Delineation Report
Operable Unit 1
Fort Ord, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
CEG	38269 00141		9/98	

Equipment Hollow Stem Auger
12"-diameter (CME 85)

Elevation 128.50 ft. (grnd) Date 8/6/98



F10

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring and Well Completion MW-OU1-26-A PLATE

Phase IV Plume Delineation Report
Operable Unit 1
Fort Ord, California

A2

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
CEG	38269 00141		9/98	

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # MW-OU1-88-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,144,246.831 5,747,761.098

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☒ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☒ Other See Well Log

PROPOSED SPECIFICATIONS	
Depth (ft):	
Diameter (in):	
Width seal (in):	
Depth perforations:	

CASING	
Single/Double:	
Material:	
Type of joint:	
Gravel Pack (ft):	
Filter pack (ft):	

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property
- ☐-In use
- ☐-Inactive
- ☒-Abandoned

Indicate intentions for use of replaced well
- ☐-To be abandoned
- ☐-To supplement new well
- ☐-To be LEFT inactive
- ☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-122.0 ft
Materials to be used: Bentonite Grout
Location of screens or perforations: 72.0-122.0ft
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one: Professional Geologist/~~Certified~~ Engineer

Print Name: Laura McNamara

Certification Number: CH 6526

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/Environmental/Health

Monterey County Health Dept – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-88A

Corresponding Well ID: MW-OU1-88A Sheet 1 of 4

Project Name: Fort Ord OU1-FONR Drilling	**Project Number:** OMA009-201-01-07-02-01	**Location:** Fort Ord Natural Reserve	**Client:** US Army Corps of Engineers
Drilling Company: WDC	**Driller:** Ralph, Alberto, Jeff	**Date / Time Drilling Started:** 22-Aug-06 / 10:15 A.M.	**Date / Time TD Reached:** 22-Aug-06 / 1:15 P.M.
Drilling Equipment: CME 85	**Sampling Device:** Calif. Mod. Split Spoon	**Geologist:** J. Alt.	**Checked By:**
Drilling Method: Hollow Stem Auger		**Borehole Diameter:** 10 1/4 in.	**Total Depth Drilled:** 125.5 (ft)
Well Depth 122			
Screen: Dia. 4" Length: 50 (ft) Type/Size: 0.01"		**Water Level (bgs):** first: (ft)	final: (ft)
Casing: Dia. 4" Length: 72 (ft) Type/Size: S. 40			
Ground Surface Elevation (ft msl): 124.22	**Northing:** 2144246.831	**Easting:** 5747761.098	

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		Silty sand, medium brown (7.5 YR 4/3), dry, fine to very fine-grained, loose, organic.	SM	124.22					Drilling to 90' with plugged 10 1/4" augers.
10		Sand, yellowish brown (10YR 5/6 moist), moist, fine-grained, loose, poorly sorted, subangular to	SP	114.22			0.0		PID on cuttings
20		As Above	SP	104.22			0.0		PID on cuttings
30		As Above	SP	94.22			0.0		PID on cuttings
40									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-88A

Corresponding Well ID: MW-OU1-88A

Sheet 2 of 4

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As Above	SP	84.22			0.0		PID on cuttings
50		As Above	SP	74.22			0.0		PID on cuttings
60		Sand ,yellowish brown (10YR 5/6), moist, fine-grained, loose, poorly sorted, subangular to subrounded.	SP	64.22			0.0		PID on cuttings
70		As Above	SP	54.22			0.0		PID on cuttings
80									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-88A

Corresponding Well ID: MW-OU1-88A

Sheet 3 of 4

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As Above	SP	44.22			0.0		PID on cuttings
90		Sand, yellowish brown (10YR 5/4), wet, fine-grained, loose, poorly sorted.	SP	35.72	100	9 10 12	0.0		No Odor
		As above	SP		100	9 10 14			No Odor
100		Sand, yellowish brown (10YR 5/6), wet, very fine-grained w/reddish-brown mottling (oxidized roots?), loose, poorly-sorted, no fines.	SP	27.22	100	9 13 17	0.0		No Odor
		Sand, light brown (10YR 5/3), wet, no fines, very fine-grained, loose, subrounded to rounded.	SP	20.72	100	12 14 17			No Odor
110		Sandy clay, grayish brown (10YR 6/2), wet, non-plastic	CL	15.22	100		0.0		No Odor
		Sand, light brown (10YR 6/2), saturated, fine to medium-grained, <5% silt, loose, subrounded to rounded.	SP	10.22	100				No Odor
120		Clay, light brown (7.5YR 6/3), moist, plastic.	CL	5.72					No Odor

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-88A

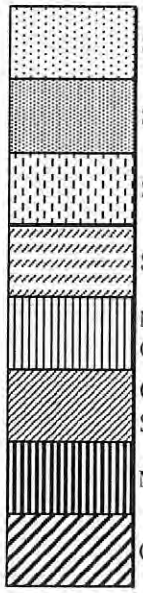
Corresponding Well ID: MW-OU1-88A

Sheet 4 of 4

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As above	CL	4.22	100	18 14 22	0.0		No Odor Set well @ 122'
		Clay, blue green, with silt, moist, plastic	CH	2.22					No Odor
130									
140									
150									
160									

Boring and Well Log Legend



SP = Poorly-graded Sands, Clean Sands, Little or no fines

SW = Well-graded Sands, Gravelly Sands, Little or no fines

SM = Silty-Sands, Sand-Silt Mixtures

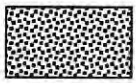
SC = Clayey Sands, Sand-Silt Mixtures

ML = Inorganic Silts and Very Fine Sands, Silty or Clayey Fine Sands or Clayey Silts with Slight Plasticity

CL = Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays

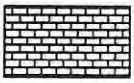
MH = Inorganic Silt, micaceous or diatomaceous fine Sand or Silty Soils

CH = Inorganic Clays of high plasticity, fat Clays

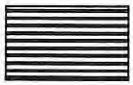


Gravels

Shale



Limestone



Well Screen

Groundwater Elevation

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # EW-OU1-49-A

✓ **- Monitoring Well -** *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓ **- Soil Boring -** *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,144,355.179 5,747,796.775

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
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3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☒ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☒ Other See Well Log

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft)
Filter pack (ft):

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ☒-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-109.6 ft
Materials to be used: Bentonite Grout
Location of screens or perforations. 78.5-108.5
Cleaning of well required. TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one Professional Geologist/CH# Engineer

Print Name Laura McNamara

Certification Number CH 8523

Monterey County Health Dept – Environmental Health
Attn Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth/

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-49-A
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 1 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144355.18

Corresponding Well ID: EW-OU1-49-A
Date: 7/2/2004
Geologist: D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 125.85
Easting(ft): 5747796.78

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
2									Drilling began at 0700 hrs. on 7/2/04
10		***Poorly Graded Sand*** Moderate brown, slightly moist, slightly dense, fine to medium sand, slightly silty	SP						Surface grab sample.
20		***Poorly Graded Sand*** Moderate yellowish brown, slightly moist, slightly dense, fine to medium sand, slightly silty							Surface grab sample.
30		***Poorly Graded Sand*** Moderate yellowish brown, slightly moist, slightly dense, fine to medium sand, slightly silty							Surface grab sample
40									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 8"
Total Depth Drilled: 112'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-49-A
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 1 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144355.18

Corresponding Well ID: EW-OU1-49-A
Date: 7/2/2004
Geologist: D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 125.85
Easting(ft): 5747796.78

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
42		***Poorly Graded Sand*** Moderate yellowish brown, slightly moist, slightly dense, fine to medium sand, slightly silty							Surface grab sample. PID = 0.2 (open hole).
44									
46									
48									
50		***Poorly Graded Sand*** Moderate yellowish brown, moist, slightly dense, fine to medium sand, slightly silty							Surface grab sample.
52									
54									
56									
58									
60		***Poorly Graded Sand*** Moderate yellowish brown, moist, slightly dense, fine to medium sand, slightly silty	SP						Surface grab sample.
62									
64									
66									
68									
70		***Poorly Graded Sand*** Moderate yellowish brown, moist, slightly dense, fine to medium sand, slightly silty							Surface grab sample
72									
74									
76								▽	Saturated at 75 feet bgs
78									
80				46					

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb Hammer / 30" Drop - 18" CA Mod Split Spoon

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Boring Diameter: 8"
Total Depth Drilled: 112'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-49-A **Corresponding Well ID:** EW-OU1-49-A
Project No: OMA009-201-01-07-02 **Date:** 7/2/2004
Project: Ft. Ord - OU1 - Phase 1 Drilling **Geologist:** D. Fortier
Client: USACE **Checked By:** D. McCrumb, R.G.
Location: Former Fort Ord - OU1 **Ground Surface Elevation(ft msl):** 125.85
Northing(ft): 2144355.18 **Easting(ft):** 5747796.78

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
82		***Sand with Silt*** Moderate yellowish brown, saturated, slightly dense, mostly fine sand with some medium sand, 90% sand, 10% silt	SP - SM	36	100	42/50 for 12"	0.4		[EX-OU1-2004-A 80' soil sample for sieve analysis]
90		***Poorly Graded Sand*** Moderate yellowish brown, saturated, slightly dense, fine to medium sand	SP		90	22/25/31	0.4		
96		***Poorly Graded Sand*** Moderate yellowish brown, saturated, slightly dense, fine to medium sand			5	37/42	0.2		
100		***Poorly Graded Sand*** Moderate yellowish brown, saturated, slightly dense, fine to medium sand			90	21/20/37	0.4		[EX-OU1-2004-A 100' soil sample for sieve analysis]
106		***Poorly Graded Sand*** Moderate yellowish brown, saturated, slightly dense, fine to medium sand		17	80	23/22/28	0.6		
110		***Silty Clay*** Light olive gray, moist, stiff, trace fine sand	CL	14	100	40/48/45	0.2		Total depth was reached at 0950 hrs. on 7/2/04 No grab groundwater sample collected
114									
116									
118									
120									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb Hammer / 30" Drop - 18" CA Mod Split Spoon

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Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 112'
Sheet 3 of 3

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # PZ-OU1-49-A1

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☑-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,144,353.560 5,747,766.780

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
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REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☑ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☑ Other See Well Log

PROPOSED SPECIFICATIONS	
Depth (ft):	
Diameter (in):	
Width seal (in):	
Depth perforations:	

CASING	
Single/Double:	
Material:	
Type of joint:	
Gravel Pack (ft):	
Filter pack (ft):	

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ☑-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

☑ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-122.3 ft
Materials to be used: Bentonite Grout
Location of screens or perforations: 91.5-121.5
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

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Laura McNamara

Circle one: Professional Geologist/CH Engineer

Print Name Laura McNamara

Certification Number CH 8526

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/Environmental/Health

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Attn: Hazardous Materials Management Services
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HYDRO GeoLogic INC.

Borehole ID: SB-OU1-49-A1
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 1 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144353.56

Corresponding Well ID: PZ-OU1-49-A1
Date: 7/7/2004
Geologist: D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 124.46
Easting(ft): 5747766.78

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
2									Drilling began at 0900 hrs. on 7/7/04
10		***Poorly Graded Sand*** Moderate brown, slightly moist, slightly dense, fine to medium sand, slightly silty	SP						Surface grab sample.
20		***Poorly Graded Sand*** Light brown, slightly moist, slightly dense, fine to medium sand, slightly silty							Surface grab sample.
30		***Poorly Graded Sand*** Moderate yellowish brown, moist, slightly dense, fine to medium sand, slightly silty	SP						Surface grab sample.
40									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 8"
Total Depth Drilled: 122'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-49-A1
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 1 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144353.56

Corresponding Well ID: PZ-OU1-49-A1
Date: 7/7/2004
Geologist: D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 124.46
Easting(ft): 5747766.78

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
42		***Poorly Graded Sand*** Moderate yellowish brown, moist, slightly dense, fine to medium sand, slightly silty							Surface grab sample.
44									
46									
48									
50		***Poorly Graded Sand*** Moderate yellowish brown, moist, slightly dense, fine to medium sand, slightly silty	SP						Surface grab sample.
52									
54									
56									
58									
60		***Poorly Graded Sand*** Moderate yellowish brown, moist, slightly dense, fine to medium sand, slightly silty							Surface grab sample.
62									
64									
66									
68									
70		***Poorly Graded Sand*** Moderate yellowish brown, very moist, slightly dense, fine to medium sand, slightly silty	SP						Surface grab sample.
72									
74									
76								▽	Saturated at 75 feet bgs
78									
80									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 122'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-49-A1 **Corresponding Well ID:** PZ-OU1-49-A1
Project No: OMA009-201-01-07-02 **Date:** 7/7/2004
Project: Ft. Ord - OU1 - Phase 1 Drilling **Geologist:** D. Fortier
Client: USACE **Checked By:** D. McCrumb, R.G.
Location: Former Fort Ord - OU1 **Ground Surface Elevation(ft msl):** 124.46
Northing(ft): 2144353.56 **Easting(ft):** 5747766.78

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
82		***Poorly Graded Sand*** Moderate yellowish brown, saturated, slightly dense, fine to medium sand, slightly silty			90	20/25/30	0.0		
84									
86					100	12/50	0.0		
88									
90		***Poorly Graded Sand*** Moderate yellowish brown, saturated, slightly dense, fine to medium sand, slightly silty			100	12/47	0.1		
92									
94		***Poorly Graded Sand*** Moderate yellowish brown, saturated, slightly dense, fine to medium sand, slightly silty	SP						
96					90	22/30	0.0		
98									
100		***Poorly Graded Sand*** Moderate yellowish brown, saturated, slightly dense, fine to medium sand, slightly silty			100	47/50	0.0		
102									
104		***Poorly Graded Sand*** Moderate yellowish brown, saturated, slightly dense, fine to medium sand, slightly silty							
106					100	40/50	0.0		
108				15					
110		***Silty Sand*** Light olive gray, very moist, stiff, mostly fine sand (70%) with 30% silt and clay			10	45/50	0.0		
112									
114		***Poorly Graded Silty Sand*** Moderate yellowish brown, saturated, slightly dense, fine to coarse sand, 20% silt	SM						
116					10	42/47	0.0		
118				6					
120									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 122'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-49-A1
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 1 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144353.56

Corresponding Well ID: PZ-OU1-49-A1
Date: 7/7/2004
Geologist: D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 124.46
Easting(ft): 5747766.78

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
122		***Clay*** Dark gray, moist, very dense, slightly silty	CL	2	10	50/50/50	0.0		Total depth was reached at 1435 hrs. on 7/7/04 No grab groundwater sample collected.
124									
126									
128									
130									
132									
134									
136									
138									
140									
142									
144									
146									
148									
150									
152									
154									
156									
158									
160									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 122'
Sheet 4 of 4

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # MW-OU1-86-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,144,285.082 5,747,414.248

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
☒ Ground Water Monitoring
☐ Vapor Extraction
☐ Vadose Zone
☐ Piezometer
☐ Soil Boring/Core Sampling
☐ Cathodic Protection Well
☒ Other See Well Log

Location of well Seals: (ft) ____

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft):
Filter pack (ft):

DRILLING METHOD
☐ Rotary
☐ Cable
☐ Dug
☐ Other ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use	☐-To be abandoned
☐-Inactive	☐-To supplement new well
☒-Abandoned	☐-To be LEFT inactive
	☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-126.0 ft
Materials to be used: Bentonite Grout
Location of screens or perforations: 76.0-126.0
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one: Professional Geologist/C~~a~~ Engineer

Print Name Laura McNamara

Certification Number CH 6526

Monterey County Health Dept – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 · Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/Environmentalhealth

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-86A

Corresponding Well ID: MW-OU1-86-A Sheet 1 of 4

Project Name: Fort Ord OU1-FONR Drilling	**Project Number:** OMA009-201-01-07-02-01	**Location:** Fort Ord Natural Reserve	**Client:** US Army Corps of Engineers
Drilling Company: WDC	**Driller:** Ralph/Alberto	**Date / Time Drilling Started:** 7-Aug-06 / 1:20 P.M.	**Date / Time TD Reached:** 10-Aug-06 / 9:15 AM
Drilling Equipment: CME 85	**Sampling Device:** Calif. Mod. Split Spoon	**Geologist:** J. Alt	**Checked By:** Michael J. Bombard, P.G., C.HG.
Drilling Method: H. S. Auger		**Borehole Diameter:** 8 - 12.25 in.	**Total Depth Drilled:** 126.5 (ft)
Well Depth 126			
Screen: Dia. 6 Length: 50 (ft) Type/Size: 0.01"		**Water Level (bgs):** first: (ft)	final: (ft)
Casing: Dia. 6 Length: 76 (ft) Type/Size: S. 40			
Ground Surface Elevation (ft msl): 129.21	**Northing:** 2144285.082	**Easting:** 5747414.248	

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		Silty sand, brown (7.5YR 3/4), dry, very fine-grained sand, sub-angular to sub-rounded, loose, organic.	SM	129.21					Plug in 8" augers, unable to detect 1st water.
10		Sand, yellowish-brown (10YR 5/6), moist, very fine to fine-grained, no fines, loose, poorly sorted.	SP	120.21			0.0		No Odor
20		As Above		109.21			0.0		
30		As Above		99.21			0.0		
40									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-86A

Corresponding Well ID: MW-OU1-86-A

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As Above - Sand, yellowish-brown (10YR 5/6), moist, very fine to fine-grained, no fines, loose, poorly sorted.	SP	89.21			0.0		
50		As Above	SP	79.21					
60		As Above	SP	69.21			0.0		
70		As Above	SP	59.21			0.0		
80									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-86A

Corresponding Well ID: MW-OU1-86-A

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		Sand, yellowish brown (10YR 5/6), wet, fine to very fine grained sand, loose, no fines, sub-angular.	SP	49.21	100	9 12 13	0.0		No Odor
		Sand, light yellowish brown (2.5 Y 5/6), wet, fine-grained, loose.	SP	44.21	100	4 9 15			No Odor
90		Sand, light brown (7.5YR 4/5), wet, very fine-grained locally w/ reddish-brown mottling.	SP	39.21	100	3 7 13	0.0		No Odor
		Sand, yellowish brown (10YR 5/6), wet, fine-grained, no fines, loose.	SP	34.21	100	11 14 16			No Odor
100		As Above	SP	29.21	100	8 12 19	0.0		No Odor
		As Above	SP	24.21	100	10 13 17			No Odor
110		As Above	SP	19.21					No Odor
		Sand, light brown (10YR 7/3), wet, fine-grained, loose, sub-angular to sub-rounded, poorly graded.	SP	14.21		13 24 31			No Odor
120									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-86A

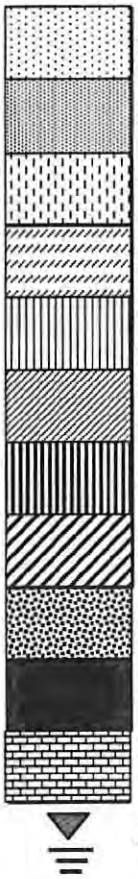
Corresponding Well ID: MW-OU1-86-A

Sheet 4 of 4

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As Above	SP	9.21		18 21 27 19 23	0.0		No odor
		Clay, very dark greenish gray (5G 3/1) wet, plastic		3.21		33			No odor
130									
140									
150									
160									

Boring Log Legend



SP = Poorly-graded Sands, Clean Sands, Little or no fines

SW = Well-graded Sands, Gravelly Sands, Little or no fines

SM = Silty-Sands, Sand-Silt Mixtures

SC = Clayey Sands, Sand-Silt Mixtures

ML = Inorganic Silts and Very Fine Sands, Silty or Clayey Fine Sands or Clayey Silts with Slight Plasticity

CL = Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays

MH = Inorganic Silt, micaceous or diatomaceous fine Sand or Silty Soils

CH = Inorganic Clays of high plasticity, fat Clays

Gravels

Shale

Limestone

Groundwater Elevation

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # MW-OU1-27-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,144,578.100 5,747,460.400

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
☒ Ground Water Monitoring
☐ Vapor Extraction
☐ Vadose Zone
☐ Piezometer
☐ Soil Boring/Core Sampling
☐ Cathodic Protection Well
☒ Other See Well Log

PROPOSED SPECIFICATIONS	
Depth (ft):	
Diameter (in):	
Width seal (in):	
Depth perforations:	

CASING	
Single/Double:	
Material:	
Type of joint:	
Gravel Pack (ft):	
Filter pack (ft):	

DRILLING METHOD
☐ Rotary
☐ Cable
☐ Dug
☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ☒-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-89.8 ft
Materials to be used: Bentonite Grout
Location of screens or perforations: 55.0-85.0 ft
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor: Rick Alcartado

Laura McNamara

Circle one: Professional Geologist/~~Civil~~ Engineer

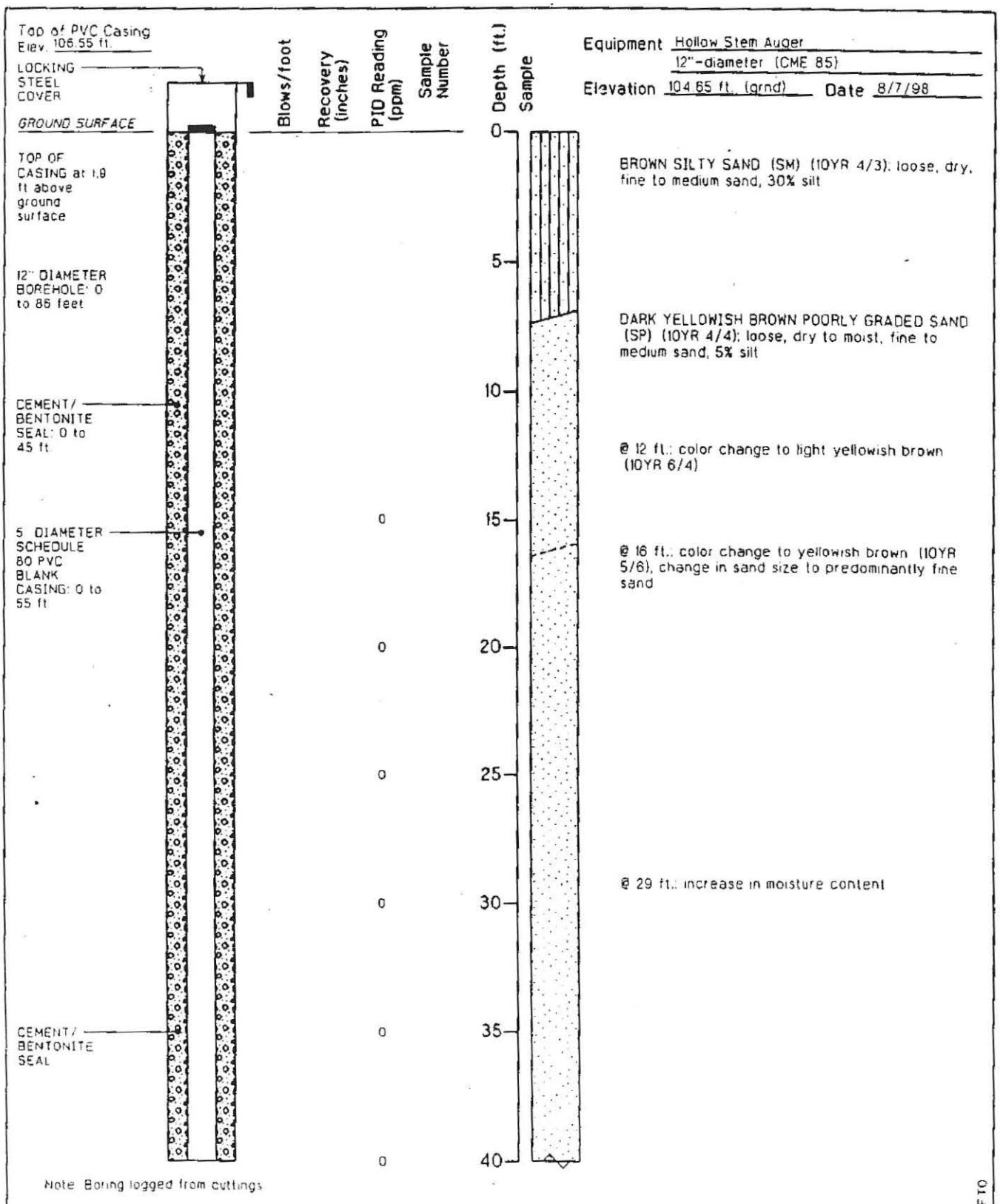
Print Name: Laura McNamara

Certification Number: CH6526

Mail your MW SB application packet along with your check to:

Monterey County Health Dept. – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth



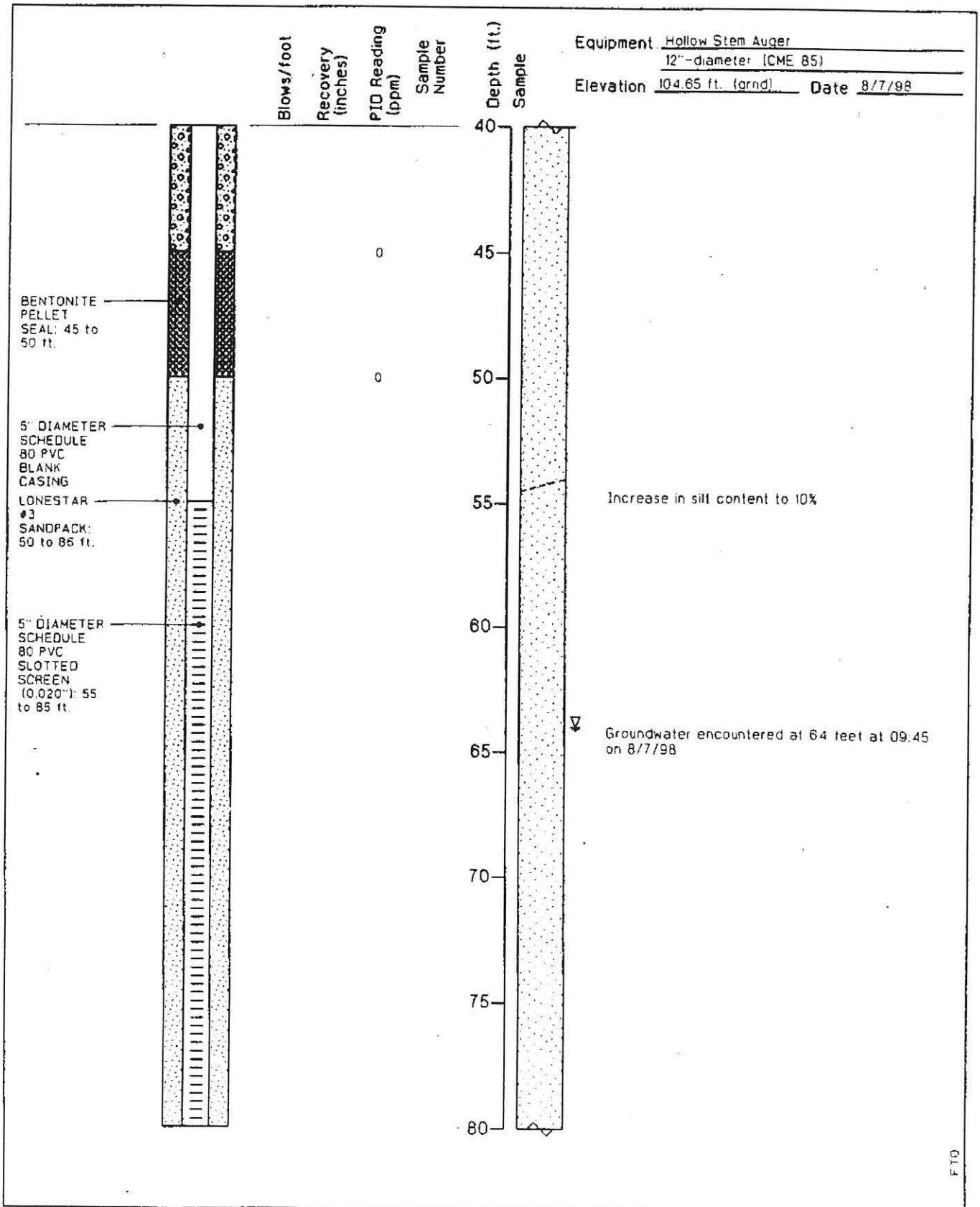
Harding Lawson Associates
Engineering and Environmental Services

Log of Boring and Well Completion MW-OU1-27-A PLATE

Phase IV Plume Delineation Report
Operable Unit 1
Fort Ord, California

A3

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
CEG	38269 00141		9/98	



Herding Lawson Associates
Engineering and Environmental Services

Log of Boring and Well Completion MW-OU1-27-A

PLATE A3

Phase IV Plume Delineation Report
Operable Unit 1
Fort Ord, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
CEG	38269 00141		9/98	

Equipment Hollow Stem Auger
12"-diameter (CME 85)

Elevation 104.65 ft. (grnd) Date 8/7/98

Depth (ft.)	Sample	Blows/foot	Recovery (inches)	PID Reading (ppm)	Sample Number
80					
85					
90					
95					
100					
105					
110					
115					
120					

5" DIAMETER SILT TRAP: 85 to 85.5 ft

BOTTOM OF WELL CAP: 85.5 ft.

HOLE CLEANED OUT TO 86 ft.

BOTTOM OF BOREHOLE: 86.5 ft.

OLIVE GRAY LEAN CLAY WITH SAND (CL) (5Y 4/2): firm, wet, 30% fine sand

Bottom of boring at 86.5 feet. Converted to Monitoring Well MW-OU1-27-A on 8/10/98.

FTO

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring and Well Completion MW-OU1-27-A

Phase IV Plume Delineation Report
Operable Unit 1
Fort Ord, California

PLATE **A3**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
CEG	38269 00141		9/98	

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING

One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # EW-OU1-72-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: _____

Physical Address of site: Coordinates: 2,144,576.724 5,747,243.822

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:

1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☒ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☒ Other See Well Log

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft):
Filter pack (ft):

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other _____

Location of well Seals: (ft) _____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ☒-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-108.5 ft
Materials to be used: Bentonite Grout
Location of screens or perforations: 61.0-111.0
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one: Professional Geologist/~~Civil~~/Engineer (circled: Engineer)

Print Name: Laura McNamara

Certification Number: CH 6526

Mail one MW/SB application package along with your check to:

Monterey County Health Dept. – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 · Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SB OU1-72-A

Corresponding Well ID: EW-OU1-72-A

Sheet 1 of 3

Project Name: Fort Ord OU1-FONR Drilling	**Project Number:** OMA009-201-01-07-02-01	**Location:** Fort Ord Natural Reserve	**Client:** US Army Corps of Engineers
Drilling Company: WDC	**Driller:** Gerald/Jeff	**Date / Time Drilling Started:** 2-Aug-06 / 5:30 P.M.	**Date / Time TD Reached:** /
Drilling Equipment: CME 85	**Sampling Device:** Calif. Mod. Split Spoon	**Geologist:** J. Alt	**Checked By:** Michael J. Bombard, P.G., C.HG.
Drilling Method: Hollow Stem Auger		**Borehole Diameter:** 8 -12.25 in.	**Total Depth Drilled:** 111 (ft)
Well Depth 111'			
Screen: Dia. 6" Length: 50 (ft) Type/Size: 0.01		**Water Level (bgs):** first: (ft) final: (ft)	
Casing: Dia. 6" Length: 58.5 (ft) Type/Size: S. 80			
Ground Surface Elevation (ft msl): 114.69	**Northing:** 2144576.724	**Easting:** 5747243.822	

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		Silty sand, medium brown (7.5YR 4/2) dry, very fine grained, organic, unconsolidated.	SM						No Odor
10		Sand, reddish brown (5YR 4/3), moist, very fine-grained, loose.	SP				0.0		No Odor
20		Sand, yellowish-brown (10YR 4/4), moist, fine grained, well-sorted.	SP				0.0		No Odor
30		As Above					0.0		No Odor
40									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SB OU1-72-A

Corresponding Well ID: EW-OU1-72-A

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As Above	SP				0.0		No Odor
50		As Above	SP				0.0		No Odor
60		As Above	SP						
								▽	
70		As Above	SP						
80									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SB OU1-72-A

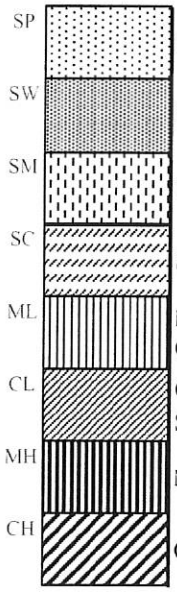
Corresponding Well ID: EW-OU1-72-A

Sheet 3 of 3

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		Sand, yellowish brown (10YR 5/4), wet. Loose, poorly graded, fine-grained. Grains sub-angular to sub-rounded. No fines.	SP		100	4 7 20	0.0		No Odor
		As Above	SP		100	7 11 22			No Odor
90		As Above	SP		100	3 8 20	0.0		No Odor
		As Above	SP		100	5 14 24			No Odor
100		Sand, yellow-brown (10YR 5/4), wet, 10% Fines, fine-grained.	SP		100	4 5 9	0.0		No Odor
		Sand, yellow-brown (10YR 6/4), wet, fine to medium-grained, no fines				10 16 19			No Odor
110						4 9 17	0.0		No Odor
		Clay, Gray (5YR 5/1), moist, plastic Bottom of boring at 111'							Very sharp contact at 111'
120									

Boring and Well Log Legend



SP = Poorly-graded Sands, Clean Sands, Little or no fines

SW = Well-graded Sands, Gravelly Sands, Little or no fines

SM = Silty-Sands, Sand-Silt Mixtures

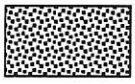
SC = Clayey Sands, Sand-Silt Mixtures

ML = Inorganic Silts and Very Fine Sands, Silty or Clayey Fine Sands or Clayey Silts with Slight Plasticity

CL = Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays

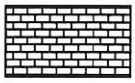
MH = Inorganic Silt, micaceous or diatomaceous fine Sand or Silty Soils

CH = Inorganic Clays of high plasticity, fat Clays

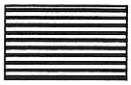


Gravels

Shale



Limestone



Well Screen

Groundwater Elevation

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # MW-OU1-84-A

✓- **Monitoring Well -** *Fee $407.00 ea.* ☐-Construction ■-Abandonment/Destruction

✓- **Soil Boring -** *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,144,683.376 5,746,730.867

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ■ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ■ Other See Well Log

PROPOSED SPECIFICATIONS	
Depth (ft):	
Diameter (in):	
Width seal (in):	
Depth perforations:	

CASING	
Single/Double:	
Material:	
Type of joint:	
Gravel Pack (ft):	
Filter pack (ft):	

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ■-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

■ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-127.0 ft
Materials to be used: Bentonite Grout
Location of screens or perforations: 80.5-130.5
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one: Professional Geologist/~~Civil~~ Engineer

Print Name: Laura McNamara

Certification Number: CH 6526

Mail your MW SB application packet along with your check to:

Monterey County Health Dept. – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth

HGL HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-84A

Corresponding Well ID: MW-OU1-84-A Sheet 1 of 4

Project Name: Fort Ord-OU1-Summer 2006 Drilling	**Project Number:** OMA009-201-01-07-02-01	**Location:** Fort Ord Natural Reserve	**Client:** US Army Corps of Engineers
Drilling Company: WDC	**Driller:** Ralph	**Date / Time Drilling Started:** 18-Aug-06 / 8:05 A.M.	**Date / Time TD Reached:** 18-Aug-06 / 11:15 A.M.
Drilling Equipment: CME 85	**Sampling Device:** Calif Modified Split Spoon	**Geologist:** J. Alt	**Checked By:** Michael J. Bombard, P.G., C.HG.
Drilling Method: Auger		**Borehole Diameter:** 10 1/4 in.	**Total Depth Drilled:** 131.5 (ft)
Well Depth 127'		**Water Level (bgs):**	
Screen: Dia. 4" Length: 50 (ft) Type/Size: 0.01"		first: (ft)	final: (ft)
Casing: Dia. 4" Length: 77 (ft) Type/Size: S. 40			
Ground Surface Elevation (ft msl): 133.61		**Northing:** 2144683.376	**Easting:** 5746730.867

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		Silty sand, reddish-brown (5YR 4/2), dry very fine-grained, loose, organic, ~70% sand 30% silt.	SM	133.61					Drilled to 90' with plugged 10 1/4" augers
10		Sand w/silt, yellowish brown (7.5 YR 5/6), moist, medium-grained, <10% silt.	SP SM	124.61			0.0		PID On Cuttings
		Sand, yellowish brown (10YR 5/6), moist, fine-grained, loose, poorly graded, no fines.	SP	117.61			0.0		PID On Cuttings
20		As Above	SP	113.61			0.0		PID On Cuttings
30		As Above	SP	103.61			0.0		PID On Cuttings
40									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-84A

Corresponding Well ID: MW-OU1-84-A

Project Name:	Project Number:	Location:	Client:
Fort Ord-OU1-Summer 2006 Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As Above	SP	93.61			0.0		PID On Cuttings
50		As Above	SP	83.61			0.0		PID On Cuttings
60		Sand, yellowish-brown (10YR 6/6), moist, loose, sub-angular to sub-rounded.	SP	73.61			0.0		PID On Cuttings
70		As Above	SP	63.61			0.0		PID 0.0 On Cuttings
80									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-84A

Corresponding Well ID: MW-OU1-84-A

Sheet 3 of 4

Project Name:	Project Number:	Location:	Client:
Fort Ord-OU1-Summer 2006 Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		Same As Above	SP	53.61			0.0		PID on cuttings
90		Sand, light-brown (10YR 6/3), saturated, very	SP	43.61	100	7 10 15	0.0		No Odor
		Sand, yellowish-brown (10YR 5/6), wet, fine-grained, poorly sorted, no fines, loose, subangular to subrounded.	SP	39.11	100	8 8 14			No Odor
100		As Above	SP	33.61	100	10 12 15	0.0		No Odor
		As Above	SP	28.61	100	10 12 14			No Odor
110		As Above	SP	23.61	100	12 17 17	0.0		No Odor
		Sandy clay, light-brown (10YR 6/2), moist, non-plastic	SC	17.61	100	12 15 17			No Odor Sharp Contact
120									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-84A

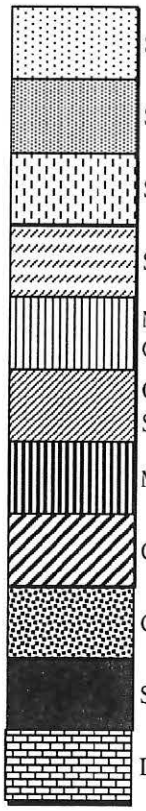
Corresponding Well ID: MW-OU1-84-A

Sheet 4 of 4

Project Name:	Project Number:	Location:	Client:
Fort Ord-OU1-Summer 2006 Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		Sand, light-brown (10YR 6/3), saturated, medium-grained, loose, no fines, poorly sorted.	SP	13.61	100	9 12 13	0.0		No Odor
		As Above	SP	8.61	80	12 17 18			
130						19			No Odor
		Clay, greenish gray (10 BG 5/1), moist, plastic.		3.11		27 32	0.0		Well set at 127', lost 3' to sand
140									
150									
160									

Boring and Well Log Legend



SP = Poorly-graded Sands, Clean Sands, Little or no fines

SW = Well-graded Sands, Gravelly Sands, Little or no fines

SM = Silty-Sands, Sand-Silt Mixtures

SC = Clayey Sands, Sand-Silt Mixtures

ML = Inorganic Silts and Very Fine Sands, Silty or Clayey Fine Sands or Clayey Silts with Slight Plasticity

CL = Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays

MH = Inorganic Silt, micaceous or diatomaceous fine Sand or Silty Soils

CH = Inorganic Clays of high plasticity, fat Clays

Gravels

Shale

Limestone

Groundwater Elevation

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # MW-OU1-83-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,144,908.009 5,746,717.940

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☒ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☒ Other See Well Log

PROPOSED SPECIFICATIONS	
Depth (ft):	
Diameter (in):	
Width seal (in):	
Depth perforations:	

CASING	
Single/Double:	
Material:	
Type of joint:	
Gravel Pack (ft):	
Filter pack (ft):	

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ☒-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-123.0 ft
Materials to be used: Bentonite Grout
Location of screens or perforations: 73.0-123.0
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one Professional Geologist/~~Civil~~ Engineer

Print Name Laura McNamara

Certification Number CH 6526

Mail your MW-SB application package with your check to:

Monterey County Health Dept – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth

HGL HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-83A

Corresponding Well ID: MW-OU1-83-A

Sheet 1 of 4

Project Name: Fort Ord OU1-FONR Drilling	**Project Number:** OMA009-201-01-07-02-01	**Location:** Fort Ord Natural Reserve	**Client:** US Army Corps of Engineers
Drilling Company: WDC	**Driller:** Ralph/Alberto	**Date / Time Drilling Started:** 21-Aug-06 / 11:15 A.M.	**Date / Time TD Reached:** 21-Aug-06 / 1:55 P.M.
Drilling Equipment: CME 85	**Sampling Device:** Calif. Modified Split Spoon	**Geologist:** J. Alt.	**Checked By:** Michael J. Bombard, P.G., C.HG.
Drilling Method: Auger		**Borehole Diameter:** 10 in.	**Total Depth Drilled:** 125.5 (ft)
Well Depth 123			
Screen: Dia. 4" Length: 50 (ft) Type/Size: 0.01		**Water Level (bgs):**	
Casing: Dia. 4" Length: 73 (ft) Type/Size: S. 40		first: (ft)	final: (ft)
Ground Surface Elevation (ft msl): 127.38		**Northing:** 2144683.376	**Easting:** 5746730.867

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		Silty sand, medium-brown (7.5YR 4/3), dry, fine-grained, organic, loose.	SM	127.38					Drilling to 90' with plugged 10" Auger
10		Sand, yellowish brown (10YR 6/4) dry, moist, fine-grained, loose, sub-angular to sub-rounded.	SP	118.38			0.0		PID on Cuttings
20		As Above	SP	107.38			0.0		PID on Cuttings
30		As Above	SP	97.38			0.0		PID on Cuttings
40									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-83A

Corresponding Well ID: MW-OU1-83-A

Sheet 2 of 4

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As Above	SP	87.38			0.0		PID on Cuttings
50		As Above	SP	77.38			0.0		PID on Cuttings
60		As Above	SP	67.38			0.0		PID on Cuttings
70		As Above	SP	57.38			0.0		PID on Cuttings
80									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-83A

Corresponding Well ID: MW-OU1-83-A

Sheet 3 of 4

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As Above	SP	47.38			0.0		PID on Cuttings
90		As Above	SP	37.38	0	3 7 16			Lost Sample
		Sand, yellowish-brown (10YR 5/6), moist, wet, fine-grained, loose, poorly sorted, no fines, sub-angular to sub-rounded.	SP	32.38	100	8 13 14	0.0		No Odor
100		As Above	SP	27.38	100	9 12 14	0.0		No Odor
		Color change to yellowish-brown (10YR 5/4) wet	SP	22.38	100	10 13 15	0.0		No Odor
110		Clayey silt, light brown (2.5Y 5/4), wet, non-plastic, w/ very fine sand.	ML	17.38		12 17 19	0.0		No Odor
		Light brown sand (10YR 6/3) saturated, loose. Sub-angular to sub-rounded, poorly sorted.	SP	11.38		12 12 14			No Odor
120									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-83A

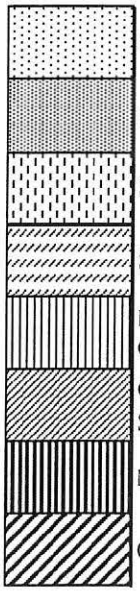
Corresponding Well ID: MW-OU1-83-A

Sheet 4 of 4

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As above	SP			4			
		Silt, light brown, wet.	ML	6.88		18 21		0.0	No Odor
		Clay, bluish gray (5B 5/1), wet, medium plasticity.	CL	4.38		18 23 30			Set well at 123' Slight non-chemical odor, organic
		Bottom of boring at 125.5'							
130									
140									
150									
160									

Boring and Well Log Legend



SP = Poorly-graded Sands, Clean Sands, Little or no fines

SW = Well-graded Sands, Gravelly Sands, Little or no fines

SM = Silty-Sands, Sand-Silt Mixtures

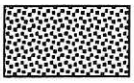
SC = Clayey Sands, Sand-Silt Mixtures

ML = Inorganic Silts and Very Fine Sands, Silty or Clayey Fine Sands or Clayey Silts with Slight Plasticity

CL = Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays

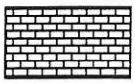
MH = Inorganic Silt, micaceous or diatomaceous fine Sand or Silty Soils

CH = Inorganic Clays of high plasticity, fat Clays

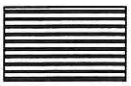


Gravels

Shale



Limestone



Well Screen

Groundwater Elevation

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # MW-OU1-82-A

✓- **Monitoring Well -** *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring -** *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,144,952.025 5,746,360.764

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☒ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☒ Other See Well Log

Location of well Seals: (ft) ____

PROPOSED SPECIFICATIONS	
Depth (ft):	
Diameter (in):	
Width seal (in):	
Depth perforations:	

CASING	
Single/Double:	
Material:	
Type of joint:	
Gravel Pack (ft)	
Filter pack (ft):	

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Existing Wells on property: **Check one**

Condition of other wells on property
- ☐-In use
- ☐-Inactive
- ☒-Abandoned

Indicate intentions for use of replaced well
- ☐-To be abandoned
- ☐-To supplement new well
- ☐-To be LEFT inactive
- ☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-123.0 ft
Materials to be used: Bentonite Grout
Location of screens or perforations: 73.0-123.0 f
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner: William K. Collins

Drilling Contractor: Rick Alcartado

Laura McNamara

Circle one: Professional Geologist/~~Civil~~ Engineer

Print Name: Laura McNamara

Certification Number: CH 6526

Mail your MW-SB application packet along with your check to:

Monterey County Health Dept – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth

HGL HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SB-OU1-82A

Corresponding Well ID: MW-OU1-82-A

Sheet 1 of 4

Project Name: Fort Ord OU1-FONR Drilling	**Project Number:** OMA009-201-01-07-02-01	**Location:** Fort Ord Natural Reserve	**Client:** US Army Corps of Engineers
Drilling Company: WDC	**Driller:** Ralph	**Date / Time Drilling Started:** 23-Aug-06 / 11:00 A.M.	**Date / Time TD Reached:** 23-Aug-06 / 1:40 P.M.
Drilling Equipment: CME 85	**Sampling Device:** Calif. Mod. Split Spoon	**Geologist:** Jack Alt	**Checked By:**
Drilling Method: Auger		**Borehole Diameter:** 10 1/4 in.	**Total Depth Drilled:** 125.5 (ft)
Well Depth 123			
Screen: Dia. Length: (ft) Type/Size:		**Water Level (bgs):** first: 83 (ft) final: (ft)	
Casing: Dia. Length: (ft) Type/Size:			
Ground Surface Elevation (ft msl): 126.08		**Northing:** 2144952.025	**Easting:** 5746360.764

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		Silty sand, medium brown, dry, loose, very fine-grained, organic.	SM	126.08					Drilling to 90' with plugged 10'4" augers
10		Sand, yellowish-brown (10YR 5/6), moist. Loose, poorly sorted, no fines, sub-angular to sub-rounded.	SP	119.08			0.0		PID on cuttings
20		As above	SP	106.08			0.0		PID on cuttings
30		As above	SP	96.08			0.0		PID on cuttings
40									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SB-OU1-82A

Corresponding Well ID: MW-OU1-82-A

Sheet 2 of 4

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As above	SP	86.08			0.0		PID on cuttings
50		As above	SP	76.08			0.0		PID on cuttings
60		As above	SP	66.08			0.0		PID on cuttings
70		As above	SP	56.08			0.0		PID on cuttings
80									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SB-OU1-82A

Corresponding Well ID: MW-OU1-82-A

Sheet 3 of 4

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As above	SP	46.08			0.0		PID on cuttings
								▽	First water at 83'
90		As above	SP	36.08	100	6 9 9	0.0		No Odor
		As above	SP	31.08	100	10 12 17	0.0		No Odor
100		As above	SP	26.08	100	7 9 13	0.0		No Odor
		Clayey sand, light-brown, wet, very fine-grained.	SC	20.58	100	11 13 19			No Odor
110		Clayey silt, medium-brown (10YR 4 3), wet, with 3" lens of coarse-grained sand.	ML	16.08	80	10 9 12	0.0		No Odor
		color change to brown (7.5YR 5 2), no sand lens	ML	11.08	80	14 19 22			No Odor
		Silty clay, grayish brown (10YR 5 2), moist, moderate plasticity	CL	5.08					
120									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SB-OU1-82A

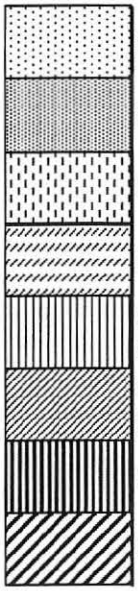
Corresponding Well ID: MW-OU1-82-A

Sheet 4 of 4

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As Above	CL	6.08	60	17 21 23	0.0		No Odor
		Clay, blue-green w/silt, wet, slightly plastic	CL	3.08		15 23 29			Contact with SVA at 123' No Odor Bottom of boring at 125.5'
130									
140									
150									
160									

Boring and Well Log Legend



SP = Poorly-graded Sands, Clean Sands, Little or no fines

SW = Well-graded Sands, Gravelly Sands, Little or no fines

SM = Silty-Sands, Sand-Silt Mixtures

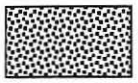
SC = Clayey Sands, Sand-Silt Mixtures

ML = Inorganic Silts and Very Fine Sands, Silty or Clayey Fine Sands or Clayey Silts with Slight Plasticity

CL = Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays

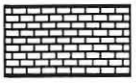
MH = Inorganic Silt, micaceous or diatomaceous fine Sand or Silty Soils

CH = Inorganic Clays of high plasticity, fat Clays

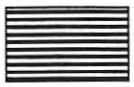


Gravels

Shale



Limestone



Well Screen

Groundwater Elevation

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # MW-OU1-50-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ■-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,144,999,.072 5,746,101.724

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ■ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ■ Other See Well Log

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft)
Filter pack (ft):

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ■-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

■ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-111.2 ft
Materials to be used: Bentonite Grout
Location of screens or perforations. 80.0-110.0
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner: William K. Collins

Drilling Contractor: Rick Alcartado

Laura McNamara

Circle one: Professional Geologist/~~Civil~~ Engineer

Print Name: Laura McNamara

Certification Number: CH 6526

Mail your MW-SB application packet along with your check to:

Questions (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth

Monterey County Health Dept. – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-2004-B
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 1 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144999.07

Corresponding Well ID: MW-OU1-50-A
Date: 7/13/2004
Geologist: D. Kremer
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 108.47
Easting(ft): 5746101.72

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
2		***Poorly Graded Sand*** Brown (7.5YR 5/2), dry, very loose, very fine to medium sand with some coarse material, subround to round, with silt, no cementation, non-plastic							Drilling began at 0900 hrs. on 7/13/04 5% coarse 50% medium 30% fine 10% very fine 5% silt
20		***Poorly Graded Sand*** Pinkish gray (7.5YR 6/2), dry, very loose, fine to medium sand with some coarse material, subround to round, with silt, no cementation, non-plastic	SP						5% coarse 60% medium 20% fine 10% very fine 5% silt

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 8"
Total Depth Drilled: 111'
Sheet 1 of 3

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-2004-B
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 1 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144999.07

Corresponding Well ID: MW-OU1-50-A
Date: 7/13/2004
Geologist: D. Kremer
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 108.47
Easting(ft): 5746101.72

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
42		***Poorly Graded Sand*** Pinkish gray (7.5YR 6/2), dry, very loose, fine to medium sand with some very fine sand and coarse material, subround to round, trace silt, no cementation, non-plastic							50% medium 35% fine 15% very fine trace silt
44									
46									
48									
50		***Poorly Graded Sand*** Pinkish gray (7.5YR 6/2), dry, very loose, fine to medium sand with some very fine sand and coarse material, subround to round, trace silt, no cementation, non-plastic							5% coarse 50% medium 30% fine 10% very fine 5% silt
52									
54									
56									
58									
60			SP						
62									
64									
66		***Poorly Graded Sand*** Yellowish brown (10YR 5/4), dry, very loose, fine to medium sand with some very fine sand and coarse material, subround to round, trace silt, no cementation, non-plastic							5% coarse 40% medium 30% fine 20% very fine 5% silt
68									
70									
72									
74									
76									Saturated at 78 feet bgs. 30% medium 40% fine 20% very fine 10% silt
78								▽	
80				28					

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 111'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-2004-B
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 1 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144999.07

Corresponding Well ID: MW-OU1-50-A
Date: 7/13/2004
Geologist: D. Kremer
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 108.47
Easting(ft): 5746101.72

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
82		***Silty Sand*** Yellowish brown (10YR 5/4), saturated, very loose, fine to very fine sand with silt, medium sand is subround to round, no cementation, no plasticity to low plasticity with depth	SM		100	18/22/26			Sieve analysis (80-81.5' soil sample).
84									
86					100	18/20/22			10% medium 30% fine 40% very fine 20% silt
88									
90					100	20/20/27			
92									
94		***Silty Sand*** Yellowish brown (10YR 5/4), saturated, very loose, fine to very fine sand with silt, medium and fine sand is subround to round, no cementation, no plasticity to low plasticity with depth							40% fine 30% very fine 30% silt trace clay
96					100	21/24/27			
98									
100					100	14/12/20			[Collected groundwater sample @ 105' bgs - MW-OU1-2004-B]. Sieve analysis (100-101.5' soil sample).
102									
104				3					
106		***Silty Clay*** Grayish brown (10YR 5/2), moist, stiff, primarily clay with silt, trace fine to very fine sand, no cementation, low to medium plasticity	CL		100	16/18/20			trace fine 5% very fine 95% silt/clay
108									
110				-3	100	17/19/21			Total depth was reached at 1400 hrs on 7/13/04
112									
114									
116									
118									
120									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 111'
Sheet 3 of 3

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # PZ-OU1-02-A1

✓- **Monitoring Well -** *Fee $407.00 ea.* ☐-Construction ■-Abandonment/Destruction

✓- **Soil Boring -** *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,144,099.970 5,748,088.780

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ■ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ■ Other See Well Log

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft):
Filter pack (ft):

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ■-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

■ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-137.0 ft
Materials to be used: Bentonite Grout
Location of screens or perforations. 90.0-130.0
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner _____

Drilling Contractor: Rick Alcartado

Laura McNamara

Circle one: Professional Geologist/~~Civil~~ Engineer

Print Name: Laura McNamara

Certification Number: CH 6526

Monterey County Health Dept – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth/

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-02-A1
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144099.97

Corresponding Well ID: PZ-OU1-02-A1
Date: 10/18/2004
Geologist: Dave Kremer
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 131.75
Easting(ft): 5748088.78

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
2		***Poorly Graded Sand*** Brown (7.5YR 5/3), dry, very loose, no cementation, subround, coarse to very fine sand							Drilling began at 1350 hrs. on 10/18/04
4									
6							0.0		5% coarse 80% medium 15% fine to very fine trace silt
8									
10									
12									
14									
16		***Poorly Graded Sand*** Brown (7.5YR 5/4), dry, very loose, no cementation, subround to round, coarse to very fine sand					0.0		10% coarse 75% medium 15% fine to very fine Trace silt
18									
20			SP						15% coarse 75% medium 10% fine no silt
22									
24									
26		***Poorly Graded Sand*** Light brown (7.5YR 6/4), dry, very loose, no cementation, subround to round, coarse to very fine sand					0.1		10% coarse 80% medium 10% fine
28									
30									15% coarse 70% medium 15% fine to very fine trace silt
32									
34									
36		***Poorly Graded Sand*** Light brown (7.5YR 6/4), dry, very loose, no cementation, subround to round, coarse to very fine sand					0.0		
38									
40									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 8"
Total Depth Drilled: 137'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-02-A1
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144099.97

Corresponding Well ID: PZ-OU1-02-A1
Date: 10/18/2004
Geologist: Dave Kremer
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 131.75
Easting(ft): 5748088.78

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
42		***Poorly Graded Sand*** Light brown (7.5YR 6/4), dry, very loose, no cementation, subround to round, coarse to very fine sand	SP						15% coarse 75% medium 10% fine no silt
44									
46		***Poorly Graded Sand*** Brown (7.5YR 5/3), dry, moist, no cementation, subround to round, coarse to very fine sand					0.0		15% coarse 75% medium 10% fine
48									
50									10% coarse 80% medium 10% fine
52				79					
54		***Poorly Graded Sand with Silt*** Brown (7.5YR 5/4), moist to saturated, loose to medium dense, subround to round, no cementation, non-plastic, coarse to very fine sand					0.0		20% coarse 65% medium 10% fine - very fine 5% silt
56									
58									
60			SP / SM						
62				69					
64		***Poorly Graded Sand*** Brown (7.5YR 5/3), moist, medium dense, subround to round, no cementation, coarse to very fine sand, trace silt					0.1		10% coarse 75% medium 15% fine - very fine Trace Silt
66									
68									
70		***Poorly Graded Sand*** Brown (7.5YR 4/4), moist, medium dense, no cementation, subround to round, coarse to fine sand	SP						10% coarse 80% medium 10% fine no silt
72									
74									
76							0.0		
78									
80								▽	Saturated at 80 feet bgs

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 137'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-02-A1
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144099.97

Corresponding Well ID: PZ-OU1-02-A1
Date: 10/18/2004
Geologist: Dave Kremer
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 131.75
Easting(ft): 5748088.78

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
82		***Poorly Graded Sand*** Brown (7.5YR 4/3), saturated, medium dense to loose, no cementation, subround to round, coarse to fine sand	SP				0.0		20% coarse 70% medium 10% fine no silt
84									
86									
88				44					
90		***Silty Sand*** Brown (7.5YR 5/3), saturated, medium dense, no cementation, non-plastic, mediud to very fine sand, trace coarse sand, silt, no clay	SM		100	3/10/12			Trace Coarse 60% medium 25% fine - very fine 15% silt/no clay
92				39					
94		***Poorly Graded Sand with Silt*** Brown (7.5YR 4/3), saturated, medium dense, subround to round, no cementation, non-plastic, coarse to very fine sand, with silt					0.0		
96									
98									
100			SP / SM		100	9/20/22			5% coarse 70% medium 20% fine - very fine 5% silt
102									
104									
106				26			0.0		
108		***Silty Sand*** Gray (7.5YR 5/1), saturated, no cementation, non-plastic, medium to very fine sand, silt/clay	SM						
110					100	7/16/20			30% medium 20% fine - very fine 40% silt 10% clay
112				19					
114		***Sandy Silt*** Gray, saturated, dense, medium to very fine sand	ML	17					
116		***Clayey Silt***			100	14/27/42			10% medium 60% fine - very fine 25% silt 5% clay
118			SP / SM	12					
120									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 137'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-02-A1
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144099.97

Corresponding Well ID: PZ-OU1-02-A1
Date: 10/18/2004
Geologist: Dave Kremer
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 131.75
Easting(ft): 5748088.78

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
122		***Silty Sand with Clay*** Gray (7.5YR 5/1), saturated, very dense, no cementation, non-plastic, medium to very fine sand; silt with clay	SP / SM	7	100	21/40/54			5% coarse 70% medium 20% fine - very fine 5% silt / no clay
124									
126		***Poorly Graded Sand with Silt*** Brown (7.5YR 5/2), saturated, very dense, round, no cementation, medium to very fine sand; silt; no clay	SW	3	100	26/47/53			30% coarse 40% medium 30% fine
128									
130		***Well Graded Sand*** Pinkish gray (7.5YR 6/2), saturated, very dense, no cementation, round, coarse to fine sand; trace silt	ML	-3	100	14/35/45			5% very fine 50% silt 45% clay
132									
134		***Clayey Silt*** Gray (7.5YR 5/1), dry to moist, very dense, no cementation, low plasticity, very fine sand; silt; clay	CL	-5	100	9/14/21			100% silt/clay
136									
138		***Silty Clay*** Very dark greenish gray (Gley1 3/5G), slightly moist, hard, no cementation, low to medium plasticity, silt/clay							Total depth was reached at 1630 hrs. on 10/18/04
140									
142									
144									
146									
148									
150									
152									
154									
156									
158									
160									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 137'
Sheet 4 of 4

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # MW-OU1-46-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: _____

Physical Address of site: Coordinates: 2,144,773.124 5,746,795.274

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☒ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☒ Other See Well Log

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft):
Filter pack (ft):

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other _____

Location of well Seals: (ft) _____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ☒-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-105.0 ft
Materials to be used: Bentonite Grout
Location of screens or perforations: 75.0-105.0 f
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

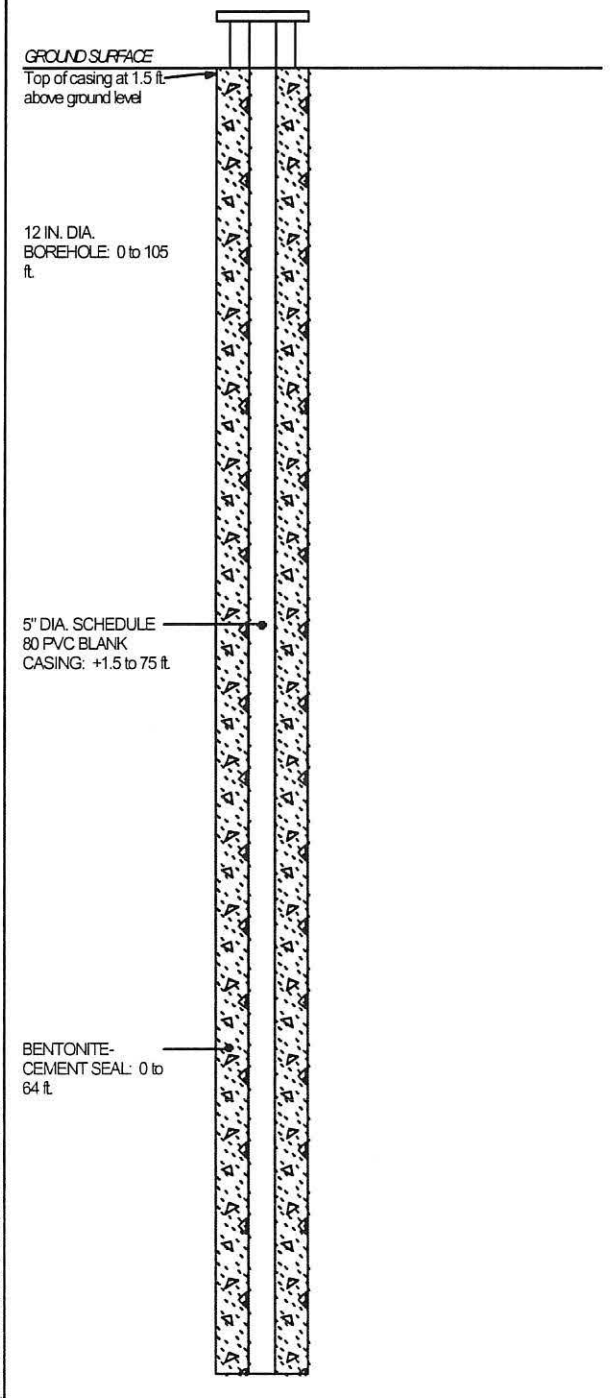
Laura McNamara

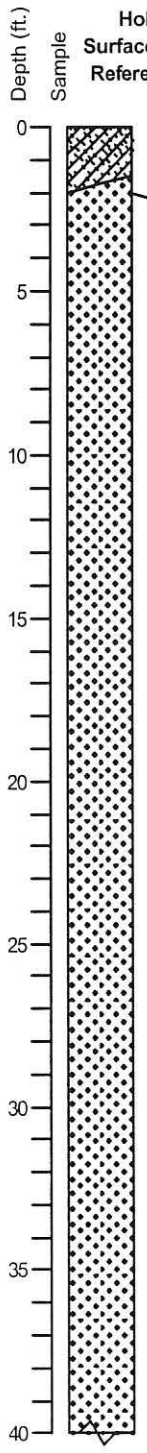
Circle one: Professional Geologist/~~Civil~~ (Engineer)
Print Name Laura McNamara
Certification Number. CH 6526

Mail your MW/SB application packet along with the check to: Monterey County Health Dept. – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth

Equipment CME 85 Hollow Stem Auger
Hole Diameter 12 in.
Surface Elevation 128.60 ft. 128.6 Date 4/12/01
Reference Datum





DARK OLIVE GRAY SILTY SAND (SC) (5Y 3/2) Loose, moist, 80% fine to coarse sand, 20% silt

OLIVE GRAY WELL-GRADED SAND WITH SILT (SW) (5Y 4/2) Loose, moist, 90% fine to coarse sand, 10% silt

@ 5 ft.: Color change to dark yellowish brown (10YR 3/4)

@ 7 ft.: Color change to yellowish brown (10YR 5/4), dry

@ 20 ft.: Color change to light yellowish brown (10YR 6/4)

BORING_WELL2 49132.GPJ GEOL.GDT 10/7/02

Harding Lawson Associates
Engineering and Environmental Services

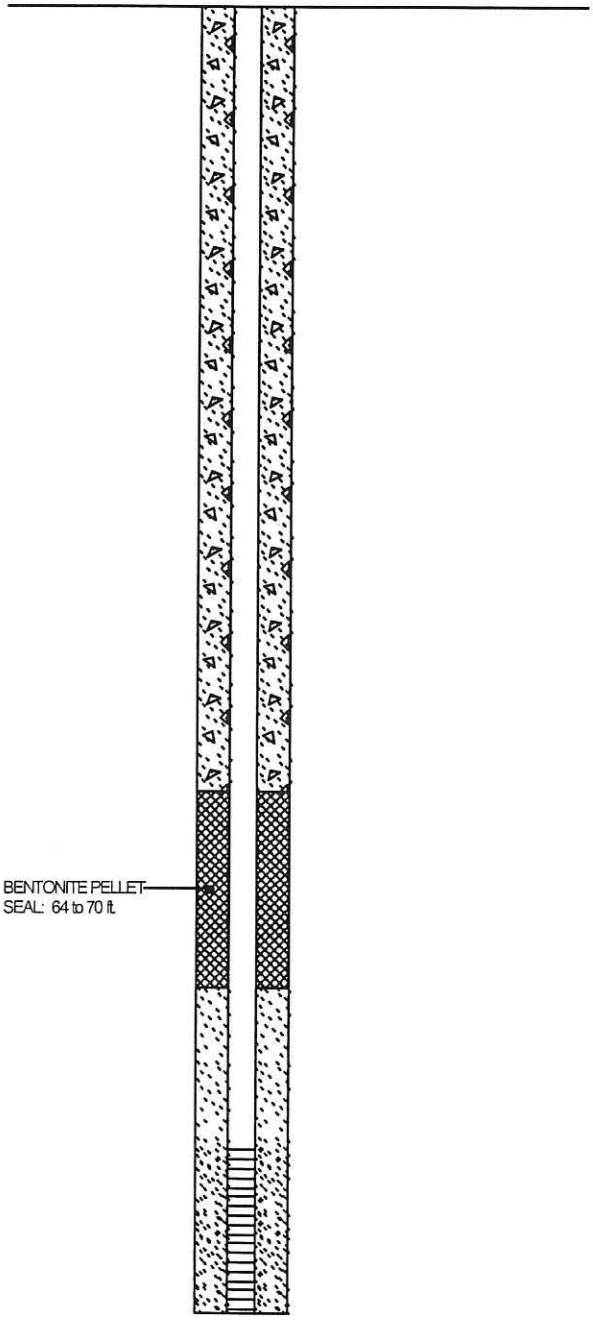
Log of Boring MW-OU1-46A

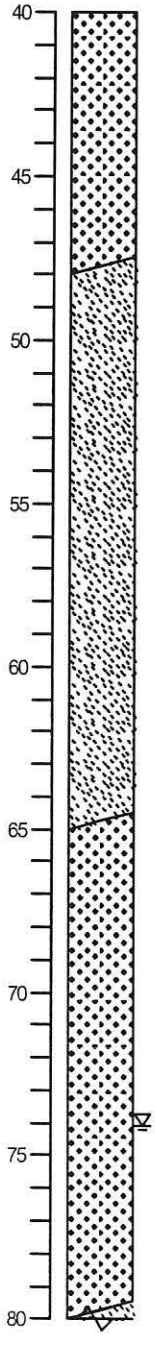
Phase V Well Installation Report
Operable Unit 1
Former Fort Ord, California

PLATE **A6**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
CN	49132 00241		10/02	

Equipment CME 85 Hollow Stem Auger
Hole Diameter 12 in.
Surface Elevation 128.60 ft. 128.6 Date 4/12/01
Reference Datum





YELLOWISH BROWN POORLY-GRADED SAND (SP) (10YR 5/4) Loose, dry, 95% fine to medium sand , 5% silt

@ 60 ft.: Color change to dark yellowish brown (10YR 4/6)

YELLOWISH BROWN WELL-GRADED SAND (SW) (10YR 5/6) Loose, moist, 95% fine to coarse sand, 5% silt

Becoming wet at 74 ft.

@ 75 ft.: Decreasing coarse sand

BORING_WELL2 49132.GPJ GEOL.GDT 10/7/02

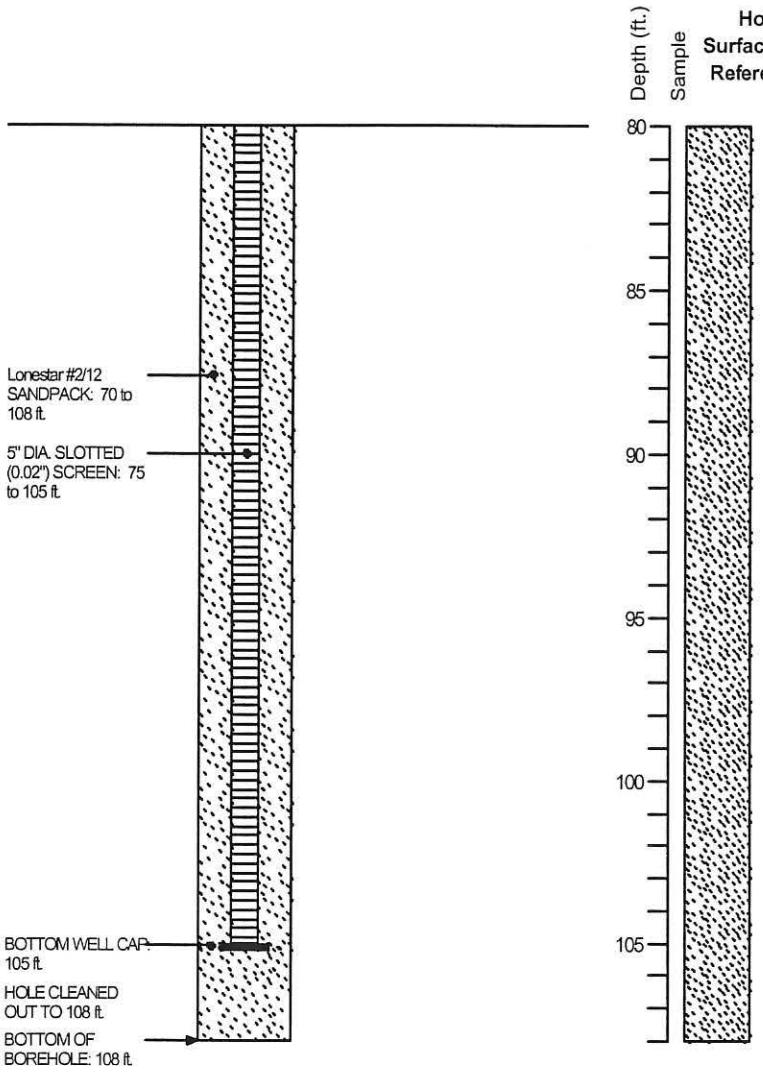
Harding Lawson Associates
Engineering and Environmental Services

Log of Boring MW-OU1-46A
Phase V Well Installation Report
Operable Unit 1
Former Fort Ord, California

PLATE
A6

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
CN	49132 00241		10/02	

Equipment CME 85 Hollow Stem Auger
Hole Diameter 12 in.
Surface Elevation 128.60 ft. 128.6 Date 4/12/01
Reference Datum



YELLOWISH BROWN POORLY-GRADED SAND (SP) (10YR 5/6) Loose, wet, 95% fine to medium sand, 5% silt

@ 102 ft.: Driller notes a change in resistance

Bottom of boring at 108 ft.
Boring converted to groundwater monitoring well on 4/13/01.

BORING_WELL2 49132.GPJ GEOL.GDT 10/7/02

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring MW-OU1-46A
Phase V Well Installation Report
Operable Unit 1
Former Fort Ord, California

PLATE
A6

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
CN	49132 00241		10/02	

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # MW-OU1-59-A

✓- **Monitoring Well -** *Fee $407.00 ea.* ☐-Construction ☒-Abandonment/Destruction

✓- **Soil Boring -** *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,144,852.762 5,746,195.379

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ☒ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ☒ Other See Well Log

PROPOSED SPECIFICATIONS	
Depth (ft):	
Diameter (in):	
Width seal (in):	
Depth perforations:	

CASING	
Single/Double:	
Material:	
Type of joint:	
Gravel Pack (ft)	
Filter pack (ft):	

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ☒-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

☒ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-103.7 ft
Materials to be used: Bentonite Grout
Location of screens or perforations. 76.0-106.0 f
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one Professional Geologist/~~Civil~~ Engineer

Print Name: Laura McNamara

Certification Number: CH 6526

Mail your WDSB application packet along with your check to:

Questions: (831) 755-4511 · Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth

Monterey County Health Dept – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-2004-H
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144852.76

Corresponding Well ID: MW-OU1-59-A
Date: 11/2/2004
Geologist: J.D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 111.73
Easting(ft): 5746195.38

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
2									Drilling began at 1130 hrs. on 11/1/04
4									
6									
8									
10									PID readings from cuttings.
12									
14									
16									
18									
20		***Poorly Graded Sand*** Moderate yellowish brown, slightly moist, slightly dense, friable, fine to medium sand, well rounded	SP						
22									
24									
26									
28									
30									
32									
34									
36									
38									
40							0.0		

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX (916) 614-8775

Boring Diameter: 8"
Total Depth Drilled: 111.5'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-2004-H
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144852.76

Corresponding Well ID: MW-OU1-59-A
Date: 11/2/2004
Geologist: J.D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 111.73
Easting(ft): 5746195.38

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
42									
44									
46									
48									
50									
52									
54									
56									
58									
60		***Poorly Graded Sand*** Moderate yellowish brown, slightly moist, slightly dense, friable, fine to medium sand, well rounded	SP						
62									
64									
66									
68									
70								▽	Saturated at 70 feet bgs.
72									
74									
76									
78									
80									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 111.5'

HYDRO GeoLogic INC.

Borehole ID: SB-OU1-2004-H
Project No: OMA009-201-01-07-02
Project: Ft. Ord - OU1 - Phase 2 Drilling
Client: USACE
Location: Former Fort Ord - OU1
Northing(ft): 2144852.76

Corresponding Well ID: MW-OU1-59-A
Date: 11/2/2004
Geologist: J.D. Fortier
Checked By: D. McCrumb, R.G.
Ground Surface Elevation(ft msl): 111.73
Easting(ft): 5746195.38

SUBSURFACE PROFILE					SAMPLE				
Depth	Symbol	Description	USCS	Elevation	Recovery %	Blow Counts	PID (ppm)	Water Level	Remarks
82		***Poorly Graded Sand*** Dark yellowish orange, saturated, slightly dense, fine to medium sand, well rounded	SP	12					
100		***Clayey Silt*** Light olive gray, saturated, moderately stiff, silt/clay, slightly plastic	ML	4			0.0		
108		***Clay*** Grayish blue, slightly moist, very stiff, slightly plastic	CL	0	100	40/45/48	0.0		Total depth was reached at 0720 hrs. on 11/2/04
112									
120									

Drilled By: DynaDrill International
Drill Method: Hollow Stem Auger
Drilling Equipment: CME 95
Sampling Equipment: 140 lb. Hammer / 30" Drop - 18" CA Mod Split Spoon

HydroGeoLogic, Inc.
4600 Northgate Blvd., Suite 207
Sacramento, CA 95834
(916) 614-8770 FAX: (916)614-8775

Boring Diameter: 8"
Total Depth Drilled: 111.5'
Sheet 3 of 3

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # IW-OU1-73-A

✓- **Monitoring Well** - *Fee $407.00 ea.* ☐-Construction ■-Abandonment/Destruction

✓- **Soil Boring** - *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,144,508.890 5,746,782.737

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
- ■ Ground Water Monitoring
- ☐ Vapor Extraction
- ☐ Vadose Zone
- ☐ Piezometer
- ☐ Soil Boring/Core Sampling
- ☐ Cathodic Protection Well
- ■ Other See Well Log

PROPOSED SPECIFICATIONS	
Depth (ft):	
Diameter (in):	
Width seal (in):	
Depth perforations:	

CASING	
Single/Double:	
Material:	
Type of joint:	
Gravel Pack (ft)	
Filter pack (ft):	

DRILLING METHOD
- ☐ Rotary
- ☐ Cable
- ☐ Dug
- ☐ Other ____

Location of well Seals: (ft) ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ■-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

■ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-126.0 ft
Materials to be used: Bentonite Grout
Location of screens or perforations. 76.5-126.5 f
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner: William K Collins

Drilling Contractor: Rick Alcartado

Laura McNamara

Circle one: Professional Geologist/~~Civil~~/Engineer

Print Name: Laura McNamara

Certification Number: CH 6526

Mail your application packet along with your check to:

Monterey County Health Dept – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SB OU1-73A

Corresponding Well ID: IW-OU1-73-A

Sheet 1 of 4

Project Name: Fort Ord OU1-FONR Drilling	**Project Number:** OMA009-201-01-07-02-01	**Location:** Fort Ord Natural Reserve	**Client:** US Army Corps of Engineers
Drilling Company: WDC	**Driller:** Ralph	**Date / Time Drilling Started:** 17-Aug-06 / 7:30 A.M.	**Date / Time TD Reached:** 17-Aug-06 / 2:15 P.M.
Drilling Equipment: CME 85	**Sampling Device:** Calif. Mod. Split Spoon	**Geologist:** J. Alt	**Checked By:** Michael J. Bombard, P.G., C.HG.
Drilling Method: Hollow-Stem Auger		**Borehole Diameter:** 8 - 12.25 in.	**Total Depth Drilled:** 128 (ft)
Well Depth 126			
Screen: Dia. 6" Length: 50 (ft) Type/Size: 0.01		**Water Level (bgs):**	
Casing: Dia. 6" Length: 76 (ft) Type/Size: S. 80		first: (ft) final: (ft)	
Ground Surface Elevation (ft msl): 127.41		**Northing:** 2144508.89	**Easting:** 5746782.737

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		Sand, yellowish-brown (10YR 5/6), dry. Sub-angular to sub-rounded, finely grained, loose.	SP	127.41					Drilling pilot hole with plugged 8" auger to 90ft
10		As Above	SP	117.41					
20		As Above	SP	107.41		0,0			
30		As Above	SP	97.41		0,0			
40									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SB OU1-73A

Corresponding Well ID: IW-OU1-73-A

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As Above	SP	87.41			0.0		
50		As Above	SP	77.41			0.0		
60		Sand, yellowish-brown (10YR 5/6), dry, fine-grained, ~50% quartz, 40% feldspars, 10% black sub-angular to sub-rounded, loose.	SP	67.41			0.0		
70		As Above	SP	57.41			0.0		
80									

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SB OU1-73A

Corresponding Well ID: IW-OU1-73-A

Sheet 3 of 4

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	FONR	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As Above	SP	47.41			0.0	▼	
90		Sand, yellowish brown (10YR 5/6), wet. Fine-grained, poorly sorted. Loose.	SP	37.41	100	3 7 12	0.0		No Odor
		As Above	SP	32.41	100	9 13 15			No Odor
100		As Above	SP	27.41	100	10 14 19	0.0		No Odor
		As Above	SP	22.41	100	7 11 14			No Odor
110		As Above	SP	17.41	100	9 9 13	0.0		No Odor
		Silty Sand, yellowish-brown (10YR 5/4), wet, very fine-grained.	SM	12.41	50	12 17 25			No Odor
120		Sand, yellow-brown (10YR 5/6), wet, sub-rounded to rounded, fine- to medium-grained.	SP	10.41	50	13 10 13			No Odor

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SB OU1-73A

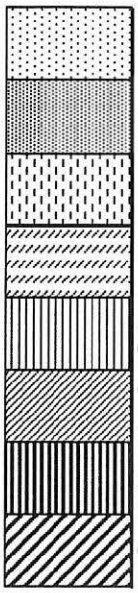
Corresponding Well ID: IW-OU1-73-A

Sheet 4 of 4

Project Name:	Project Number:	Location:	Client:
Fort Ord OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		Sand, Yellow-brown (10YR 5/6), wet, sub-rounded to rounded, fine to med. grained.	SP	7.41	100	13 19 23	0.0		
		As Above	SP	4.41	75	19 17 20	0.0		
		As Above	SP	2.41		14 18			
		Silty clay, light brown, wet, micaceous, moderately plastic.	CL	1.41		29 21	0.0		
			CH	1.91		27			
		Clay, brownish gray, moist, red-brown mottled, plastic.	CH	1.41		32	0.0		
130		Clay, blue-green, moist, plastic.							
		Bottom of boring at 128'							
140									
150									
160									

Boring and Well Log Legend



SP = Poorly-graded Sands, Clean Sands, Little or no fines

SW = Well-graded Sands, Gravelly Sands, Little or no fines

SM = Silty-Sands, Sand-Silt Mixtures

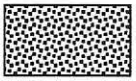
SC = Clayey Sands, Sand-Silt Mixtures

ML = Inorganic Silts and Very Fine Sands, Silty or Clayey Fine Sands or Clayey Silts with Slight Plasticity

CL = Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays

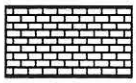
MH = Inorganic Silt, micaceous or diatomaceous fine Sand or Silty Soils

CH = Inorganic Clays of high plasticity, fat Clays

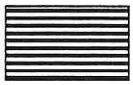


Gravels

Shale



Limestone



Well Screen

Groundwater Elevation

MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: 5/5/2017 APN: 031111006000 Well # IW-OU1-74-A

✓- **Monitoring Well -** *Fee $407.00 ea.* ☐-Construction ■-Abandonment/Destruction

✓- **Soil Boring -** *Fee $136.00 per site* - # of S.B.: ____

Physical Address of site: Coordinates: 2,144,573.499 5,746,674.984

Site contact person: Megan Matteazzi - HydroGeoLogic, Inc Phone Number: (708) 308-8251

Owner: William K. Collins/Environmental Coordinator - Fort Ord Brac Office	Consultant: HydroGeoLogic, Inc.	Driller: Cascade Drilling LP
Address: P.O Box 5008	Address: 14142 Denver West Parkway, Bldg 51, Suite 225	Address: 120 S. 23rd Street
City: Monterey	City: Lakewood	City: Richmond
State: CA Zip: 93944	State: CO Zip: 80401	State: CA Zip: 94804
Phone: 831-242-7920	Phone: 303-984-1167	Phone: 510-478-0858

A C-57 License is required by law. C-57 938110 Date of estimated work: Start: 7/10/17 Finish: 7/10/18

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: No longer needed

TYPE OF WELL OR BORING
■ Ground Water Monitoring
☐ Vapor Extraction
☐ Vadose Zone
☐ Piezometer
☐ Soil Boring/Core Sampling
☐ Cathodic Protection Well
■ Other See Well Log

Location of well Seals: (ft) ____

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft)
Filter pack (ft):

DRILLING METHOD
☐ Rotary
☐ Cable
☐ Dug
☐ Other ____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ■-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

■ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft) 1-119.5 ft
Materials to be used: Bentonite Grout
Location of screens or perforations: 70.0-120 ft
Cleaning of well required: TBD

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid permit and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Well Owner William K. Collins

Drilling Contractor Rick Alcartado

Laura McNamara

Circle one: Professional Geologist/~~Engineer~~ Engineer

Print Name: Laura McNamara

Certification Number: CH 6526

Mail your MH/SB application packet along with your check to:

Monterey County Health Dept – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511 Fax # (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth

HGL HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-74A

Corresponding Well ID: IW-OU1-74-A

Sheet 1 of 3

Project Name: Ft. Ord-OU1-FONR Drilling	**Project Number:** OMA009-201-01-07-02-01	**Location:** Fort Ord Natural Reserve	**Client:** US Army Corps of Engineers
Drilling Company: WDC	**Driller:** Ralph	**Date / Time Drilling Started:** 25-Aug-06 / 12:10 P.M.	**Date / Time TD Reached:** /
Drilling Equipment: CME 85	**Sampling Device:** Calif. Mod. Split Spoon	**Geologist:** J. Alt.	**Checked By:** Michael J. Bombard, P.G., C.HG.
Drilling Method: Auger		**Borehole Diameter:** 8 1/4 - 12 1/4 in.	**Total Depth Drilled:** 121 (ft)
Well Depth 119.5			
Screen: Dia. 6" Length: 50 (ft) Type/Size: 0.01		**Water Level (bgs):** first: (ft) final: (ft)	
Casing: Dia. 6" Length: 69.5 (ft) Type/Size: S. 80			
Ground Surface Elevation (ft msl): 121.86		**Northing:** 2144573.499	**Easting:** 5746674.984

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		Sand, yellowish brown (10YR 5/6), moist, fine-grained, loose, poorly graded, no fines, sub-angular to sub-rounded.	SP	121.86					Drilling to 90' with plugged 8 1/4" auger
10		As Above	SP	111.86			0.0		PID on cuttings
20		As Above	SP	101.86			0.0		PID on cuttings
30		As Above	SP	91.86			0.0		PID on cuttings

HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-74A

Corresponding Well ID: IW-OU1-74-A

Project Name:	Project Number:	Location:	Client:
Ft. Ord-OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As Above	SP	81.86			0.0		PID on cuttings
50		As Above	SP	71.86			0.0		PID on cuttings
60		As Above	SP	61.86			0.0		PID on cuttings
70		As Above	SP	51.86			0.0		PID on cuttings
80									

HGL HydroGeoLogic, Inc
Exceeding Expectations

Borehole ID: SBOU1-74A

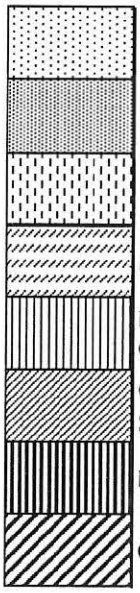
Corresponding Well ID: IW-OU1-74-A

Sheet 3 of 3

Project Name:	Project Number:	Location:	Client:
Ft. Ord-OU1-FONR Drilling	OMA009-201-01-07-02-01	Fort Ord Natural Reserve	US Army Corps of Engineers

Depth	Lithologic Symbol	Description: lithology, color, saturation, grain size, sorting, angularity, density, plasticity and cementation.	USCS Symbol	Elevation	% Recovery	Blow Counts	PID (ppm)	Water Level	Remarks
		As Above, wet	SP	41.86			0.0		PID on cuttings
90		As Above	SP	32.36		5 7 12	0.0		No Odor
		As Above	SP	27.36		9 12 14			No Odor
100		As Above	SP	22.36		6 9 12			No Odor
		As Above	SP	17.36		12 15 18			No Odor
		Silty clay, light brown (10YR 6/2), wet, slightly plastic.	CL	14.86		10 13 17			No Odor
110		Sand, brown (7.5YR 6/2), wet, fine to medium-grained, <10% silt.	SM	13.86					
		As Above	SP	7.36		4 7 9			No Odor
		Silty clay, light brown, wet, plastic, reddish-brown mottling	CL	3.86		13 23 32			
120		Clay, light bluish gray (5PB 7/1), wet, plastic	CH	1.86					Bottom of boring at 121'

Boring and Well Log Legend



SP = Poorly-graded Sands, Clean Sands, Little or no fines

SW = Well-graded Sands, Gravelly Sands, Little or no fines

SM = Silty-Sands, Sand-Silt Mixtures

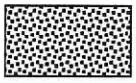
SC = Clayey Sands, Sand-Silt Mixtures

ML = Inorganic Silts and Very Fine Sands, Silty or Clayey Fine Sands or Clayey Silts with Slight Plasticity

CL = Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays

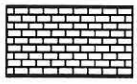
MH = Inorganic Silt, micaceous or diatomaceous fine Sand or Silty Soils

CH = Inorganic Clays of high plasticity, fat Clays

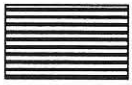


Gravels

Shale



Limestone



Well Screen

Groundwater Elevation

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OU-1 WELL DESTRUCTION AND NWTS DECOMMISSIONING WORK PLAN

APPENDIX B

MONTEREY COUNTY ENVIRONMENTAL HEALTH DEPARTMENT MONITORING WELL CONSTRUCTION OR DESTRUCTION PERMIT FORM

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OU-1 WELL DESTRUCTION AND NWTS DECOMMISSIONING WORK PLAN

APPENDIX B

MONTEREY COUNTY ENVIRONMENTAL HEALTH DEPARTMENT MONITORING WELL CONSTRUCTION OR DESTRUCTION PERMIT FORM

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MONTEREY COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH –
HAZARDOUS MATERIALS MANAGEMENT SERVICES

APPLICATION TO CONSTRUCT OR DESTROY MONITORING WELL OR SOIL BORING
One application per Monitoring Well

Date of Application: _____ APN: _____ Well # _____

✓**- Monitoring Well -** *Fee $407.00 ea.* ☐-Construction ☐-Abandonment/Destruction

✓**- Soil Boring -** *Fee $136.00 per site* - # of S.B.: _____

Physical Address of site: _____

Site contact person: _____ Phone Number: _____

Owner:	Consultant:	Driller:
Address:	Address:	Address:
City:	City:	City:
State: Zip:	State: Zip:	State: Zip:
Phone:	Phone:	Phone:

A C-57 License is required by law. C-57 Date of estimated work: Start: Finish:

A map showing the following data must accompany this application:
1- The property lines, distances of the proposed well/soil boring to the property lines, other wells or borings on the property and adjacent properties.
2- The location of the proposed well/soil borings must be marked at the site by a surveyor's stake with the words "proposed well/soil boring".
3- A work plan and site safety plan must also accompany well and soil boring applications.

REASON FOR INSTALLATION – DESTRUCTION OF MONITORING WELL: _____

TYPE OF WELL OR BORING
☐ Ground Water Monitoring
☐ Vapor Extraction
☐ Vadose Zone
☐ Piezometer
☐ Soil Boring/Core Sampling
☐ Cathodic Protection Well
☐ Other _____

PROPOSED SPECIFICATIONS
Depth (ft):
Diameter (in):
Width seal (in):
Depth perforations:

CASING
Single/Double:
Material:
Type of joint:
Gravel Pack (ft):
Filter pack (ft):

DRILLING METHOD
☐ Rotary
☐ Cable
☐ Dug
☐ Other _____

Location of well Seals: (ft) _____

Existing Wells on property: **Check one**

Condition of other wells on property	Indicate intentions for use of replaced well
☐-In use ☐-Inactive ☐-Abandoned	☐-To be abandoned ☐-To supplement new well ☐-To be LEFT inactive ☐-Irrigation (AG)

☐ - WELL DESTRUCTION ☐ - SOIL BORING DESTRUCTION

Submit well log with the application and a site plan. Depth of well/boring (ft) Depth of proposed seal(s) (ft)_____
Materials to be used:_____
Location of screens or perforations: _____
Cleaning of well required:_____

I hereby agree to comply with all laws and regulations of the County of Monterey and the State of California pertaining to well/soil boring construction and destruction. I will contact the Monterey County Health Department before I commence the work. After completion of the work, I will furnish the Monterey County Health Department a log, signed and stamped by a certified professional. A certified professional will also directly supervise all drilling operations. I hereby agree that I will not commence work until I have a valid perm it and that I will notify the Monterey County Health Department if I change the location of the well/boring site. I hereby agree to pay all fees at the time of application and any subsequent fees that may accrue.

All legal representatives signatures **must be obtained before a permit is issued.**

Property Owner: _____ _____
Circle one: Professional Geologist/Civil Engineer

Drilling Contractor:_____ Print Name: _____

Certification Number: _____

Mail your MW/SB application packet along with your check to: Monterey County Health Dept. – Environmental Health
Attn: Hazardous Materials Management Services
1270 Natividad Rd., Room B301
Salinas, CA 93906

Questions: (831) 755-4511· Fax #: (831) 755-8954
http://www.co.monterey.ca.us/health/EnvironmentalHealth/

Revised 6/09

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OU-1 WELL DESTRUCTION AND NWTS DECOMMISSIONING WORK PLAN

APPENDIX C

ACCIDENT PREVENTION PLAN AND

SITE SAFETY AND HEALTH PLAN

(APPENDIX C SUBMITTED AS A SEPARATE DOCUMENT FOR REVIEW)

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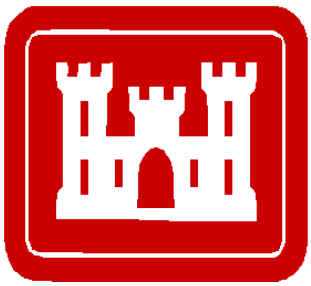
FINAL
ACCIDENT PREVENTION PLAN
OU-1 FORT ORD NATURAL RESERVE WELL DESTRUCTION AND NORTHWEST TREATMENT SYSTEM DECOMMISSIONING

FORMER FORT ORD, CALIFORNIA

Prepared for



U.S. Army Corps of Engineers
Sacramento District

Contract No. W912DY-10-D-0023
Task Orders CM11

Prepared by

HydroGeoLogic, Inc.
14142 Denver West Parkway, Suite 225
Lakewood, CO 80401

May 2017

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FINAL
ACCIDENT PREVENTION PLAN
OU-1 FORT ORD NATURAL RESERVE WELL DESTRUCTION AND NORTHWEST TREATMENT SYSTEM DECOMMISSIONING

FORMER FORT ORD, CALIFORNIA

Prepared for

U.S. Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento, CA 95814

Prepared by

HydroGeoLogic, Inc.
14142 Denver West Parkway, Suite 225
Lakewood, CO 80401

May 2017

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EMERGENCY INFORMATION

To facilitate the quick retrieval of information in the event of an emergency, this summary has been placed in the front of this Accident Prevention Plan (APP). In the event of any situation or unplanned occurrence requiring assistance, the appropriate contact(s) should be made from the list below. For emergency situations, telephone contact should be made with the site point of contact (POC) who will then contact the appropriate response teams. In the event of a serious, life threatening emergency, the appropriate highlighted emergency personnel should be contacted before contacting the site point of contact.

Emergency Telephone Numbers and Project Contacts

Fire, Police, Emergency Medical Services	City of Marina	911
Fort Ord BRAC Office	Bart Kowalski	(831) 242-7918
Emergency Medical Care	Community Hospital of the Monterey Peninsula	(831) 625-4900
National Poison Control Center	(800) 222-1222	
National Response Center Environmental Emergencies	(800) 424-8802	
EPA Spill and Release Notification	(800) 424-9346	
Client USACE Contracting Officer USACE Project Manager District Project Manager Forward	 Robert Meekie, Jr. Curtis Payton Alexander Kan	 (916) 557-5229 (916) 557-7431 (916) 557-7578
HydroGeoLogic, Inc. Contacts		
H&S Emergency Number	(800) 341-3647	
HGL Project Manager	Roy Evans, P.E.	Office: (720) 381-5591 Cell: (303) 319-9808
HGL Field Supervisor / Site Point of Contact	Peter Arroyo	(209) 321-6255
HGL Site Safety and Health Officer	Megan Matteazzi	(303) 477-1293
Corporate Health and Safety Director (CHSD)	Stephen Davis, CIH, CSP	Cell: (865) 659-0499
HGL Project CIH	Edie Scala-Hampson, CIH, CHMM	(847) 409-6384
HGL Corporate Occupational Physician (Medical Review Officer [MRO]) WorkCare 24/7 Emergency hotline	Peter Greaney, MD WorkCare 24/7	(800) 455-6155 (888)-449-7787

Directions to nearest hospital:
Community Hospital of the Monterey Peninsula is located at 23625 Pacific Grove-Carmel Hwy, Monterey, CA 93942.

Directions (13.2 miles, 16 minutes):

1. From Reservation Road, start west to Del Monte Blvd (2.1 miles)
2. Turn left onto Del Monte Blvd (0.7 mile)
3. Take the ramp onto CA-1 S (9.9 mile)
4. Take the CA-68 W exit toward Pacific Grove/Pebble Beach (0.3 mile)
5. Turn right onto CA-68 W Community Hospital of the Monterey Peninsula at 23625 Pacific Grove-Carmel Hwy, Monterey, CA 93942.

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LIST OF APPENDICES

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LIST OF ACRONYMS AND ABBREVIATIONS

°F	Fahrenheit
ACGIH	American Conference of Governmental Industrial Hygienists
AED	Automated External Defibrillator
AHA	Activity Hazard Analysis
APP	Accident Prevention Plan
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CHSD	Corporate Health and Safety Director
CHMM	Certified Hazardous Materials Manager
COR	Contracting Officer's Representative
CP	Competent Person
CPR	cardiopulimary resuscitation
CSP	Certified Safety Professional
ECT	equivalent chill temperature
EM	Engineer Manual
EMS	Emergency Medical Service
EPA	U.S. Environmental Protection Agency
FFA	Federal Facility Agreement
FONR	Fort Ord Natural Reserve
FS	Field Supervisor
GAC	granular activated carbon
GDA	government designated authority
HAZWOPER	Hazardous Waste Operations and Emergency Response
HCP	Hazard Communication Program
HGL	HydroGeoLogic, Inc.
HSP	Health and Safety Program
HTRW	hazardous, toxic, or radioactive waste
IDW	investigation-derived waste
$\mu g/m^3$	micrograms per cubic meter
mg/m3	milligrams per cubic meter
MEC	munitions and explosives of concern
MRO	Medical Review Officer
MSHA	Mine Safety and Health Administration
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health

NOAA	National Oceanic and Atmospheric Administration
NPL	National Priorities List
NWTS	Northwest Treatment System
OU	Operable Unit
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
PM	Project Manager
POC	point of contact
PPE	personal protective equipment
QC	quality control
RAC	risk assessment code
RCRA	Resource Conservation and Recovery Act
REL	Recommended Exposure Limit
SCBA	self-contained breathing apparatus
SDS	Safety Data Sheet
SHM	Safety and Health Manager
SOP	Standard Operating Procedure
SOW	scope of work
SPF	sun protection factor
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
TLV	Threshold Limit Value
TSM	tailgate safety meeting
UCSC	University of California at Santa Cruz
USACE	U.S. Army Corps of Engineers
WBGT	wet bulb globe temperature

ACCIDENT PREVENTION PLAN ACKNOWLEDGMENT

I have read, understand and agree to abide by the provisions as detailed in this Accident Prevention Plan prepared by HydroGeoLogic, Inc. Failure to comply with these provisions may lead to disciplinary action that may include dismissal from the work site, termination of employment or, for subcontractors, termination of the work contract.

Printed Name	**Company**	**Signature**	**Date**

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1. SIGNATURE SHEET

Prepared by: Roy Evans Digitally signed by Roy Evans DN: cn=Roy Evans, o=HydroGeoLogic, Inc, ou=ECD, email=revans@hgl.com, c=US Date: 2017.05.23 14:05:26 -06'00' _____ _____

Roy Evans, P.E. Date
HydroGeoLogic, Inc.
Project Manager
720-381-5591

Approved by: _____ _____

Donald Boyle, P.E, Date
HydroGeoLogic, Inc.
Denver Office Manager
303-524-3425

Review/ Concurrence: Edith Scala-Hampson Digitally signed by Edith Scala-Hampson Date: 2017.05.23 15:11:10 -05'00' _____ _____

Edie Scala-Hampson CIH, CHMM Date
HydroGeoLogic, Inc.
Project CIH
847-409-6384

Review/ Concurrence by: Ralph McGahey Digitally signed by Ralph McGahey DN: cn=Ralph McGahey, o=Cascade Drilling, ou, email=rmcgahey@cascade-env.com, c=US Date: 2017.05.23 12:07:08 -07'00' _____ 5/23/17

Ralph McGahey, Date
Cascade Drilling, L.P.

Review/ Concurrence by: _____ _____

Matthew Johnson, Date
Denise Duffy & Associates

1. SIGNATURE SHEET

Prepared by: _____ _____

Roy Evans, P.E.
HydroGeoLogic, Inc.
Project Manager
720-381-5591

Date

Approved by: _____ _____

Donald Boyle, P.E.
HydroGeoLogic, Inc.
Denver Office Manager
303-524-3425

Date

Review/ Concurrence: _____ _____

Edie Scala-Hampson CIH, CHMM
HydroGeoLogic, Inc.
Project CIH
847-409-6384

Date

Review/ Concurrence by: _____ _____

Ralph McGahey
Cascade Drilling, L.P.

Date

Review/ Concurrence by: Matthew Johnson Digitally signed by Matthew Johnson Date: 2017.05.12 11:09:01 -07'00' 5/12/2017

Matthew Johnson
Denise Duffy & Associates

Date

2. BACKGROUND INFORMATION

2.a CONTRACTOR

HydroGeoLogic, Inc. (HGL)
14142 Denver West Parkway
Suite 225
Lakewood, CO 80401

HydroGeoLogic, Inc. (Corporate Office)
11107 Sunset Hills Road, Suite 400
Reston, VA 20190
(703) 478-5186

2.b CONTRACT NUMBER

Contract Number: W912DY-10-D-0023
Task Orders: CM11
HGL Project Numbers: H10211

2.c PROJECT NAME

This Accident Prevention Plan (APP) was prepared to support the U.S. Army Corps of Engineers (USACE) Sacramento project being conducted at the former Fort Ord, California. The project is as follows:

- FY17 Operable Unit (OU)-1 Groundwater Monitoring, Treatment System and Well Decommission, and Site Closeout former Fort Ord, CA.

2.d PROJECT DESCRIPTION

Former Fort Ord is located near Monterey Bay in Monterey County, California. The post consisted of about 28,000 acres near the cities Seaside, Sand City, Monterey, Del Rey Oaks, and Marina. Fort Ord was a U.S. Army installation, which closed in 1994. Most of the fort's land now makes up the Fort Ord National Monument, managed by the Bureau of Land Management as part of the National Landscape Conservation System. Figure 2.1 shows the location of the former Fort Ord.

In February 1990, Fort Ord was placed on the National Priorities List (NPL) of hazardous waste sites. A Federal Facility Agreement (FFA) was signed by the Army, U.S. Environmental Protection Agency (EPA), California Department of Health Services, and the Regional Water Quality Control Board in November 1990. Investigation and remediation activities have been ongoing at the Former Fort Ord for over 20 years. Figure 2.2 shows the locations of the groundwater contamination plumes that are being remediated. Note that the OU-1 plume shown on Figure 2.2 is included only for reference and represents the OU-1 plume in 2013. As explained below, OU-1 remediation is complete and all OU-1 contaminants in groundwater meet

the cleanup levels specified in the Record of Decision. The well locations to be destroyed and Northwest Treatment System (NWTS) site are shown on Figure 3.1 of the Work Plan.

Well Destruction and Treatment Plant Decomissioning

The regulatory agencies have agreed that OU-1 remediation is complete and site closeout can proceed. Consequently, the groundwater monitoring, extraction, and injection wells and the treatment plant previously constructed to support the OU-1 remediation effort are no longer needed. The Monterey County Environmental Health Services and the State of California have issued regulations for the proper methods to destroy monitoring wells when the wells are no longer required for managing the remediation process. HGL will destroy the remaining monitoring, injection, and extraction wells associated with OU-1. HGL will also decommission the NWTS facility that was constructed to remove volatile organic contaminants from extracted groundwater. Portions of the NWTS facility—specifically, the containment basin, lighting, power, and security fence—will be left in place and adapted to alternative use by the University of California at Santa Cruz (UCSC). Thirty-four of the 35 wells to be destroyed and the NWTS facility are located within the University of California Fort Ord Natural Reserve (FONR). The UCSC manages the FONR.

HGL will use previously developed mitigation measures during the well destruction effort while conducting monitoring of sensitive habitat of work areas located within habitat restricted areas.

The planned field activities for the project are listed below. Photographs of relevant site components are provided for reference in Attachment 1 of this APP. The Activity Hazard Analyses (AHAs) for the site activities listed below are contained in Attachment 1A of the Site Safety and Health Plan (SSHP) (Appendix A):

- Monitoring Well Destruction
    - Mobilize drilling equipment, excavation equipment, and crews. (Please see General Site Hazards" AHA and "Mobilization/Demobilization"AHA in Attachment 1A for details on hazard analyses.)
    - Destroy groundwater monitoring and production wells including removal of all well surface features, well covers, well vaults, and backfilling and restoring the site to match surrounding features. (Please see "Well Destruction" AHA in Attachment 1A for details on hazard analyses for this task.)
    - Remove pumps, discharge piping, and subsurface appurtenances from OU-1 extraction wells.
    - Manage all contaminated and non-contaminated wastes associated with well destruction activities. (Please see "Investigation-Derived Waste (IDW) Management" AHA in Attachment 1A for details on hazard analyses for this task.)
- Pipeline Capping
    - Seal buried pipeline and electrical conduit from entire route connecting extraction wells to the NWTS facility. (Please see the "Pipeline Capping" AHA in Attachment 1A for details on hazard analyses for this task.)

  - No trenching is needed. The pipelines were installed approximately three feet below ground surface. The end points of buried pipe and conduit where they daylight above the ground surface will be removed by excavator or backhoe. The remaining pipeline will be sealed at the end points and left in place. All excavations will be completely closed at end of each workday.
  - Equipment to be used may include dump trailer, bobcat, excavator, backhoe(s), drill rig, support truck, pickup truck(s), and vacuum truck.

- NWTS Decommissioning
  - NWTS decommissioning includes the removal of the entire physical plant, associated piping, fixtures, system components, transfer pumps, carbon tanks, poly tanks, and debris.
  - All surface debris and visible piping within the treatment plant area (except for the Pacific Gas and Electric transformer, electrical meter, outdoor lighting, fence, and concrete pad) will be removed. Before demolition begins, all power will be disconnected and lock out/tag out protocols will be installed and used.
  - The activated carbon contained in the carbon tanks will be sampled and removed. The four tanks will be drained and unbolted from the containment pad. A telescopic forklift will be used to lift the carbon tanks out of the containment area. The tanks will be transported to a local recycler. Spent carbon will be disposed of/recycled at an approved facility.
  - Two transfer pumps will be unbolted from the concrete platforms and lifted out of the containment pad using a telescopic forklift. Transfer pumps will be loaded into a dump truck and disposed of in the local Marina, CA landfill.
  - Two poly tanks will be cut into pieces and/or crushed with a backhoe, then removed from the containment basin manually or with the backhoe. The pieces will be recycled at an approved facility.
  - Equipment to be used may include a backhoe, telescopic forklift, reciprocating saw, cutoff saw, roll off bins, and pickup trucks.

- Grassland area
  - Actions to be completed in the grassland area include removal of the injection vault with a backhoe. Concrete and associated debris will be transferred to a dump truck and disposed of at the local Marina, CA landfill.
  - Equipment to be used may include dump trailer, bobcat, excavator, backhoe(s), and pickup truck(s).

Baseline AHAs were developed based on anticipated job steps under each definable feature of work. The AHAs define the job steps to be performed for each activity; the specific anticipated hazards associated with each job step; and the equipment, materials, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level of risk. The AHAs may include site-specific training requirements and the names of competent and qualified

personnel. Any new AHAs required for the project will be submitted for approval to the government designated authority (GDA) 15 days before beginning the work covered by the AHA. Work shall not begin until the AHA for that site activity has been accepted by the GDA and discussed with all HGL and subcontractor personnel engaged in the activity.

HGL project and safety management personnel will take steps to determine that the subcontractors are performing their operations in accordance with the provisions of this APP/SSHP and the subcontractor's AHAs, if needed. Subcontractors are expected to contribute to and must abide by HGL's APP/SSHP. HGL will integrate subcontractor work activities and hazard controls into the APP/SSHP and require that subcontractors follow provisions of the APP/SSHP during their work activities.

FIGURE(S)

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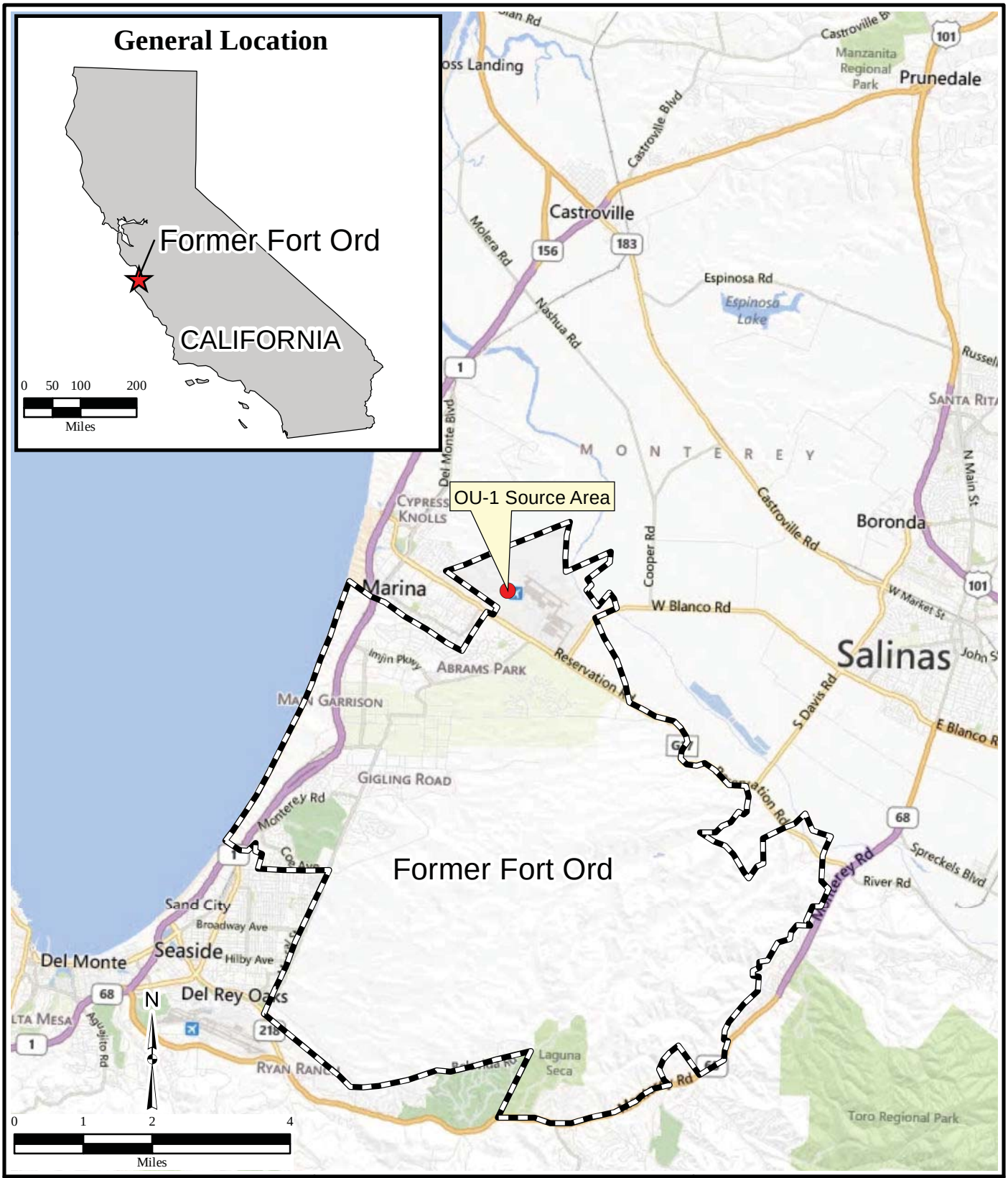

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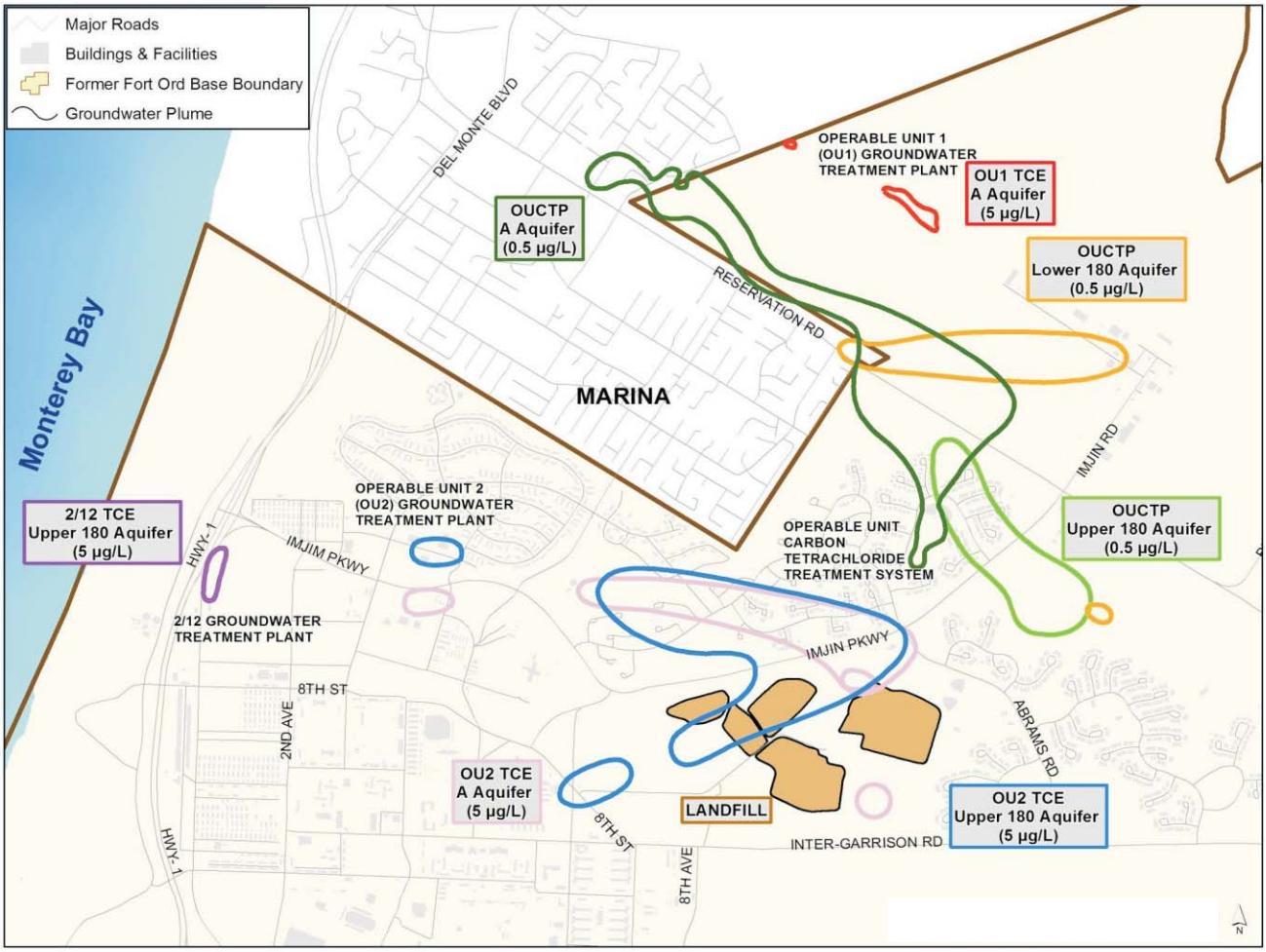
APP_LTM_WellDestruction\
(2-01)location_map.mxd
11/4/2013 RB
Source: HGL
ESRI Online Bing Maps Road Map

Legend

Site OU-1 Source Area

Former Fort Ord

Figure 2.1
Former Fort Ord
Location Map



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(2-02)GW_Plumes.cdr
11/04/2013 RB
Source: USACE

HydroGeoLogic, Inc

Figure 2.2
Groundwater Contamination Plumes at Former Fort Ord

3. STATEMENT OF SAFETY AND HEALTH POLICY

In accordance with Engineer Manual (EM) 385-1-1 version November 2014, HGL's Accident Experience (*Copy of OSHA 300* and 300A) is provided below.

HGL
HydroGeoLogic, Inc
Exceeding Expectations

HGL's Commitment to Employee Health and Safety

HydroGeoLogic, Inc. (HGL) is committed to providing safe and healthful working conditions for our employees, as well as protecting our subcontractors, the communities where we work, and the environment. HGL promotes sound safety practices based on the identification and control of Occupational Health and Safety (OH&S) risks where our employees work. We do this by effective project and task planning; by staffing our projects with knowledgeable and skilled professionals; by carefully selecting our subcontractors and business partners; by executing projects according to approved plans; by monitoring performance, and by reviewing and updating programs and procedures annually and when new potential risks are identified. As an organization, HGL is dedicated to:

- Protecting the safety and health of our employees through anticipation, recognition and control of hazards in the workplace. We assess the hazards of each new task, identify effective hazard controls, document the hazard controls, train personnel on hazard controls, and monitor work in progress to verify that hazard controls are implemented and are effective.
- Complying with applicable health and safety regulations and client requirements everywhere we operate.
- Ensuring our commitment to employee health and safety is an integral aspect of our culture and our services.
- Enabling and encouraging all personnel to report incidents and potentially unsafe conditions and to stop work, as needed, to prevent accidents.
- Investigating incidents, identifying effective improvements, and tracking completion of improvement actions to minimize the probability of future incidents.
- Measuring and reviewing our progress, at the senior management level monthly and annually and striving for continuous improvement.

We apply the following principles to all of our work:

- All levels of management are responsible and accountable for providing the resources and leadership required to ensure a positive and safe work environment.
- Working safely is a condition of employment.
- Safety and the prevention of injuries is everyone's responsibility.
- Training and supporting employees to perform their work safely is essential.

By integrating health and safety considerations into all aspects of HGL's business, we protect our employees and our clients while achieving sustainable growth and productivity.

Peter S. Huyakorn
Peter S. Huyakorn, Ph. D
President

11-15-2016
Date

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Exhibit 1: OSHA 300 Form – 2016

OSHA's Form 300 (Rev. 01/2004)
Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

Year 2016

U.S. Department of Labor
Occupational Safety and Health Administration

You must record information about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an injury and illness incident report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Form approved OMB no. 1218-0176

Establishment name HydroGeologic, Inc.

City Reston State VA

Identify the person			Describe the case		Classify the case				Enter the number of days the injured or ill worker was:		Check the "injury" column or choose one type of illness:					
(A) Case No.	(B) Employee's Name	(C) Job Title (e.g., Welder)	(D) Date of injury or onset of illness (mo./day)	(E) Where the event occurred (e.g. Loading dock north end)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (e.g. Second degree burns on right forearm from acetylene torch)	CHECK ONLY ONE box for each case based on the most serious outcome for that case: Death (G)	Days away from work (H)	Remained at work: Job transfer or restriction (I)	Remained at work: Other record-able cases (J)	Away From Work (days) (K)	On job transfer or restriction (days) (L)	(M) Injury (1)	Skin Disorder (2)	Respiratory Condition (3)	Poisoning (4)	Hearing Loss (5)	All other illnesses (6)
1		Treatment plant operator	1/25/2016	SJCC parking lot	Shoulder injury				x			x					
2																	
3																	
					Page totals	*0*	*0*	*0*	*1*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*0*

Be sure to transfer these totals to the Summary page (Form 300A) before you post it.

Public reporting burden for this collection of information is estimated to average 14 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Do not send the completed forms to this office.

Injury (1) | Skin Disorder (2) | Respiratory Condition (3) | Poisoning (4) | Hearing Loss (5) | All other illnesses (6)

OSHA's Form 300A (Rev. 01/2004)
Summary of Work-Related Injuries and Illnesses

Year 2016

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	0	1
(G)	(H)	(I)	(J)

Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
0	0
(K)	(L)

Injury and Illness Types

Total number of...	(M)		
(1) Injury	1	(4) Poisoning	0
(2) Skin Disorder	0	(5) Hearing Loss	0
(3) Respiratory Condition	0	(6) All Other Illnesses	0

Post this Summary page from February 1 to April 30 of the year following the year covered by the form

Establishment information

Your establishment name HydroGeologic, Inc.

Street 11107 Sunset Hills Road, Suite 400

City Reston State Virginia Zip 20190

Industry description (e.g., Manufacture of motor truck trailers)
Remediation Services

Standard Industrial Classification (SIC), if known (e.g., SIC 3715)

OR North American Industrial Classification (NAICS), if known (e.g., 336212)
5 6 2 9 1 0

Employment information

Annual average number of employees 300

Total hours worked by all employees last year 600,000

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

Scott Schulein Company executive

COO Title

703-478-5186 Phone

1-4-17 Date

3.a HEALTH AND SAFETY PROGRAM GOALS

The goal of HGL's corporate Health and Safety Program (HSP) is to provide the education and tools required to deliver a safe and compliant work environment for its employees, project personnel, subcontractors, and the general public as the nature of the work allows. The HSP includes written policies and procedures; new employee orientation; project-specific training, refresher training, and customized classes; a project-specific medical monitoring program, worker exposure monitoring; an incident reporting system which includes reporting and evaluating near misses; review and approval of subcontractors' health and safety performance prior to hiring; and annual management-level health and safety performance goals and objectives. HGL considers worker safety a priority and has established a goal of zero incidents throughout the company.

HGL's safety program goals, safety performance objectives, and accident experience objectives for this project are as follows:

The written safety program as reflected in the APP, SSHP and AHAs shall conform to the standards and expectations of HGL, client needs and expectations, and be in compliance with applicable regulations and consensus standards.

Permanent and temporary staff assigned to work at these sites will have read, understood, been given the opportunity to question, and sign off on these safety program documents. HGL and subcontractor staff will be briefed by the appropriate safety and health official before starting new or non-routine tasks on the field conditions to be faced, the tasks to be performed, the hazards expected and the control methods that will be used to eliminate or control those hazards.

No employee or subcontractor shall be allowed to work on a task that has not been trained and/or certified in accordance with regulatory requirements and approved for safety related responsibilities by the Safety and Health Manager (SHM).

Safety equipment used on this project shall be maintained and working as required. Safety equipment shall be inspected within the frequency prescribed by this APP, according to regulatory and consensus standards' requirements and these inspections shall be documented.

Accidents and injuries are not anticipated at this site if the work is planned, the employees properly equipped and trained, and management provides proper leadership and support.

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4. RESPONSIBILITIES AND LINES OF AUTHORITY

This section provides information on the project team, particularly those with worker health and safety responsibilities, competent persons, and the lines of authority for implementing this APP/SSHP. Health and safety staffing will be based on the number of tasks operating independently that need full time coverage; the time required to handle daily and weekly inspections and generate paperwork/documentation; and the time necessary to maintain inspection, equipment, and activity databases. All staff, of both the contractor and the subcontractor, have the authority to temporarily stop work if they observe an unsafe act or condition.

4.a EMPLOYER ULTIMATE RESPONSIBILITY

HGL, as the prime contractor, will manage health and safety activities on this project in accordance with our corporate HSP and project specific documents.

HGL's HSP is detailed in the Corporate Health and Safety Manual, available in print or electronically, and implemented/overseen by HGL's Corporate Health and Safety Director (CHSD), Stephen Davis, Certified Industrial Hygienist (CIH), Certified Safety Professional (CSP). HGL managers and employees are expected to conduct business in compliance with governmental environmental and safety regulations, client programs, and company policies and procedures. The "rules of construction" for subcontractors apply, as specified in 29 Code of Federal Regulations (CFR) 1926.16.

4.b PERSONNEL IDENTIFICATION AND ACCOUNTABILITY

HGL will manage this project from the Denver office. Personnel will be drawn from this and other HGL offices as needed. The following personnel are designated to perform the stated health and safety functions:

- Project Manager (PM) – Roy Evans, P.E.
- Field Supervisor (FS) – Peter Arroyo
- Site Safety and Health Officer (SSHO) – Megan Matteazzi
- Corporate Health and Safety Director – Stephen Davis, CIH, CSP

HGL's Occupational Medicine Physician is Peter Greaney, MD, President of WorkCare, Inc.

Resumes and applicable certifications for key project personnel responsible for safety are included in Attachment 1B of the SSHP.

4.b.1 All Personnel

Each person is responsible for his/her own health and safety, for completing tasks in a safe manner, and for reporting any unsafe acts or conditions to the SSHO. All persons on site are responsible for continuous adherence to the APP/SSHP provisions during the performance of project work. All employees/personnel have the authority and responsibility to Stop Work on

the site if an imminent hazard is observed. Even when a hazard is not imminent, employees/personnel should intercede when unsafe behavior is observed.

Personnel working in areas where contact with contaminated soil or water are possible, or who wear respiratory protection, will be certified as fit to work before working in those areas. Documentation of medical qualifications will be retained on site.

HGL maintains and provides ready access to employee health and safety documents and other pertinent information. This information includes:

- Employee name and general information;
- Health and safety training;
- Respirator fit tests;
- Incident reports;
- Exposure monitoring;
- Emergency notification; and
- Certification and licenses.

4.b.2 Project Manager

The HGL PM is the single point of contact (POC) with the USACE project manager. The PM has overall responsibility for the health and safety of personnel on the project, including:

1) The project team's adherence to company policy and this APP/SSHP;
2) Confirming the proper review and distribution of health and safety documents;
3) Communicating with the SHM/CHSD for any variances or modifications in a timely manner;
4) Verifying that HGL personnel assigned to the project:
    a. Are current participants in the medical surveillance program,
    b. Have a current (within the last calendar year) respiratory fit test (if applicable), and
    c. Have completed required safety and health training.
5) Determining that subcontractors have submitted required health and safety documents to the SSHO; and
6) Reporting and maintaining records of exposure and accident experience incidental to the work (this includes exposure and accident experience of HGL and subcontractors.) At a minimum, these records shall include exposure work hours and equivalent as prescribed by 29 CFR 1904.

4.b.3 Field Supervisor

The FS directs site activities in accordance with the approved work plan, the APP/SSHP, federal and state, and applicable local laws and regulations. The FS has the responsibility and authority to halt or modify any working condition and to remove from the site any person who refuses to

comply with the APP/SSHP or whose behavior endangers his or her own safety or the safety of others. Should the FS become aware that a subcontractor is not following the APP/SSHP; the FS will notify the subcontractor and require that the subcontractor begin immediate corrective actions.

4.b.4 Site Safety and Health Officer

The SSHO will be assigned to the site at all times when field activities are being performed. The SSHO will provide day-to-day safety and industrial hygiene support; oversee air monitoring, training, and daily site safety inspections; and will report activities to the PM and SHM/CHSD. The SSHO is the main contact in any on-site emergency situation. The SSHO is responsible for facilitating and coordinating the field implementation of the APP/SSHP and has the responsibility and authority to halt or modify hazardous activities or working condition. The SSHO has the authority to remove from the site any person who refuses to comply with the APP/SSHP or whose behavior endangers his or her own safety, or the safety of others. Should the SSHO become aware that a subcontractor is not following the APP/SSHP; the SSHO will notify the most senior member of the subcontractor's field team and require that the subcontractor begin immediate corrective actions.

The SSHO will direct the job steps, such as briefings, training, and inspection involved with safety. Specific tasks assigned to the SSHO include:

- Verifying that the APP/SSHP and AHAs are followed by HGL and subcontractors;
- Verifying that the specified personal protective equipment (PPE) is available and used;
- Participating in accident/incident and near-miss investigations;
- Reviewing pertinent safety and health documentation from the field for compliance to this APP/SSHP;
- Monitoring the implementation and execution of the Hazard Tracking Log by quality control (QC) personnel;
- Monitoring that personnel are properly trained for the task(s) assigned;
- Developing a schedule for safety observations and inspection checklists; and
- Establishing appropriate site control zones and control the entry and exit points;
- Conducting and documenting the daily tailgate safety meetings (TSMs);
- Conducting site safety inspections (Section 7.a);
- Monitoring the field team for signs of thermal stress, fatigue, and exposure symptoms;
- Knowing emergency procedures, evacuation routes, and telephone numbers;
- Reporting all near-miss, injury, illness, and vehicle accidents or incidents to the PM and SHM/CHSD within 24 hours, and confirming that an Accident Investigation Form is completed;
- Holding a safety stand-down meeting to conduct training at any time a deviation or degradation of safety warrants a review;

- Seeking guidance from the SHM/CHSD when unanticipated conditions develop;
- Preparing a site safety and health closeout report to include lessons learned; and
- Stopping work if any operation threatens worker or public safety or health.

4.b.5 Corporate Health and Safety Director

The CHSD will advise the PM and SSHO on safety and health issues that may have an impact on project operations, and provide technical assistance to the project team, based upon a review of the APP/SSHP and contributing documents. The CHSD or designee is also responsible for reviewing and approving the APP/SSHP; suggesting modifications to the APP/SSHP; and reviewing and approving all changes and updates suggested by the field team. In addition, the CHSD is responsible for:

- Providing general safety and health program administration;
- Conducting field safety and health audits for APP/SSHP conformance;
- Establishing air-monitoring parameters based on expected contaminants;
- Establishing employee exposure monitoring notification programs;
- Establishing random and for cause drug and alcohol testing as warranted;
- Providing technical assistance to the PM and the FS/SSHO;
- Investigating significant incidents, illnesses, and near-misses; and
- Providing support for evaluation of subcontractor actions as they pertain to protecting the safety and health of workers and the public.

4.b.6 Occupational Medicine Physician

The occupational physician's responsibilities include:

- Ensuring that employees meet physical capability requirements;
- Providing Medical Review Officer (MRO) services for drug and alcohol test results review;
- Providing clinical consultation to injured employees prior to them traveling to an emergency room and consulting with treating physicians as necessary;
- Maintaining contact with injured employees to determine if there are issues or barriers to rapid healing, rehabilitation and return to full duty status; and
- Providing technical support as needed for determination of project specific medical monitoring.

4.b.7 Visitors

Visitors and unauthorized personnel will not be allowed within the regulated work area(s) without authorization from the PM and without the knowledge of the SSHO.

Visitors requesting authorization to enter a designated regulated area must meet the additional requirements for appropriate medical exams, training, and PPE as required by this APP/SSHP. All persons entering the site during site operations must first be given a site hazard briefing.

4.c COMPETENT PERSONS QUALIFICATIONS

A Competent Person (CP), as defined by 29 CFR 1926.651(k)(1), is required to supervise activities requiring entry into excavation, fall protection, scaffolding, permit-required confined space entry, and lockout/tagout.

The following activities planned for this project require a CP:

- Excavation
- Lockout/tagout

It is possible but not expected that permit-required confined space entry may be needed. This situation would occur if it becomes necessary to enter a well vault as part of the well destruction effort. The AHA for this activity is also included in case it is needed. No scaffolding or fall protection are expected to be needed for this effort; if the work environment changes in that regard then properly certified / documented supervisor(s) and AHA(s) will be added to oversee the work.

The designated CP(s) shall be listed in the appropriate AHAs (Attachment 1A of the SSHP) during the field activity.

4.d COMPETENT PERSON REQUIREMENTS

No work will be performed unless the CP or the designated alternate CP is present on the job site.

4.e PRE-TASK SAFETY AND HEALTH ANALYSIS

AHAs have been developed for all major tasks performed for the project and are discussed in Section 10, and included in Attachment 1A of the SSHP (the SSHP is included as Appendix A of this APP).

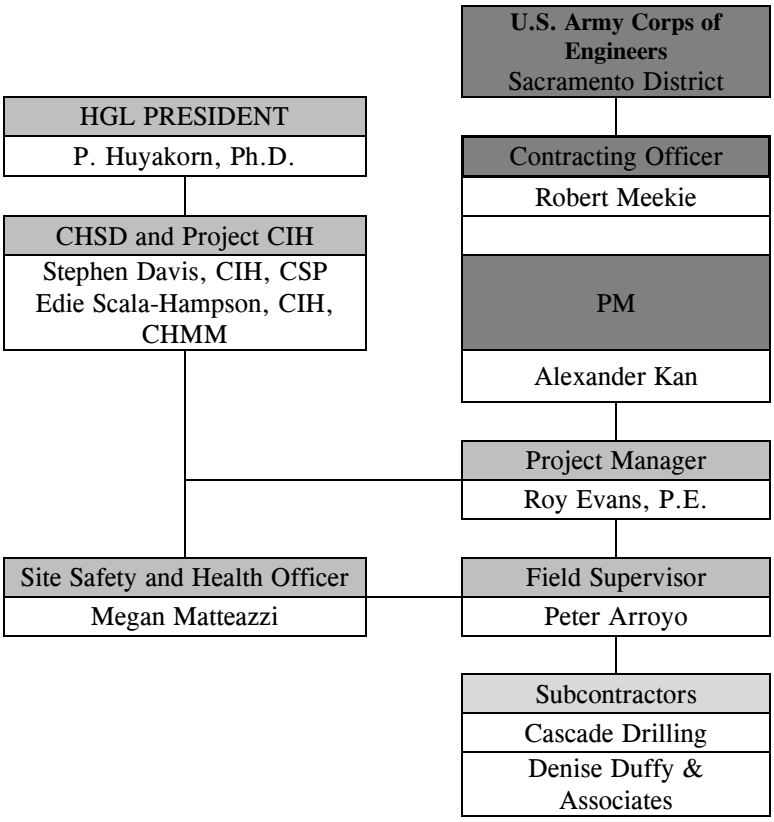
Each AHA relevant to the day's planned activities will be reviewed by the field team in conjunction with the daily TSMs. In addition, a pre-task safety and health analyses will be completed by the field crew at the daily TSM at the beginning of each task. The analyses will be completed using the Pre-Task Analysis Worksheet and Checklist, which are included in Appendix B of this APP.

The analyses will be revised, as necessary, when unforeseen circumstances arise or work-site conditions change. At the discretion of the Contracting Officer's Representative (COR), any revisions will be immediately communicated to the COR as a revision and USACE must be allowed 15 days to review and approve or comment on the revised or new AHA. Upon approval and prior to the start of work, the USACE 3 phase quality inspection process must be completed.

This involves a coordinated meeting with the COR and any other specialists he or she elects to join the meeting. Only after these steps are completed will the affected site workers be briefed on the new procedures and hazard controls and allowed to execute the task.

A more detailed analyses of the day's tasks will be completed using the Pre-Task Analysis Worksheet and Checklist which are included in Appendix B of this APP. The Pre-Task Analysis Worksheet and Checklist will include a listing of all required CP(s) and the names of the personnel fulfilling the role. This process is intended to engage field crews in analyzing the potential hazards associated with each task planned for the day, as required.

4.f LINES OF AUTHORITY



The PM has the overall responsibility for this project and will execute the contract in a manner consistent with this APP/SSHP and other contract-specific requirements. The PM will coordinate with the FS, SSHO, and SHM/CHSD and Project CIH to complete the work in a manner consistent with this APP/SSHP.

The FS directs site activities in accordance with the approved work plan, the APP/SSHP, and all federal, state and local laws and regulations. The FS is responsible for maintaining contact with the PM and the HGL SHM/CHSD for matters regarding project health and safety. The FS reports to the PM.

The SSHO verifies that operations are conducted in accordance with this APP/SSHP, USACE requirements, and Occupational Safety and Health Administration (OSHA) regulations. The

SSHO reports to the PM on technical matters during execution of project activities, but reports directly to the SHM/CHSD with functional issues regarding safety.

4.g NONCOMPLIANCE WITH SAFETY REQUIREMENTS

HGL's HSP provides steps for addressing unsafe actions or work environments as early as possible facilitating the return to a productive, safe and compliant work environment. Because certain unsafe acts or work environments contrary to health and safety policies, SSHPs, and other safe work practices can be life threatening or may cause serious injuries, HGL's disciplinary policy is stringently administered.

4.h MANAGEMENT ACCOUNTABILITY

Annually, written health and safety goals are developed for members of the senior, office, and project management team. The goals are designed to advance development of the health and safety program at HGL, involve all levels of employees, proactively address health and safety issues, and reinforce accountability for staff health and safety with the management team. Management personnel are held accountable for completion of these goals and compensation is tied to the success of an individual's performance in meeting the goals.

Management, with the assistance of the internal health and safety professional staff, as necessary, will conduct audits to assess the effectiveness of the safety program(s) in place, and to identify areas for improvement. The deficiencies identified in audits will be promptly corrected.

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5. SUBCONTRACTORS AND SUPPLIERS

5.a IDENTIFICATION OF SUBCONTRACTORS AND SUPPLIERS

Subcontractors listed in Table 5.1 will perform work for HGL on this project.

5.b SUBCONTRACTOR/SUPPLIER SAFETY RESPONSIBILITIES

Subcontractor personnel report to the HGL PM and the FS. Subcontractors assume primary responsibility for the safety and health of their personnel and will abide by their Corporate Health and Safety Program in addition to the HGL APP/SSHP during field activities. The presence of the HGL SSHO and the implementation of the APP/SSHP do not relieve subcontractors of their responsibility as employers. Subcontractors are responsible for the health and safety of their employees.

Subcontractors conducting fieldwork on HGL projects shall establish an effective safety program applicable to their work and employees. Subcontractors will review and accept HGL's APP/SSHP and prepare their own safety AHAs for presentation to HGL's PM at least 10 days before site mobilization. At a minimum, the subcontractor must meet the requirements of this APP/SSHP and provide safety equipment and safeguards suitable for the tasks and hazards involved. Subcontractors must provide the appropriate safety and health hazards and controls information for their project tasks to their personnel.

The identified subcontractor personnel responsible for safety at the former Fort Ord site are listed in Table 5.1.

The subcontractor's FS(s) and CP(s) are responsible for performing a daily safety inspections of their operations (29 CFR 1926.20[b][2]). A copy of this inspection report will be submitted to HGL's SSHO each day.

Subcontractors using heavy equipment must comply with the safety and inspection provisions in Sections 18 and 18.G of EM 385-1-1. Drilling subcontractors must comply with the safety and inspection provisions in Sections 18 and 18.H of EM-385-1-1. Subcontractors shall provide certification that heavy equipment, drilling equipment, or other equipment is current with regard to maintenance and repairs, and shall provide a thorough inspection according to the approved USACE inspection checklist (provided in Appendix B of this APP) before bringing the equipment on site. The Subcontractor may use the manufacturer's daily heavy equipment checklist, if this checklist is more specific than the USACE checklist. The Subcontractor shall also inspect the safety critical functions of heavy equipment and drill rigs daily.

The Subcontractor shall provide documentation to the SSHO for equipment operators documenting that they are fit to operate the equipment in a safe and efficient manner, and training certificates from a recognized training provider.

All accidents and near misses will be reported to the Army's Contracting Officer, Contracting Officer's Representative, and Project Manager (see Figure 5.1) as soon as reasonably possible but not later than 24 hours after the occurrence.

Each Subcontractor will comply at a minimum with the requirements of this APP and SSHP and also must:

- Provide documentation of successful completion of applicable training for each on-site worker to the HGL SSHO;
- Provide documentation of medical approval on an as-needed basis before the worker arrives on site;
- Provide all PPE required by their employees for this project [subject to the provisions of 29 CFR 1910.132(h)];
- Provide awareness-level training to affected HGL employees and other subcontractor workers regarding any material, equipment, or operation that may pose a hazard;
- Conduct any required industrial hygiene monitoring for their workers;
- Participate in the daily TSM and in routine site inspection activities;
- Report immediately all unsafe conditions, faulty equipment, incidents, and close calls to HGL's SSHO so that lessons learned can be discussed at TSMs; and
- Document that all equipment brought to the site is new or in "like new" condition, is inspected before use and routinely during use, and is maintained in safe working order.

Table 5.1
HGL Subcontractor List

Expertise	Subcontractor Name	Field Superintendent
Well Destruction	Cascade Drilling	R. Alcartado
Biologist	Dennis Duffy & Assoc.	Matthew Johnson

6. TRAINING

6.a NEW HIRE SAFETY AND OCCUPATIONAL HEALTH ORIENTATION

HGL's corporate HSP is designed to provide the education and tools enabling HGL employees to work in a safe and compliant manner. The program includes written policies and procedures including new employee orientation, project specific training, refresher training and customized classes. HGL staff expected to conduct work that may result in exposure to contaminant-related health and safety hazards or work on Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA) and Military Munitions Response Program sites, must complete a 40–hour Hazardous Waste Operations and Emergency Response (HAZWOPER) course prior to assignment to the field, if they have not already successfully completed the course.

6.b MANDATORY TRAINING AND CERTIFICATIONS

Workers at the site who may be exposed to safety or health hazards will receive site-specific training by the SSHO before they are permitted to enter areas where health and safety hazards pose a potential concern. Workers are not permitted to participate in or supervise site activities until they have been trained to the level required by their specific job function and responsibility.

Workers assigned to conduct fieldwork for this project shall complete these training requirements after mobilization to the field site:

- Site orientation;
- Site-specific emergency action procedures;
- Periodic safety and health training for supervisors and employees; and
- Munitions and explosives of concern (MEC) Awareness (whenever the potential of encountering MEC exists).

The FS and SSHO must have successfully completed a HAZWOPER 8–hour supervisor training course.

- The SSHO must have:
    - successfully completed a 30-hour OSHA Construction Safety outreach class for construction and investigation projects; or

If this project is classified as a hazardous, toxic, or radioactive waste (HTRW) or MEC site, in addition to the training listed above, workers will have:

- successfully completed a 40–hour HAZWOPER course and have three days of documented supervised field experience;
- successfully completed an 8–hour HAZWOPER refresher training course on an annual basis; and
- successfully completed a first aid/cardiopulmonary resuscitation (CPR)/Automated External Defibrillator (AED) course every two years.

Individuals fulfilling the roles of CP as defined by OSHA shall also have the experience and training courses as applicable and be designated as a CP by the CHSD.

Documentation of training for the initial field personnel assigned to this project is provided in Attachment 1B of the SSHP. This documentation will be kept current by the SSHO and retained on site while work is being performed.

6.b.1 Site-Specific Health and Safety Training

Before the start of the project, field personnel assigned to this project will participate in an initial meeting with the PM, FS, and SSHO to review and discuss the APP/SSHP and sign the APP acknowledgment form located at the beginning of the document. All new personnel assigned to the project after the initial safety meeting will review the APP, receive site-specific health and safety training, and sign the APP acknowledgement page.

The SSHO will summarize known site and activity hazards and explain precautions required to eliminate or minimize exposure to those hazards. The SSHO shall maintain attendance records and meeting notes with the project file.

The following subjects will be discussed during the site safety orientation meeting:

- Lines of authority, organization, responsibilities
- Communication methods and cell phone access locations
- Site facilities, locations of utilities, access/egress, work zones
- Hospital route
- Phases and sequence of work, equipment used
- Potential hazards, controls and safe work practices
- Required PPE
- Decontamination procedures
- Evacuation routes, emergency response plan, places of safe refuge, route to hospital; emergency notifications
- On-site persons certified in first aid and CPR
- Spill kits, first aid kits, fire extinguishers
- MEC awareness
- Fire Prevention

6.b.2 General Training

General training requirements, as applicable, are described below and should be completed at the appropriate function-specific frequency:

- Compliance with State of California requirements for water treatment plant operators, as needed;

- Completion of the Construction Quality Management for Contractors training by the construction QC system manager and alternates every 5 years;
- Completion of the OSHA Confined Space Entrant, Attendant, and Supervisor training course;
- Completion of the Construction Fall Protection Training and CP Certification;
- Completion of the USACE 30-hour General Industry/Construction Safety certification course; and
- Completion of the RCRA Hazardous Waste Management training.

Copies of certifications shall be provided to the CHSD for inclusion in the employee's health and safety file and the health and safety database.

6.c DAILY HEALTH AND SAFETY TAILGATE MEETINGS

The SSHO will conduct a safety briefing for all HGL and Subcontractor site personnel in the form of a TSM at the beginning of each workday and whenever conditions or tasks change.

These briefings will be used as an opportunity to address site-specific safety issues, refresh workers on specific procedures, address new hazards and controls on the Pre-Task Analysis worksheet, and discuss any Lessons Learned. An example of the TSM meeting documentation form is included in Appendix B of this APP.

Topics to be discussed at the TSM include the following:

- Day's activities
- Potential health and safety issues
- Changes in activities and operations
- Changes in conditions
- Weather conditions and heat/cold stress precautions
- Methods of risk reduction
- Required PPE for each task
- Exposure monitoring results
- Significant incidents from the previous day's activities
- Changes to the SSHP
- Completion of Pre-task Safety and Health Analyses worksheet, as needed

Employee feedback regarding health and safety will also be solicited. Documentation of each day's meeting will be retained.

6.d EMERGENCY RESPONSE TRAINING

The SSHO and FS will review site-specific emergency action procedures as a part of the site safety orientation training and periodically as a component of TSMs. All site personnel shall be

trained in the emergency response procedures in the SSHP, Section 15. This training shall include the following:

- Identification of the emergency coordinator(s) and contacts
- Procedures for emergency communications and notifications
- Procedures for contacting emergency services
- Locations of functioning communication devices for personnel not equipped with cellular telephones and for personnel working in areas with limited or no cellular telephone reception
- Location of communication service marshaling areas
- Locations of emergency telephone contact lists
- Locations of emergency medical facilities
- Site emergency evacuation procedures
- Locations of emergency evacuation rally points and safe refuge areas
- Identification of trained first aid and CPR providers
- Spill response procedures

7. SAFETY AND HEALTH INSPECTIONS

7.a SITE SAFETY INSPECTIONS

Job site safety and health inspections (reviews and audits) can be conducted by SSHOs, QC Officers, PMs and the SHM/CHSD or designee. The following reviews shall be performed:

- The SSHO shall inspect the job site daily or more often if warranted by ongoing activities. Findings shall be documented on the Daily Site Safety Inspection Log (Appendix B of this APP) and the results posted on the project bulletin board with copies sent to the PM, and SHM/CHSD or designee;
- The SSHO shall conduct quarterly facility safety inspections using the Facility Inspection Checklist that can be found in the Health & Safety Manual; and
- The PM or SHM/CHSD may conduct unannounced job site safety audits.

All safety deficiencies identified during the inspection processes shall be tracked until closed on the Safety and Occupational Health Deficiency Tracking Log (Appendix B of this APP), which will be retained in the field or facility office. The log will include the following:

- Date deficiency is identified
- Description of deficiency
- Name of person responsible for correcting deficiency
- Projected resolution date
- Date resolved

During periods of active fieldwork or when deficiencies apply to fixed facilities, a copy of the Safety and Occupational Health Deficiency Tracking Log will be provided each week to the SHM/CSHD for follow-up. The PM and SHM/CHSD shall verify each month that any necessary corrective actions have been implemented.

7.b PORTABLE FIRE EXTINGUISHER INSPECTIONS

The SSHO is responsible for performing the monthly inspections of and obtaining annual service for portable fire extinguishers that are not mounted on vehicles or equipment. The inspections shall be documented on the inspection tag on each extinguisher. Vehicle and equipment operators are responsible for the daily inspection of fire extinguishers on vehicles or equipment.

7.c FIRST AID KITS

First aid kits not located in vehicles shall be inspected monthly by the SSHO using the First Aid Kit Inspection Log (Appendix B of this APP). A seal may be placed on first aid kits to allow for less frequent inspections. If the seal is not broken, then an inspection is not required for up to 3 months.

A small first aid kit shall be available in each project vehicle. First aid kits in project vehicles do not need to be inspected if the factory plastic wrapping is intact. First aid kits in vehicles that

are not sealed in the factory plastic wrapping shall be inspected by the operator monthly using the First Aid Kit Inspection Log (Appendix B of this APP).

7.d EMERGENCY EYEWASH

An emergency eyewash unit capable of delivering at least 0.4 gallons of water per minute for 15 minutes or more shall be located immediately adjacent to employees who handle hazardous or corrosive materials, such as treatment plant operational chemicals and acidic sample preservatives. The emergency eyewash units shall be inspected twice monthly by the SSHO. The inspection shall be documented on the inspection tag on each eyewash station.

7.e EXTERNAL INSPECTIONS

The USACE or regulatory agencies may, at any time, perform inspections or audits of HGL's field health and safety practices. The PM, SHM/CHSD shall be immediately notified when a regulatory agency inspector requests access to an HGL work site for the purpose of a compliance inspection.

The COR shall be immediately notified by the PM of any regulatory agency inspection. The inspection should not be delayed due to non-availability of the COR or their designee.

If a citation is issued to HGL or its subcontractors, a copy of the citation will be submitted to the USACE COR along with a Corrective Action Plan.

8. ACCIDENT REPORTING

8.a EXPOSURE DATA (LABOR-HOURS WORKED)

All USACE contractors are required to submit monthly reports of labor hours worked by contractor/subcontractor personnel each month. The PM is responsible for reporting and maintaining records of all exposure and accident experience incidental to the work (this includes exposure and accident experience of HGL and its subcontractors). At a minimum, these records shall include exposure work hours and equivalent as prescribed by 29 CFR 1904. All accidents and near misses will be reported to the Army's Contracting Officer, Contracting Officer's Representative, and Project Manager (see Figure 5.1) as soon as reasonably possible but not later than 24 hours after the occurrence.

The HGL SHM maintains incident records for federal reporting requirements (OSHA 300 Log). The PM or designee will collect exposure data for each month when personnel are working on site. This exposure data will be provided to USACE using the USACE Prime Contractor Monthly Record of Work-Related Injuries/Illnesses & Exposure Form (Appendix B).

8.b ACCIDENT INVESTIGATIONS, REPORTS AND LOGS

Project personnel are required to report near misses, injuries, illnesses, and incidents to the FS and SSHO immediately. The SSHO will summon/arrange appropriate medical care if required. If an employee is injured or ill, WorkCare should be contacted as soon as practical, **(888) 449-7787**, if the injury is not a 911 life threatening injury. Use the HGL Emergency Number, (**800) 341-3647**, for after-hours reporting.

Except for rescue and emergency measures, the accident scene will not be disturbed until it has been released by the SSHO and the investigation is complete. This means that the accident scene will be left as it was immediately after the accident occurred; with the exception of injured personnel, nothing at the scene will be moved, straightened up, thrown away, or cleaned. Photographs of the incident site will be taken and any independent witness statements recorded as soon as safely possible. Witnesses are to be isolated and questioned separately if possible.

On-site management personnel will investigate near misses, injuries, illnesses, and incidents and accidents to identify unsafe acts or conditions that occurred or existed at the time of the accident. Corrective actions will be determined and implemented to prevent recurrence of the incident, and responsibility for implementation of corrective actions will be assigned. The final report and required forms will be submitted to the PM for signature and forwarded to the USACE COR. ENG Form 3394 will be completed and submitted to the COR within five working days of the completion of the investigation into the incident.

In the event that an accident results in an employee being sent to a doctor, the Medical Assessment/Work Capacity Form (Appendix B of this APP) will be completed by the attending physician on the date of treatment and will state one of the following conditions:

- Employee may return to full duty work.

- Employee may return to limited duty (with type of limitations).
- Employee is unable to return to work.

A copy of the completed Medical Assessment/Work Capacity Form (Appendix B of this APP) must accompany the completed accident reports.

At the discretion of the COR, HGL will provide a face-to-face briefing of all lost work day accidents to the USACE within five days of the accepted ENG Form 3394. HGL management, the SSHO, and others deemed necessary will be present at the briefing.

8.c IMMEDIATE NOTIFICATION REQUIREMENTS

The FS will make notifications to the PM, SHM/CHSD and others as required by HGL's incident reporting policy. The SSHO will complete and submit the HGL Incident Report form within 24-hours as directed by HGL's HSP Incident Reporting Policy. The PM will report incidents to the COR and USACE PM as soon as the facts are known, but no longer than 24 hours after the incident. The appropriate forms to be completed are in Appendix B and include the following:

- Supervisor's Incident Investigation Report;
- Automobile Accident Report;
- HGL Incident Report;
- HGL Lessons Learned;
- HGL Medical Assessment/Work Capacity Form;
- USACE Form 3394 – USACE Accident Investigation Report (Submitted within 5 days); and
- Worksheet for Preliminary Accident Notification (submitted within 24 hrs.).

Subcontractors and other non-HGL employees shall report all close calls, equipment property damage, injuries, or illnesses. The subcontractor's safety personnel shall investigate and analyze the incident so that the situation can be corrected. A copy of the subcontractor's investigation report shall be made available to the HGL PM. The PM will then forward the report to the SHM/CHSD.

Immediate notification to the USACE through the HGL PM is required for:

- A fatal injury;
- An Arc Flash incident;
- The hospitalization of one (1) or more persons hospitalized as inpatients as a result of a single occurrence; and/or
- Property damage of $200,000 or more.

HGL will also notify the USACE within 24 hours of a determination that a project related injury or illness may result in a permanent total or partial disability.

9. PLANS (PROGRAMS, PROCEDURES) REQUIRED BY THE SAFETY MANUAL

The following sections address the plans required by the USACE in the Safety and Health Requirements Manual (USACE, 2014).

9.a FATIGUE MANAGEMENT PLAN

A fatigue management plan will be in force since work hours may exceed 10 hours per day for more than 4 consecutive days and exceed 50 hours in a 7 day work week.

Excessive Work Hours

The following workday duration limitations for hours worked on the projects are in effect:

- Personnel working on site, including those who are operating hoisting equipment or mobile construction equipment, may work up to 12 hours at the site, which does not include travel time to/from their home/motel or uncompensated lunch breaks. This workday duration is subject to reduction by the other requirements and factors described in the bullets below. The 12-hour limit is primarily due to motor vehicle driving restrictions.
- Personnel, while on duty, shall not operate motor vehicles after being in a duty status (regardless of their role or function) for more than 12 hours during any 24-hour period without at least 8 consecutive hours of rest. Personnel may work an additional 2 hours at the motel or their home (for a total 14-hour day), though still subject to reduction by the other requirements and factors described below. A minimum of 8 consecutive hours shall be provided for rest in each 24-hour period.
- No employee may drive continuously for more than 10 hours in any single on-duty period (continuous period of more than 10 hours in any 24-hour period without at least 8 consecutive hours of rest).

For each project effort, the SSHO is responsible for adjusting the workday duration within these limits. The following factors will be considered by the SSHO for adjusting the workday duration:

- Time of year (e.g., reduce workday duration because there is less daylight in winter).
- Temperature/weather (e.g., reduce workday duration when the temperature is very cold, very hot, or very windy).
- Type of work (e.g., reduce workday duration for personnel involved in physically demanding phases of work).
- Individual personnel limitations (e.g., reduce workday duration for personnel with minor head colds, suffering from temporary effects of allergies, or showing signs of heat stress).

The controls established at the worksite will include the following:

- Training that includes signs and symptoms of fatigue, habits and actions the worker may take to avoid fatigue, actions workers should take if they observe fatigue in a co-worker, and controls in place to prevent fatigue.
- Discussion of driving to and from work and any possible mitigation of driving as a factor of fatigue.

Managers and supervisors will know how to recognize signs and symptoms of the potential health effects associated with extended and unusual work shifts. Workers who are being asked to work extended or irregular shifts will be diligently monitored for the signs and symptoms of fatigue. Any employee showing such signs will be evaluated and possibly directed to leave the active area and seek rest.

Discussion of controls for fatigue which will include work scheduling (limit number of consecutive night shifts), rotating jobs to prevent repetitive work, breaks at critical times in the work cycle, control of environmental factors (heat, cold, use of personal protective equipment), buddy check-in for individuals working alone, and alternate transportation for long commutes.

9.b LAYOUT PLANS

The staging area for well destruction and plant decommissioning activities will be located at the existing NWTS. This area was used during previous construction and well destruction efforts. If available, additional staging areas may be identified and used with the permission of the land owner and the SSHO.

9.c EMERGENCY RESPONSE PLANS

Pre-planning measures to avoid personal injury or exposure include employee training, fire and explosion prevention and protection, chemical spill and discharge prevention and protection, and safe work practices. In the event that an emergency situation occurs, site personnel will assess the situation, decide if they have the equipment, supplies, PPE and tools to respond to, to contain or to clean up the incident. If any aspect of an emergency response effort is missing, the SSHO will announce a site evacuation (emergency action) to the rally points detailed in the emergency action plan. Emergency response plans include:

- Emergency Response team organization
- Communication means and protocols
- An evaluation of likely emergencies
- Staff training and capabilities
- Emergency response equipment
- A determination of likely emergencies that can be handled using internal resources and a list of likely emergencies needing outside emergency assistance
- Steps to summon and coordinate outside emergency responders
- Clean up actions necessary after the immediate emergency has been contained

- Provisions for a critical review of actual emergency response activities against the activities specified for that type of emergency in the emergency response plan
- Editing changes into the written plan and briefing site personnel on the changes.

Emergency Action Plans limit site employee activities to:

- Emergency recognition
- Emergency notification inside the site and with outside emergency responders
- Communication means and protocols
- An evaluation of likely emergencies
- Staff training and capabilities
- Steps to coordinate with outside emergency responders on site
- Evacuation routes and rally points
- Clean up actions necessary after the immediate emergency has been contained
- Provisions for a critical review of actual emergency actions against the actions specified for that type of emergency in the emergency action plan
- Editing changes into the written plan and briefing site personnel on the changes.

9.c.1 Procedures and Testing

Upon mobilization to the project, the FS and SSHO shall verify that personnel have an effective means of communications (cellular telephone or two-way radio) from every work area on the site. Before project work commences, an emergency medical assistance network will be established and all emergency communication equipment tested. The local Emergency Medical Service (EMS) as identified on the Emergency Information Sheet (located at the front of this APP) will be informed of the field activities, location, and schedule. An estimate of response times will be documented. A designated meeting location will be established and the location communicated to the field team during the TSM.

In the event that an emergency arises, the appropriate immediate response must be taken by the first person to recognize the situation. The field crew shall contact emergency response services by calling 911 (or location specific emergency communication system) and then immediately notify the SSHO of the incident. The authority to order personnel to evacuate the area rests with the FS, SSHO or a qualified USACE representative.

In the event that site evacuation is required, a continuous, uninterrupted air horn will be sounded for approximately ten seconds. Air horns in the work area or a vehicle horn will be used. Continuous communication will be maintained between the site and the main office. Emergency alert systems shall be tested periodically. If employees are working alone in remote locations, a means of contact must be provided. Personnel shall evacuate to a designated safe, upwind location and the crew leader will perform a head count. Once the head count has been performed, the SSHO will be provided a status report of the event.

During any on-site emergency, work activities in the affected area will cease until the emergency is bought under control.

9.c.2 Spill Plans

Subcontractors will maintain the following equipment and materials on site for use during spill response activities:

- Polyethylene sheeting;
- Spill control materials;
- 55-gallon drums; and
- Shovels and assorted hand tools.

Potential spill events include vehicle and equipment fuels, oils and other fluids which may occur during fueling operations or because of equipment leaks. Materials that may cause contamination will be present in radiators, fuel tanks, hydraulic reservoirs, fuel cans, and oil cans. To prevent leaks:

1. Vehicles and equipment will be inspected daily and immediately taken out of service in the event of leaks.
2. Cans containing fuels or oils will be labeled and stored appropriately.
3. Non-emergency maintenance of heavy equipment or vehicles will not be performed on site. In the event that on-site equipment maintenance is required, precautions such as buckets and plastic sheeting will be used to so that contaminants are not released to the environment.

Hazardous waste stockpiles are not anticipated on this project. Construction debris and recyclable materials may be stockpiled before transporting the materials off site for disposal or recycling.

If a hazardous material spill is observed at the site, the cause of the spill will be addressed (if possible) as soon as it is safe to do so. After addressing the cause, spill control materials will be applied to the spill if appropriate. The SSHO will then be notified. The SSHO will make an assessment of the magnitude and potential impact of the spill, including if the material represents a reportable quantity. Fuels or oils that are spilled in excess of 100 pounds or 25 gallons will be immediately reported to the Monterey County Environmental Health Department and the facility fire department. The fire department will be called to assist with spills that cannot be safely handled by on-site personnel. The SSHO will then notify the PM, and the HGL CHSD. The PM will notify the COR.

If a spill occurs during fueling operations, the vehicle tank will be capped and fuel dispensing device moved away from the equipment. Spill control materials will be applied to the spill (usually kitty litter) and the solidified spill dug up and transferred to 55-gallon metal open top drums. The drums will be labeled with the location, date, time and contents.

For other spills that can be safely handled by on-site personnel, the spilled material will be cleaned up when it is safe to do so as follows:

- The spill area will be approached from upwind.
- The spilled material will be identified based on the source of the material (fuel tank, labeled container, etc.). The Safety Data Sheets (SDS) will be reviewed by the FS and SSHO. The potential hazards will be evaluated to determine the proper personal protection levels, methods, and equipment necessary for response.
- Evacuate, isolate, and secure the spill area, if necessary.
- Work zones shall be set up.
- Spill containment will initially be made without entering the immediate hazard area. Priority will be given to prevent the spilled material from entering any streams, ditches, or sewers.
- Entry to the spill area for cleanup will be made by personnel with the proper PPE, training, methods, and equipment necessary to perform the work. Spill cleanup and collection typically involves shoveling or excavating the affected soil into drums or larger containers.
- Store the spilled material for disposal. Disposal options of the material will depend on the amount and type of material.

9.c.3 Fire Fighting Plans

In the event of a fire or explosion, the SSHO will notify the Marina City Fire Department and EMS. On-site fire extinguishers may be used on incipient stage fires only provided that the person has been trained and can safely do so.

9.c.4 Posting of Emergency Telephone Numbers

To facilitate the quick retrieval of information in the event of an emergency, a summary has been placed in the front of this SSHP including emergency contact information and a map showing the route from the project site to the hospital. A copy of this emergency information will be kept in all field vehicles and posted in on-site offices (as applicable).

9.c.5 Man Overboard/Abandon Ship

Not applicable since there will be no boats, vessels, or skiffs used at the project under the current scope of work (SOW).

9.c.6 Medical Support

The HGL occupational medical care provider will be available to provide patient specific information in case medical treatment is needed. For injuries or illnesses requiring EMS, notification via the 911 system or equivalent system will be made by the SSHO. Emergency response personnel will determine the best course of treatment and the medical treatment facility

where this will occur. Personnel may be transported to the nearest medical treatment facility as determined by EMS personnel.

Qualified first aid and CPR providers may treat minor injuries on site. Two field team members (HGL or subcontractor) must be trained to render both CPR and First Aid. On this project Peter Arroyo and Megan Matteazzi are trained for CPR and First Aid. Each HGL first aid/CPR certified employee is part of the HGL Bloodborne Pathogens Program.

Trained employees may provide first aid/CPR of their own free will and are protected from liability under local Good Samaritan laws. A first aid kit, including necessary protection against bloodborne pathogens, will be available in project vehicles. An adequate supply of fresh potable water for emergency eye wash purposes or portable emergency eyewash will be available.

If additional treatment beyond first aid is required, the injured personnel will be transported to the identified emergency medical care. If the injury is not serious or if the ambulance response time is excessive, the injured party may be transported by the FS to the nearest emergency room using an HGL field vehicle. The Emergency Information Sheet and the map and directions indicating the fastest route to the hospital emergency room will be retained in each field vehicle. In all cases, the FS or SSHO will accompany injured HGL workers to the hospital or medical care facility. A member of the subcontractor's field team will accompany subcontractor's workers to the hospital or medical care facility.

9.d PLAN FOR PREVENTION OF ALCOHOL AND DRUG ABUSE

HGL implements a Substance Abuse Deterrence Program in support of the Corporate Drug-free workplace policy. The program is designed to maintain a safe workforce and prohibits the following:

- Engaging in any drug activity that is prohibited by federal, state, or local law. This includes, but is not limited to, the possession, use, manufacture, distribution, or sale of illegal drugs at any time or at any place;
- Working under the influence of alcohol or illegal drugs;

The deterrence program includes post-offer/pre-employment drug testing, random testing for safety sensitive employee groups, testing for cause and testing after an accident when it appears that the employee is under the influence.

Failure to comply with any part of this policy may result in disciplinary action up to and including termination of employment.

9.e SITE SANITATION PLAN

HGL shall maintain hygienic sanitation provisions during the duration of this project. General requirements for a temporary, mobile field crew include:

- Drinking water – Potable drinking water shall be available to employees and employees are encouraged to frequently drink small amounts, (e.g., 1/2 cup every 15-20 minutes). The water shall be kept reasonably cool 50-60 degrees F (10-15 degrees C) to encourage consumption.
- Toilet facilities – A port-a-potty is maintained at the OU-1 treatment plant and will remain until the NWTS is decommissioned and all IDW has been removed.
- Washing facilities – Portable washing facilities shall be kept in close proximity to the work site. Portable washing facilities will consist of, at a minimum, soap, water and paper towels.
- Waste Disposal – IDW generated during the field activities will be classified, handled and disposed in accordance with the Waste Management procedures outlined in the Work Plan following applicable federal, state, and local regulations. Waste is not generated during operation of the OU-1 treatment plant unless the granular activated carbon (GAC) is changed out. If GAC change out is required, it is characterized and recycled by the vendor.
- Disposable materials (not classified as hazardous) such as latex-free gloves, used PPE, aluminum foil, paper towels, etc., will be placed and sealed in plastic garbage bags for disposal with sanitary waste from the site.

9.f ACCESS AND HAUL ROAD PLAN

HGL will use existing roads to access the work area. Overland access will be required within the work area during well destruction and pipeline removal; however, no new roads will be constructed. Overland access routes will be laid out to minimize natural resource impacts as specified in the Work Plan.

9.g RESPIRATORY PROTECTION PLAN

A Respiratory Protection plan is not applicable in accordance with 29 CFR 1910.134; applicable State regulations; and HGL's Standard Operating Procedure (SOP) 06 *Hazardous or Toxic Agents and Environments* and the Safety and Health Requirements Manual (USACE, 2008) under the current SOW.

9.h HEALTH HAZARD CONTROL PROGRAM

The Hazard Control Program for this site consists of:

- AHAs;
- Hazard/Risk Analysis;
- PPE;
- Exposure Monitoring/Air Sampling Program; and
- Standard Safety Procedures, Work Practices, and Engineering Controls.

AHAs: The process for developing AHA is discussed in Section 10 and the AHAs developed for this project are provided in Attachment 1A of the SSHP. HGL's FS and SSHO will

continually review activities and works environment to identify hazards not addressed in the AHA. The SSHO will keep subcontractor personnel informed of changing conditions and any new hazards and requirements.

Hazard/Risk Analysis: The anticipated hazards and the recommended control measures are presented in Section 3.0 of the SSHP (Appendix A). HGL's overall approach is to eliminate hazards when possible and feasible. If a hazard cannot be eliminated, then the National Institute for Occupational Safety and Health (NIOSH) hierarchy of controls should be applied, with substitution and engineering controls used preferentially over administrative controls and PPE. The NIOSH hierarchy is as follows:

1. Elimination
2. Substitution
3. Engineering controls
4. Administrative controls
5. PPE.

PPE: HGL's PPE Program is detailed in HGL HSP Procedure 06. HGL uses the EPA terminology for PPE which consists of four recognized levels of protection.

1. **Level A protection** is required when the greatest potential for exposure to hazards exists, when the concentration and type of airborne substances is unknown, and when the greatest level of skin, respiratory, and eye protection are required. Level A clothing and equipment include positive-pressure, full face-piece self-contained breathing apparatus (SCBA) or positive pressure supplied air respirator with escape SCBA, totally encapsulated chemical- and vapor-protective suit, inner and outer chemical-resistant latex-free gloves, and boots.
2. **Level B protection** is required under circumstances requiring the highest level of respiratory protection, with lesser level of skin protection. Level B protection includes positive-pressure, full face-piece SCBA or positive pressure supplied air respirator with escape SCBA, inner and outer chemical-resistant latex-free gloves, face shield, hooded chemical resistant clothing, coveralls, and outer chemical-resistant boots.
3. **Level C protection** is required when the concentration and type of airborne substances is known and the criteria for using air purifying respirators are met. Level C equipment includes full-face air purifying respirators, inner and outer chemical-resistant latex-free gloves, hardhat, escape mask (in confined spaces), and disposable chemical-resistant outer boots. The difference between Level C and Level B protection is the type of equipment used to protect the respiratory system, assuming the same type of chemical-resistant clothing is used. The main criterion for Level C is that atmospheric concentrations and other selection criteria permit wearing an air-purifying respirator.
4. **Modified Level D protection** is required where there is a potential for skin and clothing contact but little potential for airborne exposures. Modified Level D ensemble includes all of the PPE listed in Level D below plus Tyvek®-type coveralls for dry contaminated matrices or Saranax®-type coverall for wet contaminated matrices. Modified Level D has

the advantage of being quickly upgraded to a Level C ensemble if conditions require it. The disadvantage is that both types of coveralls subject the wearer to higher levels of heat and heat stress incidents.

5. **Level D protection** is the minimum protection required. Level D protection may be sufficient when no contaminants are present or work operations preclude splashes, immersion, or the potential for unexpected inhalation or contact with hazardous levels of chemicals. Level D protective equipment includes long pants, long-sleeve shirts, latex-free work gloves, coveralls, safety glasses, face shield, and chemical-resistant, boots or shoes with steel or composite toes for crush protection. When working near roadways or alongside heavy equipment, Type 2 reflective vests and/or outer clothing must be worn.

While these are general guidelines for typical PPE to be worn in certain circumstances, other combinations of protective equipment may be more appropriate, depending on specific site and task characteristics. The specific PPE required for this site is detailed in Section 6.0 of the SSHP (Appendix A of this APP).

Exposure Monitoring/Air Sampling Program: Air monitoring may be conducted whenever work might generate gases, vapors, dust, fumes, mists, or other airborne hazardous materials. HGL's approach is to conduct sampling with direct-reading instruments. The exposure monitoring program specified for this project is detailed in Section 8.0 of the SSHP (Appendix A of this APP).

Standard Safety Procedures, Work Practices, and Engineering Controls: HGL will implement applicable and feasible engineering controls and work practices to eliminate, or reduce, the risk of exposure to recognized site hazards. These control measures are presented in Section 10.0 of the SSHP (Appendix A of this APP).

9.i HAZARD COMMUNICATION PROGRAM

HGL developed a Hazard Communication Program (HCP) to meet the requirements of the OSHA Hazard Communication Standard, Title 29 CFR 1910.1200 - 1201 including the 2012 amendments. OSHA requires that employers make information available to employees about hazardous chemicals they may be exposed to in the workplace. This information includes, but is not limited to, toxicology, physical and chemical hazards, means of detection, and protection against exposure.

For hazardous chemicals brought to the site, HGL makes this information available to staff members through this written hazard communication program, lists of chemicals in use, current copies of SDSs, container labeling, and staff training.

The OSHA Hazard Communication Standard recognizes that HGL may be the only employer on some work sites, and one of several employers on others. This HCP has provisions for requesting and communicating information on hazardous chemicals others bring to the work site that HGL staff may be exposed to during the course of their duties.

Some states or local municipalities may have specific Right-To-Know or Community Right-To-Know requirements not addressed in this HCP. Accordingly, Office Managers, PMs, or their designees will determine the specific requirements of the localities where they operate.

As a part of the HCP, the project SSHO is responsible for:

- Bringing a copy of the following documents to the project site:
  - The written HCP;
  - The OSHA Hazard Communication Standard; and
  - Current SDSs for each hazardous chemical HGL introduces to the site.
- Developing and maintaining a comprehensive list of hazardous chemicals HGL introduces to the job site, and making it accessible to all staff on the site.
- Reviewing the SDSs which accompany incoming shipments and maintaining the SDSs in project files on site.
- Contacting the source of the hazardous chemicals if the SDSs are not complete or if an SDS is not supplied with an initial shipment.
- Labeling temporary and permanent hazardous chemical containers.
- At multi-employer sites, telling the other employers the location of the written HGL HCP and copies of SDSs for the site.
- Communicating with other employers (e.g., Owner, Contractors, Subcontractors) to obtain information about the location of their written hazard communication program(s), labeling program, and SDSs, and, if applicable, information on the hazardous chemicals they may produce or introduce to the job site that HGL employees may be potentially exposed to.

9.j PROCESS SAFETY MANAGEMENT PLAN

A Process Safety Management Program is not applicable in accordance with 29 CFR 1910.119 and the Safety and Health Requirements Manual (USACE, 2008) under the current SOW.

9.k LEAD ABATEMENT PLAN

A Lead Abatement Program is not applicable in accordance with 29 CFR 1910.1025 and the Safety and Health Requirements Manual (USACE, 2008) under the current SOW.

9.l ASBESTOS ABATEMENT PLAN

An Asbestos Abatement Program is not applicable in accordance with 29 CFR 1910.1001; 29 CFR 1926.1101; 40 CFR 61, Subpart M; applicable State regulations; and HGL's SOP 06 *Hazardous or Toxic Agents and Environments* and the Safety and Health Requirements Manual (USACE, 2008) under the current SOW.

9.m RADIATION SAFETY PROGRAM

A Radiation Safety Program is not applicable in accordance with applicable state regulations; HGL's HSP Procedure 31 *Radiation Safety*; HGL's SOP 06 *Hazardous or Toxic Agents and Environments*; and the Safety and Health Requirements Manual (USACE, 2008) under the current SOW.

9.n ABRASIVE BLASTING PLAN

An abrasive blasting plan is not applicable in accordance with the Safety and Health Requirements Manual (USACE, 2008) under the current SOW.

9.o HEAT/COLD STRESS MONITORING PLAN

9.o.1 Heat Stress

HGL's Heat Stress Program is applicable to all HGL employees that work in hot and humid environments, either indoors or outdoors. A heat stress or strain condition exists when a person's body becomes warmer when heat is added faster than it is dissipated. Many factors affect the rate of heat addition and the rate of heat loss. Increased heat accumulation occurs when a person works more strenuously or exposes himself to a source of radiant heat (e.g., the sun). Loss of heat from the body is hindered by high humidity, low air movement, and high temperature of air and surrounding objects. Heavy clothing or additional protective equipment, which might be required on a project site, also can reduce the loss of heat and thus increase heat accumulation.

The risk of heat-related illness among healthy workers who are acclimatized to hot work is low if the wet bulb globe thermometer (WBGT) value does not exceed the American Conference of Governmental Industrial Hygienists (ACGIH) "screening criteria" shown below in Table 9.1 (ACGIH, 2012).

Table 9.1
ACGIH Screening Criteria and Action Limit for Heat Stress Exposure
(WBGT Values in Degrees Centigrade/Fahrenheit)

Work/Recovery cycle	TLV®				Action Limit			
	Light	Moderate	Heavy	Very heavy	Light	Moderate	Heavy	Very heavy
75 - 100% work	31/87.8	28/82.4	-	-	28/82.4	25/77	-	-
50 - 75% work	31/87.8	29/82.2	27.5/81.5	-	28.5/83.3	26/78.8	24/75.2	-
25 - 50% work	32/89.6	30/86	29/84.2	28/82.4	29.5/85.1	27/80.6	25.5/77.9	24.5/76.1
0 - 25% work	32.5/90.5	31.5/88.7	30.5/86.9	30/86	30/86	29/79	28/82.4	27/80.6

Notes: Values from the 2012 edition of the ACGIH publication Threshold Limit Values (TLV®) and Biological Exposure Indices.

Physiological monitoring to detect the symptoms of heat stress is required under the following circumstances:

- Impermeable protective clothing is worn by workers in hot environments, or

- A feasible work/rest cycle is not sufficiently protective to conform to the ACGIH recommendation if WGBT protocol is employed (greater than 80 degrees Fahrenheit (°F)/50% relative humidity).

The SSHO will use personal monitoring devices that continuously measure heart rate and/or body temperature. The following should be followed for an individual healthy employee's heart rate.

- Count the radial (wrist) pulse during a 30-second period as early as possible in the rest period.
- If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same.
- If the heart rate still exceeds 110 beats per minute at the next rest period, shorten the following work cycle by one-third and keep the rest period the same.

SSHOs may need to consider more conservative criteria depending on an individual employee's health condition (heart disease history, obesity, diabetes) and age adjustment.

In hot environments, the following guidelines will be followed to prevent heat-related injury.

- Potable drinking water shall be available to employees and employees are encouraged to frequently drink small amounts, (e.g., 1/2 cup every 15-20 minutes). The water shall be kept reasonably cool 50-60 degrees F (10-15 degrees C) to encourage consumption.
- Toolbox training in hot environments will include training on the symptoms of heat-related problems, contributing factors to heat-related injuries, and prevention measures.
- When possible, work should be scheduled for cooler periods during the day.
- Individuals will be encouraged to take breaks in a cooler location, and use cooling devices as necessary, such as cooling vests, to prevent heat-related injury. A buddy system will be implemented to encourage fluid intake and watch for symptoms of heat-related injury. Workers should not only monitor themselves, but also be alert to changes and the symptoms of their co-workers.
- SSHO will monitor those individuals who have had a previous heat-related illness, are known to be on medication, or exhibit signs of possibly having consumed large amounts of alcohol in the previous 24 hours for signs or indicating symptoms of heat-related illness.
- Individuals who are not acclimatized will be allowed additional breaks. The period and number should be determined by the SSHO and provided to the supervisor and employee for implementation.

Where employees are exposed to solar radiation for short periods and there is the potential for sunburn or exposure for prolonged periods where long-term exposure could lead to health effects such as skin cancer, they will be provided sunscreen with a sun protection factor (SPF) appropriate for their skin type and exposure. Sunscreens shall be used only in accordance with the manufacturer's recommendations.

More information may be found in HGL HSP Procedure 14.1 Heat Stress Program and in HGL SOP 06 Hazardous or Toxic Agents and Environments, Section 06.I Inclement Weather and Heat/Cold Stress Management (in Appendix C of this APP).

9.o.2 Cold Stress

The potential for cold stress is determined primarily by two variables: the temperature of the air and the speed of the wind. The cooling effects of moving air on exposed flesh can be expressed as an equivalent chill temperature (ECT), which combines temperature and air speed. At a given temperature, calm air is less dangerous.

Table 9.2 shows values of ECT for various temperature and speed combination. The conditions represented by Zones B and C are extremely dangerous to exposed skin. Continuous exposure of exposed skin should not be permitted if the ECT is -25 °F or less. Work under conditions represented by Zone A is much less dangerous to exposed skin. However, workers can suffer frostbite injury in the less severe environment if they develop a false sense of security and fail to take precautions.

At low ECT values, precautions against hypothermia are necessary, even if workers are dressed in well insulating clothing. The danger of hypothermia is especially severe if immersion in water is possible during the work.

Table 9.2
Equivalent Chill Temperature (°F)
at Various Air Temperatures and Wind Speeds

Estimated Wind Speed (mph) ↓	**Actual Temperature Reading (°F)**											
	50	**40**	**30**	**20**	**10**	**Zero**	**-10**	**-20**	**-30**	**-40**	**-50**	**-60**
Calm	*50*	*40*	*30*	*20*	*10*	*0*	*-10*	*-20*	*-30*	*-40*	*-50*	*-60*
5	*48*	*37*	*27*	*16*	*6*	*-5*	*-15*	*-26*	*-36*	*-47*	*-57*	*-68*
10	*40*	*28*	*16*	*-9*	*-24*	*-24*	*-33*	*-46*	*-58*	*-70*	*-83*	*-95*
15	*36*	*22*	*9*	*-5*	*-18*	*-32*	*-45*	*-58*	*-72*	*-85*	*-99*	*-112*
20	*32*	*18*	*4*	*-10*	*-25*	*-39*	*-53*	*-67*	*-82*	*-96*	*-110*	*-121*
25	***Zone A***			*-15*	*-29*	*-44*	*-59*	*-74*	*-88*	*-104*	*-118*	*-133*
30	***Little Danger*** *(in < 1*			*-18*	*-33*	**Zone**	*-63*	*-79*	**Zone C**			
35	*hour, if skin is dry)*			*-20*	*-35*	**B**	*-67*		**Great Danger** (Flesh may			
40	*26*	*10*	*-6*	*-21*	*-37*	*-53*	*-69*	*-85*	freeze within 30 seconds.)			

The SSHO will make an assessment of the potential for cold stress before field work begins, primarily through local weather reports but using thermometers or wind speed measuring equipment on site as needed.

Work rules related to the prevention of cold-related injury will be required if conditions of the type represented in Zones A, B, or C in the ECT table are anticipated. Under such conditions,

the SSHO will measure temperature and wind speed when work commences each day and at routine intervals (at least every four hours) thereafter, unless he or she believes that some other means of hazard assessment is adequate. The HGL CHSD must approve any alternative means of hazard assessment. When work is conducted under conditions represented in Zones A, B, or C, the SSHO will implement work rules described below to manage the potential hazard.

- Employees will receive training on the dangers and symptoms of cold-related injury and the work rules adopted to prevent it.
- Site workers will be warned that older individuals and people with circulatory problems might be at increased risk for cold-related injury, and that added precautions might be necessary to protect them.
- Each employee will be under protective observation by someone else during work. (i.e., use of the "buddy system" will be required)
- Employees who experience pain in the extremities or evident shivering will be removed from exposure to the cold work environment.
- Work must be halted if frostbite cannot be prevented. Continuous skin exposure will not be permitted when the ECT is -25 °F or less (Zones B and C on the ECT table).
- Tasks should be scheduled to avoid long periods during which workers must sit or stand still.
- Work expectations for new employees should be adjusted downward for the first few days, to permit acclimatization to the cold conditions.
- Dehydration, which decreases blood flow to the extremities, should be avoided. Employees will be encouraged to replenish water lost to perspiration and respiration. The SSHO will provide soups and warm sweet drinks as appropriate.
- The SSHO will develop procedures that reduce the likelihood of immersion in water or soaking of the clothing by other means during project work. Such precautions should apply to any work with liquids like gasoline, alcohols, solvents, or cleaning fluids.
- The SSHO will plan for any likely scenarios that would lead to wet clothing (through immersion in water, soaking by mist, etc.), and provide for quick changing into dry clothing and treatment for hypothermia.
- Emergency plans will give special attention to the prevention of cold-related injury (hypothermia and freezing of damaged tissues).

If continuous work must be performed at an ECT below 19.4 °F, then the SSHO or PM will provide a heated shelter (truck, car, tent, cabin, or similar space) for warming after exposure to the cold environment. Employees should be encouraged to use the shelter at frequent intervals, and upon (1) onset of pain or heavy shivering, (2) occurrence of minor frostbite, or (3) onset of feelings of excessive fatigue, drowsiness, irritability, or euphoria. For these conditions, the SSHO will monitor weather and environmental conditions and implement a mandatory work/warming regimen according to Table 9.3.

Table 9.3
Work/Warming Schedule for a 4-Hour Shift

Air Temp. (°F)	Air Speed (mph)				
	Calm	**5**	**10**	**15**	**20**
- 15 to -19	Normal Breaks (1)	Normal Breaks (1)	75 min. max. work period with 2 breaks	55 min. max. work period with 3 breaks	40 min. max. work period with 4 breaks
- 20 to – 24	Normal Breaks (1)	75 min. max. work period with 2 breaks	55 min. max. work period with 3 breaks	40 min. max. work period with 4 breaks	30 min. max. work period with 5 breaks
- 25 to – 29	75 min. max. work period with 2 breaks	55 min. max. work period with 3 breaks	40 min. max. work period with 4 breaks	30 min. max. work period with 5 breaks	
- 30 to – 34	55 min. max. work period with 3 breaks	40 min. max. work period with 4 breaks	30 min. max. work period with 5 breaks		
- 35 to – 39	40 min. max. work period with 4 breaks	30 min. max. work period with 5 breaks	**Non-emergency work should cease.** NOTE: The above work/warming regimens are applicable to workers in dry **not** wet clothing.		
- 40 to – 44	30 min. max. work period with 5 breaks				
- 45 and below					

Notes: Break period is a 10 minute warm-up time in a warm location. Source: ACGIH TLVs and BEIs, Cincinnati, OH, 2011. Adapted from the Occupational Health and Safety Division, Saskatchewan Department of Labour

The rules implemented by the SSHO will require that employees wear adequately insulating dry clothing if conditions of the type represented in Zones A, B, or C in the ECT table are anticipated. Workers should wear cold-protective clothing appropriate for the environmental conditions and the level of physical activity. The following considerations should guide the selection and use of protective clothing:

- Layered clothing shall be used to preserve body heat. An easily removable outer windbreak garment should be worn in windy conditions.
- Inner garments and underwear shall be made of fabrics that dry quickly and wick moisture away from the body.
- Outer garments shall be made with provisions for easy ventilation to prevent inner layers to be wetted by sweat.
- An employee shall not enter or remain in a cold work environment if his or her clothing is wet as a consequence of sweating. If clothing is wet, then the employee shall change into dry clothing before returning to the cold environment.
- Latex-free gloves and/or mittens shall be used as necessary to protect the hands, and employees shall be warned not to touch very cold objects and surfaces with bare skin.
- Workers shall routinely change socks and removable felt insoles to reduce moisture around the feet.
- Eye protection suitable to the type of hazard shall be used. Special precautions against ultraviolet light and glare might be necessary in snow-covered terrain.

- Hardhat liners shall be used. If work must be done on slippery surfaces, then shoe attachments that enhance traction shall be used.

The focus of this procedure is to ensure that workers can work safely in cold environments with required PPE to protect them from other hazards they may encounter on their worksite and not incur increased risk of cold stress related illness. PPE for cold environments beyond that described in this procedure require that the SSHO, PM, and CHSD be contacted on a case-by-case basis before such PPE is employed.

Work under extremely cold and/or windy conditions outside of those described in this procedure must be approved by the CHSD.

More information may be found in HGL HSP Procedure 14.2 Cold Stress Program and in HGL SOP 06 Hazardous or Toxic Agents and Environments, Section 06.I Inclement Weather and Heat/Cold Stress Management (Appendix C of this APP).

9.p CRYSTALLINE SILICA MONITORING PLAN

Employee airborne exposure to crystalline silica shall not exceed the 8-hour TWA limit as specified by the ACGIH in their "Threshold Limit Values and Biological Exposure Indices," most recent edition, or by OSHA, whichever is more stringent. Table 9.4 provides U.S. guidelines and limits for occupational exposure to crystalline silica established by NIOSH, OSHA, and ACGIH as of the date of this Plan.

Table 9.4
U.S. Guidelines and Limits for Occupational Exposure to Crystalline Silica

Reference	Substance	Guideline or limit(mg/m^3)
NIOSH (NIOSH, 2003)	Crystalline silica: quartz, cristobalite, and tridymite as respirable dust	REL = 0.05 (for up to 10-hr workday during a 40-hr workweek
OSHA [29 CFR 1926.1153	Respirable crystalline silica, quartz	PEL =.05 mg/m^3 Action level=.03 mg/m^3
ACGIH (ACGIH, 2017)	Respirable crystalline silica, quartz	TLV = 0.025 (8-hr TWA)
	Respirable crystalline silica, cristobalite	TLV = 0.025 (8-hr TWA)

Notes:
mg/m^3 – milligrams per cubic meter
PEL - Permissible Exposure Limit - OSHA
REL - Recommended Exposure Limit - NIOSH
TLV - Threshold Limit Value – ACGIH
TWA – Time Weighted Average

Employee exposure shall be eliminated through the implementation of feasible engineering controls. After all such controls are implemented and they do not control to the occupational exposure limit, HGL and its subcontractors will implement administrative controls that may include moving employees to the extent possible in order to reduce exposure. When all engineering or administrative controls have been implemented, and the level of respirable silica

still exceeds the occupational exposure limit, HGL and its subcontractors will implement a respirator program pursuant to the mandatory requirements of 29 CFR 1910.134.

No employee will be allowed to work in areas where there is a possibility of airborne exposure to crystalline silica unless he/she has met the medical surveillance and training and experience, and has been provided the appropriate PPE.

There are operations that could present occupational exposures of personnel to crystalline silica.

Bentonite mixing and grouting of wells. Potential exposure to silica will be addressed by drillers and/or subcontractors conducting mixing of bentonite and grouting activities. Intermittent dust exposures will be kept below visible dust concentrations by using wet methods. If dust cannot be contained by using wet methods a crystalline silica monitoring plan will be developed in accordance with EM-385-1-1 (06.N).]

Destruction and decommissioning activities will include, but are not limited to using a backhoe equipped with a hydraulic breaker to split the concrete into pieces that can be easily handled and loaded. The breaker operator will take care to position his equipment so that the cab of the backhoe stays upwind of the work point and the work area will be pre-wet to minimize the amount of dust arising from the demolition activity. The SSHO will monitor dust levels downwind of the work area against background levels measured before the start of demolition. If dust levels exceed 150 micrograms per cubic meter ($\mu g/m^3$) above background, a continuous water spray supplied from a water truck will be used to control dust and any potential silica emissions. If the dust levels still exceed 150 $\mu g/m^3$ above background, work will stop and the water spray redirected until dust levels measured downwind drop below this threshold.

9.q NIGHT OPERATIONS LIGHTING PLAN

A night operations lighting plan is not applicable as all work will be scheduled during daylight hours.

9.r FIRE PREVENTION PLAN

This section details fire prevention and protection procedures/resources to be used at the project. This information is to be included in the site health and safety indoctrination as detailed in Section 5.3 of the SSHP, and in Section 6.b.1 of the APP.

9.s WORKPLACE FIRE HAZARDS

The primary fire hazards at the project consist of fueling operations, storage of fuels, and other flammable liquids at the project site, welding and cutting activities, and dry grasses at remote locations during the summer months.

9.t POTENTIAL IGNITION SOURCES

The significant ignition sources at the project include smoking materials, welding/cutting equipment, vehicle/equipment exhaust, catalytic converters, and engine block surfaces.

Personnel shall also be alert for other ignition sources such as, static electricity, lightning, and electrical equipment.

9.u FIRE-CONTROL SYSTEMS, EQUIPMENT, AND PROCEDURES

Depending on the nature and extent of any fire, the following fire-control systems and equipment shall be evaluated or provided for at the project:

- Call the Marina City Fire Department for help with all fires.
- Fire extinguishers shall be maintained in all vehicles and in specific areas of concern: e.g. near electrical work or areas of hot work. Where flammable or combustible materials in quantities greater than 5 gallons are present or if where hot work will be performed, 10-pound extinguishers rated 4A:60B:C will be present in the immediate area.
- A Hot Work Permit is required before a flame or spark-producing activity is to commence.
- Only small quantities of flammable liquids may be stored in work areas, or carried in vehicles, providing those materials will be used that day and are in an approved container.
- Flammable wastes will be stored or disposed of in metal containers, clearly marked as containing flammable materials.
- Storage of combustible materials will be kept to a minimum.
- Safe fueling operations shall be followed by project personnel when engaged in fueling equipment.
- Flammable and oxidizing materials shall be stored in marked (No Smoking, Matches, or Open Flame) areas with fire extinguishers available.
- Smoking shall be permitted only in designated areas. Personnel shall never discard cigarette butts into the environment while working at the site.
- Open flames are prohibited.
- Vehicles and equipment will not be left idling or parked in areas where catalytic converters may ignite vegetation.
- Project personnel are only permitted to extinguish small fires in their incipient stages only provided that the person has been trained and feels comfortable doing so.

9.u.1 Fire-Control Equipment Maintenance Responsibilities

The SSHO is responsible for performing the monthly inspections of portable fire extinguishers and obtaining annual service for all HGL provided fire extinguishers used at the project. The subcontractor's site supervisor is responsible for performing the monthly inspections of portable fire extinguishers that are not mounted on vehicles and equipment, and obtaining annual service for all subcontractor-provided fire extinguishers used at the project site. Vehicle and equipment operators are responsible for the daily inspection of fire extinguishers on vehicles/equipment.

9.v WILD LAND FIRE MANAGEMENT PLAN

Not applicable based on the location of the project site.

9.w HAZARDOUS ENERGY CONTROL PLAN

Applicable OSHA standards for electrical power (29 CFR 1926, Subpart K); Section 11 of the *Safety and Health Requirements Manual* (USACE, 2008); and the National Fire Protection Association (NFPA) 70 E (NFPA, 2012), Standard for Electrical Safety in the Workplace apply to the work performed at the project site. All work also will be in accordance with the HGL SOP 12 Control of Hazardous Energy, which is included in Appendix C of this APP.

9.w.1 Electric Tools, Extension Cords, and Electrical Work Monitoring

Employees working in areas where electrical hazards are present shall be provided with and shall use double-insulated and insulating hand tools, latex-free rubber insulating gloves, protective clothing, and PPE that is designed and constructed for the specific part of the body to be protected and for the work to be performed, as specified by Section 130.7 of NFPA 70E (NFPA, 2012). Employees and subcontractors shall use insulated tools and/or handling equipment when working inside the limited approach boundary of exposed live parts where tools or handling equipment might make accidental contact. Insulated tools shall be protected from damage to the insulating material.

All portable electrical equipment and extension cords shall be protected with a ground fault circuit interrupter as part of the circuit. Use only hard or extra hard, outdoor usage extension cords that are rated (in watts or amps) at least equal to the sum of the connected loads. Extension cords, power tools, and lighting equipment shall be inspected before each use, protected from damage, and kept out of wet areas.

All electrical installations shall be made as required by NFPA 70, National Electrical Code (NFPA, 2012) or local code, whichever is more protective. Only qualified electricians may work on electrical circuits. Qualified personnel shall be trained with the proper use of the special precautionary techniques, PPE, arc flash, insulating and shielding materials, and insulated tools and test equipment.

Before starting each electrical job, the qualified employee in charge shall conduct a job briefing with the employees involved. The briefing shall cover such subjects as hazards associated with the job, work procedures involved, special precautions, energy source controls, and PPE requirements. Live parts to which an employee might be exposed shall be put into an electrically safe work condition (de-energized) before an employee works on or near them. This rule applies to all electrical work, including changing light bulbs.

9.w.2 Overhead Electrical Lines

Equipment shall maintain a safe distance from overhead lines. Clearances will be adequate for the movement of vehicles and for the operation of construction equipment. A minimum clearance

of 20 feet will be implemented unless otherwise specified in Table 9.5 below. A spotter, located so that they have a different line of sight than the equipment operator, shall be used as needed to identify the location of the lines. When equipment operations must be performed closer than 20 feet from overhead power lines, the SHM/CHSD must be notified. If authorization to proceed is received from the SHM/CHSD, the electric utility company must be contacted to turn the power off or physically insulate (protect) the lines if the operation must be performed closer than 20 feet of the power line.

Table 9.5
Minimum Clearance from Energized Overhead Electric Lines

Nominal System Voltage (kilovolts)	Minimum Rated Clearance (feet)
0 – 50	10
51 – 200	15
201 – 300	20
301 – 500	24.6
501 – 750	34.4
751 – 1,000	44.3

9.w.3 Underground Utilities

Before any intrusive activity at the work site begins, positive steps shall be taken to determine if the area contains underground utilities, even though utilities have been located by the proper entities. Intrusive activities are defined as any activity that produces a manmade cut, cavity, hole, or trench, in the ground surface as a result of soil removal or any activity that results in an object placed into the earth below the surface. These activities include excavating, drilling, augering, boring, shoveling, fence post driving, driving stakes, etc. Breaching underground utilities during intrusive activities can result in electrocution from damaged electrical lines, fires from broken fuel/gas lines, and disruption of telephone service.

Before commencing intrusive activities, the following procedure shall be implemented to identify and protect underground installations or indicate that none exist:

1. Prepare a drawing/figure indicating the area(s) where intrusive activity is planned to occur.
2. Contact Pacific Gas and Electric Company by telephone at (800) 469-3981 or 811 or submit an online request form available at: http://www.usanorth811.org. The request must be made at least two business days (excluding Saturdays, Sundays, and holidays), but not more than 10 business days before starting the work.
    - Contact the utility companies, landowners, or responsible authorities to locate and mark the locations of the underground installations. For utility companies that do not participate in the state one-call system, contact them directly.

- Verify that all underground installations have been located and physically marked, or that the location of the intrusive operation has been documented to be clear of underground utilities. Retain documentation in the project logbook.
- Mark all overhead utilities with kilovolts rating on the drawing/figure (well installation should not be performed directly below overhead utilities). Refer to Table 9.5 and Section 9.s.2 when working near overhead power lines.
- Discuss locations of underground utilities in the daily TSM, if applicable.

9.x CRITICAL LIFT PLAN

Not applicable since there will be no critical lifts under the current scope of work as defined in Section 16.H of the *Safety and Health Requirements Manual* (USACE, 2014).

9.y CONTINGENCY PLAN FOR SEVERE WEATHER

When there are warnings or indications of impending severe weather (heavy rains, thunderstorms, damaging winds, tornados, hurricanes, floods, lightning, etc.), weather conditions will be monitored using a weather station that is part of the National Oceanic and Atmospheric Administration (NOAA) weather radio all hazards network or similar notification system. Appropriate precautions shall be taken to protect personnel and property from the effects of the severe weather. Field crews will be directed to shelter in their vehicles if weather conditions warrant.
Thunder and lightning storms, hail, high winds, tornados, and blizzards may occur. Fog and lighting may pose potential problems in the work area as well.

Work shall cease if fog or white out snow fall limits visibility during situations where accurate vision is required (i.e. driving, work around power lines, measuring, equipment spotting, precise equipment operations).

If lightning is seen or thunder heard, the “30-30 Rule” shall be used where visibility is good and there is nothing obstructing the view of the thunderstorm: when lightning is seen, the time until thunder is heard is counted. If that time is 30 seconds or less, then the thunderstorm is within six miles and is dangerous. Activities with exposure shall cease at that time and shall not resume until at least 30 minutes after the last clap of thunder.

The weather will be monitored routinely. It may be necessary to halt certain hazardous operations or stop work altogether to allow the situation to pass. The SSHO must decide what operations, if any, are safe to perform based on existing and anticipated conditions. In the case that immediate shelter is required all personnel will go to the designated meeting location and wait until hazardous conditions pass.

Slips, trips, and falls due to standing or flowing water, mud, debris, snow, or ice may be encountered. To minimize this, the work area will be kept free of accumulated precipitation as much as possible. Snow and ice will be removed, water diverted, and debris removed from the immediate area as much as possible. False floors, platforms, mats, or other dry materials and

standing places shall be provided where practical. Walkways shall be demarcated in some manner as to indicate where foot traffic should take place. Individuals shall not walk on slick surfaces such as plastic sheeting when that surface is wet. Outdoor carpeting may be placed on slick surfaces to provide a safe path and work area.

9.z FLOAT PLAN

Not applicable since no operations are expected to require the use of floats, boats, vessels, or skiffs under the current work scope.

9.aa SITE-SPECIFIC FALL PROTECTION AND PREVENTION PLAN

A site-specific fall plan is not applicable. No work is planned or anticipated to take place from a ladder or an elevated work surface.

9.bb DEMOLITION PLAN

A demolition plan, including engineering evaluation and lead-based paint and asbestos surveys is not required given the current scope of work. The scope of work includes demolition of wells and decommissioning one water treatment plant. The water treatment plant will be evaluated before decommissioning to determine whether lead-based paint or asbestos surveys should be conducted.

9.cc EXCAVATION/TRENCHING PLAN

An Excavation/Trenching Plan is not currently applicable. The maximum depth of any planned earthwork will be less than 6 feet below ground surface. Potholes and vault excavations will be backfilled and compacted as work progresses and will not remain open overnight. If entry into an excavation deeper than 5 feet becomes necessary work will STOP until:

- the subcontractor's CP determines if sloping, shoring, or trench box protective measure(s) are necessary;
- the subcontractor's CP makes specific recommendations regarding the need for protective measures and the specific measure(s), if any are needed, to the HGL CHSD and the Army; and
- the subcontractor CP's recommendations are approved by the Army.

Note: Excavations less than 5 feet (1.5 meters) in depth and for which a CP examines, determines, and documents that there is no potential for cave-in do not require protective systems; however, a fixed means of egress shall be provided. For excavations greater than 6 feet in depth an Excavation/Trenching Plan shall be prepared.

The Excavation/Trenching Plan shall include, at a minimum;

- Activity Hazard Analysis (AHA);

- For all piping activities, include workers' increased exposure during connection activities (i.e. bent over, kneeling);
- Methods and locations for egress;
- Identification and credentials of the CP for Excavation;
- Documentation that examination of the ground by the CP provides no indication of a potential cave-in;
- Rescue plan and procedures. A rescue plan shall be prepared and maintained when workers are working at depths in excess of 5 feet (1.5 meters);
- Diagram or sketch of the area where the work is to be done, with adjacent and nearby structures shown;
- Projected maximum depth of the excavation;
- Projected soil type and method of testing to determine soil type;
- Planned method of shoring, sloping and/or benching;
- Planned method for confined space entry, trench access and egress and atmospheric monitoring processes;
- Location of utility shut offs (if required);
- Proposed methods for preventing damage to overhead utility lines, trees designated to remain, and other man-made facilities or natural features designated to remain within or adjacent to the construction rights-of-way;
- Plan for management of excavated soil/asphalt/concrete;
- Plan for traffic control; and
- Plan for utility clearance prior to excavation.

9.dd EMERGENCY RESPONSE (TUNNELING)

Not applicable since no tunneling will be performed under the current work scope.

9.ee UNDERGROUND CONSTRUCTION FIRE PREVENTION AND PROTECTION PLAN

Not applicable since underground construction will not be performed under the current work scope.

9.ff COMPRESSED AIR PLAN

Refer to the air compressor manufacturer's instructions for safe operation. Never use an air compressor in enclosed or partially enclosed spaces due to the quick build-up of high levels of carbon monoxide. The concentration of carbon monoxide shall be monitored when using generators in areas of poor ventilation. The concentration of carbon monoxide in the work area shall not be allowed to exceed 20 parts per million.

All air compressors and hoses shall be inspected before use, and operated and maintained by designated, qualified personnel. All air compressors shall be equipped with a pressure gauge and relief-valve, and only be operated at design pressures. Chicago fittings shall be secured together with tie-wire or equivalent and secured with safety lashings.

Before refueling, the air compressor shall be shut off and allowed to cool down for at least 10 minutes; gasoline spilled on hot engine parts could ignite. A 4-A:80-B:C fire extinguisher shall be readily available in locations where an air compressor is being used. Use hearing protection when working near an air compressor.

9.gg FORM WORK AND SHORING ERECTION AND REMOVAL PLANS

Not applicable since this type of work will not be performed under the current work scope.

9.hh PRECAST CONCRETE PLAN

Not applicable since precast concrete will not be used under the current work scope.

9.ii LIFT SLAB PLANS

Not applicable since lift slab work will not be performed under the current work scope.

9.jj STEEL ERECTION PLAN

Not applicable since steel erection work will not be performed under the current work scope.

9.kk SITE SAFETY AND HEALTH PLAN

The SSHP is included as Appendix A of this APP.

9.ll BLASTING SAFETY PLAN

Not applicable, since blasting work will not be performed under the current work scope.

9.mm DIVING PLAN

Not applicable since diving work will not be performed under the current SOW.

9.nn CUMULATIVE TRAUMA DISORDER PREVENTION

Vibration Hazards

Both hand-held and stationary tools that transmit vibration through a work piece can cause vibration "white fingers" or hand-arm vibration syndrome. The use of these types of tools is not anticipated on this project; however, if they should be required, proper control measures will be used to minimize hand-arm vibration. The control measures may include:

- Using anti-vibration tools and/or latex-free gloves;

- Keeping hands and body warm;
- Minimizing the vibration coupling between the hand and the tool;
- Participating in the medical surveillance program; and
- Adhering to the ACGIH TLV for hand/arm vibration.

9.oo CONFINED SPACE PROGRAM

Procedures and actions pertaining to entry into confined spaces by HGL or subcontractor staff will comply with the requirements of the OSHA General Industry Standard on Permit-Required Confined Spaces (29 CFR 1910.146) and in accordance with HGL HSP Procedure 26, *Permit Required Confined Space Entry* (included in Appendix C). Confined spaces will only be entered when entry is the only feasible means of completing project tasks.

HGL employees who may or will be entering confined spaces will be trained and certified as competent to conduct confined space entries as an authorized Entrant, Attendant, or Entry Supervisor.

9.oo.1 Permit Required Confined Space Entry

It is possible but not expected that permit-required confined space entry may be needed. This situation would occur if it becomes necessary to enter the infiltration trench vault as part of the NWTS decommissioning effort. If confined space entry is required, an AHA for this activity will first be submitted for review and entry will not occur until the AHA is approved.

Entry into a permit-required confined space requires use of trained personnel, following written practices and procedures, use of an entry permit system, and arrangement of rescue services described in HGL's written program. The PM is responsible for designating a trained competent and responsible entry supervisor for each confined space entry project or task. The PM and the Entry Supervisor are responsible for ensuring that the Pre-Entry Checklist (Appendix B of this APP) is completed and submitted to Corporate Health and Safety prior to mobilizing the field team.

The PM is responsible for providing all equipment necessary to ensure employee safety during a confined space entry. The Entry Supervisor is responsible for determining that all equipment necessary to ensure employee safety during a confined space entry is present on site and is used in an appropriate manner.

9.oo.2 Atmospheric Testing

HGL employees will be equipped, trained, and declared competent to use air monitoring equipment that can measure oxygen concentrations, explosive gas levels, and any other location-specific air contaminants. Measurements will be made by the Attendant before entry into any confined space, and continuously for the duration of the entry.

Atmospheric testing is required for the distinct purposes of evaluation of the hazards of the permit space, verification that acceptable conditions for entry into that space exist and to aid in self rescue should the equipment alarm at pre-set action levels.

9.oo.3 Emergency Response and Rescue

HGL has not trained or authorized an HGL "in-house" rescue team in lieu of notifying and/or staging an "external" trained and equipped rescue team at confined space entry projects. Therefore, permit-required entries will not be allowed into ANY confined space unless a trained and equipped rescue team has been notified and is available to respond prior to entry.

Permit-required entries will not be allowed into confined spaces with atmospheres exceeding concentrations known or suspected to be Immediately Dangerous to Life or Health unless a trained and equipped and authorized rescue entrant or rescue team, approved by Corporate Health and Safety, is staged on site prior to entry.

Arrangements must be completed with rescue and emergency services (i.e., emergency medical services) prior to the confined space entry. The "host employer"/confined space owner should identify the designated rescue service during the pre-entry inspection. The service should be contacted by the Entry Supervisor, and determination of interest to serve as the rescue team, availability, response time, equipment, familiarity with the site, and responder training must be documented

9.oo.4 Non-Permit Entry

A permit space, hazard-eliminated or, a non-permit space due to ventilation and monitoring, or, an alternate entry procedure permit space means that an employer can demonstrate that the only hazard posed by the permit space is an actual or potential hazardous atmosphere, and the following:

- That continuous forced ventilation alone is sufficient to maintain the permit space safe for entry,
- There is monitoring and inspection data that supports this, and
- Atmospheric testing continues during entries.

Entry into a permit space, hazard eliminated, does not require use of a permit system. For purposes of HGL's program, only the host employer/owner of the confined space can classify and document these spaces as such.

Hazard eliminated means that all serious safety and health hazards have been controlled using physical controls not including PPE or respiratory protection.

10. RISK MANAGEMENT PROCESSES

Project-specific hazards and controls are discussed in Section 3.0 Hazard/Risk Analysis of the SSHP. Detailed project-specific hazards and controls for each major phase/activity of field work are presented in the AHAs contained in Attachment 1A of the SSHP. A risk assessment code (RAC) associated with each activity has been determined. RACs are defined by probability and severity of occurrence. All RACs for activities associated with this project range from low risk (L) to moderate risk (M). AHAs will be revised and completed in the field as needed.

To further manage risk, pre-task safety and health analyses will be completed by the field crew at the daily TSM at the beginning of each task. The analyses will then be revised, as necessary, when unforeseen circumstances arise or work-site conditions change. Any revisions will be immediately communicated with the affected site workers. If the need to complete an unplanned task becomes necessary at any point throughout the day, then a new pre-task analysis will be prepared to cover that task. The analyses will be completed using the Pre-Task Analysis Worksheet and Checklist which are included in (Appendix B).

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11. REFERENCES

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ACCIDENT PREVENTION PLAN
OU-1 FORT ORD NATURAL RESERVE WELL DESTRUCTION AND NORTHWEST TREATMENT SYSTEM DECOMMISSIONING

APPENDIX A

SITE SAFETY AND HEALTH PLAN

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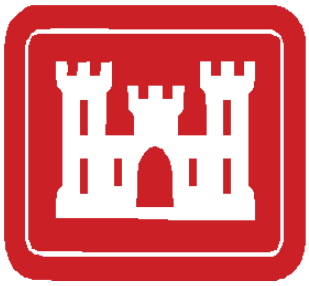
FINAL
SITE SAFETY AND HEALTH PLAN

OU-1 FORT ORD NATURAL RESERVE WELL DESTRUCTION AND NORTHWEST TREATMENT SYSTEM DECOMMISSIONING FORMER FORT ORD, CALIFORNIA

Prepared for



U.S. Army Corps of Engineers Sacramento District

Contract No. W912DY-10-0023
Delivery Order: CM02

HydroGeoLogic, Inc.
14142 Denver West Parkway, Suite 225
Lakewood, CO 80401

May 2017

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EMERGENCY INFORMATION

To facilitate the quick retrieval of information in the event of an emergency, this summary has been placed in the front of this Site Safety and Health Plan (SSHP). In the event of any situation or unplanned occurrence requiring assistance, the appropriate contact(s) should be made from the list below. In case of life-threatening emergency, contact the appropriate highlighted personnel from the list, then contact the HGL Site Safety and Health Officer. For emergency situations, telephone contact should be made with the site point of contact who will then contact the appropriate response teams. In the event of a serious, life threatening emergency, the appropriate highlighted personnel should be contacted before contacting the site point of contact.

Emergency Telephone Numbers and Project Contacts

Fire, Police, Emergency Medical Services	City of Marina	911
Fort Ord BRAC Office	Bart Kowalski	(831) 242-7918
Emergency Medical Care	Community Hospital of the Monterey Peninsula	(831) 625-4900
National Poison Control Center	(800) 222-1222	
National Response Center Environmental Emergencies	(800) 424-8802	
EPA Spill and Release Notification	(800) 424-9346	
Client USACE Contracting Officer USACE Project Manager District Project Manager Forward	 Robert Meekie Curtis Payton Alexander Kan	 (916) 557-5229 (916) 557-7431 (916) 557-7578
HydroGeoLogic, Inc. Contacts		
H&S Emergency Number	(800) 341-3647	
HGL Project Manager	Roy Evans, P.E.	Office: (720) 381-5591 Cell: (303) 319-9808
HGL Field Supervisor / Site Point of Contact	Peter Arroyo	(209) 321-6255
HGL Site Safety and Health Officer	Megan Matteazzi	(303) 477-1293
HGL Corporate Health and Safety Director (CHSD)	Stephen Davis, CIH, CSP	Cell: (865) 659-0499
HGL Project CIH	Edie Scala-Hampson, CIH, CHMM	(847) 409-6384
HGL Corporate Occupational Physician (Medical Review Officer [MRO]) WorkCare 24/7 Emergency hotline	Peter Greaney, M.D. WorkCare 24/7	(800) 455-6155 (888)-449-7787

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Hospital Route Map

Community Hospital of the Monterey Peninsula is located at 23625 Pacific Grove-Carmel Hwy, Monterey, CA 93942.

Directions (13.2 miles, 16 minutes):

1. From Reservation Road, start west to Del Monte Blvd (2.1 miles)
2. Turn left onto Del Monte Blvd (0.7 mile)
3. Take the ramp onto CA-1 S (9.9 mile)
4. Take the CA-68 W exit toward Pacific Grove/Pebble Beach (0.3 mile)
5. Turn right onto CA-68 W Community Hospital of the Monterey Peninsula 23625 Pacific Grove-Carmel Hwy, Monterey, CA 93942.

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ACL	aquifer cleanup level
AHA	Activity Hazard Analysis
ANSI	American National Standards Institute
APP	Accident Prevention Plan
Army	U.S. Army
CHMM	Certified Hazardous Materials Manager
CHSD	Corporate Health and Safety Director
CIH	Certified Industrial Hygienist
CPR	cardiopulmonary resuscitation
CRZ	contamination reduction zone
CSP	Certified Safety Professional
dBA	decibels on the A-weighted scale
DCA	dichloroethane
DCE	dichlorothene
DEET	N,N-diethyl-m-toluamide
DFW	definable feature of work
EM	Engineer Manual
EMS	Emergency Medical Services
EZ	exclusion zone
FDA	Fire Drill Area
FONR	Fort Ord Natural Reserve
ft	feet
GFCI	ground fault circuit interrupter
GWETS	Groundwater Treatment System
H2S	hydrogen sulfide
HAZWOPER	Hazardous Waste Operations and Emergency Response
HGL	HydroGeoLogic, Inc.
HSP	Health and Safety Program
LEL	lower explosive limit
m	meter
M.D.	Medical Doctor
MEK	methyl ethyl ketone
NIOSH	National Institute for Occupational Safety and Health
NPL	National Priorities List
NWTS	Northwest Treatment System

O2	oxygen
OU	Operable Unit
OSHA	Occupational Safety and Health Administration
PCE	tetrachloroethylene
PID	photoionization detector
PM	Project Manager
PPE	personal protective equipment
ppm	parts per million
RAC	risk assessment code
SDS	Safety Data Sheet
SHM	Safety and Health Manager
SS	Site Supervisor
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
TCA	trichloroethane
TCE	trichloroethene
TSM	tailgate safety meeting
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
UVA	ultraviolet A
UVB	ultraviolet B
VOC	volatile organic compound

SITE SAFETY AND HEALTH PLAN ACKNOWLEDGMENT

I have read, understand and agree to abide by the provisions as detailed in this Site Safety and Health Plan prepared by HydroGeoLogic, Inc. Failure to comply with these provisions may lead to disciplinary action that may include dismissal from the work site, termination of employment or, for subcontractors, termination of the work contract.

Printed Name	Company	Signature	Date

FINAL
SITE SAFETY AND HEALTH PLAN
OU-1 FORT ORD NATURAL RESERVE WELL DESTRUCTION AND NORTHWEST TREATMENT SYSTEM DECOMMISSIONING
FORMER FORT ORD, CALIFORNIA

1.0 INTRODUCTION

The health and safety procedures established by this Site Safety and Health Plan (SSHP) are based on preliminary analysis of potential hazards at the site corresponding to the project activities as described in Section 2.d of the Accident Prevention Plan (APP). This SSHP was prepared in accordance with requirements and guidance provided in U.S. Army Corps of Engineers (USACE) Engineer Manual (EM) 385-1-1 Safety – Safety and Health Requirements Manual, November 2014, Appendix A, Section 28.B.02. The APP/SSHP interfaces with HydroGeoLogic, Inc.'s (HGL) Corporate Health and Safety Program (HSP) manual, which is available upon request.

This plan provides specific guidelines for indoor and outdoor site activities. It identifies any supplemental controls, use of personal protective equipment (PPE), emergency procedures, and training, beyond what is covered by the APP, that will be implemented during this project. If necessitated by conditions encountered in the field, detailed site-specific information will be addressed in this plan. No significant changes to this plan will be made without the prior approval of the HGL Project Manager (PM) and the Corporate Health and Safety Director (CHSD).

An approved copy of this SSHP will be maintained with the APP at the project site during all field activities, provided to authorized personnel and subcontractors for their review before the start of work, and readily available to all site workers. HGL and its subcontractors will implement HGL's SSHP. HGL documents this agreement by having employees sign the SSHP acknowledgment form provided at the front of this SSHP.

Table 1.1 summarizes the definable features of work (DFWs) that are anticipated during site work. Table 1.2 lists the wells to be sampled during execution of this project. For each DFW, Activity Hazard Analysis (AHA) forms have been prepared for the activities anticipated under each DFW. Each AHA lists the job steps, hazards associated with each job step, and identified actions to eliminate or minimize hazards. The AHAs are described in Section 3 and included in Attachment 1A.

Table 1.1
Definable Features of Work and Associated AHAs

Activity	AHA #	Description
Mobilization/ Demobilization and Site Preparation	1, 3, 5, 6	In coordination with USACE, the following will be established: • Work areas, support areas, and access routes that minimize impacts to protected areas. • Utility locate—all underground utilities clearly marked before the start of excavation. • Construction debris and recyclable material stockpile areas. • Decontamination area for equipment and personnel.
		Mobilization of drilling equipment, excavation equipment, and field crews.
		Demobilization of all equipment.
		Conduct follow-up biological evaluation if protected species encountered.
Monitoring Well Destruction	3, 4, 6, 7	Destroy groundwater monitoring and production wells including: • Remove all surface features and well covers, • Remove first 1 foot to 5 feet of well casing below ground surface, • Remove well vaults, and • Backfill and restore well sites to match surrounding features.
		Manage and dispose of all contaminated and noncontaminated wastes associated with well destruction activities.
NWTS Decommissioning	3, 4, 6, 8	Remove and dispose of the physical NWTS plant, associated piping, fixtures, system components, transfer pumps, carbon tanks, and debris. The fencing, containment basin, lighting, and power will be left in place.
Injection Vault Removal	3, 4, 6, 9	The injection vault in the grassland area and associated concrete and debris will be removed and disposed. The buried pipeline and electrical conduit connecting extraction wells to the NWTS facility will be sealed.

The number of HGL and subcontractor personnel required on site at any given time will vary based on the field activities. The anticipated personnel required for this project include the following:

- HGL PM (on site intermittently);
- HGL Field Supervisor/Site Safety and Health Officer [SSHO]); and
- Additional task-specific HGL and/or subcontractor personnel as needed.

It is estimated that on site work for this project will require 20 to 30 days of fieldwork beginning in the third or fourth quarter of 2017.

2.0 SITE DESCRIPTION AND CONTAMINATION CHARACTERIZATION

2.1 SITE DESCRIPTION AND HISTORY

HGL Former Fort Ord is located near Monterey Bay in Monterey County, California. The post consisted of about 28,000 acres near the cities Seaside, Sand City, Monterey, Del Rey Oaks, and Marina. Laguna Seca Recreation Area and Toro Regional Park border Fort Ord to the south and southeast, respectively. The Pacific Ocean marked the western boundary of Fort Ord. Land use east of Fort Ord is primarily agricultural. Figure 2.1 shows the location and extent of the former Fort Ord.

Beginning with its founding in 1917, Fort Ord served primarily as a training and staging facility for infantry troops. In 1938, additional agricultural property was purchased for the development of the Main Garrison. At the same time, the beachfront property was donated to the U.S. Army (Army). From 1947 to 1975, Fort Ord was a basic training center. After 1975, the 7th Infantry Division occupied Fort Ord. Those light infantry troops operated without heavy tanks, armor, or artillery.

Although Army personnel still operate parts of the post, no active Army division is stationed at Fort Ord. In February 1990, Fort Ord was placed on the National Priorities List (NPL) of hazardous waste sites. A Federal Facility Agreement was signed by the Army, U.S. Environmental Protection Agency (USEPA), California Department of Health Services and the Regional Water Quality Control Board in November 1990.

Activities conducted at the Fritzsche Army Airfield Fire Drill Area (FDA) between 1962 and 1985 resulted in release of contaminants to soils and groundwater. The FDA was established as a training area for the Fort Ord Fire Department. The FDA consisted of an unlined burn pit, a drum loading area, a storage tank, and underground piping that connected the storage tank to a discharge nozzle. During training exercises, fuel was piped into the burn pit, ignited, and then extinguished. Approximately 90 percent of the ignition sources used in training exercises was reported to be jet petroleum fuel grade 4 helicopter fuel that was contaminated with water or was outdated. Other substances burned at the FDA included gasoline, diesel fuel, hydraulic and lubrication oils, and small quantities of industrial solvents. Training activities at the FDA ceased in 1985.

The cleanup effort at the FDA became Operable Unit (OU)-1 in the Fort Ord NPL Program. Additional groundwater contamination resulting from sources at the former Fort Ord led to remediation efforts at OU-2, OU-2/12, and OU-carbon tetrachloride. Figure 2.2 of the APP showed the locations of the groundwater contaminant plumes being remediated through these operable units.

2.2 CONTAMINATION CHARACTERIZATION

The 1995 Record of Decision for OU-1 identified 10 groundwater contaminants that exceeded aquifer cleanup levels (ACL) within OU-1. These contaminants may have been present in

groundwater flowing through the OU-1 monitoring wells or in the groundwater that was pumped and processed through the former OU-1 treatment plants:

- Trichloroethene (TCE);
- 1,1-Dichloroethane (1,1-DCA);
- 1,1-Dichloroethene (1,1-DCE);
- 1,1,1-Trichloroethane (1,1,1-TCA);
- Chloroform;
- 1,2-Dichlorethane (1,2-DCA);
- Total 1,2-dichloroethene (1,2-DCE);
- Benzene;
- Methyl ethyl ketone (MEK); and
- Tetrachloroethene (PCE).

The original Groundwater Treatment System (GWETS) was constructed in 1988, the expanded Northwest Treatment System (NWTS) was constructed in 2006, and the off-post treatment plant was constructed in 2009. Groundwater within the GWETS and the off-post contributing areas met the groundwater cleanup targets; these treatment plants were decommissioned in 2014. TCE was the only contaminant detected within OU-1 groundwater at a concentration above the established aquifer cleanup level after 2008. In September 2014, TCE met the cleanup goals at all OU-1 wells and the NWTS was placed on standby in October 2014. TCE is described in more detail below.

Trichloroethene

TCE is a chlorinated hydrocarbon commonly used in the past as an industrial solvent. It is a clear, nonflammable liquid with a distinct solvent odor (similar to chloroform). TCE is a skin and eye irritant. Ingestion may result in nausea, vomiting, and central nervous system depression. Inhalation may irritate mucous membranes of the respiratory tract and may result in headache, dizziness, and drowsiness.

FIGURE

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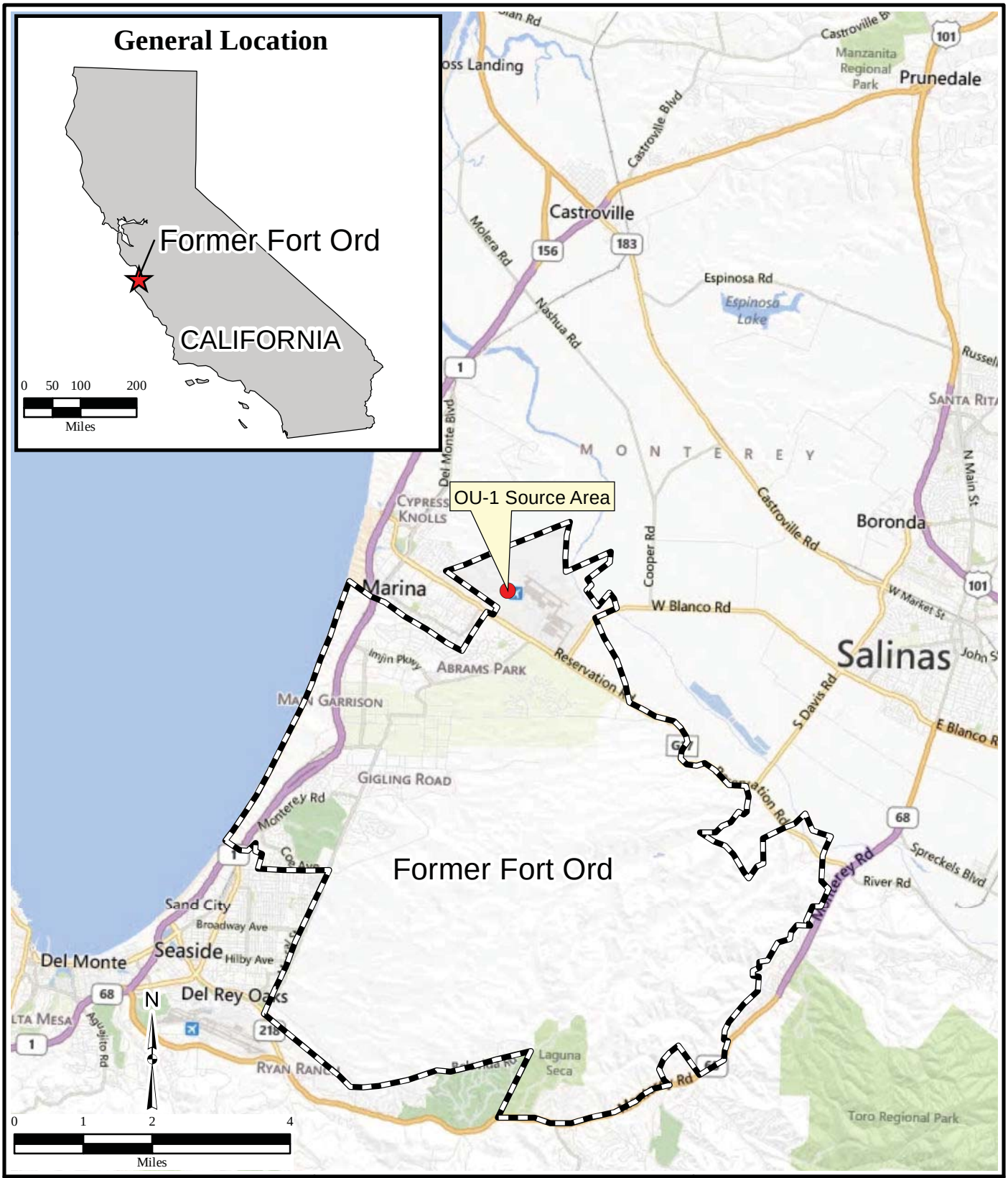

\\Gst-srv-01\HGLGIS\Ft_Ord_MSIW\
APP_LTM_WellDestruction\
(2-01)location_map.mxd
11/4/2013 RB
Source: HGL
ESRI Online Bing Maps Road Map

Legend

Site OU-1 Source Area

Former Fort Ord

Figure 2.1
Former Fort Ord
Location Map

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3.0 HAZARD/RISK ANALYSIS

The anticipated hazards and the recommended control measures for anticipated tasks are presented in this section. HGL's overall approach is to eliminate hazards when possible and feasible. If a hazard cannot be eliminated, then the National Institute for Occupational Safety and Health (NIOSH) hierarchy of controls should be applied, with substitution and engineering controls used preferentially over administrative controls and PPE. The NIOSH hierarchy is as follows:

- Elimination,
- Substitution,
- Engineering controls,
- Administrative controls, and
- PPE.

The AHAs are a component of the Health Hazard Control Program detailed in Section 9.h of the APP. AHAs were developed by evaluating operations, materials, and equipment to be used for this project to determine the presence of hazardous tasks or if hazardous or toxic agents could be released into the work environment. Based on this evaluation, AHAs were prepared based on anticipated job steps under each DFW (see Table 1.1). The job steps, hazards, and actions to eliminate or minimize hazards are provided in the AHA. A risk assessment code (RAC) has been assigned in the AHA as defined by probability or occurrence and severity of hazards likely to be encountered while performing the work. The RACs for activities associated with this project range from low risk (L) to moderate risk (M). During the morning tailgate safety meeting (TSM), the SSHO and team members (including subcontractor personnel) will conduct a pretask safety and health analysis before tasks commence. Conditions encountered will be documented on the Pretask Analysis worksheet. A blank worksheet is provided in Appendix B of the APP with the health and safety forms.

HGL's Field Supervisor and SSHO will monitor activities and the work environment to identify hazards not addressed in the AHAs. Significant changes in site conditions or new site tasks that result in new potential hazards will be discussed with the PM and the Safety and Health Manager (SHM). If required, a revised/new AHA will be prepared. The SSHO will keep subcontractor personnel informed of changing conditions and any new hazards and requirements.

3.1 PHYSICAL HAZARDS

Potential physical hazards associated with the anticipated work at this site include the following:

- General hazards, such as noise and dust and slips, trips, and falls;
- Fire;
- Hazardous energy (such as electrical, mechanical, hydraulic, and pneumatic);
- Pressurized hoses/tubing;

- Contact with traffic and/or mobile equipment;
- Lacerations from hand tools; and
- Heat/cold stress.

The measures that will be employed to mitigate physical hazards are discussed in the following subsections.

3.1.1 Noise

Noise will be generated from the operation of plant equipment and the use of other equipment and tools. Hearing loss resulting from occupational exposure to noise can be prevented through the use of hearing protection. Audiometric testing is part of the medical surveillance criteria for the HGL hearing conservation program. Personnel will wear hearing protection when working with or around operating equipment or power tools that generate noise at 80 decibels or above—levels that require raising the voice to carry on a conversation at a distance of 3 feet. Sound Level meter smart phone apps can also be used to determine decibel levels and areas that need posting of warning signs in areas where noise levels are greater than 80 decibels that necessitates the use of hearing protection. The use of headphones for entertainment purposes is prohibited.

3.1.2 Dust

The generation of visible dust for periods of more than 15 minutes and fugitive emissions is not anticipated during well destruction or pipeline removal, except occasionally during travel on dirt roads to access groundwater monitoring wells. If necessary, work practices will be adjusted in a manner to minimize dust generation, such as lowering excavation rates, not allowing soils to free-fall from equipment buckets, and traveling more slowly on dusty roads. Personnel shall avoid working in dust by positioning themselves upwind of dust-generating activities. Excessive dust shall be controlled by suppression with water. Requirements for controlling crystalline silica dust during mixing of bentonite, are specified in Section 9.p of the APP.

3.1.3 Excessive Work Hours

The following workday duration limitations for hours worked on the projects are in effect:

- Personnel working on site, including those who are operating hoisting equipment or mobile construction equipment, may work up to 12 hours at the site, which does not include travel time to/from their home/motel or uncompensated lunch breaks. This workday duration is subject to reduction by the other requirements and factors described in the bullets below. The 12-hour limit is primarily a result of motor vehicle driving restrictions.
- Personnel, while on duty, shall not operate motor vehicles after being in a duty status (regardless of their role or function) for more than 12 hours during any 24-hour period without at least 8 consecutive hours of rest. Personnel may work an additional 2 hours at the motel or their home (for a total 14-hour day), though still subject to reduction by

the other requirements and factors described below. A minimum of 8 consecutive hours shall be provided for rest in each 24-hour period.

- No employee may drive continuously for more than 10 hours in any single on-duty period (continuous period of more than 10 hours in any 24-hour period without at least 8 consecutive hours of rest).

For each project effort, the SSHO is responsible for adjusting the workday duration within these limits. The following factors will be considered by the SSHO for adjusting the workday duration:

- Time of year (for example, reduce workday duration because there is less daylight in winter);
- Temperature/weather (for example, reduce workday duration when the temperature is very cold, hot, or windy);
- Type of work (for example, reduce workday duration for personnel involved in physically demanding phases of work); and
- Individual personnel limitations (for example, reduce workday duration for personnel with minor head colds, suffering from temporary effects of allergies, or showing signs of heat stress).

For any questions regarding the implementation of this policy, contact the SHM/CHSD or PM.

3.1.4 Slips, Trips, and Falls

Practices and procedures that will be implemented to prevent slips, trips, and falls are listed below:

- Walkways and vehicle driveways shall be marked.
- Personnel shall keep working areas clean and orderly. Tools, equipment, and materials shall be used and stored in a fashion to minimize tripping hazards.
- Personnel are prohibited from walking or working on surfaces or equipment that are not intended as walking or working surfaces.
- Walking and working surfaces shall be properly maintained during inclement weather.
- Personnel shall not jump from elevated places or equipment.
- Personnel using hand and mechanical tools shall position themselves properly and consider the events if a tool slips or suddenly moves.
- Electrical extension cords and electrical wiring shall be kept clear of walking and working areas or otherwise secured.
- Running is prohibited on job sites unless under emergency conditions.

- Personnel shall take extra precautions, such as establishing firm handholds, wearing suitable footwear, and walking slowly when walking on surfaces during wet, snowy, or icy weather.
- Spills shall be cleaned up immediately.
- No employee may be exposed to a fall of over 4 feet without being adequately protected.

Any additional measures needed to accommodate ground conditions encountered in the field will be identified during the pretask hazard analysis completed during the daily TSM.

3.1.5 Hand and Power Tools

Hand tools shall be used, inspected, and maintained in accordance with the manufacturer's instructions and recommendations and will be used only for the purpose for which they were designed. A copy of the manufacturer's instructions and recommendations shall be maintained at the project site where the tools are being used. The following requirements shall be adhered to:

- Tools will be used only for their designed use.
- Tools designed to accommodate guards will be equipped with such guards when in use.
- Tools shall be inspected to verify that they are in safe operating conditions; damaged tools will not be used.
- Wood handles will be sound and securely wedged or fastened to the tool.
- Tools are to be kept clean and free of accumulated dirt.
- Electric power tools and extension cords shall be used with a ground fault circuit interrupter (GFCI).
- Portable power cords will be designated as hard usage or extra hard usage and shall not be used if damaged, patched, oil-soaked, worn, or frayed.
- Hand tools, such as hammers and chisels, shall be inspected and dressed if necessary to remove mushroomed heads, which may separate and become projectile hazards.

Proper cutting tools are to be used when possible in lieu of box cutters or knives. Furthermore, if box cutters are determined to be the appropriate tool for the job, the only type that should be used is the design that has a self-retracting blade capability. Employees must use appropriate PPE (leather gloves) to allow for further protection. The following safety procedures should be used when using box cutters:

- Keep the blade sharp and clean, or replace as needed. A dull blade can cause accidents because more force is needed to cut an object. Maintain a supply of either replacement knives and/or blades and make them readily available.

- Cut away from yourself, ending the knife stroke away from your body. Hold the item you are cutting firmly, and do not cut downward and toward your body. Carefully cut "into the air" or onto a hard surface.
- Confirm that appropriate PPE (for example, gloves) specific to the task is available to employees and used when the possibility of injury exists.

Proper eye protection is critical when using power tools. At a minimum, safety glasses will be required during site operations. Where appropriate, full-face shields will be utilized in addition to the glasses. Hearing protection must be worn if sound levels exceed 80 decibels.

3.1.6 Operation of Motor Vehicles

All vehicles used on the project shall be inspected daily. Vehicles not meeting safe operating conditions shall be immediately removed from service, its use prohibited until unsafe conditions have been corrected, and reinspected before being placed in service again.

All personnel are expected to observe posted speed limits. While on site, speeds should be 30 miles per hour or less. All personnel shall drive defensively and wear seat belts while vehicles are in motion. Workers should not walk on active roadways. If work in active traffic areas is required, workers will wear American National Standard Institute (ANSI) Class 2 high visibility vests and the work zone will be marked with barricades, cones, or tape to warn traffic. Vehicles, equipment, and materials will be parked/staged in a manner that minimally obstructs traffic and provides clear visibility of the job site.

Operators of vehicles in motion may not use cellular telephones. Before using a handheld cellular telephone, drivers shall find a safe place to bring their vehicle to a stop. This requirement does not preclude a passenger(s) from using cellular telephones while the vehicle is in motion. The use of headphones and earphones for music or radio is prohibited while operating a motor vehicle.

Most vehicle accidents occur when backing up. For this reason, backing of vehicles should be avoided when possible. If backing up vehicles is unavoidable, the following precautions should be observed:

- The driver should first walk around the entire vehicle to observe all areas and especially the area behind the vehicle.
- The driver should then back up slowly and back up the shortest distance necessary to accomplish the maneuver.
- Spotters should be used to back vehicles whenever possible.
- When parking vehicles, drivers should back vehicles into the space whenever possible and feasible so that vehicles can be pulled out front first upon departure.

3.1.7 Heavy Equipment/Vehicle Traffic

Considerations for controlling the movement of personnel and equipment in a work area are vitally important to any project as serious injuries may occur while working with or adjacent to such equipment. HGL will take precautions to control the safety of the on-site personnel during traffic movement operations.

All workers will adhere to all applicable standards and regulations while operating heavy equipment at the site. Operators will be trained and experienced in the use and maintenance of the equipment they are operating. Equipment will be inspected on a daily basis to identify any worn parts and/or unsafe conditions. Inspections will be documented using the Equipment Checklist; refer to Appendix D, Safety and Health Forms, in the Accident Prevention Plan. Any unsafe equipment will be removed from service until safety defects can be corrected. Equipment operators will not leave their machine unattended while it is running. All equipment will have electronic backup alarms. Each piece of equipment will be equipped with a 2A:10B:C fire extinguisher. No vehicles or equipment will be operated in a careless or unsafe manner. Personnel will wear high visibility clothing when working around equipment/vehicles. All personnel will stay a minimum of 4 feet clear of the operational area of the equipment.

During some activities, it is often necessary to have a worker direct the operator. In these cases, close communication between the operator and the ground person is of critical importance. One designated person will give signals to the operator of both equipment and vehicles in the work area. Workers should not take any action unless they have made eye contact with the operator and clearly communicated their intentions. In addition, all machines are equipped with back-up alarms, which are checked daily and repaired immediately. Truck traffic will be controlled by a flagger/spotter, as required.

Maintenance and inspection of vehicles and heavy equipment is a vital part of the overall safety program. As part of the preventive maintenance, all equipment is checked for properly functioning safety devices (for example, backup alarms, brakes, lights, and fire extinguishers). Rental equipment is subjected to a similar inspection when delivered to the job site. Any piece of rental equipment that fails the inspection must be repaired by the vendor before it is accepted for use. In addition, all equipment is inspected in the field before the start of each day's activities. If the Site Supervisor (SS) or SSHO detects a defect, the equipment is taken out of service and a properly qualified mechanic is dispatched from the rental agency to make the repairs on site. All heavy equipment used at the site will be equipped with rollover protective structures in accordance with EM 385-1-1 18.B.13.

3.1.8 Ladders

The use of ladders is not anticipated for this project unless excavation during the pipeline removal exceeds 5 feet in depth. If that occurs, the use of ladders will be defined in the Excavation Trenching Plan and AHA that will be prepared to address the situation.

3.1.9 Fall Protection

Fall protection is required when exposed unprotected edges 4 feet or more above the lower level are present. Fall protection is implemented for most elevated platforms in the facility using standard Occupational Safety and Health Administration (OSHA)-compliant guard rail and kick-plate systems on the open side of the platforms. Platform entrances are closed off using 1-inch chain. Personnel will follow the fall protection procedures detailed in Section 9.aa of the APP.

3.1.10 Hazardous Electrical Energies

Safety measures to be employed when working around potential electrical hazards are detailed in the Hazardous Energy Control Plan provided in Section 9.w of the APP.

3.1.11 Electrical

Overhead power lines, downed electrical wires, and buried cables all pose a danger of shock or electrocution if contacted or severed during site operations. A minimum distance of 10 feet will be present between overhead wires and equipment. This distance will vary according to voltage, the greater the voltage, the greater the clearance between any part of the equipment and the power line; refer to Table 3.1, Minimum Clearance from Energized Overhead Electrical Lines. When required, a spotter will be used to maintain a safe distance between equipment and overhead wires. The basic rule is, "Don't locate equipment in a position where it can come in contact with overhead power lines." Maintain the required distance from the lines. Overhead electrical power lines will be considered energized unless the person owning such line, or operating officials of the electrical utility supplying the line ensures that it is not energized and it has been visibly grounded.

Table 3.1
Minimum Clearance from Overhead Transmission Lines

Voltage (nominal, kilovolt, alternating current)	Minimum clearance distance
Up to 50	10 feet (ft) (3 meters [m])
51 to 200	15 ft (4.6 m)
201 to 350	20 ft (6 m)
351 to 500	25 ft (7.6 m)
501 to 750	35 ft (10.7 m)
751 to 1000	45 ft (13.7 m)
Over 1,000	(as established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution)

There are various means of insulating the wires, as well as barriers and alarms that may be available to reduce the risk of injury to workers; however, the use of such devices does not change the requirements of any other applicable standards or laws. In addition, these and other measures (such as grounding the equipment itself) may not be fully effective and may create a

false sense of security. Only the utility company or authorized personnel are authorized to de-energize, insulate, or handle the lines. No one else may attempt these operations.

Electrical equipment used on site may also pose a hazard to workers. Whenever possible, HGL will use low-voltage equipment with GFCIs and watertight, corrosion-resistant connecting cables to help minimize this hazard. In addition, lightning is a hazard during outdoor operations, particularly for workers handling metal containers or equipment. In the event of an electrical storm, all operations will cease for the duration of the storm.

No employee will be permitted to work in the proximity (within 12 inches) of any part of an electrical power circuit unless the person is protected against electric shock by de-energizing the circuit and grounding it, or it has been locked and tagged out. These procedures will be used when work has to be performed on energized equipment.

All electrical wiring and equipment will be intrinsically safe for use in potentially explosive environments and atmospheres. GFCIs are standard for use at the site.

3.1.12 Material Handling

Various materials and equipment may be handled manually during project operations. Care should be taken when lifting and handling heavy or bulky items to avoid back injuries. Employees will be trained for safe lifting. The following fundamentals address the proper lifting techniques that are essential in preventing back injuries:

- The size, shape, and weight of the object to be lifted must first be considered. Multiple employees or the use of mechanical lifting devices are required for heavy objects.
- The anticipated path to be taken by the lifter should be considered for the presence of slip, trip, and fall hazards.
- The worker will place feet far enough apart for good balance and stability (typically shoulder width).
- The worker will get as close to the load as possible. The legs will be bent at the knees.
- The worker will keep his or her back as straight as possible and tighten abdominal muscles.
- The worker will avoid twisting motions should when performing manual lifts.
- To lift the object, the worker will straighten legs from their bending position.
- A worker will never carry a load that cannot be seen over or around.

When placing an object down, the stance and position are identical to that for lifting. The legs are bent at the knees and the object lowered. When two or more workers are required to handle the same object, workers will coordinate the effort so that the load is lifted uniformly and that the weight is equally divided between the individuals carrying the load. When carrying the object, each worker, if possible, will face the direction in which the object is

being carried. In handling bulky or heavy items, the following guidelines will be followed to avoid injury to the hands and fingers:

- A firm grip on the object is essential; leather gloves will be used if necessary.
- The hands and object will be free of oil, grease, and water which might prevent a firm grip, and the fingers will be kept away from any points that could cause them to be pinched or crushed, especially when setting the object down.
- The item will be inspected for metal slivers, jagged edges, burrs, and rough or slippery surfaces prior to being lifted.

3.1.13 Fires/Explosion Hazards

Hot work (welding, burning, cutting, and similar activities) is not anticipated to be needed during completion of the project activities. If unexpected conditions result in the need to perform hot work activities, the requirements of this section will be met. Signs stating "NO SMOKING, MATCHES, OR OPEN FLAME" will be posted at areas where a potential fire hazard exists.

If required, the SSHO will establish areas approved for welding, cutting, and other hot work. Hot work conducted on site must comply with the following Hot Work Procedures. A hot work permit will be obtained from the SSHO. All personnel will be protected from welding radiation, flashes, sparks, molten metal, and slag. All welding, burning, and cutting equipment will be inspected daily by the operator. Defective equipment will be tagged and removed from service, replaced or repaired, and reinspected before again being placed in service. All welders will be properly trained in the safe operation of their equipment, safe welding/cutting practices, and welding/cutting respiratory and fire protection.

Cutting or welding will NOT be permitted in the presence of explosive atmospheres (mixtures of flammable/combustible gases, vapors, liquids, or dusts with air), or explosive atmospheres that may develop inside uncleaned or improperly prepared drums, tanks, or other containers, and equipment that has previously contained such materials.

Where practical, all combustible material will be relocated at least 35 feet away from the hot work site. Where relocation is impractical, combustibles will be protected with flameproof covers or otherwise shielded. At a minimum, two fully charged and operable fire extinguishers appropriate for the type of possible fire (10-pound ABC) will be available at the work area. A fire watch will be required whenever hot work is performed and for a minimum of 30 to 60 minutes after hot work is complete, depending on the surrounding environment.

A hot work permit will be issued by the SSHO, reviewed with personnel who will perform the hot work, and the permit posted near the work area. The hot work permit is good only for the date(s) issued and is valid only for the work shift(s) for which it is issued. If at any time during the hot work operation a change in conditions at the work site is suspected, such as a release of flammable gases or vapors in the work area, work will be stopped immediately and the SSHO will be notified. Such work stoppage invalidates the hot work permit, and a new

permit will be completed after inspections and tests have been performed by the SSHO; refer to Appendix D in the APP – Safety and Health Forms for the Hot Work Permit.

3.1.14 Air Compressor Use

Safety measures to be employed when working with air compressors are detailed in the Compressed Air Plan provided in Section 9.ff of the APP.

3.1.15 Compressed Gas Cylinder Handling

Damage to compressed gas cylinders can result in the release of toxic substances. Damaged cylinders may also rupture, becoming rocket-like projectiles. All requirements specified in EM 385-1-1 Section D.20 will be met, including the following procedures:

- Cylinders are to be stored only in designated areas and segregated by type of gas.
- Cylinders shall be stored and used in an upright position, and secured to prevent falling.
- Cylinders, hoses, and valves will be inspected before use. Cylinders that show any signs of damage, including rust, corrosion, deep dents, or unusual sounds, will not be used.
- Cylinders will be secured to hand trucks or vehicles with caps in place during transport.
- Oxygen cylinders in storage must be separated from fuel gas cylinders by a distance of 20 feet or a noncombustible barrier 5 feet high.

3.1.16 Portable Generator Use

When using portable generators, workers shall follow the generator manufacturer's instructions for safe operation. Workers will never use a generator in enclosed or partially enclosed spaces because of the quick buildup of high levels of carbon monoxide. The concentration of carbon monoxide shall be monitored when using generators in areas of poor ventilation. The concentration of carbon monoxide in the work area shall not be allowed to exceed 25 parts per million (ppm).

Portable generators are exempt from grounding if (1) approved by the manufacturer; (2) the generator supplies only equipment mounted on the generator or cord-and-plug-connected equipment through receptacles is mounted on the generator, or both; and (3) the non-current-carrying metal parts of the equipment and the equipment grounding conductor terminals of the receptacles are bonded to the generator frame. The generators will be grounded by using a hand-inserted ground rod, if recommended by the manufacturer. Underground utilities shall be identified before using any ground rod.

Keep the generator dry and do not use in rain or wet conditions. To protect from moisture, operate it on a dry surface under an open, canopy-like structure. Dry your hands, if wet, before touching the generator. Use only hard, or extra hard, outdoors usage extension cords

that are rated (in watts or amps) at least equal to the sum of the connected loads. Extension cords, power tools, and lighting equipment shall be inspected before each use, protected from damage, and kept out of wet areas.
Before refueling, the generator shall be shut off and allowed to cool down for at least 10 minutes; gasoline spilled on hot engine parts could ignite. A fire extinguisher with a minimum rating of 4-A:80-B:C shall be readily available in locations where a generator is being used.

Place generators downwind and away from workers when possible to minimize carbon monoxide and noise exposure hazards. Use hearing protection when working near a generator.

3.1.17 Intrusive Activities

Safety measures to address intrusive activities (defined as any activity that produces a manmade cut, cavity, hole, or trench, in the ground surface as a result of soil removal or any activity that results in an object placed into the earth below the surface) are detailed in Section 9.w.3 of the APP. This SSHP will be amended as needed before performing additional intrusive activities. A safety meeting shall be held to include all personnel involved in the intrusive activities before initiating work.

3.1.18 Use of Pressure Washers or Steam Washers

Pressure washing may be performed periodically to clean debris or equipment. The safety measures below should be followed while working with the power washers:

- Use a face shield and latex-free gloves
- Never point an active power washer at anyone.
- Do not attempt to push or move objects with spray from the washer.
- Plug the properly grounded pressure washer into a properly grounded receptacle.
- When an extension cord is used, keep the pressure washer's power cord connection out of any standing water, and use a heavy-duty extension cord with components rated for use in wet conditions.
- Remember to keep both the power cord and extension cord connections as far away as possible from the flow of the washer.
- Always wear rubber-soled shoes that provide some insulation when using the pressure washer.
- Do not remove the grounding from the pressure washer's power cord plug or the extension cord.
- Follow the instructions mentioned in the owner's manual carefully.

3.2 CHEMICAL HAZARDS

Exposure to chemical hazards may occur primarily from chemicals brought on site as part of the work effort. The concentrations of contaminants of concern in groundwater no longer

exceed ACLs and do not present a chemical hazard. As a precaution, however, the wells will be allowed to vent for a minimum of 10 minutes before destruction activities begin.

Additional substances that may be brought on site include compressed gases for instrument calibration or cutting torches as well as gasoline and diesel fuel. Alconox or Liquinox may be used for decontamination of equipment.

A list of hazardous materials that are stored on site will be kept at the project site. A Safety Data Sheet (SDS) will be kept on site for each hazardous material covered under HGL's Hazard Communication Program (other than waste) that may be brought on site. SDSs and the Comprehensive List of Chemicals will be kept on site in a 3-ring binder and clearly identified as "SDSs."

3.3 BIOLOGICAL HAZARDS

Multiple biological hazards may be encountered, particularly when working in areas of thick vegetation. Potential biological hazards include spiders, stinging insects, snakes, ticks, rodents, ticks and mosquitoes, poisonous/noxious plants, large predators (mountain lions or coyotes), and microorganisms left in dried bird and rodent excrement.

For the purposes of this SSHP, biological hazards are identified as insects, mountain lions, and poisonous plants. Environmental hazards discussed in this section include sunburn. Additional environmental hazards include thermal stress (Section 9.o of the APP and Section 9 of this SSHP) and severe weather (Section 9.y of the APP). It is not possible to prevent all insect bites, insect stings, and rashes from irritating plants when working outdoors, so providing the proper bite, sting, and rash care is extremely important. Encounters with irritating plants, rashes, insect bites, and insect stings must be immediately reported to the SSHO for guidance in proper treatment, care, and management. Because some people are more sensitive or allergic to various biological hazards, individuals are encouraged to alert the SSHO of any allergies, sensitivities, or conditions that may require additional precautions.

When additional protection against ticks, chiggers and mosquitoes is necessary, commercially prepared "clothing and gear" insect repellants containing 0.5 percent permethrin may be used. These repellants, such as Repel Permanone™ are available in the sporting goods departments at major retailers. Clothing and gear insect repellants are not for use on skin. Use the repellent according to the manufacturer's recommendations provided on the container.

3.3.1 Ticks

Working in tall grass, especially in or at the edge of wooded areas, increases the potential for ticks to bite workers. Ticks can be particularly numerous in the spring and fall. Ticks are vectors of many different diseases, including Lyme disease. Ticks attach to the skin and intravenously feed on blood, thus creating an opportunity for disease transmission.

The primary symptoms of tick-borne diseases are high fever, head and joint aches, nausea, and vomiting. Additionally, persons develop rashes or experience occasional coughs, chest

pain, and severe pneumonia. Lyme disease usually presents a distinctive bull's eye rash at the site of the bite in addition to flu-like symptoms and swollen lymph nodes.

Use an insect repellent containing approximately 30 percent N,N-Diethyl-m-toluamide (DEET). Insect repellant containing DEET shall be available to personnel while working on site. Use the repellent according to the manufacturer's directions provided on the container. Frequent reapplication or saturation is unnecessary for effectiveness. Avoid prolonged and excessive use of DEET. Caution: some individuals may be sensitive to DEET – always read and follow label directions. After returning from outdoor field activities, wash treated skin with soap and water. Additionally, special insecticide preparations, such as Repel Permanone, shall be available for treating worker's clothing.

Periodically during the workday, employees should inspect themselves for the presence of ticks. If a tick is discovered, the following procedure should be used to remove it:

- Do not try to detach a tick with bare fingers; bacteria from a crushed tick may penetrate even unbroken skin. Fine-tipped tweezers should be used.
- Grip the tick as close to the skin as possible and gently pull it straight away from you until it releases its hold.
- Do not twist the tick as you pull and do not squeeze its body; this may inject bacteria into your skin.
- Thoroughly wash your hands and the bite area with soap and water, and then apply an antiseptic to the bite area.

3.3.2 Chiggers

Chiggers, also known as "red-bugs" or "harvest mites," are the immature stages of a tiny red mite. The larvae attach themselves to the clothing of people or to the fur of passing animals. Before settling down to feed, chiggers move to a constriction, such as sock tops, waistbands, or armpits. Feeding chiggers inject a salivary fluid, which dissolves the host's cells, and then they suck up the liquefied tissue. Within a few hours, small, reddish, intensely itching welts appear. These bites may continue to itch for several days up to 2 weeks after the chigger is dislodged.

The following are suggestions that should provide some protection from chiggers:

- Stay out of areas where chiggers are likely to be present including wood lots, pastures, roadside ditches, or other areas with tall grasses and weeds. Chiggers are especially common in moist, low-lying areas.
- Wear loose-fitting clothing (if possible) when working outdoors. Vehicles should be vacuumed frequently to reduce the number of chiggers that may have been deposited.
- Use an insect repellent containing approximately 30 percent DEET. Insect repellant containing DEET shall be available to personnel while working on site. Use the repellent according to the manufacturer's directions provided on the container. Frequent reapplication or saturation is not necessary for repellent containing DEET to

be effective. Avoid prolonged and excessive use of DEET. Caution: some individuals may be sensitive to DEET – always read and follow label directions. After returning from outdoor field activities, wash treated skin with soap and water.

- Immediately after possible exposure to chiggers, take a bath, thoroughly scrubbing the body with hot soapy water. This will kill or dislodge many of the chiggers. The clothes that were worn when the bite(s) occurred should be placed in a plastic bag for temporary storage until they can be laundered.
- When bites begin to itch, one course of treatment is to apply rubbing alcohol, followed by one of the nonprescription local anesthetics. A baking soda paste, calamine lotion, or product such as "After-Bite" or "Chigarid" also will help reduce discomfort. Avoid scratching bites since this only increases irritation and may lead to a secondary infection of the bite.

3.3.3 Mosquitoes

Mosquitoes may carry diseases, such as the West Nile and Zika Viruses, as well as be bothersome. They are attracted by heat, sweat, body odor, fragrances, and carbon dioxide. Site personnel should use insect repellent containing DEET. Insect repellent should be reapplied at least every 4 hours.

The following suggestions that should provide some protection from mosquitoes:

- Review the hazards associated with the West Nile Virus and Zika Virus through exposure to mosquito bites periodically during the TSMs. Zika virus prevention is an important issue because contracting this virus during pregnancy appears to pose a significant risk of neurological birth defects including microcephaly. Infection appears to be much less dangerous for healthy adults. Get regular updates on transmission and controls from: Centers for Disease Control - www.cdc.gov/zika/
- Apply sunscreen first and then insect repellent.
- Increase protective measures when working at dawn, dusk, and in the early evening.
- Reduce the area of exposed skin when working outdoors.
- Use an insect repellent containing approximately 30 percent DEET. Use the repellent according to the manufacturer's directions provided on the container. Frequent reapplication or saturation is not necessary for repellent containing DEET to be effective. Avoid prolonged and excessive use of DEET. Caution: some individuals may be sensitive to DEET – always read and follow label directions. After returning from outdoor field activities, wash treated skin with soap and water.
- Use commercially prepared "clothing and gear" insect repellants containing 0.5 percent permethrin when additional protection against mosquitoes is necessary. These repellants, such as Repel Permanone™, are available in the sporting goods departments at major retailers. Clothing and gear insect repellants are not for use on skin. Use the repellent according to the manufacturer's recommendations provided on the container.
- Avoid using fragrances.

3.3.4 Stinging Insects

Workers should keep alert for bee and wasp activity, and avoid wearing bright clothing and scented toiletries when working outside. Be wary of areas around structures where bees and wasps may live. If you see bees or wasp activity, avoid the area if possible. The use of insect repellants containing DEET is not effective in preventing stings. Anyone can have an allergic reaction to a bee sting, even if they were stung before with no reaction. Allergic reactions to bee stings may include swelling around the lips and eyes, rapid development of a rash, difficulty breathing, or signs of shock (pale skin, rapid pulse, and fainting). If any of these symptoms occur, call 911 immediately. If you have had a previous reaction, notify the SSHO and carry a "bee-sting kit," EpiPen®, or Ana-Kit. All personnel shall immediately report stings to the SSHO.

3.3.5 Poisonous Plants

Poison oak is widespread within the OU-1 portion of the project area. The best preventive measure for poisonous plants is recognition and avoidance. Three or five leaves radiating from a stem is the rule of thumb for identifying poison ivy and poison oak (see Figure 3.1). Poison ivy is a vine that attaches to trees, fence posts, power poles, or other vertical structures; it also may be low-lying. Poison oak is bush-like.

All of these plants can produce a delayed allergic reaction. The plant tissues have an oleoresin, which is active in live, dead, and dried plants. The oleoresin may be carried through smoke, dust, contaminated articles, and the hair of animals. Additionally, when operating a chainsaw to clear brush in the winter or early spring, sawdust may be contaminated with enough oleoresin to cause a severe rash. Symptoms usually occur 24 to 48 hours after exposure, resulting in rashes that itch and blister. Should exposure to these plants occur, wash/rinse the affected area within one-half hour after contact using Technu™, rubbing alcohol, Neutrogena™ acne wash/skin cleanser. Do not scrub skin. Do not use soap with lotions or emollients as this will cause spreading of the allergenic plant oils. Seek medical attention as necessary. The use of disposable latex-free gloves and Tyvek coveralls or barrier creams (applied in advance of exposure) can help prevent skin contact with these plants.

3.3.6 Snakes

To minimize contact with snakes, individuals walking on site shall avoid tall grass and vegetation and avoid placing hands in concealed areas. The following precautions should be followed:

- Be aware of your surroundings at all times. Learn to check around with a sweeping glance to scan for camouflaged snakes in woodlands, weeds, trails, bushes, and other cover habitat. Be aware that many species or snakes shelter near water, and will likely be hidden from view while they are sleeping or hunting. Be alert.
- Avoid specific snake habitats such brush piles, debris mounds, logjams, root systems, abandoned buildings, and watery areas.

- Never sit or climb (feet and hands), or step over obstacles anywhere without first carefully checking for snakes.
- Wear leather snake gaiters when walking in areas where snakes are suspected to be present.
- Never try to capture a snake.
- If anyone on the worksite is bitten by a snake, seek medical attention immediately. Keep the victim calm. Remember what the snake looks like, so the proper antivenin can be administered.

Rattlesnakes have been observed in the vicinity of the NWTS in the past. Be alert when visiting the NWTS and observe the following precautions:

- When reaching the plant, drive to the gate, and then back up and park approximately 10 yards from the gate. Leave plenty of room to exit the truck and walk on the gravel path to alert snakes in the area to your presence and help avoid stepping out of the truck and into a snake lair.
- Remain on the gravel path when entering or exiting the plant.
- Don snake chaps before approaching the gate.
- Wear work boots or similar thick footwear.
- Stomp your feet and make noise as you approach the gate.
- Be sure to visually inspect the containment basin before entering to access equipment or meters – watch for snakes that may be basking on the concrete containment basin.
- Do not attempt to touch or approach a snake, if sighted. Make noise and allow it a path to escape.

3.3.7 Large Predators

The Fort Ord project site is located within the range of mountain lions and coyotes. Although an encounter with these animals is considered unlikely, they are addressed here because of their known presence in the region.

The recommended course of action if any of these animals is encountered is to maintain substantial space between yourself and the animal and leave it a path of escape. Do not attempt to run away or lie on the ground. Stand your ground, make noise, yell, throw objects, use pepper spray, or similar substances. If attacked, fight back with all means available.

If any of these animals are spotted within the project area, personnel should make noise and not move quietly through the area. This step will alert the animal to your presence and it will most likely depart the vicinity. Any encounters with a hostile, ill, or otherwise aggressive animal should be reported to the Fort Ord Baseline Realignment and Closure office immediately. Work shall be stopped and personnel will seek shelter if an aggressive animal does not depart the immediate vicinity.

3.3.8 Sunburn

Personnel working in direct sunlight are encouraged to wear tightly woven clothing that blocks out light and apply sunscreen rated for ultraviolet A (UVA, long wave rays) and ultraviolet B (UVB, short-wave rays) to all unprotected skin surfaces. The benefits of preventing sunburn and skin cancer are self-evident. Sunscreen will be provided for use by project personnel while working on site. Personnel are encouraged to examine their bodies monthly for early detection of skin cancers.

3.4 RADIOLOGICAL HAZARDS

Radiological hazards are not anticipated on this project.

3.5 MUNITIONS AND EXPLOSIVES OF CONCERN

Uncontrolled munitions and explosives of concern are not anticipated to be present within the work areas included in this project.

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FIGURE

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Figure 3.1
Poisonous Plants

COMMON POISON IVY (*Rhus Radicans*)

Grows as a small plant, vine, and shrub.
Grows everywhere in the United States except California and parts of adjacent states. Eastern oak leaf poison ivy is one of its varieties.
Leaves always consist of three glossy leaflets.
Also known as three-leaf ivy, poison, creeper, climbing sumac, poison oak, markweed, picry, and mercury.


Spring


Summer


Fall


Winter

WESTERN POISON OAK (Rhus Diversiloba)

Grows in shrub and sometimes in vine form.
Grows in California and parts of adjacent states (most likely not applicable to New York). Sometimes called poison ivy.
Leaves always consist of three leaflets.





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4.0 STAFF ORGANIZATION, QUALIFICATION AND RESPONSIBILITIES

HGL will manage site activities from the Denver, Colorado, office. Personnel will be drawn from other HGL offices as needed. The roles and responsibilities of the site personnel designated to perform health and safety functions are described in Section 4 of the APP.

4.1 IDENTIFICATION AND ACCOUNTABILITY OF PERSONNEL RESPONSIBLE FOR SAFETY

The identified personnel responsible for safety at the Fort Ord site are listed below:

HGL Project Manager (PM)	Roy Evans, P.E.
HGL Field Supervisor	Peter Arroyo
Site Safety and Health Officer (SSHO)/Quality Control Manager (QCM)	Megan Matteazzi
Safety and Health Manager (Project CIH)	Edie Scala-Hampson, Certified Industrial Hygienist (CIH), Certified Hazardous Materials Manager (CHMM)
Occupational Medicine Physician	Peter Greaney, Medical Doctor (M.D.) (WorkCare, Inc)
Competent Person – Confined Space Entry Supervisor, Entrant, Attendant	To be determined (TBD), TBD, TBD
Project Site Safety and Health Officer	Amador Arroyo (Well Destruction) Megan Matteazzi (NWTS Decommissioning)
Competent Person – Lockout/Tagout:	Kim Cohan

Confined space entry is not anticipated to be needed. Resumes, documentation of training and competency, and applicable licenses for HGL key project personnel responsible for safety are included in Attachment 1B.

4.2 ALL PERSONNEL

Each person is responsible for his or her own health and safety, for completing tasks in a safe manner and for reporting any unsafe acts or conditions to the SSHO. All persons on site are responsible for continuous adherence to APP/SSHP procedures during the performance of any project work. All employees/personnel have the authority and responsibility to stop work of other HGL employees or subcontractors if an imminent hazard is observed. Even when a hazard is not imminent, employees/personnel should intercede when unsafe behavior is observed.

4.3 SUBCONTRACTORS

The roles and responsibilities of the subcontractor personnel designated to perform health and safety functions are described in Section 5.b of the APP. Subcontractor personnel responsible for safety at the Fort Ord site will be identified and added during the field mobilization phase.

4.4 VISITORS

No visitor will be allowed within an established exclusion zone (EZ) without authorization from the PM or the SSHO. Visitors requesting authorization to enter an established EZ must meet the additional requirements for appropriate medical exams, training, and PPE as required USACE EM 385-1-1. All persons entering the site during site operations must first be given a site hazard briefing.

5.0 TRAINING

5.1 SAFETY AND OCCUPATIONAL HEALTH ORIENTATION

HGL's corporate training program is described in Section 6 of the APP. Before new or periodic operations at the site commence, the SSHO will hold a safety orientation meeting with staff, including subcontractors, to review and discuss the APP/SSHP/AHAs and complete the Pretask Analysis worksheet. A blank worksheet is provided in Appendix B of the APP with the health and safety forms. The SSHO will summarize anticipated site hazards and explain precautions required to minimize exposure to those hazards. The SSHO shall maintain attendance records and meeting notes for the project file. All site personnel will sign the SSHP acknowledgment form, documenting they have read and agree to abide by the procedures in this SSHP.

The following subjects will be discussed during the site safety orientation meeting:

- Lines of authority, organization, and responsibilities;
- Communication methods and cell phone access location;
- Site facilities, locations of utilities, access/egress, and work zones;
- Hospital route;
- Phases and sequence of work and equipment use;
- Potential hazards, controls, and safe work practices;
- Required PPE;
- Decontamination procedures;
- Evacuation routes, places of safe refuge, emergency response plan, emergency notifications;
- Emergency contacts and notifications;
- On-site persons certified in first aid and cardiopulmonary resuscitation (CPR);
- Spill kits, first aid kits, fire extinguishers;
- Munitions and explosives of concern awareness;
- Fire prevention; and
- Management of Change procedures if applicable to operation and maintenance of the treatment system.

5.2 MANDATORY TRAINING AND CERTIFICATIONS

Workers at the site who may be exposed to safety or health hazards will receive site-specific training by the SSHO before they are permitted to enter areas where health and safety hazards pose a potential concern. Workers are not permitted to participate in or supervise site activities

until they have been trained to the level required by their specific job function and responsibility.

All HGL personnel working inside or outside the treatment facility building must comply with the following minimum training requirements, as appropriate:

- Site-specific emergency action procedures;
- Successful completion of a 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) course and 3 days of supervised field experience;
- Successful completion of an 8-hour HAZWOPER refresher training course on an annual basis; and
- First aid and CPR (minimum of two personnel).

Site visitors are prohibited from participating in work tasks. Site visitors will be presented with a copy of the APP/SSHP and briefed on site hazards and PPE requirements and safety precautions. Site visitors who have the necessary PPE and have reviewed the portions of the APP/SSHP relevant to the ongoing work may observe site activities from a safe distance. If site visitors refuse to comply with these requirements work will cease until the visitor has left the site.

The SSHO must comply with the following minimum training requirements (in addition to those listed above for other site personnel):

- Successful completion of a HAZWOPER 8-hour supervisor training course;
- Periodic safety and health training for supervisors and employees as needed; and
- Completion of a 30-hour OSHA Construction Safety outreach class for construction and investigation projects.

Individuals fulfilling the role of a Competent Person as defined by OSHA shall also have relevant experience which may include completing topical training courses and be designated by their employer as the Competent Person for that task or operation. No work requiring a Competent Person will be performed unless a designated Competent Person is present on the job site.

Documentation of training for all field personnel working on this project is contained in Attachment 1B of the SSHP and will be kept current and retained on site while work is being performed.

5.3 DAILY HEALTH AND SAFETY MEETINGS

The SSHO will conduct a safety briefing for all HGL and subcontractor site personnel in the form of a TSM at the beginning of each workday and whenever conditions or tasks change. These briefings will be used as an opportunity to address site-specific safety issues, refresh workers on specific procedures, address new hazards and controls on the Pre-Task Analysis

worksheet and discussed any lessons learned. An example of the TSM log is included in Appendix B of the APP.

Topics to be discussed at the TSM include the following:

- Activities planned for the day;
- Potential health and safety issues;
- Changes in activities and operations;
- Changes in conditions;
- Weather conditions and heat/cold stress precautions;
- Methods of risk reduction;
- Required PPE for each task;
- Exposure monitoring results;
- Significant incidents from the previous day's activities;
- Changes to the SSHP; and
- Completion of pretask safety and health analyses, as needed.

Employee feedback regarding health and safety will also be solicited. Documentation of each day's meeting will be retained.

All HGL employees and visitors at the site who may be exposed to safety or health hazards will receive site-specific training before they are permitted to engage in site operations. Personnel will not be permitted to participate in or supervise site activities until they have been trained to the level required by their specific job function and responsibility.

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6.0 PERSONAL PROTECTIVE EQUIPMENT

6.1 LEVELS OF PROTECTION

The USEPA terminology for describing the various types of PPE (Levels D, C, B, and A) is used for this project. Based on known site conditions and the level of contaminants, Level D PPE will be worn for all activities. Level D PPE consists of the following:

- Standard work clothing (mandatory long pants);
- High-topped shoes/boots with protective toe caps;
- Safety glasses with side shields (whenever a splash potential exists);
- Hard-hat (in drilling areas or if an overhead hazard exists);
- Disposable Nitri-solve® latex-free (11 mil) or equivalent gloves whenever there is reasonable potential for contact with contaminated soils, groundwater, or equipment that may contain trace contamination. Disposable gloves will be changed frequently (at least every 15 minutes or with each new sample collection) to avoid breakthrough; and
- Hearing protection (if noise levels exceed 80 decibels on the A-weighted scale [dBA]).

Additional PPE will be used as appropriate and includes the following:

- High visibility vests;
- Long sleeves when there is the potential for contact with poison oak or poison ivy;
- Kleenguard A30 coveralls for individuals with severe allergies to poison oak or poison ivy;
- Clothing that minimizes cold stress;
- Latex-free gloves when there is reasonable potential for contact with contaminated soils;
- Nitrile latex-free gloves when handling metaphosphoric acid;
- Nitrile and nitrile rubber gloves if cleaning up fluorescent light breakage; or
- Polyvinyl alcohol gloves when there is reasonable potential for contact with groundwater, free product, saturated soils, or soils producing elevated photoionization detector (PID) readings.

The required PPE for each task anticipated for this project is identified in Table 6.1. Additional details for PPE requirements for specific tasks are provided in HGL Procedure 06 - Personal Protective Equipment (March 2013).

Table 6.1
Personal Protective Equipment

Activity	PPE Required
Mobilization/Demobilization and Site Preparation	D to Modified Level D, ANSI Class 2 high visibility vest, hearing protection, safety glasses, hard hat and coveralls as needed.
Monitoring Well Destruction	D to Modified Level D, ANSI Class 2 high visibility vest, hearing protection, safety glasses, hard hat and coveralls as needed.
Treatment Plant Decommissioning	D to Modified Level D, ANSI Class 2 high visibility vest, hearing protection, safety glasses, hard hat and coveralls as needed.

6.2 PERSONAL PROTECTIVE EQUIPMENT FOR VISITORS

An adequate supply of hard hats, safety glasses, and other basic PPE shall be maintained on site for visitors. Visitors will not be supplied with chemical protective clothing or respiratory protection.

7.0 MEDICAL SURVEILLANCE

HGL personnel are required to participate in the medical surveillance program, which is managed by the CHSD. The program includes initial and routine medical exams provided by a licensed physician at a WorkCare approved clinic. These exams are used to establish an initial baseline of the employee's health and then used to monitor their future health as they pertain to potential occupational exposures to hazardous agents, and fitness to work.

Personnel who will be working in established exclusion zones or in areas where exposure to contaminate-related safety or health hazards are possible, or who wear respiratory protection, will be certified as fit to work before working in those areas. Documentation of medical qualifications will be retained on site.

Any injury or illness (whether on or off the job) may require work accommodations before the employee returns to work. If the injury or illness requires medical care, the attending physician must complete an HGL Medical Assessment/Work Capacity Form and it must be provided before an employee returns to work.

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8.0 EXPOSURE MONITORING

The activities to be conducted at the former Fort Ord requiring exposure monitoring, and action levels for the contaminants of interest at the site are detailed in Table 8.1. Confined space atmospheric monitoring is not anticipated, but if necessary will be conducted in accordance with HGL's Permit-Required Confined Space Entry Program summarized in the APP and located in APP Appendix D.

If PID readings are less than the action levels indicated in Table 8.1, and readings are below chemical-specific colorimetric tube action levels, no additional upgrade from Level D is required. A Level C upgrade to NIOSH-approved respirator cartridges will occur if ventilation/off-gassing, working upwind, or suspending work and returning to work only when airborne concentration return to acceptable levels, does not bring down concentrations in the breathing zone to levels below the stated action level.

All personnel working on activities requiring PPE at any level more restrictive than Level D will be confirmed to possess adequate training and medical clearance commensurate with the required equipment before using upgraded PPE (respirator fit test, medical clearance for respirator use, etc.).

Table 8.13
Site-Specific Exposure Monitoring and Action Levels

Activity	Location	Frequency	Monitoring Method	Action Level	Action
Well vault/piping junction vault entry or trench entry deeper than 4 feet where there is a potential for a hazardous atmosphere	Characterized from top to bottom.	Before entering vaults/manholes.	4-gas meter with a PID	19.5 – 23% O2, <10% LEL, <25 ppm CO, <1 ppm H2S, <5 ppm VOCs	Acceptable entry condition NOT ACHIEVED, entry prohibited
	Breathing zone	During a permit-required confined space entry.			Self-rescue activities initiated. Re-entry prohibited unless an acceptable entry condition achieved.

Notes:
CO = carbon monoxide
H2S = hydrogen sulfide
LEL = lower explosive limit
O2 = oxygen
VOC = volatile organic compound

9.0 HEAT AND COLD STRESS

HGL's Heat and Cold Stress Monitoring Plan is provided as Section 9.o of the APP. No additional site-specific requirements beyond the measures detailed in Section 9.o of the APP are needed for this project.

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10.0 STANDARD SAFETY PROCEDURES, WORK PRACTICES, AND ENGINEERING CONTROLS

HGL will implement applicable and feasible engineering controls and work practices to eliminate, or reduce, the risk of exposure to recognized site hazards. These control measures are presented as a working guide for site personnel and are not intended to cover all issues. Additional controls may be identified in the AHAs (Attachment 1A).

10.1 STANDARD SAFETY PROCEDURES

10.1.1 General Safe Work Practices

The identification and assessment of work hazards is a continual process; personnel must be aware of their surroundings and the chemical, physical, biological, and radiological hazards that may be present. Individuals will be familiar with the physical characteristics of a site including: wind direction; accessibility to associates, equipment, vehicles, and communication; areas of known or suspected contamination; site access; and water sources. The number of workers will be limited to the minimum necessary to complete work tasks in a safe and efficient manner. Site personnel will perform only those tasks that they are qualified to perform.

The following general safe work practices will be followed by HGL and its subcontractors:

- Consuming food and beverages, using tobacco products, and carrying matches or lighters are prohibited in potentially contaminated areas.
- Equipment will be bonded and grounded, spark proof and explosion resistant, as appropriate.
- Contact with potentially contaminated substances will be avoided. Walking through stained soils, puddles, pools, or mud, or handling soils without protective clothing is prohibited. Whenever possible, kneeling on the ground, leaning, or sitting on equipment is prohibited.
- Personnel are required to work using the buddy system for exposure-related site activities.
- Individuals must be alert to potentially dangerous situations, such as the presence of strong, irritating, unusual, or nauseating odors.
- PPE must be worn as specified. Individuals will be alert to decreased performance capabilities such as poor tactile skills when wearing gloves.
- Wearing jewelry, which may become entangled in equipment, is prohibited.
- Visitors will be escorted by qualified personnel at all times.
- Running and horseplay are prohibited on-site.
- A hazard communication program will be implemented, which includes retention of SDSs, container labeling, and personnel training.

10.1.2 Buddy System

The buddy system will be used whenever possible. At least two persons are required to be at the work area when work that might result in worker contamination or injury is conducted. When only one person is working on site, that individual will carry a cell phone and keep it turned on at all times while in the field and call in to the office at predetermined times to verify he or she is well. The predetermined call-in times from on site will, at a minimum, correspond to site arrival, mid-day, and site departure. The employee will also notify the client of his or her presence on site upon arrival.

10.1.3 Worker Restrictions

Smoking shall only be permitted in designated areas. Personnel shall never discard cigarette butts into the environment while working at the site. Workers must wash hands and face before eating, drinking, or smoking.

10.1.4 Work Permit Requirements

Confined Space Entry Permits, Excavation, Hot Work, and Scaffolding Permits are required as appropriate at this facility.

10.1.5 Lifting, Material Handling, and Ergonomic Hazards

10.1.5.1 Lifting and Material Handling

Various materials and equipment may be handled manually during project operations. Materials placed in storage will be placed in such a manner as to prevent the material from falling onto workers or others who may be below the storage area. Stored items also will be placed in such a manner to prevent the creation of a tripping hazard.

There is a potential for workers to experience musculoskeletal injuries when lifting and handling heavy or bulky items, working in tight areas, clearing properties of debris, or similar situations. Work tasks/conditions that may be associated with such injuries include the following:

- Awkward postures, which might include prolonged work with the neck bent; squatting, kneeling, or lifting; handling objects with the back bent or twisted; repeated or sustained bending or twisting of wrists, knees, hips, or shoulders; and forceful and repeated gripping.
- Forceful lifting, pushing, or pulling, which might include handling heavy or awkward objects; moving bulky or slippery objects; or assuming awkward postures while moving objects.
- Prolonged repetitive motion, which might include using hand tools or operating equipment levers or knobs; or handling/manipulating objects.
- Contact stress, which might include repeated contact with hard or sharp objects.

- Vibration, such as overuse of power hand tools.

The following fundamentals address the proper lifting techniques that are essential in preventing injuries:

- Use a hand truck to relocate heavy objects.
- Whenever possible, push, do not pull.
- If you must twist or stretch to reach the load to be handled, readjust the load before moving or reposition yourself before lifting.
- The size, shape, and weight of the object to be lifted shall first be considered. No individual employee is permitted to lift any object that weighs over 50 pounds. Multiple employees or the use of mechanical lifting devices is required for objects over the 50-pound limit.
- The safe lifting zone is between the knees and shoulders. If the object is below knee level, bend the knees and lift with the legs. If load is above the shoulders, use a sturdy stool or ladder.
- Inspect the anticipated path to the destination for the presence of slip, trip, and fall hazards, and clear obstacles before commencing to move the load/object. Feet shall be placed far enough apart for good balance and stability (typically shoulder width).
- The worker shall get as close to the load as possible. Legs shall be bent at the knees.
- The back shall be kept as straight as possible and abdominal muscles should be tightened.
- The safe lifting zone is between the knees and shoulders. If the object is below knee level, bend the knees and lift with the legs. If load is above the shoulders, use a sturdy stool or ladder.
- Twisting motions should be avoided when performing manual lifts.
- To lift the object, the legs are straightened from their bending position.
- Take small turning steps without twisting the knees or the back if it is necessary to turn with the load.
- A worker shall never carry a load that cannot be seen over or around.
- When placing an object down, the stance and position are identical to that for lifting; the legs are bent at the knees and the object lowered.
- When two or more workers are required to handle the same object, coordination is essential for sharing the weight between the individuals carrying the load and to make a uniform lift. When carrying the object, each worker, if possible, shall face the direction in which the object is being carried.
- In handling bulky or heavy items, the following guidelines shall be followed to avoid injury to the hands and fingers:
    - A firm grip on the object is essential; leather gloves shall be used as necessary.

  - Hands and the object shall be free of oil, grease, and water, which might prevent a firm grip. Fingers shall be kept away from any points that could cause them to be pinched or crushed, especially when setting the object down.
- Item shall be inspected for metal slivers, sharp or jagged edges, burrs, and rough or slippery surfaces prior to being lifted.

10.1.5.2 Ergonomic Work Practices

Injuries may also occur from hand digging with shovels, clearing and grubbing tools, hand augers, and concrete cutting tools. Workers will be instructed to avoid over-reaching, lifting and twisting while moving equipment, and to make sure that footing is solid before lifting commences.

Both hand-held and stationary tools that transmit vibration through a work piece can cause vibration "white fingers" or hand-arm vibration syndrome. The use of these types of tools are not anticipated on this project; however, if they should be required, proper control measures will be used to minimize hand-arm vibration. The control measures may include the following:

- Use of antivibration tools and/or latex-free gloves,
- Work practices that keep hands and body warm,
- Steps to minimize the vibration coupling between the hand and the tool,
- Medical surveillance, and
- Adherence to the ANSI Standard for hand/arm vibration.

10.1.6 Drum/Container/Tank Handling

Moving drums or chemicals by hand will be limited to single lifts less than 50 pounds or by using a dolly/hand cart. In all cases the procedures described in the preceding sections will be followed. A forklift or pallet jack will be used to move anything stored on pallets or similar containers.

10.2 ENGINEERING CONTROLS

10.2.1 Hot Work

Hot work means any activity that involves an open flame or has the potential to generate sparks or embers. Such activities include use of cutting torches, metal cutting saws, abrasive grinding of metals, welding, brazing, and soldering. Hot work is not anticipated but if it is necessary to perform hot work, the permit requirements in Section 10.1.4 will be implemented and the safety measures detailed in the Fire Prevention Plan in Section 9.r of the APP will be followed.

HGL and subcontractor personnel will remain a safe distance from any hot work being performed. A fire watch shall be put into place for up to an hour after the conclusion of the Hot Work depending upon the surrounding environment.

10.2.2 Unexploded Ordnance

Unexploded ordnance is not expected to be encountered during this project.

10.2.3 Lockout/Tagout

Equipment and machinery can present many hazards to workers from electrical, mechanical, pneumatic or hydraulic sources. Disconnecting or making safe the equipment involves the removal of all energy sources and is known as isolation. The steps necessary to isolate equipment is the lockout/tagout procedure. The isolation procedure generally includes the following tasks:

1. Identify the energy source(s)
2. Isolate the energy source(s)
3. Lock and tag the energy source(s)
4. Prove that the equipment isolation is effective

The locking and tagging of the isolation point lets others know not to de-isolate the device.

When employees or subcontractors are working on equipment or in areas where the activation of the equipment might endanger the worker's safety, a site-specific written lockout/tagout procedure will be developed and followed. The Project SSHO is responsible for coordinating the lockout/tagout procedure. Only authorized employees will perform lockout/tagout. Personnel working with or around an isolated system will be trained as either an Affected or Authorized employee, as appropriate.

10.2.4 Clearing and Grubbing

When clearing weeds or brush by hand, the following minimum procedures apply:

- Feet and hands will be kept clear of blades.
- Proper PPE, such as safety glasses and hearing protection, will be used.
- Stable, secure footing will be established before cutting – especially on slopes.
- Work areas will be surveyed prior to cutting for obstacles, rocks, structures, etc.
- Sharp equipment shall be placed in sheaths or boxes before changing locations.

The use of gas-powered equipment may be required. If they are used, only trained individuals wearing the appropriate clothing will be allowed to operate them. Before beginning clearing and grubbing operations, nearby personnel will be alerted that machete, chainsaw, or chipper operations are about to begin.

10.2.5 Pressure Washing

Pressure washing for decontamination of equipment used in normal sampling, operation and maintenance activities is not anticipated. If dry contamination procedures are not adequate,

additional washing or pressure washing methods may be adopted. In that case, the SSHP will be updated to incorporate such procedures before they are implemented.

If pressure washing methods are employed the updated SSHP will include the following basic procedures:

- All hose ends and connections will be secured to prevent accidental disconnection and to restrict whipping in the case of disconnection.
- All hoses and related equipment must be inspected on a daily basis for damage.
- Personnel working with high-pressure lines will not point the stream at any body part, and must wear the appropriate eye, face and skin protection.
- Prior to disconnection, all pressurized lines must be bled to relieve the pressure, and verified to be depressurized.

10.2.6 Confined Space Entry

Confined space entry is not expected to be necessary during this project. If pipeline removal or well destruction activities require entry into well vaults or trenches greater than 4 feet in depth where there is a potential for a hazardous atmosphere, then the space will be evaluated to determine whether the proposed activities constitute permit required confined space entry. Permit required Confined Space Entry tasks will be performed in accordance with HGL's HSP Procedure 26 in Appendix D of the APP and Section 9.oo of the APP. A sample Confined Space Entry Permit form and the confined space pre-entry inspection checklist forms are available in Appendix B of the APP. Confined Space Entry permits are multipart and sequentially numbered and must be ordered from the CHSD.

11.0 SITE CONTROL MEASURES

11.1 WORK ZONES

An EZ will be set up at applicable exterior work locations (well destruction, pipeline removal) under the following circumstances:

- In the event of a planned or unplanned release of contaminates;
- In the event of an unplanned chemical release that escapes containment
- To keep unauthorized persons out of the work area during activities and tasks that potentially expose HGL employees, subcontractors or visitors to contaminate-related safety or health hazards

For activities that take place outside the facility that have the potential expose HGL employees, subcontractors or visitors to contaminate-related safety or health hazards, the Project SSHO shall be responsible for designation of the zones. Work areas shall be established and protected so that unauthorized persons shall be prohibited from entering the work area.

The EZ will include any area where chemical contamination may be encountered and will be marked with barrier tape or other means to warn personnel of the hazards. The EZ will be large enough to prevent contamination from leaving the marked area.

Immediately adjacent to the EZ, a contamination reduction zone (CRZ) with a decontamination area for equipment and personnel will be established. This area will also be delineated with traffic cones and/or barrier tape. The CRZ will be large enough to provide a safety zone to prevent the movement of contaminants from the EZ into the support zone. Only personnel who have completed the appropriate training, have a current medical clearance for hazardous waste site operations, and are wearing the proper PPE will be allowed within an EZ or CRZ.

The remainder of the project area will be designated as the support zone. No special markings or warning labels are required for this area.

11.2 COMMUNICATION SYSTEMS

Multiple types of communication systems will be available for workers assigned to the former Fort Ord site. Face-to-face communication will be the primary method for workers in the facility, work and support areas. In addition, cell phones will be used for worker communication and emergency notifications. In the event that cell phone reception cannot be accessed in all areas of the work site, the communication muster point where cell phone reception is known to be available has been established outside the facility building. As a backup, telephones located in the office can be used to contact emergency assistance.

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12.0 PERSONNEL HYGIENE AND DECONTAMINATION

12.1 PERSONNEL DECONTAMINATION

Personnel decontamination will be instituted to minimize the possibility of exposure to chemical hazards. All field personnel will wash their hands and face in the rest room before eating, drinking, and leaving the site for the day.

The SSHO will be responsible for assessing the effectiveness of decontamination procedures. Should the SSHO deem the decontamination procedures herein to be ineffective, the SSHO shall consult the SHM/CHSD for guidance.

12.2 ON-SITE FACILITIES

HGL shall maintain hygienic sanitation provisions during the duration of this project. General requirements for a temporary, mobile field crew include the following:

- Drinking water – bottled drinking water will be maintained on site for use by field personnel. Potable water is not available at the treatment plant facility or at the extraction/injection well locations.
- A portable toilet is located at the NWTS. Portable hand washing will be accomplished using potable water carboys, liquid soaps, or sanitary hand wipes.

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13.0 EQUIPMENT DECONTAMINATION

Small equipment that cannot be damaged by water will be placed in a wash tub containing AlconoxTM or similar low-sudsing nonphosphate detergent along with portable water. The surfaces of the items will be scrubbed with a bristle or similar brush. Equipment will be rinsed with tap water in a second wash tub followed by a deionized water rinse.

Dedicated sampling equipment will be used for sampling unknown liquid waste.

The Fort Ord Natural Reserve (FONR) is a restricted area used to conduct research on plant growth, including the study of federally protected Monterey spineflower and sand gilia. To minimize the introduction of non-native plants into the FONR, any vehicle taken into the FONR must be carefully inspected and cleaned to remove soil and/or vegetation before entering.

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14.0 EMERGENCY EQUIPMENT AND FIRST AID REQUIREMENTS

Arrangements have been made for medical facilities and personnel to provide prompt attention to injured employees and for consultation concerning occupational safety and health matters. Emergency equipment and information available on site will include, but is not limited to the following:

- An effective means of communication (hard-wired or cellular telephone, two-way radio, etc.) to call 911 or other emergency response sources;
- A minimum of one working vehicle to effectively transport injured worker;
- The telephone numbers of physicians, hospitals, and ambulances;
- A map delineating the best route to the nearest medical facility;
- A minimum of one ANSI Z308.1, Type III First Aid Kit for portable outdoor settings;
- A minimum of one approved fire extinguisher; and
- A spill kit.

First aid kits and personal eye wash bottles will be maintained on site in vehicles for activities conducted in remote locations away from the treatment plant. A 15-minute eye wash and emergency shower are present in the treatment plant. The contents of first-aid kits will be checked by the employer before their use on site and at least every 3 months when work is in progress so that when they are needed, they are complete, in good condition, and have not expired.

In addition, when a medical facility or physician is not accessible within 5 minutes of the work site, a minimum of two personnel present at the site will be qualified to administer first aid and CPR when two or more personnel are present.

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15.0 EMERGENCY RESPONSE AND CONTINGENCY PROCEDURES

The emergency response plan consists of pre-planning measures, emergency notification procedures, and response plans for spills, fires, and severe weather are detailed in Section 9.c of the APP. Safe work practices will be employed to minimize the potential need for emergency response; however, the emergency response plan in Section 9.c of the APP, as well as the procedures detailed in this SSHP section will be reviewed by project personnel upon assignment so that workers are aware of response and contingency procedures in the event of an accident or other site emergency. In the event of an accident or incident, the SSHO will notify the PM and CHSD after the immediate needs of the site and the employees are attended to. Incident reporting shall be in accordance with the requirements of Section 8 of the APP, and HGL's Incident Reporting Policy. The incident shall also be reported to USACE using the Preliminary Accident Notification form and the ENG Form 3394 as outlined in Section 8.0 of the APP.

15.1 PRE-EMERGENCY PLANNING

Before project work commences, an emergency medical assistance network will be established and all emergency communication equipment tested. The local emergency medical services (EMS) as identified on the Emergency Information Sheet (located at the front of this SSHP) will be informed of the field activities, location, and schedule. A designated meeting location will be established and the location communicated to the field team during the TSM.

15.2 PERSONNEL AND LINES OF AUTHORITY FOR EMERGENCY SITUATIONS

In the event that an emergency arises, the appropriate immediate response must be taken by the first person to recognize the situation. The field crew shall contact emergency response services by calling 911 and then immediately notify the SSHO of the incident. The authority to order personnel to evacuate the area rests with the Lead Operator, SSHO, or a qualified representative.

15.3 SITE EVACUATION

In the event that site evacuation is required, a continuous, uninterrupted air horn will be sounded for approximately 10 seconds. Air horns in the work area or a vehicle horn will be used. Continuous communication will be maintained between the site and the main office. Emergency alert systems shall be tested periodically. If employees are working alone in remote locations, a means of contact must be provided. Personnel shall evacuate to the designated Assembly Point and the crew leader will perform a head count. When the head count has been performed, the SSHO will be provided a status report of the event.

During any on-site emergency, work activities in the affected area will cease until the emergency is bought under control.

15.4 MEDICAL TREATMENT OF INJURED PERSONNEL

The HGL occupational medical care provider will be available to provide patient specific information in case medical treatment is needed. For injuries or illnesses requiring EMS, notification via the 911 system or equivalent system will be made. Emergency response personnel will determine the best course of treatment and the medical treatment facility where this will occur. Personnel may be transported to the nearest medical treatment facility as determined by EMS personnel.

Qualified first aid and CPR providers may treat minor injuries on site. Two field team members (HGL or subcontractor) must be trained to render both CPR and First Aid. On this project, Peter Arroyo and Megan Matteazzi are trained for CPR and First Aid.

A first aid kit, including necessary protection against bloodborne pathogens, will be available in project vehicles. An adequate supply of fresh potable water for emergency eyewash purposes or portable emergency eyewash will be available.

The Emergency Information Sheet and the map and directions indicating the fastest route to the hospital emergency room will be retained in each field vehicle. The HGL SSHO or SS shall accompany injured HGL workers to the hospital or medical care facility. The subcontractor's Project SSHO shall accompany subcontractor's workers to the hospital or medical care facility.

15.5 HOSPITAL ROUTE MAP

The hospital route map and written directions to the nearest medical facility identified for this project are provided at the front of this SSHP and will be retained in each field vehicle along with the Emergency Information Sheet.

15.6 CRITERIA FOR ALERTING LOCAL EMERGENCY RESPONDERS

Personnel have the responsibility and authority to call 911 in the event of a medical emergency, fire, or other emergency. The SSHO will determine whether additional local emergency services should be notified. The Emergency Contact Sheet is provided at the front of this SSHP for easy access.

ATTACHMENT 1A

ACTIVITY HAZARD ANALYSIS FORMS

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ACTIVITY HAZARD ANALYSIS #1

Date Prepared: August 29, 2016	**Overall Risk Assessment Code (RAC) (Use highest code)**					**M**
Project Name: OU-1 Fort Ord Natural Reserve Well Destruction and Northwest Treatment System Decommissioning, Former Fort Ord, California	**Risk Assessment Code (RAC) Matrix**					
Activity/Work Task: Decontamination During Demolition	**Severity**	**Probability**				
Activity Location(s): Former Fort Ord, California		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Edie Scala-Hampson CIH, CHMM	Catastrophic	**E**	**E**	**H**	**H**	**M**
	Critical	**E**	**H**	**H**	**M**	**L**
Task Start Date: Between 6/15//17 and 10/31/17	Marginal	**H**	**M**	**M**	**L**	**L**
	Negligible	**M**	**L**	**L**	**L**	**L**
Task Duration: 20 days	Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident, and is identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.				**RAC Chart**	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as: Catastrophic, Critical, Marginal, or Negligible				**E = Extremely High Risk**	
Revised by: Roy Evans					**H = High Risk**	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				**M = Moderate Risk**	
					L = Low Risk	

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
1. Determine location for set up	Traffic-Struck by hazards	• Select location away from traffic. • Place barricades for work site protection, if necessary. • Keep all unnecessary personnel out of the work area and in an upwind location. • Wear high visibility vest.	M
	• Driving over soft ground • Uneven terrain	• Choose location with level and firm soils.	M
	General site hazards - Environmental: • Biologicals (plants, insects, wild life) • Adverse weather • Temperature stresses • UV hazards	• Refer to General site hazards AHA.	M

ACTIVITY HAZARD ANALYSIS #1 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
2. Movement to decontamination area	Contact with heavy equipment-struck by hazards	• Shut down all machinery or equipment by positive means in order to prevent its operation while decontamination is being done. • Lower and block bulldozer and scraper blades, end-loader bucket and similar equipment. • Prohibit unattended machinery or equipment that has not been turned off. • Prohibit getting off or on any equipment while it is in motion. • Require all mobile equipment be equipped with back up alarm.	
3. Pressure Washing	Slip, trip and fall hazards	• Wear slip resistant footwear. • Keep work area picked up and as clean as feasible and free of tripping and fall hazards.	M
	Flying debris-Eye hazards	• Wear safety glasses or goggles and a face shield. • Ensure eyewash is available.	M
	Burns-Heat/ Chemical	• Wear rain suits or suits of chemical resistant material to prevent direct contact with hot water or chemicals of concern. • Prohibit decon or washing of personal protective equipment (PPE), with hot water, while on a person.	M
	Strains, sprains, awkward bending/lifts and ergonomic hazards	• Use proper lifting techniques. • Ensure walking pathway is clear. • Do not lift greater than 40 lbs. • Use mechanical assistance or 2-person lift whenever possible. • Limit repetitive awkward motions.	M
	Noise	• Wear hearing protection if noise levels from neighboring equipment (pressure washers) exceeds 80 dBA (if you cannot be heard speaking in a normal voice at arm's distance).	M
	Contact with potentially contaminated materials: Inhalation and skin contact hazards	• Conduct real-time monitoring (PID). • Wear required PPE as indicated in SSHP such as chemical resistant gloves based on the identified chemicals, boot covers and splash suit protection. Follow respirator action level dictates of SSHP. • Maintain good housekeep to safeguard against cross contamination of surrounding areas and to eliminate safety hazards. • Practice good personal hygiene.	L

ACTIVITY HAZARD ANALYSIS #1 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
4. Measure with PID for VOC	Inhalation of contaminants	• Refer to SSHP for chemical hazard discussion. • Allow only essential personnel in the decon area. Locate all others in an upwind location. • Follow PPE dictates of SSHP concerning airborne measurements and action levels.	L
5. Personal decontamination	Take home toxics	• Decontaminate per SSHP. • Remove all contaminated clothing and materials and leave on site. • Shower as soon as possible.	L
6. Containerize water	Spills-Environmental damage	• Use absorbents and containers for rinse water.	M
Add Steps, Hazards, and Actions to Eliminate or Minimize Hazards based on conditions encountered in the field.			
Job Steps	**Hazards**	**Actions to Eliminate or Minimize Hazards**	

ACTIVITY HAZARD ANALYSIS #1 (continued)

Equipment	Inspection	Training
PPE Level D: • Hard hat • Safety glasses • Safety-toed boots • Work gloves/chemical resistant gloves • ANSI Class 2 reflective warning vests Other Equipment: • Generator • Fire extinguishers • Emergency eyewash • First aid kit • Insect repellant–DEET • Hand tools • Spill containment supplies • First aid supplies • Containers as needed • Tarps • GFCI • Heavy duty extension cords • Drinking water • Heat stress monitoring • Steam cleaner • Alconox/cleaning brushes/buckets/as needed • Smart phone apps for temperature stress and noise	Daily inspection (SSHO) _____ Housekeeping (daily) • Fire extinguisher (monthly) • Vehicle inspection (daily) • Eye wash • Equipment and tools inspection (daily and before use) • Survey areas for poisonous plants, insects, and animals (each work area) • Check body for ticks (each evening during tick season) Identify closest usable tornado shelter available in each work area	Competent Person (CP) / Qualified Person (QP): CP/SSHO _____ Alternate CP/SSHO _____ QP/First Aid and CPR _____ Training Requirements (as determined by the SSHO): • HAZWOPER 40 hour • Site safety orientation • Tailgate meetings • Emergency procedures • Hazard communication • Hearing conservation • MEC awareness • Applicable AHAs • Fire extinguisher use • Biological hazard identification and control • Tornado shelter location • Lightning safety procedures • Heat stress prevention and heat stroke treatment • Cold stress prevention

ACTIVITY HAZARD ANALYSIS #2

Date Prepared: August 29, 2016	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
Project Name: OU-1 Fort Ord Natural Reserve Well Destruction and Northwest Treatment System Decommissioning, Former Fort Ord, California	**Risk Assessment Code (RAC) Matrix**	
Activity/Work Task: Pipeline Removal		
Activity Location(s): Former Fort Ord, California		
Prepared by: Edie Scala-Hampson CIH, CHMM		
Task Start Date: Between 10/1/16 and 1/31/17		
Task Duration: 15 - 25 days		
Revised by: Roy Evans		

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident, and is identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as: Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
1. Arrival of new personnel at site.	Newly hired personnel and visitors. Unfamiliarity with: • Site, • general (chemical, physical, environmental) site hazards, • project safety rules and hazard control procedures, • chain of command, and • emergency procedures.	• Confirm that all field personnel have read the project Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) and are trained in the procedures corresponding to work assignments. After personnel are trained in the contents of the APP and the SSHP, they shall sign the APP Acknowledgment Form and the SSHP Acknowledgment Form. • Confirm name of subcontractor competent person. • Conduct pre-entry health and safety briefing. • Confirm that site hazards are recognized. • Confirm that necessary equipment, to evaluate and control site hazards, is available and in good working condition. • Confirm that applicable engineering, administrative and personal protective equipment (PPE) controls and equipment are available and ready to be used as needed. • Confirm emergency, safety, and first aid supplies are available.	M

ACTIVITY HAZARD ANALYSIS #2 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
1. Arrival of new personnel at site (continued).	Newly hired personnel and visitors. Unfamiliarity with: • site, • general (chemical, physical, environmental) site hazards, • project safety rules and hazard control procedures, • chain of command, and • emergency procedures (continued).	• Review emergency procedures, contact numbers and evacuation plans. • Confirm that all personnel know what to do in the event of an accident (personal or property damage). • Complete preliminary and initial quality meeting with Corps, if required. • Keep all training certifications held by personnel onsite in personnel files. • Acquire Subcontractor certificate for Excavation Competent Person training.	**L**
	Medical emergencies	• Complete the Voluntary Allergy/Sensitivity/Medical Questionnaire.	**L**
2. Removal of concrete. • Break up concrete. • Load concrete debris. • Haul away concrete debris. • Remove buried piping Cutting of metal. Removal of scales. Grade soils.	Complacency	• Require attendance of all personnel at the morning safety meetings to re-focus site personnel to hazards, emergency procedures and equipment, operational aspects, and change(s) in site/work conditions. Recommended control measures for the hazards shall be part of the discussion.	**L**
	Trench collapse: The pipeline associated with the NWTS on the FONR property is no deeper than 3 feet below the ground surface.	• The buried pipeline will be removed using heavy equipment with minimal, if any, manual labor taking place within any trench deeper than 4 feet. • The field crew will not enter any trench area greater than 4 feet in depth unless: ➢ The trench has been evaluated and approved for entry by the subcontractor's competent person and daily inspection forms (more often if weather creates hazards) are completed, ➢ The sidewalls of the trench in the work area are sloped at a gradation no steeper than 1.5 feet horizontal per 1 foot of vertical rise, or ➢ A trench box or shield is approved by a registered professional engineer and is placed in the trench work area. ➢ A means of egress is provided. • The procedures and work standards of OSHA Publication 2226-10R 2015 will be followed. HGL Procedure 21 and 21.1 checklist will be followed (excavation observation).	**M**

ACTIVITY HAZARD ANALYSIS #2 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
2. Removal of concrete (continued)	Open Excavation	• No open excavations deeper than 1 foot will be left on site at the end of each work day. • Open excavations at the end of each work day will be ramped to match the existing ground surface within 3 lateral feet from each edge of the excavation. • Open excavations at the end of each work day will be identified by barricades and tape or rope.	**M**
	Heavy lifting, strains, and sprains	• Use proper lifting techniques. • Limit weight to 40 pounds. Multiple employees or the use of mechanical lifting devices are required for lifting objects over the 40-pound limit.	**M**
	Fire	• Maintain fire extinguishers in work areas. A 4-A:60-B:C fire extinguisher shall be available when refueling at the project site. • Smoke only in designated areas. Only discard cigarette butts in proper receptacles – never discard cigarette butts onto the ground. Smoking shall not be permitted within 50 feet of fueling operations. • Use caution with vehicle exhaust systems in grassy areas. Do not run vehicles while parked in grassy areas. • Shut off engines shall before refueling.	**M**
	Struck by and against: • Vehicles • Equipment	• Wear PPE with high visibility vests when walking or working near moving equipment or vehicles. • Maintain a safe distance from operations. • Restrict personnel to walk or work within the swing radius of the equipment. • Make eye contact with the operator and wait until he signals to you. Do not assume equipment and vehicle operators have seen you. • Use warning signs and signalmen as necessary.	**L**
	Struck by flying concrete debris	• Wear appropriate PPE - hard hat, safety boots, and safety glasses at a minimum. • Maintain a safe distance from operations. • Require shatter resistant windshields in any heavy equipment used for breaking up the concrete.	**M**

ACTIVITY HAZARD ANALYSIS #2 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
2. Removal of concrete (continued)	Hand injuries	• Inspect items being handled for sharp edges, splinters, burrs, rough surfaces, etc. prior to being handled. • Wear leather gloves when handling materials with sharp edges, splinters, burrs, rough surfaces, etc. • Be aware of and avoid pinch point hazards.	**L**
	Use of mechanical equipment Heavy equipment anticipated: • excavators • hammer on excavators	• Require that only qualified personnel be permitted to operate equipment. Forklift operators must be licensed. • Inspect mechanical equipment daily. Deficiencies in equipment shall be noted on the inspection form. Equipment found to be unsafe shall be taken out of serviced.	**M**
	• rollers • wheel loaders • dump truck • combination backhoe Note: Jackhammer use is not anticipated. Compaction equipment anticipated: self-propelled compactor	• Require equipment operators wear safety belts and hearing protection (as necessary). • Operate all equipment at safe speeds and in a safe manner. • Prohibit operators of equipment to use cellular telephone devices while operating equipment. • Observe the minimum distances from overhead electrical lines (SSHP Table 2.1). • Review HGL Protection from Excessive Vibration Exposure Program for hazards and controls related to hand-arm vibration and whole body vibration.	**L**
	Injury from use of tools	• Select the proper tool – do not improvise. • Inspect all power and hand tools before each use (do not use damaged tools). • Check your position, footing, and grip before using tool. • Avoid distraction, keep your focus, and concentrate on the job. • Maintain a steady pace when using tools and take adequate rest periods. • Review HGL Protection from Excessive Vibration Exposure Program for hazards and controls related to hand-arm vibration and whole body vibration.	**L**
	Noise	• Require that all personnel wear hearing protection when exposed to high noise levels.	**L**
	Slips, trips, and falls	• Understand the hazards of slips, trips, and falls – consider the consequences. • Do not jump from equipment or elevated surfaces.	**L**

ACTIVITY HAZARD ANALYSIS #2 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
2. Removal of concrete (continued)	Slips, trips, and falls (continued)	• Clean-up work areas throughout the day and at the end of each workday. • Use three-point contact rule for entering/exiting vehicles, trucks, and equipment. • Use hand rails and other stationary objects (door frames, door knobs, steering wheels, walls, etc.) to increase stability. • Use extra caution when walking on wet, muddy, frosty, icy, or snow-covered surfaces. Consider postponing work as necessary and feasible. • Increase your awareness, keep alert, stay focused, and know your environment. • Avoid slippery areas when possible. Slow down - take smaller steps. • Stay away from slopes, hills, and grades. • Be cautious when using stairs. • Remove snow and ice when possible (shoveling, chipping, and salt application). • Apply traction aids, such as sand, gravel, and straw. • Lower your center of gravity when necessary. • Maintain proper illumination in work areas.	**L**
	Dust (silica)	• Control dust by maintaining equipment operation rates. • Control dust by applying water. • Personnel shall stay out of dust and work from upwind when possible.	**L**
	Heat stress	• See AHA “General Site Hazards.”	**L**
	Cold stress	• See AHA “General Site Hazards.”	**L**
	Dump truck operations	• Inspect trucks daily, paying particular attention to tire condition, tire pressure, and leaking hydraulic fluid. Re-evaluate overhead hazards prior to allowing dump trucks onto the project site. Barricade areas with overhead hazards with caution tape to prevent dump bed from contacting.	**L**

ACTIVITY HAZARD ANALYSIS #2 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
2. Removal of concrete (continued)	Dump truck operations (continued)	• Observe minimum distances from electrical lines (SSHP Table 2.1). In areas where it is not feasible to use barricades, then provide spotters and overhead hazard warning signs. • Wear seat belts while trucks are in motion at the project site. • Assist trucks when backing is necessary. • Obey traffic control signage and flag persons, as necessary. • Do not allow trucks to raise beds on uneven surfaces or in soft areas where the tires will sink. • Prohibit ground personnel near trucks when beds are raised. • Stay away from pinch hazards. • Lower dump beds before moving trucks.	**L**
	Overhead utilities	• Complete a Site Layout Plan prior to mobilizing the equipment. The plan shall identify all overhead and underground hazards. • Before equipment is moved, the travel route shall be surveyed for overhead and terrain hazards. The minimum distances from electrical lines must be observed (SSHP).	**L**
	Overhead utilities (continued)	• Power lines shall be assumed to be energized unless verified to be de-energized and visibly grounded. Operation beneath a power line that has not been verified as de-energized and grounded must maintain clearance distances stated above. A high-visibility elevated warning line or barricade shall be erected at the minimum approach distance. • Each work crew member shall be trained in the electrocution hazards and emergency procedures associated with energized power lines.	**L**
	Excavation hazards	• Follow the Excavation/Trenching Plan • Excavation competent person shall inspect and monitor all excavations at least daily and when conditions change, at a minimum, and document the inspections on the Excavation Inspection form. • Soils, equipment, and materials shall be kept at least 2 feet from the face of excavations if personnel will be entering the excavation.	**M**

ACTIVITY HAZARD ANALYSIS #2 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
2. Removal of concrete (continued)	Excavation hazards (continued)	• Provide walkways when personnel must cross over trenches. Walkways must have toeboards, and mid and top rails as fall protection. • Provide ladders, in trenches greater than 4 feet in depth, so that personnel do not have greater than 25 feet of lateral travel to exit excavations.	**M**
3. Dewatering	Use of pumps and hoses	• Review operator's manual for recommended operating procedures. • Utilize appropriate PPE and always wear safety glasses and face shield when disconnecting hoses. • Keep away from hot exhaust and hot surfaces. • Use proper lifting procedures for pumps and hoses. Get help as necessary. • Maintain control of hose ends when moving hoses to prevent striking self or other workers. • Secure hoses with lashing to prevent whipping - do not allow hoses to whip. Identify and avoid pinch points. • Secure Kamlok® OPW connections with safety clips/ties.	**M**
4. Cutting of Metal	Hot Work - Cutting with tools that will create sparks and heat and/ or cutting with an acetylene torch. Exposure to potential lead and chrome paint pigments.	• Require old paint removal before hot work is conducted. • Complete and submit a Request for Hot Work Permit. • Never look at arc during cutting. • Confirm that correct eye protection is worn that incorporates the appropriate level of tinted lenses for the task. • Keep unnecessary personnel from entering active cutting areas of at least a distance of 30 feet. • Require barricade and or welding curtain screen around area, as needed, where work will be done so as to prevent inadvertent arc flash exposure (eye damage) to neighboring workers. • Determine your escape route prior to entering work area. • Adhere to instructions given in daily briefings. • Remove combustible materials from the hot work area to a distance of at least 30 feet. • Avoid entering active torch cutting areas. • Confirm that tanks and welding equipment are used, stored and transported per regulations and safe work practices.	**M**

ACTIVITY HAZARD ANALYSIS #2 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
4. Cutting of Metal (continued)	Hot Work - Cutting with tools that will create sparks and heat and/ or cutting with an acetylene torch. Exposure to potential lead and chrome paint pigments. (continued)	• Confirm appropriate hand arm protection (flame resistant long sleeve shirt and leather gloves) when contacting the area being cut and when handling the grounding cable. • Note that a "Fire watch" is maintained for 30 minutes after completion of the cutting activities (60 minutes if combustible materials are present). Fire extinguisher should be in immediate area, 4A:60B:C. • Confirm fire extinguishers are suitably placed, distinctly marked, accessible and maintained in a fully charged /operable condition.	**M**
Add Steps, Hazards, and Actions to Eliminate or Minimize Hazards based on conditions encountered in the field.			
Job Steps	**Hazards**	**Actions to Eliminate or Minimize Hazards**	

ACTIVITY HAZARD ANALYSIS #2 (continued)

Equipment	Inspection	Training
PPE Level D: • Hard hat • Safety glasses • Safety-toed boots • Work gloves/chemical resistant gloves • ANSI Class 2 reflective warning vests • Hearing protection Other Equipment: • Generator • Fire extinguishers • Emergency eyewash • First aid kit • Insect repellant–DEET • Hand tools • Spill containment supplies • First aid supplies • Containers as needed • Tarps • GFCI • Heavy duty extension cords • Drinking water • Heat stress monitoring and Smart phone apps for temperature stress Heavy equipment anticipated: • excavators, • hammer on excavators, • backhoes. Compaction equipment anticipated: • self-propelled compactor or backhoe with compactor arm • vibratory compactor	Daily inspection (SSHO) _____ Housekeeping (daily) • Fire extinguisher (monthly) • Vehicle inspection (daily) • Eye wash • Equipment and tools inspection (daily and before use) • Survey areas for poisonous plants, insects, and animals (each work area) • Check body for ticks (each evening during tick season) Identify closest usable tornado shelter that is available (each work area)	Subcontractor Excavation Competent Person (CP) / Qualified Person (QP): _____ CP/SSHO _____ Alternate CP/SSHO _____ QP/First Aid and CPR _____ Training Requirements (as determined by the SSHO): • HAZWOPER 40 hour • Site safety orientation • Tailgate meetings • Emergency procedures • Hazard communication • Hearing conservation • MEC awareness • Applicable AHAs • Fire extinguisher use • Biological hazard identification and control • Tornado shelter location • Lightning safety procedures • Heat stress prevention and heat stroke treatment • Cold stress prevention

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ACTIVITY HAZARD ANALYSIS #3

Date Prepared: March 29, 2017	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
Project Name: OU-1 Fort Ord Natural Reserve Well Destruction and Northwest Treatment System Decommissioning, Former Fort Ord, California	**Risk Assessment Code (RAC) Matrix**	
Activity/Work Task: General Site Hazards	**Severity** / **Probability**	
Activity Location(s): Former Fort Ord, California		
Prepared by: Edie Scala-Hampson CIH, CHMM		
Task Start Date: Between 6/15/16 and 10/31/17		
Task Duration: 20 – 30 Days		
Revised by: Roy Evans		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident, and is identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
1. Review–Health and Safety (H&S) Needs	• Inadequate preparation that can lead to personal injuries, property damage and project delays • Addition of new personnel to work team	• Confirm all field personnel read project Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) and are trained in the procedures corresponding to work assignments. • Conduct pre-entry H&S briefing. • Confirm all site hazards are recognized. • Confirm all necessary equipment to evaluate and control site hazards is available and in good working condition. • Confirm applicable engineering, administrative and personal protective equipment (PPE) controls are ready to be implemented as needed. • Confirm emergency safety and first aid supplies are available. • Review emergency procedures and evacuation plans.	L
2. Transportation–Vehicle Maneuvering	Traffic and driving	• Practice defensive driving and always wear safety belt.	M

2. Transportation–Vehicle Maneuvering (continued)	Traffic and driving (continued)	• Confirm vehicle is adjusted per your personal specifications and is in good working order, all cargo is secured, and distractions are minimized. • Familiarize yourself with the route and directions. • Keep vehicle speed appropriate to road conditions.	M
	Road conditions: ruts, snow, ice, puddles, poor traction	• Be cognizant of road conditions and vehicle size limitations at all times. • Match driving speed to the conditions.	M
	Maneuvering in tight areas/potential vehicle or personnel damage	• Use a spotter to help maneuver in tight areas. • Avoid backing if possible. • Check all blind spots before you attempt to move vehicle. • Sound horn before backing and move slowly. • Remember that loaded haul trucks have the right of way.	M
3. General Site Hazards	Site access control–unwanted entry	• Maintain a watch for entry of unauthorized personnel. • Establish positive site access control prior to on-site operations using barricades, signs, or other methods. • Keep entry gates locked.	L
	Strains, sprains, awkward bending/lifting/ positions and ergonomic hazards	• Follow General Safe Work Practices and daily task specific briefing procedures. • Size up the load before the lift. • Use proper lifting techniques. • Maintain good personal fitness. • Know your own limitations. • Confirm walking pathway is clear. • Do not lift more than 40 lbs. • Use mechanical assistance or 2-person lift whenever possible. • Limit repetitive awkward motions and unbalanced lifting as much as possible. • Develop appropriate work-rest cycles. • DO NOT lift and twist torso at the same time. • Discuss and caution personnel about knowing their personal limitations when conducting strenuous activities.	M

ACTIVITY HAZARD ANALYSIS #3 (continued)

3. General Site Hazards (continued)	Overhead hazards	• Wear hard hat when there is a potential for head injury.	M
	Electrical	• Confirm that there is written certification of installation and grounding of all electrical power hook up installations and disconnections by a certified electrician.	M
	Traffic/Heavy Equipment–struck-by hazards, crushing hazards	• Select location away from traffic. • Place barricades for work site protection, if necessary. • Wear high visibility vest. • Stay clear of traffic and equipment. • Wear PPE (hardhat, safety glasses, hearing protection, high-visibility vest, etc.–Level D minimum). • Discuss active work areas in daily briefings. • Respect active work zones. • Make eye contact with operators of equipment to make sure they know your intentions. STAY CLEAR of earth moving equipment. • Note that machinery or equipment requiring an operator should not be permitted to run unattended. • Be alert to backup alarms and equipment material movement. • Minimize the number of ground personnel working around heavy equipment.	L
	Unhygienic conditions	• Restroom facilities, if installed on site, will be adequately provided and maintained. • Maintain hand disinfectant, wipes, and wash stations.	L
	Fire	• Maintain at least one dry chemical fire extinguisher having a minimum UL rating of 1A5BC on site.	L
	Driving/walking over soft ground Uneven and rough terrain	• Choose location with level and firm soils. • Contact subcontractor and note that gravel or wood chips may be needed to prevent entrapment in mud or water. • Watch footing when walking in mud or wet soils. • Maintain vehicle speed corresponding to road conditions.	M

ACTIVITY HAZARD ANALYSIS #3 (continued)

3. General Site Hazards (continued)	Getting lost/personal safety	• Do not travel alone and bring a topographic and/or site map and compass or GPS. • If you must work alone employ a "check-in" system. • Use the buddy system when possible. • Maintain adequate gear and equipment for possible emergencies.	L
	Electric shock	• Require that all electrical power hook up, installations and disconnections be made or certified by a qualified electrician who will provide written certification of installation and grounding. • Make certain all electrical is de-energized if work is to be performed near live power; implement lockout/tagout procedures.	M
	Unattended worker	• Employ the Buddy System if possible and maintain visual contact. • If working alone follow Lone Worker Procedure: contact PM or alternate point of contact at work start, mid-day, and when leaving work site at end of day.	M
	Slip, trip, and fall hazards	• Wear slip-resistant footwear. • Keep work area picked up and as clean as feasible and free of tripping and fall hazards. • Exercise caution to prevent entrapment in mud or wet soils and avoid walking on loose soils that can give way. • Continually inspect the work area for slip, trip, and fall hazards. • Note that egress routes are as clear and unobstructed as possible. • Use extra caution when working on uneven ground.	L
	Soft ground–entrapment or cave in hazards	• Make initial visual check. • Stand back 3 feet from excavations. • Know evacuation routes.	L
	Flying debris–eye, head, etc.	• Remain aware of surroundings and potential for flying debris and dust. • Wear safety glasses when there is a potential for flying debris. • Confirm eyewash is available. • Wear required PPE including: safety glasses with side shields, hard hats and high-visibility safety vests.	L

3. General Site Hazards (continued)	Biologicals–contact with poisonous plants, allergens, insects and animal kingdom hazards (for example: spiders, hornets, reptiles, snakes, ticks, mosquitos, bird and rodent droppings, biting and stinging insects, thorny plants)	• Ensure all personnel have the option to complete the Voluntary Allergy/Sensitivity/Medical Questionnaire. • Conduct visual inspection before work begins. • Survey and note (mark) areas of poisonous vegetation, insect (hornet wasp) and snake habitats, for example. • Use mosquito repellant with DEET, as required. • Know the local fauna and review emergency preparedness measures. Review potential animal dangers specific to the site and precautions (actions to take if run-in with wild animal occurs) and treatments. • Inspect your body and clothing for ticks during outdoor activity and at the end of the day. Wear light colored clothing so ticks can be more easily seen. Remove ticks right away to prevent infections. • Wear long-sleeved shirts that should be tucked in. When in areas with tick potential tuck pants into socks and duct tape. • Review information for poison ivy/oak recognition and treatment. • Use barrier cream as necessary (e.g., Technu™). • Wear snake protection chaps in natural habitat areas. • Use preferred footpaths. • Avoid walking in uncleared areas with poison ivy/oak or biological hazard potential. • Decontaminate using soap. Shower immediately upon leaving work.	M
	UV exposure–sunburn	• Wear SPF sunscreen (minimum 15 SPF) and reapply frequently.	M
	Noise–hearing loss	• Wear hearing protection if noise levels from neighboring equipment exceeds 80 dBA (if you cannot be heard speaking in a normal voice at arm's distance).	M
	Spills and leaks	• Maintain a portable spill response kit (if spills are possible) containing absorbent materials, nonsparking shovel, PPE, and disposable supplies in a readily accessible location.	L

3. General Site Hazards (continued)	Hand tools/power tools-cut hazards, jamming, pinch points, struck-by	• Confirm that hand tools are in good repair and used correctly. Use the right tool for the right job. Inspect tools daily prior to use and remove defective tools from service immediately. • Wear PPE with eye protection and leather gloves per the SSHP for all tasks with potential for cuts or lacerations. • Use electric power tools and extension cords with a ground fault circuit interrupter.	M
	Contact with equipment–struck-by	• Conduct daily task specific briefings regarding the hazards associated with the tasks. All personnel will wear a minimum of Level D protection. All HGL subcontractors will be required to attend the site specific hazards health and safety training. Maintain eye contact with equipment operators if is necessary to enter active work zones. • Establish clear safety zones.	L
	Heat or cold stress	• Review H&S program section regarding monitoring and controls necessary for heat or cold stress prevention. Take preventive and recovery measures as necessary. See SSHP. • Develop a work/rest regimen. Take breaks as needed for rehydration and recovery. • Dress appropriately.	L
	Severe weather related hazards (lightning, high winds, snow, rain, sleet)	• Be tuned in to the local weather reports. • STOP work as necessary when adverse weather conditions (wind, lightning, or rain) appear to be approaching the work area. Suspend work if storm is 5 miles away. Stop work if lightning is within a 30-second count (before thunder is heard) of the work area. Proceed to safe refuge. Return to work 30 minutes after last strike. (Follow the 30/30 rule.) • Do not remain under trees in severe winds. • Identify likely tornado refuge during site safety meeting. • Confirm that trailers are installed with appropriate anchorage capable of withstanding anticipated wind forces and comply with state and local standards for the installation of mobile homes. Only authorized vendors will remove all strapping anchors and chocks in preparation for trailer removal from the work site.	L

ACTIVITY HAZARD ANALYSIS #3 (continued)

3. General Site Hazards (continued)	Inhalation of dust, irritants, allergens	• Remain upwind as much as practical. Use dust filtering face-pieces if desired (optional). • Use water as a dust suppressant, if necessary.	L
	Medical emergency	• Ensure all personnel have the option to complete the Voluntary Allergy/Sensitivity/Medical Questionnaire.	M
4. Specific High-Hazard Activities: For example: Hot work, hoisting, work from elevation, scaffolding opening pressurized lines, electrical, mechanical repair, excavation, confined space, unplanned activity, etc.	Multiple hazards	• Require a permit for these activities before beginning work. • Require Competent Person to evaluate planned activity for potential hazards. Prepare written plan/procedure for each activity as appropriate. ➢ Obtain permits for Hot Work or Confined Space Entry ➢ Lockout/Tagout Procedures ➢ Competent Person Inspection and Sign-Off	M
5. General maintenance and housekeeping	Use of cleaning compounds, paints, and sealants	• Read and follow MSDS for each chemical used. • Do not use any chemical you have not been trained to safely use. Properly label all containers. • Provide ventilation and proper storage / disposal as necessary. • Wear proper PPE. • Use green, nonhazardous products where possible.	L
6. Performing work tasks for work periods longer than 8 hours	Fatigue associated with extended work shifts which includes general drowsiness and also associated driving fatigue	• Know your physical and psychological limitations. • Stop work/driving when necessary to take breaks and hydrate. • Stop work all together if fatigue endangers your safety or the safety of others. If appropriate, find a replacement for your job tasks. • Schedule more demanding tasks for when endurance and alertness is best. • Postpone more demanding and hazardous jobs if you are fatigued. • Follow guidelines of SSHP for work-rest regimens under adverse conditions of heat or cold stress. • Limit moderate to heavy workloads by knowing your physical limitations to minimize the risk of musculoskeletal injuries.	L
7. Completion of work shift	Take home toxics-Contact with potentially contaminated materials	• Note a source of decontamination water on site. Do not bring contaminated PPE or boots into truck. • Wear Tyvek as necessary and washable or disposable over-boots to keep personal clothing clean and free of contaminated soils.	L

ACTIVITY HAZARD ANALYSIS #3 (continued)

7. Completion of work shift (continued)	Chemical exposure or burns during equipment decontamination (pressure washing) and use of any chemicals or contact with hazardous wastes	• Store and dispose of contaminated materials in accordance with regulations. • Use liners to prevent contamination of truck. • Shower immediately at end of workday. • Check body for ticks, bites and signs of irritation or cuts. • Read MSDSs for all chemicals used such as methanol or hexane and follow procedures. • Label all containers as to contents and associated hazards. • Wear appropriate PPE (rain suit or equivalent) to prevent burns from hot water. • Do not eat in contaminated areas. • Prohibit pressure washing of PPE while it is being worn.	L
Add Steps, Hazards, and Actions to Eliminate or Minimize Hazards based on conditions encountered in the field.			
Job Steps	**Hazards**	**Actions to Eliminate or Minimize Hazards**	

ACTIVITY HAZARD ANALYSIS #3 (continued)

Equipment	Inspection	Training
PPE Level D: • Hard hat • Safety glasses • Safety-toed boots • Work gloves/chemical resistant gloves • ANSI Class 2 reflective warning vests Other Equipment: • Generator • Fire extinguishers • Emergency eyewash • First aid kit • Insect repellant–DEET • Hand tools • Spill containment supplies • First aid supplies • Containers as needed • Tarps • GFCI • Heavy duty extension cords • Drinking water • Heat stress monitoring	Daily inspection (SSHO) _____ Housekeeping (daily) • Fire extinguisher (monthly) • Vehicle inspection (daily) • Eye wash • Equipment and tools inspection (daily and before use) • Survey areas for poisonous plants, insects, and animals (each work area) • Check body for ticks (each evening during tick season) Identify closest usable tornado shelter that is available (each work area)	Competent Person (CP) / Qualified Person (QP): CP/SSHO _____ Alternate CP/SSHO _____ QP/First Aid and CPR _____ Training Requirements (as determined by the SSHO): • HAZWOPER 40 hour • Site safety orientation • Tailgate meetings • Emergency procedures • Hazard communication • Hearing conservation • MEC awareness • Applicable AHAs • Fire extinguisher use • Biological hazard identification and control • Tornado shelter location • Lightning safety procedures • Heat stress prevention and heat stroke treatment • Cold stress prevention

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ACTIVITY HAZARD ANALYSIS #4

Date Prepared: August 29, 2016	**Overall Risk Assessment Code (RAC) (Use highest code)**	**L**
Project Name: OU-1 Fort Ord Natural Reserve Well Destruction and Northwest Treatment System Decommissioning, Former Fort Ord, California	**Risk Assessment Code (RAC) Matrix**	
Activity/Work Task: IDW Management		
Activity Location(s): Former Fort Ord, California		
Prepared by: Edie Scala-Hampson CIH, CHMM		
Task Start Date: Between 6/15/17 and 10/31/17		
Task Duration: 15 - 30 Days		
Revised by: Roy Evans		

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident, and is identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as: Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
1. Drum Waste, Sealing Drums and Transporting Drums	Cut/crush/skin absorption hazards– hand and foot	• Wear leather steel-toed /ceramic-toed boots when handling heavy material. • Check bung lids to be sure they are tight to prevent leaks. • Use mechanical aid (drum dolly) for relocating drums. • Wear correct PPE as defined in SSHP. • Wear thick clothing when there is a potential for lacerations. • Wear abrasion resistant hand protection. • Transport drums properly and keep on level ground.	L
	Inhalation, skin contact and ingestion hazards with chemicals of concern (COC), etc.	• Wear correct PPE as defined in SSHP. Follow upgrades in PPE based on airborne measurements and action levels. Conduct real-time air monitoring as required by SSHP. • Communicate air sampling results. • Review hazards of COCs and review MSDSs of chemicals brought to site.	L

ACTIVITY HAZARD ANALYSIS #4 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
1. Drum Waste, Sealing Drums and Transporting Drums (continued)	Inhalation, skin contact and ingestion hazards with chemicals of concern (COC), etc. (continued)	• Wear polyvinyl alcohol gloves based on the identified chemicals. Wear boot covers and splash suit protection if necessary. • Label all IDW containers as to contents. • Follow good hygiene practices: no eating, drinking, or smoking until decontaminated and out of Exclusion Zone. • Transport and dispose of IDW transport in accordance with applicable local, municipal, county, state, and federal rules and regulations.	L
	Spills from filling and storing drums	• Place plastic sheeting where it is needed to protect environment. • Containerize all purge water and waste. • Use absorbents and containers for spills.	L
2. IDW Waste Characterization and Management	Inhalation, skin contact, ingestion of contaminants	• Wear correct PPE as defined in SSHP. Follow upgrades in PPE based on airborne measurements and action levels. • Conduct real-time air monitoring as required by SSHP and communicate results of monitoring to field crew in timely manner. • Obtain or review chemical information on COCs. • Follow respirator action level dictates of SSHP. • Remain upwind whenever possible.	L
3. IDW Collection	Chemical spills and chemical contact with skin and eyes.	• Never leave open chemicals unattended. • Know location of nearest eyewash station. • Wear proper PPE as specified in SSHP (for example: polyvinyl alcohol gloves, safety glasses, face shields). • Keep preparation and packing area well ventilated. • Keep absorbent spill cloth and hazmat spill kit readily available. • Make sure all caps are secure.	L

ACTIVITY HAZARD ANALYSIS #4 (continued)

Add Steps, Hazards, and Actions to Eliminate or Minimize Hazards based on conditions encountered in the field.			
Job Steps	**Hazards**	**Actions to Eliminate or Minimize Hazards**	

Equipment	**Inspection**	**Training**
PPE Level D: • Hard hat • Safety glasses • Safety-toed boots • Work gloves/chemical resistant gloves • ANSI Class 2 reflective warning vests Other Equipment: • Generator • Fire extinguishers • Emergency eyewash • First aid kit • Insect repellant–DEET • Hand tools • Spill containment supplies • First aid supplies • Containers as needed • Tarps • GFCI • Heavy duty extension cords • Drinking water • Heat stress monitoring	Daily inspection (SSHO) _____ Housekeeping (daily) • Fire extinguisher (monthly) • Vehicle inspection (daily) • Eye wash • Equipment and tools inspection (daily and before use) • Survey areas for poisonous plants, insects, and animals (each work area) • Check body for ticks (each evening during tick season) Identify closest usable tornado shelter that is available (each work area)	Competent Person (CP) / Qualified Person (QP): CP/SSHO _____ Alternate CP/SSHO _____ QP/First Aid and CPR _____ Training Requirements (as determined by the SSHO): • HAZWOPER 40 hour • Site safety orientation • Tailgate meetings • Emergency procedures • Hazard communication • Hearing conservation • MEC awareness • Applicable AHAs • Fire extinguisher use • Biological hazard identification and control • Tornado shelter location • Lightning safety procedures • Heat stress prevention and heat stroke treatment • Cold stress prevention

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ACTIVITY HAZARD ANALYSIS #5

Date Prepared: August 29, 2016	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
Project Name: OU-1 Fort Ord Natural Reserve Well Destruction and Northwest Treatment System Decommissioning, Former Fort Ord, California	**Risk Assessment Code (RAC) Matrix**	
Activity/Work Task: Mobilization/Demobilization	**Severity** / **Probability**	
Activity Location(s): Former Fort Ord, California		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Prepared by: Edie Scala-Hampson CIH, CHMM

Task Start Date: Between 6/15/17 and 2/28/17

Task Duration: 20 – 30 Days

Revised by: Roy Evans

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident, and is identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
1. Review-Health and Safety needs	Inadequate preparation which can lead to the pain and suffering of an accident or personal injury	• See General Site Hazards AHA.	M
2. Mobilize Equipment, Tools and Safety Gear	Strains, sprains, awkward bending/lifts and ergonomic hazards	• Use proper lifting techniques. • Maintain good personal fitness. • Know your limitations. • Ensure walking pathway is clear. • Do not lift more than 40 lbs. • Use mechanical assistance or 2-person lift whenever possible. • Limit repetitive awkward motions.	M
3. Travel to site	Traffic (road and site traffic)	• Assure vehicle is adjusted per your personal specifications, is in good working order, all cargo is secured, and distractions are minimized. • Familiarize yourself with the route and directions.	M

ACTIVITY HAZARD ANALYSIS #5 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
4. On-site Mobilization • Determine location for set up/staging equipment • Develop capability at the site, to include installation of office/equipment storage trailers, etc. • Set up trailers and other support services	Traffic-Struck by hazards	• Select location away from traffic. • Place barricades for work site protection, if necessary. • Wear high visibility vest. • Stay clear of traffic and equipment. Have all necessary PPE (hardhat, safety glasses, hearing protection, vest, etc.).	M
	• Driving over soft ground • Uneven and rough terrain	• Choose location with level and firm soils.	M
	Site access control-unwanted entry	• Maintain a constant watch for intrusion of unauthorized personnel.	L
	Electric shock	• Require that all electrical power hook up, installations, and disconnections be made or certified by a qualified electrician who will provide written certification of installation and grounding.	L
	Slip, trip and fall hazards	• Wear slip resistant footwear. • Keep work area picked up and as clean as feasible and free of tripping and fall hazards.	M
	Flying debris	• Wear safety glasses when there is a potential for flying debris. • Ensure eyewash is available.	L
	Strains, sprains, awkward bending/lifts and ergonomic hazards-Tow trailer activities	• Use proper lifting techniques. • Maintain good personal fitness. • Ensure walking pathway is clear. • Do not lift more than 40 lbs. • Use mechanical assistance or 2-person lift whenever possible. • Limit repetitive awkward motions. • Do not overexert or overstrain muscles/joints.	M
	Noise-Hearing loss	• Wear hearing protection if noise levels from neighboring equipment exceeds 80 dBA (if you cannot be heard speaking in a normal voice at arms distances).	M
	Spills and leaks	• Maintain a portable spill response kit (if spills are possible) containing absorbent materials, non-sparking shovel, PPE and disposable supplies in a readily accessible location.	L
	Hand tools-cut hazards, jamming, pinch points, Struck-by	• Confirm that tools are in good repair and used correctly. The right tool for the right job.	M

ACTIVITY HAZARD ANALYSIS #5 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
4. On-site Mobilization (continued)	Contact with equipment-Struck by	• Conduct daily task specific briefings regarding the hazards associated with the tasks. All personnel will wear a minimum of Level D protection. All HGL subcontractors will be required to attend the site-specific hazards health and safety training. Maintain eye contact with equipment operators if necessary when entering active work zones.	**M**
5. Removal and transport of equipment and supplies from the site	Take home toxics	• Note a source of Decon water on site. Do not bring contaminated PPE or boots into truck. • Use liners to prevent contamination of truck.	**M**
	Same hazards as in step 4 above	• See action to eliminate or minimize hazards in step 4.	**M**
6. General site work	Environmental hazards • Biologicals (Plants, insects, wildlife) • Adverse weather • Temperature stresses • UV hazards	• Refer to General Site Hazards AHA. • Pack what you will need for control of hazards.	**M**

Add Steps, Hazards, and Actions to Eliminate or Minimize Hazards based on conditions encountered in the field.

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	

ACTIVITY HAZARD ANALYSIS #5 (continued)

Equipment	Inspection	Training
PPE Level D: • Hard hat • Safety glasses • Safety-toed boots • Work gloves/chemical resistant gloves • ANSI Class 2 reflective warning vests Other Equipment: • Generator • Fire extinguishers • Emergency eyewash • First aid kit • Insect repellant–DEET • Hand tools • Spill containment supplies • First aid supplies • Containers as needed • Tarps • GFCI • Heavy duty extension cords • Drinking water • Heat stress monitoring	Daily inspection (SSHO) _____ Housekeeping (daily) • Fire extinguisher (monthly) • Vehicle inspection (daily) • Eye wash • Equipment and tools inspection (daily and before use) • Survey areas for poisonous plants, insects, and animals (each work area) • Check body for ticks (each evening during tick season) Identify closest usable tornado shelter that is available (each work area)	Competent Person (CP) / Qualified Person (QP): CP/SSHO _____ Alternate CP/SSHO _____ QP/First Aid and CPR _____ Training Requirements (as determined by the SSHO): • HAZWOPER 40 hour • Site safety orientation • Tailgate meetings • Emergency procedures • Hazard communication • Hearing conservation • MEC awareness • Applicable AHAs • Fire extinguisher use • Biological hazard identification and control • Tornado shelter location • Lightning safety procedures • Heat stress prevention and heat stroke treatment • Cold stress prevention

ACTIVITY HAZARD ANALYSIS #6

Date Prepared: August 29, 2016	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
Project Name: OU-1 Fort Ord Natural Reserve Well Destruction and Northwest Treatment System Decommissioning, Former Fort Ord, California	**Risk Assessment Code (RAC) Matrix**	
Activity/Work Task: Subcontractor Oversight		
Activity Location(s): Former Fort Ord, California		
Prepared by: Edie Scala-Hampson CIH, CHMM		
Task Start Date: Between 6/15/17 and 10/31/17		
Task Duration: 20 - 30 Days		
Revised by: Roy Evans		

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident, and is identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur, and is identified as: Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
1. Oversight activities	Struck by and crushing injuries	• Keep a distance of 30 feet from moving equipment and buckets. • Stand on uphill side of the work area whenever possible. • Determine your escape route prior to entering work area. • Adhere to instructions given in daily briefings. • Know when heavy equipment is or will be in motion. Stop, look and listen for audible warnings. • Make eye contact with the equipment operators before approaching or crossing the path of equipment. • Avoid entering active soil removal areas. • Wear hearing protection when noise exceeds 85dBA. if you cannot be heard within an arms distance when speaking in a normal voice use hearing protection. • Do not walk in areas where soils are loose and can become dislodged.	M M

ACTIVITY HAZARD ANALYSIS #6 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
1 .Oversight activities	Struck by and crushing injuries (continued)	• Stand back 3 feet from excavations Select location of observation point away from traffic and moving equipment. • Place barricades for work site protection, if necessary. • Wear high visibility vest. • Stay clear of traffic and equipment. Wear all necessary PPE (hardhat, safety glasses, hearing protection, vest, etc.- Level D minimum). • Discuss active work areas in daily briefings. • Respect active work zones. • Note that machinery or equipment requiring an operator should not be permitted to run unattended. • Do not use cell phone while working. Limit distractions.	**M**
2. General site hazards	• Site access control-unwanted entry • Strains, sprains, awkward bending/ lifting/ positions and ergonomic hazards • Overhead hazards • Electrical • Traffic/Heavy Equipment • Unhygienic conditions • Fire • Driving/ walking over soft ground • Uneven and rough terrain • Getting lost • Electric shock • Unattended worker • Slip, trip and fall hazards • Soft ground-entrapment or cave in hazards • Flying debris-Eye, head, etc • UV exposure-Sunburn • Noise-Hearing loss • Spills and leaks • Hand tools/power tools-cut hazards, jamming, pinch points, Struck-by • Contact with equipment-Struck by	• See General Site Hazards AHA.	**M**

ACTIVITY HAZARD ANALYSIS #6 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
2. General site hazards (continued)	• Heat or cold stress • Severe weather related hazards (lightning, high winds, snow, rain, sleet) • Biologicals: Contact with poisonous plants, allergens, insects and animal kingdom hazards (for example: spiders, hornets, reptiles, snakes, ticks, mosquitos, bird and rodent droppings, biting and stinging insects, thorny plants)	• See General Site Hazards AHA.	**M**
3. Specific High Hazard activities For example: Hot work, hoisting, work from elevation, scaffolding opening pressurized lines, electrical, mechanical repair, excavation, confined space, unplanned activity	Multiple hazards	• Require permit for these activities before beginning work. • Require Competent Person to evaluate planned activity for its hazards. Written plan/procedure must be prepared for each activity as appropriate. ➢ Hot Work ➢ Hoisting Rigging Plan ➢ Critical lift plan ➢ Lock out/Tag out procedures ➢ Competent person inspection and sign-off ➢ Confined space permit	**M**
4. Operating Equipment	Physical hazards	• Monitor subcontractor compliance with their own AHA for each piece of equipment. • Stop work if subcontractor does not follow their own safety practices.	**M**
5. Completion of work shift	Take home toxics-Contact with potentially contaminated materials (if contaminant cleanup is not complete at site).	• Note a source of Decon water on site. Do not bring contaminated PPE or boots into truck. • Wear Tyvek as necessary and washable or disposable over-boots in order to keep personal clothing clean and free contaminated soils. • Store and dispose of contaminated materials in accordance with regulations. • Use liners to prevent contamination of truck. • Shower immediately at end of work day. • Check body for ticks, bites and signs of irritation or cuts.	**M**

ACTIVITY HAZARD ANALYSIS #6 (continued)

Add Steps, Hazards, and Actions to Eliminate or Minimize Hazards based on conditions encountered in the field.

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	

Equipment	Inspection	Training
PPE Level D: • Hard hat • Safety glasses • Safety-toed boots • Work gloves/chemical resistant gloves • ANSI Class 2 reflective warning vests Other Equipment: • Generator • Fire extinguishers • Emergency eyewash • First aid kit • Insect repellant–DEET • Hand tools • Spill containment supplies • First aid supplies • Containers as needed • Tarps • GFCI • Heavy duty extension cords • Drinking water • Heat stress monitoring • Steam cleaner • Alconox/cleaning brushes/buckets/as needed	Daily inspection (SSHO) _____ Housekeeping (daily) • Fire extinguisher (monthly) • Vehicle inspection (daily) • Eye wash • Equipment and tools inspection (daily and before use) • Survey areas for poisonous plants, insects, and animals (each work area) • Check body for ticks (each evening during tick season) Identify closest usable tornado shelter that is available (each work area)	Competent Person (CP) / Qualified Person (QP): CP/SSHO_____ Alternate CP/SSHO_____ QP/First Aid and CPR _____ Training Requirements (as determined by the SSHO): • HAZWOPER 40 hour • Site safety orientation • Tailgate meetings • Emergency procedures • Hazard communication • Hearing conservation • MEC awareness • Applicable AHAs • Fire extinguisher use • Biological hazard identification and control • Tornado shelter location • Lightning safety procedures • Heat stress prevention and heat stroke treatment • Cold stress prevention

ACTIVITY HAZARD ANALYSIS #7

Date Prepared: August 29, 2016	**Overall Risk Assessment Code (RAC) (Use highest code)**					**M**
Project Name: OU-1 Fort Ord Natural Reserve Well Destruction and Northwest Treatment System Decommissioning, Former Fort Ord, California	**Risk Assessment Code (RAC) Matrix**					
Activity/Work Task: Well Destruction	**Severity**	**Probability**				
Activity Location(s): Former Fort Ord, California		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Edie Scala-Hampson CIH, CHMM	Catastrophic	**E**	**E**	**H**	**H**	**M**
	Critical	**E**	**H**	**H**	**M**	**L**
Task Start Date: Between 6/15/17 and 10/31/17	Marginal	**H**	**M**	**M**	**L**	**L**
	Negligible	**M**	**L**	**L**	**L**	**L**
Task Duration: 5 –20 Days	Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above).					
	"Probability" is the likelihood to cause an incident, near miss, or accident, and is identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.	**RAC Chart**				
Revised by: Roy Evans	**"Severity"** is the outcome/degree if an incident, near miss, or accident did occur and is identified as: Catastrophic, Critical, Marginal, or Negligible.	**E = Extremely High Risk**				
		H = High Risk				
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.	**M = Moderate Risk**				
		L = Low Risk				

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
1. Determine location for set up	• Traffic • Struck by hazards • Driving over soft ground/uneven terrain	• Select location away from traffic. • Place barricades for work site protection, if necessary and wear high visibility vest. • Choose location with firm soils for set up and driving as much as possible.	**M**
2. Position grout tub and hoses on firm, level ground.	• Mobile equipment – operation, struck by • Struck by product hose lines • Tripping hazards	• Confirm that only authorized and trained personnel will operate mobile equipment. • Confirm that back-up alarms, spotters and pre-positioning plan are in place. • Ban use of cell phones to limit distractions while working. • Maintain visual communication between all site employees. • Secure all lines, whip checks on positive ends. • Position hoses and ground tub to allow site access and movement.	**M**

ACTIVITY HAZARD ANALYSIS #7 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
3. Mix desired loads of grout as required.	Manual handling	• Use 50 lb. bags or split 90 lb. bags in half. • Position ground bags to reduce lifting and twisting.	M
4. Well abandonment	Bentonite dust-Silica	• Require air purifying (P100 or N100) respirator if dusty conditions exist.	M
5. Install diverter, and tremie pipe to appropriate depth	Pinch points / chemical. Manual handling	• Wear appropriate gloves. Use good ergonomic positioning and team task: One team member to lower tremie and one team member ready to clamp.	L
6. Upon completion of filling casing and removal of tremie pipe remove diverter and install pressure test cap only when grout is full in casing.	Work on ground	• Protect knees during work on ground with PPE.	L
7. Pressure Washing	Heavy lifting	• Use bent knees and straight back when lifting. Do not twist torso when carrying a heavy load. Use mechanical means or the buddy system if weight is greater than 50 lbs.	M
	Work on uneven surfaces	• Watch set up and footing to avoid tripping or equipment toppling.	M
	Contact with potential contaminated materials such as VOCs	• Follow SSHP directives for appropriate PPE and air monitoring equipment.	L
	Flammable or hazardous atmosphere	• Monitor atmosphere with LEL/ Oxygen direct reading instrumentation as indicated by site contaminants.	L
	Welding and cutting hazards	• Obtain hot work permit for torching and welding.	M
	Exposure to bacteria	• Follow PPE requirements as indicated in the SSHP and Health and Safety Manual.	L
	Struck by hand tools	• Use tools for their intended purpose and inspect tools daily for uneven wear and damage.	M
	Exposure to treatment chemicals	• Review SDS, follow directions of use, assure all chemicals are labeled, and wear appropriate PPE.	M
	General site Hazards Environmental Hazards • Biologicals (plants, insects, wild life) • Adverse weather • Temperature stresses • UV hazards • Noise	• See general site hazards AHA.	M

ACTIVITY HAZARD ANALYSIS #7 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
8. Wrap up	Take home toxics (if contaminant cleanup is not complete at site)	• Decontaminate with soap and water or wipes. • Remove all contaminated clothing and materials and leave on site. Use plastic as a barrier for soil, truck bed or foot contact.	**L**
Add Steps, Hazards, and Actions to Eliminate or Minimize Hazards based on conditions encountered in the field.			
Job Steps	**Hazards**	**Actions to Eliminate or Minimize Hazards**	

Equipment	Inspection	Training
PPE Level D: • Hard hat • Safety glasses • Safety-toed boots • Work gloves/chemical resistant gloves • ANSI Class 2 reflective warning vests Other Equipment: • Generator • Fire extinguishers • Emergency eyewash • First aid kit • Insect repellant–DEET • Hand tools • Spill containment supplies • First aid supplies • Containers as needed • Tarps • GFCI • Heavy duty extension cords • Drinking water • Heat stress monitoring • Steam cleaner • Alconox/cleaning brushes/buckets/as needed	Daily inspection (SSHO) _____ Housekeeping (daily) • Fire extinguisher (monthly) • Vehicle inspection (daily) • Eye wash • Equipment and tools inspection (daily and before use) • Survey areas for poisonous plants, insects, and animals (each work area) • Check body for ticks (each evening during tick season) Identify closest usable tornado shelter that is available (each work area)	Competent Person (CP) / Qualified Person (QP): CP/SSHO _____ Alternate CP/SSHO _____ QP/First Aid and CPR _____ Training Requirements (as determined by the SSHO): • HAZWOPER 40 hour • Site safety orientation • Tailgate meetings • Emergency procedures • Hazard communication • Hearing conservation • MEC awareness • Applicable AHAs • Fire extinguisher use • Biological hazard identification and control • Tornado shelter location • Lightning safety procedures • Heat stress prevention and heat stroke treatment • Cold stress prevention

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ACTIVITY HAZARD ANALYSIS #8

Date Prepared: April 1, 2017	**Overall Risk Assessment Code (RAC) (Use highest code)**					**M**
Project Name: OU-1 Fort Ord Natural Reserve Well Destruction and Northwest Treatment System Decommissioning, Former Fort Ord, California	**Risk Assessment Code (RAC) Matrix**					
Activity/Work Task: Carbon Tank and Transfer Pump Removal	**Severity**	**Probability**				
Activity Location(s): Former Fort Ord, California		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Megan Matteazzi	Catastrophic	**E**	**E**	**H**	**H**	**M**
	Critical	**E**	**H**	**H**	**M**	**L**
Task Start Date: Between 6/15/17 and 10/31/17	Marginal	**H**	**M**	**M**	**L**	**L**
	Negligible	**M**	**L**	**L**	**L**	**L**
Task Duration: 2 - 4 days	Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above).					
	"Probability" is the likelihood to cause an incident, near miss, or accident, and is identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.	**RAC Chart**				
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible.	**E = Extremely High Risk**				
Revised by: Roy Evans		**H = High Risk**				
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.	**M = Moderate Risk**				
		L = Low Risk				

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
1. Arrival of new personnel at site	Newly hired personnel and visitors. Unfamiliarity with: • Site, • general (chemical, physical, environmental) site hazards, • project safety rules and hazard control procedures, • chain of command, and • emergency procedures	• Confirm that all field personnel have read the project Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) and are trained in the procedures corresponding to work assignments. After personnel are trained in the contents of the APP and the SSHP, they shall sign the APP Acknowledgment Form and the SSHP Acknowledgment Form. • Confirm name of subcontractor competent person. • Conduct pre-entry health and safety briefing. • Confirm that site hazards are recognized. • Confirm that necessary equipment to evaluate and control site hazards is available and in good working condition. • Confirm that applicable engineering, administrative and personal protective equipment (PPE) controls and equipment are available and ready to be used as needed.	**M**

ACTIVITY HAZARD ANALYSIS #8 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
1. Arrival of new personnel at site (continued)	Newly hired personnel and visitors. Unfamiliarity with: (continued) • site, • general (chemical, physical, environmental) site hazards, • project safety rules and hazard control procedures, • chain of command, and • emergency procedures	• Confirm emergency, safety and first aid supplies are available. • Review emergency procedures, contact numbers, and evacuation plans. • Confirm that all personnel know what to do in the event of an accident (personal or property damage). • Complete preliminary and initial quality meeting with Corps, if required. • Keep all training certifications held by personnel on site in personnel files. • Acquire Subcontractor certificate for Excavation Competent Person training	
	Medical emergencies	• Complete the Voluntary Allergy/Sensitivity/Medical Questionnaire.	**L**
2. Removal of carbon tanks and transfer pumps: • Detach tanks and pump from concrete pad • Lift tanks and pump out of containment basin, one at a time • Transfer tanks to trailer for transport to recycling site • Transfer pump to roll-off • Haul away tanks and pump • Remove associated piping and debris	Complacency	• Require attendance of all personnel at the morning safety meetings to re-focus site personnel to hazards, emergency procedures and equipment, operational aspects, and change(s) in site/work conditions. Include recommended control measures for the hazards as part of the discussion.	**L**
	Heavy equipment hazards: Sling or chain failure Falling load, struck by hazards Heavy lifting, strains, and sprains	• For manual lifts, limit weight to 50 pounds. Multiple employees or the use of mechanical lifting devices are required for lifting objects over the 50-pound limit or for awkward lifts.	**M**
	Crushing or bodily injury from: • Toppling tank(s) during lift or transfer to trailer • Dropping tank(s) during lift or transfer to trailer • Dropping pump during lift or transfer to roll-off • Tank(s) falling from trailer during transport	• Verify that equipment (telescopic fork lift for example) has lifting capacity at least 25% greater than the tank weight. • Confirm the lift is consistent with the load chart for the equipment. • Lift the tanks from the top (using hooks that are integral to the tank itself) • Guide tank into position on trailer using straps that keep personnel at least 12 feet from the tank. • Do not lift tank more than 8 feet above the ground surface. • Keep lifting equipment on level ground. • Cut tank into smaller section(s) before lifting if necessary to comply with above steps.	**M**

ACTIVITY HAZARD ANALYSIS #8 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
2. Removal of carbon tanks and transfer pumps (continued)	Crushing or bodily injury from: (continued)	• Secure pump to lifting equipment before removing it from containment basin. • Keep all personnel at least 12 feet from tanks or pumps during transfer to trailer or roll-off.	**M**
	Fire	• Maintain fire extinguishers in work areas. A 4-A:60-B:C fire extinguisher shall be available when refueling at the project site. • Smoke only in designated areas. Only discard cigarette butts in proper receptacles – never discard cigarette butts onto the ground. Smoking shall not be permitted within 50 feet of fueling operations. • Use caution with vehicle exhaust systems in grassy areas. Do not run vehicles while parked in grassy areas. • Shut off engines shall before refueling.	**M**
	Struck by and against: • Vehicles • Equipment	• Wear PPE with high visibility vests when walking or working near moving equipment or vehicles. • Maintain a safe distance from operations. • Restrict personnel to walk or work within the swing radius of the equipment. • Make eye contact with the operator and wait until he signals to you. Do not assume equipment and vehicle operators have seen you. • Use warning signs and signalmen as necessary.	**L**
	Struck by flying debris	• Wear appropriate PPE. Wear hard hat, safety boots, and safety glasses at a minimum. • Maintain a safe distance from operations.	**M**
	Hand injuries	• Inspect items being handled for sharp edges, splinters, burrs, rough surfaces, etc. prior to being handled. • Wear leather gloves when handling materials with sharp edges, splinters, burrs, rough surfaces, etc. • Be aware of and avoid pinch point hazards.	**L**

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
2. Removal of carbon tanks and transfer pumps (continued)	Use of mechanical equipment Heavy equipment anticipated: • telescopic forklift • wheel loaders, • dump truck, and • combination backhoe	• Require that only qualified personnel be permitted to operate equipment. Forklift operators must be licensed. • Inspect mechanical equipment daily. Note deficiencies in equipment on the inspection form. Remove from service equipment found to be unsafe. • Require equipment operators to wear safety belts and hearing protection (as necessary). • Operate all equipment at safe speeds and in a safe manner. • Prohibit operators of equipment from using cellular telephone devices while operating equipment. • Observe the minimum distances from overhead electrical lines (SSHP Table 2.1). • Review HGL Protection from Excessive Vibration Exposure Program for hazards and controls related to hand-arm vibration and whole body vibration.	**M**
	Injury from use of tools	• Select the proper tool – do not improvise. • Inspect all power and hand tools before each use (do not use damaged tools). • Check your position, footing, and grip before tool use. • Avoid distraction, keep your focus, and concentrate on the job. • Maintain a steady pace when using tools and take adequate rest periods. • Review HGL Protection from Excessive Vibration Exposure Program for hazards and controls related to hand-arm vibration and whole body vibration.	**L**
	Noise	• Require that all personnel wear hearing protection when exposed to high noise levels.	**L**
	Slips, trips, and falls	• Understand the hazards of slips, trips, and falls – consider the consequences. • Do not jump from equipment or elevated surfaces. • Clean-up work areas throughout the day and at the end of each workday. • Use three-point contact rule for entering/exiting vehicles, trucks, and equipment.	**L**

ACTIVITY HAZARD ANALYSIS #8 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
2. Removal of carbon tanks and transfer pumps (continued)	Slips, trips, and falls (continued)	• Use hand rails and other stationary objects (door frames, door knobs, steering wheels, walls, etc.) to increase stability. • Use extra caution when walking on wet or muddy, surfaces. Consider postponing work as necessary and feasible. • Increase your awareness, keep alert, stay focused, and know your environment. • Avoid slippery areas when possible. Slow down - take smaller steps. • Stay away from slopes, hills, and grades. • Be cautious when using stairs. • Apply traction aids, such as sand, gravels, and straw. • Lower your center of gravity when necessary. • Maintain proper illumination in work areas.	
	Heat stress	• See AHA "General Site Hazards."	**L**
	Cold stress	• See AHA "General Site Hazards."	**L**
	Dump truck operations	• Inspect trucks daily, paying particular attention to tire condition, tire pressure, and leaking hydraulic fluid. • Re-evaluate overhead hazards prior to allowing dump trucks onto the project site. Barricade areas with overhead hazards with caution tape to prevent dump bed from contacting. • Observe minimum distances from electrical lines (SSHP Table 2.1). In areas where it is not feasible to use barricades, then provide spotters and overhead hazard warning signs. • Wear seat belts while trucks are in motion at the project site. • Assist trucks when backing is necessary. • Obey traffic control signage and flag persons, as necessary. • Do not allow trucks to raise beds on uneven surfaces or in soft areas where the tires will sink. • Prohibit ground personnel near trucks when beds are raised. • Stay away from pinch hazards. • Lower dump beds before moving trucks.	**L**

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
2. Removal of carbon tanks and transfer pumps (continued)	Overhead utilities	• Complete a Site Layout Plan prior to mobilizing the equipment. The plan shall identify all overhead and underground hazards. • Before equipment is moved, survey the travel route for overhead and terrain hazards. Observe the minimum distances from electrical lines. (SSHP) • Power lines shall be assumed to be energized unless verified to be de- energized and visibly grounded. Operation beneath a power line that has not been verified as de-energized and grounded must maintain clearance distances stated above. A high-visibility elevated warning line or barricade shall be erected at the minimum approach distance. • Each work crew member shall be trained in the electrocution hazards and emergency procedures associated with energized power lines.	**L**
3. Dewatering	Use of pumps and hoses	• Review operator's manual for recommended operating procedures. • Use appropriate PPE and always wear safety glasses and face shield when disconnecting hoses. • Keep away from hot exhaust and hot surfaces. • Use proper lifting procedures for pumps and hoses. Get help as necessary. • Maintain control of hose ends when moving hoses to prevent striking self or other workers. • Secure hoses with lashing to prevent whipping - do not allow hoses to whip. Identify and avoid pinch points. • Secure Kamlok® OPW connections with safety clips/ties.	**M**
4. Cutting of Metal	Hot Work - Cutting with tools that will create sparks and heat and/ or cutting with an acetylene torch. Exposure to potential lead and chrome paint pigments	• Require old paint removal before hot work is conducted. • Complete and submit a Request for Hot Work Permit. • Never look at arc during cutting. • Confirm that correct eye protection is worn that incorporates the appropriate level of tinted lenses for the task. • Keep unnecessary personnel from entering active cutting areas of at least a distance of 30 feet.	**M**

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
4. Cutting of Metal (continued)	Hot Work - Cutting with tools that will create sparks and heat and/ or cutting with an acetylene torch. Exposure to potential lead and chrome paint pigments (continued)	• Require barricade and or welding curtain screen around area, as needed, where work will be done so as to prevent inadvertent arc flash exposure (eye damage) to neighboring workers. • Determine your escape route prior to entering work area. • Adhere to instructions given in daily briefings. • Remove combustible materials from the hot work area to a distance of at least 30 feet. • Avoid entering active torch cutting areas. • Confirm that tanks and welding equipment are used, stored, and transported per regulations and safe work practices. • Confirm appropriate hand arm protection (flame resistant long sleeve shirt and leather gloves) when contacting the area being cut and when handling the grounding cable. • Keep 4A:60B:C fire extinguisher in the immediate area of the hot work. • Note that a “Fire watch” is maintained for 30 minutes after completion of the cutting activities (60 minutes if combustible materials are present). • Confirm fire extinguishers are suitably placed, distinctly marked, accessible, and maintained in a fully charged /operable condition.	**M**
Add Steps, Hazards, and Actions to Eliminate or Minimize Hazards based on conditions encountered in the field.			
Job Steps	**Hazards**	**Actions to Eliminate or Minimize Hazards**	

ACTIVITY HAZARD ANALYSIS #8 (continued)

Equipment	Inspection	Training
PPE Level D: • Hard hat • Safety glasses • Safety-toed boots • Work gloves/chemical resistant gloves • ANSI Class 2 reflective warning vests • Hearing protection Other Equipment: • Generator • Fire extinguishers • Emergency eyewash • First aid kit • Insect repellant–DEET • Hand tools • Spill containment supplies • First aid supplies • Containers as needed • Tarps • GFCI • Heavy duty extension cords • Drinking water • Heat stress monitoring • Smart phone apps for temperature stress and noise Heavy equipment anticipated: • excavators, • hammer on excavators, • backhoes. • Telescoping fork lift Compaction equipment anticipated: • self-propelled compactor or backhoe with compactor arm • vibratory compactor	Daily inspection (SSHO) _____ Housekeeping (daily) • Fire extinguisher (monthly) • Vehicle inspection (daily) • Eye wash • Equipment and tools inspection (daily and before use) • Survey areas for poisonous plants, insects, and animals (each work area) • Check body for ticks (each evening during tick season) Identify closest usable tornado shelter that is available (each work area)	Subcontractor Excavation Competent Person (CP) / Qualified Person (QP): _____ CP/SSHO _____ Alternate CP/SSHO _____ QP/First Aid and CPR _____ Training Requirements (as determined by the SSHO): • HAZWOPER 40 hour • Site safety orientation • Tailgate meetings • Emergency procedures • Hazard communication • Hearing conservation • MEC awareness • Applicable AHAs • Fire extinguisher use • Biological hazard identification and control • Tornado shelter location • Lightning safety procedures • Heat stress prevention and heat stroke treatment • Cold stress prevention

ACTIVITY HAZARD ANALYSIS #9

Date Prepared: April 1, 2017	**Overall Risk Assessment Code (RAC) (Use highest code)**					**M**
Project Name: OU-1 Fort Ord Natural Reserve Well Destruction and Northwest Treatment System Decommissioning, Former Fort Ord, California	**Risk Assessment Code (RAC) Matrix**					
Activity/Work Task: Pipeline Capping and Injection Vault Removal	**Severity**	**Probability**				
Activity Location(s): Former Fort Ord, California		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Megan Matteazzi	Catastrophic	**E**	**E**	**H**	**H**	**M**
	Critical	**E**	**H**	**H**	**M**	**L**
Task Start Date: Between 6/15/17 and 10/31/17	Marginal	**H**	**M**	**M**	**L**	**L**
	Negligible	**M**	**L**	**L**	**L**	**L**
Task Duration: 5 - 25 days	Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above).					
	"Probability" is the likelihood to cause an incident, near miss, or accident, and is identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.	**RAC Chart**				
Revised by: Roy Evans	**"Severity"** is the outcome/degree if an incident, near miss, or accident did occur, and is identified as: Catastrophic, Critical, Marginal, or Negligible.	**E = Extremely High Risk**				
		H = High Risk				
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.	**M = Moderate Risk**				
		L = Low Risk				

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
1. Arrival of new personnel at site	Newly hired personnel and visitors. Unfamiliarity with: • Site • general (chemical, physical, environmental) site hazards • project safety rules and hazard control procedures • chain of command • emergency procedures	• Confirm that all field personnel have read the project Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) and are trained in the procedures corresponding to work assignments. After personnel are trained in the contents of the APP and the SSHP, they shall sign the APP Acknowledgment Form and the SSHP Acknowledgment Form. • Confirm name of subcontractor competent person. • Conduct pre-entry health and safety briefing. • Confirm that site hazards are recognized. • Confirm that necessary equipment to evaluate and control site hazards is available and in good working condition. • Confirm that applicable engineering, administrative and personal protective equipment (PPE) controls and equipment are available and ready to be used as needed.	**M**

ACTIVITY HAZARD ANALYSIS #9 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
1. Arrival of new personnel at site (continued)	Newly hired personnel and visitors. Unfamiliarity with: • sit • general (chemical, physical, environmental) site hazards • project safety rules and hazard control procedures • chain of command • emergency procedures (continued)	• Confirm emergency, safety and first aid supplies are available. • Review emergency procedures, contact numbers and evacuation plans. • Confirm that all personnel know what to do in the event of an accident (personal or property damage). • Complete preliminary and initial quality meeting with Corps, if required. • Keep all training certifications held by personnel on site in personnel files. • Acquire Subcontractor certificate for Excavation Competent Person training.	**M**
	Medical emergencies	• Complete the Voluntary Allergy/Sensitivity/Medical Questionnaire.	**L**
2. Sealing endpoints of pipeline - Position grout tub and hoses on firm, level ground	• Mobile equipment – operation, struck by • Struck by product hose lines • Tripping hazards	• Confirm that only authorized and trained personnel will operate mobile equipment. • Confirm that back-up alarms, spotters and pre-positioning plan are in place. • Ban use of cell phones in work area to limit distractions while working. • Maintain visual communication between all site employees. • Secure all lines, whip checks on positive ends. Position hoses and ground tub to allow site access and movement.	**M**
3. Sealing endpoints of pipeline - Mix desired loads of grout as required	Manual handling	• Use 50 lb. bags or split 90 lb. bags in half. • Position bags on ground to reduce lifting. Do not twist and lift while feet are planted.	**M**
	Bentonite dust-Silica	• Require air purifying (P100 or N100) respirator if dusty conditions exist. • Stay on upwind side of mixing / application area	**M**
4. Sealing endpoints of pipeline - Install diverter, and tremie pipe to appropriate depth	Pinch points / chemical. Manual handling	• Wear appropriate gloves. Use good ergonomic positioning and team task: One team member to lower tremie and one team member ready to clamp. Fill approximately 1 linear foot of pipeline with grout and add excess seal around the end point.	**L**

ACTIVITY HAZARD ANALYSIS #9 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
5. Removal of conduit, injection vault, and endpoint of pipeline: • Break up concrete • Load concrete debris • Haul away concrete debris • Remove ends of pipeline (leaving remaining pipeline buried and intact) Cutting of metal Removal of scales Grade soils	Complacency	• Require attendance of all personnel at the morning safety meetings to re-focus site personnel to hazards, emergency procedures and equipment, operational aspects, and change(s) in site/work conditions. Include recommended control measures for the hazards as part of the discussion.	**L**
	Trench collapse: No trenching will take place during this activity. Pipelines are approximately three feet below ground surface and will not be accessed during capping. Pipeline capping activities will only occur at the ends of the pipeline, with minimal excavation.	• Following the sealing of the pipeline, remove the pipe endpoint, injection vault, and conduit using heavy equipment. No excavations deeper than 4 feet are expected to take place – see “Excavation Hazards” below.	**M**
	Open Excavation	• All excavations will be completely closed at the end of each workday.	**M**
	Heavy lifting, strains, and sprains	• Use proper lifting techniques. • Limit weight to 50 pounds. Multiple employees or the use of mechanical lifting devices are required for lifting objects over the 50-pound limit.	**M**
	Fire	• Maintain fire extinguishers in work areas. A 4-A:60-B:C fire extinguisher shall be available when refueling at the project site. • Smoke only in designated areas. Only discard cigarette butts in proper receptacles – never discard cigarette butts onto the ground. Smoking shall not be permitted within 50 feet of fueling operations. • Use caution with vehicle exhaust systems in grassy areas. Do not run vehicles while parked in grassy areas. • Shut off engines shall before refueling.	**M**
	Struck by and against: • Vehicles • Equipment	• Wear PPE with high visibility vests when walking or working near moving equipment or vehicles. • Maintain a safe distance from operations. • Restrict personnel to walk or work within the swing radius of the equipment. • Make eye contact with the operator and wait until he signals to you. Do not assume equipment and vehicle operators have seen you. • Use warning signs and signalmen as necessary.	**L**

ACTIVITY HAZARD ANALYSIS #9 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
5. Removal of conduit, injection vault, and endpoint of pipeline (continued)	Struck by flying concrete and other debris	• Wear appropriate PPE - hard hat, safety boots, and safety glasses at a minimum. • Maintain a safe distance from operations. • Require shatter resistant windshields in any heavy equipment used for breaking up the concrete.	**M**
	Hand injuries	• Inspect items being handled for sharp edges, splinters, burrs, rough surfaces, etc. prior to being handled. • Wear leather gloves when handling materials with sharp edges, splinters, burrs, rough surfaces, etc. • Be aware of and avoid pinch point hazards.	**L**
	Use of mechanical equipment Heavy equipment anticipated: • excavators • hammer on excavators • rollers • wheel loaders • dump truck • combination backhoe Compaction equipment anticipated: self-propelled compactor	• Require that only qualified personnel be permitted to operate equipment. Forklift operators must be licensed. • Inspect mechanical equipment daily. Deficiencies in equipment shall be noted on the inspection form and the equipment shall not be used until any deficiencies potentially impacting safety are corrected. Remove from service equipment found to be unsafe. • Require equipment operators wear safety belts and hearing protection (as necessary). • Operate all equipment at safe speeds and in a safe manner. • Prohibit operators of equipment to use cellular telephone devices while operating equipment. • Observe the minimum distances from overhead electrical lines (SSHP Table 2.1). • Review HGL Protection from Excessive Vibration Exposure Program for hazards and controls related to hand-arm vibration and whole body vibration.	**M**
	Injury from use of tools	• Select the proper tool – do not improvise. • Inspect all power and hand tools before each use. Do not use damaged tools. • Check your position, footing, and grip before tool use. • Avoid distraction, keep your focus, and concentrate on the job. • Maintain a steady pace when using tools and take adequate rest periods.	**L**

ACTIVITY HAZARD ANALYSIS #9 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
5. Removal of conduit, injection vault, and endpoint of pipeline (continued)	Injury from use of tools (continued)	• Review HGL Protection from Excessive Vibration Exposure Program for hazards and controls related to hand-arm vibration and whole body vibration.	**L**
	Noise	• Require that all personnel wear hearing protection when exposed to noise levels above 85 dBA.	**L**
	Slips, trips, and falls	• Understand the hazards of slips, trips, and falls – consider the consequences. • Do not jump from equipment or elevated surfaces. • Clean-up work areas throughout the day and at the end of each workday. • Use three-point contact rule for entering/exiting vehicles, trucks, and equipment. • Use hand rails and other stationary objects (door frames, door knobs, steering wheels, walls, etc.) to increase stability. • Use extra caution when walking on wet, muddy, frosty, icy, or snow-covered surfaces. Consider postponing work as necessary and feasible. • Increase your awareness, keep alert, stay focused, and know your environment. • Avoid slippery areas when possible. Slow down - take smaller steps. • Stay away from slopes, hills, and grades. • Be cautious when using stairs. • Remove snow and ice when possible (shoveling, chipping, and salt application). • Apply traction aids, such as sand, gravels, and straw. • Lower your center of gravity when necessary. • Maintain proper illumination in work areas.	**L**
	Dust (silica)	• Control dust by maintaining equipment operation rates. • Control dust by applying water. • Personnel shall stay out of dust and work from upwind when possible.	**L**
	Heat stress	• See AHA “General Site Hazards.”	**L**
	Cold stress	• See AHA “General Site Hazards.”	**L**

ACTIVITY HAZARD ANALYSIS #9 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
5. Removal of conduit, injection vault, and endpoint of pipeline (continued)	Dump truck operations	• Inspect trucks daily, paying particular attention to tire condition, tire pressure, and leaking hydraulic fluid. • Re-evaluate overhead hazards prior to allowing dump trucks onto the project site. Barricade areas with overhead hazards with caution tape to prevent dump bed from contacting. • Observe minimum distances from electrical lines (SSHP Table 3.1). In areas where it is not feasible to use barricades, provide spotters and overhead hazard warning signs: • Wear seat belts while trucks are in motion at the project site. • Assist trucks when backing is necessary. • Obey traffic control signage and flag persons, as necessary. • Do not allow trucks to raise beds on uneven surfaces or in soft areas where the tires will sink. • Prohibit ground personnel near trucks when beds are raised. • Stay away from pinch hazards. • Lower dump beds before moving trucks.	**L**
	Overhead utilities (none at site)	• Visually confirm during pre-mobilization site visit.	**L**
	Excavation hazards – no excavation deeper than 4 feet in depth expected	In the unlikely event that excavation greater than 4 feet is deemed necessary during operations, the following measures will be implemented: Follow the Excavation/Trenching plan. • Inspect and monitor all excavations by the excavation competent person (at least daily and when conditions change, at a minimum). Document the inspections on the Excavation Inspection form. • Keep soils, equipment, and materials at least 2 feet from the face of excavations if personnel will be entering the excavation. • Provide walkways when personnel must cross over trenches. Walkways must have toeboards, and mid and top rails as fall protection. • Provide ladders in trenches greater than 4 feet in depth so that personnel do not have greater than 25 feet of lateral travel to exit excavations.	**M**

ACTIVITY HAZARD ANALYSIS #9 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
6. Empty inlet/outlet tanks	Use of pumps and hoses	• Review operator's manual for recommended operating procedures. • Use appropriate PPE and always wear safety glasses and face shield when disconnecting hoses. • Keep away from hot exhaust and hot surfaces. • Use proper lifting procedures for pumps and hoses. Get help as necessary. • Maintain control of hose ends when moving hoses to prevent striking self or other workers. • Secure hoses with lashing to prevent whipping - do not allow hoses to whip. Identify and avoid pinch points. • Secure Kamlok® OPW connections with safety clips/ties.	**M**
7. Cutting of Metal	Hot Work - Cutting with tools that will create sparks and heat and/ or cutting with an acetylene torch. Exposure to potential lead and chrome paint pigments Hot Work (continued)	• Require old paint removal before hot work is conducted. • Complete and submit a Request for Hot Work Permit. • Never look at arc during cutting. • Confirm that correct eye protection that incorporates the appropriate level of tinted lenses for the task is worn. • Keep unnecessary personnel from entering active cutting areas of at least a distance of 30 feet. • Require barricade and or welding curtain screen around area, as needed, where work will be done to prevent inadvertent arc flash exposure (eye damage) to neighboring workers. • Determine your escape route prior to entering work area. • Adhere to instructions given in daily briefings. • Remove combustible materials from the hot work area to a distance of at least 30 feet. • Avoid entering active torch cutting areas. • Confirm that tanks and welding equipment are used, stored, and transported per regulations and safe work practices. • Confirm appropriate hand arm protection (flame resistant long sleeve shirt and leather gloves) is worn when contacting the area being cut and when handling the grounding cable.	**M**

ACTIVITY HAZARD ANALYSIS #9 (continued)

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
7. Cutting of Metal (continued)		• Note that a "Fire watch" is maintained for 30 minutes after completion of the cutting activities (60 minutes if combustible materials are present). • Confirm fire extinguishers (4-A:60-B:C) are suitably placed, distinctly marked, accessible, and maintained in a fully charged /operable condition.	**M**
8. Wrap up	Take home toxics (if contaminant cleanup is not complete at site)	• Decontaminate with soap and water or wipes. • Remove all contaminated clothing and materials and leave on site. Use plastic as a barrier for soil, truck bed or foot contact.	**L**
Add Steps, Hazards, and Actions to Eliminate or Minimize Hazards based on conditions encountered in the field.			
Job Steps	**Hazards**	**Actions to Eliminate or Minimize Hazards**	

ACTIVITY HAZARD ANALYSIS #9 (continued)

Equipment	Inspection	Training
PPE Level D: • Hard hat • Safety glasses • Safety-toed boots • Work gloves/chemical resistant gloves • ANSI Class 2 reflective warning vests • Hearing Protection Other Equipment: • Generator • Fire extinguishers • Emergency eyewash • First aid kit • Insect repellant–DEET • Hand tools • Spill containment supplies • First aid supplies • Containers as needed • Tarps • GFCI • Heavy duty extension cords • Drinking water • Heat stress monitoring • Smart phone apps for determining noise levels and temperature stress Heavy equipment anticipated: • excavators, • hammer on excavators, • backhoes. Compaction equipment anticipated: • self-propelled compactor or backhoe with compactor arm • vibratory compactor	Daily inspection (SSHO) _____ Housekeeping (daily) • Fire extinguisher (monthly) • Vehicle inspection (daily) • Eye wash • Equipment and tools inspection (daily and before use) • Survey areas for poisonous plants, insects, and animals (each work area) • Check body for ticks (each evening during tick season) Identify closest usable tornado shelter that is available (each work area)	Subcontractor Excavation Competent Person (CP) / Qualified Person (QP): _____ CP/SSHO _____ Alternate CP/SSHO _____ QP/First Aid and CPR _____ Training Requirements (as determined by the SSHO): • HAZWOPER 40 hour • Site safety orientation • Tailgate meetings • Emergency procedures • Hazard communication • Hearing conservation • MEC awareness • Applicable AHAs • Fire extinguisher use • Biological hazard identification and control • Tornado shelter location • Lightning safety procedures • Heat stress prevention and heat stroke treatment • Cold stress prevention

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ATTACHMENT 1B

SAFETY PERSONNEL RESUMES
AND PROOF OF TRAINING AND COMPETENCY

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NAME: **Peter Arroyo** **HYDROGEOLOGIC, INC.**
TITLE: **Field Supervisor** **Patterson, California**

PROFESSIONAL DEVELOPMENT COURSES:

40-hour, 8-hour HAZWOPER
OSHA Electrical Safety
PPE - Respirator Fit Testing
Health and Safety -- CPR, First Aid

EXPERIENCE SUMMARY:

Peter Arroyo has over 20 years of environmental field experience as a field sampling specialist and treatment plant operator. His field sampling experience including the following:

- All types of groundwater sampling, Low Flow, Passive Diffusion Bag, Standard three volume purge, Hand Bailing
- Monitoring and sampling of treatment systems
- Maintenance of field gear including pumps, generators, compressors, and sampling vehicles
- Performance of pump tests and vapor extraction tests
- Installation of groundwater treatment systems and vapor extraction systems
- Operation and Maintenance of treatment systems.

Quarterly Groundwater Monitoring / Various Clients / Northern CA. Perform quarterly groundwater monitoring and sampling activities at over 50 underground storage tank sites in Northern California. Responsibilities included contacting clients and regulators to schedule work, measuring depth to water in wells, purging wells which included Low Flow, Passive Diffusion, Hand Bailing and standard 3 volume purge, arranging for courier pick up of samples for transportation to an analytical lab, and preparation of field notes and purge logs.

Refinery Monitoring and Testing / Various Clients / Northern CA. Perform monitoring activities at refineries including groundwater monitoring and sampling, well gauging and safety controls. He conducted Separate Phase Hydrocarbon (SPH) pilot testing to assess viable remediation methods, and operated product recovery systems. Handled & labeled Hazardous Waste. Performed bail down tests of product and monitored recovery then created spreadsheets with collected data.

Bio-Remediation/ Quick Stop Markets No. 40/San Jose, CA. Responsible for coordination of all field activities and performing quarterly groundwater monitoring. Operated a bio-reactor groundwater treatment system that utilizes bacteria to degrade petroleum hydrocarbon impacted groundwater. During quarterly monitoring activities, he evaluate the operation of the on-site wells and optimize the growth of bacteria to enrich the treatment system. Installed 3 extraction wells & trenched from wells to treatment system.

Joleen Way – PRP Group/ Morgan Hill, CA. Conducted monthly monitoring activities including; collecting groundwater samples, operation & maintenance of GWETS, safety precautions, traffic control and coordination of related activities. Perform carbon changes. Well development, Well injection of Cheese Whey. On-site construction – extends monitoring wells for the installation of a retention pond, oversee operation of heavy equipment. Installed 600 ft of underground pipe, used walk behind trencher. Remove & dismantle VES system.

Remediation Monitoring / PRP Group / Geothermal Landfill – Lake County, CA. Responsible for coordination of field activities and performing semi-annual monitoring of groundwater wells and sludge ponds at a former landfill that accepted solid and liquid waste containing geothermal well drilling mud, sulfur cake, and various heavy metals.

Well Installation / Development / Vandenberg AFB, CA. Participated in the construction and installation of groundwater monitoring wells. Developed monitoring wells, performed monitoring / sampling of groundwater wells.

Remediation Monitoring / Fort Ord Army Base / Marina, CA. Responsible for performing Passive Diffusion Bag Sampling of groundwater wells and weekly monitoring of the remediation system. Monthly activities also include collection of effluent / influent groundwater samples.

Refinery Monitoring & Remediation / Big West of California / Bakersfield, CA. Responsible for performing quarterly monitoring of groundwater wells, weekly gauging & bailing of LNAPL, installed & operated product recovery systems. Hand Auger & sample contaminated soil. Handling & labeling of Hazardous Waste.

Storm Water Sampling / Owens Corning / Santa Clara, CA. Responsible for performing on-call 24-hour storm water sampling and performed semi-annual monitoring of groundwater wells.

Remedial Testing / Conoco Phillips / Bulk Plants / Northern CA. Activities have involved groundwater monitoring and sampling for numerous sites. Supervised the performance of a pilot test utilizing vapor extraction to remediate impacted soil and air sparging to remediate impacted groundwater. The vapor extraction test and the air sparge test were conducted separately and then were conducted in conjunction with each other as extracted vapors were remediated using a thermal oxidizer.

Concrete Coring / Soil Sampling / Santa Clara, CA. Core over 60 locations, hand auger to 5 feet & take soil samples at various locations. Install 3 temporary monitoring wells, well development, and perform groundwater sampling. Drum & label material and arrange for disposal.

Site Safety / Applegate / Newark, CA. Oversee up to 60 contractor's on-site working on various projects related to construction of a new building for Apple. Daily safety check list, walk site & make sure all contractors are following safety protocol. Heavy equipment on site, including water trucks, earth movers, back hoes, loaders, excavators, trenchers.

PROFESSIONAL MEMBERSHIPS:

- California Groundwater Association

NAME: **STEPHEN L. DAVIS CIH, CSP** **HYDROGEOLOGIC, INC.**
TITLE: **Director, Environmental Health and Safety** **Reston, VA**

EDUCATION AND TRAINING:

M.S., Public Health, Industrial Hygiene specialization - University of South Carolina, 1983
Bachelor of Science in Zoology - Valdosta State University, 1975

PROFESSIONAL CERTIFICATIONS:

Certified Industrial Hygienist (#4213), by the American Board of Industrial Hygiene, 1989
Certified Safety Professional (#10044), by the Board of Certified Safety Professionals, 1991

EXPERIENCE SUMMARY:

Mr. Davis is a seasoned Environmental Health and Safety professional with a broad range of successful experience in both program and project management. He is focused on developing cost-effective and "common sense" solutions to EHS challenges within resource-constrained systems. Mr. Davis is highly effective at creating successful safety cultures in order to achieve regulatory compliance and excellent injury statistics. He has achieved effective workers comp case management and excellent safety statistics while being in compliance with client safety requirements and third party review systems. Mr. Davis also has experience in medical surveillance program management.

EMPLOYMENT HISTORY:

HydroGeoLogic, Inc., Director, Environmental Health & Safety, Reston VA, February 2014.
Program Manager for EHS, Workers Compensation, and Medical Surveillance programs. Responsible for execution and continuous improvement of systems to ensure the safety of HGL personnel, pursue HGL's zero incident goal, meet or exceed OSHA regulatory requirements, exceed client EHS requirements, effectively manage workers compensation claims, and achieve best-in-class safety statistics.

Science Applications International Corporation (SAIC), Environmental, Health and Safety and Quality Assurance Manager, Oak Ridge, TN, 2010 – 2012.
Program Manager for EHS and QA for the Federal Infrastructure organization within SAIC. Responsible for execution of systems to meet or exceed OSHA regulatory requirements, exceed client EHS and QA requirements, assess and minimize risks, effectively manage workers compensation claims, and achieve best-in-class safety statistics. Created business-unit level system for project and program risk review in order to identify and control risks such as serious health and safety risks, third party lawsuits, regulatory citations and fines, and environmental damage. System documented potential risks and agreed-upon risk controls and facilitated subsequent verification of execution and effectiveness. Managed QA program for

5,000 employee organization conducting multiple disparate types of activities subject to requirements of multiple government and commercial clients utilizing either NQA-1 or ISO 9001. 5,000 employee Business Unit achieved TRIR of 0.27 in 2011, which is less than 1/3 the average rate reported by the Bureau of Labor Statistics for engineering firms. Average TRIR for last 4 years was 0.37. 5,000 employee Business Unit received the National Safety Council Industry Leader award and was one of only 81 of the 54,000 NSC members to receive this award.

Science Applications International Corporation (SAIC), Vice President, Environmental, Health and Safety, Oak Ridge, TN, 1993 to 2009.
Program Manager for EHS for the Energy, Environment and Infrastructure Business Unit within SAIC. Responsible for execution of systems to meet or exceed OSHA regulatory requirements, exceed client EHS requirements, assess and minimize risks, effectively manage workers compensation claims, and achieve best-in-class safety statistics. Created and implemented EHS program compliant with ANSI Z-10 "American National Standard for Occupational Health and Safety Management Systems" for the 5,000 employee Business Unit. This program exceeded all regulatory requirements and established a system for establishing and tracking world-class safety practices and performance. Provided leadership and direction for activities of 7 EHS Managers of sub-tier organizations and dozens of site health and safety officers. Established successful Behavior Based Safety Program in compliance with multiple client requirements. This program allowed the organization to successfully satisfy rigorous requirements of several major oil and gas clients and federal agencies. Established EHS systems and documentation to achieve approval from multiple third-party review programs such as ISNetworld and PICS, and clients such as the Department of Energy, the US Army Corps of Engineers, and multiple major oil and gas clients. Created and implemented process to review and qualify subcontractors based on prior health and safety performance in order to ensure exceptional safety performance. This program served two important functions; 1) Exclude unsafe subcontractors and 2) Notify all subcontractors that only first-class EHS programs and execution were acceptable. Managed the EHS portions of successful acquisition of $20M in commercial oil and gas business. EHS systems and performance represented 20% to 40% of evaluation criteria for these bids. Established processes for workers compensation reporting and case management that facilitated significant reduction in OSHA recordable injury and illness rates. Provided EHS leadership for over $200M in work at 100s of sites. This work included Architect and Engineer (AE), Military Munitions Response Program (MMRP), Long Term Response Action (LTRA) and Hazardous Toxic and Radioactive Waste (HTRW) contracts for the US Army corps of Engineers Louisville District, Savannah District, St. Louis District, Omaha District, Northwestern Division, Buffalo District, Mobile District, and Nashville District. It also included similar work for the Air Force Center for Energy and the Environment (3P, 4P, 4PAE), the US Navy, the National Aeronautics and Space Administration, the National Guard Bureau, the Tennessee Department of Transportation, US Forest Service, Washington Department of Ecology, Department of Energy prime contractors, and multiple commercial clients including oil and gas companies. As part of this leadership; coordinated with clients regarding safety expectations, provided guidance to multiple regional and onsite health and safety officers, wrote or reviewed hundreds of health and safety plans and activity hazard analyses, conducted formal readiness reviews to verify preparations,

conducted audits, conducted incident investigations, conducted EHS performance reviews and compiled performance statistics. The challenges associated with these programs included Munitions and Explosives of Concern (MEC), residual explosives contamination, hazardous wastes, petroleum residues, ionizing radiation and radioactive contamination, operation and maintenance of onsite treatment systems, remedial construction, excavation, SCUBA diving, vessel operation, heavy equipment operation, elevated work and high voltage electrical systems. The Business Unit received the National Safety Council "Perfect Record" award for working 2,780,000 hours without a lost time injury or illness in 2009. The Business Unit received the National Safety Council "Occupational Excellence" award each year for ten consecutive years by maintaining a lost time incident rate of less than half the average rate for other businesses in its North American Industry Classification System code.

International Technology Corporation (IT), Regional Manager Health and Safety Consulting and Training, Knoxville, TN, 1983 to 1993.
Managed a consulting program delivering health and safety program audits, health and safety training, field project health and safety oversight, job hazard analyses, and occupational exposure monitoring for multiple clients including the Department of Energy, US Corps of Engineers, US Navy, and the California Department of Health Services. Successfully managed project to deliver health and safety support to the U.S. Army Corps of Engineers (USACE) at the Bruin Lagoon Superfund Site. The acid sludge disposal site was being remediated by excavating the sludge, mixing it with lime and soil and burying the mix on site. Services consisted of health and safety oversight of the remedial contractor, general health and safety technical advice, on-site monitoring with four real-time instruments mounted on all-terrain vehicle, and installation and maintenance of a real-time perimeter data logging system to collect and store results from multiple hydrogen sulfide and hydrogen chloride sensors. The perimeter monitoring system measured real-time concentrations, recorded instantaneous and average concentrations and provided immediate notification (alarmed) of unacceptable excursions. Following project completion the general results of the air-monitoring program were published and presented, with USACE and EPA input and approval, at the EPA Design and Construction Conference. Successfully managed second phase of job hazard analyses project for Ft. Bliss Army Post, Texas. Managed and participated in a project to perform hundreds of job hazard analyses at the Ft. Bliss Army Post for AIRHAS (HAZWRAP). Interviewed dozens of army personnel, observed maintenance and storage operations, inventoried chemical supplies, assessed the nature and severity of potential exposures, and identified issues and hazards that needed immediate attention. Reduced the data to Army codes and entered the accumulated data into the Army's Health Hazard Information Module database. Provided industrial hygiene support for remedial investigation at the U.S. Department of Energy (DOE) Feed Materials Production Center, Fernald, Ohio. The primary objective of this activity was to attain compliance with the requirements of 29 CFR 1910.120, the Hazardous Waste Operations and Emergency Response standard. Conducted detailed on-site hazard assessments, prepared over 20 task-specific health and safety plans including a line-by-line analysis of compliance with the OSHA lead standard, coordinated activities and hazard controls with DOE representatives, and conducted real-time air monitoring to assess employee exposures and verify compliance with exposure limits. Managed and participated in the development and delivery (over 20 sessions) of the 3-day "Hazard Appraisal and Recognition

Planning," course for the California Department of Health Services. This course was the basic health and safety training for the state hazardous waste compliance officers. It was developed to meet the specific needs of the sponsor and included training in preparation of program-specific hazard assessment forms, use of program-specific monitoring instruments, and compliance with program-specific policies. The courses were presented on-site at multiple locations around the state. Managed and participated in 25 presentations of "The Navy Hazardous Substance Incident Response Management Course." This five-day course was presented in Kaneohe Bay HI, Pearl Harbor HI, Norfolk VA, Virginia Beach VA, Charleston SC, Washington, D.C., Guam, Oakland CA, Philadelphia PA, Pensacola FL, San Diego CA, Port Hueneme CA, and Seattle WA. Successful presentation required maintenance, shipment, and set-up of over two thousand pounds of gear including self contained breathing apparatus, totally encapsulating chemical protective suits, air purifying respirators, and real time air monitoring instruments. Each course culminated in student-lead responses to simulated hazardous materials incidents.

US CITIZEN: Yes

PUBLICATIONS AND TECHNICAL PRESENTATIONS:

Publications:

Davis, S.L., and B. Khona, 1991, "Airborne Exposure Control at an Acid Sludge Remedial Site," published in the proceedings of USEPA conference, Design and Construction Issues at Hazardous Waste Sites.

Davis, Stephen L., 1985, "Permeation Testing of Protective Gloves Exposed to Selected High Hazard Pesticides," report prepared under EPA contract number 68 03 3069, IT Corporation, Edison, New Jersey.

Davis, S.L., C.E. Feigley, and G.A. Dwiggins, 1984, "A Comparison of Two Methods Used to Measure Permeation of Glove Materials by a Complex Organic Mixture," American Society for Testing and Materials (ASTM) Special Technical Publication, First International ASTM Symposium on the Performance of Protective Clothing.

Technical Presentations:

Davis, Stephen, L., 1991, "Airborne Exposure Control at an Acid Sludge Remedial Site," USEPA Conference, Design and Construction Issues at Hazardous Waste Sites.

Davis, Stephen, L., 1985, "Industrial Hygiene Assessment for Initial Entry into Hazardous Waste Sites," Joint Conference of Occupational Health (JCOH), Orlando, Florida, 1985.

Davis, Stephen, L., 1983, "Permeation of Glove Materials by Liquefied Coal," Carolina's Section, American Industrial Hygiene Association, Asheville, North Carolina.

Davis, Stephen, L., 1983, "A Comparison of Two Methods Used to Measure Permeation of Glove Materials by a Complex Organic Mixture," Carolina's Section, American Industrial Hygiene Association, Asheville, North Carolina.

Megan Matteazzi, EI **HYDROGEOLOGIC, INC.**
Assistant Engineer/Site Safety and Health Officer **Denver, CO**

EDUCATION

B.S., Environmental Engineering, University of Colorado, May 2015

PROFESSIONAL DEVELOPMENT COURSES

- Occupational Safety and Health Administration (OSHA) 40-Hr Hazardous Waste and Emergency Response (HAZWOPER) Training; August 2015
- American Red Cross Adult First Aid/CPR Training; September 2015
- HAZWOPER 8-Hr Supervisor Training; November 2015
- OSHA 30-Hr Construction Training; November 2015
- OSHA 8-Hr HAZWOPER 8-Hr Annual Refresher; July 2016
- Midwest GeoSciences Group Webinar: The Use and Misuse of the Unified Soil Classification System

EXPERIENCE SUMMARY

Ms. Matteazzi is an Environmental Engineer with experience in a wide range of environmental projects including remedial actions at sites contaminated with petroleum hydrocarbons, chlorinated solvents, explosives, and metals.

Her project experience includes work for U.S. Army Corps of Engineers (USACE) and the Air Force Civil Engineer Center (AFCEC). Her duties include tabulating, managing, and evaluating data (including statistical evaluations), preparing deliverables, coordinating project work with installation personnel, and managing subcontractors.

Her technical expertise includes completing small to large field efforts including multi-media sampling. Ms. Matteazzi has completed groundwater sampling events using low-flow and passive sampling techniques. She has experience logging soil borings and overseeing Rotosonic and Reverse Circulation drilling to install groundwater wells and overseeing large scale amendment injection operations.

Field Engineer and Site Safety Officer, Joint Base Elmendorf-Richardson, AK, May 2016 to August 2016.
Ms. Matteazzi supported the low-flow sampling of 33 groundwater wells for 1,4-dioxane. She led a field team including one subcontractor in installing soil vapor sampling points in approximately 30 buildings. Ms. Matteazzi also led the field team in collecting approximately 240 ambient air samples and approximately 115 soil vapor samples using SUMMA® canisters analyzed for volatile organic compounds (VOCs), gasoline range organics, benzene, toluene, ethylbenzene, and xylene and chlorinated ethenes. Sample collection included checking the

SUMMA® canisters and sample system for the presence of a vacuum leaks and using helium to check the soil vapor port for leaks.

Field Engineer, Field Supervisor, and Site Safety Officer, Hawthorne Army Depot, NV, November 2015 to Present.

Ms. Matteazzi is supporting the implementation of corrective measures for this site. The selected groundwater remedy consists of enhancing the anaerobic degradation of trichloroethene (TCE) and hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) by installing permeable reactive barriers (PRBs) and periodic recirculation of groundwater amended with substrate through a network of injection wells within the contaminant source area. Full-scale corrective action consists of a large drilling and injection/extraction program. As part of the drilling program, Ms. Matteazzi participated in the installation of 50 injection and extraction wells installed to a depth of approximately 150 feet below ground surface using reverse circulation and roto-sonic drilling methods. As part of the injection/extraction program, Ms. Matteazzi supervised the injection and recirculation of approximately 40,000 gallons of substrate solution and managed three subcontractor personnel. Ms. Matteazzi also serves as the site safety officer and field supervisor, managing a subcontractor collecting groundwater samples from six wells to be analyzed for TCE, RDX, and Monitored Natural Attenuation (MNA) parameters.

Assistant Engineer, Scott AFB RA-O, LTM, and LUC, Basewide, Scott Air Force Base, IL, USACE, September 2015 to November 2015.

Ms. Matteazzi authored deliverables for eleven sites on the Scott AFB Remedial Action-Operations (RA-O), Long-Term Maintenance (LTM), and Land Use Controls (LUC) task order. Activities included evaluating and managing data, conducting site history research, and responding to client comments. Contamination at sites included chlorinated solvents, metals, petroleum hydrocarbons, pesticides, and polychlorinated biphenyls (PCBs). Ms. Matteazzi evaluated the progress of MNA, enhanced reductive dechlorination, and enhanced aerobic bioremediation at various sites.

Field Engineer, MacDill Air Force Base, FL, March 2016.

Ms. Matteazzi supported basewide sampling and was responsible for gauging and collecting groundwater samples from 8 sites using low-flow methods, and conducting the LUC inspections of 30 sites. At sites undergoing active remedies, samples were collected as part of the annual basewide monitoring program; at sites in the post-active remediation monitoring phase, samples were collected as part of MNA or long-term monitoring. A wide variety of contaminants including metals, VOCs, and chlorinated solvents were present among the sites.

Assistant Engineer, Cape Canaveral Air Force Station, Site DP011, December 2015.

Ms. Matteazzi's authored a data gap investigation and interim measure work plan report for this project. The report evaluated the field and analytical results of the investigation activities and presented the planned approach for remediating metals contamination in soil identified during the investigation. The investigation consisted of collecting and analyzing one groundwater sample and 70 soil samples from 10 borings using direct push technology to horizontally and vertically delineate the contamination. The planned remedy consisted of excavating contaminated soil and restoring the site to its original condition.

Field Engineer, Tooele Army Depot, UT, October 2015.
Ms. Matteazzi supported the inspection and gauging of approximately 250 wells by inspecting wells for necessary repairs, measuring water levels and total well depths, and setting Hydrasleeve™ sampler bags.

Field Engineer, Fort Ord Operable Unit 1, CA, October 2015.
Ms. Matteazzi supported attainment monitoring at Fort Ord. Her responsibilities included measuring the water levels in 24 wells and collecting groundwater samples. Sampling included VOC samples collected from 8 wells in passive diffusion bags (PDBs) and perfluorooctane sulfonate (PFOS)/perfluorooctanoic acid (PFOA) samples collected from 7 wells in Hydrasleeve™ sampler bags.

Assistant Engineer, Site ST025, Little Rock AFB, October 2015.
The selected groundwater remedy at the sites consisted of surfactant injection and extraction to enhance extraction of Light Non-Aqueous Phase Liquid and MNA of the dissolved phase petroleum hydrocarbon plume. Ms. Matteazzi authored a report that evaluated the progress of the MNA portion of the remedy.

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NAME: Edie Scala-Hampson, CIH, CHMM **HYDROGEOLOGIC, INC.**

EDUCATION: B.S., Biology, 1976

TRAINING: HAZWOPER 40-Hour
HAZWOPER 8-Hour Refresher
HAZWOPER 8-Hour Site Supervisor
30-Hour Construction Safety
DOT/IATA Shipping of Hazardous Materials
First Aid/CPR
MEC Hazard Awareness Training
Excavation Competent Person
Advanced Concepts in Emergency Chemical Detection
Industrial Hygiene Toxicology
Hazard Communication
Integrated Emergency Response Planning
Determining Action Levels for HW Sites
Fundamentals of Safety Management
Chemical Protective Clothing

PROFESSIONAL REGISTRATIONS: Certified by the ABIH – CIH #2929CP; CHMM #06859

BIOGRAPHY: Ms. Scala-Hampson has over 28 years of experience in industrial hygiene and environmental activities related to compliance with OSHA's exposure values and standards. Her experience includes chemical air sampling, noise, radiation and physical stressor monitoring; engineering design and control document reviews; project on-site safety coordination; and management of heavy construction and environmental remediation projects. Ms. Scala-Hampson's duties have included managing safety for multi-million dollar remediation and engineering services contracts and implementing and performing detailed safety and industrial hygiene programs at HTRW and MEC sites.

EMPLOYMENT HISTORY:

HydroGeoLogic, Inc., 8/2010 - Present

AFCEE, LTM at Multiple Sites, Kirtland AFB, NM. Project H&S Manager for long term monitoring at munitions and hazardous waste sites. Reviewed SSHP, which included tasks for munitions response, geophysical surveying, GW sampling, sampling of USTs, semi-annual gauging of 109 wells at ST-105, and 400 ExsprayTM tests. Wrote SOP for ExsprayTM Field Kit use for explosives screening. ExsprayTM contains 45% DMSO, which can act as a carrier for other toxins to penetrate the skin leading to systemic poisoning. Glove selection is important when working with DMSO because the commonly used nitrile gloves dissolve rapidly upon exposure. For example, a solution of sodium cyanide in DMSO can cause cyanide poisoning through skin contact. DMSO can also produce an explosive reaction when exposed to acid chlorides. Butyl rubber gloves, silver shield or 4H gloves were recommended in the SOP for

DMSO use. Also developed action levels for dust monitoring based on known contaminant concentrations in soils for Cd, Cu, and Pb.

AFCEE, Charleston Joint Base, SC. Project H&S Manager for bioremediation project. Developed HGL's SSHP for an enhanced bioremediation remedy for the Pentachlorophenol Treatment Area of Former Southside Building 88. Developed AHAs and reviewed field work to be performed by subcontractors. Developed specific AHAs for IDW sampling, treatment and disposal of IDW, installation of new monitoring wells, and GW sampling.

AFCEE, 95th ABW/CERV O&M of Ion Exchange Groundwater Extraction Treatment System (GETS), Edwards AFB, CA. Project H&S Manager for remediation system O&M project. Developed SSHP for O&M of the GW extraction treatment system at site WP285. The system consists of seven extraction wells, four injection wells, particulate filters, and liquid granular activated carbon. Project activities included removing and replacing 50 cubic feet of spent ion-exchange resin and 32,000 pounds of granular activated carbon annually. Developed AHAs for ion exchange, activated carbon, profiling waste, disposing of waste and testing for Technologically Enhanced Naturally Occurring Radioactive Materials. Activities also included monthly analysis of influent, midpoint, and effluent from the GETS sample ports for VOCs, perchlorate, and n-nitrosodimethylamine.

USAEC, ACSIM Environmental Remediation Services at Fort Devens, MA. Project H&S Manager for long term monitoring, bioinjection, and in-well recirculation treatment system. Amended the SSHP for Environmental Remediation Services. Reviewed APP, SSHP, and MEC additions. Reviewed subcontractor scopes of work and safety submissions.

USACE, Sacramento District, Basewide ERS at Scott AFB, IL. Project H&S Manager for basewide PBR project. Developed and approved HGL Construction Safety Phasing Plan and AHAs for subcontractor brush clearing, tree felling operations, MEC surveying, paint booth repairs, sprinkler installation and hot work torch cutting. Reviewed scopes of work and subcontractor safety submissions to determine employee and subcontractor compliance with H&S policies and procedures. Audited the project site for compliance with SSHP. To date there are no cases of illness or injury on this project.

USACE, Kansas City District, LTRA, O&M of Treatment Systems, Cosden Chemical Site, NJ. Project H&S Manager for O&M project. Developed addendum to SSHP for man-lift operations. Reviewed information as received, recommended changes and adjustments to methods and techniques to control falls, secured work platforms, and work in confined spaces.

USEPA Region 7, General Motors Corporation/ Former AC Rochester Facility RI/FS in support of an Interim Action ROD, Sioux City, IA. Project H&S Manager for RI/FS and ROD project. Developed, reviewed, and approved SSHPs, AHAs, and subcontractor activities. Also, periodically resolved safety issues as they arose during field activities involving direct push technology for soil and GW investigations, rotosonic monitoring well installation, hydraulic conductivity testing, well sampling, vapor intrusion investigation, and waste characterization and disposal.

Self Employed Industrial Hygiene/Environmental Consultant, 8/1996 – 8/2010

Project Industrial Hygienist for occupational and safety auditing at 13 sites in Brazil as part of a USTDA grant. Conducted regulatory auditing and gap analysis at petrochemical manufacturing facilities, including, vinyl chloride, chlor-alkali, caprolatum and aromatic plants. Engineering controls and administrative control estimates were compiled as part of a gap analysis for the company to achieve compliance with practices in occupational safety.

Project Industrial Hygienist for development and implementation of an Emergency Response Plan and Air Sampling Plan for a high profile Chicago top-down construction project with confined space and egress hazards). Ms. Scala-Hampson provided onsite oversight and air sampling during removal of soils for the 6 story below grade parking garage and subway link. Ms. Scala-Hampson developed and implemented project specific Safety and Health training for the subcontractors, field superintendents and engineers who were performing the daily construction activities.

Project Industrial hygienist for development of a downtown Chicago property. Onsite safety and health coordination for an NPL and Superfund remediation site with radioactive/thorium decay series contamination. Developed comprehensive Site Safety Plans. Ms. Scala-Hampson coordinated with EPA Region 5 and Illinois Department of Nuclear Safety the construction and remediation of soils excavated for the construction of an underground parking garage.

Environmental Safety and Health auditor and risk assessor for aircraft engine parts and plastics manufacturer Performed audits of the facility including review of air monitoring records, medical surveillance programs, MSDSs, records and adequacy of health, safety and environmental compliance. Audits also included review of emergency preparedness, respiratory protection programs and confined space entry procedures.

Industrial Hygienist, Airborne Hazards Monitoring Metropolitan Water Reclamation District of Greater Chicago (MWRDC). Developed and implemented OSHA and EPA regulated sampling, training and medical surveillance and compliance programs. IH monitoring included: Organic solvents, heavy metals, mold, and pesticide evaluations of worker breathing zone exposures.

STS Consultants, Ltd, 12/1988 – 8/1996

Served as the Manager of Industrial Hygiene and Corporate Health and Safety Officer. Responsibilities included conducting in house training in compliance with the OSHA's Hazardous Waste Operations and Emergency Response Standard and providing technical assistance on industrial health and chemical safety for all levels of staff and management in six regional offices.

Continental Insurance, 1981 – 1988

Senior Industrial Hygienist, CTEK Environmental Health Unit, Chicago, IL. Coordinated occupational and environmental health surveys with all company groups and acted as a consultant to fee customers and insureds throughout the U.S. Advised, interpreted and evaluated

environmental health exposures and control programs for underwriting. Marketed and prepared proposal cost estimates. Interpreted the technical aspects of occupational disease exposures that resulted in reported occupational disease claims. Integrated industrial hygiene and safety functions by coordinating interaction on audit committees for environmental conservation, hazardous materials and occupational safety for Fortune 500 companies. Conducted environmental risk assessments. Represented corporations as an expert witness in occupational disease cases.

ACCIDENT PREVENTION PLAN
OU-1 FORT ORD NATURAL RESERVE WELL DESTRUCTION AND NORTHWEST TREATMENT SYSTEM DECOMMISSIONING

APPENDIX B

HEALTH AND SAFETY FIELD FORMS

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PRE-TASK SAFETY AND HEALTH ANALYSIS WORKSHEET

DATE:
PROJECT NAME:
SSHO:

Location of Job (Unit/Location on Project):		**Task Analyzed**
Required PPE:	**Safety Access/ Location**	Supervisor of Work:
First Aid Personnel:	Safe Haven: Wind Direction: Evacuation Route: Assembly Point:: Emergency Equipment:	Prepared By: New: Revised: Are other crews in area? Coordination needed? Audit
Pre-Task Preparation 1. Fill out worksheet 2. Review worksheet (EVERYONE) 3. Sign worksheet (EVERYONE)		

Job Task (What you are doing)

Potential Hazards	**Supervisor's Comments:**
Recommended Action or Procedure	
	Supervisor's Initials:

Crew Signatures:

PRE-TASK SAFETY AND HEALTH ANALYSIS CHECKLIST

(Check all that apply)

Date:
Project Name:
SSHO:

Task Analyzed: _____ **Project Name**: _____

Permits
- ☐ Hot Work Permit
- ☐ Confined Space Entry Permit
- ☐ All permit conditions met
- ☐ Signed-off when work completed
- ☐ Rescue equipment/services available
- ☐ Other:
- ☐ Other:

PPE
- ☐ Hard hat, safety glasses, safety-toe boots
- ☐ Chemical protective gloves
- ☐ Leather or special gloves (e.g. Whizards)
- ☐ Chemical protective coveralls
- ☐ Chemical protective boots
- ☐ Splash goggles / face shield
- ☐ Respirator
- ☐ Hearing protection
- ☐ Fall protection
- ☐ Burning goggles/welder's helmet
- ☐ Leathers (slag and burn protection)
- ☐ Chainsaw protection
- ☐ Pressure washing protection
- ☐ Puncture resistant insoles
- ☐ Reflective vest
- ☐ Other:

Tools
- ☐ Current inspection
- ☐ Proper tools for the job
- ☐ Good tool condition
- ☐ Qualifications, e.g. explosive actuated tool
- ☐ Other:

Emergency Equipment
- ☐ Fire extinguishers
- ☐ Safety shower/eyewash station
- ☐ First aid kit
- ☐ Evacuation route(s)
- ☐ Other:

Access
- ☐ Scaffold training and inspection
- ☐ Ladders
- ☐ Man-lift inspected
- ☐ Personnel basket (inspected/approved)
- ☐ Operator training
- ☐ Fall protection provided
- ☐ Other:

Welding and Cutting
- ☐ Flash, slag, and other burn protection
- ☐ Combustibles & flammables
- ☐ Spark containment
- ☐ Shields
- ☐ Grounding
- ☐ Water hose
- ☐ Fire extinguisher
- ☐ Fire watch
- ☐ Proper cylinder procedures
- ☐ Flashback arrestors
- ☐ Other:

Overhead Utilities
- ☐ Survey area for utilities
- ☐ Check for clearance issues
- ☐ De-energize or reroute
- ☐ Barricade area
- ☐ Post hazard warning signs
- ☐ Provide spotters

Electrical (Shock and Arc Flash)
- ☐ De-energized
- ☐ Lockout tagout
- ☐ NFPA 70 E PPE
- ☐ GFCI
- ☐ Assured grounding
- ☐ Extension cord inspected
- ☐ Other:

Lifting
- ☐ Forklift
- ☐ Forklift operator licensed
- ☐ Crane inspected
- ☐ Crane operator licensed
- ☐ Lift plan completed
- ☐ Rigging Competent Person
- ☐ Rigging inspected and safe
- ☐ Rigging properly stored
- ☐ Manual Lifting (50 pound limit)
- ☐ Proper manual lifting procedure

Drilling/ Direct Push
- ☐ Underground / overhead utilities
- ☐ Rig inspected
- ☐ Air monitoring performed
- ☐ Emergency procedures
- ☐ Other:

Hazards (Environmental)
- ☐ Cold stress
- ☐ Heat stress / Phys. monitoring
- ☐ Sunburn
- ☐ Hot/cold surfaces or materials
- ☐ Inadequate lighting
- ☐ Irritating plants
- ☐ Noise
- ☐ Severe weather
- ☐ Insects/Animals
- ☐ Other:

Hazards (Chemicals)
- ☐ Chemical – skin or eye contact
- ☐ Ingestion
- ☐ Inhalation
- ☐ Flammable
- ☐ Chemical reaction
- ☐ Hazard Communication Standard

Hazards (Body)
- ☐ Fall protection
- ☐ Pinch points
- ☐ Slips & trips
- ☐ Struck-by
- ☐ Other:

Monitoring Required
- ☐ Air
- ☐ Noise
- ☐ Radiological
- ☐ Other:

Overhead Work
- ☐ Barricades
- ☐ Signs
- ☐ Hole covers
- ☐ Guardrails

Excavation
- ☐ Excavation Competent Person
- ☐ Underground utilities located
- ☐ Overhead utilities and hazards
- ☐ Overhead utilities and hazards
- ☐ Heavy equipment inspected
- ☐ Perimeter protection
- ☐ Daily inspections
- ☐ Protective systems in place
- ☐ Air monitoring / Dust control

Supervisor/Foreman Recommendations:

HGL
HydroGeoLogic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- ☐ Tailgate (daily)
- ☐ Activity Hazard Analysis
- ☐ Pre-Task Hazard Analysis (prior to new task or operation)
- ☐ Site Safety Orientation (new personnel)
- ☐ Supervisor's (monthly)
- ☐ Supervisor's (weekly)
- ☐ UXO Awareness
- ☐ Asbestos Awareness
- ☐ Health and Safety Plan Addendum: _____
- ☐ Other: ___

Date/Time: _____ Client: _____

Location: _____ Job No.: _____

Meeting/training conducted by: _____

Work Activities: _____

Safety / Training Topics Presented

Chemical Hazards: _____

Physical Hazards: _____

Specific Safety Topic(s): _____

_____

Specific Training Covered: _____

_____

Attendees

Name Printed and Employee Number:	Signature:

SAFETY MEETING/TRAINING LOG
(Continued)

Date: ________________________ Job No.: ________________________

Attendees

Name Printed and Employee Number:	Signature:

HGL
HydroGeoLogic, Inc
Exceeding Expectations

Safety and Occupational Health Deficiency Tracking Log

Project Number: _____

Project Name: _____

Date Deficiency Identified	Description of Deficiency or Comment	Recommended Action	Person Responsible for Correcting Deficiency	Projected Resolution Date	Date Deficiency Actually Resolved	Verified By Initial

FIRST AID KIT INSPECTION LOG
(Inventory Kit)

Location: _____ Project Name: _____

Project Number: _____ Client: _____ Date: _____

Inspected by: _____ SSHO Approval Signature: _____

Contents	Fixed Location Kit		Vehicular Kit*			
	Minimum Required Quantity	Actual Quantity	Required Quantity	Actual Quantity		
				Vehicle 1 ID	Vehicle 2 ID	Vehicle 3 ID
Telfa Bandage Compress, 4"x4"	4	_____	2	_____	_____	_____
Adhesive Bandages, 1"x3-3/8"	25	_____	25	_____	_____	_____
Ammonia Inhalants	2	_____	1	_____	_____	_____
Triangular Bandage 40" x 40" x 56"	1	_____	-	_____	_____	_____
Eye Covering with Means of Attachment	1	_____	-	_____	_____	_____
Eye Flush, 1oz.	2	_____	2	_____	_____	_____
Absorbent Compress 24 sq. in.	1	_____	1	_____	_____	_____
Antiseptic Wipes 1" x 1"	10	_____	5	_____	_____	_____
Antiseptic Swabs 0.14 fl. oz.	10	_____	5	_____	_____	_____
Antiseptic Towelettes 24 sq. in.	10	_____	-	_____	_____	_____
Sterile Pad 3" x 3"	4	_____	2	_____	_____	_____
Burn Treatment 0.14 fl. Oz.	6	_____	1	_____	_____	_____
Roller Bandage 4" x 6 yd.	1	_____	-	_____	_____	_____
Roller Bandage 2" x 6 yd.	2	_____	-	_____	_____	_____
Kwik-Kold Ice Pak	2	_____	-	_____	_____	_____
Adhesive Tape, 1" x 5 yd.	2	_____	1	_____	_____	_____
Scissors and Forceps Kit	1	_____	-	_____	_____	_____
Tick Removal Kit	1	_____	-	_____	_____	_____
Emergency Blanket	1	_____	-	_____	_____	_____
Disposable Gloves	4 pair	_____	2 pair	_____	_____	_____
Flashlight	1	_____	-	_____	_____	_____
Cotton-tip Applicators	10	_____	-	_____	_____	_____
Disposable mouth-to-mouth Resuscitators	2	_____	1	_____	_____	_____
Multi-Trauma Dressings 8"x10"	2	_____	-	_____	_____	_____
2" Bandage Compress 2" x 36"	4	_____	-	_____	_____	_____
3" Bandage Compress 3" x 60"	2	_____	-	_____	_____	_____
4" Bandage Compress 4" x 72"	1	_____	-	_____	_____	_____
Supervisor's Employee Injury Report	1	_____	1	_____	_____	_____
Inventory Kit	1	_____	-	_____	_____	_____

* Readily available "vehicle-size" first aid kits may be purchased at the local department store to fulfill vehicle kit stocking requirements. The kit contents do not need to be inspected as long as the shrink-wrap sanitary covering is intact.

USACE PRIME CONTRACTOR

Monthly Record of Work-Related Injuries/Illnesses & Exposure

US Army Corps of Engineers

Month May, 2009

In accordance with the provisions of EM 385-1-1, Section 01 Program Management, Paragraph 01.D Accident Reporting and Recording, sub-paragraphs 01.D.05, you (the Prime Contractor) shall provide a monthly record of all exposure and accident experience incidental to the work (this includes exposure and accident experience of the Prime Contractor and its sub-contractor(s)). As a minimum, these records shall include exposure work hours and a record or occupational injuries and illneses that include the data elements listed below. Definitional criteria for each data element is found in 29 CFR Part 1904. If the maintenance of OSHA 300 Logs are required by OSHA, most of this information can be obtained from those logs. If data on log provided below is revised after it is submitted to USACE, Contractor shall provide a revised report to the GDA. You must complete the USACE ENG Form 3394, Report of Accident Investigation Report for all recordable accidents. If you're not sure whether a case is recordable, call your local Safety and Occupational Health Office for help.

USACE Command	Los Angeles District
Contractor Name	Freeman's Funny Farm
Contract Number	W912PP-07-C-0010
Project Title	RMS Training Contract
City & State	Litchfield Park, AZ 85340
USACE Office	Flagstaff Project Office

Contractor / Labor Classification	Prime/Subcontractor	Age	Gender	Date Employee began work / Date of Injury or onset of illness	Where the event occured	Describe the injury or illness	Death	Days Away From Work	Job Transfer or restriction	Other record-able cases	Number of Days: On Job transfer or restriction (days)	Number of Days: Away from work (days)	Injury	Skin Disorder	Respiratory Condition	Poisoning	Hearing Loss	All other illnesses
No accidents reported																		
Totals:							0	0	0	0	0	0	0	0	0	0	0	0

Exposure Hours

Month: 12,899 hours

Year To Date: 59,665 hours

Certification of Record

Name of Person Submitting Record: Kevin Walker

Signature: _____ **Date:** _____

USACE PRIME CONTRACTOR

Monthly Record of Work-Related Injuries/Illnesses & Exposure

US Army Corps of Engineers

Month May, 2009

Contractor / Trade	P or S	Exposure Hours		Number of Cases				Number of Days		Number of Injuries / Illnesses						Rates		
		Current Period	Year to Date	Death Cases	Days Away from Work Cases	Transfer or Restriction Cases	Other Reportable Cases	Days Away from Work	Job Transfer Days	Injuries	Skin Disorder	Respiratory Conditions	Poisoning	Hearing Loss	All Other Illnesses	Lost Time Frequency Rate	Contractor DART Rate	Contractor Day Count
Freeman's Funny Farm Prime Contractor	P	1,359	6,886	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
ATL, Inc. Materials Testing	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Aero Automatic Sprinkler Co. Fire Protection-Systems	S	306	848	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Aero Construction Co Fencing	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Affordable Fire & Safety Fire Protection-Systems	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
American Fence Fencing	S	0	282	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Arizona Custom Millwork Cabinetry/Casework	S	650	832	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Benham Enterprises, Inc; DBA: Tucson Restaur Furnishings	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Bureau of Indian Aff	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Bureau of Indian Affairs	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Charles Court Constr Specialities	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Claridge Products & Equipment Specialities	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Commercial Enterprises Insulation-Buildings	S	4,258	25,993	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Concrete Structures, Inc Concrete	S	1,259	2,516	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Contract Decor, Inc. Furnishings	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Core Slab - Albuquer Concrete	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Coreslab Structures - PHX Concrete	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Cornell Metro PHX Doors, Steel	S	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Dial Mechanical Plumbing	S	150	2,332	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0

USACE PRIME CONTRACTOR

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Contractor / Trade	P or S	Exposure Hours		Number of Cases				Number of Days		Number of Injuries / Illnesses						Rates		
		Current Period	Year to Date	Death Cases	Days Away from Work Cases	Transfer or Restriction Cases	Other Reportable Cases	Days Away from Work	Job Transfer Days	Injuries	Skin Disorder	Respiratory Conditions	Poisoning	Hearing Loss	All Other Illnesses	Lost Time Frequency Rate	Contractor DART Rate	Contractor Day Count
Exterior Systems Furnishings	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
FCI Constructors, In Prime Contractor	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Falcon Contracting Pavement Marking	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Farwest Pump Plumbing	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Frank Redmond and As Food Service Equipment	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
G & G Enterprises Masonry	S	0	87	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Hark Drilling Concrete	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Howard Electrical Electrical	S	1,488	7,587	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Hufcor/Arizona, Inc. Furnishings	S	0	238	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
J.E.P., Inc. Specialities	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
KTI Tile, Inc. Ceramic Tile	S	1,380	2,320	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Kadee Industries, Inc. Furnishings	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Kebko Architectural Signage Signage Interior/Exterior	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
L.PH Bolander & Sons Furnishings	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
M & K Mechanical HVAC	S	450	3,422	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Maggart & Associates Cathodic Protection	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Mudslingers Concrete	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Nations Gas Technologies Plumbing	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Norcon Industries Furnishings	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0

USACE PRIME CONTRACTOR

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Contractor / Trade	P or S	Exposure Hours		Number of Cases				Number of Days		Number of Injuries / Illnesses						Rates		
		Current Period	Year to Date	Death Cases	Days Away from Work Cases	Transfer or Restriction Cases	Other Reportable Cases	Days Away from Work	Job Transfer Days	Injuries	Skin Disorder	Respiratory Conditions	Poisoning	Hearing Loss	All Other Illnesses	Lost Time Frequency Rate	Contractor DART Rate	Contractor Day Count
Northland Surveying Surveying	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Otis Elevator Elevator/Conveying Equip	S	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
PDI Pest Control Pest/Termite Control	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Partitions & Accessories Toilet Partitions/Access	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Pena Acoustics Acoustic Ceiling	S	339	648	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Phoenix Fabricators, Inc. Tanks/Tank Covers	S	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Power Line Technolog Electric Special Systems	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Progressive Roofing Roofing	S	0	2,012	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
R. E. Nelson Earthwork	S	272	1,083	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
RTR Paving Asphalt Paving	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Rigid Building Syste Pre-Engineered Buildings	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Robert Cohen Co., LL Floor Coverings	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
S & H Steel Steel Joists/Decks	S	244	641	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
San Juan Glass Windows/Glazing	S	0	504	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Sky Design Concepts Windows/Glazing	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Steel Dor of Phoenix Doors, Steel	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Sunstate Installations, Inc. Furnishings	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
TAB Technology, Inc. Mechanical	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Tri-Hurst Construction Pre-Engineered Buildings	S	0	460	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0

USACE PRIME CONTRACTOR

Monthly Record of Work-Related Injuries/Illnesses & Exposure

US Army Corps of Engineers

Month May, 2009

Contractor / Trade	P or S	Exposure Hours		Number of Cases				Number of Days		Number of Injuries / Illnesses						Rates		
		Current Period	Year to Date	Death Cases	Days Away from Work Cases	Transfer or Restriction Cases	Other Reportable Cases	Days Away from Work	Job Transfer Days	Injuries	Skin Disorder	Respiratory Conditions	Poisoning	Hearing Loss	All Other Illnesses	Lost Time Frequency Rate	Contractor DART Rate	Contractor Day Count
USACE Sub-Contractor	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
VWR International LL Cabinetry/Casework	S	0	51	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Western Technologies QC Testing Lab	S	66	200	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Wholesale Floors Floor Coverings	S	672	672	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Totals:		12,899	59,665	0	0	0	0	0	0	0	0	0	0	0	0			

HGL Medical Assessment/Work Capacity Form

TO BE COMPLETED BY SUPERVISOR

Employee Name – Last	First	M.I.	Today's Date
Department	Shift		Employee is ☐ Regular ☐ Temporary
Date of Incident	Has an incident report been filed? ☐ Yes Date _____ ☐ No		
Reason for visit			
Supervisor Name (print)	Supervisor's Signature	Contact Information	

TO BE COMPLETED BY HEATLH CARE PROVIDER

Employee states this incident is ☐ Work-related ☐ Non-work related

Medical Evaluation

Emergency Contact _____
Name Phone Number

Medical Assessment

Medical Assessment ☐ Suture _____ ☐RX _____ ☐ Tetanus Shot
☐ Other treatment/medications prescribed or given:

Medical Referral To _____

Reason _____

☐ Return to work with NO restrictions or limitations.
☐ Return to work with restrictions or limitations to begin _____ until _____
☐ Time off work to begin _____ until _____
Work restrictions/limitations are ☐ Temporary ☐ Permanent

Next appointment:
At _____ with _____ Date _____ Time _____
(clinic) (Care Provider)

Nature of restrictions/limitations:

1. ☐ No repetitive gripping with _____ more than _____hours per day.
2. ☐ No lifting over _____lbs, to a height of _____, over _____ per day.
3. ☐ No pushing or pulling over _____lbs more than _____hours per day.
4. ☐ Walking and standing limited to _____minutes/hours per day.
5. ☐ Sitting not to exceed _____ minutes without a _____ break to ambulate.
6. ☐ Stooping, bending, twisting, or kneeling limited to _____ times/hour.
7. ☐ No working with the neck, or wrists bent or twisted for more than _____hours per day.
8. ☐ Work limited to _____ hours per day.
9. ☐ Use of respiratory protection – APR, SCBA, etc. (specify which) _____ limited to _____
10. ☐ Use of chemical protective coveralls, gloves, booties, (specify which) _____ limited to _____

Other restrictions/limitations

Supervisor notified ☐ No ☐ Yes, via ☐ Phone ☐ Message ☐ In Person Date _____ Time _____

Authorization to Release/Obtain Medical Information

I hereby authorized the undersigned to share, provide, exchange and discuss medical information and records concerning this injury or illness with my doctor or health care provider and others deemed necessary including medical doctors, physical therapists, and nurse practitioners. I further authorize the health care provider to discuss essential medical information with my supervisor if this injury/illness requires time off from work and/or work restrictions. If I am claiming this incident to be the result of an occupational injury/illness, I authorize providing a copy of this report with company personnel having a legitimate need for the information. I hereby understand and agree to abide by the medical or work restrictions outlined above.

Health Care Provider Signature	Date	Employee Signature

HGL
HydroGeoLogic, Inc.
Exceeding Expectations

SUPERVISOR'S Incident Investigation Report

(To be completed by the employee's supervisor or other responsible administrative official)

Location where accident occurred	Employer's Premises: Yes No Job site: Yes No	Date of accident or illness
Who was injured?	Employee Non-Employee	Time of accident a.m. p.m.
Length of time with firm / Job title or occupation		
What property/equipment was damaged?		Property/equipment owned by:
What was employee doing when injury/illness occurred? (Add additional sheets if needed)		
How did injury/illness occur? List all objects and substances involved.		
Part of body affected/injured?		
Nature and extent of injury/illness and property damaged (be specific)		

PLEASE INDICATE ALL OF THE FOLLOWING WHICH CONTRIBUTED TO THE INJURY OR ILLNESS

____ Failure to lockout	____ Improper maintenance	____ Poor housekeeping
____ Failure to secure	____ Improper protective equipment	____ Unrealistic schedule/budget
____ Horseplay	____ Inoperative safety device	____ Unsafe arrangement or process
____ Fatigue	____ Lack of training or skill	____ Unsafe equipment
____ Improper guarding	____ Operating without authority	____ Unsafe position
____ Improper instruction	____ Physical or mental impairment	____ Other_____

Supervisor's corrective action to ensure this type of accident does not recur:

_____

_____

_____

Was employee trained in the appropriate use of Personal Protective Equipment/Proper safety procedures?..... Yes ___ No ____
Was employee cautioned for failure to use Personal Protective Equipment/Proper safety procedures? ..... Yes ___ No ____
Did employee promptly report the injury/illness? ..... Yes ___ No ____
Is there modified duty available? ..... Yes ___ No ____
If so, Please describe: _____

Supervisor's name	Supervisor's signature	Phone#	Date
_____	_____	_____	_____

HGL
HydroGeoLogic, Inc
Exceeding Expectations

Corporate Headquarte

AUTOMOBILE ACCIDENT REPORT

INSURED DRIVER INFORMATION

DATE

DRIVER

ADDRESS

CITY - STATE - ZIP

YEAR AND MAKE OF CAR/PLATE NUMBER/STATE

VEHICLE I.D. NUMBER/LICENSE NUMBER

CITY AND STATE ACCIDENT OCCURRED

DESCRIPTION:

TELEPHONE NUMBER (S)

(H) _____ (w) _____

OTHER VEHICLE NO. 2

DRIVER'S FULL NAME

ADDRESS

CITY - STATE - ZIP

YEAR	MAKE	LICENSE NO.	STATE

VEHICLE I.D. NUMBER/PLATE NUMBER

OWNER

ADDRESS

CITY - STATE - ZIP

TELEPHONE NUMBER (S)

(H) _____ (w) _____

INSURANCE COMPANY AND POLICY NUMBER/PHONE NUMBER

OTHER VEHICLE NO. 3

DRIVER'S FULL NAME

ADDRESS

CITY - STATE - ZIP

YEAR	MAKE	LICENSE NO.	STATE

VEHICLE I.D. NUMBER/PLATE NUMBER

OWNER

ADDRESS

CITY - STATE - ZIP

TELEPHONE NUMBER (S)

(H) _____ (w) _____

INSURANCE COMPANY AND POLICY NUMBER/PHONE NUMBER

Get Name of Witnesses

WITNESSES

1. FULL NAME

ADDRESS

CITY - STATE - ZIP

TELEPHONE NUMBER | AGE

2. FULL NAME

ADDRESS

CITY - STATE - ZIP

TELEPHONE NUMBER | AGE

POLICE

OFFICER NAME | BADGE NO.

REPORT NO. | STATION

All drivers should make themselves familiar with the contents of this booklet promptly on receipt. Booklet should be kept in glove compartment of vehicle.

IN CASE OF TRAFFIC ACCIDENT

1. Stop immediately. Keep calm.
2. Warn oncoming traffic.
3. Help the injured. Do not render first aid unless your are trained.
4. Do not argue, accuse anyone, or make any admission of blame for the accident.
5. Call appropriate law enforcement agency (highway patrol, police, sheriff, or other authority).
6. Get the information called for in this booklet.
7. If camera available, please take photo.

Name and address of person completing this form:

11107 Sunset Hills Road, Suite 400, Reston, Virginia 20190
Phone: (703) 478-5186 Fax: (703) 471-4180
www.hgl.com

HGL INCIDENT REPORT

Section 1 – General Information

Date of Occurrence	Date Reported	Reported to whom?	Time of Occurrence

Employee Name	Work Address	City, State, Zip Code	Work Phone Number

Date of Birth	Home Address	City, State, Zip Code	Home Phone Number

Occupation (Title)	Full time ☐ Part time ☐ Temporary ☐

Location of Occurrence	Address	City, State, Zip Code

Description of Incident (include what employee was doing, work process, cause, injury and body part)

Witness(es)	Address	City, State, Zip Code	Work Phone Number

Was First Aid given on-site? Yes ☐ No ☐ By whom?

Was employee taken to hospital? Yes ☐ No ☐ Ambulance Yes ☐ No ☐
If so, provide name, address, and phone number of hospital and name of attending physician below:

Name of Hospital:	Address:	City, State, Zip Code:	Phone Number:

Attending Physician:

Did employee seek medical attention other than an emergency room? Yes ☐ No ☐
If so, provide practice name, address, phone number and name of attending physician below:

Practice Name:	Address:	City, State, Zip Code:	Phone Number:

Attending Physician:

Did employee lose time on the job? Yes ☐ No ☐ If so, how many days after the initial injury date? _____

Was employee assigned light duty? Yes ☐ No ☐ If so, how many days after the initial injury date? _____

Supervisor (print):	Signature:	Date:
Employee (print):	Signature:	Date:
Witness (print):	Signature:	Date:
Witness (print):	Signature:	Date:
Director, Health & Safety:	Signature:	Date:

HGL
HydroGeoLogic, Inc
Exceeding Expectations

HGL LESSONS LEARNED FORM

WHO OR WHAT WAS INVOLVED:
☐ HGL employee or equipment
☐ Third Party (private individual/contractor/client) employee or equipment

SECTION 1. WHAT HAPPENED?
Sequence of events: Describe the physical situation plus pertinent events before, during, and after the incident. Report only facts. Identify injury/equipment damage avoided. If you can, also list the obvious cause(s) for what happened.

SECTION 2. HOW CAN WE AVOID SIMILAR SITUATIONS?
List actions that will prevent recurrence. (e.g. change how the task is done, purchase or use different equipment, use different PPE, add additional workers, alter the management structure)

SECTION 3. WHO CAN BE CONTACTED IF ADDITIONAL DETAILS ARE NEEDED?
HS Coordinator: _____
Or (if you are brave) Your Name: _____
Date: _____

THANKS FOR THE INFORMATION!

(For Safety Staff only)	REPORT NO.	EROC CODE	**UNITED STATES ARMY CORPS OF ENGINEERS** **ACCIDENT INVESTIGATION REPORT** *(For Use of this Form See Attached Instructions and USACE Suppl to AR 385-40)*	REQUIREMENT CONTROL SYMBOL: CEEC-S-8(R2)

1. ACCIDENT CLASSIFICATION

PERSONNEL CLASSIFICATION	INJURY/ILLNESS/FATAL	PROPERTY DAMAGE	MOTOR VEHICLE INVOLVED	DIVING
GOVERNMENT ☐ CIVILIAN ☐ MILITARY	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ CONTRACTOR	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ PUBLIC	☐ FATAL ☐ OTHER		☐	

2. PERSONAL DATA

a. NAME (Last, First, MI)	b. AGE	c. SEX ☐ MALE ☐ FEMALE	d. SOCIAL SECURITY NUMBER	e. GRADE

f. JOB SERIES/TITLE	g. DUTY STATUS	h. EMPLOYMENT STATUS AT TIME OF ACCIDENT
	☐ ON DUTY ☐ TDY ☐ OFF DUTY	☐ ARMY ACTIVE ☐ ARMY RESERVE ☐ VOLUNTEER ☐ PERMANENT ☐ FOREIGN NATIONAL ☐ SEASONAL ☐ TEMPORARY ☐ STUDENT ☐ OTHER (Specify)

3. GENERAL INFORMATION

a. DATE OF ACCIDENT *(month/day/year)*	b. TIME OF ACCIDENT *(military time)* hrs	c. EXACT LOCATION OF ACCIDENT	d. CONTRACTOR'S NAME (1) PRIME: (2) SUBCONTRACTOR

e. CONTRACT NUMBER	f. TYPE OF CONTRACT	g. HAZARDOUS/TOXIC WASTE
☐ CIVIL WORKS ☐ MILITARY ☐ OTHER (SPECIFY)	☐ CONSTRUCTION ☐ SERVICE ☐ A/E ☐ DREDGE ☐ OTHER (SPECIFY)	☐ SUPERFUND ☐ DERP ☐ IRP ☐ OTHER (SPECIFY)

4. CONSTRUCTION ACTIVITIES ***(Fill in line and corresponding code number in box from list - see instructions)***

a. CONSTRUCTION ACTIVITY	(CODE) #	b. TYPE OF CONSTRUCTION EQUIPMENT	(CODE) #

5. INJURY/ILLNESS INFORMATION ***(Include name on line and corresponding code number in box for items e, f & g - see instructions)***

a. SEVERITY OF ILLNESS/INJURY	(CODE) #	b. ESTIMATED DAYS LOST	c. ESTIMATED DAYS HOSPITALIZED	d. ESTIMATED DAYS REST. DUTY

e. BODY PART AFFECTED	(CODE) #	g. TYPE AND SOURCE OF INJURY/ILLNESS
PRIMARY		TYPE (CODE) #
SECONDARY	(CODE) #	SOURCE (CODE) #
f. NATURE OF ILLNESS/INJURY	(CODE) #	

6. PUBLIC FATALITY ***(Fill in line and correspondence code number in box - see instructions)***

a. ACTIVITY AT TIME OF ACCIDENT	(CODE) #	b. PERSONAL FLOATATION DEVICE USED? ☐ YES ☐ NO ☐ N/A

7. MOTOR VEHICLE ACCIDENT

a. TYPE OF VEHICLE	b. TYPE OF COLLISION	c. SEAT BELTS	USED	NOT USED	NOT AVAILABLE
☐ PICKUP/VAN ☐ AUTOMOBILE ☐ TRUCK ☐ OTHER (Specify)	☐ SIDE SWIPE ☐ HEAD ON ☐ REAR END ☐ BROADSIDE ☐ ROLL OVER ☐ BACKING ☐ OTHER (Specify)	(1) FRONT SEAT (2) REAR SEAT			

8. PROPERTY/MATERIAL INVOLVED

a. NAME OF ITEM	b. OWNERSHIP	c. $ AMOUNT OF DAMAGE
(1)		
(2)		
(3)		

9. VESSEL/FLOATING PLANT ACCIDENT ***(Fill in line and correspondence code number in box from list - see instructions)***

a. TYPE OF VESSEL/FLOATING PLANT	(CODE) #	b. TYPE OF COLLISION/MISHAP	(CODE) #

10. ACCIDENT DESCRIPTION (Use Additional paper, if necessary)

11. CASUAL FACTORS *(Read Instructions Before Completing)*

a. (Explain YES answers in item 13	YES	NO
DESIGN: Was design of facility, workplace or equipment a factor?	☐	☐
INSPECTION/MAINTENANCE: Were inspection & maintenance procedures a factor?	☐	☐
PERSON'S PHYSICAL CONDITION: In your opinion, was the physical condition of the person a factor?	☐	☐
OPERATING PROCEDURES: Were operating procedures a factor?	☐	☐
JOB PRACTICES: Were any job safety/health practices not followed when the accident occurred?	☐	☐
HUIMAN FACTORS: Did any human factors such as size or strength of person, etc., contribute to accident?	☐	☐
ENVIRONMENTAL FACTORS: Did heat, cold, dust, sun, glare, etc. contribute to the accident?	☐	☐

a. (CONTINUED)	YES	NO
CHEMICAL AND PHYSICAL AGENT FACTORS: Did exposure to chemical agents, such as dust, fumes, mists, vapors, or physical agents such as noice, radiation, etc. contribute to accident?	☐	☐
OFFICE FACTORS: Did office setting such as, lifting office furniture, carrying, stooping, etc. contribute to the accident?	☐	☐
SUPPORT FACTORS: Were inappropriate tools/resources provided to properly perform the activity/task?	☐	☐
PERSONAL PROTECTIVE EQPT: Did the improper selection, use or maintenance of personal protective eqpt contribute to the accident?	☐	☐
DRUGS/ALCOHOL: In your opinion, was deugs or alcohol factor to the accident?	☐	☐

b. WAS A WRITTEN JOB/ACTIVITY HAZARD ANALYSIS COMPLETED FOR TASK BEING PERFORMED AT TIME OF ACCIDENT?
☐ YES (If yes, attach a copy) ☐ NO

12. TRAINING

a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK?	b. TYPE OF TRAINING	c. DATE OF MOST RECENT FORMAL TRAINING
☐ YES ☐ NO	☐ CLASSROOM ☐ ON JOB	Month/Day/Year

13. FULLY EXPLAIN WHAT ALLOWED OR CAUSED THE ACCIDENT: INCLUDE DIRECT AND INDIRECT CAUSES (See instruction for definition of direct and indirect causes.) (Use additional paper, if necessary)

a. DIRECT CAUSE

b. INDIRECT CAUSE(S)

14. ACTION(S) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(S)

DESCRIBE FULLY:

15. DATES FOR ACTIONS IDENTIFIED IN BLOCK 14

a. BEGINNING (Month/Day/Year)	b. ANTICIPATED COMPLETION (Month/Day/Year)		
c. SIGNATURE AND TITLE OF SUPERVISOR CORPS CONTRACTOR	d. DATE (Month/Day/Year)	e. ORGANIZATION IDENTIFIER (Div,Br,Sect)	f. OFFICE SYMBOL

16. MANAGEMENT REVIEW (1st)

a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS

SIGNATURE	TITLE	DATE

17. MANAGEMENT REVIEW (2nd - Chief Operations, Construction, Engineering, etc.)

a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS

SIGNATURE	TITLE	DATE

18. SAFETY AND OCCUPATIONAL HEALTH OFFICE REVIEW

a. ☐ CONCUR b. ☐ NON CONCUR c. ADDITIONAL ACTIONS/COMMENTS

SIGNATURE	TITLE	DATE

19. COMMAND APPROVAL

COMMENTS

COMMANDER SIGNATURE	DATE

* U.S. GOVERNMENT PRINTING OFFICE: 1993-0-791-757

10. ACCIDENT DESCRIPTION (Continuation)

13a. DIRECT CAUSE (Continuation)

(Addition to ENG Form 3394)

13b. INDIRECT CAUSES (Continuation)

14. ACTION(S) TAKEN, ANTICIPATED, OR RECOMMENDED TO ELIMINATE CAUSE(S) (Continuation)

(Addition to ENG Form 3394)

APPENDIX A
CONFINED SPACE PRE-ENTRY INSPECTION CHECKLIST

DATE: _____ **CLIENT:** _____

SPACE LOCATION AND DESCRIPTION: _____

_____

_____ **SPACE NUMBER** _____
(IF APPLICABLE)

PURPOSE OF ENTRY: _____

JOB NUMBER: _____

CLIENT CLASSIFICATION: ☐ NON-PERMIT ☐ PERMIT REQUIRED ☐ UNKNOWN*

____ NON-PERMIT DUE TO VENTILATION/MONITORING (Permit Space; Hazard Eliminated)

If permit required, reasons for classification**

ATMOSPHERIC

☐ Oxygen Deficient ☐ Oxygen Enriched
☐ LEL ☐ Flammable Dusts
☐ Toxics ☐ IDLH

ENGULFMENT HAZARDS

☐ Water/Liquids ☐ Solid Materials

INTERNAL CONFIGURATION

☐ Converging Walls ☐ Maze Construction
☐ Obstacle(s) in Space

OTHER RECOGIZED HAZARDS

☐ Energy/Mechanical ☐ Hot Work
☐ Use of Chemicals/Compressed Gases in Space
☐ Other Serious Hazard(s)**

List _____

_____

Technical Notes:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

*Space must be classified prior to entry

**If available, reference and/or attach Confined space Classification Form

PERMIT-REQUIRED CONFINED SPACE ENTRY	
Procedure Number: 26.1	Approval M. McSwain CSP, CIH

AIR MONITORING MEASUREMENTS

TESTS MADE	PERMISSIBLE ENTRY LEVEL	DEPTH	DISTANCE	BEFORE VENTILATION	AFTER VENTILATION
Oxygen	19.5% to 23.5%				
Lower Flammable Limit	< 10%				
Carbon Monoxide	< 25 ppm				
Hydrogen Sulfide	< 11 ppm				
Hydrocarbons	< 1ppm				

INSTRUMENTS

MAKE	MODEL	SERIAL NO.	CALIBRATION DATE

EQUIPMENT NECESSARY FOR ENTRY - CHECKLIST

EQUIPMENT	YES	NO
Confined Space Entry Permit Needed (Corporate Health & Safety Notified)	☐	☐
Authorized Entrants, Authorized Attendants, Entry Supervisor*	☐	☐
Lockout/Tagout Materials	☐	☐
Ventilation Fan, Hoses and Saddle Vent	☐	☐
Barriers, Danger Signs, Flags, Traffic Cones (devices)	☐	☐
Direct Reading Gas Monitor(s) with Current Bench Calibration	☐	☐
Safety Harness and Lifelines for Entrant and Standby Persons	☐	☐
Hoisting Equipment ☐ with Fall Protection	☐	☐
Fire Extinguisher (ABC)	☐	☐
First Aid and Infection Control Kit	☐	☐
Powered Communications ☐ Intrinsically Safe	☐	☐
Electric Equipment and Lighting ☐ Explosion Proof	☐	☐
Hardhat, Goggles, Boots, Gloves, Disposable Outerwear	☐	☐
Chemical Protective Clothing	☐	☐
Escape Bottles - 5 Minute/10 Minute (ESCBA)	☐	☐
Air Purifying Respirators with ESCBA	☐	☐
Supplied Air Respirators (Level B) ☐ Airline with ESCBA ☐ SCBA	☐	☐

***Please indicate dates of CSE training for authorized personnel**

PERMIT-REQUIRED CONFINED SPACE ENTRY	
Procedure Number: **26.1**	Approval M. McSwain CSP, CIH

CONFINED SPACE RESCUE TEAM ☐ ONSITE ☐ OFFSITE

Name: _____ Phone Number: _____

Contact Person: _____ Estimated Response Time: _____

☐ Rescue Team notified and available to respond to entry site when:
- Entrants are not wearing supplied air respirators: AND
- Entrants are not exposed to obvious IDLH or potential IDLH conditions; AND
- Entrants can be expected to "self-rescue" under normal circumstances; AND
- No other need for a standby rescue team.

☐ Rescue team notified and staged at entry site when:
- Entrants are wearing supplied air respirators; OR/AND
- Entrants are exposed to obvious IDLH or potential IDLH conditions; OR/AND
- Entrants would be expected to have difficulty in "self-rescue."

Sketch Confined Space - Ventilation Points - Monitoring Points

A copy of this document shall be reviewed by the Confined Space Entry Team Prior to Entry.

Inspector Signature: _____ Date: _____

Project Manager: _____ Date: _____

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ACCIDENT PREVENTION PLAN
OU-1 FORT ORD NATURAL RESERVE WELL DESTRUCTION AND NORTHWEST TREATMENT SYSTEM DECOMMISSIONING

APPENDIX C

HEALTH AND SAFETY POLICIES AND PROCEDURES

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HGL HydroGeoLogic, Inc Exceeding Expectations	**Health and Safety Procedure 06**	
	Approved by: Steve Davis Digitally signed by Steve Davis DN: cn=Steve Davis, o=HGL, ou=EHS, email=sdavis@hgl.com, c=US Date: 2014.12.18 11:49:47 -05'00'	Health and Safety Director
Personal Protective Equipment		H&S Procedure No.: 6
		Publication Date: March 2012
		Revision No.: 04
		Revision Date: December 2014
		Review Date: December 2015

1.0 PURPOSE

To provide guidance in the proper selection and use of personal protective equipment (PPE) and to support compliance with regulatory and client requirements for PPE. HydroGeoLogic, Inc. (HGL) staff must use PPE when engaged in activities where a potential exists for harmful exposure to chemical, biological, physical or mechanical hazards that cannot be controlled by other means.

2.0 SCOPE AND APPLICATION

This procedure applies to all HGL locations and all HGL activities.

3.0 GENERAL REQUIREMENTS

This procedure requires the following:

- Perform and document hazard evaluations for all work that may require use of PPE, prior to initiating the work.
- Implement other hazard controls rather than using PPE, whenever possible, such as removing the hazard, substituting less hazardous materials, implementing engineering/mechanical controls, or utilizing administrative controls.
- Purchase PPE as specified in HGL's corporate Personal Protective Equipment policy.
- Train personnel to use required PPE properly.
- Verify that PPE is used properly and provides adequate protection against credible hazards.

4.0 DEFINITIONS

None.

5.0 PROCEDURE

HGL initiates engineering and work practice controls to minimize the potential for employee exposure to chemical, biological, physical, or mechanical hazards. If potentially harmful hazards cannot be feasibly removed from the work environment or controlled by

administrative means, and if PPE will provide adequate hazard control, HGL provides employees with appropriate PPE and require its use. Hazard evaluations and selection of PPE will be conducted and documented as specified in HS Procedure 2 Hazard Evaluation, the Preliminary Hazard Assessment form (Appendix A), or other appropriate documentation.

5.1 PPE SELECTION

Select PPE based on:

- Planned work tasks;
- The toxic materials, physical agents, waste contaminants, or process chemicals known to be present;
- Concentrations of hazardous components in the waste media or process chemicals;
- The toxicology and the probable routes of entry into the body;
- Breakthrough times and permeability of PPE material;
- Known or expected airborne concentrations; and
- Potential for exposure to physical agents such as impact, puncture, falls, electrical, mechanical, hydraulic, pneumatic, thermal, nuclear, or non-ionizing radiation energy.

5.2 FITTING PPE

HGL provides employees with a choice of PPE in a selection of sizes from several different vendors. In training, HGL discusses and practices proper fitting and use of the PPE. Proper fit of PPE is critical to providing adequate protection. Proper fit is also associated with the comfort essential to the employees wearing the PPE provided.

5.3 PPE INSPECTION

Employees should inspect PPE before donning and periodically while in use. Visually inspect PPE for imperfect seams, uneven coatings, tears, and malfunctioning closures. If a defect is observed in protective clothing or in gloves, do not wear the defective item.

5.4 PPE DECONTAMINATION

If PPE will become contaminated with hazardous substances sufficient to pose a risk to personnel during removal of the PPE or pose a risk of transporting hazardous quantities of material offsite, a decontamination process must be implemented (see 29 CFR 1910.120 [k]). The decontamination process must address:

- **Type of Contaminant.** The extent of personnel decontamination is a function of the amount of the contaminant, its toxicity and its interaction with the PPE articles.
- **Amount of Contamination.** Gross contamination increases the probability of personal contact or the degradation and permeation.
- **Type and Level of PPE.** Clothing variations and different levels of protection may require adding or deleting stations to the decontamination line.
- **Work Function.** Employees performing tasks that will not bring them into contact with contaminants may not need to have their garments washed and rinsed while others in the Exclusion Zone, with potential direct contact with the hazardous material, will require a more thorough decontamination.
- **Location of the Contamination.** Contamination on the upper areas of protective clothing poses a greater risk to workers. Volatile compounds may generate a hazardous breathing concentration for both the worker and the decontamination personnel.

Confine decontamination activities to a designated area within the Contamination Reduction Zone, known as the Contamination Reduction Corridor. The Corridor controls access into and out of the Exclusion Zone and confines decontamination activities to a limited area. The size of the Corridor varies depending on the number of stations in the decontamination procedure, overall dimensions of the work control zones, and the amount of space available at the site.

Within the Corridor, set aside distinct areas for decontamination of personnel, portable field equipment, discarded clothing, and other items, as needed. Step-by-step procedures for decontamination of personnel wearing PPE Levels A, B and C are found in Appendix E.

5.5 TRAINING

HGL provides training for personnel provided with PPE in its use, care, capabilities, and limitations prior to using it in a hazardous work environment. At a minimum, cover the following in the training:

- When PPE must be worn.
- What PPE is necessary and the selection criteria used for this determination.
- The operation of the selected PPE, including capabilities and limitations.
- The nature of the hazards and the consequences of not using the PPE.
- Donning, doffing, checking, fitting, and using PPE.
- The user's responsibility for decontamination, maintenance and repair of PPE.

- Limitations of the PPE.
- Useful life and disposal of the PPE.
- How to recognize PPE failure.
- Emergency procedures and self-rescue in the event of PPE failure.

6.0 RESPONSIBILITIES

6.1 CORPORATE HEALTH AND SAFETY DIRECTOR (CHSD)

- Approve this procedure and subsequent revisions.
- Revise this procedure as needed to address regulatory or other changes.
- Verify the implementation of this procedure.

6.2 SUPERVISOR (OFFICE AND PROJECT MANAGERS)

- Serve as a role model for safe work and use of any required PPE.
- Prepare or review and approve hazard evaluations for work under their purview.
- Provide adequate resources to control hazards and acquire PPE, as necessary.
- Enforce the requirements of applicable hazard evaluations, including PPE use.

6.3 OFFICE AND SITE HEALTH AND SAFETY OFFICERS

- Serve as a role model for safe work and use of any required PPE.
- Prepare hazard evaluations and specify PPE, as requested.
- Verify that hazard controls, including PPE, are adequate and effective by performing inspections, air monitoring or sampling, and other evaluations.
- Take steps to correct inadequate hazard controls by stopping or modifying the task or modifying PPE.
- Notify the responsible manager and CHSD if the planned hazard controls are found to be inadequate.

6.4 ALL HGL PERSONNEL

- Use the required hazard controls, including PPE.
- Understand how to use and care for PPE.

- Stop or question work that does not meet applicable requirements or that may be unsafe.

7.0 RECORDS RETENTION

Maintain documentation, specifically hazard evaluations, generated as a result of this program in accordance with Document Control requirements of the HGL Corporate Quality Assurance Manual.

8.0 REFERENCES

29 CFR 1910, Subpart I, Personal Protective Equipment

29 CFR 1910.133, Eye and Face Protection

29 CFR 1910.135, Occupational Head Protection

29 CFR 1910.136, Occupational Foot Protection

EM 385-1-1, US Army Corps of Engineers Safety and Health Requirements Manual

APPENDICES

APPENDIX A: Preliminary Hazard Assessment Checklist

APPENDIX B: PPE Specifications, Capabilities, and Limitations

APPENDIX C: PPE Ensembles for Hazardous Waste Operations Levels of Protection for Levels A – D

APPENDIX D: Airborne Contaminant Action Levels for Selection of PPE Ensembles

APPENDIX E: Minimum and Maximum Decontamination Stations and Equipment for PPE Ensemble Levels A, B and C

HGL HydroGeoLogic, Inc Exceeding Expectations	**Health and Safety Procedure 07**	
	Approved by: Steve Davis Digitally signed by Steve Davis DN: cn=Steve Davis, o=HGL, ou=EHS, email=sdavis@hgl.com, c=US Date: 2015.02.22 20:10:40 -05'00'	Health and Safety Director
Respiratory Protection		H&S Procedure No.: 7
		Publication Date: March 2012
		Revision No.: 05
		Revision Date: February 2015
		Review Date: February 2016

1.0 PURPOSE

To provide guidance in the proper selection and use of respiratory protection and to support compliance with regulatory and client requirements.

2.0 SCOPE AND APPLICATION

This procedure applies to all HGL locations and to all work which requires or may require HGL personnel to wear respiratory protection.

3.0 GENERAL REQUIREMENTS

This procedure requires the following:

- Perform and document hazard evaluations for all work that may require use of respirators, prior to initiating the work.
- Implement other hazard controls rather than using respirators, whenever possible, such as removing the hazard, substituting less hazardous materials, implementing engineering/mechanical controls, or utilizing administrative controls.
- Confirm that planned respirator use will provide adequate protection against the expected exposure.
- Train personnel to use required respirators properly.
- Require each respirator user to have a successful fit test with the type and size respirator being used, within the prior 12 months.
- Require each respirator user to have a current medical clearance for respirator use.
- Monitor use of respirators to verify that employees are adequately protected from harmful exposure.
- Provide personnel who choose to voluntarily use respirators with a copy or access to Appendix C: Information for Employees Using Respirators When Not Required Under the Standard (Appendix D to 29 CFR 1910.134).

4.0 DEFINITIONS

Air-purifying – a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

Assigned Protection Factor (APF) – level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by this section.

Atmosphere-supplying respirator – a respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators and self-contained breathing apparatus units.

Canister or ***cartridge*** – a container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.

Demand respirator – an atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.

Emergency situation – any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.

Employee exposure – exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.

End-of-Service-Life Indicator (ESLI) – a system that warns the respirator user of the approach of the end of adequate respiratory protection, e.g., that the sorbent is approaching saturation or is no longer effective.

Escape-only respirator – a respirator intended to be used only for emergency exit.

Filter or ***air purifying element*** – a component used in respirators to remove solid or liquid aerosols from the inspired air.

Filtering Facepiece (dust mask) – a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

Fit factor – a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

Fit test – the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (See also *Qualitative Fit Test* and *Quantitative Fit Test*.)

High Efficiency Particulate Air (HEPA) filter – a filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.

Hood – a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

Immediately Dangerous to Life or Health (IDLH) – an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

Loose-fitting facepiece – a respiratory inlet covering that is designed to form a partial seal with the face.

Maximum Use Concentration (MUC) – the maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator, and is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance. The MUC can be determined mathematically by multiplying the APF specified for a respirator by the required ACGIH occupational exposure limit. When no OSHA exposure limit is available for a hazardous substance, an employer must determine an MUC on the basis of relevant available information and informed professional judgment.

Negative pressure respirator (tight fitting) – a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

Oxygen deficient atmosphere – an atmosphere with oxygen content below 19.5% by volume.

Physician or other Licensed Health Care Professional (PLHCP) – an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required.

Positive pressure respirator – a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

Powered Air-Purifying Respirator (PAPR) – an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

Pressure demand respirator – a positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.

Qualitative Fit Test (QLFT) – a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

Quantitative Fit Test (QNFT) – an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Respiratory inlet covering – the portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit, or a mouthpiece respirator with nose clamp.

Self-Contained Breathing Apparatus (SCBA) – an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

Service life – the period of time that a respirator, filter or sorbent or other respiratory equipment provides adequate protection to the wearer.

Supplied-Air Respirator (SAR) or ***airline respirator*** – an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

Tight-fitting facepiece – a respiratory inlet covering that forms a complete seal with the face.

User seal check – an action conducted by the respirator user to determine if the respirator is properly seated to the face.

5.0 PROCEDURE

HGL initiates engineering and work practice controls to minimize the potential for harmful exposure to airborne hazards. If potentially harmful exposures cannot be feasibly removed from the work environment, controlled through engineering (ventilation, process changes, etc.) or administrative means, and if respirators will provide adequate exposure control, HGL provides employees with appropriate respirators and requires their use. Hazard evaluations and selection of respirators will be conducted and documented as specified in HS Procedure 2, Hazard Evaluation.

5.1 HAZARD EVALUATION AND RESPIRATOR SELECTION

Select respirators based on the respiratory hazard(s) to which an employee may be exposed, the tasks to be performed, and environmental and user factors (such as heat, space limitations, and other contaminants present) that could affect respirator performance and reliability. Calculate a reasonable estimate of probable employee exposures based upon hazardous chemical quantities and concentrations, an identification of the chemical state and physical form, ambient conditions, site activities, and other factors as appropriate.

Unless otherwise approved by the HGL Corporate H&S Staff, at a minimum, NIOSH-approved full face respirators with appropriate chemical cartridges and filters will be worn whenever air purifying respirators are required.

HGL utilizes full and half-face respirators from 3M, North, and MSA. **Each office H&S Coordinator will stock sufficient numbers of each respirator, including spare parts and cartridges, based upon the fit test results for their personnel and the types and frequency of work requiring respiratory protection.**

Respirators with tight-fitting face pieces can not be used by employees who have:

- Facial hair that comes between the sealing surface of the face piece and the face or that interferes with valve function; or
- Any condition that interferes with the face-to-face piece seal or valve function.

If an employee wears corrective glasses or goggles or other personal protective equipment, they must do so in a manner that does not interfere with the seal of the face piece.

> *See the PPE Policy #30 in the HGL Policy Manual or the PPE Program, Section 06, for corrective inserts reimbursement rates.*

For all tight-fitting respirators, employees must perform a user seal check each time they put on the respirator.

Employees must leave the respirator use area:

- To wash their faces and respirator face pieces as necessary to prevent eye or skin irritation;
- If they detect breakthrough, changes in breathing resistance, or leakage; or
- To replace the respirator or the filter or cartridge.

Employees who wish to voluntarily use respiratory protection (other than dust masks) shall do so in accordance with the requirements of this policy.

Respiratory protection use in immediately dangerous to life or health (IDLH) atmospheres must be reviewed and approved by HGL's Corporate H&S Director prior to entry.

5.2 TRAINING

Train respirator users on the following topics.

- Why the respirator is necessary and how improper fit, usage, or maintenance can compromise protection;
- Limitations and capabilities of the respirator;
- Use in emergency situations, including situations in which the respirator malfunctions;
- How to inspect, put on and remove, use, and check seals;
- Maintenance and storage procedures;
- Medical signs and symptoms that may limit or prevent the effective use of respirators; and
- The general requirements of the OSHA Respiratory Protection Standard (29 CFR 1910.134).

Retraining must be administered annually, and when the following situations occur:

- Changes in the workplace or the type of respirator renders previous training obsolete;
- Inadequacies in the employee's knowledge or use of the respirator indicate that they have not retained the requisite understanding or skill; or
- Any other situation arises in which retraining appears necessary to ensure safe use.

5.3 FIT TESTING AND MEDICAL CLEARANCE

Before being assigned a tight-fitting respirator, each employee must be successfully be fit-tested with the type and size respirator to be used. Fit tests expire 12 months from the date of issue.

Respirator users must be medically cleared for respirator use in accordance with HGL's Medical Surveillance Program prior to respirator use.

5.4 CARTRIDGE CHANGE-OUT SCHEDULES

If a respirator cartridge is equipped with an end of service life indicator (ESLI); that information will be used to develop a change out schedule.

If there is no ESLI appropriate for conditions which will be encountered, a change schedule for organic vapor cartridges must be developed. In these instances, the information and data relied upon and the basis for the change schedule and the basis for reliance on the data must be documented. Such information will be furnished in the project's SSHP.

When developing change out schedules, follow the respirator manufacturer's recommendations. Respirator manufacturer service-life software can be found on the web sites of HGL's respirator manufacturers; 3M, MSA, and North.

Cartridge Change out Schedule Documentation, Mixture Calculation Worksheet and Respirator/Cartridge Usage Log are in Appendix B.

When developing change out schedules, the respirator manufacturer's recommendations shall be followed if available. If specific manufacturer's information is not available, use the following guidelines to determine the change out schedule:

- If the chemical's boiling point is $>70°C$ and the concentration is less than 200 parts per million (ppm) a service life of eight hours at a normal work rate should be used.
- If the chemical's boiling point is $<70°C$ a service life of four hours at a normal work rate should be used.
- Service life is inversely proportional to work rate. If employees are performing at heavy work rates (i.e., shoveling, heavy lifting), the service life should be reduced by half.
- If the chemical concentration is reduced by a factor of 10, increase the service life by a factor of five.
- If humidity is above 85%, reduce service life by 50%.

Regardless of the change out schedule, chemical cartridges must be changed whenever odor, taste, irritation, breathing resistance, or other indications of breakthrough or failure are experienced.

Particulate filters and disposable particulate respirators will be replaced in accordance with the manufacturer's recommendations or when breathing resistance is experienced.

5.5 INSPECTION

All respirators must be inspected before each use and during cleaning. Respirator inspections must include:

- A check of respirator function, tightness of connections, and the condition of the various parts including, but not limited to, the face piece, head straps, valves, connecting tube, and cartridges or filters; and
- A check of elastomeric parts for pliability and signs of deterioration.

All respirators maintained for use in emergency situations must be inspected at least monthly in accordance with the manufacturer's recommendations; the inspections must be documented (a hang tag is sufficient); and, the respirators shall be checked for proper function before and after each use. For respirators maintained for emergency use, the following will be done:

- Certify the respirator by documenting the date the inspection was performed, the name (or signature) of the person who made the inspection, the findings, required remedial action, and a serial number or other means of identifying the inspected respirator; and
- Provide this information on a tag or label that is attached to the storage compartment for the respirator, is kept with the respirator, or is included in inspection reports stored as paper or electronic files. This information shall be maintained until replaced following a subsequent certification.
- Self-contained breathing apparatus (SCBA's) shall be inspected monthly. Cylinders must be maintained in a fully charged state and recharged when the pressure falls to 90% of the manufacturer's recommended pressure level. A check shall be made that the regulator and warning devices function properly.

Respirators that fail an inspection must be removed from service, and discarded or repaired or adjusted only by persons appropriately trained to perform such operations and only the manufacturer's parts designed for the respirator shall be used.

5.6 CLEANING

Employees shall maintain their respirators in clean, sanitary, and good working order. Respirators issued for the exclusive use of an employee shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition. Respirators issued to more than one employee shall be cleaned and disinfected before being worn by different individuals. Respirators maintained for emergency use shall be cleaned and disinfected after each use.

5.7 MAINTENANCE

All respirators must be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they shall be packed or stored to prevent deformation of the face piece and exhalation valve.

All filters and cartridges must retain the NIOSH approval label and color coding.

In facilities equipped with Emergency Respiratory Protection, emergency respirators shall be kept accessible to the work area but located away from the immediate hazard and stored in compartments or in covers that are clearly marked as containing emergency respirators.

Repairs shall be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed. Repairs to SCBA or air supplied reducing and admission valves, respirator hoses, tanks, alarms or regulators will only be made by the manufacturer. SCBA cylinders must be tested and maintained as prescribed by the manufacturer.

5.8 BREATHING AIR

Compressed breathing air shall meet at least the requirements for Grade D breathing air described in American National Standards Institute/Compressed Gas Association Commodity Specification for Air, G-7.1-2011 and must be supplied by established vendors with a demonstrated history of providing breathing air.

Compressors used to supply breathing air to respirators shall be constructed and situated so as to:

- Prevent entry of contaminated air into the air-supply system;
- Minimize moisture content so that the dew point at 1 atmosphere pressure is 10°F below the ambient temperature;
- Have suitable in-line air-purifying sorbent beds and filters which are maintained and replaced or refurbished periodically following the manufacturer's instructions; and,
- Have a tag containing the most recent change date and the signature of the person authorized to perform the change. The tag shall be maintained at the compressor.
- Provide air with less than 10 ppm carbon monoxide.

For oil-lubricated compressors, high-temperature or carbon monoxide alarm, or both, shall be used to monitor carbon monoxide levels. If only high-temperature alarms are used, the air

supply shall be monitored at intervals sufficient to prevent carbon monoxide in the breathing air from exceeding 10 ppm. Breathing air couplings must be incompatible with outlets for non-respirable worksite air or other gas systems.

Breathing air supply systems must be monitored during use to preclude unplanned and potentially dangerous interruptions in air supply.

5.9 PROGRAM EVALUATIONS

Program evaluations shall be conducted by the Corporate H&S Director annually, or more often as necessary, to ensure that the provisions of this Program are being effectively implemented and that it continues to be effective.

Regular consultations with employees required to use respirators shall be conducted to assess employees' views on Program effectiveness and identify problems. Any problems that are identified during this assessment shall be corrected. Documentation of evaluations shall be retained.

6.0 RESPONSIBILITIES

6.1 CORPORATE H&S DIRECTOR

The Corporate H&S Director is responsible to:

- Develop, review and periodically update this Program;
- Specify the types of respirators needed;
- Manage the medical clearance program; and
- Review HGL SSHPs for technical accuracy and appropriateness for the anticipated exposures.

6.2 PROJECT MANAGERS/OFFICE MANAGERS

Project Managers/Office Managers are responsible to:

- Utilize engineering or administrative controls to control hazardous atmospheres whenever feasible, rather than using respirators.
- Ensure that all employees, selected for a project requiring the use of a respirator, fulfill all training, medical, and fit testing requirements of the program. Inform the Site Safety Officer (SSO) of any training needs or medical restrictions.
- Require that the appropriate respiratory protection be worn on the job site.

- Ensure cleaning, storage, maintenance, and inspections are conducted as needed.

6.3 SSO / H&S COORDINATORS

A project's SSO and/or the H&S Coordinator are responsible to:

- Coordinate training and fit testing and/or contact corporate health and safety to arrange for training and fit testing.
- Maintain field copies of training, fit testing, and inspection records for all site personnel.
- Provide fit testing certifications for upload to the HGL training and certification database.
- Stock approved respiratory protection equipment, spare parts and cartridges needed for the project.
- Verify program execution including respirator use, cartridge change-out, respirator cleaning, and respirator maintenance.
- Verify that respirator use provides adequate protection.

6.4 EMPLOYEES

Each employee is responsible to:

- Follow instructions received in training;
- Inspect, clean, maintain, and properly store respirators;
- Complete medical surveillance requirements and abide by all medical restrictions;
- Properly wear assigned respiratory protective equipment as assigned; and
- Notify the SSHO and/or the site supervisor of cartridge or other respirator failure.

7.0 RECORDS RETENTION

Maintain documentation generated as a result of this program in accordance with Document Control requirements of the HGL Corporate Quality Assurance Manual. At a minimum training and fit test records must be retained until the training or fit testing is renewed.

8.0 REFERENCES

OSHA 29 CFR 1910.134, *Respiratory Protection.*

OSHA 29 CFR 1926.103, *Construction-Respiratory Protection.*

APPENDICES

APPENDIX A: User Seal Check Procedures (29 CFR 1910.134 Appendix B-1)

APPENDIX B: Mixture Calculation Worksheet, Cartridge Change Schedule, and Respirator Usage Log

APPENDIX C: Information for Employees Using Respirators When Not Required Under the Standard (Appendix D to 29 CFR 1910.134)

HGL HydroGeoLogic, Inc Exceeding Expectations	**Health and Safety Procedure 12**	
	Approved by: Steve Davis Digitally signed by Steve Davis DN: cn=Steve Davis, o=HGL, ou=EHS, email=sdavis@hgl.com, c=US Date: 2015.08.19 09:06:07 -04'00'	Health and Safety Director
Control of Hazardous Energy Program	H&S Procedure No.: 12	
	Publication Date: March 2012	
	Revision No.: 02	
	Revision Date: July 2015	
	Review Date: July 2016	

1.0 PURPOSE

The purpose of this program is to prevent harm to personnel due to the unexpected release of energy, particularly when employees construct, install, set up, adjust, inspect, modify, maintain, or service machines or equipment. The fundamental requirements are to shut down and lock out or tag-out equipment during service, maintenance, inspection or any other activities that expose personnel to potentially harmful release of energy. A secondary purpose is to comply with the Control of Hazardous Energy (Lockout/Tagout) standard, 29 CFR 1910.147 and 29 CFR 1926.416, the OSHA regulation that addresses electrical energy control in the construction industry.

2.0 SCOPE AND APPLICATION

This program applies to any work which exposes HGL employees and HGL temporary employees to the unplanned and potentially harmful release of energy such as; electricity, pressurized fluids, steam, movement, gravity, heat, etc. It applies to situations where personnel work on or near systems or equipment that produce, use, or store hazardous energy and that have the potential to harm personnel through the unplanned release of energy. Examples of such work include equipment inspection, testing, and maintenance tasks which require removal of protective guards. HGL subcontractors that perform this work must have their own processes that meet or exceed OSHA regulations and client requirements.

3.0 GENERAL REQUIRMENTS

- Understand the equipment to be worked on or around, the potential hazards of unplanned energy releases, and hazard controls. Only attempt to work on equipment if you have the proper tools and equipment.
- Shut down, isolate, and lock all sources of energy to equipment that have a potential to cause harm by unexpected release of energy whenever personnel will remove guards or otherwise be exposed to the hazardous energy. Use tagout devices to indicate the hazard and warn against activating the equipment when it is not possible to lock such equipment.
- Locks or tags are to be removed **only** by the individual that placed them on the equipment rendering them “Out of Service”. If this is not possible the supervisor may remove locks or tags after first going through the specified removal process.

- Return equipment to safe status (replace guards, exit the hazardous area, etc.) prior to removing locks or tags and re-activating the equipment.
- Train staff in the applicable hazards and hazard controls.

4.0 DEFINITIONS

Affected employee – An employee who works in an energy control area. The affected employee cannot service, maintain, or inspect and is not responsible for carrying out the energy control program.

Authorized employee – An employee who services, maintains, or inspects machines or equipment. Authorized employees are responsible for carrying out the energy control procedures for their protection and the protection of others.

Energized – A machine or piece of equipment connected to an energy source or containing residual or stored energy.

Energy Control Program – A set of written equipment specific procedures that clearly and specifically outlines the scope, purpose, authorization, rules, and techniques to be used by staff for the control of hazardous energy, at a specific location. Lockout/tagout procedures and equipment may be one aspect of an energy control program.

Energy-isolating device – Any mechanical device that physically prevents the transmission or release of energy. Examples of energy-isolating devices include manually operated electrical circuit breakers, disconnect switches, line valves, and pipe blocks.

Energy source – Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, gravity, or other type of energy.

Lockout (LO) – The placement of a lockout device on an energy-isolating device, according to established procedure, that ensures that the energy-isolating device and the controlled equipment cannot be operated until the lockout device is removed.

Lockout device – Any device that uses a positive means such as a lock, either key or combination type, to hold an energy-isolating device in a safe position, preventing energizing of machinery or equipment. When properly installed, blank pipe flanges or bolted pipe slip blinds are lockout devices.

Tagout (TO) – The placement of a tagout device on an energy-isolating device, according to established procedure, warning others that the energy-isolating device and controlled equipment may not be operated until the tagout device is removed.

Tagout device **–** Any prominent warning device, such as a tag and a means of attachment that can be securely fastened to an energy-isolating device according to an established procedure. The tag indicates that the machine or equipment is "Out of Service" and not to be operated until the removal of the tagout device according to the energy control procedure.

5.0 PROCEDURE

5.1 BASIC REQUIREMENTS

- Protect personnel from the hazards of unplanned energy release during tasks such as permit-required confined space entry and equipment maintenance, repair, or inspection. In general, these requirements apply when protective guards are removed from equipment or personnel enter areas that are not intended for worker occupancy. In general, these requirements do not apply to routine work where protective guards are in place and personnel do not enter areas that are not designed for occupancy.
- Identify and assess the potential energy sources that employees may be exposed to when protective guards are removed or when personnel enter areas that are not designed for occupancy. Potential hazardous energy sources include, but may not be limited to, electricity (electrocution and arc flash), pressurized gasses, gravity (components that may fall on personnel), moving parts (agitators, blades, grinders), steam, ionizing radiation, thermal systems (heaters, chillers), movement or engulfment by particulate matter or liquids, etc.
- Shut down, isolate, and lock all sources of energy to equipment that have a potential to cause harm by unplanned release of energy whenever personnel will remove guards, enter areas that are not designed for occupancy, or otherwise create a potential exposure to the hazardous energy. Use tagout devices to indicate the hazard and warn against activating the equipment when it is not possible to lock such equipment.
- See HGL Health and Safety Procedures 11 – Electrical Safety Program and 26 – Permit-Required Confined Space Entry for additional information.
- Ensure that personnel who will perform such work are properly trained and understand the equipment to be worked on or around, the potential hazards of unplanned energy releases, and hazard controls. Only repair or maintain equipment if you have the proper tools.
- Ensure that locks or tags are to be removed only by the individual that placed them. If this is not possible, the supervisor may remove them after first going through the specified removal process to ensure that workers are not endangered by removal.

- The simple lockout procedure in Appendix A is provided to assist HGL supervisors in developing and reviewing equipment-specific lockout/tagout procedures.
- When the energy isolating devices are not lockable, tagout may be used, provided that employees receive additional training and more rigorous periodic inspections are conducted by the Site Safety Officer (SSO).
- For more complex energy source systems, more comprehensive procedures may need to be developed, documented and utilized.
- Lockout and tagout devices must be specific to this purpose, must be capable of withstanding the ambient conditions, must identify the authorized person who placed the devices and tagout devices must be labeled with warnings of the hazards and specify that they are not to be removed except by the person who placed them.

5.2 EQUIPMENT SPECIFIC LOCKOUT/TAGOUT TEMPLATE

Equipment specific procedures will be developed by experienced and knowledgeable personnel and then reviewed by the supervisor. These procedures will provide the following information:

- Administrative information such as procedure numbers, procedure development dates;
- Identification of potential energy sources(s);
- Shutdown preparation;
- Notification of affected and other employees;
- Machine or equipment shutdown;
- Machine or equipment isolation;
- Application of LO/TO devices;
- Stored energy management; and
- Isolation verification.

5.3 LOCK OR TAG REMOVAL BY AUTHORIZED EMPLOYEE

In most cases, the HGL authorized employee who applied the lockout/tagout will be responsible to remove the lockout/tag and restore equipment to service. The sequence of lockout/tagout removal steps are:

- Check machine/equipment and the immediate area ensuring that non-essential items have been removed, equipment is operationally intact and unimpaired for successful re-energization/restart and operation.
- Ensure employees are safely removed from area.
- Remove locks/tags in the reverse order of their application during all lockout/tagout steps in order to re-energize equipment.
- Notify affected employees that servicing and maintenance is completed and the machine equipment is ready for use.
- Authorized employee will complete required HGL paperwork and submit to supervisor.

5.4 LOCK OR TAG REMOVAL BY OTHERS

When the authorized employee who applied the lockout or tagout device is not available to remove it, that device may be removed under the direction of the supervisor.
The supervisor must:

- Verify that the authorized employee who locked out the equipment is not available or on the site.
- Making all reasonable efforts to contact the authorized employee to inform him/her that his/her lockout/tagout device will be removed.
- Visually confirm that all employees, tools, and materials are clear of the equipment.
- Remove the lockout or tagout device as described above.
- Make sure the authorized employee is notified that his/her lock has been removed before he/she resumes work at the facility.

5.5 GROUP LOCKOUT/TAGOUT

When more than one staff member or more than one employer services, maintains, or inspects machines or equipment covered by this procedure, they shall use a procedure that affords each worker a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device. The following procedures must be implemented to provide protection for all employees:

- The supervisor will designate a “primary” authorized employee, who is responsible for all of the employees working under the protection of the group lockout device.

- The "primary" authorized employee is in charge of the process and will place the group lockout device.
- The primary authorized employee will notify affected employees before and after lockout procedures are performed.
- Each authorized employee must place his/her own personal lockout/tagout device on the energy isolating device and shall remove his/her own devices when he/she stops working on the machine or equipment.
- When an energy isolating device cannot accept locks, a multiple tagout system must be used.

5.6 SHIFT OR PERSONNEL CHANGE

If lockout/tagout work will extend over multiple shifts, the continuity of protection must be maintained. Two steps are required:

- If a lockout/tagout procedure will extend into the following shift, the authorized employee who originally placed his/her personal lock must remove it.
- The lock must immediately be replaced with the personal lock of the next authorized employee to continue the repair or maintenance on that equipment or machine.

5.7 CORD AND PLUG CONNECTED EQUIPMENT

The following procedures are used when servicing or maintaining cord and plug equipment:

- Unplug equipment from its electrical outlet.
- Maintain control of the plug to prevent it from being re-inserted in an outlet. If it is not possible to maintain direct control of the plug, utilize a secure method to lock it out such as placing a lockable cover over the plug.
- Ensure that all other forms of hazardous energy are also controlled.

5.8 OUTSIDE CONTRACTORS

Whenever outside servicing, maintenance, or inspection personnel are to be engaged in activities that may expose HGL employees to hazardous energy sources, each shall inform the other of their respective lockout/tagout procedures. The guidance for contractor procedures is as follows:

- Verify that the contractor has a lockout/tagout procedure and that they provide or ensure training of their personnel.
- Ensure that all potentially affected HGL personnel are aware of the contractor's work and will not be endangered by the work.
- Coordinate with contractor to ensure that their personnel are not endangered by HGL activities.

5.9 TAG LIMITATIONS

Tags are only used when equipment cannot be locked out. The following information points out the limitations of tags:

- Tags are warning devices affixed to energy isolating devices and do not provide the physical restraint that is provided by a lock.
- When a tag is attached to an energy isolating device, it is not to be removed without the express consent of the authorized person responsible for it. It is never to be bypassed, ignored, or otherwise defeated.
- In order to be effective, tags must be legible and understandable by all of the authorized, affected, and other employees whose work operations are, or may be, in the area.
- Tags and their means of attachment must be made of materials that will withstand the environmental conditions encountered in the workplace.
- Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

5.10 TRAINING REQUIREMENTS

- Each authorized employee must receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.
- Each affected employee, who is exposed to a risk of hazardous energy release, must be instructed in the purpose and use of the energy control program and about the prohibition relating to attempts to restart or re-energize locked out or tagged out machines or equipment, and safe clearance distances from energized equipment.
- When tagout systems are used, employees must be trained in the limitations of tags.
- Retraining must be provided for authorized and affected employees when there is a change in equipment or processes that presents a new hazard.

Refer to the training requirement in the HSP Electrical Safety Section 11 for additional information.

6.0 RESPONSIBILITIES

6.1 PRESIDENT, CHIEF OPERATING OFFICER, DIVISIONAL VICE PRESIDENTS

- Be a role model for safety.
- Provide adequate resources to enable safe work. When tagout systems are used, ensure that supervisors know that employees must be trained in the limitations of tags.
- Maintain a general awareness of procedural requirements.

6.2 CORPORATE HEALTH AND SAFETY DIRECTOR

- Be a role model for safety.
- Approve this program and subsequent revisions.
- Provide support and assistance in the implementation of this program.

6.3 OFFICE MANAGERS

- Be a role model for safety.
- Maintain a general awareness of the applicable portions of these requirements.
- Maintain an awareness of potentially hazardous energy sources on supervised work and ensure that adequate controls are in place.

6.4 OFFICE HEALTH AND SAFETY OFFICERS

- Be a role model for safety.
- Maintain a general awareness of the applicable portions of these requirements.
- Maintain an awareness of hazardous energy sources in the office and on work managed by the office.
- Verify that energy hazards in the office are controlled.

6.5 SUPERVISORS AND PROJECT MANAGERS

- Ensure that a written, equipment-specific, Lockout/Tagout Procedure is developed for work in which HGL personnel are potentially exposed to the unplanned release of hazardous energy.
- Ensure that personnel authorized to perform Lockout/Tagout are properly trained.
- Procure a copy of the client's lockout/tagout procedures for each piece of client equipment that a HGL employee may be required to service or maintain.
- Procure appropriate energy control devices for project tasks.
- Coordinate HGL's energy control programs with those of the owner or contractor.
- Ensure that staff adheres to approved procedures.
- Keep records of approved procedures and their use.

6.6 EMPLOYEES

- Follow the energy control procedures.
- Alert supervisor if proper equipment is not available or there are uncontrolled hazards.

7.0 RECORDS

Collect and maintain documentation generated as a result of this program in accordance with Document Control requirements of the HGL Corporate Quality Assurance Manual.

7.1 LOCKOUT/TAGOUT DOCUMENTS

The supervisor or SSHO will maintain equipment specific lockout/tagout procedures for the duration of work activities.

7.2 TRAINING RECORDS

Training records will include the following information:

- The dates of the training sessions.
- The contents or a summary of the training sessions.
- The names and qualifications of persons conducting the training.
- The names and job titles of persons attending the training sessions.

8.0 REFERENCES

- OSHA 29 CFR 1910.147, *The Control of Hazardous Energy (lockout/tagout)_*
- OSHA 29 CFR 1926 Subpart K – *Electrical*
- HGL Health and Safety Procedure 11, *Electrical Safety Program*
- HGL Health and Safety Procedure 26, *Permit-Required Confined Space Entry*

APPENDIX A
LOCKOUT/TAGOUT PROCEDURE

Equipment _____ Location _____

Date _____ Written by _____

Make Notifications

Notify affected employee(s) that a lockout is required, the reason for the lockout, and the expected duration.

Take all necessary equipment, tools, and personal protective equipment to the job site.

Consider hazards associated with the work you will be doing and gather the tools and equipment needed to do the job safely.

Machine or Equipment Shutdown

Determine all sources of energy feeding into the machine or equipment. Describe the steps needed to shut down the equipment.

Isolation and Lockout/Tagout

Describe steps needed to isolate equipment from all energy sources, including the location(s) to apply lockout/tagout devices. If a lockout device cannot be applied, list the location of the tagout device and any additional precautions taken to ensure the level of safety is equal to that of a lockout device.

Release Stored Energy

List any devices that may contain stored energy and the process to safely release or contain this energy. Examples include, but are not limited to, capacitors, springs, hydraulic/pneumatic cylinders, and pressurized piping.

Verification of Isolation

To ensure that all energy sources have been isolated; 1) Ensure that no personnel can be exposed to operating machinery or equipment, 2) Operate all controls to ensure that the equipment will not operate. List all controls that need to be tested and all indicators that should be observed to ensure the equipment has been isolated from all energy sources. CAUTION: Ensure all controls have been returned to the off or neutral position upon completion of the test.

Jogging or Cycling (If applicable)

If, during repair or maintenance activities, the machine or equipment is required to be jogged or cycled, list the location of lockout/tagout device(s) that can be removed to accomplish this. Only the lockout/tagout devices absolutely necessary to allow the equipment or machine to be jogged or cycled should be removed. After the equipment or machine has been cycled or jogged, the lockout/tagout devices shall be reapplied and above steps shall be repeated prior to commencing work.

Release from Lockout/Tagout and Restoring to Service

- Make sure all tools and other materials have been removed.
- Make sure machines are fully reassembled and guards and other safety devices have been reinstalled.
- Check the work area to ensure that all employees are clear of the equipment or machine.
- Verify that all controls are in their neutral or off position.
- Each lockout/tagout device shall be removed from each energy isolation device by the employee who applied the device.
- Indicate here any steps needed to safely re-energize the machine or equipment.

- Notify all affected employees that the lockout/tagout devices have been removed and the machine or equipment is safe for use.

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HGL HydroGeoLogic, Inc Exceeding Expectations	**Health and Safety Procedure 14.1**	
	Approved by: Steve Davis Digitally signed by Steve Davis DN: cn=Steve Davis, o=HGL, ou=EHS, email=sdavis@hgl.com, c=US Date: 2015.08.27 13:53:39 -04'00'	Health and Safety Director
Heat Stress Program		H&S Procedure No.: 14.1
		Publication Date: 12/2011
		Revision No.: 01
		Revision Date: August 2015
		Review Date: August 2016

1.0 PURPOSE

The purpose of this document is to decrease the probability of heat related illnesses such as heat stroke and heat exhaustion, by specifying heat stress hazard controls and providing associated guidance.

2.0 SCOPE AND APPLICATION

This procedure applies to work performed by HGL personnel, and HGL temporary personnel that poses a heat stress hazard. It applies to work performed at temperatures of 75° Fahrenheit (F) or more and to work performed while wearing impermeable clothing such as coated Tyvek suits.

3.0 GENERAL REQUIREMENTS

This procedure requires at least the following actions:

- Provide classroom or onsite training on the signs and symptoms of heat-related illnesses, contributing factors, prevention, and treatment. Onsite training can occur during the project kick-off briefing and/or during tailgate safety meetings.
- Provide chilled drinking water and/or electrolyte replacement drinks and encourage personnel to drink regularly. Four cups per hour or two gallons a day is recommended, if perspiring profusely.
- Implement a buddy system so that personnel will monitor each other for signs of heat illnesses such as heat stroke, heat exhaustion, and fainting.
- Monitor ambient conditions using OSHA Heat Safety Tool (cell phone application), local weather forecasts for Heat Index, Wet Bulb Globe Temperature index, or other appropriate method when temperatures exceed 75° F and include the results as part of the decision process to establish scheduled breaks to prevent heat induced illnesses.
- Provide shaded or air conditioned break areas and schedule at least three breaks per day to allow personnel to cool down if temperatures exceed 80° F. Adjust the frequency and length of breaks based on monitoring of ambient conditions, physiological monitoring, visual observation of workers, and/or feedback from workers. Schedule breaks every hour at higher temperatures or if personnel

experience signs of heat exhaustion. Consider additional or longer breaks if personnel are not acclimated to the heat.

- Conduct physiological monitoring such as heart rate or core temperature monitoring when impermeable clothing is worn in temperatures greater than 75° F and use the results to control the length and duration of breaks.
- Consider additional controls such as providing continuous shade, personal cooling products such as water-retentive bandanas, cooling vests, fans, starting work earlier in the day, or task modification to decrease physical exertion if temperatures are extreme or if personnel report repeated heat-stress related problems.
- Treat heat stroke (indicated by high body temperature, unconsciousness, incoherence, etc.) as a medical emergency. Call 911 and provide immediate cooling using damp towels, air conditioning or other means. Notify WorkCare and HGL corporate health and safety after emergency care is initiated.

4.0 DEFINITIONS

Acclimatization – means temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat.

Environmental risk factors for heat illness – means working conditions that create the possibility that heat illness could occur, including air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, protective clothing and personal protective equipment worn by employees.

Heat Exhaustion - means the body's response to an excessive loss of the water and salt contained in sweat. It may be characterized by weakness, dizziness, muscle cramps, nausea, and headache. If uncontrolled, it may progress to heat stroke.

Heat illness – means a medical condition resulting from the body's inability to cope with a particular heat load, and includes, in order of less severe to most severe, heat rash, heat cramps, heat exhaustion, heat syncope (fainting) and heat stroke. *(See Appendix A for warning signs, symptoms and emergency responses to these heat illnesses)*

Heat Index - This system, developed by the National Oceanographic and Atmospheric Administration, incorporates ambient temperature and relative humidity into a single value. It does not incorporate the influence of radiant heat.

Heat Stroke - Heat stroke occurs when the body temperature exceeds normal, the sweating mechanism fails, and the body is unable to cool down. Body temperature may rise to 106 °F or higher within 10-15 minutes. Heat stroke can cause death or permanent disability if emergency treatment is not given.

Personal risk factors for heat illness – means factors such as an individual's age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body's water retention or other physiological responses to heat.

Wet Bulb Globe Temperature (WBGT) – Wet Bulb Globe Temperature Index, a calculated measurement of temperature, radiant heat, air movement and humidity used to assess ambient heat stress.

5.0 PROCEDURE

5.1 EMPLOYEE TRAINING

Training in the following topics will be provided to employees before the employees begin work that could reasonably be anticipated to result in exposure to the risk of heat illness. This training can be presented at project kick-off or tailgate meetings.

- The information contained in Appendix A.
- The environmental and personal risk factors for heat illness, as well as the added burden of heat load on the body caused by exertion, clothing, and personal protective equipment.
- The importance of frequent consumption of small quantities of water and/or electrolyte replacement fluids, up to 4 cups per hour, when the work environment is hot and employees are likely to be sweating more than usual in the performance of their duties.
- The importance of acclimatization.
- The different types of heat illness and the common signs and symptoms of heat illness.
- The importance to employees of immediately reporting to the SSHO or Supervisor any signs of heat illness in themselves, or in co-workers.
- Procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary.

- Procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider.

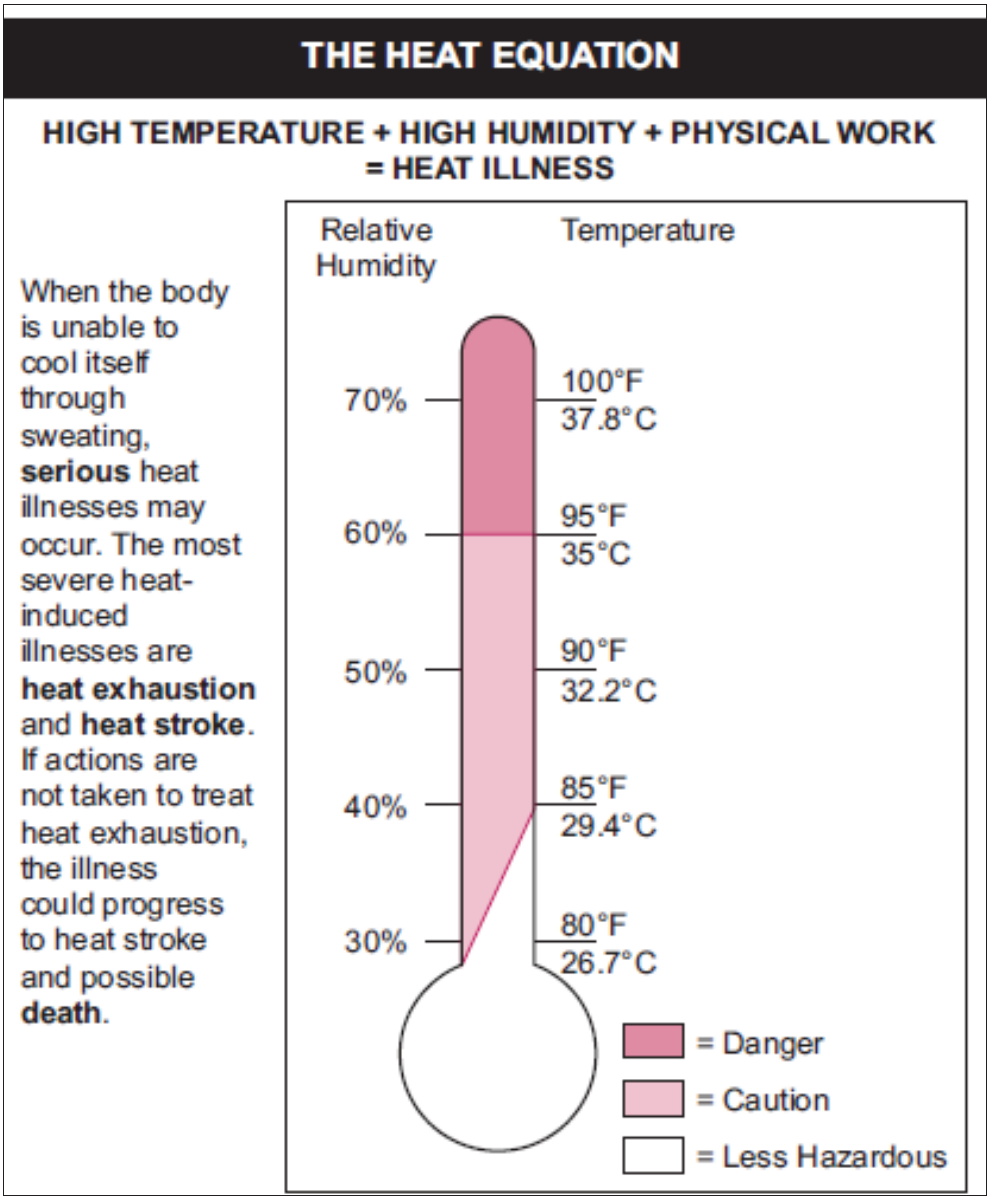
5.2 FLUID REPLACEMENT

- Ensure an adequate supply of chilled (50 to 60° F) potable (drinkable) water for pre-field work and during work.
- Ensure that water containers are clearly marked, capable of being tightly closed, equipped with a tap, maintained in a sanitary manner, and cleaned at least weekly.
- Water or electrolyte replacement fluids will not be dipped from the container.
- Encourage personnel to drink water or electrolyte fluids during each break. Personnel should drink approximately 4 cups an hour or two gallons a day if sweating profusely.

5.3 MONITORING

Work in hot, humid environments can cause heat to accumulate in the body faster than it can be dissipated. This accumulation of heat can produce serious illnesses, which range from mild to fatal. The heat-related illnesses, which are described in the definitions and Appendix A, include heat rash, heat cramps, heat exhaustion, and heat stroke. The first three conditions normally do not have extremely serious consequences – unless an exhausted employee falls and suffers injury. Heat stroke, however, can cause death or permanent injury to the brain. For this reason, heat stroke should be treated as a medical emergency. Monitoring, both of ambient conditions and personnel, is an important step in preventing these illnesses. Because individual susceptibility to heat induced illnesses varies greatly depending on factors such as acclimatization to high temperatures, personal fitness, and age, monitoring should include the application of good judgement. No single monitoring approach can accurately predict the potential for heat-related illnesses or ensure prevention of such illnesses. As a general rule monitoring should include assessment of ambient conditions (temperature, humidity, radiant heat, and wind), work load, and individual responses to the heat.

When temperatures exceed 75° F monitoring will include at least determination of the local temperature and heat index, visual observation of personnel by a Supervisor or SSHO, and intra-team assessment of individual and group responses to conditions. Additional monitoring, such as Wet Bulb Globe Temperature Index (WBGT) may be conducted as well. The graphic immediately below illustrates the general relationship between temperature, humidity, and hazard.



When personnel wear impermeable or semipermeable protective clothing such as coated Tyvek suits in temperatures greater than 75° F physiological monitoring must be conducted to assess the heat strain on each individual, in addition to monitoring of ambient conditions. Physiological monitoring may also be conducted if environmental conditions are extreme, such as the Danger area in the above graphic, personnel are not acclimated to the conditions, personnel are performing relatively strenuous tasks, or personnel may be unusually susceptible to heat illness due to physical condition or medication. Physiological monitoring typically consists of measuring pulse rates and/or core temperatures.

5.3.1 Heat Index

This system was developed by the National Oceanographic and Atmospheric Administration and is one of the monitoring approaches advocated by OSHA. It combines air temperature and relative humidity. It does not incorporate radiant heat loads, so the impact of radiant/solar heat load must be assessed by the user. Heat index data is readily available through local radio stations, the National Weather Service, and various applications that are available for cell phones.

The Heat Index is a measure of how hot it really feels when relative humidity is factored in with the actual air temperature. As an example, if the air temperature is 96° F and the relative humidity is 65%, the heat index is 121° F. The National Weather Service will initiate alert procedures when the Heat Index is expected to exceed 105-110° F (depending on local climate) for at least 2 consecutive days.

Since heat index values were devised for shady, light wind conditions, hazard assessments based on the heat index should be adjusted if personnel will be exposed to full sun. Adjustments of as much as 15° F may be reasonable.

NOAA's National Weather Service

Heat Index

Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution | Extreme Caution | Danger | Extreme Danger

5.3.2 Wet Bulb Globe Temperature (WBGT) Index and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value

The WBGT index measures and integrates ambient temperature, radiant heat, air movement, and humidity. The American Conference of Governmental Industrial Hygienists publishes a Threshold Limit Value (TLV) based on this index, which is intended to predict safe exposures for acclimated and reasonably fit personnel. This TLV provides a matrix which includes WBGT index readings, assessments of work intensity (light, medium, heavy or very heavy) and recommended work/rest cycles. The risk of heat-related illness among healthy workers who are acclimatized to hot work is low if the WBGT value does not exceed the ACGIH TLVs shown below:

Table 14.1-1
Modified ACGIH Table 2. TLV for Heat Stress Exposure
(WBGT Values in Degrees Fahrenheit)

Work/ Recovery Cycle	Work Intensity/TLV®			
	Light	Moderate	Heavy	Very Heavy
75 - 100% work	88	82	-	-
50 - 75% work	88	84	82	-
25 - 50% work	90	86	84	82
0 - 25% work	91	89	87	86

Modified values from the American Conference of Governmental Industrial Hygienists (ACGIH) publication Threshold Limit Values (TLV®) and Biological Exposure Indices. Temperature readings have been converted to Fahrenheit and rounded to the nearest degree.

Table 14.1-2
Work Load Definitions
Modified ACGIH Table 3. Metabolic Rate Categories

Work Load	Examples
Rest	Sitting
Light	Sitting with light manual work with hands or hands and arms and driving. Standing with some light arm work and occasional walking
Moderate	Sustained moderate hand and arm work, moderate arm and leg work, moderate arm and trunk work, or light pushing and pulling. Normal walking. Examples: Scrubbing in a standing position. Walking about with moderate lifting or pushing. Walking on level ground at 3.75 miles/hour while carrying a 6 pound load.
Heavy	Intense arm and trunk work, carrying, shoveling, manual sawing, pushing and pulling heavy loads and walking at a fast pace. Examples: Intermittent heavy lifting with pushing or pulling (e.g., pick and shovel work).
Very Heavy	Very intense activity at a fast to maximum pace. Shoveling wet sand.

Modified to convert metric units to miles and pounds.

Table 14.1-3
Approximate Wet-Bulb Globe Temperature (WBGT) Chart
(U.S. Army Corps of Engineers EM 385-1-1)

Degrees F

Relative Humidity (%)	68	70	72	73	75	77	79	81	82	84	86	88	90	91	93	95	97	99	100	102	104	106	108
0	59	61	61	63	64	64	66	66	68	68	70	72	72	73	73	75	75	77	77	79	81	81	82
5	61	61	63	64	63	66	66	68	70	70	72	72	73	75	75	77	79	79	81	81	82	84	84
10	61	63	63	64	66	66	68	70	70	72	73	73	75	77	77	79	81	81	82	84	86	86	88
15	63	63	64	66	66	68	70	70	72	73	73	75	77	79	79	81	82	84	84	86	88	90	91
20	63	64	64	66	68	70	70	72	73	75	75	77	79	81	81	82	84	86	88	90	90	91	95
25	64	64	66	68	68	70	72	73	75	75	77	79	81	82	82	84	86	88	90	91	93	95	97
30	64	66	68	68	70	72	73	73	75	77	79	81	82	84	84	86	88	90	91	93	95	97	99
35	64	66	68	70	72	72	73	75	77	79	81	82	84	86	88	90	91	93	95	97	99	100	102
40	66	68	70	70	72	73	75	77	79	81	82	84	86	88	90	91	93	95	97	99	100	102	
45	66	68	70	72	73	75	77	79	81	81	82	84	86	90	91	93	95	97	99	100			
50	68	70	72	73	73	75	77	79	81	82	84	86	88	91	93	95	97	99	102				
55	68	70	72	73	75	77	79	81	82	84	86	88	90	93	95	97	99	100					
60	70	72	73	75	77	79	81	82	84	86	88	90	91	95	97	99	100						
65	70	72	73	75	77	79	81	82	84	88	90	91	93	97	99	100							
70	72	73	75	77	79	81	82	84	86	88	91	93	95	97	100	102							
75	72	73	75	77	79	81	84	86	88	90	91	95	97	99	102								
80	73	75	77	79	81	82	84	86	90	91	93	97	99	100									
85	73	75	77	79	82	84	86	88	90	93	95	99	100	102									
90	75	77	79	81	82	84	88	90	91	95	97	99	102										
95	75	77	79	81	84	86	88	91	93	95	99	100											
100	75	79	81	82	84	88	90	91	95	100	100	102											

Chart assumes full sunshine and light wind. Using this chart on a cloudy or windy day will result in an overestimation of heat stress

This chart can be used to approximate WBGT measurements, using temperature and humidity measurements. The values in this chart were calculated with an assumption of full sunshine and light wind.

Under these criteria, workers should be able to perform moderately strenuous work, with only the usual rest and lunch breaks, if the WBGT value is 77° F or lower. At a WBGT value of 82.4° F, workers should be able to perform light work without added breaks, and moderate work for thirty minutes out of each hour.

5.3.3 Physiological Monitoring

The following should be followed for an individual healthy employee's heart rate.

(a) Count the radial (wrist) pulse during a 30-second period as early as possible in the rest period.

(b) If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same. Consider

additional controls such as providing shade in the work area, changing the work schedule to work during cooler parts of the day, using personal cooling devices, etc.

(c) If the heart rate still exceeds 110 beats per minute at the next rest period, shorten the following work cycle by one-third and keep the rest period the same.

Monitoring of core body temperature may be conducted in addition to or instead of heart rate monitoring. If core body temperature is monitored, a core temperature of 101.3° F will be used as a limit and monitoring will be conducted as specified above for heart rate monitoring.

It may be necessary to consider more conservative criteria depending on an individual employee's health condition (heart disease history, obesity, diabetes) and age adjustment.

6.0 ROLES AND RESPONSIBILITIES

6.1 SENIOR MANAGEMENT (PRESIDENT, COO, DIVISIONAL VICE PRESIDENTS)

- Be role models for safety.
- Maintain a general awareness of health and safety procedures.
- Provide adequate resources to perform work safely.

6.2 CORPORATE HEALTH AND SAFETY DIRECTOR

- Be a role model for safety.
- Approve this program and subsequent revisions.
- Provide support and assistance in the implementation of this program.

6.3 OFFICE MANAGERS

- Be a role model for safety.
- Maintain a general awareness of the applicable portions of these requirements.
- Maintain an awareness of heat stress hazards on supervised work and ensure that adequate controls are in place.

6.4 OFFICE HEALTH AND SAFETY OFFICERS

- Be a role model for safety.
- Maintain a general awareness of the applicable portions of these requirements.
- Maintain an awareness of heat stress hazards in the office and on work managed by the office.

- Verify that heat stress hazards (if any) in the office are controlled.

6.5 SUPERVISORS AND PROJECT MANAGERS

- Be a role model for safety.
- Maintain an awareness of the applicable portions of these requirements.
- Provide the resources to control heat stress hazards.
- Enforce safe work practices including appropriate work/rest cycles.
- Provide effective protective equipment and supplies (including fluids).
- Ensure that employees receive appropriate training.
- Communicate potential hazards and any mandatory site procedures to Subcontractors.
- Promptly address any unsafe conditions or unsafe acts.
- Conduct regular discussions with staff on matters pertaining to Health and Safety.
- Implement disciplinary procedures as warranted, for unsafe behaviors.

6.6 SITE SAFETY AND HEALTH OFFICERS

- Be a role model for safety.
- Maintain an awareness of the applicable portions of these requirements.
- Stop work or require other corrective measures if unsafe conditions are practices are observed.
- Inspect work area at least daily and verify that heat stress controls are being implemented and are adequate. Ensure that appropriate fluids are provided and that communal water containers are appropriately sanitized.
- Determine threshold of concern for heat stress to employees for project activities and implement this program to protect employees from heat stress.
- Execute corrective/emergency measures when an employee exhibits signs consistent with possible heat illness, including emergency response procedures.
- Perform heat stress surveys as the situation requires, communicate those results to PM, employees and Corporate Health and Safety Director as needed, maintain heat stress survey records.
- Maintain heat stress monitoring equipment.
- Notify supervisor and the Health and Safety Director of heat illnesses or incidents.

6.7 EMPLOYEES

- Complete required training.
- Maintain an awareness of the applicable portions of these requirements.
- Report heat stress illness symptoms to the SSHO or supervisor.
- Take proactive measures to find shade or cool down, if heat stress illness symptoms persist after a water break.
- Provide suggestions for improvement in heat stress management.

7.0 RECORDS

Collect and maintain documentation generated as a result of this program in accordance with Document Control requirements of the HGL Corporate Quality Assurance Manual. Create and retain records of at least heat stress training, heat stress monitoring, and heat stress controls implemented to control the hazard. This information may be recorded as entries in the project safety log or as entries on a data sheet created for this purpose.

8.0 REFERENCES

- OSHA Quick Card: *Protecting Workers from Heat Stress*
- OSHA Safety and Health Topics: *Occupational Heat Exposure*
- National Weather Service: *Heat Index*
- EM 385-1-1 *US Army Corps of Engineers Safety and Health Requirements Manual*
- American Conference of Governmental Industrial Hygienists (ACGIH), *Threshold Limit Values for Chemical Substances and Physical Agents*, 2015)
- California heat illness prevention standard (California Code of Regulations Title 8 § 3395) Updated May 14, 2015

HGL HydroGeoLogic, Inc Exceeding Expectations	**Health and Safety Procedure 14.1**
	Approved by: Steve Davis — Health and Safety Director Digitally signed by Steve Davis DN: cn=Steve Davis, o=HGL, ou=EHS, email=sdavis@hgl.com, c=US Date: 2015.08.27 14:05:37 -04'00'

Heat Stress Program Appendix A	H&S Procedure No.: 14.1
	Publication Date: 12/2011
	Revision No.: 01
	Revision Date: August 2015
	Review Date: August 2016

APPENDIX A

Heat Illnesses
Warning Signs, Symptoms, and Emergency Response

There are several illnesses associated with heat stress, ranging from relatively minor, such as heat cramps, to potentially fatal illnesses such as heat stroke. Each of the heat-related illnesses is discussed below. The information provided below includes signs and symptoms, prognoses, hazard controls, and emergency measures, if appropriate.

Heat Stroke

Heat stroke occurs when the body becomes unable to control its temperature. The body's temperature rises rapidly, the sweating mechanism fails, and the body is unable to cool down. Body temperature may rise to 106 °F or higher within 10-15 minutes. ***Heat stroke can cause death or permanent disability if emergency treatment is not given.***

Warning signs of heat stroke vary but may include:

- an extremely high body temperature (oral temperature above 103 °F)
- red, hot, and dry skin (no sweating)
- rapid, strong pulse
- throbbing headache
- dizziness
- nausea
- confusion
- unconsciousness

If you see any of these signs, you may be dealing with a life threatening emergency. Have someone call for immediate medical assistance while you begin cooling the victim:

- Get the victim to a shady area.

- Cool the victim rapidly using whatever methods you can. For example, immerse the victim in a tub of cool water; place in a cool shower; spray with cool water from a garden hose; sponge with cool water; or if the humidity is low, wrap the victim in a cool, wet sheet and fan him or her vigorously.
- Monitor body temperature and continue cooling efforts until the body temperature drops to 101-102 °F.
- If emergency medical personnel are delayed, call the hospital emergency room for further instructions.
- Do not give the victim alcohol to drink.
- Get medical assistance as soon as possible.

Sometimes a victim's muscles will begin to twitch uncontrollably as a result of heat stroke. If this happens, keep the victim from injuring himself, but do not place any object in the mouth and do not give fluids. If there is vomiting, make sure the airway remains open by turning the victim on his or her side.

Heat Syncope

A person with heat syncope suddenly faints or passes out during activities in a hot environment. The body cools itself by increasing blood flow to the skin, where heat is released into the environment. This shift of blood flow reduces the amount of blood flowing to other parts of the body, including the brain. If the blood flow to the brain is reduced too much, the brain stops functioning, which results in fainting.

Warning signs of heat syncope vary but include:

- fainting
- dizziness
- dry mouth
- excessive thirst
- excessive sweating
- fatigue
- headache
- nausea
- vomiting

Because of the abruptness usually associated with heat syncope and the possibility of other medical conditions, seek medical attention. Treatment of heat syncope includes:

- removing clothing
- a tepid water bath or sponge bath
- oral fluids
- intravenous fluids
- cardiac monitoring
- rest in a cool environment

Heat Exhaustion

Heat exhaustion is the body's response to an excessive loss of the water and salt contained in sweat. Those most at risk are elderly people, people with high blood pressure, and people working or exercising in a hot environment.

Warning signs of heat exhaustion include:

- heavy sweating
- paleness
- muscle cramps
- tiredness
- weakness
- dizziness
- headache
- nausea or vomiting
- fainting

The skin may be cool and moist. The victim's pulse rate will be fast and weak, and breathing will be fast and shallow. If heat exhaustion is untreated it may progress to heat stroke. Seek medical attention immediately if symptoms are severe or the victim has heart problems or high blood pressure. Otherwise, help the victim to cool off, and seek medical attention if symptoms worsen or last longer than one hour.

Cooling measures that may be effective include:

- cool, non-alcoholic beverages
- rest
- cool shower, bath, or sponge bath
- an air-conditioned environment

Heat Cramps

Heat cramps usually affect people who sweat a lot during strenuous activity. This sweating depletes the body's salt and moisture. The low salt level in the muscles causes painful cramps. Heat cramps may also be a symptom of heat exhaustion.

Heat cramps are muscle pains or spasms – usually in the abdomen, arms, or legs – that may occur in association with strenuous activity. If you have heart problems or are on a low sodium diet, get medical attention for heat cramps.
If medical attention is not necessary, take these steps:

- Stop all activity, and sit quietly in a cool place.
- Gently stretch cramped muscles.
- Drink clear juice or a sports beverage.
- Do not return to strenuous activity for a few hours after the cramps subside because further exertion may lead to heat exhaustion or heat stroke.
- Seek medical attention for heat cramps if they do not subside in one hour.

Heat Rash

Heat rash is a skin irritation caused by excessive sweating during hot, humid weather. It can occur at any age but is most common in young children.

Heat rash looks like a red cluster of pimples or small blisters. It is more likely to occur on the neck and upper chest, in the groin, under the breasts, and in elbow creases.

The best treatment for heat rash is to provide a cooler, less humid environment. Keep the affected area dry. Dusting powder may be used to increase comfort, but avoid using ointments or creams as they keep the skin warm and moist and may make the condition worse. Treating heat rash is simple and it usually does not require medical assistance. Other heat-related problems can be much more severe.

Sunburn

Sunburn should be avoided because it is damaging to the skin. Although the discomfort is usually minor and healing often occurs in about a week, a more severe sunburn may require medical attention. The skin becomes red and painful.

Consult a doctor if these symptoms are present:

- fever
- fluid-filled blisters
- severe pain

Also, remember these tips when treating sunburn:

- Avoid repeated sun exposure.
- Apply cold compresses or immerse the sunburned area in cool water.
- Apply moisturizing lotion to affected areas. Do not use salve, butter, or ointment.
- Do not break blisters.

HGL HydroGeoLogic, Inc Exceeding Expectations	**Health and Safety Procedure 14.2**	
	Approved by: Steve Davis Digitally signed by Steve Davis DN: cn=Steve Davis, o=HGL, ou=EHS, email=sdavis@hgl.com, c=US Date: 2015.08.28 08:18:29 -04'00'	Health and Safety Director
Cold Stress Program	H&S Procedure No.: 14.2	
	Publication Date: March 2012	
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	Revision Date: August 2015	
	Review Date: August 2016	

1.0 PURPOSE

The purpose of this document is to decrease the probability of cold related illnesses such as frostbite and hypothermia, by specifying hazard controls and providing guidance on implementation.

2.0 SCOPE AND APPLICATION

This procedure applies to work performed by HGL personnel and HGL temporary personnel under the following conditions; when air temperature or wind chill is or may drop below 40° Fahrenheit (F), when parts of the body are or may become immersed in cold water, and when working in snow or ice.

3.0 GENERAL REQUIREMENTS

This procedure requires at least the following actions.

- Train employees on the dangers and symptoms of cold-related illnesses and the applicable hazard controls (see Appendix A).
- Train workers on the personal factors that may increase risk such as advanced age and circulatory problems.
- Establish a buddy system and ensure that personnel watch each other for signs of cold related illnesses.
- Establish a schedule for warm-up breaks and increase the frequency of warm-up breaks with decreasing temperatures. Take warm-up breaks if personnel exhibit shivering or report pain in the extremities that might be due to incipient frostbite.
- Prevent or minimize exposure of bare skin if temperature or wind chill is less than minus (-) 25° F.
- Schedule tasks to avoid long periods during which workers must sit or stand still.
- Adjust work schedules or tasks for new employees to permit acclimatization to the cold conditions.
- Encourage personnel to drink adequate quantities of water, soup, or other fluids to ensure adequate hydration.

- Establish emergency plans to include at least immediately available dry clothing if there is a potential for personnel to be splashed or immersed in liquid.

4.0 DEFINITIONS

Acclimatization – this is the temporary adaptation of the body to work in the cold that occurs gradually when a person is exposed to it. It is more difficult for the human body to acclimatize to cold environments than hot ones.

Cold illness – these are medical conditions resulting from the body's inability to cope with cold load, and include hypothermia and frost bite. *(See Appendix A for warning signs, symptoms and emergency responses to cold illnesses)*

Cold stress – this is the body's response to cold temperatures resulting from heat loss from a portion of the body, such as feet, hands, limbs or head.

Environmental risk factors for cold illness – these are working conditions that create the possibility that cold illness could occur, including air temperature, air movement (wind speed), workload severity and duration, lack of protective clothing and personal protective equipment worn by employees.

Equivalent Chill Temperature (ECT) – this is the equivalent, felt, or sensed, air temperature on exposed skin due to cooling effects from cold and air movement, popularly called the wind chill factor.

Heat loss – heat loss occurs by:

Radiation – heat loss due to temperature gradient of difference between air and body;
Conduction – heat loss through direct touch/contact with an object;
Convection – heat loss to moving air across a surface (e.g., skin); and
Evaporation – heat loss via liquid turning to gas (e.g., sweating, breathing).

Personal risk factors for cold illness – these are factors that can negatively affect the body's physiological responses to cold and increase cold illness risk such as an individual's age (older workers lose heat more), degree of acclimatization, health, circulatory disease (e.g., heart disease, Reynaud's disease, carpal tunnel, diabetes), previous cold injury, injury that would restrict blood flow, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications.

5.0 PROCEDURE

5.1 EMPLOYEE TRAINING

Effective training in the following topics will be provided to each supervisory and non-supervisory employee before the employee begins work that could reasonably be anticipated to result in exposure to the risk of cold illness:

- The environmental and personal risk factors for cold illness, as well as the added burden of cold on the body caused by skin exposure, wind chill, wet clothing, and personal protective equipment.
- Planned cold stress hazard controls.
- The importance of frequent consumption of small quantities of warm fluids when the work environment is extremely cold.
- The importance of acclimatization.
- The different types of cold illness and the common signs and symptoms of cold illnesses *(see Appendix A)*.
- The importance of immediately reporting to the SSHO and/or supervisor symptoms or signs of cold illness in themselves, or in co-workers.
- Procedures for responding to symptoms of possible cold illness, including how emergency medical services will be provided should they become necessary.
- Procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider.

5.2 HAZARD EVALUATION

The potential for cold stress is determined primarily by two variables: The temperature of the air and the speed of the wind. At a given temperature, calm air is less dangerous. The "cooling power" of moving air on exposed flesh can be expressed as an Equivalent Chill Temperature (ECT), which combines temperature and air speed. The following table shows values of ECT for various temperature and speed combination:

Table 14.2.1
Equivalent Chill Temperature (°F)
At Various Air Temperatures and Wind Speeds

Estimated Wind Speed (mph)	Actual Temperature Reading (°F)											
	50	**40**	**30**	**20**	**10**	**Zero**	**- 10**	**- 20**	**- 30**	**- 40**	**- 50**	**- 60**
Calm	*50*	*40*	*30*	*20*	*10*	*0*	*- 10*	*- 20*	*- 30*	*- 40*	*- 50*	*- 60*
5	*48*	*37*	*27*	*16*	*6*	*- 5*	*- 15*	*- 26*	*- 36*	*- 47*	*- 57*	*- 68*
10	*40*	*28*	*16*	*- 9*	*- 24*	*- 24*	*- 33*	*- 46*	*- 58*	*- 70*	*- 83*	*- 95*
15	*36*	*22*	*9*	*- 5*	*- 18*	*- 32*	*- 45*	*- 58*	*- 72*	*- 85*	*- 99*	*-112*
20	*32*	*18*	*4*	*- 10*	*- 25*	*- 39*	*- 53*	*- 67*	*- 82*	*- 96*	*-110*	*-121*
25	30	16	0	- 15	*- 29*	*- 44*	*- 59*	*- 74*	*- 88*	*-104*	*-118*	-133
30	28	13	- 2	- 18	*- 33*	- 48	*- 63*	*- 79*	- 94	- 109	- 125	- 140
35	27	11	- 4	- 20	*- 35*	- 51	*- 67*	*- 82*	- 98	- 113	- 129	-145
40	26	10	- 6	- 21	*- 37*	*- 53*	*- 69*	*- 85*	- 100	- 116	- 132	- 148
.	**Zone A: Little Danger** (in < 1 hour, if skin is dry)				Zone B: Increasing Danger (Danger from freezing of exposed flesh within one minute			**Zone C: Great Danger** (Flesh may freeze within 30 seconds.)				
Developed by the U.S. Army Research Institute of Environmental Medicine, Natick, MA.												

Appendix B has the same ECT chart but with units in kilometers per hour and degrees Centigrade if needed.

The conditions represented by Zones B and C are extremely dangerous to exposed skin. Continuous exposure of exposed skin should not be permitted if the ECT is minus (-) 25 °F or less. Work under conditions represented by Zone A is much less dangerous to exposed skin. At low ECT values, precautions against hypothermia are necessary, even if workers are dressed in well insulating clothing. The danger of hypothermia is especially severe if immersion in water is possible during the work.

5.3 WORK/WARMING REGIMENS

If continuous work must be performed at an ECT below 19.4°F, then the SSHO or PM will provide a heated shelter (truck, car, tent, cabin, or similar space) for warming after exposure to the cold environment. Employees should be encouraged to use the shelter at frequent intervals, and upon (1) onset of pain or heavy shivering, (2) occurrence of minor frostbite, or (3) onset of feelings of excessive fatigue, drowsiness, irritability, or euphoria. The SSHO will monitor weather and environmental conditions and implement a mandatory work/warming regimen that is recommended in the following table for those conditions.

Table 14.2.2
Work/Warming Schedule for a 4-Hour Shift

Air Temp. (°F)	Air Speed (mph)				
	Calm	5	10	15	20
- 15 to -19	Normal Breaks (1)	Normal Breaks (1)	75 min. max. work period with 2 breaks	55 min. max. work period with 3 breaks	40 min. max. work period with 4 breaks
- 20 to - 24	Normal Breaks (1)	75 min. max. work period with 2 breaks	55 min. max. work period with 3 breaks	40 min. max. work period with 4 breaks	30 min. max. work period with 5 breaks
- 25 to - 29	75 min. max. work period with 2 breaks	55 min. max. work period with 3 breaks	40 min. max. work period with 4 breaks	30 min. max. work period with 5 breaks	
- 30 to - 34	55 min. max. work period with 3 breaks	40 min. max. work period with 4 breaks	30 min. max. work period with 5 breaks		
- 35 to - 39	40 min. max. work period with 4 breaks	30 min. max. work period with 5 breaks	**Non-emergency work should cease.**		
- 40 to - 44	30 min. max. work period with 5 breaks				
- 45 and below					

NOTE: The above work/warming regimens are applicable to workers in dry **not** wet clothing.

Schedule applies to any 4-hour work period with moderate to heavy work activity; with warm-up periods of ten (10) minutes in a warm location and with an extended break (e.g. lunch) at the end of the 4-hour work period in a warm location.

Source: ACGIH TLVs and BEIs, Cincinnati, OH

5.4 PROTECTIVE EQUIPMENT

Insulated dry clothing should be worn if conditions of the type represented in Zones A, B, or C in the ECT table are anticipated. Workers should wear cold-protective clothing appropriate for the environmental conditions and the level of physical activity. The following considerations should guide the selection and use of protective clothing:

- Layered clothing will be used to preserve body heat. An easily removable outer windbreak garment should be worn in windy conditions.
- No cotton garments will be worn if ECT is less than 32°F.
- Outer garments will be made with provisions for convenient ventilation to prevent the wetting of inner layers by sweat.
- Outerwear and boots must be capable of withstanding ambient conditions and in extreme conditions this will require utilizing arctic rated gear.
- An employee will not enter or remain in a cold work environment if his or her clothing is wet as a consequence of sweating. If clothing is wet, then the employee will change into dry clothing before returning to the cold environment.
- Gloves and/or mittens will be used as necessary to protect the hands, and employees will be warned not to touch very cold objects and surfaces with bare skin.
- Workers will routinely change socks and removable felt insoles to reduce moisture around the feet.
- Eye protection suitable to the type of hazard will be used. Special precautions against ultraviolet light and glare might be necessary in snow-covered terrain.
- Hardhat liners will be used. If work must be done on slippery surfaces, then shoe attachments that enhance traction will be used.

6.0 ROLES AND RESPONSIBILITIES

6.1 SENIOR MANAGEMENT (PRESIDENT, COO, DIVISIONAL VICE PRESIDENTS)

- Be role models for safety.
- Maintain a general awareness of health and safety procedures.
- Provide adequate resources to perform work safely.

6.2 CORPORATE HEALTH AND SAFETY DIRECTOR

- Be a role model for safety.
- Approve this program and subsequent revisions.
- Provide support and assistance in the implementation of this program.

6.3 OFFICE MANAGERS

- Be a role model for safety.
- Maintain a general awareness of the applicable portions of these requirements.
- Maintain an awareness of cold stress hazards on supervised work and ensure that adequate controls are in place.

6.4 OFFICE HEALTH AND SAFETY OFFICERS

- Be a role model for safety.
- Maintain a general awareness of the applicable portions of these requirements.
- Maintain an awareness of cold stress hazards in the office and on work managed by the office.
- Verify that cold stress hazards (if any) in the office are controlled.

6.5 SUPERVISORS AND PROJECT MANAGERS

- Be a role model for safety.
- Maintain an awareness of the applicable portions of these requirements.
- Provide the resources to control cold stress hazards including a heated shelter (truck, car, tent, cabin, or similar space) for warming after exposure to the cold environment.
- Enforce safe work practices.
- Provide effective protective equipment, as needed.
- Ensure that employees receive appropriate training.
- Communicate potential hazards and any mandatory site procedures to Subcontractors.
- Promptly address any unsafe conditions or unsafe acts.
- Conduct regular discussions with staff on matters pertaining to cold stress and use employee feedback and concerns to enhance hazard controls.
- Implement disciplinary procedures as warranted, for unsafe behaviors.
- Notify the Corporate Health & Safety Director (CHSD) when there is concern about cold stress or a cold stress emergency.

6.6 SITE SAFETY AND HEALTH OFFICERS

- Be a role model for safety.
- Maintain an awareness of the applicable portions of these requirements.
- Stop work or require other corrective measures if unsafe conditions or practices are observed.
- Inspect work area at least daily and verify that hazard controls are being implemented and are adequate. Clearly identify and monitor the heated shelter (truck, car, tent, cabin, or similar space) for warming.
- Execute corrective/emergency measures when an employee exhibits signs consistent with possible cold illness, including emergency response procedures.
- Monitor ambient conditions and establish work/warm schedules appropriate to the conditions, communicate those results to PM, employees and Corporate Health and Safety Director as needed, and maintain records.
- Notify supervisor and the Health and Safety Director of cold illnesses or incidents.

6.7 EMPLOYEES

- Complete required training.
- Maintain an awareness of the applicable portions of these requirements.
- Report cold illness symptoms to the SSHO or supervisor.
- Stop work and remove/replace wet clothing, as appropriate.
- Provide suggestions for improvement in cold stress management.
- Follow required procedures when cold illness symptoms exist. Monitor coworkers that exhibit signs consistent with possible cold illness.

7.0 RECORDKEEPING REQUIREMENTS

Collect and maintain documentation generated as a result of this program in accordance with Document Control requirements of the HGL Corporate Quality Assurance Manual. Create and retain records of at least cold stress training and implemented hazard controls. This information may be recorded as entries in the project safety log or as entries on a data sheet created for this purpose. A cold stress measurement log for routine ECT measurements is located in Appendix C of this procedure and can be used to document monitoring.

8.0 REFERENCES

- OSHA: *Cold Stress Guide*
- OSHA Quick Card: *Protecting Workers from Cold Stress*
- American Conference of Governmental Industrial Hygienists: *Threshold Limit Values for Chemical Substances and Physical Agents (2015)*

APPENDIX A

Cold Illnesses
Warning Signs, Symptoms, and Emergency Response

There are several illnesses associated with cold, ranging from relatively minor, such as chilblains, to potentially fatal illnesses such as hypothermia. Each of the cold-related illnesses is discussed below. The information provided below includes signs and symptoms, prognoses, hazard controls, and emergency measures, if appropriate.

Non-Freezing Cold Illnesses

Chilblains

What happens to the body?

Chilblains are a mild cold injury caused by prolonged and repeated exposure for several hours to air temperatures from above freezing (0°C or 32°F) to as high as 16°C (or about 60°F). In the affected skin area there will be redness, swelling, tingling, and pain

What should be done?

- Warm slowly to room temperature
- Elevate extremity to prevent swelling
- Air dry, if extremely wet
- Do not constrict limb with clothing or blanket

Immersion Foot

What happens to the body?

Immersion foot occurs in individuals whose feet have been wet, but not freezing cold, for days or weeks. It can occur at temperatures up to 10°C (50°F). The primary injury is to nerve and muscle tissue. Symptoms include tingling and numbness; itching, pain, swelling of the legs, feet, or hands; or blisters may develop. The skin may be red

initially and turn to blue or purple as the injury progresses. In severe cases, gangrene may develop.

What should be done?

- Warm slowly to room temperature
- Elevate extremity to prevent swelling
- Air dry, if extremely wet
- Do not constrict limb with clothing or blanket

Trench Foot

What happens to the body?

Trenchfoot is "wet cold disease" resulting from prolonged exposure in a damp or wet environment from above the freezing point to about 10°C (50°F). Depending on the temperature, an onset of symptoms may range from several hours to many days but the average is three days. Trenchfoot is more likely to occur at lower temperatures whereas an immersion foot is more likely to occur at higher temperatures and longer exposure times.

What should be done?

- Warm slowly to room temperature
- Elevate extremity to prevent swelling
- Air dry, if extremely wet
- Do not constrict limb with clothing or blanket

Freezing Cold Illnesses

Frostnip

What happens to the body?

Frostnip is the mildest form of a freezing cold injury. It occurs when ear lobes, noses, cheeks, fingers, or toes are exposed to the cold and the top layers of skin freeze. The skin of the affected area turns white and it may feel numb. The top layer of skin feels hard but the deeper tissue still feels normal (soft).

What should be done?

Frostnip can be prevented by wearing warm clothing and foot wear. It is treated by:

- Gentle rewarming (e.g., holding the affected tissue next to unaffected skin of the victim or of another person).
- As for all cold-induced injuries, never rub the affected parts - ice crystals in the tissue could cause damage if the skin is rubbed.
- Do not use very hot objects such as hot water bottles to rewarm the area or person.

Frostbite

What happens to the body?

(1) Freezing in the deep layers of skin and tissue; (2) Pale, waxy-white skin color; (3) Skin becomes hard and numb; (4) Fingers, hands, toes, feet, ears, and nose normally are affected first.

What should be done?

- Move the person to a warm dry area.
- Don't leave the person alone.
- Remove any wet or tight clothing that may cut off blood flow to the affected area.
- DO NOT rub the affected area, because rubbing causes damage to the skin and tissue.
- Gently place the affected area in a warm (105°F) water bath and monitor the water temperature to slowly warm the tissue. Don't pour warm water directly on the affected area because it will warm the tissue too fast causing tissue damage. Warming takes about 25-40 minutes.
- After the affected area has been warmed, it may become puffy and blister. The affected area may have a burning feeling or numbness. When normal feeling, movement, and skin color have returned, the affected area should be dried and wrapped to keep it warm.

  NOTE: If there is a chance the affected area may get cold again, do not warm the skin. If the skin is warmed and then becomes cold again, it will cause severe tissue damage.
- Seek medical attention as soon as possible.

Hypothermia - (medical emergency)

What happens to the body?

Normal body temperature (98.6 °F / 37 °C) drops to or below 95 °F (35 °C); fatigue or drowsiness; uncontrolled shivering; cool bluish skin; slurred speech; clumsy movements; irritable, irrational or confused behavior. The table below indicates signs of various stages of hypothermia.

Table 14.2.A-1
What are the Signs of Hypothermia?

Stage	Core Temperature	Signs and Symptoms
Mild Hypothermia	37.2-36.1ºC (99 - 97ºF)	Normal, shivering may begin.
	36.1-35ºC (97 - 95ºF)	Cold sensation, goose bumps, unable to perform complex tasks with hands, shivering can be mild to severe, hands numb.
Moderate Hypothermia	35-33.9ºC (95 - 93ºF)	Shivering, intense, muscles incoordination becomes apparent, movements slow and labored, stumbling pace, mild confusion, may appear alert. Use sobriety test, if unable to walk a 9 meter (30 foot) straight line, the person is hypothermic.
	33.9-32.2ºC (93 - 90ºF)	Violent shivering persists, difficulty speaking, sluggish thinking, amnesia starts to appear, gross muscle movements sluggish, unable to use hands, stumbles frequently, difficulty speaking, signs of depression, withdrawn.
Severe Hypothermia	32.2-30ºC (90 - 86ºF)	Shivering stops, exposed skin blue and puffy, muscle coordination very poor, inability to walk, confusion, incoherent/irrational behavior, but may be able to maintain posture and appearance of awareness
	30-27.8ºC (86 - 82ºF)	Muscle rigidity, semiconscious, stupor, loss of awareness of others, pulse and respiration rate decrease, possible heart fibrillation.
	27.8-25.6ºC (82 - 78ºF)	Unconscious, a heartbeat and respiration erratic, a pulse may not be obvious.
	25.6-23.9ºC (78 - 75ºF)	Pulmonary edema, cardiac and respiratory failure, death. Death may occur before this temperature is reached.

Source: *Cold Environments- Health Effects and First Aid,* Canadian Center for Occupational Health and Safety (CCOHS), 2008

What should be done?

- Call for emergency help (i.e., ambulance or call 911).
- Move the person to a warm, dry area. Don't leave the person alone. Remove any wet clothing and replace with warm, dry clothing or wrap the person in blankets.

- Have the person drink warm, sweet drinks (sugar water or sports-type drinks) if they are alert. Avoid drinks with caffeine (coffee, tea, or hot chocolate) or alcohol.

- Have the person move their arms and legs to create muscle heat. If they are unable to do this, place warm bottles or hot packs in the arm pits, groin, neck, and head areas. DO NOT rub the person's body or place them in warm water bath. This may stop their heart.

What should be done? (If immersed in water)

- Call for emergency help (ambulance or call 911). Body heat is lost up to 25 times faster in water.

- DO NOT remove any clothing. Button, buckle, zip, and tighten any collars, cuffs, shoes, and hoods because the layer of trapped water closest to the body provides a layer of insulation that slows the loss of heat. Keep the victim's head out of the water and put on a hat or hood.

- Assist the victim to get out of the water as quickly as possible or climb on anything floating. DO NOT encourage the victim to attempt to swim unless a floating object or another person can be reached because swimming or other physical activity uses the body's heat and reduces survival time by about 50 percent.

- If getting the victim out of the water is not possible, have the victim wait quietly and conserve body heat by folding arms across the chest, keeping thighs together, bending knees, and crossing ankles. If another person is in the water, huddle together with chests held closely.

How to protect workers?

- Learn the signs and symptoms of cold-induced illnesses/injuries and what to do to help the worker.

- Train the workforce about cold-induced illnesses and injuries.

- Select proper clothing for cold, wet, and windy conditions. Layer clothing to adjust to changing environmental temperatures. Wear a hat and gloves, in addition to underwear that will keep water away from the skin (polypropylene).

- Take frequent short breaks in warm dry shelters to allow the body to warm up.

- Perform work during the warmest part of the day.
- Avoid exhaustion or fatigue because energy is needed to keep muscles warm.
- Use the buddy system (work in pairs).
- Drink warm, sweet beverages (sugar water, sports-type drinks). Avoid drinks with caffeine (coffee, tea, or hot chocolate) or alcohol.
- Eat warm, high-calorie foods like hot pasta dishes.

APPENDIX B

Table 14.2.B-1
Equivalent Chill Temperature

Estimated Wind Speeds (In Km/h)	Air Temperature Celsius										
	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40
	Equivalent chill temperature (C)										
0 calm	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40
8	9	3	-2	-7	-12	-18	-23	-28	-35	-38	-44
16	4	-2	-7	-14	-20	-27	-33	-38	-45	-50	-57
24	2	-5	-1	-18	-25	-32	-38	-45	-52	-58	-65
32	0	-7	-14	-21	-28	-35	-42	-50	-56	-63	-70
40	-1	-1	-16	-24	-31	-38	-46	-53	-60	-67	-76
48	-2	-10	-17	-25	-33	-40	-48	-55	-63	-70	-78
56	-3	-11	-18	-26	-34	-42	-50	-58	-65	-73	-81
64	-3	-11	-19	-27	-35	-43	-51	-59	-66	-74	-82
(wind speed greater than 64Km/h have little additional effect)	LOW HAZARD Risk of exposure, dry skin being effected in less than one (1) hour. Acceptable working conditions, given proper clothing and precautions are taken			INCREASING HAZARD Danger from freezing of exposed flesh within one (1) minute				HIGH HAZARD Flesh may freeze within thirty (30) seconds			

APPENDIX C

Table 14.2.C-1
Site Safety and Health Officer Equivalent Chill Temperature Log

Date	Time	Dry Bulb Temp.	Wind Speed	ECT Temp	Recommended Work/Rest Regimen (per hour) Work / Breaks
					/
					/
					/
					/
					/
					/
					/

HGL HydroGeoLogic, Inc Exceeding Expectations	**Health and Safety Procedure 26**	
	Approved by: Steve Davis — Health and Safety Director Digitally signed by Steve Davis DN: cn=Steve Davis, o=HGL, ou=EHS, email=sdavis@hgl.com, c=US Date: 2016.03.10 11:42:12 -05'00'	
Confined Space Entry	H&S Procedure No.: 26	
	Publication Date: March 2011	
	Revision No.: 03	
	Revision Date: February 2016	
	Review Date: February 2017	

1.0 PURPOSE

The purpose of this program is to ensure work in confined spaces is executed safely. Confined spaces often present physical and atmospheric hazards that can be avoided if they are recognized and addressed prior to entering these spaces to perform work. HGL's program was developed to comply with the OSHA General Industry Confined Space Standard, 29 CFR 1910.146 and the OSHA regulation that addresses confined spaces in the construction industry, 29 CFR 1926 Subpart AA. If HGL employees or subcontractors are engaged in both construction and industrial confined space entry, the work must comply with the construction safety standard because the standard is the more protective of the two.

2.0 SCOPE AND APPLICATION

This procedure applies to any work which exposes HGL employees, HGL temporary employees and subcontractors to confined space hazards. It also applies to situations where personnel or subcontractors may work around confined spaces, e.g., there are posting and signage requirements for confined spaces even if no one will have to enter identified confined spaces.

This procedure applies to entering, attending entries, and supervising entry into confined spaces. Examples of such work may include sampling or inspections in vaults, sewers, pits, tanks, crawl spaces, attics, and boilers. HGL subcontractors that perform this work must have their own processes that meet or exceed these requirements and the applicable regulations.

3.0 GENERAL REQUIRMENTS

- Limit all entry into permit-required confined spaces to those situations when it is the only feasible means of completing the tasks.
- Train staff that will participate in confined space entry in the applicable hazards and hazard controls. The training should include the kinds of spaces workers may be in, what the hazards could be, how those hazards will be made safe or monitored, and how workers will be rescued if anything goes wrong.
- Identify confined spaces that are under HGL control with signage. For permit required confined spaces the signs should read, "DANGER – PERMIT REQUIRED CONFINED SPACE, DO NOT ENTER." For non-permit required spaces the sign

should indicate that a permit is not required and should also indicate any requirements for entry.

- Have this document available at the jobsite for review by all employees that will be entering confined spaces.
- Take effective measures to prevent unauthorized employees from entering permit spaces (barriers).
- Include a discussion of any permit-required confined spaces at a jobsite (including the known hazards) in the site safety briefing and daily tail gate briefings when work is scheduled to be performed in or around the confined space. Also, identify and discuss the confined spaces with entry employers (i.e. subcontractor) and each other before and after entry.
- Complete a confined space entry permit and receive all approvals prior to entering permit-required spaces.
- Conduct continuous atmospheric monitoring during entries in permit-required spaces.
- Conduct continuous monitoring and have an early warning alarm system for engulfment hazards, if present. For example, when workers are performing work in a storm sewer.
- Before entry, prepare and discuss the plan for emergency self-rescue from permit-required confined spaces and for emergency rescue procedures with equipment and trained personnel, if required. If relying on local emergency services for emergency rescue, arrangements with the responders must be coordinated in advance so that they know to give HGL advance notice if they will be unable to respond for a period of time (because they are responding to another emergency, attending department-wide training, etc.). Note: Outside emergency services must have the capability to reach the victim(s) within a time frame that is appropriate for the permit space hazard(s) identified.

4.0 DEFINITIONS

Acceptable Entry Conditions – The conditions that must exist in a permit space to allow entry and to ensure that HGL or subcontractor employees involved with a permit-required confined space entry can safely enter and work within the space.

Attendant – Is the employee authorized and assigned to observe the Entrant during entry into a permit-required confined space. All Attendants must receive an appropriate level of confined space entry training and show competence in carrying out an Attendant's responsibilities. No confined space entry will be undertaken without the presence of an Attendant. The Attendant can also serve as the entry supervisor.

Authorized Entrant – Means an employee who is authorized by the entry supervisor to enter a permit space. The Entrant must alert the attendant if a dangerous situation develops.

Blanking or Blinding – Means the absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a blind flange, spectacle blind, or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

Competent Person – A trained individual who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them. Each employer at a worksite must ensure that a competent person identifies all confined spaces in which one or more of the employees it directs may work, and identifies each space that is a permit space, though consideration and evaluation of the elements of that space, including testing as necessary.

Confined Space – A space that is large enough and so configured that an employee can bodily enter (entire body or a portion of the body, e.g. head, arms and upper torso) and do assigned work, has limited or restricted means for entry or exit, and is not designed for continuous employee occupancy.

Examples of confined spaces include, but are not limited to, the following:

- boilers
- storm drains
- tunnels
- sewers
- bunkers
- pipelines
- sumps
- utility/transformer vaults
- wells
- pumping stations
- sewage digesters
- smokestacks
- vats
- ductwork
- tanks
- reaction or process vessels

Types of Confined Spaces

Non-Permit-Required Confined Space – A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard that can cause death or serious physical harm and all hazards within the space are **eliminated** without entry into the space.

Permit-Required Confined Space (or "Permit Space") – A confined space that has any one of the following characteristics:

- Contains or has the potential to contain a hazardous atmosphere,
- Contains a material with the potential for engulfment of an Entrant,
- Has an internal shape such that an Entrant could be trapped or asphyxiated by inwardly converging walls, or a floor that slopes downward and tapers to a smaller cross section, or contains any other recognized serious safety and health hazard (such as moving machinery or the potential for the release of thermal energy).

Entry into a permit-required confined space requires use of trained personnel, following written practices and procedures, use of an entry permit system, and arrangement of rescue services described in this written program.

Permit Space, hazard eliminated- A permit space, hazard-eliminated or, an alternate entry procedure permit space means that an employer can demonstrate that the only hazard posed by the permit space is an actual or potential hazardous atmosphere, and the following conditions are met:

- That all physical hazards in the space are eliminated or isolated through engineering controls so that the only hazard posed by the permit space is an actual or potential hazardous atmosphere,
- That continuous forced ventilation alone is sufficient to maintain the permit space safe for entry, and that, in the event the ventilation system stops working, entrants can exit the space safely;
- There is monitoring and inspection data that supports this, and
- Atmospheric monitoring, that has alarm settings, continues during entries.

Entry into a permit space, hazard eliminated, does not require use of barriers, permit system, or rescue and emergency service measures (example, no tripod and full body harness). Self-rescue from the confined space is the means of exit. For purposes of this written program, only the host employer/owner of the confined space can classify and document these spaces as such.

Hazard eliminated means that all serious safety and health hazards have been controlled using physical controls not including personal protective equipment (PPE) or respiratory protection.

Controlling Contractor – The employer that has overall responsibility for construction at the worksite. **Note:** If the controlling contractor owns or manages the property, then it is both a controlling employer and a host employer. Controlling contractors and host employers must discuss spaces on the site and their hazards with entry employers and each other before and after entry.

Double Block and Bleed – The closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

Early-Warning System – The monitoring method used to alert authorized entrants and attendants that an engulfment hazard may be developing. Examples of early-warning systems include, but are not limited to: alarms activated by remote sensors, and lookouts with equipment for immediately communicating with the authorized entrants and attendants.

Emergency – Means any occurrence (including any failure of power, hazard control or monitoring equipment) or event, internal or external, to the permit space that could endanger entrants.

Engulfment – Means the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, crushing, or suffocation.

Entry – The act by which a person intentionally passes through an opening into a permit required confined space. Entry includes ensuing work activities in that space, and occurs when any part of the entrant's body breaks the plane of an opening into the space.

Entry employer – The employer who directs workers to enter a space.

Entry Permit (Permit) – The written or printed document that is provided by the employer (see Appendix C for HGL form) to allow and control entry into a permit space and that contains the following information:

- The permit space to be entered,
- The purpose of the entry,
- Authorized entrants, attendants, and entry supervisors,
- Hazards of the permit space to be entered and measures used to isolate the permit space and to eliminate or control permit space hazards,

- Acceptable entry conditions, and results of initial and periodic tests, and
- Equipment, such as personal protective equipment, monitoring equipment, communications equipment, alarm systems, and rescue equipment.

Entry Rescue – Entry rescue requires entry by a fully trained and equipped confined space emergency responder, not the attendant.

Entry Supervisor – The person responsible for determining whether acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section. The entry supervisor must remain at the jobsite throughout the entire entry operation. **Note:** An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required by this standard for each role he or she fills. Also, the duties of entry supervisor may be passed from one individual to another during the course of an entry operation.

Electrical/Mechanical/Hazardous Energy Hazards – Include any machinery, equipment, or line that could be energized/started up unexpectedly or cause the release of stored energy that would create a safety hazard.

Hazardous Atmosphere – An atmosphere that may expose workers to the risk of death, incapacitation, and impairment to self-rescue, injury, or acute illness from one or more of the following causes:

- The atmospheric oxygen concentration is below 19.5 percent ("oxygen deficient atmosphere") or above 23.5 percent ("oxygen enriched atmosphere"). Any atmosphere with less than 19.5 percent oxygen will not be entered without the use of an approved supplied air system.

  Note: The oxygen level in a confined space can decrease because of work in progress, such as welding, cutting, or brazing. It can also be decreased by certain chemical reactions (rusting) or through bacterial action (fermentation). The oxygen level also may be low if another gas, such as carbon dioxide or nitrogen, displaces the oxygen in the space. An oxygen-rich atmosphere (above 23.5 percent) will cause combustible materials to burn violently when ignited, and should be avoided.

- Flammable gas, vapor, or mist is more than 10 percent of its lower explosive limit (LEL)/lower flammable limit (LFL).
- Airborne combustible dust is at a concentration that meets or exceeds the LEL.

  Note: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52 meters) or less.

- Toxic substances at atmospheric concentrations that could result in employee exposures exceeding a published exposure limit. Those substances that can cause death, incapacitation, impairment of the ability to self-rescue, injury, or acute illness due to their health effects must be given higher priority than substances that pose chronic hazards. Some sources of toxic substances are as follows:
    - Material previously stored in the space: Contents can be absorbed into the walls and gradually vaporize after the contents have been removed. Removing contents residue may release gases, vapors, or dusts into the space.
    - Work tasks in a confined space: Examples include welding, cutting, brazing, painting, scraping, sanding, degreasing, etc. Various processes generate toxic substances that may collect in the confined space.
    - Areas next to the confined space: Toxics produced by work outside of a confined space can enter and accumulate in the confined space.

Host Employer – The employer that owns or manages the property where the work is taking place. The host employer must identify and provide any information regarding permit space hazards and entry operations. Controlling contractors and host employers must discuss spaces on the site and their hazards with entry employers and each other before and after entry. The host employer should identify the designated rescue service during the pre-entry inspection.

Fall Hazards – Which are defined as any conditions creating a potential fall of 6 feet or more.

Hot Work – Which is defined as operations such as riveting, welding, cutting, burning, and heating that are capable of providing a source of ignition and/or cause or have the potential to cause a hazardous atmosphere. If hot work is required in a confined space a hot work permit must be completed.

Isolation – The process by which a permit space is removed from service and completely protected against the release of energy and material into the space. Techniques include blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages. Simply locking or tagging out a piping system, is not appropriate for fluid isolation purposes and would not qualify a space as non-permit, since it not elimination of the hazard.

Limited Contact/Reduced Visibility – Which is defined as conditions where direct communications with others is not possible or visibility is limited to less than 5 feet due to darkness.

Limited or Restricted Means for Entry or Exit – Means a condition that has a potential to impede an employee's movement into or out of a confined space. Such conditions include, but

are not limited to, trip hazards, poor illumination, slippery floors, inclining surfaces and ladders. Examples of where restricted exist may occur are: tanks, vessels, silos, storage bins, vaults and pits.

Lockout – Means the placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lower Flammable Limit or Lower Explosive Limit – Means the minimum concentration of a substance in air needed for an ignition source to cause a flame or explosion.

Monitor or Monitoring – Means the process used to identify and evaluate the hazards after an authorized entrant enters the space. This is a process of checking for changes that are performed in a periodic or continuous manner after the completion of the initial testing or evaluation of that space.

Non-entry Rescue – Occurs when a rescue service, usually the attendant, retrieves employees in a permit space without entering the permit space.

Prohibited Condition – Any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

Rescue Service – The personnel designated to rescue HGL or subcontractor employees from permit spaces.

Retrieval System – The equipment, including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor, used for non-entry rescue of persons from permit spaces. OSHA expects all authorized entrants in permit spaces to wear retrieval devices.

Test or testing – Means the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

Ventilate or Ventilation – Means controlling a hazardous atmosphere using continuous forced-air mechanical systems that meet the requirements of §1926.57—Ventilation. As noted in the standard, using ventilation to preclude the possibility of a hazardous atmosphere is considered control of the atmospheric hazard and is not considered elimination, therefore the ventilated space would still be considered a Permit Confined Space.

5.0 PROCEDURE

5.1 NOTIFICATION

The Project Manager must contact Corporate Health and Safety before initiating any project with new confined space entry tasks, whether it be by HGL or subcontractors.

Notification may be email or by telephone. This notification will include the following:

- Project name, location, and Project Manager
- Anticipated confined space entry tasks
- Names of the proposed members of the confined space entry team(s), and in the case of HGL serving as "host employer," the name of the subcontractor making entry.

5.2 PRE-ENTRY INSPECTION

The Project Manager, Site Safety and Health Officer and/or Entry Supervisor must conduct a pre-entry site inspection. The inspection must be documented (see Pre-Entry Inspection Checklist in Appendix A), and should identify at least the following:

- Entryway or utility accessibility and condition.
- Current or past contents of pipes, sumps, or tanks.
- Air testing results.
- Any structural modifications or additions required to make a safe entry.
- Any fall hazards or ladder use that may be present during entry.
- The possible effect of adverse weather.
- The locations of entry, exit, and ports for mechanical venting.
- Lockout/tagout, blanking blocking and bleeding, or isolation requirements.
- The types of safety and environmental monitoring equipment required to make a safe entry.
- The location and path to a secondary means of egress if available.

During the pre-entry inspection, the atmosphere of a confined space must be analyzed (at multiple different levels) using equipment of sufficient sensitivity and specificity to identify

and evaluate any hazardous atmospheres that may exist or arise, so that appropriate permit entry procedures can be developed and acceptable entry conditions identified

5.3 POST-INSPECTION

Once the pre-entry inspection checklist is completed (see appendix **A**), the Project Manager, Site Safety and Health Officer and/or the Entry Supervisor and Corporate Health and Safety Director will review this data and determine acceptable entry conditions. The Corporate Health and **S**afety Director will review the identified confined space hazards as well as entry and/or permit entry requirements and procedures, including necessary rescue services. If the entry will be a permit-required entry performed or supervised by HGL employees, the Corporate Health and Safety Director will provide consecutively numbered confined space entry permits (see **A**ppendix **C**)**.** The entry permit hazard identification and evaluation checklist (minimum and needed safety requirements, based on pre-entry inspection checklist, and air monitoring results) will be used to authorize entry into a permit-required confined space and must be completed and posted outside the permit space prior to entry**.**

5.4 VERIFICATION TESTING

The atmosphere of a permit space that may contain a hazardous atmosphere must be tested, by the Entry Supervisor before entry, for the contaminants identified during the pre-entry inspection using equipment specified in the permit. Initial measurement of values for each atmospheric parameter must be made for at least the minimum response time of the test instrument specified by the manufacturer, including procedures to identify stratified atmospheres.

Evaluation and interpretation of this data (i.e., are atmospheric contaminant concentrations within the range of acceptable entry conditions) will be done by the Entry Supervisor. For all HGL or contractor confined space entries, there will be continuous atmospheric monitoring for the duration of the entry.

Results of testing (i.e., actual concentration, etc.) must be recorded on the permit in the space provided next to the stipulated acceptable entry condition and, if applicable, in the project field manual.

5.5 PERMIT COMPLETION

The HGL Confined Space Entry Permit (permit) consists of a list of engineering controls, safety equipment, personal protective equipment, respiratory protection, and rescue service arrangements that may be appropriate for any given confined space. Based on information obtained from the pre-entry inspection and documented on the Pre-Entry Inspection Checklist, each individually listed permit condition will be identified as necessary for the entry or not.

The following permit conditions are required for all HGL or subcontractor permit-required entries:

- Lockout/tagout, unless not applicable (i.e., no hazardous energy or any potentially moving equipment is present),
- Lines broken or capped, unless not applicable (i.e., no lines discharge into the space),
- Ventilation, unless mechanical ventilation is not necessary or would not be effective,
- Secured area,
- Air monitoring,
- Full body harness,
- Emergency retrieval and/or lifeline and/or fall protection,
- Fire extinguisher/first aid kit,
- Safety glasses and/or goggles,
- Hard hat,
- Escape self-contained breathing apparatus (ESCBA), unless higher respiratory protection is needed OR there are no potential atmospheric hazards and the ESCBA could cause an entanglement hazard, and
- Emergency services notified or standing by.

Any member of the HGL confined space entry team may fill out the HGL permit. The Entry Supervisor is responsible for verifying that the information on the permit is complete and correct, all permit conditions have been met, and all equipment, including personal protective equipment, is in working order and being properly used. If all conditions are met, the Entry Supervisor reviews the permit with the authorized Entrant(s) and Attendant, signs it, and posts it at the entrance to the confined space.

5.6 ENTRY

Whenever possible, entry should be horizontal with the Entrant wearing a full body harness attached to a retrieval line. For vertical openings, entry may be made by a ladder inserted into the confined space or by lowering the Entrant into the space using a man-rated winch. During any vertical entry, fall protection shall be provided for the Entrant and Attendant and must consist of a full body harness, a shock-absorbing fall lanyard, or an American National Standards Institute (ANSI) certified retractable lifeline/emergency retrieval winch combination, or equivalent.

A mechanical retrieval system must be available to retrieve employees from vertical entry confined spaces more than 5 feet deep.

If the Entrant will be stopping at several different heights for more than a few minutes (i.e., to do an inspection of the walls), a boatswain's chair will be used when the opening to the space has a diameter larger than 24 inches. Use of a boatswain's chair will be in accordance with OSHA 29 CFR 1910.28 (k), 1926.104, and 1926.451 (l).

5.7 ENTRY TERMINATION

The Entry Supervisor will cancel the entry permit when the following conditions are met:

- The entry operations covered by the permit have been completed.
- A prohibited condition that is not allowed under the entry permit arises in or near the permit space.

If the Entry Supervisor cancels the permit due to a prohibited condition, all personnel must evacuate the confined space. Prior to reentering the confined space, a new Pre-Entry Inspection Checklist and a new Permit will need to be obtained from the Corporate Health and Safety Director.

5.8 EMERGENCY RESPONSE AND RESCUE

OSHA requires HGL to develop and implement procedures for summoning rescue and emergency services for rescuing entrants from permit-required confined spaces, for providing necessary emergency services to rescued employees, and for preventing unauthorized personnel from attempting a rescue.

HGL has not trained or authorized an HGL "in-house" rescue team in lieu of notifying and/or staging an "external" trained and equipped rescue team at confined space entry projects. *Therefore, permit-required entries will not be allowed unless a trained and equipped rescue team has been notified and is available to respond prior to entry. Permit-required entries will not be allowed into confined spaces with atmospheres exceeding concentrations known or suspected to be IDLH unless a trained and equipped and authorized rescue entrant or rescue team, approved by Corporate Health and Safety, is staged on site prior to entry.*

For the purposes of this written program and the above policies, one of the following rescue services arrangements must be made, by the Site Safety and Health Officer or Entry Supervisor, prior to the confined space entry:

- A rescue team can be notified at the time of entry and be available to respond if called if:

  - Entrants will not be wearing supplied air respirators,
  - Entrants are not expected to be exposed to IDLH conditions, and Entrants can be expected to "self-rescue" or be "non-entry rescued" under normal circumstances,
  - The entry is a straight horizontal or vertical,
  - A trained and authorized Rescue Entrant, in addition to the Attendant, is staged at the entry,
  - No other need for a standby rescue team exists.
- A rescue team must be notified and staged on-site at the time of entry if:
  - Entrants will be wearing supplied air respirators,
  - Entrants are expected to be exposed to obvious IDLH conditions, and/or
  - Entrants would be expected to have difficulty in being "non-entry rescued" under normal circumstances, and/or
  - Any other need for an on-site rescue team exists.

Arrangements must be completed with rescue and emergency services (i.e., emergency medical services) prior to the confined space entry. The "host employer"/confined space owner should identify the designated rescue service during the pre-entry inspection. The service should be contacted by the Entry Supervisor, and determination of interest to serve as the rescue team, availability, response time, equipment, familiarity with the site, and responder training must be documented. NOT ALL BASE AND LOCAL FIRE DEPARTMENTS ARE QUALIFIED TO SERVE AS CONFINED SPACE RESCUE TEAMS.

For each permit required confined space entry, an Emergency Response Form (see Appendix B) shall be completed and approved by the Entry Supervisor. The approved Emergency Response Form must be posted with the entry permit near the opening of the confined space. Emergency escape routes and directions to the nearest hospital (attach maps) shall be developed and attached to the Emergency Response Form (see Appendix B).

5.9 SUBCONTRACTOR AND MULTI-EMPLOYER WORKSITES

The client, representatives of the client, or a subcontractor may be required to enter a confined space with HGL employees. OSHA requires the coordination of entry operations when employees of more than one employer are working simultaneously as authorized entrants in a confined space. Planning the task and making these arrangements in advance could prevent the purchase or rental of redundant equipment and the assignment of extra employees to the project.

OSHA identifies the employer who controls the confined space as the "host employer," and all other employers who could enter the space as a contractor or "guest employer." HGL is usually a "guest employer" in relation to its clients. HGL is always a "host employer" to HGL-hired subcontractors.

As a "guest employer," HGL will:

- Provide a copy of this written confined space entry program to the "host employer" to allow for coordination of efforts,
- Provide documentation of HGL or subcontractor employees' confined space entry training,
- Obtain any available information regarding permit space hazards and entry operations from the "host employer,"
- Independently assess the classification of a confined space using observation, instrumentation, and direct communication with the client and document such information on a Pre-Entry Inspection Checklist (see Appendix A), and
- Communicate to the "host employer" any hazards confronted or created during the entry.

Should a "host employer" require HGL and subcontractor employees to follow the host employer's written confined space entry program (i.e., "host employer" employees will be entering the space with HGL employees), the HGL Entry Supervisor will notify HGL's Corporate Health and Safety Director before coordinating operations with the "host employer."

As a "controlling contractor," HGL will:

- Discuss spaces on the site and their hazards with entry employers and each other before and after entry. **Note:** This is a new requirement for the controlling contractors and host employers. The construction confined space standard makes the controlling contractor, rather than the host employer, the primary point of contact for information about permit spaces at the work site.
- Make sure employers outside a space know not to create hazards in the space, and that entry employers working in a space at the same time do not create hazards for one another's workers.

As a "host employer," HGL will:

- Obtain a copy of the subcontractor's written confined space entry program,
- Discuss any barriers, precautions or procedures that have been set up for protection in or near permit spaces,

- Obtain documentation of subcontractor employees' confined space entry training,
- Provide to the subcontractor any available information regarding permit space hazards and entry operations from the client/owner of the confined space,
- Independently assess the classification of a confined space using observation, instrumentation, and direct communication with the client/owner and document such information on a Pre-Entry Inspection Checklist (see Appendix A), and
- Debrief the subcontractor and communicate to the "host employer" any hazards confronted or created during the entry.

5.10 TRAINING REQUIREMENTS

- Each authorized employee (including all Entrants) must receive training in their specific roles in confined space entry, the rules and regulations, kinds of spaces workers may be in, what the hazards could be, how those hazards will be made safe or monitored, how workers will be rescued if anything goes wrong, company policy, recognizing warnings and identification signs, procedures that address employees of other companies who may enter and work in permit-required confined spaces and this procedure. Training will be both on-line and hands-on. Retraining must also be provided for authorized and affected employees when there is a change that presents a new hazard.
- Entry Supervisors and Attendants will be trained in:
  - Their roles and responsibilities.
  - The hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
  - The communication method to alert entrants of the need to evacuate the space.
  - The monitoring methods that will be used to evaluate activities inside and outside the space to determine if it is safe for entrants to remain in the space.
  - The need to verify that appropriate entries have been made on the entry permit, all tests conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.
  - The method of performing non-entry rescue or summoning rescue services.

6.0 RESPONSIBILITIES

6.1 PRESIDENT, CHIEF OPERATING OFFICER, DIVISIONAL VICE PRESIDENTS

- Be a role model for safety.
- Provide adequate resources to enable safe work. Maintain a general awareness of procedural requirements.

6.2 CORPORATE HEALTH AND SAFETY DIRECTOR

The Corporate Health & Safety Director will be consulted before initiating any new task with confined space entry exposures. The Corporate Health & Safety Director will assist the supervisors in meeting their responsibilities under this section. This assistance will include providing technical guidance in identifying confined spaces, reviewing project confined space entry and procedures, and assisting in developing and facilitating training.

- Be a role model for safety.
- Approve this program and subsequent revisions.
- Provide support and assistance in the implementation of this program.
- Review the confined space entry task(s) and provide constructive input on confined space hazard recognition and control.
- Review Pre-Entry Inspection Checklists.
- Provide numbered confined space permits as needed.
- Make recommendations to correct deficiencies found to exist before entries are authorized and be available for post-entry reviews.
- Confirm and document certification in the HGL Training and certification database that the employees have completed the necessary confined space training for their roles.

6.3 OFFICE MANAGERS

- Be a role model for safety.
- Maintain a general awareness of the applicable portions of these requirements.
- Maintain an awareness of the confined spaces on supervised work and ensure that adequate controls are in place.

6.4 OFFICE HEALTH AND SAFETY OFFICERS

- Be a role model for safety.
- Maintain a general awareness of the applicable portions of these requirements.
- Maintain an awareness of confined spaces on work managed by the office.
- Verify that confined space hazards are controlled.

6.5 SUPERVISORS AND PROJECT MANAGERS

- Ensure that confined spaces are identified and everyone working onsite is aware of locations and hazards. Coordinate entry operations with subcontractors and ensure that entry is performed in compliance with OSHA's Confined Space Standards and this procedure.
- Contact Corporate Health and Safety to discuss plans for entry.
- Ensure that personnel authorized to be involved in confined space entry work are properly trained and collect certifications.
- Ensure that there is a trained competent and responsible entry supervisor/attendant for each confined space entry project or task.
- Procure appropriate equipment for confined space entry project tasks.
- Coordinate the confined space entry with those of the owner or contractor and make the subcontractor aware of the elements that make the space in question a permit space. Also, apprise subcontractors of any procedures that HGL and/or the host employer/owner of the space have implemented for the protection of employees of HGL or its subcontractor.
- Ensure that all involved adhere to approved procedures.
- Keep records of pre-entry check lists and permits.
- Debrief the subcontractor at the conclusion of the entry

6.6 ENTRY SUPERVISOR/ SITE SAFETY OFFICER

- Ensure that conditions in the permit-required confined space have been tested to determine if acceptable entry conditions exist before entry begins,
- Verify that the information on the Pre-Entry Inspection Checklist (see Appendix A) accurately reflects the conditions and hazards of the confined space,
- Verify that the completed entry permits (see Appendix C) reflects the availability and proper working condition of the equipment to be used for atmospheric monitoring, entry, and remote emergency retrieval before authorizing or allowing entry,

- Verify that the necessary procedures, practices, and equipment for safe entry are present and in effect before allowing entry.
- Verify that rescue services are available and that the means for summoning them are operable.
- Oversee the initial air monitoring to determine if an acceptable entry condition is present.
- Verify that all Entrants and Attendants have received appropriate training, and medical and respiratory protection clearances before initiating an entry.
- Verify, at appropriate intervals, that the entry operations remain consistent with the terms of the entry permit and that acceptable entry conditions are present.
- Cancel the entry authorization and end the entry when acceptable entry conditions are not present.
- Take the necessary measures for concluding an entry operation including canceling the permit and replacing the cover or otherwise restricting access to the confined space. Take the appropriate measures to prevent individuals who the company has not authorized for entry from lingering in or near an active confined space entry.
- Arrange all required field and safety equipment before initiating entry.
- Inspect all equipment before entry and ensure that the environmental monitors have been properly calibrated, passed a function check, and operate correctly.
- Ensure that the permit-required confined space is tested or monitored as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations.
- Reevaluate the space in the presence of any Entrant, or his/her representative, who requests that the space be reevaluated if they have reason to believe the evaluation may not have been adequate.
- Provide each Entrant with monitoring results immediately.
- Ensure that at least one Entry Supervisor/Attendant is outside the confined space for the duration of the entry.
- Identify all HGL or subcontractor staff that have roles in the confined space entry and discuss their roles with them.
- Prevent unauthorized personnel from attempting a rescue.
- Prepare, use, and cancel entry permits.
- Conclude the entry after operations have been completed.

- Have a discussion with entry employer, controlling employer and host employer after the entry to review how the entry proceeded and provide any information regarding permit space hazards or lessons learned during the entry operation.

6.7 ATTENDANT

The Attendant continuously maintains an accurate count of persons in the confined space. The Attendant is only assigned to one confined space entrance at a time, even if there is an emergency.

The Attendant shall:

- Recognize potential chemical, physical, electrical, or mechanical confined space hazards, as well as the signs, symptoms, and consequences of exposure to these hazards, and report any unusual circumstance to the Entry Supervisor,
- Monitor activities inside and outside the confined space and judge if it is safe for the Entrants to remain in the space, and
- Monitor the air quality inside the confined space.
- Communicate – The Attendant shall:
    - Keep in contact with Entrants during entry, and
    - Order Entrants to evacuate the permit space immediately when:
        - The Attendant observes an activity or condition outside the acceptable entry conditions for that confined space,
        - The Attendant detects a situation outside the confined space that could endanger the Entrants,
        - The Attendant detects an uncontrolled hazard within the confined space, or
        - An emergency in a nearby confined space may distract the Attendant from his/her responsibilities.
- Rescue – The Attendant shall:
    - Call 911 or contact the appropriate emergency response team,
    - Never enter the confined space to attempt a rescue of Entrants,
    - Properly use any remote rescue equipment provided and perform any other assigned rescue and emergency duties without entering the confined space, and
    - Warn, or stop unauthorized Entrants.

6.8 EMPLOYEES

- Participate in confined space training, as needed.
- Follow the confined space entry procedures.
- Alert supervisor if proper equipment is not available or there are uncontrolled hazards.

7.0 RECORDS

Collect and maintain documentation generated as a result of this program in accordance with Document Control requirements of the HGL Corporate Quality Assurance Manual.

Entry permits will be retained in project records. Records of task or site specific training will be retained in project documentation. Records of formal training such as classroom training for confined space entrants, attendants, and supervisors will also be kept in HGL's corporate training data base.

The training records will include the following information:

- The dates of the training sessions.
- The contents or a summary of the training sessions.
- The names and qualifications of persons conducting the training.
- The names and job titles of persons attending the training sessions.

8.0 REFERENCES

- OSHA's 29 CFR 1910.146, Permit-required Confined Spaces.
- OSHA's 29 CFR 1926 Subpart AA.

HGL HydroGeoLogic, Inc Exceeding Expectations	**Health and Safety Procedure 26** Approved by: Steve Davis Health and Safety Director Digitally signed by Steve Davis DN: cn=Steve Davis, o=HGL, ou=EHS, email=sdavis@hgl.com, c=US Date: 2016.03.10 12:13:53 -05'00'

26.1 Confined Space Pre-entry Inspection Checklist	H&S Procedure No.: 26 Publication Date: March 2011 Revision No.: 03 Revision Date: February 2016 Review Date: February 2017

APPENDIX A

CONFINED SPACE PRE-ENTRY INSPECTION CHECKLIST

DATE: _____ **CLIENT:** _____

SPACE LOCATION AND DESCRIPTION: _____

_____

_____ **SPACE NUMBER** _____
(IF APPLICABLE)

PURPOSE OF ENTRY: _____

JOB NUMBER: _____

CLIENT CLASSIFICATION: ____ NON-PERMIT ____ PERMIT REQUIRED ____ UNKNOWN
____ NON-PERMIT DUE TO VENTILATION/MONITORING (Permit Space; Hazard Eliminated)

ATMOSPHERIC

☐ Oxygen Deficient ☐ Oxygen Enriched
☐ LEL ☐ Flammable Dusts
☐ Toxics ☐ IDLH

ENGULFMENT HAZARDS

☐ Water/Liquids ☐ Solid Materials

INTERNAL CONFIGURATION

☐ Converging Walls ☐ Maze Construction
☐ Obstacle(s) in Space

OTHER RECOGIZED HAZARDS

☐ Energy/Mechanical ☐ Hot Work
☐ Use of Chemicals/Compressed Gases in Space
☐ Other Serious Hazard(s)
List _____
_____

Technical Notes:

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26.1 Confined Space Pre-entry Inspection Checklist	H&S Procedure No.: 26
	Publication Date: March 2011
	Revision No.: 03
	Revision Date: February 2016
	Review Date: February 2017

AIR MONITORING MEASUREMENTS

TESTS MADE	PERMISSIBLE ENTRY LEVEL	DEPTH	DISTANCE	BEFORE VENTILATION	AFTER VENTILATION
Oxygen	19.5% to 23.5%				
Lower Flammable Limit	< 10%				
Carbon Monoxide	< 25 ppm				
Hydrogen Sulfide	< 11 ppm				
Hydrocarbons	< 1ppm				

INSTRUMENTS

MAKE	MODEL	SERIAL NO.	CALIBRATION DATE

EQUIPMENT NECESSARY FOR ENTRY - CHECKLIST

EQUIPMENT	YES	NO
Confined Space Entry Permit Needed (Corporate Health & Safety Notified)		
Authorized Entrants, Authorized Attendants, Entry Supervisor		
Lockout/Tagout Materials		
Ventilation Fan, Hoses and Saddle Vent		
Barriers, Danger Signs, Flags, Traffic Cones (devices)		
Direct Reading Gas Monitor(s) with Current Bench Calibration		
Safety Harness and Lifelines for Entrant and Standby Persons		
Hoisting Equipment ☐ with Fall Protection		
Fire Extinguisher (ABC)		
First Aid and Infection Control Kit		
Powered Communications ☐ Intrinsically Safe		
Electric Equipment and Lighting ☐ Explosion Proof		
Hardhat, Goggles, Boots, Gloves, Disposable Outerwear		
Chemical Protective Clothing		
Escape Bottles - 5 Minute/10 Minute (ESCBA)		
Air Purifying Respirators with ESCBA		
Supplied Air Respirators (Level B) ☐ Airline with ESCBA ☐ SCBA		

26.1 Confined Space Pre-entry Inspection Checklist	H&S Procedure No.: 26
	Publication Date: March 2011
	Revision No.: 03
	Revision Date: February 2016
	Review Date: February 2017

CONFINED SPACE RESCUE TEAM ☐ ONSITE ☐ OFFSITE

Name: _____ Phone Number: _____

Contact Person: _____ Estimated Response Time: _____

☐ Rescue Team notified and available to respond to entry site when:
- Entrants are not wearing supplied air respirators: AND
- Entrants are not exposed to obvious IDLH or potential IDLH conditions; AND
- Entrants can be expected to "self-rescue" under normal circumstances; AND
- No other need for a standby rescue team.

☐ Rescue team notified and staged at entry site when:
- Entrants are wearing supplied air respirators; OR/AND
- Entrants are exposed to obvious IDLH or potential IDLH conditions; OR/AND
- Entrants would be expected to have difficulty in "self-rescue."

Sketch Confined Space - Ventilation Points - Monitoring Points

A copy of this document must be reviewed by the Confined Space Entry Team Prior to Entry.

Inspector Signature: _____ Date: _____

Project Manager: _____ Date: _____

HGL HydroGeoLogic, Inc Exceeding Expectations	**Health and Safety Procedure 26**
	Approved by: Steve Davis Health and Safety Director Digitally signed by Steve Davis DN: cn=Steve Davis, o=HGL, ou=EHS, email=sdavis@hgl.com, c=US Date: 2016.03.10 12:17:35 -05'00'

26.2 Confined Space Emergency Response Form	H&S Procedure No.: 26
	Publication Date: March 2011
	Revision No.: 03
	Revision Date: February 2016
	Review Date: February 2017

APPENDIX B

CONFINED SPACE ENTRY EMERGENCY RESPONSE FORM

Post this form at the work site near the Confined Space Entry Permit and/or Nearest Telephone

CONFINED SPACE RESCUE TEAM	CONTACT NAME	TELEPHONE NUMBER
On-Site Confined Space Rescue Team ☐ Facility ☐ Contracted Response Time: _____		
Off-Site Confined Space Rescue Team ☐ Fire ☐ Police ☐ EMS ☐ Contracted Response Time: _____		

OTHER EMERGENCY SERVICES	CONTACT NAME	TELEPHONE NUMBER
On-Site Security		
Other On-Site Response Team(s)		
Base Or Municipal Emergency Medical Services		
Base Or Municipal Fire Department		
Base Or Municipal Police Department		

Note: Please contact the emergency services listed above prior to conducting entry operations to determine their ability to respond in an emergency.

CORPORATE HEALTH AND SAFETY

STEVE DAVIS, CIH,CHMM	Director, Health And Safety	(865)659-0499 Knoxville
EDIE SCALA-HAMPSON, CIH, CHMM	Senior Health And Safety Project Manager	(847) 409-6384 Chicago

OTHERS TO BE NOTIFIED IN CASE OF ACCIDENT

	Project Manager
	Local Health and Safety Coordinator

Note: When the confined space is evacuated due to an on-site emergency, personnel shall not re-enter until all of the following conditions have been met:

- The conditions resulting in the emergency have been corrected.
- The hazards have been reassessed.
- Corporate health and safety has been notified.
- A new entry permit has been completed.
- The entry team has been briefed on proposed changes in work practices, personal protection, and permitted space hazards.

HGL HydroGeoLogic, Inc Exceeding Expectations	**Health and Safety Procedure 26**	
	Approved by: Steve Davis Health and Safety Director Digitally signed by Steve Davis DN: cn=Steve Davis, o=HGL, ou=EHS, email=sdavis@hgl.com, c=US Date: 2016.03.10 12:31:13 -05'00'	
26.3 Confined Space Entry Permit		H&S Procedure No.: 26
		Publication Date: March 2011
		Revision No.: 03
		Revision Date: February 2016
		Review Date: February 2017

APPENDIX C
CONFINED SPACE ENTRY PERMIT

CONFINED SPACE ENTRY PERMIT

PERMIT NO. _____
DATE: _____
JOB NO. _____

Please refer to Pre-Entry Inspection Checklist.
Permit valid for duration of entry only. All copies of permit will remain at job site until job is completed.

Client: _____

Site location and description: _____

Purpose of Entry: _____

Supervisor: _____ Employee No.: _____

SHADED AREAS DENOTE MINIMUM REQUIREMENTS TO BE COMPLETED AND REVIEWED PRIOR TO ENTRY

Check and Initial Appropriate Response	Yes	No	N/A	Supv Init	Check and Initial Appropriate Response	Yes	No	N/A	Supv Init
ENGINEERING CONTROLS					**PERSONAL PROTECTIVE EQUIPMENT**				
Lock Out/De-energize/Test					Safety Glasses				
Line(s) Broken-Capped-Blanked					Face Shield				
Ventilation					Chemical Goggles				
Secure Area (Barriers/Danger Signs/Flags)					Hard Hat				
Inert-Purge-Flush and Ventilate					Gloves				
SAFETY EQUIPMENT					Boots				
Air Monitoring Equipment					Chemical Protective Clothing				
Full Body Harness w/"D" Ring					**RESPIRATORY PROTECTION**				
Emergency Escape Retrieval Equip					ESCBA Only				
Lifelines					APR w/ESCBA				
Fall Protection					Airline w/ESCBA				
Fire Extinguishers/First Aid Kit					SCBA				
Lighting (Explosion Proof)					**RESCUE SERVICES**				
Spark Resistant Tools					Emergency Response Team Notified				
Powered Communication (Intrinsically Safe)					Standby Rescue Personnel w/SCBA				

RECORD AIR MONITORING RESULTS PRIOR TO ENTRY. CONTINUOUSLY MONITOR THE ATMOSPHERE. RECORD READINGS AT LEAST EVERY TWO HOURS.

Air Monitoring Tests to be Taken	Permissible Entry Level (w/o Respiratory Protect)	Time:____ Concentration	Time:____ Concentration	Time:____ Concentration	Time:____ Concentration	Time:____ Concentration
Percent Oxygen	19.5 to 23.5%					
Lower Flammable Limit	Under 10%					
Carbon Monoxide	<25 PPM *+					
Hydrogen Sulfide	<1 PPM+*5PPM					
Hydrogen Cyanide	<C 4 PPM (Skin)					
Hydrocarbons	<1 PPM +* 5 PPM					

C – ceiling value.
* Short-term exposure limit: Employee can work unprotected in the area up to 15 minutes.
+ 8 Hr. time Weighted Ave.: Employee can work unprotected in area 8 hours (longer with appropriate respiratory protection).

Air Monitor Model:	Serial No.:	Calibration Date:
Air Monitor Model:	Serial No.:	Calibration Date:
Air Monitor Model:	Serial No.:	Calibration Date:

Attendants: Name/Signature	Employee Number	Attendant Training Date

Entrants: Name Signature	Employee Number	Entrant Training Date

ALL OF THE ABOVE CONDITIONS ARE SATISFIED AND ALL PERSONNEL NOTIFIED

SUPERVISOR SIGNATURE: _____
DATE: _____ TIME: _____

PERMIT CANCELLED

SUPERVISOR SIGNATURE _____
DATE: _____ **TIME:** _____

OU-1 WELL DESTRUCTION AND NWTS DECOMMISSIONING WORK PLAN

APPENDIX D

ENVIRONMENTAL PROTECTION PLAN

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OU-1 WELL DESTRUCTION AND NWTS DECOMMISSIONING WORK PLAN

APPENDIX D

ENVIRONMENTAL PROTECTION PLAN

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ENVIRONMENTAL PROTECTION PLAN
WELL DESTRUCTION AND TREATMENT PLANT DECOMMISSIONING
FORMER FORT ORD, CALIFORNIA

PROJECT: Groundwater Extraction Treatment System Expansion Project for Operable Unit 1, Former Fort Ord, California

PROJECT MANAGER: Roy Evans, P.E.
HydroGeoLogic, Inc.
2460 West 26th Avenue, Suite 450C
Denver, CO 80211
(720)-381-5591

PREPARATION DATE: June 2004; Revised February 2006; Revised October 2010; Revised September 2016

Worker Environmental Awareness Training Program for the Former Fort Ord OU-1 Groundwater Remediation Project

HydroGeoLogic, Inc. (HGL) is committed to protecting the environmental resources within the Former Fort Ord OU-1 Groundwater Extraction and Treatment System (GWETS) expansion project (the Project) area, which is on and adjacent to the Fort Ord Natural Reserve (FONR) in Monterey County, California. Federally and State protected species, species of special concern and critical habitat have been identified in this area, and the project design has been modified to ensure their protection. Protection measures have been developed in order to minimize project impacts to these plants, animals and habitat. Knowledge and practice of these protection measures will be the responsibility of all onsite personnel.

Violation of these protection measures could result in costly project delays or shutdowns, as well as serious consequences for the responsible individuals.

This worker environmental awareness training program provides an overview: of the sensitive biological resources in the project area, of environmental laws and penalties, of general environmentally-protective work practices, of the responsibilities of project personnel and monitors, and of who to contact in case an environmentally-related situation arises, or if you have an environmentally-related question. The biological resources and general work practices relevant to the former Fort Ord environmental cleanup are presented in the 28 May 2015 Programmatic Biological Opinion for Cleanup and Property Transfer Actions Conducted at the Former Fort Ord, Monterey County, California (8-8-09-F-74). A Habitat Check List (included with the forms at the end of this Plan) will be completed before intrusive work begins.

Introduction

HydroGeoLogic, Inc. (HGL) is committed to protecting the environmental resources within the Former Fort Ord OU-1 project area, which is on and adjacent to the Fort Ord Natural Reserve (FONR) in Monterey County, California. Federally and State protected species, species of special concern and critical habitat have been identified in the project area. This Environmental Protection Plan has been developed to minimize project impacts to these plants, animals and habitat. Knowledge and practice of these protection measures will be the responsibility of all onsite personnel.

Violation of these protection measures could result in costly project delays or shutdowns, as well as serious consequences for the responsible individuals.

This Environmental Protection Plan will be provided to all field workers as part of site environmental awareness training and provides an overview of:

- the sensitive biological resources in the project area,
- environmental laws and penalties,
- general environmentally-protective work practices,
- the responsibilities of project personnel and monitors, and
- who to contact in case an environmentally-related situation arises, or if there is an environmentally-related question.

Sensitive Biological Resources

The FONR portion of the project is partly within an area managed by the University of California Natural Reserve System (UCNRS) and designated as the FONR. The dominant habitats within the FONR are coast live oak woodland, coastal scrub, maritime chaparral and annual grassland. The maritime chaparral is a rare habitat found only in the Monterey Bay region and is largely dependent on the former Fort Ord land for survival. The FONR is an undeveloped, protected area with limited access and with constraints on construction and development. Specific permission must be obtained to work on the reserve and such work must conform to protective guidelines. The objective of the work effort is to execute the well destruction and treatment plant demolitions while minimizing the effects to the sensitive plants, animals and habitat of the FONR or in similarly protected areas.

The base-wide Fort Ord Habitat Management Plan (HMP) was prepared by the U.S. Army Corps of Engineers (USACE) and also approved by the U.S. Fish and Wildlife Service (USFWS) in 1997. The HMP provides for no net loss of plant or animal populations or habitat, and protects 22 special-status plant species and 23 special-status animal species found in various habitats throughout former Fort Ord.

Wildlife

Four HMP-protected wildlife species are found within the environmental habitats that occur in the project area:

1. **California black legless lizard** (*Anniella pulchra nigra*)

The California black legless lizard is found from near the Santa Cruz-Monterey County border south into coastal Baja Mexico. Formerly this lizard ranged north to San Francisco.

The body is elongate, pencil-thin, smooth and limbless, and has moveable eyelids with no external ear openings. The upper snout is rounded and blunt, sharp at the tip, and extends well beyond the lower jaw. The eyes are tiny, with round pupils and opaque eyelids. The tongue is short, broad, and slightly nicked at the tip. The body is black or dark brown in color. The tail is long, and often regenerated. Juveniles are thin and silvery.

2. **California tiger salamander** (*Ambystoma californiense*)

This amphibian was historically distributed throughout most of the Central Valley, adjacent foothills, Coast Ranges, Santa Barbara County, and the Santa Rosa Plain in Sonoma County. This salamander requires seasonal ponds, or vernal pools, for successful breeding. The species breeds during the winter rainy season, but spends the majority of the year in underground refuges, primarily small mammal burrows, in grassland or oak woodland habitat.

The California tiger salamander is a large, stocky, terrestrial salamander with a broad, rounded snout. Adult males are about 8 inches long and adult females are a little less than 7 inches long. Coloration consists of white or pale yellow spots or bars on a black background on the back and sides. The belly varies from almost a uniform white or pale yellow to a variegated pattern of white or pale yellow and black. The salamander's small eyes protrude from their heads, and they have black irises.

3. **Monterey ornate shrew** (*Sorex ornatus salarius*)

The Monterey ornate shrew ranges along the southern two-thirds of coastal California, and it is also found in central California.

This small mammal has a grayish brown back and a slightly paler stomach. The tail is dark brown, being darkest at the tip. It is typically 3.5 to 4.25 inches long. Little is known about the habits of the Monterey ornate shrew, but they are probably similar to those of other small, long-tailed shrews. Ornate shrews typically are found: in brackish water marshes; along streams; in brushy areas of valleys and foothills; and in forests. They especially favor low, dense vegetation that forms a cover for worms and insects.

The California black legless lizard and the Monterey ornate shrew are also considered "species of special concern" (SOSC) by the State of California.

4. **Coast horned lizard** (*Phrynosoma coronatum*)

The coast horned lizard is primarily found west of the Sierra mountains from central California south throughout Baja California.

Erroneously called "horny toads," horned lizards are spiny, ant-eating lizards unlike any other lizards in North America. Fourteen species are currently recognized, 8 of which are found within the continental USA.

Nesting Birds

The FONR project site and vicinity supports various nesting opportunities for native raptors (hawks, falcons and owls) and songbirds. The birds, nests, eggs, and young are all protected under Migratory Bird Treaty Act (MBTA) and California Fish and Game laws. Suitable nesting shrubs and trees are found throughout the project site.

Work areas will be surveyed for nesting birds prior to construction. If an active nest is found, the immediate area may be temporarily off limits. Be sure to get clearance from the Environmental Monitor before initiating work in a new area or prior to tree trimming and removal.

** Report nest sites to the Environmental Monitor.*

** Avoid and do not disturb any and all snakes, frogs, salamanders, and turtles.*

Vegetation

Several federally-protected rare, threatened or endangered (RTE) plant species are present within the FONR, including the endangered sand gilia and the threatened Monterey spineflower.

1. **Sand gilia** (*Gilia tenuiflora arenaria*)

Sand gilia is an annual herb that is native to California and is limited to the central California coastal area around Monterey Bay.

These plants are usually confined to bare, wind-sheltered areas among the coastal sand dunes and in openings in maritime chaparral. Sand gilia is a short, sticky-haired annual herb with a basal rosette of leaves with reclining stems that produces tiny purple flowers.

Sand gilia is ranked by the California Native Plant Society as extremely rare; it is listed by the state of California as Threatened; and it is listed by the Federal Government as Endangered.

2. **Monterey spineflower** (*Chorizanthe pungens pungens*)

The Monterey spineflower is found in sandy areas along the California coast from Monterey to San Francisco.

This plant is a semi-flat-lying annual. It has basal leaves, grayish hairy stems up to a foot long, and dense, head-like clusters of minute white flowers within a six-parted, greenish floral envelope, each segment of which ends in a recurved spine.

The Monterey spineflower is listed by the Federal Government as Threatened.

Several plant SOSCs are also present in the FONR, including the coast wallflower, Eastwood's goldenbush, Monterey ceanothus, Monterey manzanita, and Sandmat manzanita.

1. **Coast wallflower** (*Erysimum ammophilum)*

The disjunctive range of coast (or beach) wallflower includes the central and southern California coast, and the north Channel Islands. This plant is native to sandy coastal bluffs, old eroded dunes now well back of the existing beach line, and in sandy locales in chaparral openings. The very sandy substrate seems to be a prerequisite for this species.

Coast wallflower is a short-lived perennial with bright yellow flowers. This plant likes full sun, and sandy soil.

2. **Eastwood's goldenbush** (*Ericameria fasciculata*)

Eastwood's goldenbush (also known as mock heather) is a broad, compact, much-branched shrub that is native to California and is limited primarily to Monterey County. It is ranked by the California Native Plant Society as extremely rare.

This leafy shrub grows 1 to 3.5 feet tall. The herbage is resinous; the many leaves alternate, are linear, and are 1/8 to 3/8-inch long. The radiating yellow flower heads are in terminal clusters of 2 to 6 flowers. This species prefers dunes and sandy areas near the coast, blooming from August to November.

3. **Monterey ceanothus** (*Ceanothus cuneatus* var. *rigidus*)

This plant is rare, and is found in sandy hills, flats, and forests from the southern San Francisco Bay Area to San Luis Obispo County on the Central Coast.

Monterey ceanothus is a large shrub, 4 to 8 feet tall, that prefers full sun and sandy soil. It is a prized garden shrub because of its dense intricate habit and small dark green leaves that are clustered on short lateral branchlets. Its flowers are very typical of the Buckthorn family. The flowers are small with five incurved concave petals, each of which envelops a central stamen.

4. **Monterey manzanita** (*Arctostaphylos montereyensis*)

Monterey manzanita is native to coastal California, and is found along the Central Coast from about Point Reyes to Point Conception, and along the South Coast Ranges.

This is an evergreen shrub, about 3-7 feet tall, erect, and bristly. Leaves are alternate, simple, erect, and blade-like, somewhat rounded to oblong or oval. Flowers are small, white, and occur in dense clusters at the ends of the branches. This hardy shrub prefers full sun or partial shade.

5. **Sandmat manzanita** (*Arctostaphylos pumila*)

Sandmat (or dune) manzanita is a rare species that primarily is found along the central coast of California, and especially around Monterey Bay.

Sandmat manzanita is a gray, mounding, low shrub that is typically found in dunes and coastal hills. It normally grows 2 to 4 feet high with a spreading, sprawling habit that allows the tips to root in the loose sandy soils.

Environmental Monitors

HGL will contract with Fort Ord BRAC-approved biologists to act as environmental monitors (EMs) during the field activities on the FONR. The purpose of these environmental monitors is to make sure that all field personnel follow the environmental mitigation guidelines discussed below, and to ensure that RTE/SOSC species will not be harmed by any Project activity. These EMs will conduct the majority of field compliance monitoring tasks under the supervision of the BRAC.

The EMs will have the authority to stop Project work if non-compliance with environmental regulations or non-compliance with environmental mitigation measures occurs. In such case, the EMs will then notify the HGL Field supervisor regarding corrective actions needed to return the Project to environmental compliance. The HGL field supervisor will then notify the HGL Project Manager and the BRAC to coordinate corrective actions as appropriate.

Duties of the Environmental Monitors

The EMs will:

- assist in identifying and clearly delineating the least damaging access routes, turn-around locations, work zones, pipeline trench corridors and equipment/material staging areas. The EMs will be consulted prior to changing any of these designated routes, locations, corridors or areas.
- monitor onsite work as necessary to ensure environmental mitigation measures are implemented, and to resolve unanticipated environmental issues as they arise.
- instruct the field personnel how and where to place cut vegetation that is cleared for the new drill pads, access roadways and pipeline trenches.
- advise construction crews on how best to avoid adverse impacts to environmental resources.
- notify and consult with the BRAC and with the HGL Field Supervisor in the event of non-compliance with environmental regulations or mitigation efforts, and will stop Project work if necessary.
- assist in supervising interim surface erosion control measures as needed.

Agency/Group Interaction

Visitors to the Project from any number of local, state and federal agencies or groups could arrive at any time – each with their own concerns and interests.

These visitors should be treated with courtesy and respect. When approached by a visitor politely direct them to the HGL Field Supervisor.

The following agencies or groups could send representatives to monitor on-site activities:

- California Regional Water Quality Control Board (RWQCB)

- California Department of Toxic Substances Control (DTSC)
- Hazardous Materials Branch of the Monterey County Environmental Health Division (Well Permit Group)
- Former Ford Ord U.S. Army Corps of Engineers (USACE)
- Former Fort Ord Base Realignment and Closure (BRAC) Natural Resources Control Support Office
- University of California Natural Reserve System Management Group (for FONR)
- California Department of Fish and Game (CDFG)
- U.S. Fish and Wildlife Service (USFWS)
- U.S. Environmental Protection Agency (USEPA)

Environmental Laws, Regulations, and Penalties

Many of the resources found in the Project area are protected by Federal and State laws, as listed below:

Endangered Species Act: The Federal Endangered Species Act provides for the protection of threatened and endangered plant and animal species. The destruction of their critical habitat that prevents species recovery is also prohibited.

California Endangered Species Act: The California ESA prohibits the take of endangered and threatened wildlife.

Migratory Bird Treaty Act: Prohibits the take of migratory birds. Migratory birds are all birds typically encountered except for rock pigeons, European starlings, and English house sparrows.

California Fish and Game Code: The State Fish and Game Code prohibits the take of plant and animals that are fully protected in California, and protects certain areas designated as significant wildlife habitat.

Violations of state and/or Federal environmental laws can result in penalties including fines as high as $100,000 and/or up to one year in jail. Violations can involve corporate and individual penalties.

Taking the time to stop and ask questions is sometimes all it takes to avoid a potentially costly and environmentally damaging mistake.

General Environmentally Proactive Work Practices at FONR

- Stay in or on designated routes, locations, corridors or work areas whenever possible.
- Wherever possible drive on pre-existing compacted roadways. Do not use fields or open areas to access construction zones.

- Drive **SLOWLY** on all FONR roadways to avoid causing ruts.
- Show courtesy and respect to visitors and other FONR workers.
- Use approved access roads only. Remember to close and lock all entrance/exit gates.
- Keep out of exclusion areas marked on the aerial photos that contain known RTE/SOSC species.
- Inform the onsite EM and the HGL Field Supervisor if you find a RTE/SOSC in your designated work area. Follow the instructions of the onsite EM and the HGL Field Supervisor as to how to deal with this situation.
- Do not litter. Remove trash from the job site on a daily basis.
- No pets, firearms, or hunting is allowed.
- No fires are allowed. Report any smoke or open flame immediately to the subcontracting supervisor and to the HGL Field Supervisor. Keep fire fighting equipment in good operating order and readily available.
- Smoke only in approved areas or in vehicles. Do not drop butts on the ground to put out.
- Do not feed or disturb wildlife. Report mountain lion (or other dangerous animal) sightings immediately to the subcontracting supervisor, to the HGL Field Supervisor and to the onsite EM.
- Clean up and report all hazardous material spills immediately.
- Do not discharge any water or drill cuttings into unapproved areas.
- Report trapped, injured, or dead wildlife to the EM.
- Keep all equipment either in approved work areas or travel corridors, or in approved staging/storage areas.
- Keep fluid spill containment and clean up materials readily available. Any fluid spills and the containment / cleanup response should be documented on the attached "Hazmat Spill Form".

General Mitigation Measures to Minimize Environmental Impacts

- Joint field surveys by the EM, subcontracting supervisor and the HGL Field Supervisor will be conducted prior to the commencement of work in new areas.
- For documentation, photographs will be taken prior to disturbance and during construction at each well site and additional photographs will be taken after the work is complete.
- An EM must be either on site or on-call at all times.
- Field work areas must be clearly designated.
- Open trenches or holes may trap wildlife. Inspect trenches, holes and surface well locations prior to work and provide escape ramps for wildlife as needed. Trenches/holes left overnight need escape ramps so animals won't get trapped.
- Minimize the need for restoration by minimizing the initial disturbance.
- Impacts to environmental resources will be monitored and reported to the appropriate agencies as required.
- Roadways that are disturbed or rutted by Project activity and any excessively disturbed areas will be graded or otherwise topographically smoothed to match adjoining grades.
- If Project activities appear to be causing significant surface erosion, the EM will direct the implementation of interim anti-erosion measures.
- The EM will monitor areas associated with Project activities for encroachment of invasive exotic plants and will make recommendations for exotic plant control as needed. Exotic plant control will be coordinated with the BRAC.
- If RTE/SOSC animals (including rattlesnakes) are encountered during field activities, they will be carefully removed from harm's way and deposited on the ground surface as near to their original location as possible but outside the work area. Each encounter with a California black legless lizard will be documented on the attached "Field Observation Form – Black Legless Lizard". Note that a map should be provided with the form that shows the location of the sighting, and a photograph, if possible. The BRAC point of contact will also be notified (see form for telephone number).

Special Environmental Mitigation for Oak Trees

- No staging, parking, or movement of vehicles or equipment will occur within drip lines of oaks, except those authorized for removal.
- No grading will occur within drip lines of oaks not slated for removal. If project activities necessitate the removal of standing dead trees, these will be removed to an adjacent offsite area.
- Removal of oaks will be avoided wherever feasible. The EM will count and evaluate the size (measured 2 feet above mean grade) and condition of oak trees to be removed. Removal of trees larger than 6 inches diameter will be coordinated with the BRAC.

- Coast live oak trees removed will be replanted at a ratio of three replacement trees for each tree removed. Suitable location of replacement oak trees, in or at the perimeter of existing coast live oak woodland, will be determined by the BRAC in coordination with FONR personnel.
- Replacement oak tree planting will meet the following requirements:
    - Trees of a size class acceptable to the BRAC environmental specialist shall be planted.
    - Replacement trees shall come from BRAC-approved sources and will represent local genetic stock.
    - Soil at the planting site may be amended as recommended by the BRAC to maximize seedling survival.
    - Seedlings shall be fenced to prevent grazing and damage by burrowing animals.
    - Trees shall be irrigated weekly during late-spring through the fall months for the first year after planting, and monthly or as required during the second year. Irrigation may include drip irrigation systems or hand watering. Irrigation recommendations will be made by the landscape contractor responsible for site maintenance as overseen by the overall Project Manager.

Contacts:

Matt Johnson		
Denise Duffy & Assoc. EM	Office:	(831) 373-4341 x27
	Cell:	(831) 917-3242
Bartholomew Kowalski		
Biologist (Chenega for BRAC)	Office:	(831) 242-7918
Gage Dayton		
U.C. Santa Cruz Environmental Studies		
FONR Management -		
University of California Reserve System:	Office:	(831) 459-4867
	Cell:	(831) 383-8754
Roy Evans		
HGL Project Manager:	Office:	(720) 381-5591
	Cell:	(303) 319-9808
Alexander Kan		
USACE Project Technical Lead	Office:	(916) 557-7578

This is to certify these individuals have completed a Worker Environmental Awareness Training Program on Biological Resources, for Construction Crew and Construction Supervisors on site. By signing below, the participant indicates that they understand and shall abide by the guidelines set forth in the Program materials. Please include this completed form in your Monthly Compliance Report.

No	Employee Name	Company	Signature
1			
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25			

Bio Trainer: _____ Signature:_____ Date: ___/___/____

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HAZMAT SPILL FORM

If a significant spill of hazardous materials occurs, please inform the subcontracting supervisor and the HydroGeoLogic Field Supervisor immediately. The HydroGeoLogic Field Supervisor will document the spill using this form. The HydroGeoLogic Field Supervisor will also inform the BRAC-approved EMs and the FONR Management Group at UC Santa Cruz if the spill occurred within the FONR. Photographs of the spill will also be taken.

Spill Location _____ **Date/Time** _____
(OE site, Range # etc)

Grid # _____ **Northing/Easting or Approx. Coordinates (ft)** _____

Type of Spill (check one or write in)

- ☐ Fuel (gasoline/diesel)
- ☐ Oil (lubricating/motor)
- ☐ Hydraulic Fluid
- ☐ Coolant (water/antifreeze)
- ☐ Other _____

Weather: Air Temp._____ Wind _____ Sunny/Cloudy _____

Amount of spill if known _____

Habitat Description where spill occurred (e.g. Maritime chaparral, oak woodland, grassland, vegetation height, presence of surface litter/debris, soil type, plant species where spill found, etc):

_____
_____
_____

Description of spill (how did it happen?; area covered; color; any apparent damage to plant or animal species?):

_____
_____
_____
_____
_____

Disposition: Spill Found by: _____

Attachments: ☐ Location map ☐ Photograph (spill and habitat in which found)

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FIELD OBSERVATION FORM - BLACK LEGLESS LIZARD

If a black legless lizard is found, please call Mr. Bartholomew Kowalski of Chenega Global Associates at 831-242-7918 to notify him of the sighting. Please fill out this form, photograph the specimen if possible, attach a map showing the location of the sighting, and return to:

Mr. Bartholomew Kowalski
Environmental & Natural Resources
Building 4463, Gigling Rd, Rm 101
Monterey, CA 93944-5004

Location _____ **Date/Time** _____
(OE site, Range # etc)

Grid # _____ **Northing/Easting or Approx. Coordinates (ft)** _____

Type of Activity (check one or write in)

- ☐ Surface clearance activity (non-intrusive)
- ☐ Vegetation clearance
- ☐ Excavation/UXO removal
- ☐ Geophysical
- ☐ Other _____

Weather: Air Temp._____ Wind _____ Sunny/Cloudy _____
Depth if known _____

Habitat Description (e.g. Maritime chaparral, oak woodland, grassland, vegetation height, presence of surface litter/debris, soil type, plant species where specimen found, etc.):

_____
_____

Description of lizard (live/ injured/ dead, color, condition, behavior etc.):

_____
_____
_____

Length (inches): _____

Other Notes: _____
_____

Disposition: Found by: _____

- ☐ Observed, released to same location or adjacent habitat
- ☐ Observation form completed By:_____
- ☐ Injured or killed (placed in a Ziploc or plastic bag, and refrigerated)
- ☐ Other _____

Attachments: ☐ Location map ☐ Photograph (specimen and habitat in which found)

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FORT ORD
SITE HABITAT CHECKLIST

The following are requirements to minimize biological disturbances to protected species and habitat.

Please notify Bart Kowalski, Chenega Biologist (831-242-7918), *before* proceeding if work tasks or work boundaries change, additional vegetation removal is necessary, vegetation cutting methods change, or any other conditions change. Field Supervisors must receive a copy of this checklist.

SITE:	FONR – Operable Unit 1	**DATE:**	April 17, 2017 – September 30, 2017
WORK TO BE CONDUCTED:	Conduct rare plant surveys. Destroy existing wells, cap and remove ends of pipelines, remove carbon tanks, poly tanks, transfer pumps, and associated piping and components from northwest treatment system.		

1. LAND USE:	☒ **Habitat Reserve**	☐ **Development Area**	☐ **Other (specify):**
2. LAND OWNER:	☐ **Army**	**Location:**	
	☐ **BLM**	**Location:**	
	☒ **Other: UCSC; City of Marina**	**Location:**	FONR and one well on Marina Airport property (development area)

3. ENDANGERED, THREATENED, RARE, OR HMP-LISTED SPECIES	☐ **Yes**	☐ **No**	☐ **Flagged/Marked**
Species:	Potential species: CBLL, CTS, MOS, CHL, MS, SG, YP (see notes below)		
Location:	Within the Fort Ord Natural Reserve OU-1 area		
Grid Numbers:			

Restrictions:
CBLL = California black legless lizard, CTS = California tiger salamander, MOS = Monterey ornate shrew, CHL = Coast horned lizard, MS = Monterey spineflower, SG = sand gilia, YP = Yadon's piperia

CTS encounters must be reported immediately to field supervisor and Project Biologist. All work in the immediate area must cease if CTS encountered until the Service-approved biologist (Matt Johnson (831-373-4341 x 27) or Bart Kowalski (832-595-5569) comes out to document, handle, and relocate the CTS. Pre-demolition survey will identify current MS, SG, and potential YP locations.

4. VERNAL POOLS/PONDS PRESENT	☐ **Yes**	☒ **No**	☐ **Flagged/Marked**
Location:			
Grid Numbers:			
Work Can Proceed in Pools/Ponds:	☐ **Yes**	☐ **No**	

Restrictions: Not applicable

5. VEGETATION REMOVAL	
☐ **No Removal Needed**	**Location:**
☐ **Manual Removal Needed**	**Location:**
☒ **Mechanical Removal Needed**	**Location: Well sites**

Vegetation Removal Restrictions:

The existing ground cover immediately around well sites will be disturbed during well destruction. Areas where MS, SG, or YP were observed during the pre-demolition rare plant survey will be delineated and avoided if possible. The top 6 inches of soil at well sites within the FONR habitat will be segregated and used as cover at the same location after well destruction is complete.

6. EROSION CONCERNS/SITE RESTORATION:

All soil removed will be returned and regraded to match the surrounding undisturbed area.

7. SITE ACCESS:

The site will be accessed by Blanco Road (see entry route on Figure 2.3). The staging area will be located in the grassland adjacent to the Northwest Treatment System. Individual wells will be accessed by existing road network only.

8. INVASIVE SPECIES:

All equipment will be washed before entering the FONR.

9. ADDITIONAL SITE CONCERNS:

Well destruction activities will not begin until the BRAC biologist concurs that the MS and SG blooming season has passed. If substantial rainfall (greater than 0.5 inches of rain in a 24-hour period) occurs, work activities must cease until the Service-approved biologist has searched the work area for dispersing salamanders. Work activities may resume once the biologist has determined that CTS that could be killed or injured by work activities are not present in the work area.

This checklist has been read, approved, and signed by the following:

☐ **QC Manager:** Megan Matteazzi Digitally signed by Megan Matteazzi DN: cn=Megan Matteazzi, o=HGL, ou, email=mmatteazzi@hgl.com, c=US Date: 2017.05.23 12:24:13 -06'00' **Date:** _____

☐ **BRAC Biologist:** KOWALSKI.BARTHOLOMEW.L.1387978115 Digitally signed by KOWALSKI.BARTHOLOMEW.L.1387978115 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=CONTRACTOR, cn=KOWALSKI.BARTHOLOMEW.L.1387978115 Date: 2017.05.05 15:15:37 -07'00' **Date:** _____