# DRAFT FINAL
# WORK PLAN FOR THE
# REMEDIAL INVESTIGATION OF THE MUNITIONS RESPONSE AREAS AT THE FORMER YORK NAVAL ORDNANCE PLANT

*Prepared for:*

**Harley-Davidson Motor Company Operations, Inc.**
1425 Eden Road
York, Pennsylvania 17402

*Prepared by:*


**EA Engineering, Science, and Technology, Inc., PBC**
225 Schilling Circle
Hunt Valley, Maryland 21031


April 2015

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4/03/2015

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## TABLE OF CONTENTS

## LIST OF FIGURES



## LIST OF TABLES

## LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AMF | American Machine & Foundry Company |
| AMO | AMO Environmental Decisions |
| AOC | Area of Concern |
| AP | Armor-Piercing |
| ARAR | Applicable or Relevant and Appropriate Requirements |
| ASR | Archive Search Report |
| ATF | Alcohol, Tobacco, and Firearms |
| | |
| BKC | Blaw-Knox Corporation |
| | |
| CENAB | Corps of Engineers at Baltimore |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR | Code of Federal Regulations |
| CIH | Certified Industrial Hygienist |
| COC | Chain of Custody |
| COPC | Chemical of Potential Concern |
| COPEC | Chemical of Potential Ecological Concern |
| CSM | Conceptual Site Model |
| CY | Cubic Yard(s) |
| | |
| DDESB | Department of Defense Explosives Safety Board |
| DFW | Definable Feature of Work |
| DGM | Digital Geophysical Mapping |
| DNT | 2,4- and 2,6- Dinitrotoluene |
| DoD | Department of Defense |
| DQI | Data quality Indicator |
| DQO | Data Quality Objective |
| | |
| EA | EA Engineering, Science, and Technology, Inc., PBC |
| EcoSSL | Ecological Soil Screening Level |
| EM | Engineer Manual |
| EOD | Explosive Ordnance Disposal |
| | |
| °F | Fahrenheit |
| FDE | Findings and Determination of Eligibility |
| FM | Factory Mutual |
| FS | Feasibility Study |
| ft | Feet |
| FUDS | Formerly Used Defense Site |
| fYNOP | Former York Naval Ordnance Plant |
| | |
| GIS | Geographic Information System |
| GPS | Global Positioning System |
| GSC | Groundwater Sciences Corporation |

## LIST OF ACRONYMS AND ABBREVIATIONS (CONTINUED)

| | |
|---|---|
| H-D | Harley-Davidson or Harley-Davidson Motor Company Operations, Inc. |
| HFP | Hazard Fragment Distance |
| HQ | Hazard Quotient |
| HTRW | Hazardous, Toxic, and Radioactive Waste |
| | |
| ID | Identification |
| INPR | Inventory Project Report |
| IVS | Instrument Verification Strip |
| | |
| LCS | Laboratory Control Sample |
| | |
| m | meters |
| MC | Munitions Constituents |
| MD | Munitions Debris |
| MDL | Method Detection Limit |
| MDAS | Material Documented As Safe |
| MEC | Munitions and Explosives of Concern |
| MGFD | Munitions with the Greatest Fragmentation Distance |
| mg/kg | milligrams per kilogram |
| mm | Millimeter(s) |
| MPPEH | Material Potentially Presenting an Explosive Hazard |
| MRA | Munitions Response Area |
| MRS | Munitions Response Site |
| MSD | Minimum Separation Distance |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| | |
| NAD | North American Datum |
| NCP | National Oil and Hazardous Substances Pollution Contingency Plan |
| NIR | Notice of Intent to Remediate |
| NG | Nitroglycerin |
| | |
| OEW | Ordnance and Explosive Waste |
| | |
| PADEP | Pennsylvania Department of Environmental Protection |
| PAH | Polycyclic Aromatic Hydrocarbons |
| PARCCS | Precision, Accuracy, Representiveness, Completeness, Comparability, and Sensitivity |
| P.E. | Professional Engineer |
| P.G. | Professional Geologist |
| PM | Project Manager |
| PRP | Potentially Responsible Party |
| | |
| QA | Quality Assurance |

## LIST OF ACRONYMS AND ABBREVIATIONS (CONTINUED)

| | |
|---|---|
| QAPP | Quality Assurance Project Plan |
| QC | Quality Control |
| QCP | Quality Control Plan |
| | |
| RAC | Risk Assessment Code |
| RAGS | Risk Assessment Guidance |
| RBC | Risk-Based Concentrations |
| RCRA | Resource Conservation and Recovery Act |
| RI | Remedial Investigation |
| RLs | Reporting Limits |
| RPD | Relative Percent Difference |
| RSD | Relative Standard Deviation |
| RSL | Regional Screening Level |
| | |
| SAIC | Science Applications International Corporation |
| SARA | Superfund Amendments and Reauthorization Act |
| SI | Site Inspection |
| SOP | Standard Operating Procedure |
| SSHASP | Site-Specific Health and Safety Plan |
| SSL | Soil Screening Levels |
| SUXOS | Senior Unexploded Ordnance Supervisor |
| SWHS | Statewide Health Standards |
| SWMU | Solid Waste Management Unit |
| | |
| TCRA | Time Critical Removal Action |
| TNT | Trinitrotoluene |
| TP | Target Practice |
| | |
| U.S. | United States |
| USACE | United States Army Corps of Engineers |
| USEPA | United States Environmental Protection Agency |
| UTL | Upper Tolerance Limit |
| UTM | Universal Transverse Mercator |
| UL | Underwriters Laboratories |
| UXO | Unexploded Ordnance |
| UXOQCS | Unexploded Ordnance Quality Control Specialist |
| UXOSO | Unexploded Ordnance Safety Officer |
| UXO Tech I | Unexploded Ordnance Technician I |
| UXO Tech II | Unexploded Ordnance Technician II |
| | |
| VOC | Volatile Organic Compounds |
| | |
| WIP | Wholly-Inert Projectiles |
| WP | Work Plan |

## LIST OF ACRONYMS AND ABBREVIATIONS (CONTINUED)

| | |
|---|---|
| WWII | World War II |
| YCIDA | York County Industrial Development Authority |

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# 1. INTRODUCTION

## 1.1 PROJECT AUTHORIZATION AND REGULATORY FRAMEWORK

This Remedial Investigation (RI) Work Plan was prepared by EA Engineering, Science, and Technology, Inc., PBC (EA) under contract to Harley-Davidson Motor Company Operations, Inc. (Harley-Davidson) to support the investigation of Munitions Response Areas (MRAs) at the former York Naval Ordnance Plant (fYNOP) located at 1425 Eden Road, Springettsbury Township, York, Pennsylvania (Figure 1).[1] This plan was reviewed by fYNOP project team members including AMO Environmental Decisions (AMO), Harley-Davidson and the United States Army Corps of Engineers (USACE). The goal of the RI is to investigate the MRAs and evaluate risks to human health and the environment. The RI addresses issues related to munitions and explosives of concern (MEC) and munitions constituents (MC) associated with each munitions response site (MRS) and Area of Concern (AOC) identified during previous investigations conducted by the USACE.

Since at least 1986, Harley-Davidson has been conducting investigations and clean-up activities under the supervision of the Pennsylvania Department of Environmental Resources/Protection (PADEP). Following a 1995 settlement agreement between Harley-Davidson, the United States Department of Defense (DoD), and the United States Department of Navy, environmental assessments and remedial activities at the fYNOP are to be performed by Harley-Davidson with USACE review and guidance consistent with the National Oil and Hazardous Substances Contingency Plan (NCP) and other applicable federal, state, and local regulations. The DoD and Navy interests are represented by the USACE. Harley-Davidson is presently overseeing the performance of a remedial investigation/feasibility study (RI/FS) of the property pursuant to the NCP and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) to address the presence of volatile organic compounds (VOC) in groundwater and VOCs, polycyclic aromatic hydrocarbons (PAHs) and metals in soils.

Harley-Davidson is actively participating with the DoD under a cost sharing agreement to address the site remedial actions. Harley-Davidson and the United States Environmental Protection Agency (USEPA) signed an agreement to participate in the Federal Facility Lead Program in 2002. The Facility Lead Program was superseded by the USEPA One Cleanup Program enacted in 2003. Harley-Davidson submitted a Notice of Intent to Remediate (NIR) to the PADEP in 2005 which initiated cleanup actions under Act 2. CERCLA and Act 2 have no special provisions for dealing with explosive safety and, therefore, the provisions in the DoD Ammunition and Explosives Safety Standards (DoD 6055.9-M), USACE Engineer Manual (EM) 385-1-97 and the Final United States Army MMRP Munitions Response Remedial Investigation / Feasibility Study Guidance will be adhered to during the RI. Munitions response actions will be

1 The property is a Formerly Used Defense Site (FUDS) Property No. C03PA0984 identified and investigated by the USACE Baltimore District. In accordance with a settlement agreement between DoD and Harley-Davidson the clean-up lead is Harley-Davidson. This work plan uses the terms former York Naval Ordnance Plant (fYNOP) and Site when referring to the property. The term munitions response area or "MRA" refers to the areas encompassing the MRSs and AOC identified during previous investigations.

conducted in compliance with USACE, Harley-Davidson, and local/state requirements regarding personnel, equipment, and procedures.[2]

## 1.2 PURPOSE AND OBJECTIVE

The purpose of this work plan is to summarize the methodology planned to provide quality RI and munitions response services to Harley-Davidson at the fYNOP site. The overall objective of this RI is to collect data that will be used to define the nature and extent and fate and transport of MEC and MC in and around the MRSs and AOCs associated with historical munitions use.

It is noted that based on the site visit and initial discussions with Harley-Davidson personnel the RI approach will be phased. The initial phase will serve to confirm the boundaries of the existing MRSs and AOCs identified by USACE during previous investigations and to identify any additional areas requiring investigation. After the initial investigations are conducted, a work plan addendum will be issued to identify specific areas requiring more focused investigations and MC sampling to complete RI investigations.

## 1.3 WORK PLAN ORGANIZATION

This Work Plan contains the following chapters used to outline the work to be performed during the RI:

***Chapter 1, Introduction:*** This chapter provides an introduction to the project, purpose and scope, and work plan organization.

***Chapter 2, fYNOP Background:*** This chapter provides the project location, site description, site history, current and projected land use, brief summary of previous investigations, and an initial summary of the risk from MEC and MC.

***Chapter 3, Technical Management Plan:*** This chapter details the organizational structure, lines of authority, and communication of the project team.

***Chapter 4, Field Investigation Plan:*** This chapter describes the field methods and procedures planned for the RI, and the approach to risk characterization and analysis.

***Chapter 5, Quality Assurance Project Plan (QAPP):*** This chapter describes laboratory methods for MC sampling, laboratory standard operating procedures (SOPs), and field and laboratory quality assurance (QA)/quality control (QC) requirements and procedures to be employed.

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[2] The settlement agreement between Harley-Davidson and the DoD reduces some of the USACE requirements for separate documents (i.e. no explosive safety submission, accident prevention plan, or explosives siting plan are required);however, safety aspects of conducting investigations for munitions are included in this RI work plan, and safe work practices will follow DoD and USACE guidance documents. Furthermore, to be consistent with current terminology the term MEC is used throughout this Work Plan in lieu of the term OEW which appears in the Settlement Agreement.

***Chapter 6, References:*** This chapter includes a list of references used in the preparation of the work plan.

Additional information and plans are attached to this work plan as appendices to include:

***Appendix A, Site-Specific Health and Safety Plan (SSHASP):*** The SSHASP describes the health and safety procedures, personal protection standards, and environmental health hazards applicable to this project.

***Appendix B, Test America Denver Quality Assurance Project Plan and Certifications:*** The appendix includes the laboratory standard operating procedures (SOPs) and laboratory certifications.

***Appendix C, Standard Operating Procedures (SOP):*** Presents the SOPs that will be used during the RI field activities.

***Appendix D, Field Forms:*** Presents field forms that will be used during the RI field activities.

***Appendix E, Summary of Previous Investigations and Findings:*** Presents a summary of munitions related investigations conducted to date and other findings related to MEC and MC.

***Appendix F, Harley-Davidson Sample Nomenclature and Data Deliverable Requirements:*** Presents sample labeling requirements along with Electronic Data Deliverable and Database requirements for Harley Davidson.

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# 2. FYNOP BACKGROUND

## 2.1 LOCATION AND SETTING

The fYNOP is located in Springettsbury Township in York, York County, Pennsylvania. The site is bordered to the south by United States (U.S.) Route 30; to the west by Eden Road, a railroad line and Codorus Creek; and to the east and north by residential properties (Figure 1). The North American Datum 1983 (NAD) Universal Transverse Mercator (UTM) northing and easting coordinates for the approximate center of fYNOP are 353811m and 442801m, respectively.

## 2.2 OPERATIONAL HISTORY

The site was constructed in 1941 by the York Safe and Lock Company, a contractor for the United States Navy for production of armaments for use by the DoD during World War II (WWII). The manufacture and assembly of 40 millimeter (mm) twin and quadruple guns and gun mounts, 37 mm guns and carriages, 3-inch and 90mm anti-aircraft gun mounts, and Navy shields and gun slides was performed onsite.[3] The York Safe and Lock Company constructed two proof testing ranges for the testing of the manufactured guns (including the 40 mm, 3-inch, and 37 mm guns). Facilities constructed in the proof testing area (referred to as the Magazine Area in 1959) included proof testing ranges (Buildings 14 and 16), along with ammunition storage buildings/magazines (Buildings 17 through 23) (Figure 2). Historical documents state that 1.1 inch detonating fuses, aircraft and surface craft depth bomb mechanical fuses, 40 mm shell casings and projectiles (bullets), and 37mm shot and rocket motors were produced by York Safe and Lock Company.[4] These documents do not confirm whether these items were manufactured at the fYNOP or not (USACE 1995, Alion 2008).[5] No information was found to confirm the fuses, rocket motors or shell casings were loaded onsite or that the fuses or rocket motors were tested at the proof range. To date no evidence of fuses or rocket motors have been found onsite.[6]

By Executive Order, dated 21 January 1944, the Secretary of the Navy, permitted the Government to possess and operate the facility. After Government authorization was executed, the facility was named the U.S. Naval Ordnance Plant, York, Pennsylvania. Later in 1944, the Blaw-Knox Corporation (BKC) was requested to assume management and operation of the York Plant. BKC operated the facility as a U.S. Navy contractor until 1946 (USACE 1995).

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[3] Historical documents indicate that York Safe and Lock Company had three separate plants located in York, PA. These plants were identified as the Main Office and Plant (located on Loucks Mill Road), the South Plant (located at Pine and Boundary streets) and the East Plant (located at 6th and Ogontz streets) (Alion 2008).

[4] Historical documents list the M46, M66 and M72 fuses (Alion 2008).

[5] Historical documents indicated that as of August 1945, ordnance manufacturing contracts were being fulfilled by the other York Safe and Lock Co. facilities (not the fYNOP). In particular the York Safe and Lock Co. East Plant had a number of contracts and it housed engineering research and experimental branches while the York Safe and Lock Co. South Plant was performing sheet metal work and constructing Navy spare part boxes and ordnance items (Alion 2008).

[6] No information was found to confirm that rocket, shell, or fuse loading activities occurred at the fYNOP. Available documents state that the proof testing range was only used for the testing of machine guns up to 40mm (Alion 2008).

During the Korean War in the early 1950s, BKC was the manufacturer of 3-inch, .50-caliber guns, and 20-mm aircraft machine guns. Towards the end of 1955, the plant began to manufacture power drive units for the 5-inch and .54-caliber guns along with the 20-mm aircraft machine guns. A mission statement presented in historical documents indicated the fYNOP was also authorized to "dispose, from whatever sources received, in accordance with current directives" (USACE 1995). Disposal activities of unserviceable and/or dangerous ammunition and explosives at the site have not been confirmed through historical information or findings during previous investigations. Historical maps do not show an open burn/open detonation area, which would likely have been used for this type of operation as being present onsite (USACE 1995, Alion 2008). The only potential disposal area contains MEC identified to date was a misfire pit located adjacent to Building 14, a former proof range. The misfire pit was removed as discussed in below.

General production operations at fYNOP continued until 1964 when the plant was sold. In January 1964, the U.S. Government sold the fYNOP to American Machine & Foundry Company (AMF). AMF acquired fYNOP in 1964 and continued manufacturing operations to include rocket launchers, gun components, and other materials formerly manufactured at the facility for several years before switching over to non-ordnance manufacturing. In 1969, AMF merged with the Harley-Davidson Motor Company Operations, Inc. In 1973, Harley-Davidson moved its motorcycle assembly operations to the fYNOP. Besides motorcycles, Harley-Davidson has also produced bomb casings and other items at fYNOP (Alion 2008).

On 14 June 2012, Harley-Davidson entered into an Agreement of Sale with the York County Industrial Development Authority (YCIDA) for YCIDA to purchase approximately 58 acres of the fYNOP identified as the "West Campus". Currently, the entirety of MRS 1 is situated on property owned by the YCIDA. The West Campus parcel address is referenced as 1445 Eden Road, York PA, and environmental liability for the West Parcel is retained by Harley-Davidson as a result of the Sale Agreements. The remaining MRSs and AOCs, including the overall RI study area is located on the remaining 171 acres of property retained by Harley-Davidson. Harley –Davidson continued to develop the property over the years. Operations were moved into a new plant used for the production of motorcycles and older buildings were demolished. As a result of past and recent development, the area surrounding the MRAs to the south is developed (Figures 1 and 3) and some development (including placement of utilities and fill materials) has occurred within the MRS (Figure 4).

## 2.3 PREVIOUS INVESTIGATIONS

Between 1984 and 2013, USACE and Harley-Davidson have conducted multiple investigations and cleanup/removal actions to address MEC, munitions debris (MD), and MC related to former proof testing operations to include a removal action by Explosive Ordnance Disposal (EOD) personnel in 1993, a time critical removal action (TCRA) in 2004, and a site inspection (SI) in 2007 and 2008 investigations as well as the soil removal actions at the Building 16 backstops. As a result of these investigations, five MRSs and two AOCs were designated as being present at the site and requiring further action to address risk to human health and the environment (Figure 3). A summary of the previous investigations performed on the MRSs and AOCs at fYNOP is presented in Appendix E. A description of each MRS and AOC and a summary of the findings as they relate to remaining risk is presented below.

## 2.4 MRS AND AOC SITE DESCRIPTIONS

### 2.4.1 MRS 1 - Burial Area (Parking Lot)

MRS 1 is located on the western side of the fYNOP site in an area termed the West Parking Lot. This land is no longer owned by Harley-Davidson. MRS 1 derives its shape and location from the USACE Archive Search Report (ASR) that created a "square" shape range area encompassing a location where a former YNOP employee had drawn an "X" on a map. The "X" was to indicate the location of a former "dump" area used by YNOP. The ASR also noted that historically an inert projectile had been found during sampling activities in the west parking lot; however, it is unclear where the item was actually found. In addition, it is not clear how this information was used to validate the location of MRS 1 as no wells, boring locations, or test pit locations were cited to confirm the location of the projectile. During the 2007 SI, it was noted that MRS 1 was part of the west parking lot landfill area which was undergoing investigations. Based on a review of the 2009 Draft Supplemental Remedial Investigations Report, it was noted that the West Parking lot had been divided into a series of disposal areas which were investigated to varying degrees to include geophysics and soil/groundwater sampling to include metals but not explosives. One area, identified as Area F, appears to be in proximity to where the "X" in the ASR map was originally drawn. Based on a review of the 2009 investigation results from this area, no evidence of MEC was found. Following the investigation, Area F was part of the reconstruction project for Eden Road. As a result Area F was capped with several feet of soil and a portion of this area is covered by roadway. Land use controls are in place for this area and future use as a roadway and parking area is not expected to change. [7] No investigation of this area is planned as part of the first phase of the RI; however, the investigation and sampling data for this area will be evaluated in the work plan addendum to determine if the MRS boundary needs to be adjusted and to determine if geophysics or additional MC sampling is necessary to evaluate or close out this area. Given the low potential for MEC, the area will likely be carried fourth in post RI documents (i.e. FS) and addressed with land use controls.

### 2.4.2 MRS 2- Burial Area (Building 14 Misfire Pit)

MRS 2 is located east of Building 14 (MRS 5), in the eastern portion of fYNOP (Figure 3). The MRS was listed as having an area of 1 acre; however, the acreage listed does not correspond to the area of the pit and the area investigated (estimated to be approximately 400 square feet [sqft]). The area contained a small concrete covered pit, which was approximately 4 by 4 feet (ft) and 6 ft deep and termed a "misfire pit". The pit which contained MEC (20-mm TP cartridges, 3-inch antiaircraft gun TP cartridges, 37-mm TP cartridges, a 37-mm M74 shot cartridge, and 105 assorted small arms cartridges) was the subject of multiple removal actions (1993 UXO removal action and 2004 TCRA). The 2004 TCRA resulted in the removal of the

[7] A Protective Covenant was issued as part of the Agreement of Sale for the western portion of the Harley Davidson property (West Campus). The covenant restricts the use of groundwater and is restricts the disturbance of engineering controls present on the site in accordance with any soil management plan and applicable laws. At a minimum, recommendations will be proposed to make revisions to the existing controls to address the low potential for encountering munitions in MRS 1 below the surface.

entire concrete pit to depth. The area where the pit was removed was subsequently investigated and sampled during the 2007 SI to determine if any evidence of MEC or MC hazards remain. There were no MEC/MD findings and samples were below screening criteria. The SI recommended no further action for the MRS; however, investigations were limited to the source area (former pit location) and the immediate surrounding area.

#### 2.4.3 MRS 3- Burial Area (20mm Dump)

MRS 3 is located southeast of Building 14 (MRS 5), between Building 14 and the former location of the Building 16 firing point (Figure 3). This area was the reported location of "dump" where 20mm MD and potentially MEC was disposed of from the proof ranges. The MRS was listed as having an area of 1 acre; however, the acreage listed does not correspond to the area investigated. Historically, MD (to include one 37-mm round) was found and removed during the TCRA; however, no MEC has been historically found in the area. The area was investigated during the SI and no MEC or MD was found. However, further action was recommended for MEC due to the historical presence of MD. Risks to ecological receptors (select metals in surface soils) were also identified during the SI.

#### 2.4.4 MRS 4- Burial Area (Building 16 Misfire Pit)

MRS 4 is located east of Building 16, in the eastern portion of fYNOP (Figure 3). The MRS was listed as having an area of 1 acre (matching MRS 2 Misfire Pit Acreage). Historically, there have been no finds of MEC or MD in the location of MRS 4 and no MEC/MD findings were observed during the SI. The SI recommended no further action for the MRS; however, investigations were limited to the suspect source area (former pit location) and the immediate surrounding area.

#### 2.4.5 MRS 5- Proof Range

MRS 5 is located in the central portion of the fYNOP (Figure 3). The MRS was listed as having an area of 1-acre and the designated MRS boundary encompasses a portion of Building 14 (to include the ventilation system and target backstop area). Historically there were findings of MEC or MD and no MEC was identified during the SI. MD (empty small arms casings) were found near the former firing point during the SI reconnaissance activities (outside the MRS boundary). No MD was identified in the backstop area during the SI. However, due to the non-intrusive nature of the SI, the SI field team could not access/inspect the subsurface of the backstop sands and the sand handling system; therefore, it is unclear if MEC or additional MD are remaining within the building. The SI recommended further action for MEC due to the presence of MD and MC due to risks to ecological receptors (select metals in surface soils).

#### 2.4.6 AOC 1 – Solid Waste Management Unit (SWMU) 20/21 (37 mm Suspect MD and Sand Disposal Area)

AOC 1 is located in a wooded area in the northeastern portion of fYNOP (Figure 3). The area is mostly covered by mature trees; however, a portion of the area contains grass cover and evidence of an access road. There are no current structures in this location and the only evidence of past dumping activities consists of vegetation (trees) which were observed to have been pushed off of a cleared dirt road. No MEC or MD was found at AOC 1 during SI reconnaissance or sampling activities. Subsurface anomalies likely attributable to MD or cultural debris were noted as being present in the area. The SI recommended further action for MEC due to the potential for MEC/MD and MC due to risks to human and ecological receptors (select metals in surface soils).

### 2.4.7 AOC 2 – Building 16 Backstops

AOC 2 surrounds the area that contains the two backstops for Building 16 (Figure 3). This area is located directly east of MRS 5 (Building 14) and north of MRS 2 (20 mm Disposal Area). Current structures at this location include the east and west backstops of Building 16. The area is partially covered with concrete and contains very little vegetation. The areas behind the backstops contain tall trees and thick vegetation and a pile of material removed from the area in front of the backstops. Historically, MD to include sand filled or black powder-filled projectiles certified as inert along with slag material was found and removed from the Building 16 backstop areas (2004 TCRA). During the SI, MD and MC (dust piles associated with the former proof range ventilation system) was observed to be scattered throughout the area in front of and inside the backstops. No subsurface anomalies likely attributable to MEC/MD were located in the area during the SI reconnaissance. The SI recommended further action for MEC due to the presence of MD and MC due to risks to human and ecological receptors (select metals in surface soils).

### 2.4.8 Additional Findings and Focus of Investigations

Since 2007, Harley-Davidson has had additional munitions related findings outside the designated MRSs and AOCs (Figure 3). These findings appear to be related to disposal operations associated with the proof range operations. However, given the fact that these items were outside the 2007 designated MRS and AOC boundaries, the area of investigation is expanded to include a buffer around the AOCs and MRSs to ensure any single items potentially present outside the MRSs and AOCs will be identified.

## 2.5 SITE SETTING

### 2.5.1 Climate

Pennsylvania is generally considered to have a humid continental type of climate, but the varied physiographic features have a marked effect on the weather and climate of various sections within the state. The average yearly temperature at the fYNOP is 58.3 degrees Fahrenheit (º F), with the maximum being 95º F and the minimum being 5º F. The average precipitation is 40 inches (USACE 1995, Alion 2008).

### 2.5.2 Topography

Elevations across the fYNOP site range from 354 to 575 feet above sea level with an average of approximately 400 feet above sea level (USACE 1995). Historical site topography from 1944 is presented in Figure 2 and current topography is shown on Figure 5. In general, the topography is conducive to the planned RI activities; however, it is noted that the topography near AOC 1 is very steep in places, which could impact degree of coverage during RI activities.

### 2.5.3 Soils

Unconsolidated overburden material of residual soils and saprolite has developed from the underlying bedrock throughout the fYNOP. The overburden material ranges in thickness from 15 feet to greater than 60 feet. Portions of the fYNOP also have alluvial deposits, which include more coarsely grained sediments interspersed among the predominantly fine-grained residual soils (USACE 1995).

### 2.5.4 Vegetation

The vegetation in the fYNOP consists of white pine, red pine, Norway spruce, white spruce, jack pine, European larch, ash, walnut, lespedeza bicolor, bush honeysuckle, and shrub roses (USACE 1995, Alion 2008). A portion of the fYNOP surrounding MRS 1 (no longer owned by Harley Davidson) is developed with limited or no vegetation (parking lot).

### 2.5.5 Geology

Two geologic formations underlie the fYNOP, a solution-prone, gray limestone (carbonate-rich) located in the flat lowland, and a quartzitic sandstone underlying the more steeply sloping hills or upland are in the eastern part of the fYNOP. The bedrock is from the Kinzers Formation. The Kinzers Formation in York County is a medium to dark gray microcrystalline to very fine crystalline limestone with some quartz veins (USACE 1995).

Weathering has taken place within the limestone bedrock in the form of dissolution of carbonate minerals. Several sinkholes have occurred on the fYNOP, which are typical within areas of karst topography (USACE 1995, Alion 2008).

### 2.5.6 Hydrogeology

Groundwater generally migrates from the upland area (east) towards Codorus Creek (west). The eastern upland area is underlain by quartzitic sandstone while a carbonate (karst) aquifer underlies the western half of the Site. Aquifer transmissivity is very different between these geologic materials with the quartzitic sandstone being lower due to groundwater migrating through minor bedding planes, joints and fractures that have a high resistance to flow compared to the solution-enhanced carbonate aquifer. The materials of the carbonate aquifer are prone to dissolution by migrating groundwater which increases the formations transmissivity and permits groundwater to more readily flow through the aquifer (Groundwater Sciences Corporation (GSC) 2011).

Water table gradients are relatively steep (6 to 10%) in the upland, quartzitic sandstone, regions and are reduced to a relatively flat gradient (less than 1%) once groundwater flows into the carbonate rock aquifer. The upland area flow patterns are mainly driven by the interconnected network of fractures, joints, and bedding planes. Once the groundwater enters the carbonate rocks, groundwater flow is directed along fractures, dissolution cavities, interconnected conduits, and weathered zones in the rock. Locally, the groundwater flow through the karst bedrock is widely variable following the pathways of the karstic conduits (GSC 2011).

The extent of the karst aquifer is limited to the north and east by phyllite, quartzite, and quartzitic sandstone. These noncarbonated formations underlie the carbonate formation, dipping at angle of approximately 15 to 20 degrees toward the carbonate, and form the lower limit of the karst aquifer in the northern and eastern portions of the Site. To the south, the carbonate aquifer is laterally extensive, and the depth of the karst aquifer is unknown. Under the southern portion of the Site (including the West Parking Lot), the depth to the bottom of the carbonate aquifer is unknown (GSC 2011).

### 2.5.7 Additional Site Information

The fYNOP contains habitat that supports the State endangered Short-eared Owl, the State threatened Upland sandpiper, and the Federal and State protected Bald Eagle (USACE 1995). Activities will be conducted to minimize impact to threatened and endangered species. Specifically no activities are planned in areas where threatened or endangered species are located.

Additionally, there are no identified wetlands within the designated AOCs and MRSs at the fYNOP, and the Site is located in south central Pennsylvania and, as a result, there are no coastal zones present on the site or in the study area (USACE 1995).

No Cultural and Archaeological Resources are present within the site boundaries of fYNOP (USACE 1995) and no active waste disposal sites currently exist.

Drinking water populations within 4 miles of the fYNOP include residents of York County, Pennsylvania, which has an estimated population of over 416,322 (United State Census Bureau 2000).

Several groundwater monitoring wells are currently present on the fYNOP property; however, there are no potable water wells located on-site. Potable water for fYNOP is obtained from the York Water Company or from bottled water suppliers.

## 2.6 CURRENT AND PROJECTED LAND USE

MRS 1, located on YCIDA-owned property, is currently a paved (asphalt covered) parking area. There is no present use of MRS 1/West Parking Lot and no future land use is designated at this time, but it will likely be developed for industrial use.

MRS 2, MRS 3, MRS 4, MRS 5, and AOC 2 are on Harley-Davidson owned land that is access controlled via secure, perimeter fences. Currently, no active manufacturing operations are occurring in this area of fYNOP. Due to the presence of potential MEC and/or MC, no future land use is currently anticipated; however, as a portion of the area lacks significant topographical changes, the potential exists for future industrial development.

AOC 1, on the eastern boundary of the fYNOP, is densely wooded and located along a steep embankment. Currently, no active manufacturing operations are occurring in the area of AOC 1, and based on topography, no future land use is anticipated as the site may continue to function as a natural buffer.

## 2.7 INITIAL SUMMARY OF RISK FROM MUNITIONS AND EXPLOSIVES OF CONCERN AND MUNITIONS CONSTITUENTS

The initial summary of risk from MEC and MC for the fYNOP MRSs and AOCs is concluded from the 2007 SI report. The fYNOP is a low risk for MEC (low probability of encountering MEC) given previous removal actions and findings to date. Based on sampling results, the fYNOP does pose a risk to human health and the environment due to elevated concentrations of metals (specifically, antimony, copper, lead, nickel, and zinc) that exceed the Act 2 Pennsylvania Statewide Health Standards (SWHS) in MRS 3, MRS 5, AOC 1, and AOC 2.

## 2.8 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) for each fYNOP MRS and AOC has been developed for the different types of contaminants present onsite, including MEC and MC. The CSMs define the source (e.g., the secondary source/media), interaction (e.g., the secondary release mechanism, the tertiary source, and the exposure route), and human and ecological receptors. Potential contaminant sources and receptors were identified and the pathways linking them together were analyzed. The CSMs presented in this RI work plan will continue to be updated throughout the RI process as additional data are collected and analyzed. CSMs for the MRS are described in the following sections.

### 2.8.1 MEC CSM

#### 2.8.1.1 MEC Exposure Pathway

This section discusses the MEC exposure pathway and hazard assessment for the fYNOP MRSs and AOCs. MEC exposure pathways have been identified as complete, potentially complete, or incomplete. The following definitions were used to make a determination for the status of each pathway:

*Complete Pathway* – There is confirmed receptor and media interaction and there is MEC confirmed to be present.

*Potentially Complete Pathway* – There is confirmed receptor and media interaction; however, the exposure may be limited, either due to the type of receptor or the nature of the source, and has not been confirmed. The potentially complete pathway for MEC arises in the following instances:

- Source and mechanism of chemical release (e.g. a munitions-related organic chemical is detected or site metal concentration exceeds background concentrations);
- Transfer mechanisms (e.g. overland flow of contaminants into an adjacent stream, advection of contaminants with groundwater flow);
- Point of contact (exposure point, e.g., drinking water, soil); and
- Exposure route to receptor (e.g., ingestion, inhalation, etc.).
- The presence of material potentially presenting an explosive hazard (MPPEH) indicates there is a potential for MEC to be present, but it has not been confirmed.
- The presence of anomalies indicates there is a potential for MEC to be present, but it has not been confirmed.

*Incomplete Pathway* – There is no receptor and media interaction or MEC was not identified.

#### 2.8.1.2 Transport Process

At the time of potential MEC release into the environment, the medium receiving items was surface or subsurface soil.

Natural transport processes, including soil erosion, may cause MEC to move within the environment following the primary release. Human activities, including construction activities such as excavation or clearing and grading, may also cause MEC to move within the environment. Following the initial release of MEC, detonation, damage on impact, or degradation may release MC to the environment. Leaching and other transport mechanisms may transfer released MC between two or more media.

The CSM requires that an estimate of expected depth of MEC be included in the site-specific analysis for determining response depth, as the depth(s) at which MEC is located is a primary determinant of both potential human exposure and the cost of investigation and cleanup. A wide variety of factors may affect the depth at which military munitions are found. These factors include penetration depth—a function of munitions size, shape, propellant charge used, soil characteristics, angle of entry, and other variables—and movement of MEC through human interaction. Based on the munitions debris identified at the fYNOP MRSs and AOCs, the expected depth for potential MEC is limited to surface soils (top 6 inches of soil) and in some areas subsurface soils based on the potential for MEC and MD disposal pits at the Site.

#### 2.8.1.3 Exposure Media and Accessibility

Interaction describes ways that receptors come into contact with a source. Interaction is the means by which receptors come in contact with MEC. This interaction requires two closely connected elements: access and activity. Access is the ability of a receptor to enter the source area. Activity is any action by a receptor that may result in direct contact with individual MEC items.

The presence of access controls will help determine whether an exposure pathway to a receptor is complete, as fences or natural barriers can limit human access to a source area. The depth of MEC items in subsurface soil may also limit access by a receptor. Additionally, the effects that future land use may have on-site access must be considered. For example, access may be unlimited for construction workers, but may be restricted for nearby residents or other potential receptors. Ease of entry for adjacent populations (e.g., lack of fencing) can facilitate intentional or accidental trespassing.

The hazard presented by MEC is caused by direct contact as a result of some human activity. Site access without such activity does not present a hazard. Identification of MEC exposure pathways focuses on current and future activities that bring humans into contact with the MEC.

MEC exposure media are limited to surface and subsurface soil at fYNOP; however, access to these media is limited and education programs are in place at fYNOP to prevent interaction/contact with MEC.

#### 2.8.1.4 MEC Exposure Receptors

The receptors considered for MEC at fYNOP include authorized Harley-Davidson personnel, contractors, visitors, and biota. The fYNOP contains habitat that supports the State endangered Short-eared Owl, the State threatened Upland sandpiper, and the Federal and State protected Bald Eagle.

#### 2.8.1.5 MEC Exposure Conclusions

MEC were not observed during the 2007 SI; however, munitions debris associated with 20mm projectiles were observed. Two items were identified Harley-Davidson and removed by State Police after 2007 and USACE found an area containing surface MD adjacent to AOC 1. The presence of MD indicates there is a potential for MEC to be present in the subsurface.

### 2.8.2 Munitions Constituents CSM

The MC information presented in the CSM was used to identify all complete, potentially complete, or incomplete exposure pathways for the MRSs/AOCs, for both current and reasonable anticipated future land uses. An exposure pathway is the course a chemical or physical agent takes from a source to a receptor. The MC pathways may also include a release mechanism (i.e., volatilization) and a transport medium (i.e., air) if the point of exposure is not at the same location as the source.

The source areas associated with potential MC exposure within fYNOP includes the MRSs and AOCs and any additional areas where munitions were used or disposed. Figures 3 and 4 show the location of previously identified MRSs and AOCs located in the eastern portion of fYNOP and details of the munitions use in these areas are discussed in Section 2.4. MC of concern associated with fYNOP munitions use and remaining munitions debris identified onsite primarily includes metals (antimony, copper, lead, and zinc) from 0.50 caliber and 20 and 37 mm projectiles. To a lesser extent, select explosives associated with propellant and firing of the projectiles to include (2,4-dinitrotoluene, 2,6-dinitrotoluene (DNT), and nitroglycerin (NG) may be present as well.[8]

MC (metals and explosives) associated with the MEC or MD dissipate through the soil through infiltration and percolation. In addition to being transported, contaminants in the environment may also transfer from one medium to another, such as from soil to groundwater.

The propensity of a chemical to react to equilibrium conditions in the environment and transfer between media is an important factor in determining the mobility of a compound.

The fate and transport of MC are dependent on a variety of factors. Contaminant fate refers to the expected final state that an element, compound, or group of compounds will achieve following release to the environment. Contaminant transport refers to migration mechanisms and rates of contaminant movement from the source area. Migration pathways include air, water, soil, and the interfaces between the phases of the contaminant (i.e., solid, liquid, or gas). The fate and transport of contaminants occur in all three environmental media: terrestrial, aquatic, and atmospheric. Terrestrial environments are comprised of soil and groundwater, aquatic environments include surface water and sediment, and air is the only component of the atmospheric environment.

In the terrestrial environment, if the contaminant is released to soil, it may volatilize, adhere to the soil by sorption, leach into the groundwater, or degrade due to chemical (abiotic) or biological (biotic) processes. If the contaminant is volatilized, the compound may be released to the atmosphere, or if volatilization occurs in the subsurface, the contaminated vapor may migrate and sorb to previously uncontaminated soil or dissolve in groundwater. Constituents that adhere to soil may eventually be transported with surface runoff to an aquatic environment and become sediment. Furthermore, dissolved constituents may eventually be transported to an aquatic environment as surface water.

In the aquatic environments, if the contaminant is released to surface water and/or sediment, it may volatilize, adhere to the sediment by sorption, leach into the groundwater, or degrade due to chemical (abiotic) or biological (biotic) processes. If the contaminant is volatilized, the compound may be released to the atmosphere.

In the atmospheric environment, contaminants may exist as vapors or as particulate matter. The transport of contaminants relies mostly on wind currents, and continues until the contaminants are

[8] As noted in Sections 2.8.2.1 thru 2.8.2.4 DNT and NG have not been found in soil or GW samples collected at the site; however, they are still included in the suite of analytes for the RI.

returned to the earth by wet or dry deposition. Degradation of organic compounds in the atmosphere can occur due to direct photolysis, reaction with other chemicals, or reaction with photo chemically-generated hydroxyl radicals.

The fate and transport of contaminants at fYNOP are strongly influenced by physical and chemical properties, as well as environmental factors such as soil characteristics.

The subsections below discuss the MEC and MC exposure pathways for each of the media at the fYNOP MRAs. MC exposure pathways have been identified as complete, potentially complete, or incomplete. The following definitions were used to make a determination for the status of each pathway:

*Complete Pathway* – There is confirmed receptor and media interaction and there are confirmed exceedances of screening criteria and for metals exceedances of the mean background level indicating that MC is present.

*Potentially Complete Pathway* – There is confirmed receptor and media interaction; however, the exposure, either due to the type of receptor or the nature of the source, may be limited or has not been confirmed. The potentially complete pathway for MC arises in the following instances:

- There are confirmed exceedances of screening criteria and the mean background level indicating that MC is present, but the receptor may not significantly interact with the media (e.g. If there is an exceedance of a human health screening level in soil, there is a complete surface soil pathway for contractors, but a potentially complete surface soil pathway for visitors).

- No data was collected for the specific media; however there are confirmed exceedances of screening criteria in neighboring media and the mean background level (e.g. No surface water or sediment samples were collected; however, there was an exceedance of screening levels in soil).

*Incomplete Pathway* – There is no receptor and media interaction or there are no exceedances of screening criteria and a potential MC source (i.e. MEC or MPPEH) was not identified.

#### 2.8.2.1 Surface Soil Exposure Pathway Analysis

Appropriate human and ecological receptors which have potential to be exposed to surface soil were selected for fYNOP based on site-specific conditions. Human receptor subcategories considered for this evaluation included authorized Harley-Davidson personnel and contractors. Recreational users, visitors, and trespassers are not anticipated to interact with surface soil. Biota and sensitive environments are also considered in the evaluation.

**MRS 1:** Surface soil in MRS 1 was initially viewed as an incomplete pathway for human and ecological receptors for MC prior to the SI field efforts because the area is a paved parking lot (Alion 2008). No surface or subsurface soil samples were collected in the MRS due to the presence of the paved surface. The area remains paved and the surface soil pathway for MRS 1 is incomplete for human health and ecological risk receptors.

**MRS 2:** Surface soil in MRS 2 was viewed as an incomplete pathway for human and ecological receptors for MC prior to the SI field efforts as the source of MC was removed during the 1993 removal action and the 2004 TCRA and the site was regraded and backfilled (Alion 2008). Although the CSM pathway was viewed as incomplete, samples were still collected during the SI. Concentrations of explosives were not detected in the samples collected during the SI for MRS 2. The surface soil pathway in MRS 2 remains incomplete for human health and ecological risk receptors based on previous investigations including the 2007 SI.

**MRS 3:** Surface soil in MRS 3 was initially viewed as a potentially complete pathway for human and/or ecological receptors for MC prior to the SI field efforts (Alion 2008). Two surface soil samples were collected from MRS 3 during the SI and analyzed for explosives of concern (2,4-DNT, 2,6-DNT, and NG. The explosives (DNT and NG) were not detected, but antimony, lead, and zinc were detected at various concentrations that exceeded background soil concentrations in MRS 3; therefore, the pathway for human and ecological receptors is complete. Antimony, lead, and zinc exceeded their respective ecological screening values and were identified as chemicals of potential ecological concern (COPECs). Concentrations reported for the two surface soil samples were below human health screening criteria; therefore, no chemicals of potential concern (COPCs) were identified. The pathway for ecological receptors from exposure to surface soil is identified as complete. No human health COPCs were identified in soil; however, metals were detected in surface soil above background concentrations; therefore, the pathway was determined to be potentially complete for human receptors. The most likely human receptors are construction workers and/or contractors who may be working in the area.

**MRS 4:** Historically no pit was ever identified in MRS 4 as being located in this area and reconnaissance conducted as part of the 2007 SI found no evidence of a pit or MEC/MD, therefore no surface soil samples were collected to evaluate risk for MRS 4. As no source was found, the surface soil pathway in MRS 4 is incomplete for human health and ecological risk receptors.

**MRS 5:** Surface soil in MRS 5 was initially viewed as a potentially complete pathway for human and ecological receptors for MC prior to the SI field efforts (Alion 2008). During the SI, two surface soil samples were collected from MRS 5 and compared to industrial human health screening values and ecological screening criteria. No explosives were detected in samples collected from MRS 5. Antimony, copper, lead, nickel, and zinc concentrations detected in surface soil exceeded background concentrations; therefore, the pathways for human and ecological receptors were identified as complete. No MC of concern exceeded the human health screening values; therefore, acceptable risks were identified for human receptors and no COPCs were identified for MRS 5. Antimony, copper, lead, and zinc (max hazard quotient (HQ) of 18.5) were detected above background and ecological screening values, and identified as COPECs for this MRS. The pathway for ecological receptors exposure to surface soil was identified as complete. No human health COPCs were identified in soil; however, metals were detected in surface soil above background concentrations; therefore, the human health pathway is considered to be potentially complete for human receptors. The most likely human receptors are construction workers and/or contractors who may be working in the area.

**AOC 1:** Surface soil in AOC 1 was initially viewed as a potentially complete pathway for human and ecological receptors for MC prior to the SI field efforts (Alion 2008). During the SI, three surface soil samples and were compared to human health industrial screening values and ecological screening criteria. No explosives were detected. Antimony, copper, lead, nickel, and zinc concentrations at AOC 1 exceeded background. Antimony, copper, lead, and zinc were detected at levels above ecological screening values; therefore, they were identified as COPECs for AOC 1. Lead was detected above human health screening levels; therefore, it was identified as a COPC for AOC 1. The pathway is considered complete for both human and ecological receptors for surface soil based on detection of metals in AOC 1 that exceeded both ecological and human health screening levels. The most likely human receptors are construction workers and/or contractors who may be working in the area.

**AOC 2:** Surface soil in AOC 2 was initially viewed as a potentially complete pathway for human and ecological receptors for MC prior to the SI field efforts (Alion 2008). During the SI, three surface soil samples were collected from AOC 2 and compared to human health screening values (industrial criteria) and ecological screening criteria. A sample collected from between the backstops was located in an area of discolored soil/sand that contained suspect MD. Antimony, copper, lead, nickel, and zinc concentrations at AOC 2 reported in surface soil samples exceeded background concentrations. No MC of concern exceeded human health screening values consequently no COPCs were identified. Antimony, copper, lead, and zinc were detected at levels above ecological screening values; therefore, they were identified as COPECs for AOC 2. Harley-Davidson removed soils and dust related to the air handling system in the Building 16 backstops aft the SI and the backstop areas were also closed off to prevent access. The pathway is considered potentially complete for both human and ecological receptors for surface soil in AOC 2. The most likely human receptors are construction workers and/or contractors who may be working in the area.

#### 2.8.2.2 Subsurface Soil Exposure Pathway Analysis

Appropriate human and ecological receptors to subsurface soil were selected for fYNOP based on site-specific conditions. Human receptor subcategories considered for this evaluation included authorized installation personnel and contractors. Recreational users and visitors, and trespassers are not anticipated to interact with subsurface soil. Biota and sensitive environments are considered in this evaluation.

**MRS 1:** No subsurface soil samples were collected at this MRS due to the presence of asphalt. The pathway for construction workers and/or contractors are still noted as potentially complete for future activities (i.e. excavations) which could provide exposure to MC.

**MRS 2:** Two subsurface samples collected in MRS 2 during the SI were analyzed for MC including DNT, NG, antimony, copper, lead, nickel, and zinc. Copper and nickel concentrations at MRS 2 exceeded background, but did not exceed Region III Risk-Based Concentrations (RBCs). Concentrations of explosives were not detected in the samples collected for MRS 2. Comparison to ecological screening criteria for MRS 2 was not performed due to the absence of exposure for ecological receptors to subsurface soil. Pathways from subsurface soil to construction workers and/or contractors are identified as complete for MRS 2, but acceptable risks were found and no COPCs were identified. No risk from explosives was identified in the SI (Alion 2008).

**MRS 3:** Subsurface soil in MRS 3 was viewed as a potentially complete pathway for construction workers and/or contractors in the 2007 SI prior to the SI field efforts. During the SI, one subsurface soil sample was collected and analyzed for MC including DNT, NG, antimony, copper, lead, nickel, and zinc in MRS 3 during the SI. The subsurface soil sample was not compared to the ecological screening values because there are no exposure routes for biota. Antimony, copper, lead, nickel, and zinc concentrations at MRS 3 exceeded background; therefore, the human health subsurface soil pathways in the CSM are identified as complete. Acceptable risks were found and no COPCs were identified for this MRS. The subsurface soil samples from MRS 3 were not compared to the ecological screening values because there are no exposure routes for biota. Antimony, copper, lead, nickel, and zinc concentrations at MRS 3 exceeded background; therefore, the human health subsurface soil pathways in the CSM are identified as complete with acceptable risks (Alion 2008).

**MRS 4:** Reconnaissance conducted as part of the 2007 SI found no evidence of a pit or MEC/MD; therefore, no subsurface soil samples were collected to evaluate risk for MRS 4. Reconnaissance conducted as part of the 2007 SI found no evidence of a pit or MEC/MD; therefore, no subsurface soil samples were collected to evaluate risk for MRS 4. The pathways for subsurface soil are incomplete because no evidence of a pit or MEC/MD was found and no source areas were identified (Alion 2008).

**MRS 5:** Subsurface soil in MRS 5 was viewed as a potentially complete pathway for construction workers and/or contractors in the 2007 SI prior to the SI field efforts. During the SI, one subsurface soil sample was collected from MRS 5. Copper at MRS 5 exceeded background, consequently the pathway for construction workers and/or contractors were identified as complete in the CSM. Acceptable risks were identified for human receptors from exposure to subsurface soil. Exposure of ecological receptors to subsurface soil is not complete because there is no interaction between the media and receptor. Copper at MRS 5 exceeded background, consequently the pathway for construction workers and/or contractors were identified as complete. Acceptable risks were identified for human receptors from exposure to subsurface soil. Exposure of ecological receptors to subsurface soil is not complete because there is no interaction between the media and receptor (Alion 2008).

**AOC 1:** Subsurface soil in AOC 1 was viewed as a potentially complete pathway for construction workers and/or contractors in the 2007 SI prior to the SI field efforts. No subsurface soil samples were collected from AOC 1 and based on the findings from the surface soil samples in AOC 1, the pathways for construction workers and/or contractors were considered potentially complete for subsurface soil in AOC 1.

**AOC 2:** Subsurface soil in AOC 2 was viewed as a potentially complete pathway for construction workers and/or contractors in the 2007 SI prior to the SI field efforts. During the SI, one subsurface soil sample was collected from AOC 2. Antimony, copper, lead, and zinc site concentrations were greater than background; consequently, the pathway for human receptors exposure to subsurface soil is complete. None of these concentrations exceeded human health screening values; therefore, no COPCs were identified. Exposure of ecological receptors to subsurface soil is not complete because there is no interaction between the media and receptor. The pathway for human receptors exposure to subsurface soil is complete based on antimony, coppery, lead and zinc concentrations that exceed background. None of these concentrations exceeded human health screening values. Exposure of ecological receptors to subsurface soil is not complete because there is no interaction between the media and receptor (Alion 2008).

#### 2.8.2.3 Surface Water/Sediment Migration Pathway Analysis

No channelized surface water exists within the fYNOP MRS and AOCs and therefore no surface water/sediment receptors are present.

#### 2.8.2.4 Groundwater Migration Pathway Analysis and Conclusions

During the SI planning phase, groundwater in MRS 1 was initially considered a potentially complete pathway for construction workers and/or contractors based on the presence of groundwater monitoring wells located in the vicinity of MRS 1. During the 2007 SI, existing wells were sampled adjacent to MRS 1 and munitions-related constituents were not detected in groundwater samples. No COPCs or COPECs were identified for groundwater in this MRS. Based on the sample results, the pathway in the CSM is identified as incomplete.

During the SI planning phase, groundwater in MRS 2, was not considered a potentially complete pathway as the concrete pit and associated MEC/MD was removed during the TCRA. Additionally, no firing occurred in this area and any associated MC was likely removed with the concrete pit. Although there was no evidence of a source, the groundwater was sampled in conjunction with MRS 3 and MRS 5. Due to the location of the existing groundwater monitoring wells in relation to this MRS, the data was used to evaluate the groundwater pathway for MRS 2. Groundwater sampling was limited to NG and DNT and compared to human health screening values (EPA Region III RBCs). The samples were not compared to the ecological screening values because there is no exposure route for biota. The munitions-related constituents for this MRS were not detected and there are no COPCs identified for groundwater in this MRS. Based on the sample results, the pathway in the CSM is identified as incomplete.

During the SI planning phase, groundwater in MRS 3 was noted as a potentially complete pathway for construction workers and/or contractors as there are several groundwater monitoring wells downgradient of MRS 3. The groundwater pathway was not potentially complete for employees and biota because there are no potable water wells located downgradient and there is no exposure for biota. During the 2007 SI, groundwater sampling was limited to NG and DNT and compared to human health screening values (EPA Region III RBCs). The samples were not compared to the ecological screening values because there are no exposure routes for biota. The munitions-related constituents for this MRS were not detected and there are no COPCs identified for groundwater in this MRS. Based on the sample results, the pathway in the CSM is identified as incomplete.

MRS 4 groundwater was not a potentially complete pathway because previous investigations and the SI found no evidence of a pit or MEC/MC associated with MRS 4. The pathways are incomplete because no groundwater source areas were identified or expected.

During the SI planning phase, groundwater in MRS 5 was identified as a potentially complete pathway for construction workers and/or contractors as there are several groundwater monitoring wells downgradient of MRS 5. The groundwater pathway was not potentially complete for employees and biota because there are no potable water wells located downgradient and there is no exposure for biota. During the 2007 SI, groundwater sampling was limited to NG and DNT and compared to human health screening values (EPA Region III RBCs). Samples were not compared to the ecological screening values because there are no exposure routes for biota. The munitions-related constituents for this MRS were not detected and there are no COPCs identified for groundwater in this MRS. Based on the sample results, the pathway in the CSM is identified as incomplete.

During the SI planning phase, groundwater in AOC 1 was identified as a potentially complete pathway for construction workers and/or contractors as there are several groundwater monitoring wells downgradient of AOC 1. The groundwater pathway was not potentially complete for employees and biota because there are no potable water wells located downgradient and there is no exposure for biota. During the 2007 SI, groundwater sampling was limited to NG and DNT and compared to human health screening values (EPA Region III RBCs). The samples were not compared to the ecological screening values because there are no exposure routes for biota. The munitions-related constituents for this AOC were not detected and there were no COPCs identified for groundwater in this AOC. Based on the sample results, pathways in the CSM are identified as incomplete.

During the SI planning phase, groundwater in AOC 2 was identified as a potentially complete pathway for construction workers and/or contractors as there are several groundwater monitoring wells downgradient of AOC 2. The groundwater pathway was not potentially complete for employees and biota because there are no potable water wells located down-gradient and there is no exposure for biota. During the 2007 SI, groundwater sampling was limited to NG and DNT and compared to human health screening values (EPA Region III RBCs). The samples were not compared to the ecological screening values because there are no exposure routes for biota. The munitions-related constituents for this AOC were not detected and there were no COPCs identified for groundwater in this AOC. Based on the sample results, the groundwater pathway in the CSM was identified as incomplete for AOC 2.

#### 2.8.2.1 Air Migration Pathway Analysis and Conclusions

Air is not a potentially complete pathway for soil in MRS 1 since it is located in a paved parking lot. However, air is noted as a potentially complete pathway from subsurface soil to construction workers and/or contractors as the area underlying the pavement was used as a landfill where MD has been found.

MRS 2 air migration was not a potentially complete pathway as any evidence of a source was removed with the concrete pit during the TCRA.

The air migration pathway for MRS 3 has an extremely low potential, if any, for human and/or environmental receptors to come into contact with the analytes detected in air because of the vegetative cover.

For MRS 4, air was not a potentially complete pathway for surface or subsurface soil as there are no primary or secondary sources expected in the area.

The air migration pathway for MRS 5 has an extremely low potential, if any, for human and/or environmental receptors to come into contact with the analytes detected in surface or subsurface soil because of the vegetative cover.

The air migration pathway for AOC 1 has an extremely low potential, if any, for human and/or environmental receptors to come into contact with the analytes detected in surface soil because of the vegetative cover; therefore, the pathway is incomplete.

The air migration pathway for AOC 2 has potential for human and/or environmental receptors to come into contact with the analytes detected in surface soil because of the limited ground cover in the area of the former backstops.

# 3. TECHNICAL MANAGEMENT PLAN

## 3.1 PROJECT OBJECTIVE

The project objective is to conduct an RI to define the MEC and MC risks associated with historical military munitions use at the fYNOP MRSs and AOCs. The location of the fYNOP MRAs are depicted in Figure 1.

Specific objectives of this RI include:

- Confirm MRS/AOC extent within the identified fYNOP boundary,
- Characterize nature and extent of MEC and MC contamination,
- Refine the site-specific CSM,
- Provide identification of Applicable or Relevant and Appropriate Requirements (ARARs),
- Complete Human Health and Ecological risk assessments based on known contamination, and
- Conduct a hazard assessment based on known MEC.

## 3.2 PROJECT ORGANIZATION

The organizations that will participate in implementation of this project are described in this subsection. These organizations have specific functions according to their project responsibilities. An organization chart outlining the relationship between EA project personnel is shown on Figure 6.

### 3.2.1 Environmental Department at Harley-Davidson

The Environmental Department at Harley-Davidson is responsible for managing all environmental affairs at the facility and for coordinating all environmental-related investigation and remediation work with USEPA Region 3 and PADEP. Sharon Fisher is the head of the Environmental Department at Harley-Davidson and the Harley-Davidson Project Champion. Ms. Fisher will manage this project and act as the main conduit for communications with the federal and state regulatory agencies.

### 3.2.2 AMO Environmental Decisions (AMO)

AMO Environmental Decisions will assist Harley-Davidson with managing the RI project. Mr. Ralph Golia is responsible for this project. Mr. Golia will review planning documents, provide technical oversight during the RI, and will review the RI Report.

### 3.2.3 United States Army Corps of Engineers

The USACE Baltimore District is responsible for providing concurrence for the RI. Mr. Hamid Rafee is the USACE Project Manager responsible for this project. Mr. Rafee will review planning documents, provide technical oversight during the RI, and will review the RI Report.

### 3.2.4 EA Engineering, Science, and Technology, Inc., PBC

EA has been contracted by Harley-Davidson as the entity responsible for implementation of the RI. EA will subcontract specific vendor services as required by the project. EA reports to Harley-Davidson and AMO.

### 3.2.5 Regulatory Agencies

USEPA Region 3 and PADEP will provide review and technical oversight for the project. The USEPA Region 3 Remedial Project Manager for this project is Mr. Griff Miller. The PADEP Remediation Project Manager for this project is Ms. Pam Trowbridge.

## 3.3 PROJECT PERSONNEL

The RI activities will be managed through an organized effort of scientific and engineering personnel and technical resources. Key members of the RI project team are presented in Table 3-1.

**Table 3-1. Key Project Members and Contact Information**

| Organization | Personnel | Contact Information |
|---|---|---|
| Harley-Davidson Environmental Department (Project Champion) | Sharon Fisher | Phone: 717-852-6544<br>Email: Sharon.r.fisher@harley-davidson.com |
| Project Manager | Hamid Rafee | Phone: 410-962-7546<br>Email: Hamid.Rafiee@usace.army.mil |
| AMO Environmental Decisions, Inc. | Ralph Golia | Phone: 215-230-8282<br>Email: rgolia@amoed.com |
| Federal Regulatory Oversight, USEPA | Griff Miller | Phone: 215-814-3407<br>Email: miller.griff@epa.gov |
| State Regulatory Oversight, PADEP | Pam Trowbridge | Phone:717.705-4864<br>Email: ptrowbridg@state.pa.us |
| EA Regional Munitions Response Program Manager | Vince Williams | Phone: 410-329-5151<br>Email: vwilliams@eaest.com |
| EA Project Manager | Michael O'Neill | Phone: 410-329-5142<br>Email:moneill@eaest.com |
| EA Task Manager – Field | Steven Yankay | Phone: 717-487-6632<br>Email:syankay@eaest.com |
| EA Task Manager – Documents | Ivy Harvey | Phone: 410-329-1426<br>Email: iable@eaest.com |
| EA Program Health and Safety Coordinator | Pete Garger | Phone: 410 -90-6338<br>Email: pgarger@eaest.com |
| EA Director of MEC Operations | Rick Hanoski | Phone: 443-632-4887<br>Email: rhanoski@eaest.com |
| EA Corporate Quality Assurance/Quality Control (QA/QC) Officer | Frank Barranco | Phone: 443-286-8791<br>Email: fbarranco@eaest.com |

**Table 3-1. Key Project Members and Contact Information**

| Organization | Personnel | Contact Information |
|---|---|---|
| EA Unexploded Ordnance Quality Control Specialist/ Unexploded Ordnance Safety Officer (UXOQCS/UXOSO) | John Monk* | Phone: 410-329-5162<br>Email: jmonk@eaest.com |
| EA SUXOS | Howard "Yorky" Knowles* | Phone: 727-688-4856<br>Email:yknowles@eaest.com |
| Test America Denver | Ms. Elain Walker | (303)736-0156 |

*Depending on the timing of the fieldwork, a suitable qualified alternate may be used for UXO technician categories (see additional discussions below).

### 3.3.1 EA Program Manager

The EA Program Manager, Mr. Vince Williams, will be responsible for monitoring the overall progress of the project, reviewing progress reports, and verifying that necessary resources are available to the project manager. The Program Manager will maintain close communications with the Project Manager during performance of this RI.

### 3.3.2 EA Project Manager

The EA Project Manager, Mr. Michael O'Neill, PMP, is the primary contact for the Harley-Davidson and AMO. Within his area of responsibility, Mr. O'Neill develops scope, schedule, and budget. He will provide day-to-day management of project team and schedules and lead kickoff meetings and review conferences. Mr. O'Neill will be responsible for the safe, efficient, and quality execution of the project and for ensuring any subcontractors deliver their work safely, to specifications, and in accordance with EA's quality and safety polices/standards.

In addition, the Project Manager is responsible for integrating QC functions into project activities and supporting the Corporate QA/QC Manager with QC staff resources. This includes coordinating project and QC team communications and providing periodic status reports to Harley-Davidson and AMO.

Mr. O'Neill's authority will include making process, procedure, and managerial decisions regarding specific project issues; negotiating with subcontractors; approving subcontractor deliverable performance and invoices; and developing and implementing the work plan. He also will have the authority to temporarily stop work for unsafe conditions. Mr. O'Neill will report to the EA Program Manager for the contract and will ensure the RI is delivered in accordance with industry standards.

### 3.3.3 EA Director of MEC Operations

The EA Director of MEC Operations, Mr. Rick Hanoski, provides senior technical input on issues related to MEC. The Director of MEC Operations also reviews the project to identify any MEC safety or QC concerns.

### 3.3.4 Unexploded Ordnance Quality Control Specialist and Unexploded Ordnance Safety Officer (UXOQCS/UXOSO)

The UXOQCS/UXOSO is currently expected to be Mr. John Monk, but depending on the timing of the field work, an alternate, equally qualified UXOQCS/UXOSO may be selected from EA's staffing roster. The UXOQCS/UXOSO will be responsible for the following health and safety tasks: implementing the approved MEC health and safety program in compliance with applicable federal, state, and local health and safety statutes, regulations, and codes; scheduling the daily safety briefings; analyzing operational risks, explosive hazards, and safety requirements; establishing and ensuring compliance with all site-specific explosives operations safety requirements; and enforcing personnel limits and safety exclusion zones for explosives-related operations. The UXOQCS/UXOSO will also be responsible for conducting, documenting, and reporting the results of safety inspections to ensure compliance with all applicable explosives safety policies, standards, regulations, and codes; and ensuring all protective works and equipment used within the exclusion zone are operated in compliance with applicable DoD policy, and federal, state, and local health and safety statutes, regulations, and codes.

The UXOQCS will also be responsible for developing and implementing the MEC-specific sections of the QAPP; conducting and documenting QC audits for compliance with established procedures; and identifying, documenting, reporting, and ensuring completion of all corrective actions to ensure that operations comply with requirements. The UXOQCS openly communicates with the project management team, contributes to the overall success of the project, and ensures that suitable QC requirements are implemented. The UXOQCS will identify areas where the project could benefit from improvement and assist with the implementation of improvements. The UXOQCS will also assist in the preparation of risk and hazards analyses and will supervise the conduct of onsite MEC-related operations. The UXOQCS will administer and maintain the QC program to ensure that QC objectives are met. The UXOQCS will approve all corrective action requests and corrective action plans to ensure all MEC-related work complies with contractual requirements. The UXOQCS/UXOSO will have the authority in determining acceptance or rejection of all munitions response field work in process and completed work activities, and also will have the authority to stop work on munitions response field activities for safety or quality-related reasons. The UXOQCS will maintain instrument and equipment testing, calibration, repair, and replacement records; a photographic log; and a daily QC log.

It is anticipated that no more than 12 people will be onsite during completion of the field activities. However, if there is a period where greater than 15 EA personnel (including EA's subcontractors) will be onsite, then a separate qualified individual will also be assigned as the UXOSO and Harley-Davidson will be notified in advance.

### 3.3.5 EA SUXOS

The SUXOS is currently expected to be Mr. Howard "Yorky" Knowles, but depending on the timing of the field work, an alternate, equally qualified SUXOS may be selected from EA's staffing roster. The EA SUXOS will be the primary point of contact for communications during operational efforts for issues relating to field actions and daily schedules. The SUXOS will be responsible for management and leadership of the project UXO activities and will be onsite to provide direct oversight of field activities. He will manage field resources, information, commitments, and leads and will facilitate effective project execution and delivery of project milestones and schedules according to the RI work plan and guidance relative to public safety. The SUXOS will coordinate and schedule field activities; inspect field activities throughout the day; maintain a field log of daily activities; maintain records of field relevant observations (i.e., results of anomaly counts, MEC/MD findings, etc.) and disposal documentation (if applicable). The SUXOS will submit a daily progress report to Mr. O’Neill.

### 3.3.6 EA Task Manager(s)

Mr. Steve Yankay will serve as the EA Field Task Manager and will be involved in project scoping activities, will facilitate RI field work and ensure EA personnel are familiar with and follow Harley-Davidson procedures and policies. During field efforts, Mr. Yankay will act as liaison between Harley-Davidson and the field team. Mr. Yankay will assist with the management and execution of field activities and will report to the SUXOS and the Project Manager. Ms. Ivy Harvey will act as the document task manager and assist the project manager with the creation of project-related plan and reports.

Additionally, the Task Manager will work with the Project Manager and assist the UXOQCS/UXOSO to set up and maintain logs and records of field QC inspections, audits, reports, and meetings for the project files. The Task Manager will also ensure that project field-generated documents such as Nonconformance Reports, Root Cause Analyses, and Correction Action Requests are reviewed and approved before implementation. The UXOQCS and the Task Manager will work together to establish and maintain the project field QC file.

### 3.3.7 EA Program Health and Safety Manager

The EA Program Health and Safety Manager, Mr. Pete Garger, Certified Industrial Hygienist (CIH), will be responsible for overall safe execution of all work on this project and for compliance with all USACE safety requirements, and will have the authority to issue stop work orders for health and safety-related reasons. He will ensure that procedures described in the work plan are safe and all safety requirements are implemented in the field. Mr. Garger will conduct project safety audits, as needed.

### 3.3.8 EA Program Quality Control Officer

The EA Program Quality Control (QC) Manager, Mr. Frank Barranco, P.E., will provide overall program quality management and implementation on the project. He will have responsibility for identifying quality problems and will initiate, recommend, and/or provide corrective measures to those problems. The Program QC Manager verifies implementation of corrective measures and conducts senior level review of contract deliverables; monitors activities at the work sites; and coordinates with the Project Manager, SUXOS, and UXOQCS/SO to establish the needs and priorities of QC activities. He maintains all quality records, work plans, or other documents. The Program QC Manager also provides training, certification, and evaluation of continued satisfactory performance of QC personnel.

The Program QC Manager's authority includes an ability to halt or stop work as necessary to address quality issues and approving all work plans and all changes or deviations from established procedures or techniques.

## 3.4 PROJECT COMMUNICATION AND REPORTING

The success of this project depends on proactive and open communication among project stakeholders. Such communication ensures a mutual understanding of project goals and an endorsement among the stakeholders toward achieving those goals. Stakeholders associated with the project include:

- Harley-Davidson
- AMO
- USACE Baltimore District
- USEPA Region 3
- PADEP
- EA Team

### 3.4.1 Project Meetings

Project meetings will be coordinated to discuss planning and scheduling, obtain stakeholder concurrence on key project decisions, review/discuss project deliverables, and present field data and information. Currently, no set schedule exists to define meeting frequency; however, Harley-Davidson, AMO, or EA can suggest meetings based on progress or issues encountered. Meeting attendees will vary based on the agenda items for discussion.

### 3.4.2 Internal Communications

Internal communications are defined as communications within the project team that are essential to completion of the project objectives. This generally includes Harley-Davidson, AMO, USACE, EA, and subcontractors (as needed). Communication may be in the form of written correspondence including letters and technical directives, electronic format including email, or it may be verbal either in person or via telephone. All communications that are relevant to the project will be documented for the final record. This includes meeting minutes, telephone logs, field notebooks, and email files.

### 3.4.3 External Communications

External communications are defined as communications with local, state, and federal agencies and the general public. Unless EA is directed otherwise, all external communications will be initiated by Harley-Davidson.

### 3.4.4 Coordination with Operating Facilities

Field work will be coordinated with Harley-Davidson to minimize the impact or disruption to production operations. Contact and communication with the facility leads will be initiated through the Head of the Environmental Department, Ms. Sharon Fisher, who is the Project Champion.

### 3.4.5 Communication during Field Efforts

During the RI field work, the EA Team Task Manager and SUXOS will meet daily with all onsite personnel and field personnel to review the project status and discuss technical and safety issues. These meetings will be directed by the SUXOS with input from the Task Manager and the UXOQCS/UXOSO. The UXOQCS/USOSO will complete a Daily Tailgate Meeting Log (provided in Appendix D) upon completion of the meeting. The Daily Tailgate Meeting Log provides a summary of topics, including QC issues, discussed during the meeting and provides a list of personnel in attendance. If necessary, additional meetings may be scheduled by the UXOQCS/UXOSO or project personnel to discuss technical, quality, or safety issues at any time during the investigation. The SUXOS and UXOQCS/UXOSO may also meet individually with field personnel or the subcontractors, as necessary, to resolve problems. During the field effort, the SUXOS will be in regular contact with the project management team. When significant problems or decisions requiring additional authority occur, the SUXOS will immediately contact the Project Manager for assistance.

## 3.5 PERSONNEL QUALIFICATIONS AND TRAINING

All project staff members will be qualified to perform their assigned jobs in accordance with the terms outlined in the contract and by the project plans. Specific qualifications and training required for UXO-qualified personnel are discussed below.

### 3.5.1 Qualification and Training for UXO Personnel

UXO personnel will be qualified and certified in accordance with Department of Defense Explosives Safety Board (DDESB) Technical Paper 18. Refer to Section 5.7.2.6 for additional discussion regarding record keeping.

### 3.5.2 UXO Training Documentation

Prior to the investigation, the UXOQCS will verify each site person and obtain copies of letters and certifications, as necessary, to complete the personnel qualifications file. This information will be maintained in the project files. Records of site-specific and routine training will be maintained in the project files. Refer to Section 5.7.2.6 for additional discussion regarding record keeping.

### 3.5.3 Health and Safety Training

Health and safety training requirements for onsite project personnel have been established in accordance with Occupational Safety and Health Act requirements for hazardous site workers [29 Code of Federal Regulations (CFR) 1910.120] and are specified in the SSHASP provided as Appendix A of this work plan.

## 3.6 PRIVACY AND SECURITY

Project documents including data, reports, or other information gathered as part of this project will not be released without the expressed written consent of the Head of the Environmental Department at Harley-Davidson, Ms. Sharon Fisher. EA and its subcontractors will comply with Harley-Davidson security protocols and confidentiality requirements.

## 3.7 PROJECT DELIVERABLES

The project deliverables for this project include the RI Work Plan, Addendum(s) to the RI Work Plan, a SSHASP addendum (if required), and the RI Report.

### 3.7.1 Remedial Investigation Work Plan

The RI work plan is based on the technical approach developed through discussions and meetings with Harley-Davidson, AMO, and USACE. The RI work plan details the first phase of RI activities that will be performed at the fYNOP and provides a general outline of RI activities that may be employed during the second phase of the RI to refine potential MRS/AOC boundaries.

### 3.7.2 Remedial Investigation Work Plan Addendum

The RI work plan Addendum will be prepared as part of the second phase of the RI. The data collected during the first phase of the RI will be used to further delineate MRSs/AOCs and identify data gaps needed to determine the nature and extent of potential MEC and MC contamination. The RI work plan Addendum will provide the details necessary to execute the second phase of the RI to clarify the areas of interest, specify the type of investigation to be completed in each area, specify locations for analog or digital geophysics, and specify MC sampling locations.

### 3.7.3 Remedial Investigation Report

The EA Team will prepare and submit an RI Report to include the results from the field investigation at the fYNOP. The report outline will generally follow the outline being used for ongoing RI activities at the Site.

Geophysical and MC sampling data generated during the RI will be reviewed for accuracy and completeness, and compiled into the RI Report. Laboratory data will be electronically downloaded into a database for review and verification (100% data review and verification). Laboratory data (at least 10%) will also be independently validated by a third-party. The electronic data will be submitted with the Final RI Report. Data validation qualifiers will be entered into the database and a data quality report prepared. The validated laboratory data along with the field data will be used to prepare the RI Report. The RI Report will summarize the field investigation efforts, analyze the data collected, characterize the nature and extent and fate and transport of MEC and MC, present a risk hazard assessment for MEC, present a baseline risk assessment for MC, and assess risk management alternatives. The report will include recommendations if additional munitions response activities are needed or if any areas can be considered for No Further Action.

## 3.8 DOCUMENT MANAGEMENT

The version of each document (i.e., Draft, Draft Final, and Final) will be denoted on the cover and on each page of the document. Each document will go through the EA Senior Technical Review process to ensure EA document quality standards have been met. Documents will be distributed to Harley-Davidson, AMO, and USACE (Draft, Draft Final, and Final) along with USEPA and PADEP (Draft Final and Final), according to Harley-Davidson requests.

## 3.9 REVIEW AND ACCEPTANCE

Following submittal and review of all documents, stakeholders (team members and regulators) will provide EA with comments. Subsequently, EA will prepare written responses to each comment and will provide to stakeholders for acceptance or rejection of the comment prior to submittal of the deliverable. Upon notice of concurrence, the comments will be incorporated into the document and the revised version will be resubmitted. The review period for team members (USACE, AMO, Harley Davidson was initially set at 10-15 calendar days and the regulatory review period is scheduled for 30 calendar days. This schedule can be adjusted as necessary to meet stakeholder requirements.

## 3.10 PROJECT SCHEDULE

An Activity-Based Schedule has been developed for the project (see Figure 7) will be updated at least monthly or as needed throughout the project. The schedule outlines activities defined and is logically sequenced to support and manage completion of the RI objectives thru RI reporting. The schedule has been prepared and will be maintained using Microsoft Project software. The schedule defines the interrelationships of the tasks in a logical manner. Relationships, changes in durations, and changes to early start and finish dates will be updated for each activity after initial review by stakeholders. Schedule updates will be provided to support management requirements of the project.

## 3.11 PERIODIC REPORTING AND MEETINGS

Periodic reports such as daily progress reports (Appendix D) during field activities will be prepared to document project activities. Summary progress reports will be prepared to document activities completed during a billing cycle for AMO, Harley-Davidson, and USACE approval.

## 3.12 PERIODIC MEETINGS

Periodic meetings during field work will be held to coordinate activities, discuss field progress, and review upcoming field work. These meeting will be held at the request and direction of Harley-Davidson, if needed.

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# 4. FIELD INVESTIGATION PLAN

## 4.1 DATA QUALITY OBJECTIVES

Data quality objectives (DQOs) are both qualitative and quantitative statements that define the type, quality, and quantity of data necessary to support the decision-making process during project activities. The DQO process used for this project follows the USEPA QA/G-4 guidance (USEPA 2006) and uses the following seven-step DQO development process to ensure the environmental data used in the decision making are appropriate for their intended application:

1. State the problem. Describe concisely the problem to be studied.

2. Identify the goals of the study. State the decisions to be made to solve the problem.

3. Identify information inputs. Identify information and supporting measurements needed to make the decisions and describe the source(s) of the information.

4. Define the boundaries of the study. Specify conditions (i.e., time periods and spatial locations).

5. Develop the analytic approach.

6. Specify performance or acceptance criteria.

7. Develop the plan for obtaining data. Evaluate the results of the previous steps and develop the most resource-efficient design for data collection.

The following section describes the DQOs for the fYNOP. Individual suspected MEC items and disposal areas will be the targets of the RI; however, they will be evaluated in the context of the extent of MEC across any particular area (i.e., the second phase of the investigation will focus on identifying patterns or the density of items to determine nature and extent as opposed to trying to locate individual items for disposal).

The DQO process outlined in the USEPA 2006 guidance document entitled “Guidance on Systematic Planning Using the Data Quality Objectives Process” was used to support development of site-specific DQOs for this project. Each of the seven planned steps are included in Table 4-1.

**Table 4-1. Data Quality Objectives for the fYNOP**

| Step | | DQO |
|---|---|---|
| 1. | State the Problem | MEC and MD associated with 3-inch rounds, 20mm Target Practice projectiles, 40mm anti-air craft practice projectiles, and 37mm inert projectiles, have been identified/removed from fYNOP. During the SI, MC (including antimony, barium, copper, lead nickel and, zinc) were detected onsite at concentrations exceeding human health and/or ecological screening criteria. Items identified as MEC and MD have been found outside the designated MRSs and AOCs. The nature and extent of remaining MEC and MC have not been characterized at the fYNOP. The overall objective of this RI is to collect data that will be used to define the nature and extent and fate and transport of MEC and MC in and around the MRSs and AOCs associated with historical munitions use. |
| 2. | Identify the Goals of the Study | *First Phase:*<br>• Assess the presence or absence of MEC and identify additional areas of concern beyond the boundaries of the existing fYNOP MRSs and AOCs.<br>• Remove metallic debris from the surface to facilitate additional investigation using analogue or digital geophysics.<br>• Assess the presence or absence of MC (i.e. focused in Phase I of this RI on areas containing backstop sand or firing range debris in soil, Building 14 backstops, and breached MEC items).<br>*Second Phase:*<br>• Assess the nature and extent of MEC within areas of concern identified during the first phase.<br>• Assess nature and extent and fate and transport of MC contamination (to include explosives, and select metals [antimony, barium, copper, lead nickel and, zinc] as appropriate) in soil within the refined AOC/MRS boundaries as derived during the first phase.<br>• Assess risk from MEC using the MEC Hazard Assessment (if MEC is identified) or assess risk from potential MEC (if no MEC is identified) using the MEC Probability Assessment.<br>• Assess risk from MC to human health and the environment. |
| 3. | Identify Information Inputs | Historical MEC and MC data, including historical records reviews, historical munitions-related reports, previous environmental studies, and receptor information will be compiled from the following reports:<br>• TCRA Report (Plexus 2004)<br>• Site Inspection Report for the York Naval Ordnance Plant (Alion 2008)<br>• Supplemental Remedial Investigations Soil Report - Former York Naval Ordnance Plant (SAIC 2009)<br>• Soil Risk Assessment-Former York Naval Ordnance Plant (GSC 2012)<br>• Miscellaneous backup documents and reports.<br><br>*First Phase:*<br>**MEC Information Inputs:** New MEC data will be obtained by conducting a magnetometer assisted surface clearance over approximately 18.07 acres of the fYNOP. Prior to conducting the surface clearance, the fYNOP will be divided into 100 ft by 100 ft grids and vegetation removal will be performed, as needed, within each grid. Field observations will be recorded.<br><br>**MC Information Inputs:** If breached MEC is identified, a grab soil sample will be collected beneath the item. Samples will be analyzed for a suite of explosive (to include, trinitrotoluene (TNT) degradation products, if appropriate based on the item identified, via USEPA Method 8330A).<br><br>Refer to Sections 4.2 thru 4.10 for additional details on the data collection process. |

**Table 4-1. Data Quality Objectives for the fYNOP**

| Step | | DQO |
|---|---|---|
| | | *Second Phase:*<br>**MEC Information Inputs:** New subsurface MEC data will be obtained using analogue or digital geophysics. Subsurface data will be collected based on the observations during the first phase of the RI. Locations and rationale for the geophysics will be outlined in an Addendum to this work plan.<br><br>**MC Data:** Soil data from the SI will be used to focus MC sampling. Sampling data will be used to evaluate the nature and extent of MC in each MRS/AOC.<br><br>The new MC data will supplement the data that was gathered during previous investigations. The number of and locations of soil samples to be collected during the second phase of the RI will be outlined in an Addendum to this work plan. In addition, if breached MEC is identified, a grab soil sample will be collected beneath the item.<br><br>Soil samples will be analyzed for antimony, barium, copper, lead, nickel and, zinc using USEPA Method 6020A and 2,4-dinitrotoluene, 2,6-dinitrotoluene, and nitroglycerin using USEPA Method 8330A. Soil beneath breached MEC will also be analyzed for a tailored suite of explosives (i.e. TNT and degradation products if anticipated) based on item identified via USEPA Method 8330 A.[9]<br><br>**Additional Information Inputs:**<br>The background soil data presented in *the Supplemental Remedial Investigations Soil Report - Former York Naval Ordnance Plant* (SAIC 2009) and *the Site Inspection Report for the York Naval Ordnance Plant* (Alion 2008) will be used to perform a statistical background comparison (using a standard statistical comparison test such as the Upper Tolerance Limit (UTL) or the Quantile and Wilcoxon Rank Sum tests).<br><br>USEPA non-residential and ecological soil Regional Screening Levels and PADEP medium specific concentrations (MSCs) will dictate the action levels for MC and will be used to determine whether or not a risk assessment is warranted. The human health and ecological action levels are provided in the QAPP (Section 5.0). The detection limits associated with these methods are expected to be well below the action levels that will be used for these analytes as presented in Section 5.0. |
| 4. | Define the Boundaries of the Study | **Specifying the target population.**<br>For MEC, the target population consists of all possible induced electrical hemispheres that could be measured across the entire study area of the fYNOP with a handheld magnetometer, or all metallic anomalies across the entire study area. A MEC sampling unit would consist of one metallic anomaly above an audible threshold representing a possible magnetic response.<br><br>For MC, the target population consists of all possible soil samples that comprise the soil column across a specific area of concern. A MC sampling unit would correspond to a discrete soil of sufficient volume to be analyzed for metals and/or explosives as presented in Step 3.<br><br>**Specifying spatial and temporal boundaries and other practical constraints.**<br>The spatial boundaries consist of the study area boundaries, which are presented in Figure 8. Horizontal site boundaries have been defined in a practical way for the project and are expected to contain the full extent of MEC items associated with historic use. Vertical boundaries include the depth of MEC items and MC in soil and may have changed in certain areas over time due to disposal practices, site grading, or erosional/depositional processes. |

[9] MC identified is based on the CSM developed in the SI that identifies inert projectiles and small arms being used onsite in the proof ranges.

**Table 4-1. Data Quality Objectives for the fYNOP**

| Step | | DQO |
|---|---|---|
| | | **Specifying the scale of inference for decision making:**<br>*First Phase:* Approximately 18.07 acres of the fYNOP will be investigated during the first phase of the RI to identify potential areas of concern within the study area (Figure 8). This will exclude any paved areas within the study area and areas that have been covered with construction and demolition fill material.<br><br>*Second Phase:* The study area will be divided into MRSs/AOCs based on observations during the first phase of the RI to facilitate more extensive investigations within areas that likely pose higher risk. The additional data required for each area of concern will take into account the size of the area of concern and will be specified in an Addendum to this work plan. |
| 5. | Develop the Analytic Approach | **For MEC the following decision rules were developed for fYNOP:**<br><br>1. If a munitions-related item is found at the fYNOP, then the UXO team will determine the nature of the item (MEC vs. MD).<br>2. If MEC, significant amounts of MD, or potential disposal areas (i.e., concentrated areas of anomalies or MD) are identified at the fYNOP, then analogue or digital geophysical data collection will be recommended as part of the second phase of the RI, an Addendum to this work plan will be submitted, and follow on investigations for MEC will be recommended for existing MRSs, AOCs, and any new areas identified. The boundaries of the MRSs, AOCs, and/or newly identified areas will be evaluated and redrawn as appropriate in the Work Plan Addendum which will be provided for review and concurrence by stakeholders.<br>3. If no new MEC items, significant areas of MD, or potential disposal areas (i.e., concentrated areas of anomalies or MD) are found at the fYNOP, then a follow on investigation will be recommended for the existing MRSs and AOCs based on historical data to assess alternatives to address remaining hazards. The boundaries of the MRSs, and AOCs will be evaluated and redrawn as appropriate in the Work Plan Addendum which will be provided for review and concurrence by stakeholders.<br>4. If MEC is found at the fYNOP, then a MEC Hazard Assessment will be completed for the fYNOP using the both historical and new data gathered at the fYNOP.<br>5. If no MEC is found at the fYNOP, then a MEC Probability Assessment will be completed for the fYNOP using both historical and new data gathered at the fYNOP.<br><br>**For MC the following decision rules developed for the fYNOP:**<br><br>6. If a breached munition is identified, then a discrete soil sample will be collected beneath the item for a tailored suite of MC based on the item identified.<br>7. If new areas of concern are identified during the first phase of the RI, then an Addendum to this work plan will be prepared using the data gathered during the RI and, if appropriate, soil samples will be collected and analyzed for MC within the areas of concern.<br>8. If no areas of concern are identified during the first phase of the RI, then an Addendum to this work plan will be prepared using historical data and, if appropriate, soil samples will be collected and analyzed for MC.<br>9. If MC concentrations in soil exceed project screening criteria, then additional environmental media sampling may be recommended to further delineate nature and extent prior to completing he RI report.<br>10. If MC concentrations in soil at the fYNOP exceed background and/or action levels and are found to represent unacceptable risk after a formal human health or ecological risk assessment, then a FS for MC will be recommended. |

**Table 4-1. Data Quality Objectives for the fYNOP**

| Step | | DQO |
|---|---|---|
| | | 11. If MC concentrations in soil at the fYNOP exceed background and/or action levels, but are found to represent acceptable risk after a formal human health or ecological risk assessment, then they pose acceptable risk to human health and no further action is necessary for MC. |
| 6. | Specify Performance or Acceptance Criteria | **MEC Performance or Acceptable Criteria:**<br><br>*First Phase:* Complete coverage (100%) magnetometer assisted surface clearance will be conducted at the 18.07 acres of the fYNOP.<br><br>*Second Phase:* Analogue or digital geophysical MEC data will be collected from MRSs and AOCs.<br><br>The results of the magnetometer assisted surface clearance and analogue or digital geophysical data collection will be acceptable if the quality control processes described in Section 5, confirm the work was performed in accordance with this plan.<br><br>**MC Performance or Acceptable Criteria:**<br><br>Performance and acceptance criteria assessing the nature and extent of MC will be met using a judgmental plan. A direct comparison of soil data will be made to action levels and statistically determined background concentrations. One or more exceedance of an action level (PADEP MSCs and EPA RBCs) will trigger a human health and/or ecological risk assessment. |
| 7. | Develop the Plan for Obtaining Data | The RI will be performed using a two-phased approach as summarized below:<br><br>*First Phase:* The first phase of data collection is to include a complete (100%) magnetometer assisted surface clearance of 18.07 acres of the fYNOP to identify potential areas of concern. During the first phase of the RI, the collection of new MC soil data will be limited to locations where breached MEC are identified.<br><br>*Second Phase:* The MEC and MC sampling design will be based on the data gathered during previous investigations and the first phase of the RI and will be presented in an Addendum to this work plan. Analogue or digital geophysical data will be collected from MRSs and AOCs identified and the subsurface MEC data will be combined with the data collected from previous investigations to determine the nature and extent of MEC contamination and complete a MEC hazard assessment. Alternatively, if MEC is not identified during the RI, EA will complete a MEC probability assessment as per DoD 6055.9-M and USACE EM 385-1-97. Soil samples will be collected from the MRSs and AOCs identified during the first phase of the RI and the additional soil data will be combined with data collected from previous investigations to determine the nature and extent of MC contamination and complete human health and ecological risk assessments.<br><br>Refer to Section 4.2 thru 4.10 for additional detail regarding the MEC and MC data collection. |

## 4.2 OVERALL APPROACH

The MEC and MC RI at the fYNOP will be conducted using a two phased approach. This work plan details the first phase of RI activities that will be performed at the fYNOP and provides a general outline of potential RI activities that may be employed during the second phase of the RI.

The data collected during the first phase of the RI will be used to identify any new areas, to refine MRS/AOC boundaries, and to identify any data gaps which need to be filled to determine the nature and extent of potential MEC and MC contamination. An Addendum to this work plan will be prepared as part of the second phase of the RI. The Addendum will provide the details necessary to execute the second phase of the RI (i.e., clarify the areas of interest and specify the type and degree of additional investigation to be completed in each area).

The main work activities to be completed at the fYNOP during the *first phase* are as follows:

- Surveying and Staking of Grids
- Vegetation Clearance
- Magnetometer Assisted Surface Clearance
- MC sampling of a breached MEC item (if identified).

The main work activates that may be completed at the fYNOP during the *second phase* are as follows:

- Analogue or Digital Geophysical Mapping
- Intrusive Investigation of Anomalies
- MC Sampling.

During the first phase, a magnetometer assisted surface clearance will be performed to identify MEC, MD or metallic debris from the surface within accessible areas (to exclude where fill material and debris has been placed) on the fNYOP (see Figure 8).

During the second phase analogue or digital geophysical data may be collected in the areas of concern identified during the first phase of the RI. Analogue geophysical data collection during the second phase may include performing “Mag and Dig” operations in select areas of concern to characterize the nature and extent of MEC in the subsurface. The grids established during the first phase of the RI would be used during the second phase to establish and reference work areas. During “mag and dig” operations handheld analogue magnetometers would be used to identify anomalies in the subsurface via an audible response. The identified anomalies (or a percentage of the identified anomalies) would be intrusively investigated and the results would be documented. Mag and dig operations would likely be proposed in grids with uneven terrain and dense vegetation where high densities of anomalies were observed. Percentages will be discussed with stakeholders and documented in the work plan addendum based on the findings during Phase I.

Digital geophysical data collection during the second phase may include performing Digital Geophysical Mapping (DGM) using an EM61-Mk2 in select areas of concern to further define target anomalies for intrusive investigation. The EM61-MK2 is a high-resolution, time domain electro-magnetic induction sensor capable of detecting both ferrous and non-ferrous metallic objects. The grids established during the first phase of the RI would be used during the second phase to establish and reference work areas. As part of the DGM data collection process the field team may perform DGM over 100% of each accessible area of concern. This data would be used to provide a complete list of anomalies, generate data image maps for anomaly review, and, if appropriate, develop anomaly dig lists within the area of concern. Then the field team would reacquire and intrusively investigate select anomalies, as identified on the dig lists. DGM would likely be proposed in easily accessible grids where individual anomalies can be selected. Dig lists will be discussed with stakeholders in order to reach concurrence on items to investigate.

Both general and specific work activities are further described below.

## 4.3 GENERAL FIELD ACTIVITIES

All field work associated with the RI is anticipated to occur five days a week, Monday through Friday, up to 10 hours per day (typically 07:00 to 17:00, however the SUXOS may adjust hours) as weather and daylight permit. Modifications to this schedule will be coordinated with Harley-Davidson, as needed. At the conclusion of daily field activities, EA will remove all project materials and solid wastes from the project site. Excavations, if necessary, will be backfilled with the displaced soil and re-graded to the prior contours.

### 4.3.1 Facility Access and Utility Clearance

All onsite workers will complete Harley-Davidson’s contractor onboarding process prior to initiating field work. Copies of completed documents will be provided to Harley-Davidson.

Prior to initiating any intrusive activities during the second phase of RI field work, EA will complete the requirements of Harley-Davidson’s “Subsurface Protocol and Utility Clearance” work instruction (YS2.03.300.01). Pursuant to the work instruction, EA will clearly mark out and identify areas of proposed intrusive activities and review them with the Harley-Davidson project champion or designated Plant Engineer prior to initiating subsurface activities. To the extent possible, existing utilities will be identified during the Site survey based on the current engineering drawing (Figure 4). Additionally, EA will clear utilities in accordance with EA SOP003 (Appendix C). As all of the RI activities will occur on security/access-controlled Harley-Davidson property, a separate call will not be required to Miss-Utility – Pennsylvania.

### 4.3.2 Mobilization and Set-Up

A facility entrance briefing and site safety meeting will be conducted. This meeting will include a review of this work plan and review and acknowledgment of the SSHASP by all site personnel. Project set-up activities will include:

- Identify/procure, package, ship, and inventory project equipment
- Coordinate with local agencies, including facility security, hospital, and fire department, as appropriate
- Coordinate communications with logistical support

- Finalize field schedules
- Test and inspect equipment
- Assemble and transport the work force
- Conduct site-specific training on the work plan, SSHASP, data collection procedures, and MEC procedures and hazards
- Verify that all forms and project documentation are in order and project team members understand their responsibilities with regard to completion of project reporting requirements.

For Phase 1, a small, lockable, job site trailer will be required and a Port-a-Pot will be placed inside the automated security gate at the entrance to the work area. This placement will allow for ease of service and separation from the contractor staging area. Should a small a temporary job-trailer be required for Phase II, the staging area will be approved by Harley-Davidson during review of the Phase II work plan addendum.

No dust and emission control is required for this project due to the heavy vegetation. However, should fugitive dust be generated during vegetation clearance activities (see Section 4.5), work shall stop, the Project Manager contacted, and dust suppression techniques be implemented (i.e. water misting and/or alteration of the vegetation clearance technique).

No spill control and prevention plan is required; however, portable, Underwriters Laboratories (UL) or Factory Mutual (FM) approved, 5-gallon, diesel fuel cans for the vegetation clearance skid steer (see Section 4.5) will be stored inside of a secondary containment polyethylene tote of sufficient capacity to contain the entire contents of the fuel can. When not in use, the can and secondary containment will be stored in the bed of jobsite pick-up truck. Fuel will be dispensed to the equipment using a dedicated, non-sparking funnel, with oil absorbent pads placed under the fueling location. A spill kit will also be available.

### 4.3.3 Work Exclusion Zones

Since access to area is controlled and the site is fenced, EA will work with Harley-Davidson to prevent access to the work area during the RI. In general, during surface clearance and intrusive activities, exclusion zones are set at the hazard fragment distance (HFD) for the selected munitions with the greatest fragmentation distance (MGFD) for the MRSs/AOCs. The item selected is the 20mm practice round which requires no HFD be established. Therefore specific work exclusion zones will not be established during the field activities. In the event, MEC is identified and it is not a 20 mm practice round, work will be stopped and the item will be flagged and the Harley-Davidson Project Champion and EA project manager will be notified. The field team will consult Technical Paper 16 and DDESB Fragmentation database to establish exclusion zones using the HFD identified for the particular item found. The MGFD and any minimum separation distances (MSDs) will be detailed in a work plan Addendum, if needed to address the findings.

## 4.4 SURVEYING AND STAKING OF GRIDS

Survey control will be established using a known benchmark Pennsylvania State Plane, North American Datum of 1983 (NAD 83), South coordinate system, to the nearest 1 foot (ft). Using a global positioning system (GPS) unit (e.g. Trimble GeoXHtm GPS with Floodlight Technology), the survey team, consisting of one UXO Technician II or above and a survey technician, will mark the fYNOP study area boundaries and the four corners of the accessible 100 ft by 100 ft grid network (refer to Figure 9). Some grid corners may not be accessible for staking, depending on the surface feature at the grid corner. In these cases, virtual grid corners will be used (or paint if a stake cannot be used). Inaccessible areas in a grid will be surveyed and approved by the PM, SUXOS, and Site Manager.

## 4.5 VEGETATION CLEARANCE

The degree of vegetation clearance in the work areas will vary within the grids. Vegetation clearance will be conducted in accordance with EA SOP011 (Appendix C). Prior to initiating work, the area within the grid will be reviewed by the SUXOS who will determine the type of vegetation clearance needed. The removal of vegetation will be limited to the degree necessary to safely access the site to perform the magnetometer assisted surface clearance and to provide sufficient access for follow-on activities that may be required during the second phase of the RI (i.e., geophysics and intrusive investigations). During vegetation removal operations, a UXO Technician will search the cutting area using a magnetometer and visual techniques prior to vegetation removal to ensure that the area is free of surface MEC items. Vegetation removal personnel may cut the brush using a combination of hand and power tools. If heavy equipment is required (i.e. track-mounted skid steer), a spotter will be used. All brush and trees (four inches in diameter or less) will be cut to grade and no roots or stumps that might contain MEC will be removed. If MEC is discovered, the UXO Technician will stop work immediately, direct the vegetation removal crews to leave the immediate area and contact the SUXOS. The UXO Team will assess the item as described in SOP012 (Appendix C).

## 4.6 SURFACE CLEARANCE AND MAPPING OF ANOMALIES

A seven-man UXO team plus a dual purpose UXOQCS/UXOSO led by a SUXOS leading a field team of one UXO Tech III, three UXO Tech II's, and three UXO Tech I's will conduct a ferrous-detecting instrument-assisted (Schonstedt magnetometer or equivalent) survey/sweep within each of the lanes in the identified grids. Lanes will be approximately 5 feet wide. Whenever the team encounters MPPEH, the SUXOS and UXOQCS/UXOSO will inspect the item to determine condition of the item and to determine if the item is safe to move. If the item is determined to be MD, the SUXOS will direct the UXO Tech II or I to recover the MD and it will be removed from the area and stockpiled with other MD. If it determined that the item is MEC or cannot be certified as material documented as safe (MDAS), the SUXOS will mark and record the location of the item and the UXOQCS/UXOSO will then notify the Harley-Davidson Project Champion with all the details and recommend a course of action for approval by Harley-Davidson. Surface clearance operations will be conducted in accordance with EA SOP013 (Appendix C).

GPS coordinates will be collected and recorded for items determined to MEC or items that cannot be certified as MDAS using a unique identifier for each anomaly.

The location of MEC or items that cannot be certified as MDAS will be mapped with GPS and coordinates will be transmitted by the Task Manager to the Geographic Information System (GIS) Specialist who will incorporate the data into GIS. Data will be reviewed for completeness and accuracy. All GIS data will be provided to Harley-Davidson and the Leidos ArcGIS database manager for incorporation into the Harley-Davidson database.

## 4.7 BUILDING 14 INSPECTION

To asses any potential MEC or MD, a visual inspection of the firing range backstop and sand holding area will be performed. Using portable light stands, the SUXOS, and available tecnicians (UXO Tech III, Tech II or Tech I), will access the underground firing range and visually identify existing MEC, MD, or potential sources of MC. The UXO technicians will document the finding schematically and via photography and approximate remaining quantities if conditions permit. Under no circumstance, will the technicians enter a confined space such as mechanical areas, sumps, elevator shafts, or any other areas of the backstop not designed specifically for human ingress/egress.

## 4.8 MC SAMPLING

During the first phase, MC soil sampling will only be conducted if breached MEC is identified. Sampling will be conducted by appropriate personnel, namely the SUXOS following direction from the UXOSO and a determination that the sample location is safe. The sampler will don protective equipment (i.e. gloves) to protect the sampler from contaminant exposure. A discrete soil sample will be collected beneath the item and analyzed for a tailored suite of explosives based on item identified via USEPA Method 8330A. Soil sampling will be conducted in accordance with SOP025 (Appendix C). Sample designation/labeling will be completed in accordance with Table B-3 which is included in Appendix F.

During the second phase MC soil sampling will be conducted to determine nature and extent. Proposed sampling will be detailed in the Addendum to this Work Plan. Soil samples will be collected within areas of concern identified during the first phase of the RI, as needed. The objective of soil sampling during the second phase is to fully characterize the vertical and horizontal extent of potential contamination within fNYOP study area and provide sufficient data to support human health and ecological risk assessments. Based on historic munitions identified at the fYNOP study area, soil samples will likely be analyzed for select metals including antimony, barium, copper, lead nickel and, zinc using USEPA Method 6020A and select explosives including 2,4 DNT, 2,6-DNT, and NG using USEPA Method 8330A. In the event a breached MEC is identified which is different than items previously encountered, a soil sample may be collected and analyzed for a different/tailored suite of explosives based on item identified. The field team would contact Harley-Davidson and report the finding and request approval to expand the list of analytes.

MC soil sample locations will be mapped with GPS and coordinates will be transmitted daily by the Task Manager to the Geographic Information System (GIS) Specialist who will incorporate the data into GIS. Data will be reviewed for completeness and accuracy. All data will be provided to Harley-Davidson project ArcGIS database manager (refer to section 5.9 for additional details).

### 4.8.1 Sample Custody and Documentation

Chain of Custody (COC) forms will be initiated by the field personnel at the time samples are collected for contract laboratory analysis. The COC will be transported with the samples to Test America Denver where the sample custodian will accept custody of the samples by signing the COC. A copy of the COC will be retained onsite. An example of the laboratory COC form is provided in Appendix D. Field personnel will enter site-specific information at the top of the form and specific sample information into the following areas:

- Sample designation (e.g., MRS 1-SS-01)
- Date and time (military time, i.e., 0800, 1300, etc.) of sample collection
- Check the “Grab” column indicating that the sample cores represent discrete sampling intervals
- Requested analytical name and parameter (e.g., Metals 6020A) for each sample
- Enter his/her signature and enter the date and time (military time), enter printed version of his/her name, and his/her title in the appropriate boxes at the bottom of the form
- Indicate the required turn-around-time and requested MS/MSD (if applicable) in the “comments” section on the right side of the form.

Custody seals will be used on the shipping containers to ensure the integrity of the samples should they be left unattended or when they are relinquished to a delivery service until the shipping containers are opened by the laboratory. All samples will be shipped in insulated shipping containers, and each shipping container will be sealed with at least two custody seals at opposite corners of the container and covered with clear packing or strapping tape. The seals will be affixed to each shipping container so that it is necessary to break the seals to open the shipping container.

### 4.8.2 Sample Packing and Shipping

Samples will be placed into the appropriate containers with applicable preservatives. A label indicating the sample designation, sample interval, sample date and time, and requested analysis will be placed on each container. Sample containers will be individually wrapped in bubble wrap and placed in zipper-type plastic bags.

Samples will then be placed into coolers for transportation to the laboratory for analysis. Samples will be placed on ice, if required, prior to and during shipment to the laboratory. Bubble wrap will be used to line the bottom and sides of the sample cooler and fill voids where needed to cushion the sample containers during transportation. The completed COC representing the packaged samples will be taped to the inside of the cooler lid. The required turnaround time will be noted on the COC. The request for MS/MSD analysis, if required, will also be noted on the COC. A copy of the COC will be maintained onsite. The cooler will be sealed with packing tape and custody seals, and delivered via courier to:

***Test America Denver***
***4955 Yarrow Street,***
***Arvada, Colorado 80002***
***Phone: (303)736-0156***
***www. testamericainc.com***
***Attention: Sample Custodian***

### 4.8.3 Field Documentation

Field documentation to include field logs, calibration logs, quality control reports, Health and Safety reporting, photologs, etc. will be collected during field operations. Original field logs and records will be maintained by the UXOQCS as part of the project files. The initial project file will be structured to include a copy of the following documents and information:

- Schedule and progress reports
- Work plans, industry standards, and procedures including addenda and modifications
- Work orders and other contract modifications
- UXO information forms/incident reports
- Equipment manufacturer's certificates
- Equipment check records
- Location and survey records
- Telephone conversation logs
- Meeting minutes and agenda
- Inspection logs and schedules
- Site maps
- Qualifications and training records of all site personnel
- Photo documentation
- Non-conformance and corrective action reports.

The filing structure may be expanded or reduced as necessary to include relevant information. Additional details regarding record collection and related QC are provided in Section 5.7.

## 4.9 MUNITIONS MATERIAL MANAGEMENT AND DISPOSAL

### 4.9.1 Munitions with the Greatest Fragmentation Distance

Historically MEC and MD from the following munitions have been observed at the fYNOP:

- 3-inch rounds
- 20mm Target Practice (TP) projectiles
- 40mm anti-aircraft practice projectiles
- 37mm inert projectiles

During the first phase of the RI there are no planned intrusive operations. Therefore a MGFD has not been identified. Based on the findings of the first phase of the RI, an MGFD will be selected for intrusive operations proposed during the second phase of the RI. The MGFD will be identified in the Addendum to this Work Plan.

### 4.9.2 Minimum Separation Distances

The MSDs associated with candidate MEC items potentially present at fYNOP. Only one team is being used onsite; therefore, MSDs have not been identified. As noted in 4.3.4, no MSD is identified for the 20mm practice round; however, the potential exists that other items could be found during RI activities; therefore, in the event a second team is used an MSD of 200 feet will be used between teams.

### 4.9.3 MD Inspection and MDAS Storage and Disposition

MD will be inspected in accordance with DoD Instruction 4140.62/DoD 6055.9-M and EM 385-1-97. MD inspection procedures are detailed in SOP012, Munitions Debris Inspection. MDAS will be stored in 55-gallon drums or other suitable sealable and lockable containers, which will be shipped to a recycling facility pending Harley-Davidson approval for final disposition. Disposal will be coordinated with Harley-Davidson. Total weight of MDAS is documented during certification and verified upon receipt by the recycle facility. Each container is kept closed and locked, except when materials are being loaded into the container or the contents of the container are being inspected. Each container is closed in a manner that requires that the container seal be broken to gain access to the interior of the container. The plan is to use 55-gallon, sealable/ drums, which will be stored inside the lockable job trailer. With Harley-Davidson approval, the material will be shipped to a recycle facility, at the end of the project or periodically, as required, for final disposition. Refer to SOP012 (Appendix C), Munitions Debris Inspection for additional details.

### 4.9.4 MEC Removal and Demolition Procedures

EA will not be performing MEC removal or demolition procedures during the first phase of the RI. In the event MEC is identified, the item location will be flagged, GPS coordinates will be collected and the Harley-Davidson Project Champion or designee will be notified. The Harley-Davidson Project Champion or designee will contact the local authority (i.e. Springettsbury Township) to arrange for disposal of any suspect MEC identified during the surface clearance. Based on the findings of the first phase of the RI, it may become necessary to revise this procedure during the second phase of the RI when intrusive operations will likely be proposed to complete the RI. Any changes will be detailed in the Addendum to this Work Plan.[10]

[10] If notified by Harley-Davidson, EA will engage in discussions with Harley-Davidson, USACE and additional stakeholders if necessary to include DEP Bureau of Mines in the Pottsville Office to identify necessary procedures and approvals to place a Type II, Bureau of Alcohol, Tobacco, and Firearms (ATF) approved, temporary magazine on-site for storage of suspect MEC items. The determination to store items in the magazine will be dictated by Harley-Davidson.

## 4.10 INVESTIGATIVE-DERIVED WASTE PLAN

Investigative-derived waste generated during the RI field efforts is expected to consist of non-munitions debris, removed during the magnetometer assisted surface clearance and/or intrusive investigations, as well as expendable materials used in completing the investigation (disposable gloves, general trash).

### 4.10.1 Non-Munitions Debris

During the surface investigation non-metallic non-munitions-related debris that is uncovered will be inspected, collected, removed from the site, characterized, and disposed in accordance with State laws and regulations. Metallic non-munitions-related debris will be collected, stored and recycled off-site. All disposal operations will be coordinated with Harley-Davidson. In existing landfill/disposal areas, EA will not be performing surface clearance to remove surface debris.[11]

### 4.10.2 Decontamination Materials

All non-disposable equipment will be decontaminated. All decontamination fluids will be collected, containerized, characterized, and disposed in accordance with State laws and regulations. Disposable sampling equipment will be utilized when possible and will be disposed of as general refuse. Currently, no non-disposable sampling equipment is planned for the first phase. If needed during the next phase of the RI this section will be updated.

### 4.10.3 Other

Vegetation removed (i.e. mulched) during site clearing activities will be left as ground cover on-site. Any vegetation, or debris from tree removal, will be taken off-site and recycled (if possible) at a location approved by the Harley-Davidson project champion. Other waste materials generated during the RI will be collected, removed from the site, and disposed in accordance with State laws and regulations. These wastes will consist primarily of sampling materials (i.e. gloves, scoops, etc.), waste paper, food and beverage containers, and expendables. As practicable, any recyclable material will be segregated for disposal at a State licensed recycling facility. EA will not comingle RI waste materials with existing Harley-Davidson waste streams without permission from the Harley-Davidson Project Champion.

## 4.11 MEC HAZARD ASSESSMENT

If MEC is identified during the RI, EA will prepare a risk assessment for MEC using the MEC Hazard Analysis (USEPA 2008) as a qualitative assessment to evaluate the MEC risk present. Alternatively, if MEC is not identified during the RI, EA will complete a MEC probability assessment as per DoD 6055.9-M and USACE EM 385-1-97. A summary of the MEC HA process is provided below.

[11] Specifically as noted in Figure 9, a known disposal area exists within the RI footprint area. This area will not be cleared of any surface debris unless MEC/MD is identified. If MEC or MD is identified EA will communicate with the Harley-Davidson Project Champion to determine the path forward.

A qualitative MEC screening-level risk assessment for potential explosive safety risks will be conducted based on data gathered up to through the RI. An explosive safety risk is the probability for a MEC item to detonate and potentially cause harm as a result of human activities. An explosive safety risk exists if a person can come near or in contact with MEC and act on it to cause a detonation. The potential for an explosive safety risk depends on the presence of three elements: a source (presence of MEC), a receptor (person), and interaction (e.g., touching or picking up an item).

The exposure route for a MEC receptor typically is direct contact with a MEC item on the surface or through subsurface activities (e.g., digging during construction activities). MEC tends to remain in place unless disturbed through human activity or other natural forces (e.g., storm events, frost heaving, and erosion). If MEC movement occurs, the probability of direct human contact may increase, but may not necessarily result in direct contact or exposure.

Each of these primary risk factors will be used to evaluate the field and historic data to generate an overall hazard assessment rating of either low, moderate, or high. The MEC source is based on the MEC type, sensitivity, density, and depth distribution. The likelihood of exposure and thereby injury may be severe (lethal if detonation occurs), moderate (minor or major injury if detonation occurs), or low (no detonation, and consequently, injury occurs). MEC sensitivity, the likelihood of detonation and severity of exposure (fuzing and weathering, for instance), may be very sensitive (e.g., electronic fuzing, land mines, booby traps), less sensitive (standard fuzing), and insensitive/inert (residual risk or no injury).

Site characteristics are based on site accessibility (no restrictions, limited restrictions, and complete restrictions to access) and site stability (stable, moderately stable, and unstable). Finally, human interaction includes the type of human contact (low, moderate, and significant) and population number and frequency of access (low, moderate, high). Possible receptors will include residents, site workers, construction workers, and recreational users.

Based on these criteria, low, moderate, and high MEC risks are defined in Table 4-2. As noted in Section 2.7, the SI concluded that there is a low risk of MEC at fYNOP (low probability of encountering MEC) given previous removal actions and findings to date.

**Table 4-2: Low, Moderate, and High Munitions and Explosives of Concern Risk Assessment Categories**

| MEC Factor | Low MEC Risk | Moderate MEC Risk | High MEC Risk |
|---|---|---|---|
| MEC Source | Low MEC Type (no detonation and no injury)<br>Insensitive/Inert MEC | Moderate MEC Type (minor/major injury)<br>Moderate Sensitive MEC | Severe MEC Type (lethal)<br>Very Sensitive MEC |
| Site Characteristics | Complete restrictions to access<br>Stable (no MEC exposure by natural events) | Limited restrictions to access<br>Moderately stable (MEC may be exposed by natural events) | No restrictions to access<br>Unstable (MEC exposure most likely by natural events ) |
| Human Interaction | Low potential for and frequency of contact (e.g., no general public access, infrequent site access primarily by site personnel, no subsurface activity) | Moderate potential for and frequency of contact (e.g., a limited number of the general public has open and somewhat frequent access, few site uses, surface/subsurface intrusive activity possible) | High potential for and frequency of contact (e.g., general public has open and frequent access, high potential for surface/subsurface intrusive activity) |

## 4.12 MUNITIONS CONSTITUENTS BASELINE RISK ASSESSMENT

Baseline human health and ecological risk assessments will be conducted for the site. The latest USEPA risk assessment guidance (RAGS) will be used for conducting these risk assessments.

The screening levels will be used to determine chemicals of potential concern in the baseline risk assessment for the data collected during this RI. The screening levels will come from several sources. Screening levels for the protection of human health will be the USEPA Regional Screening Levels (RSLs). These values are updated approximately every 6 months, and the most recent values at the time future reports are prepared will be utilized. The screening levels for non-carcinogenic compounds, except lead, will be divided by 10 to account for potential occurrence of adverse non-carcinogenic health effects due to exposure to multiple non-carcinogens. Ecological screening values for metals in soil are USEPA Ecological Soil Screening Levels (EcoSSLs), Screening Levels guidance (EPA 2003). It should be noted that surface soil and subsurface soil ecological screening levels have been identified for surface soil (0 to 12 inches) and subsurface soil (greater than 12 inches) based on the type of ecological receptor that would likely come into contact with the media.

## 4.13 FOLLOW-ON ACTIVITIES

The EA team will prepare an Addendum to the Work plan to describe Phase II activities. Following completion of field activities an RI report will be prepared to document the results of the RI field activities. Based on the findings of the RI, Harley-Davidson may use the data to support an FS to determine if further action is required, evaluate alternatives, and develop cost estimates for further action, if warranted. The FS is not a part of this RI work plan.

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# 5. QUALITY ASSURANCE PROJECT PLAN

## 5.1 QUALITY ASSURANCE PROJECT PLAN ORGANIZATION

The QAPP provides general information including definitions and generic goals for data quality, minimum requirements for QA/QC samples, field documentation, instrument calibration and maintenance, auditing, data management, corrective action requirements, and reporting. This QAPP includes elements taken from USACE guidance (EM 200-1-3) and EPA guidance.

## 5.2 PROJECT ANALYTICAL LABORATORY

Implementation of the project activities will be managed through an organized effort of scientific personnel and technical resources. QA/QC procedures are in place to ensure defensible data is obtained to support site evaluation and corresponding conclusions/recommendations. Analytical services will be provided by Test America Denver of Arvada Colorado, which is a Pennsylvania certified laboratory (009). Test America Denver is also an accredited DoD Environmental Laboratory Accreditation Program (DoD ELAP), version 4.2 laboratory. Test America Denver certifications are provided in Appendix B. Detailed information regarding laboratory personnel, facilities, and Lab SOPs are presented in the Test America Denver Laboratory Quality Assurance Project Plan (Laboratory QAPP) (Appendix B).

## 5.3 QUALITY ASSURANCE AND CONTROL OBJECTIVES FOR DATA MANAGEMENT

The overall objectives of the QAPP are to provide the methodologies and quality objectives for obtaining defensible data to support site evaluation and corresponding conclusions and recommendations. USEPA guidelines entitled *Guidance for the Data Quality Objectives (DQOs) Process* illustrate the process of developing a decision rule based upon the site problem statement. Inputs to the decision rule dictate the necessary data quality to achieve overall project objectives. DQOs define the performance criteria that limit the probabilities of making decision errors by considering the purpose of collecting the data; defining the appropriate type of data needed; and specifying tolerable probabilities of making decision errors. The seven steps of the DQO development process for this project are presented in detail in Section 4.1.

As summarized in Section Table 4-1, the RI will be performed using a two-phased approach as summarized below:

First Phase: The first phase of data collection is to include a complete (100%) magnetometer assisted surface clearance of 18.07 acres of the fYNOP to identify potential areas of concern. During the first phase of the RI, the collection of new MC soil data will be limited to locations where breached MEC are identified.

Second Phase: The MEC and MC sampling design will be based on the data gathered during previous investigations and the first phase of the RI and will be presented in an Addendum to this work plan. Analogue or digital geophysical data will be collected from MRSs and AOCs identified and the subsurface MEC data will be combined with the data collected from previous investigations to determine the nature and extent of MEC contamination and complete a MEC hazard assessment.

Soil samples will be collected from the MRSs and AOCs identified during the first phase of the RI and the additional soil data will be combined with data collected from previous investigations to determine the nature and extent of MC contamination and complete human health and ecological risk assessments.

Data quality will be maximized by following established Field SOPs and through use of standard, accepted, USEPA methods for sampling and analytical procedures. Use of standard analytical procedures and established data quality objectives will result in data suitable for use as inputs to the decision rule.

## 5.4 REGULATION AND GUIDANCE USED TO DEVELOP PROJECT SCREENING CRITERIA

Because Harley Davidson's ultimate goal is to obtain site release of liability under PADEP Act 2, the PADEP media-specific statewide health standards will be used as the site screening criteria for metal and explosives in soil. For the initial evaluation, sample results will be compared to the PADEP Act 2 SWHS. For soil, the applicable screening criteria are:

- PADEP Medium-Specific Concentrations for Ingestion of Regulated Substances in Non-Residential Surface Soil (0-2 feet): Direct Contact Numeric Values (mg/kg)

In addition, soil data, used in the risk assessments, will be screened against the EPA Interim Eco-SSL (USEPA Ecological Soil Screening Levels as of Nov 2010) and the EPA RSLs for Industrial Soil – (Nov 2014 EPA Regional Screening Level Industrial Soil, update Jan 2015) to adhere to the USEPA One Cleanup Program. Sample results for characterization of waste will be compared to the PADEP SWHS and to waste facility-specific criteria to determine ultimate disposition.

A summary of laboratory analytical methods, and a comparison of method detection and/or reporting limits to the screening criteria is presented below.

## 5.5 LABORATORY ANALYTICAL METHODS

Field activities will focus on determining nature and extent of MEC and MC in the AOCs and MRSs which include analysis of select explosives and metals in soils. Soil samples will be collected from areas containing MEC and MD and at locations where evidence of munitions related disposal operations are observed during surface clearance or follow on nature and extent investigations.

Methods to be employed for explosives and metals analysis in soils include USEPA Method 6020A for metals and Method 8330A for explosives. Detailed methodologies for the collection of environmental samples are provided in Section 4.8. QA/QC samples that will be collected as part of the sampling program are discussed below in Section 5.7 below. Laboratory Analytical SOPs for specific analytical methods included in the project sampling program are included in Appendix B.

## 5.6 ANALYTICAL PROCEDURES

### 5.6.1 Routine Laboratory Analyses

The analytical methods for samples collected will follow those specified in Section 5.5. Analytical SOPs for the methods included in the sampling program are included in Appendix B.

### 5.6.2 Method Detection Limits, Quantitation Limits, and Reporting Limits

Analytical sensitivity is an important component of data quality, and it is evaluated using analyte detection and quantitation levels compared to screening criteria. Analytical methods are selected based on the method detection and/or reporting limits being lower than the screening criteria.

A list of the analytes, the analytes standard/action levels, and Test America Denver method detection limits (MDLs) and lab reporting limits (RLs) are shown for soil samples in Table 5-1.

A comparison of the Project Screening Criteria (for each matrix/analyte) to the associated RLs and MDLs was performed to evaluate whether analytical sensitivity objectives were being met for all analytes. Project screening criteria for soil are the USEPA Interim Eco-SSL (November 2010), EPA RSL-Industrial Soil (January 2015), and PADEP MSCs for ingestion in non-residential surface soil (direct contact, 0-2 feet). For analytes with no corresponding Eco-SSL value, the USEPA Region 5 ecological screening levels (August 2003) were used. The review confirmed that laboratory RLs and MDLs are acceptable to meet project sensitivity requirements for the selected metals and explosive analytes expected at the fYNOP. The Site comparison criteria are shown in Table 5-1.

### 5.6.3 Laboratory Calibration Procedures

Laboratory instrumentation calibration procedures, frequency, and standards will be consistent with the requirements of the applicable analytical method, and are summarized in Appendix B.

### 5.6.4 Laboratory and MC Sampling Quality Control

To ensure data quality several types of QC samples are planned. The types of QC samples that will be analyzed during the sampling are summarized below.

**Field Duplicate:** A Field Duplicate is a sample collected from the same location as the “parent” sample to assess precision. For aqueous samples, a field duplicate is collected by alternating between the “parent” and field duplicate sample bottles during the filling of the bottles for each analysis. Aqueous duplicates will be analyzed for the same analysis as the parent sample. Soil duplicates will be collected by homogenizing, with the exception of the aliquot for volatiles analysis, prior to splitting between jars in the “parent” and duplicate sample. The aliquot for VOC analysis will be collected prior to homogenization of the remaining aliquots. Soil duplicates will be analyzed for the same parameters as the parent sample. The identity of duplicates will be withheld from the laboratory by using a specific sample identification code. The field duplicate sample will be recorded with the “parent” sample identification code on a sampling record form. A field duplicate sample will be collected for each matrix at a frequency of 10 percent (1 for every 10 samples collected per matrix).

**Field Rinsate or Equipment Blank:** A Field Rinsate (Equipment) Blank is a sample of certified metal-free and organic-free distilled/deionized water poured into or over or pumped through the sampling device, collected in a sample container, and transported to the laboratory for analysis. Rinsate blanks are used to assess the effectiveness of equipment decontamination procedures. Rinsate blanks will be collected immediately after the equipment has been decontaminated. For any non-dedicated equipment used to take samples, rinsate blanks will be collected at a rate of 10 percent (1 for every 10 samples collected using the equipment). Rinsate blanks will not be collected when precleaned, dedicated equipment is used for sampling.

**Matrix Spike (MS) and Matrix Spike Duplicate (MSD):** MS and MSD samples are spiked with known concentrations of surrogate compounds to assess recovery and possible matrix effects, as well as analytical precision. MS/MSD analysis will be requested at a frequency of 5 percent (1 per 20). Analyses will mirror the fullest suite of analyses requested for any sample included in the sample delivery group. Samples requested for MS and MSD analyses will be clearly identified on the accompanying COC form. Information associating normal samples with the requested MS/MSD (and other QC samples) will also be included on the COC, or referenced on the COC and included on an associated QC sample batching sheet.

**Temperature blank:** Temperature blanks verify that samples have been maintained at 4 degrees Celsius during transportation from a project site to the laboratory. The temperature blank which is provided by the lab will consist of a sample container filled with non-preserved potable or distilled water to be included in each cooler containing samples for analysis.

In addition to the above noted QC sample, the analytical laboratory also performs QC procedures to ensure data quality. Type and frequencies of specific QC samples performed by the laboratory are dependent upon analytical requirements specific to the method analyzed. Internal QC methods require performance on a sample batch basis and include analyses of method blanks, laboratory control samples (LCSs), and actual environmental samples as duplicates and MS/MSDs. Laboratory QC procedures will be consistent with the requirements of the applicable analytical method and are summarized in the Laboratory method SOPs (Appendix B).

**Table 5-1. Evaluation of Potential Chemical-Specific Measurement Quality Objectives for Soil**

| Analyte | Abbreviation | Chemical Abstract Service Number | EPA Interim Eco-SSL (mg/kg) | EPA RSL Industrial Soil (mg/kg) | PADEP Medium-Specific Concentrations for Ingestion of Regulated Substances in Non-Residential Surface Soil (0-2 feet): Direct Contact Numeric Values (mg/kg) | Preferred Maximum Method Limit of Quantitation (LOQ), Soil (mg/kg) | Lab Method Limit of Detection (MDL) (mg/kg) | Lab Reporting Limit (RL) (mg/kg) |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dinitrotoluene | 2,4-DNT | 121-14-2 | 1.28 [a] | 7.4 | 260 | 0.3 | 0.0498 | 0.25 |
| 2,6-Dinitrotoluene | 2,6-DNT | 606-20-2 | 0.0328 [a] | 1.5 | 2,800 | 0.3 | 0.0542 | 0.25 |
| Nitroglycerin | NG | 55-63-0 | NSL | 82 | 280 | 6 | 0.78 | 5.1 |
| Antimony | Sb | 7440-36-0 | 0.27 | 470 | 1,100 | 2 | 0.014 | 0.2 |
| Barium | Ba | 7440-38-2 | 330 | 220,000 | 190,000 | 0.5 | 0.071 | 0.25 |
| Copper | Cu | 7440-50-8 | 28 | 47,000 | 100,000 | 1 | 0.071 | 2.5 |
| Lead | Pb | 7439-92-1 | 11 | 800 | 1,000 | 1.5 | 0.018 | 0.4 |
| Nickel | Ni | 7440-02-0 | 38 | 22,000 | 56,000 | 1 | 0.025 | 0.35 |
| Zinc | Zn | 7440-66-6 | 46 | 350,000 | 190,000 | 2 | 0.3 | 2.5 |

Notes:

EPA Interim Eco-SSL - USEPA Ecological Soil Screening Levels as of Nov 2010

EPA RSL Industrial Soil - Nov 2014 EPA Regional Screening Level Industrial Soil, update Jan 2015

PADEP Medium-Specific Concentrations - PADEP Non Residential Soil Direct Contact 0-2 ft, Jan 2011
a - USEPA Region 5 SQuiRT August 2003, http://epa.gov/region5/waste/cars/pdfs/ecological-screening-levels-200308.pdf
NSL - No screening Level

Laboratory Reporting Limits provided by Test America

## 5.7 FIELD QUALITY CONTROL

### 5.7.1 MC Sampling Quality Control

As discussed in Section 5.6, QC samples will be collected during MC sampling. QC samples will be collected at the following frequency:

- Field duplicate samples will be collected at a rate of 10 percent (1 per 10 samples)
- MS/MSDs will be collected at a rate of 5 percent (1 MS and 1 MSD per 20 samples from the same location)
- One temperature blank will be analyzed per cooler
- Rinsate (equipment) blanks (if non-dedicated sampling equipment is used) will be collected at a rate of 10 percent (1 per 10 samples).

### 5.7.2 Field Logs and Records

As presented in Section 4, original field logs and records will be maintained by the SUXOS and UXOQCS as part of the project files. As the project activities progress, the UXOQCS will monitor the usefulness of the project filing system for information retrieval. If additional files are needed, the filing structure may be expanded as necessary to include relevant information. A summary of field documentation and procedures used for the collection of quality field data during the RI activities is discussed below.

#### 5.7.2.1 Field Documentation and Chain-of-Custody

Field documentation and COC procedures will be performed as indicated in Section 4. COCs will be reviewed to ensure consistency with the QAPP/work plan and to ensure the correct sample identification is used and correct analytes/methods are being requested. Data collection records generated during surface clearance and UXO investigation activities will be reviewed for completeness to ensure appropriate information is collected (to include but not limited to quantity of MD/MEC and cultural debris in each grid, qualitative evaluation of anomaly density per grid, and any other notable features within a grid).

#### 5.7.2.2 Daily Quality Control Reports

Daily work activity summary reports will be maintained by the UXOQCS. These daily reports may include, but are not limited to, the following items:

- QC reports and findings
- Health and safety reports from the UXO SO (including activity log)
- Reports on any emergency response actions
- MPPEH/MEC discovery and classification of the item
- Records of site work and progress.

The Daily QC activities will be recorded on the Daily QC Report form (Appendix D). The daily QC Reports provide backup information and are intended to document field progress and findings and aid in the preparation of the monthly progress reports. QC reports will be checked daily by the Project Manager and or Task Manager to ensure appropriate information is being captured. At the conclusion of the project, the QC reports will become a permanent part of the record.

#### 5.7.2.3 Field Log Books

Field personnel will be responsible for maintaining paginated, bound, and dated hard copy Field Log Books to record activities that occur each work day. The Log Book will document compliance with the health and safety plan. The following is a partial list of the types of information that may be recorded in the logbook:

- Name and title of author; date and time of entry; and physical/environmental (weather included) conditions during the daily field activities
- Documentation of the performance and content of daily health and safety meetings
- Names of field personnel. start and stop times of work, and break times
- Specific description of the work being conducted
- Any incidents or other unusual events that occur on that day
- Names and titles of all site visitors
- Sampling activity purpose and plan
- Type of sampled media (i.e., surface soil)
- Sample collection method (i.e., grab-into sample container)
- Number, type, and volume of samples taken
- Sample Identification (ID) number of each sampling point
- Description, location, and elevation of the sampling point
- Sample description
- Analysis, number of containers, and preservation required
- Date and time sample was collected
- Instrument operational check records
- Description of sample collection activities
- Overnight shipper air bill number for each shipment.

The log book will describe conditions or activities leading up to or contributing to a safety incident or lost time due to safety. Pertinent information regarding the site activities will be documented as near to real-time as possible. Entries in the logbook will be signed and dated. Log books will be checked periodically to ensure appropriate information is being captured. At the conclusion of the project, log book entries will become a permanent part of the record

Entries will be made in permanent, waterproof ink, and corrections made in the logbook will be marked through with a single line and then dated and initialed. After checking the validity of the data in the field notes, the Task Manager, SUXOS or his designee will reduce the data onto the daily/weekly field progress form.

#### 5.7.2.4 Quality Control Log Book

The UXOQCS will maintain a separate QC Log Book that summarize field QC inspections. The log book will document compliance with the work plan and specify workmanship acceptability. Each log book will be portable and dedicated to the event or site. QC Log Books will be maintained as paginated, bound, and dated hard copy logs. The area and work function being inspected, and the date will be recorded. Each log book entry will be event-, area-, or site-specific and clearly noted accordingly. QC Log Books will be turned over to the Project Manager and become a permanent part of the contract record, in addition to the completed specific QC forms specified above.

#### 5.7.2.5 Test, Maintenance, and Calibration Records

Instrumentation used in the field will be tested with sufficient frequency and in such a manner that accuracy and reproducibility of results are consistent with the manufacturer's specifications. The method for measuring the instrument response will be to compare the readings to established concentrations and compare the response to the expected response. Testing, repair, or replacement records will be filed and maintained by the site manager and may be subject to audit at any time.

Equipment, instruments, tools, gauges, and other items requiring preventive maintenance will be serviced in accordance with the manufacturer's specified recommendation. The manufacturer's written maintenance schedule shall be followed to minimize the downtime of the measurement systems. The operator's responsibility will be to adhere to this maintenance schedule and to arrange necessary and prompt service as required. At a minimum, equipment used daily will be cleaned at the end of each workday and kept in good operating condition. Service to the equipment, instruments, tools, etc. shall be performed by qualified personnel. In the absence of manufacturer's recommended maintenance criteria, a maintenance procedure will be developed based upon previous use of the equipment. Field instruments will be calibrated per manufacturer recommendations and the calibration events will be documented in the field notebook or calibration worksheets.

Any equipment test, maintenance, or calibration task will be documented in a field log book by the individual performing the task. Testing and maintenance of equipment such as geophysical instruments, radios, cell phones, vehicles, and machinery will be performed per the manufacturer's specifications, this work plan, and applicable SOPs. Geophysical detection equipment will be tested daily, as specified in Section 4.3.3. At a minimum the test, calibration, or maintenance log will contain the date and time of the task, equipment name and identification numbers, name of individual performing the task, and results of the task. Upon project closeout, all tests, maintenance, and calibration records will be included in the project QC file.

**Equipment Checks**

- QC for GPS instruments will involve comparing a control point (i.e. existing benchmark noted in Figure 1) that was established using conventional survey or GPS to confirm GPS readings are within ±1 foot. The results will be documented, and assessed and summarized in the Daily QC Report.

- QC for the analog geophysical instruments (i.e., Schonstedt) will be accomplished through daily checks that the instruments are functioning before use for field activities. Each instrument will be tested on the instrument verification strip (IVS). If the instrument is not able to detect the item, it will be taken out of use until it is repaired.

- QC for mowing or earth moving machinery will be accomplished through daily checks that the equipment used for test pitting is functioning as per the manufacturer's and operator's instructions prior to field activities.

**Process and Procedural Inspections:**

- Checks for the process and procedures used during execution of this work plan will be conducted by the UXOQCS. Process integrity is defined as conformance to specifications (i.e., the requirements of the work plan, regulations, and industry standards). These checks will consist of visual observations of the methods used and will be part of the inspections conducted during the performance of the work and documented in the QC Log Book and the QC Report.

**QC Inspections:**

- Magnetometer Assisted Surface Clearance: After the dig team completes a magnetometer assisted surface clearance for a designated grid, the UXOQCS will perform a QC inspection of at least 10% of the grid using the same methodology, techniques and equipment originally used during the investigation. If the UXOQCS identifies MEC, MD, or metallic debris on the surface which meets or exceeds the size of a 20mm TP projectile it will be considered a failure.

- Intrusive Investigation (for use in Phase II): After the dig team intrusively investigates anomalies identified in a designated grid, the UXOQCS will perform a QC inspection of at least 10% of the grid using the same methodology, techniques and equipment originally used during the investigation. If the UXOQCS identifies an anomaly within a cleared hole which meets or exceeds the size of a 20mm TP projectile it will be considered a failure.

#### 5.7.2.6 Training Records

The UXOSO will maintain a file for each site employee to document qualifications and the successful completion of the required training courses for that particular employee. The documentation may be a certificate, letter, memorandum, or other written form of documentation but must include the training completion date(s). If any required refresher training courses do not take place by the anniversary date of the employee's initial training, there should be a record in the employee's file indicating why the training has been delayed and when the training will be completed.

#### 5.7.2.7 Photographic Records

Photographs will be taken onsite with a digital camera and periodically downloaded for storage and printing. Each photograph will have an entry in the field logbook indicating the date and time it was taken. Sampling points will be documented on film and, in some cases, actual photographs of samples will be taken. Photographs taken to document sample locations will have at least two reference points.

#### 5.7.2.8 Daily Review of Field Data

At the conclusion of each work day, the field team will provide the UXOQCS any completed investigation forms, field notes, and inspection reports from that day's activities. Any issues arising from the day's activities will be discussed between the UXOQCS, and appropriate field personnel. The UXOQCS will record these discussions and resolutions or corrective actions arising from these discussions will be addressed during the following morning's safety meeting and recorded on the Daily QC Report.

## 5.8 DATA REDUCTION

Data reduction is the process by which raw analytical data generated from laboratory instrument systems are converted into usable concentrations. The raw data, which may take the form of area counts, instrument responses, or observations, are processed by the lab and converted into concentrations expressed in the parts-per-million or parts-per-billion range. Raw data from these systems include compound identification, concentrations, retention times, and data system print-outs. Raw data are usually reported in graphic form, bar-graph form, or tabular form. The laboratories will follow SOPs consistent with the data handling requirements of the applicable methods as described in Appendix B.

### 5.8.1 Calculations of Data Quality Indicators

Data Quality Indicators (DQIs) are analytical method-specific qualitative and quantitative descriptors used in interpreting the degree of acceptability or utility of the data collected. Principal DQIs include precision, accuracy (bias), representativeness, comparability, and completeness. Secondary DQIs include sensitivity, recovery, memory effects, limits of quantitation, repeatability, and reproducibility. Three of these parameters can be quantified: precision, accuracy, and completeness. Representativeness and comparability are qualitative descriptors of data integrity. Sensitivity is evaluated by direct comparison of project quantitation limits to screening criteria. Establishing QC acceptance criteria for the DQIs sets quantitative goals for the quality of data generated in the analytical measurement process or measurement systems. Precision and accuracy DQIs are based upon contract laboratory historical control limits and will be reported in laboratory data packages.

Precision quantifies the reproducibility or variability of measurements under a given set of field and laboratory conditions. Typical indices of precision are standard deviation, relative percent difference, variance, range of values, or coefficient of variation. The coefficient of variation is defined as the standard deviation divided by the mean, and may be multiplied by 100 to yield a percentage. The relative standard deviation (RSD) is synonymous with the coefficient of variation and may also be expressed as a percentage. Duplicate or repeated analysis of the same sample may be used to quantify precision.

For precision, the RPD (or absolute difference) will be calculated as shown below:

$$RPD = {(|X1 - X2|} \big/ {((X1 + X2)/2))) \times 100}$$

Where:

X1 and X2 = the two replicate values.

Accuracy represents the degree of bias in a measurement. This parameter is defined as the difference between the true value and the value yielded by the method (i.e., the percent recovery). The true value is generally determined from calibration curves in which known quantities of the target analyte are artificially introduced (spiked) into the medium from which the measurement is to be taken. Accuracy can be compromised during sample collection (perhaps the largest source of bias), sample transport, and final analysis in the laboratory.

In general, accuracy is measured in terms of percent recovery as shown below:

$$\%R = (|SSR - SR|) \big/ SA$$

Where:

SSR = measured value of the spiked sample

SR = measured value of the unspiked sample

SA = known amount of the spike in the sample

Completeness is the third and final DQI parameter that is quantifiable. It is defined as the portion of measurements for which valid values were determined compared to the total number collected. Similarly field sample collection completeness can also be evaluated by comparing the number of samples actually collected to the number proposed.

Completeness, as defined in WS # 12-1 will be calculated as shown below:

$$\%C = \left(V \big/ N\right) \times 100$$

Where:

V = number of measurements judged valid

N = total number of sample results

Representativeness is a qualitative indicator of how well the data set represents true conditions of the site. For example, a data set would not be representative if a source of contamination had been missed on a site and consequently had not been sampled.

Comparability is another qualitative DQI parameter that indicates the degree to which different data sets may be meaningfully compared. Conditions that influence comparability include similarity of sampling locations, sampling times, sampling techniques, units of concentration, and many other sampling and analysis steps. Finally, it is more difficult to compare data sets with different accuracy and precision.

Analytical sensitivity is an important component of data quality, and it is evaluated using analyte detection and quantitation levels compared to screening criteria. Analytical methods are chosen based on the method detection and/or reporting limits being lower than the screening criteria. However, it should be noted that the level of sensitivity required for comparison to some comparison criteria often exceeds that available using established methods.

QC Acceptance Criteria are method- and technology-specific protocols and specifications that demonstrate that data of known and sufficient quality are generated. QC acceptance criteria include specific limits for sensitivity, recovery, memory effects, limit of quantitation, repeatability, and reproducibility, and are designed such that if they are consistently met, the project measurement quality objectives will be achieved, and the resulting data will be sufficient to meet the project DQOs and support the project decisions.

### 5.8.2 Precision

#### 5.8.2.1 MS/MSDs

Analytical precision is calculated as the percent relative percent difference (RPD) between individual measurements of the same property, under similar conditions. Compound and analyte-specific DQOs for MS/MSDs for each method-matrix combination are presented in Table 5-2. Failure to achieve project DQOs will result in the actions specified in Section 5.9.

#### 5.8.2.2 Duplicate Analyses

A separate measure of the precision of analytical results, taking into account field variables, is the comparison of field duplicate results with normal sample results. The DQO for agreement between duplicate and normal results for organic and inorganic parameters for solid matrices is ±30 percent RPD. If precision falls outside acceptance limits, data may or may not be used at the discretion of the data user. Laboratory control sample duplicate precision objective is < 25 percent RPD.

### 5.8.3 Accuracy

Accuracy is the degree of agreement of a measurement with an accepted reference or true value. Accuracy measures the bias or systematic error of the entire data collection process. To determine accuracy, an LCS, which is a laboratory blank spiked at a known concentration, will be run with each preparatory batch, and MS/MSDs will be run at a rate of 1 per 20 project samples. The laboratory accuracy objective for the project is no target analyte concentrations ≥ 1/2 LOQ

<table>
<tr><th colspan="4">TABLE 5-2: Measurement Performance Criteria: Metals and Explosives in Soils<br>Matrix: Soil<br>Analytical Group or Method: Metals/Explosives<br>Concentration Level: Low<br>Sampling procedure: Grab<br>Analytical Method: Metals 6020A/Explosives 8330A</th></tr>
<tr><th>Data Quality Indicator (DQI)</th><th>QC Sample or Measurement Performance Activity</th><th>Measurement Performance Criteria</th><th>QC Sample Assesses Error for Sampling (S), Analytical (A), or Both (S&A)</th></tr>
<tr><td>Overall Precision</td><td>Field Duplicates</td><td>Relative percent difference (RPD) ≤ 30% when target elements are detected in both samples ≥ sample-specific level of quantitation (LOQ) ; Qualify affected sample results J/UJ for exceedances</td><td>S&A</td></tr>
<tr><td>Analytical Precision (laboratory)</td><td>Laboratory Control Sample Duplicates</td><td>RPD ≤ 25%; Qualify affected sample results J/UJ for exceedances</td><td>A</td></tr>
<tr><td>Analytical Accuracy/Bias (laboratory)</td><td>Laboratory Control Samples</td><td>Laboratory limits, as noted below Qualify affected detections J for recoveries above limits; Qualify affected results J/UJ for recoveries below limits; Reject affected non-detect results for recoveries < 10%
<table>
<tr><td>Sb</td><td>80-120</td><td>Pb</td><td>80-120</td><td>NG</td><td>80-120</td></tr>
<tr><td>Ba</td><td>80-120</td><td>Ni</td><td>80-120</td><td>2,4, DNT</td><td>80-120</td></tr>
<tr><td>Cu</td><td>80-120</td><td>Zn</td><td>80-120</td><td>2,6,DNT</td><td>80-120</td></tr>
</table></td><td>A</td></tr>
<tr><td>Analytical Accuracy/Bias (matrix interference)</td><td>Matrix Spike/ Matrix Spike Duplicates</td><td>Laboratory Limits, as listed below: Qualify affected detections J for recoveries above limits; Qualify affected results J/UJ for recoveries below limits; Reject affected non-detect results for recoveries < 10%
<table>
<tr><td>Sb</td><td>75-125</td><td>Pb</td><td>75-125</td><td>NG</td><td>75-125</td></tr>
<tr><td>Ba</td><td>75-125</td><td>Ni</td><td>75-125</td><td>2,6,DNT</td><td>75-125</td></tr>
<tr><td>Cu</td><td>75-125</td><td>Zn</td><td>75-125</td><td>2,4,DNT</td><td>75-125</td></tr>
</table></td><td>A</td></tr>
</table>

| **TABLE 5-2: Measurement Performance Criteria: Metals and Explosives in Soils**<br>**Matrix: Soil**<br>**Analytical Group or Method: Metals/Explosives**<br>**Concentration Level: Low**<br>**Sampling procedure: Grab**<br>**Analytical Method: Metals 6020A/Explosives 8330A** | | | |
|---|---|---|---|
| **Data Quality Indicator (DQI)** | **QC Sample or Measurement Performance Activity** | **Measurement Performance Criteria** | **QC Sample Assesses Error for Sampling (S), Analytical (A), or Both (S&A)** |
| Overall accuracy/bias (contamination) | Blanks (method blank and field blank) | No target analyte concentrations ≥ 1/2 LOQ. | A |
| Sensitivity | LOQ Verification Sample (spiked at LOQ) | Recovery within ±25% of LOQ, will require assessment of direction of bias for associated outlier QC or calibration results<br>For impact on usability of data for project purposes, use professional judgment | A |
| Completeness | 90% Field Completeness<br><br>90% Analytical Completeness | ***Field Completeness:*** Samples planned to be collected/ Actual number of samples collected. 90% field completeness goal.<br><br>***Analytical completeness***: Usable analyte results/total number of analyte results. Usable analyte results are those analytes not qualified as rejected. Data which is J-qualified data is usable, as long as the data validator recommends to the project team that it can be used. Data exhibiting a systemic matrix bias may be usable based upon data validator findings. 90% analytical completeness goal. | S&A |

### 5.8.4 Representativeness

Representativeness expresses the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is achieved through proper development of the field sampling program (field sampling plan is discussed in Section 4).

### 5.8.5 Completeness

Although the completeness objective for field sampling is ideally 100 percent, site-specific conditions or influences beyond the control of the field sampling team may impact this objective. Therefore, the completeness objective for this project is identified as >90 percent. The Laboratory completeness objective for the project is > 90 percent, which means having 10 percent or less of the analytes qualified as rejected. Any issues affecting this objective will be documented and brought to the immediate attention of Harley-Davidson.

### 5.8.6 Comparability

Comparability expresses the confidence with which one data set can be compared to another based on a comparison of sampling and analytical procedures as well as sampling results. Comparability will be controlled by using standardized operating procedures.

### 5.8.7 Sensitivity

A comparison of laboratory MDLs and laboratory reporting limits to standard/action levels was performed to evaluate whether analytical sensitivity objectives were being met. Table 5-1 illustrates the results of the evaluation.

As discussed in Section 5.5.2 and shown on Table 5-1, RLs achieved using standard laboratory methods are sufficiently lower than standards/Action levels so no method adjustments were necessary. Laboratory sensitivity project requirements include recovery with +- 25 percent of the LOQ.

A summary of QC procedures, responsibilities, criteria, and actions is presented in table 5-3.

## 5.9 DATA VALIDATION AND REPORTING

Laboratory data will be electronically downloaded into a database and validated. Laboratory data will be independently validated by a third-party. The electronic data will be submitted with the Final RI Report. Data validation qualifiers will be entered into the database and a data quality report prepared to document precision, accuracy (bias), representativeness, comparability, completeness and sensitivity. The validated laboratory data along with the field data will be used to prepare the RI Report. Laboratory MC data reports will meet the deliverable package and EPA data forms shown on Table B-5, and electronic data will be provided to Harley-Davidson and the

Leidos database administrator for use with ArcGIS database in accordance with the EDD format shown on Table B-6 (https://www.fynop.com) (Appendix F).

## 5.10 QC PERFORMANCE SYSTEM AUDITS

### 5.10.1 Field Audit Procedures

The EA Program QC Manager will be responsible for verifying compliance with this QAPP through audits and surveillance. The Project Manager will to inspect/audit the quality of work being performed and verify that the work practices conform to specifications of this work plan or other applicable guidance. Discrepancies will be communicated to the responsible individual and documented in the QC Log Book and Weekly QC Report. Corrective actions will be verified by the Program QC Manager and recorded in the Weekly QC Report. The Inspection

**Table 5-3: Summary of QC Procedures, Responsibilities, Criteria, and Actions**

| Activity | Definable Feature of Work | Responsible Personnel | Procedure | Frequency | Pass/Fail Criteria | Action if Failure Occurs |
|---|---|---|---|---|---|---|
| Planning/ Pre-mobilization | Establishment of GIS | Task Manager, GIS Manager | • Gather all GIS data from provided historical records, georeferenced project location, and develop GIS maps for conceptual site activities (e.g., grid network, site boundaries). | Once | • Scales are in feet, measurable using engineering scale.<br>• Key map included.<br>• Project name and location correct.<br>• Grid network proper size. | • Review all data/input with GIS staff. Do not proceed until corrections are reviewed and accepted by Lead STR. Notify PM and the Program Manager. |
| Planning/ Pre-mobilization | Document management and control | Task Manager, Technical Editor | • Follow established EA document control guidelines. | Once | • Document not in compliance with EA document control guidelines. | • Internal corrective action meeting. |
| Planning/ Pre-mobilization | Subcontracting | PM or Task Manager, Procurement Manager, Contracts Manager, Health & Safety Manager | • Issue subcontractor requests for proposal or review blanket purchase orders. | Once | • Verify qualifications, safety record, training, and appropriate licenses are up to date and acceptable. Subcontracts are executed. | • Review Terms and Conditions for corrective actions. |

**Table 5-3: Summary of QC Procedures, Responsibilities, Criteria, and Actions**

| Activity | Definable Feature of Work | Responsible Personnel | Procedure | Frequency | Pass/Fail Criteria | Action if Failure Occurs |
|---|---|---|---|---|---|---|
| Planning/ Pre-mobilization | Personnel qualifications | Task Manager, UXOQCS/ UXOSO, SUXOS | • Verify all health and training certification/qualifications for all proposed personnel are appropriate and current for assigned activities.<br>• For UXO personnel, verify qualification in accordance with DDESB TP-18. | Once | • All personnel meet or exceed the training requirements and/or certifications for the assigned positions. | • Provide required training or replace personnel. Notify PM and the Program Manager. |
| Planning/ Pre-mobilization | Procurement of supplies/ materials | UXOQCS/ UXOSO, SUXOS, Task Manager, Procurement Manager, Corporate Equipment Manager | • Order all supplies in accordance with corporate procurement policy.<br>• Establish purchase requisitions.<br>• Reserve corporate equipment. | Once | • All supplies and materials received.<br>• Inspect supplies and material for damage.<br>• Function-check all equipment in accordance with operator or manufacturers' handbooks. | • Review purchase orders.<br>• Review project schedule for schedule impacts.<br>• Replace all defective supplies/materials and equipment.<br>• Notify PM and the Program Manager. |
| Field Operations | Site-specific training | Task Manager, UXOQCS/ UXOSO, SUXOS | • Verify that all on-site personnel have been given the necessary site-specific training (e.g., GPS, data management, vendor escort, work plan, SOPs etc.). | Once (for each new personnel, throughout field operations) | • Demonstrated knowledge of site-specific training topics through Q&A, equipment operational review, etc. | • Escort individual from project and exclude from site or complete on-site training for individual. |

**Table 5-3: Summary of QC Procedures, Responsibilities, Criteria, and Actions**

| Activity | Definable Feature of Work | Responsible Personnel | Procedure | Frequency | Pass/Fail Criteria | Action if Failure Occurs |
|---|---|---|---|---|---|---|
| Field Operations | Survey MRS boundaries and grids | UXOQCS/ UXOSO, SUXOS, Data Manager, GIS Manager | • Verify that MRS boundaries are demarcated using GPS.<br>• All grids nodes stakes marked with grid ID number.<br>• All grid numbers entered into data system. | Initial and as required | • MRS boundaries and grids match CSM as described in work plan.<br>• Grid nodes are marked per work plan.<br>• GPS does not meet daily accuracy check of horizontal GPS ±1.0 foot of known benchmark coordinate. | • Review coordinate accuracy.<br>• Check GPS for accuracy error.<br>• Notify PM and the Program Manager. |
| Field Operations | Magnetometer-assisted surface clearance | UXOQCS/ UXOSO, SUXOS | • Identify, remove, and document all surface MEC/UXO and MD. Identify and remove all non-munitions related debris. | Daily/each anomaly | • All detectable surface MEC/UXO removed. | • Initiate corrective action request.<br>• Notify PM and the Program Manager. |
| Field Operations | Mag and flag subsurface analog-detected anomalies (Phase II – if applicable) | UXOQCS/ UXOSO, SUXOS | • Mag and flag in accordance with work plan and SOP. | Daily/each anomaly | • Analog handheld magnetometers not operating in accordance with Operator Manual.<br>• Equipment fails IVS.<br>• Subsurface anomaly not detected and flagged. | • Replace or repair handheld magnetometers.<br>• Initiate corrective action request. |
| Field Operations | Qualitative mapping of flagged anomalies | UXOQCS/ UXOSO, SUXOS | • Anomaly survey data downloaded, imported to GIS, mapped, and checked. | Daily/each GPS | • Data downloaded and cumulative anomaly map created; no mapping errors found. | • Do not produce final map until errors corrected. |

**Table 5-3: Summary of QC Procedures, Responsibilities, Criteria, and Actions**

| Activity | Definable Feature of Work | Responsible Personnel | Procedure | Frequency | Pass/Fail Criteria | Action if Failure Occurs |
|---|---|---|---|---|---|---|
| | | | • Survey GPS operating to project specifications. | Daily | • Horizontal GPS ±1.0 foot of known benchmark coordinate. | • Do not proceed with survey until GPS operates within accuracy limit. |
| Field Operations | DGM (Phase II- if applicable) | Project Geophysicist, UXOQCS/ UXOSO | • Perform DGM to project specifications<br>• Verify instrument tests (daily static and dynamic at IVS) | Daily | • Established measurement criteria achieved | • Perform root cause analysis, identify issues(s), propose modifications (as needed).<br>• Re-work, as needed. |
| Field Operations | Anomaly Reacquisition (Phase II – if applicable) | UXOQCS/ UXOSO | • Utilize GPS and magnetometer to reacquire anomalies, as identified on dig sheets. | Daily | • Horizontal GPS ±1.0 foot of known benchmark coordinate.<br>• Unable to identify/locate anomaly | • Do not proceed with reacquire until GPS operates within accuracy limit.<br>• Perform root cause analysis, identify issue(s).<br>• |
| Field Operations | Intrusive investigation (Phase II – if applicable) | UXOQCS/ UXOSO, SUXOS | • Intrusively investigate all subsurface anomalies selected (at least 10% of total) within each grid. | Daily/each anomaly | • Selected anomaly detected to depth of detection of handheld magnetometers.<br>• Following investigation, presence of MEC/UXO/MD at selected anomaly constitutes failure. | • Initiate corrective action request.<br>• Notify PM and the Program Manager. |

**Table 5-3: Summary of QC Procedures, Responsibilities, Criteria, and Actions**

| Activity | Definable Feature of Work | Responsible Personnel | Procedure | Frequency | Pass/Fail Criteria | Action if Failure Occurs |
|---|---|---|---|---|---|---|
| Field Operations | MPPEH procedures | UXOQCS/ UXOSO, SUXOS | • Verify certification is per work plan MPPEH Management SOP and EM 385-1-97. | Daily/as required | • Discovery of any MPPEH within material certified as MDAS. | • Initiate corrective action request.<br>• Notify PM and the Program Manager.<br>• Re-investigate anomaly location. |
| Field Operations | MC sampling | Task Manager, UXOQCS/ UXOSO, SUXOS | • Collect soil sample beneath each compromised MEC with exposed explosives or high MD and post detonation for MC analysis.<br>• Maintain chain of custody. | Each Compromised MEC or High MD Area | • Chain of custody broken.<br>• Sample procedures not followed. | • Initiate corrective action request.<br>• Notify PM and the Program Manager.<br>• Re-sample. |
| Field Operations | Demobilization | Task Manager, UXOQCS/ UXOSO, SUXOS, Data Manager | • Verify MRS is returned to near original condition. | Once | • Walk through by the property owner.<br>• Site condition found acceptable by the property owner. | • Develop final punch list of corrective actions to return the site to acceptable condition.<br>• Notify PM and the Program Manager. |
| Field Operations | Evaluation of analytical data | PM/Task Manager, Project Chemist | • Review and validate data per the approved QAPP.<br>• 100% of data will be reviewed and verified<br>• 10% of data will be validated | Once | • No data rejected. | • Re-review or revise, as required.<br>• Notify PM and the Program Manager.<br>• Perform Corrective Action, as needed.<br>• Re-collect data, as needed. |

**Table 5-3: Summary of QC Procedures, Responsibilities, Criteria, and Actions**

| Activity | Definable Feature of Work | Responsible Personnel | Procedure | Frequency | Pass/Fail Criteria | Action if Failure Occurs |
|---|---|---|---|---|---|---|
| Final Project Report and Closeout | Report preparation | PM/Task Manager, Lead Senior Technical Reviewer | • Verify that report has been prepared per guidance and provides the required information to meet project objectives. | Once per version submitted | • Report has been reviewed, comments addressed and resolved, and approved. | • Take appropriate action to obtain report approval. |
| Final Project Report and Closeout | Report preparation | Data Manger UXOQCS/ UXOSO, SUXOS, | • Audit of the following items: tabulation of all MEC, MD and other material recovered during the removal action is accurate and complete.<br>• Daily records<br>• Grid tracking system<br>• QC reports and results<br>• USACE 948 QA acceptance for all grids | Once | • Any missing report<br>• Discrepancies in grid tracking | • Conduct corrective action meeting to determine discrepancies and required action. |
| Final Project Report and Closeout | Data archiving and closeout | PM/Task Manager, Project Chemist | • Have lab prepare Electronic Data Deliverable. Submit to Client. | Once | • Data is accepted by client. | • Revise data package and re-submit. |
| Final Project Report and Closeout | Data archiving and closeout | PM/Task Manager, Procurement Manager, Contracts Manager | • Verify purchase orders, vendors and subcontractors have been closed out.<br>• Run internal accounting commitment reports to verify outstanding balances. | Once | • Release of claims not received. | • Resolve issues with Contracts Manager and Procurement Manager. |

Schedule and Tracking Form is to be used by the Program QC Manager for planning, scheduling, and tracking the progress of audits (Appendix D). The information on the form is to be current and reviewed by the Program QC Manager. Audit activities and corrective actions are to be documented by the Program QC Manager in accordance with this chapter and the audit records are to be maintained as part of the project QC file.

A corrective action shall be initiated during the field work when precision, accuracy, completeness, representativeness, or comparability are not met or changes are made in the field that do not meet the scope of work requirements or other conditions are identified that are not acceptable. The PM or Task Manager will make unannounced trips to verify that work is being performed in accordance with the work plan. To document the findings, a report will be filed which lists the problems encountered and the corrective action implemented. A stop-work order may be issued by the PM or Field Task Manager, if no resolution can be reached. Additional discussions of corrective actions are presented below.

### 5.10.2 Laboratory Audit Procedures

If a particular analysis is deemed "out-of-control", corrective action will be taken to ensure continued data quality. Actions which may be taken include, but are not limited to:

- Rechecking calculations
- Checking QC data on other samples
- Auditing laboratory procedures
- Reanalyzing the sample if the holding time requirements have not been exceeded
- Accepting data with the acknowledged level of uncertainty
- Qualifying the data as unusable

The laboratory QA Manager will be responsible for initiating laboratory corrective action within 48 hours of the time it was noted. Additional corrective actions are discussed below.

## 5.11 PROCESS AND PROCEDURAL FAILURE

Process integrity is defined as conformance to specifications (i.e., requirements of the work plan, regulations, and industry standards). Checks for process integrity will consist of visual observations of the methods used and will be a significant part of the Follow-Up Inspections and documented on the Quality Control Surveillance Report for each inspection.

Defined as conformance to the requirements of the work plan, checks for procedural integrity will consist of observations of specific procedures used, and the accuracy of those methods. The results of these inspections will be documented on the Quality Control Surveillance Report.

Non-conformance with process or procedural requirements will be addressed by the UXOQCS with the appropriate team leader (e.g., SUXOS, survey crew leader, etc.). If the nonconformance is found to affect safety or overall product quality, work will cease until an appropriate resolution is identified and implemented, and the SUXOS/Field Task Manager will be notified. Once the UXOQCS, appropriate team leader, and SUXOS/Field Task Manager are satisfied with the suggested corrective action, the action will be implemented and documented in the log book and on forms contained in Appendix D.

If the failure directly affects product quality, or is otherwise determined by the UXOQCS to require a follow-up action, a Nonconformance Report will be prepared and submitted. The Nonconformance Report will include a detailed written description of the nonconformance item, and required follow-up actions, developed and signed by the UXOQCS. A copy of the completed form will be provided to the SUXOS and Project Manager as notification of the failure. In response, the EA project team will have a period of 2 working days to provide a plan for corrective action for the failure, and not more than 5 working days from the date of issue of the Nonconformance Report to complete the corrective action. Once the corrective action has been completed, it will be documented on the form and, if approved, will be signed by the UXOQCS and Project Manager. These signatures will indicate that the failed work has been corrected, accepted, and the Nonconformance Report will be closed. A copy of the Nonconformance Report and any relevant attachments will be placed in the project QC file, along with Follow-Up inspection documents.

If the failure of process or procedure occurs more than once for the area where a particular team is working, a Correction Action Request will be prepared. The Corrective Action Request will specify whether a Corrective Action Plan is needed. The UXOQCS will meet with the appropriate team leader and members to determine the corrective course of action. During follow-up QC inspections, the UXOQCS will ensure and document in the UXOQCS Log Book and the QC Report that agreed upon corrective actions have been implemented.

## 5.12 DEFICIENCY IDENTIFICATION AND RESOLUTION

While deficiency identification and resolution occurs primarily at the operational level, QC audits provide a backup mechanism to address problems that either are not identified or cannot be resolved at the operational level. The project team is responsible for verifying that deficiencies are identified and documented as prescribed herein and corrected in a timely manner. Deficiencies identified by the project team will be corrected by operational staff and documented by the UXOQCS.

### 5.12.1 QC Failure Criteria

QC failure is defined as non-conformance with: 1) provisions of the work plan and 2) industry standards. QC pass/fail criteria are presented in Table 5-2. In the event of a QC failure, a follow-up corrective action is required using the procedures described below. For surface clearance and intrusive investigation, grids that fail the Pass/Fail Criteria, or Quality Assurance (QA) surveillance, will be re-cleared.

#### 5.12.1.1 Equipment Failure

If equipment is not operating properly, it will be repaired or taken out of service and replaced with suitably operating equipment. On a case-by-case basis, the UXOQCS will evaluate whether the equipment failure has compromised data quality and will determine the appropriate corrective action.

Should any detection instrument fail to function or cannot detect items during the daily check, the operator and field team leader will determine and resolve the equipment failure. If the failure cannot be determined and repaired, the instrument will be shipped offsite for repair. A replacement will be used once it has successfully processed through the daily check and has been confirmed and documented by the UXOQCS. The UXOQCS will review this type of failure on a case-by-case basis to determine whether the failed instrument may have compromised data quality.

## 5.13 DATA CORRECTIVE ACTIONS

### 5.13.1 Introduction

Corrective actions are those measures taken to rectify a laboratory or field measurement system that does not comply with this QAPP. Any personnel engaged in project work that discovers or suspects a nonconformance is responsible for initiating corrective actions and reporting them to the Field Task Manager and PM.

A Correction Action Request can be issued by any member of the project team. If the individual issuing the Correction Action Request is also responsible for correcting the problem, then he/she should document the results on Part B of the Correction Action Request. Otherwise, the Correction Action Request should be forwarded to the Project Manager who is then responsible for evaluating the validity of the request, formulating a resolution and developing a corrective strategy, assigning personnel and resources, and specifying and enforcing a schedule for corrective actions. Once a corrective action has been completed, the Correction Action Request and supporting information will be forwarded to the Program QC Manager for closure. Sufficient information will be provided to allow the QC reviewer to verify the effectiveness of the corrective actions.

The recommendations provided in the Correction Action Requests and implemented in the work plan will be reviewed during Follow-Up QC inspections. The purposes of this Correction Action Request review are to ensure that established protocols are implemented properly, verify that corrective action commitments are met, ensure that corrective actions are effective in resolving problems, identify trends within and among similar work units, and facilitate system root cause analysis of larger problems.

The Program QC Manager will determine whether a written Corrective Action Plan is necessary, based on whether or not any of the following are met: the Correction Action Request priority is high, deficiency requires a rigorous corrective action planning process to identify similar work product or activities affected by the deficiency, or deficiency requires extensive resources and planning to correct the deficiency and to prevent recurrence. The Corrective Action Plan will be developed by the Project Manager and approved and signed by the Program QC Manager. The Corrective Action Plan will indicate whether it is submitted for informational purposes or for review and approval. In either event, operational staff is encouraged to discuss corrective action strategy with the UXOQCS throughout the process.

### 5.13.2 Field Corrective Action

Corrective action will be undertaken when a non-conforming condition is identified. The sampling team shall record any problems requiring corrective action in the field notebook, and notify the Field Task Manager at or before the end of the sampling day. If further action is required, the Field Task Manager will report the problems to the PM, who will report them to Harley-Davidson if necessary. All correspondence will be recorded either in the field notebook, in archived emails, and/or in written reports. A non-conforming condition occurs when QA/QC objectives are not met, or when procedural practices or other conditions are not acceptable.

### 5.13.3 Laboratory Corrective Action

Corrective action will be taken by the laboratory to ensure continued data quality. Laboratory corrective actions procedures are outlined in the Laboratory QAPP in Appendix B. Laboratory corrective actions will be reported to the Task Manager or PM and documented in project records.

### 5.13.4 Corrective Action Request Tracking

Each Correction Action Request must be given a unique identification number and tracked until corrective actions have been implemented in the field, documented, and the Correction Action Request submitted to the Project Manager for verification and closure.

## 5.14 LESSONS LEARNED AND OTHER DOCUMENTATION

The lessons learned through the discrepancy management process are documented on Correction Action Requests and Corrective Action Plans. To share the lessons learned, these documents will be submitted to Harley-Davidson through a Weekly QC Report, which summarizes the week's QC activities and includes a grouping of the Daily QC Reports and any other pertinent reports created during the week.

Correction Action Requests should be cited in the Weekly QC Report. Minor deficiencies identified during a QC audit that are readily correctable and can be verified in the field are to be documented in the QC Log Book and Weekly QC Report without initiating a Correction Action Request. Discrepancies that cannot be readily corrected will be documented by the UXOQCS on a Correction Action Request and in the Weekly QC Report. Copies of Correction Action Requests will be referenced in and attached to the Weekly QC Report. Corrective Action Plans will also be attached to Weekly QC Reports to document the final outcome of the deficiency. Similar or related deficiencies may be addressed on a single Corrective Action Plan.

## 5.15 PREVENTATIVE AND CORRECTIVE ACTIONS TO ENSURE QC

The preventative and corrective actions incorporated within this QAPP are designed to prevent and correct quality problems that may arise during the RI. The procedures facilitate process improvements and describe the available mechanisms to identify, document, and track discrepancies until a corrective action has been verified.

### 5.15.1 Preventative Maintenance

Periodic preventive maintenance is required for sensitive equipment. Instrument manuals will be kept on file for reference. The troubleshooting chapter of factory manuals may be used in assisting personnel in performing maintenance tasks. The frequency of preventive maintenance for field equipment is indicated in each operating instruction manual. Field equipment is checked by field personnel under the supervision of the field coordinators.

Major instruments in the laboratory are covered by annual service contracts with manufacturers. Under these agreements, regular preventive maintenance visits are made by trained service personnel. Maintenance is documented and maintained in permanent records by the individual responsible for each instrument. Laboratory management is responsible for preparation and documentation of the program. Laboratory maintenance practices are described in Appendix B.

### 5.15.2 Preventive Measures

While the entire QC program is directed toward problem prevention, certain elements of the program have greater potential to be proactive. Should these preventive measures fail, tracking and communicating discrepancies also provide a mechanism for preventing recurrence.

### 5.15.3 Continual Improvement

A continual improvement process will be implemented for the project. Project staff at all levels will be encouraged to provide recommendations for improvements in established work processes and techniques. The intent is to identify activities that are compliant but can be performed in a more efficient or cost-effective manner. Typical quality improvement recommendations include identifying an existing practice that can and should be improved (e.g., a bottleneck in production) and/or recommending an alternative practice that provides a benefit without compromising prescribed standards of quality. Project staff should bring their recommendations to the attention of the UXOQCS/ UXOSO, UXO Team Lead through verbal or written means.

Deviations from established protocols will not to be implemented without prior written approval. Where a staff-initiated recommendation results in a tangible benefit to the project, public acknowledgment will be given the Project Manager.

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# Figures

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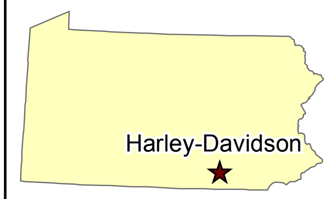



## Legend

- Access Gate used for Site Entry
- Benchmarks
- Fenceline
- Current Harley-Davidson Boundary
- Former York Naval Ordnance Plant Boundary
- York County Industrial Development Authority Boundary
- AOC Boundary
- MRS Boundary

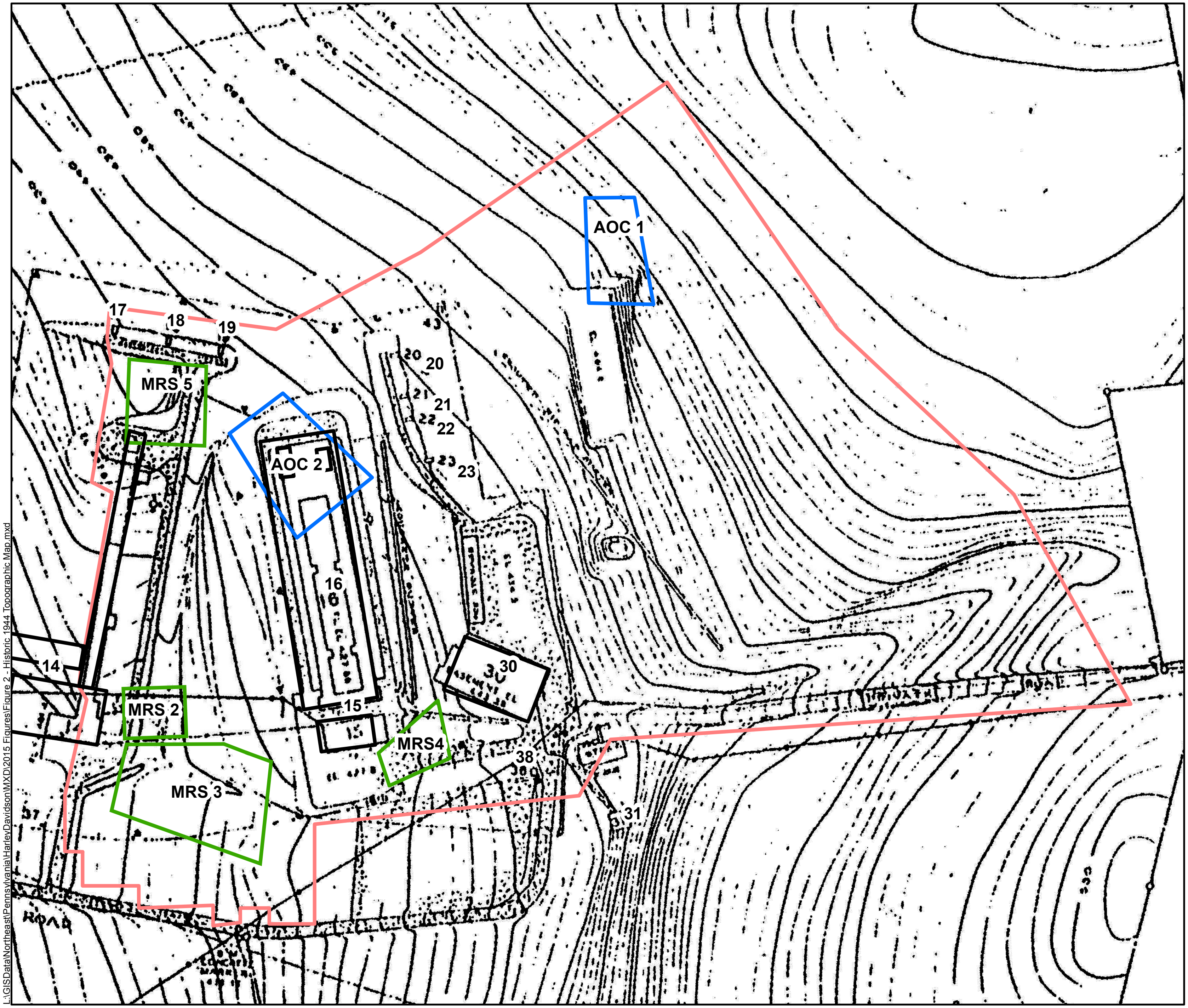
L:\GISData\Northeast\Pennsylvania\HarleyDavidson\MXD\2015 Figures\Figure 1 - AOC and MRS Location Map.mxd

**Figure 1 - AOC and MMRS Location Map**
**MMRP RI Former York Naval Ordnance Plant**

Source:
ESRI 2012

Projection: NAD 83 Maryland StatePlane Feet
Date: April 2015

0 400 800
Feet





**Legend**

- Proposed RI
- MRS Boundary
- AOC Boundary

# Figure 2 - Historic 1944 Topographic Map
## MMRP RI Former York Naval Ordnance Plant

Source:
ESRI 2012

Projection: NAD 83 Maryland StatePlane Feet
Date: April 2015

0 100 200
Feet

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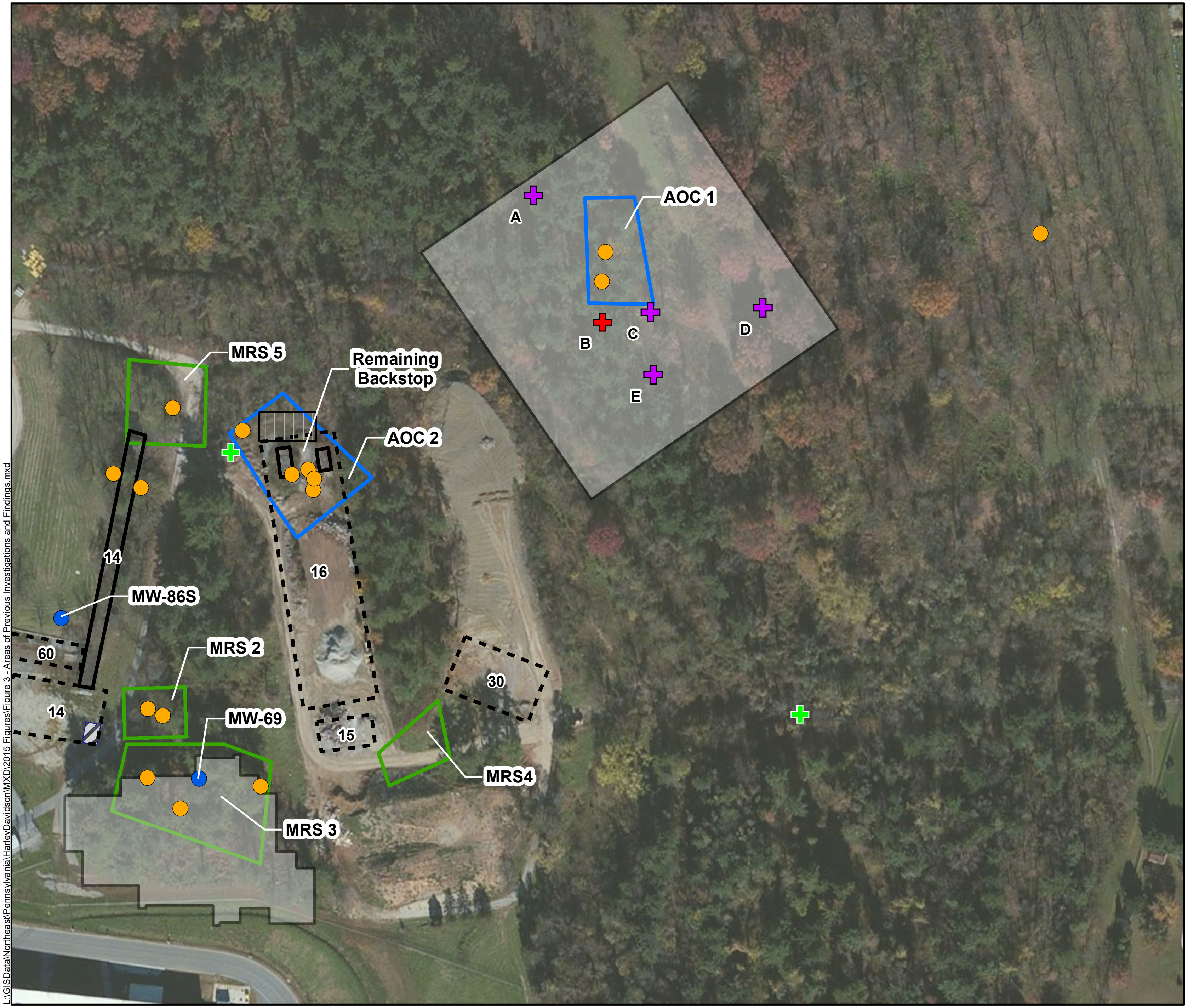




**Legend**

- SI 2007 Groundwater Sample
- SI 2007 Soil Sample
- Munitions Related Items found by H-D
- 2007 SAIC Investigation Anomalies indentified as cultural debris by USACE
- 2007 SAIC Investigation Anomaly indentified as munitions debris by USACE
- MRS Boundary
- AOC Boundary
- Former Geophysical Survey Area
- Former Building Locations
- Current Building Locations
- 2008 Suspect Soil Pile from Building 16
- 2010 Excavated and Filled Basement

L:\GISData\Northeast\Pennsylvania\HarleyDavidson\MXD\2015 Figures\Figure 3 - Areas of Previous Investigations and Findings.mxd

**Figure 3 - Areas of Previous Investigations and Findings**
**MMRP RI Former York Naval Ordnance Plant**

Source:
ESRI 2012

Projection: NAD 83 Maryland StatePlane Feet
Date: April 2015

0 100 200
Feet

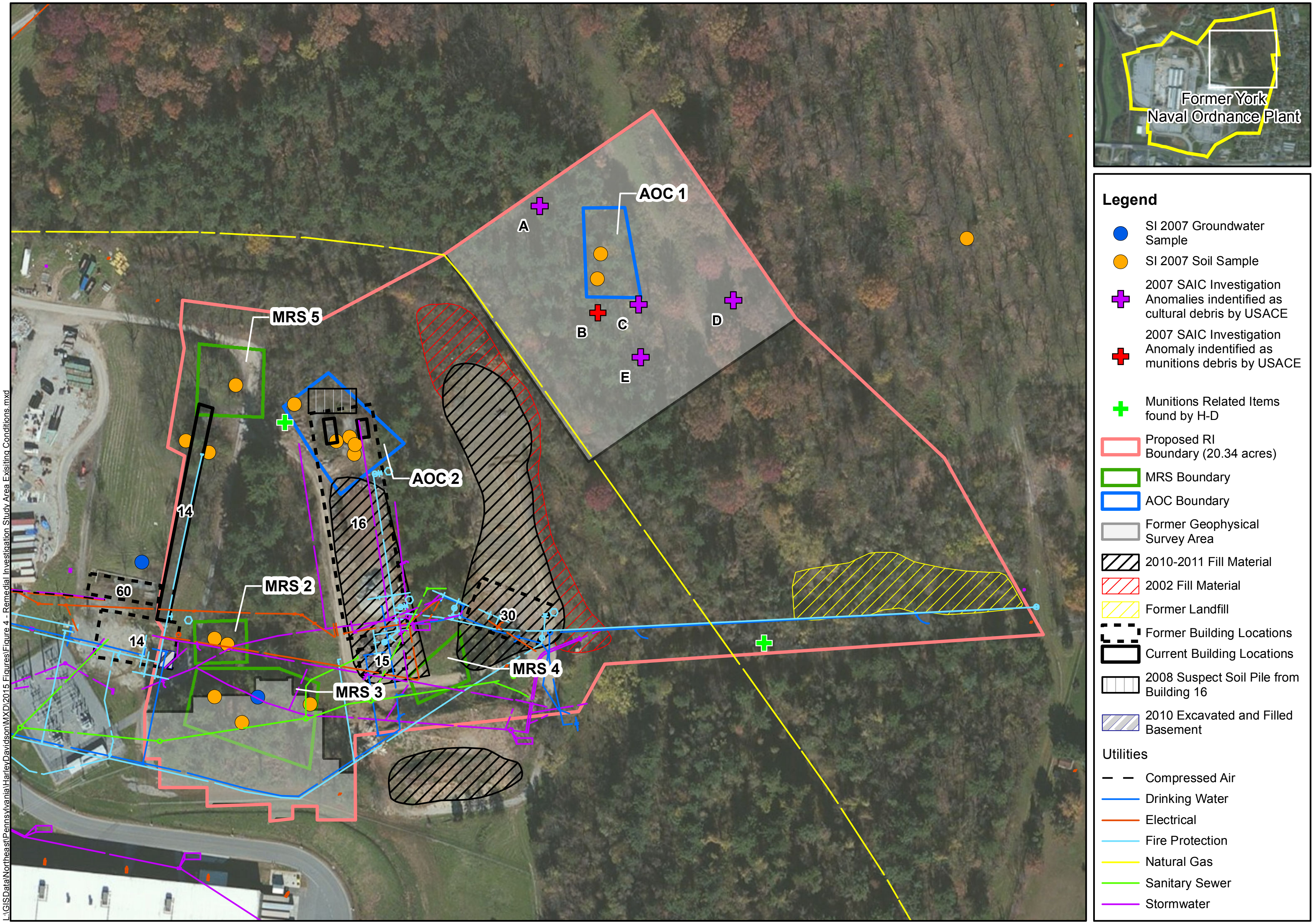
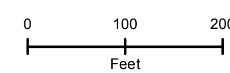



**Figure 4 - Remedial Investigation Study Area with Existing Utilities**
**MMRP RI Former York Naval Ordnance Plant**

Source:
ESRI 2012

Projection: NAD 83 Maryland StatePlane Feet
Date: April 2015



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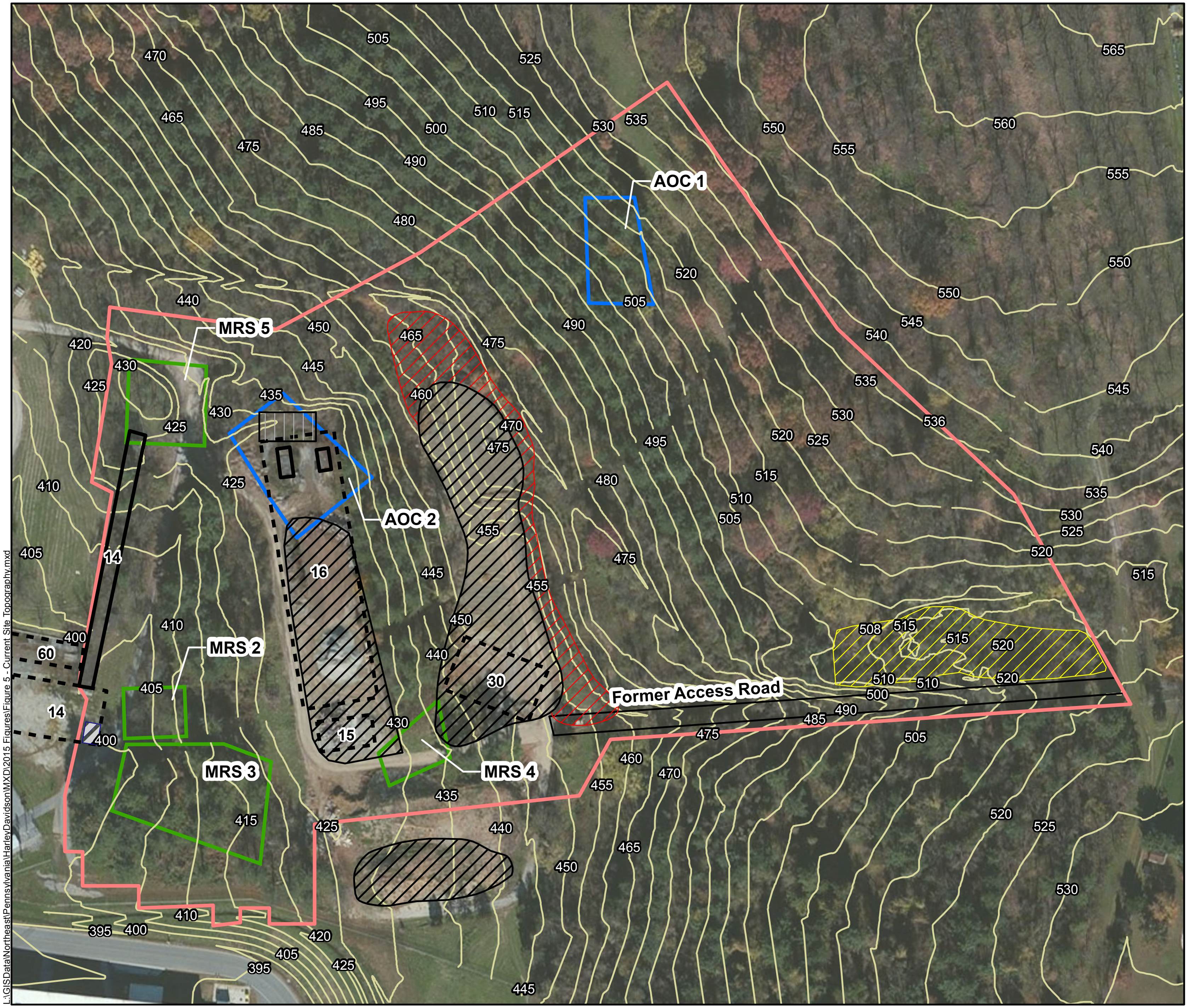



## Legend

- Elevation Contour (5 foot interval)
- Proposed RI Boundary (20.34 acres)
- MRS Boundary
- AOC Boundary
- 2010-2011 Fill Material
- 2002 Fill Material
- Former Landfill
- Former Building Locations
- Current Building Locations
- 2008 Suspect Soil Pile from Building 16
- 2010 Excavated and Filled Basement

**Note:**
Total RI Acreage: 20.34 Ac
Total Fill Acreage: 1.97 Ac
Total Landfill Acreage: .62 Ac
Accessible RI Acreage: 17.75 Ac

Total RI Acreage excludes Fill Material and Former Landfill acerages

L:\GIS\Data\Northeast\Pennsylvania\HarleyDavidson\MXD\2015 Figures\Figure 5 - Current Site Topography.mxd

**Figure 5 - Current Site Topography**
**MMRP RI Former York Naval Ordnance Plant**

Source:
ESRI 2012

Projection: NAD 83 Maryland StatePlane Feet
Date: April 2015

0 100 200
Feet

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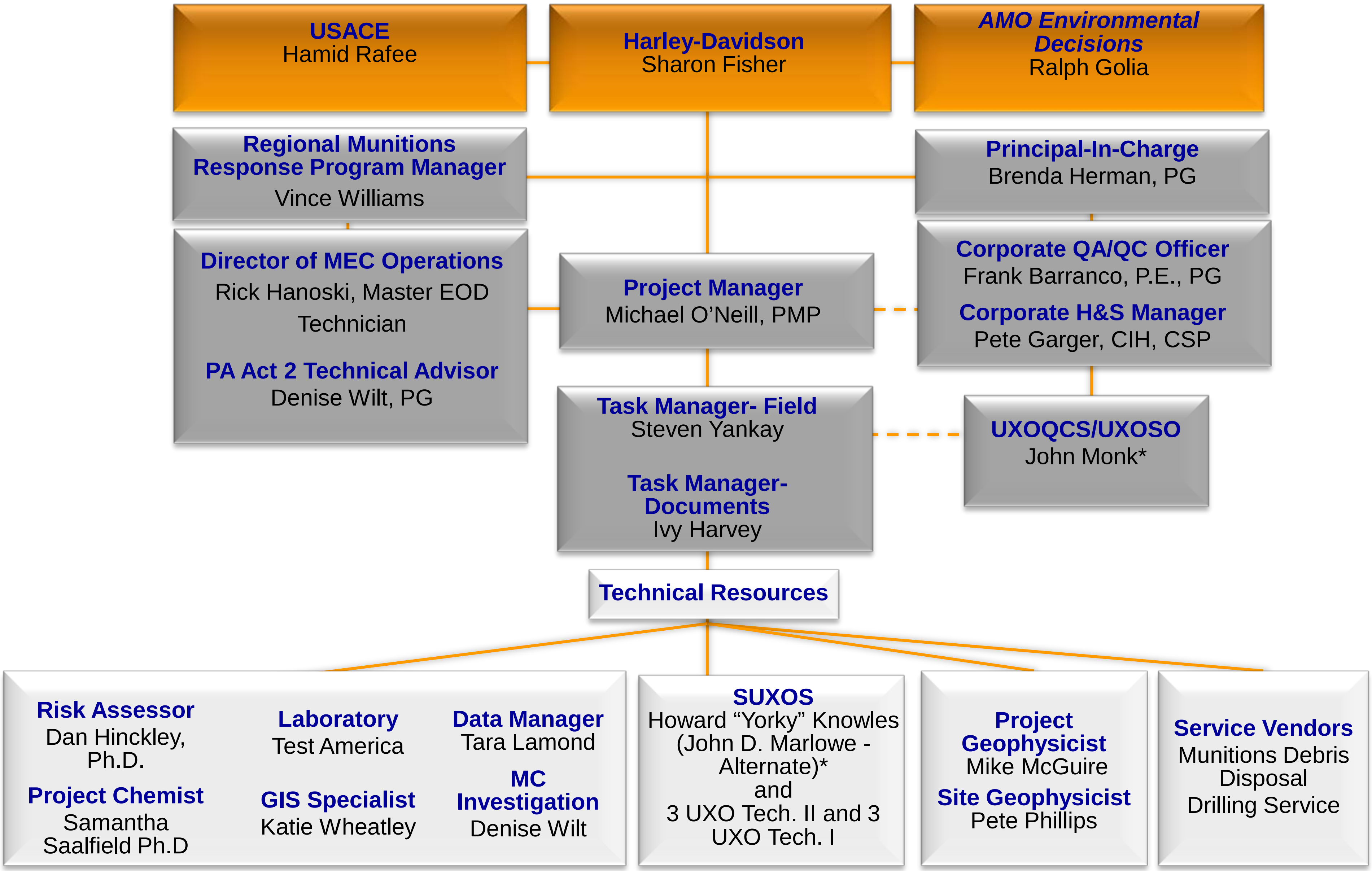
# Figure 6 Organizational Chart




*Depending on the timing of the fieldwork, a suitable qualified alternate may be used for UXO technician categories

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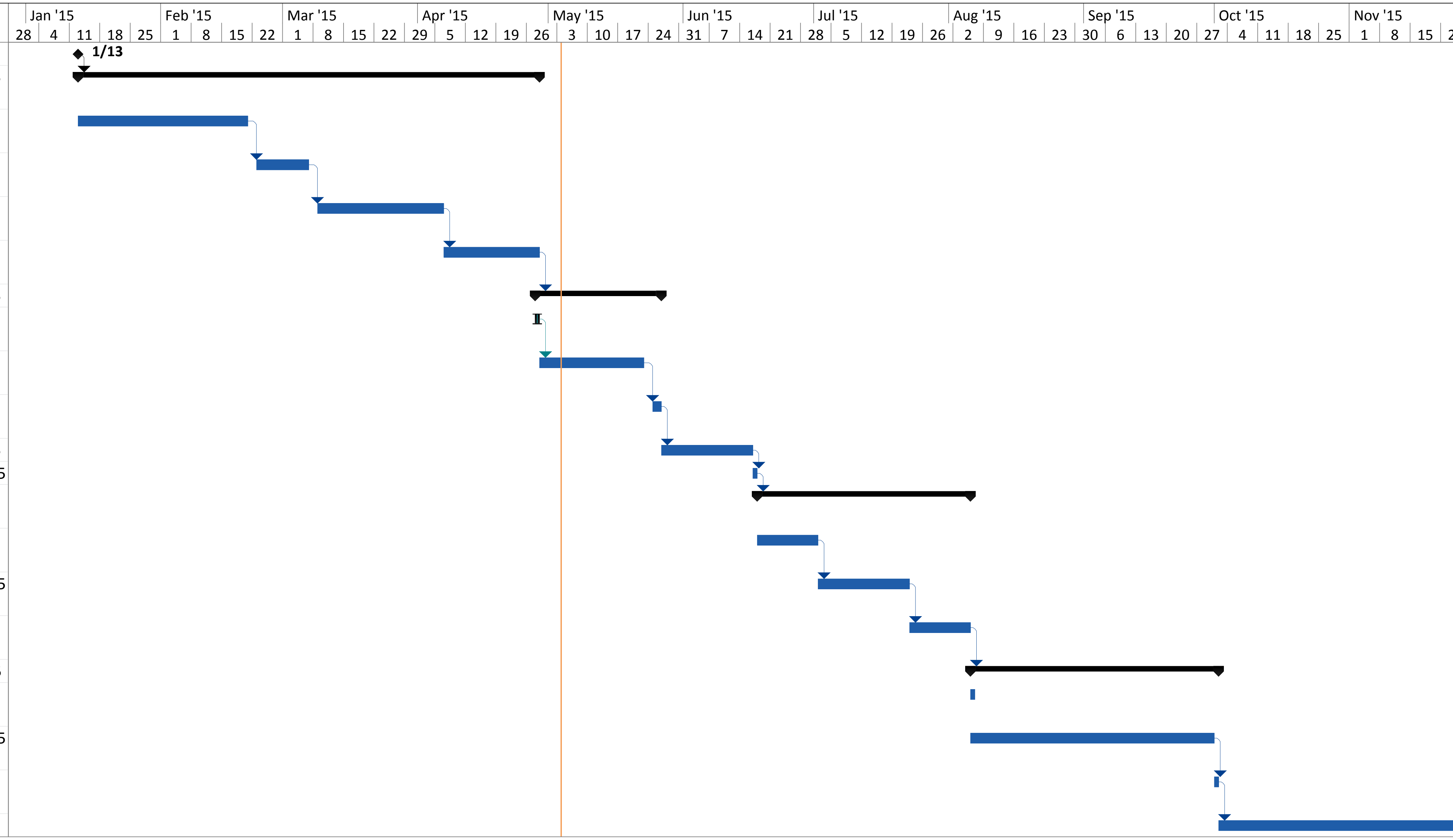
FIGURE 7
FYNOP REMEDIAL INVESTIGATION SCHEDULE

| Task Name | Duration | Start | Finish |
|---|---|---|---|
| **Project Kickoff Meeting** | **0 days** | Tue 1/13/15 | Tue 1/13/15 |
| **Prepare First Phase Planning Documents** | **76 days** | **Tue 1/13/15** | **Tue 4/28/15** |
| Submit Draft Copy of RI Work Plan | 29 days | Tue 1/13/15 | Fri 2/20/15 |
| Review of Draft Copy RI Work Plan | 10 days | Mon 2/23/15 | Fri 3/6/15 |
| Prepare Final Copy of RI Work Plan | 21 days | Mon 3/9/15 | Mon 4/6/15 |
| Receive Notice to Proceed and Conduct kickoff Meeting | 16 days | Tue 4/7/15 | Tue 4/28/15 |
| **Conduct First Phase of RI** | **21 days** | **Tue 4/28/15** | **Tue 5/26/15** |
| First Phase Mobilization | 1 day | Tue 4/28/15 | Tue 4/28/15 |
| First Phase RI Field Work | 18 days | Wed 4/29/15 | Fri 5/22/15 |
| First Phase Demobilization | 2 days | Mon 5/25/15 | Tue 5/26/15 |
| **Prepare Interim Summary Repo** | **15 days** | **Wed 5/27/15** | **Tue 6/16/15** |
| **First Phase Summary Meeting** | **1 day** | Wed 6/17/15 | Wed 6/17/15 |
| **Prepare Second Phase Planning Documents** | **35 days** | **Thu 6/18/15** | **Wed 8/5/15** |
| Submit Draft Copy of RI Work Plan Addendum | 10 days | Thu 6/18/15 | Wed 7/1/15 |
| Review Draft Copy of RI Work Plan Addendum | 15 days | Thu 7/2/15 | Wed 7/22/15 |
| Prepare Final Copy of RI Work Plan Addendum | 10 days | Thu 7/23/15 | Wed 8/5/15 |
| **Conduct Second Phase of RI** | **41 days** | **Thu 8/6/15** | **Thu 10/1/15** |
| Second Phase Mobilization | 1 day | Thu 8/6/15 | Thu 8/6/15 |
| Second Phase RI Field Work | 40 days | Thu 8/6/15 | Wed 9/30/15 |
| Second Phase Demobilization | 1 day | Thu 10/1/15 | Thu 10/1/15 |
| **Prepare Final RI Report** | **70 days** | **Fri 10/2/15** | **Thu 1/7/16** |




| | | | | | |
|---|---|---|---|---|---|
| Task | Summary | External Milestone | Inactive Summary | Manual Summary Rollup | Finish-only |
| Split | Project Summary | Inactive Task | Manual Task | Manual Summary | Deadline |
| Milestone | External Tasks | Inactive Milestone | Duration-only | Start-only | Progress |

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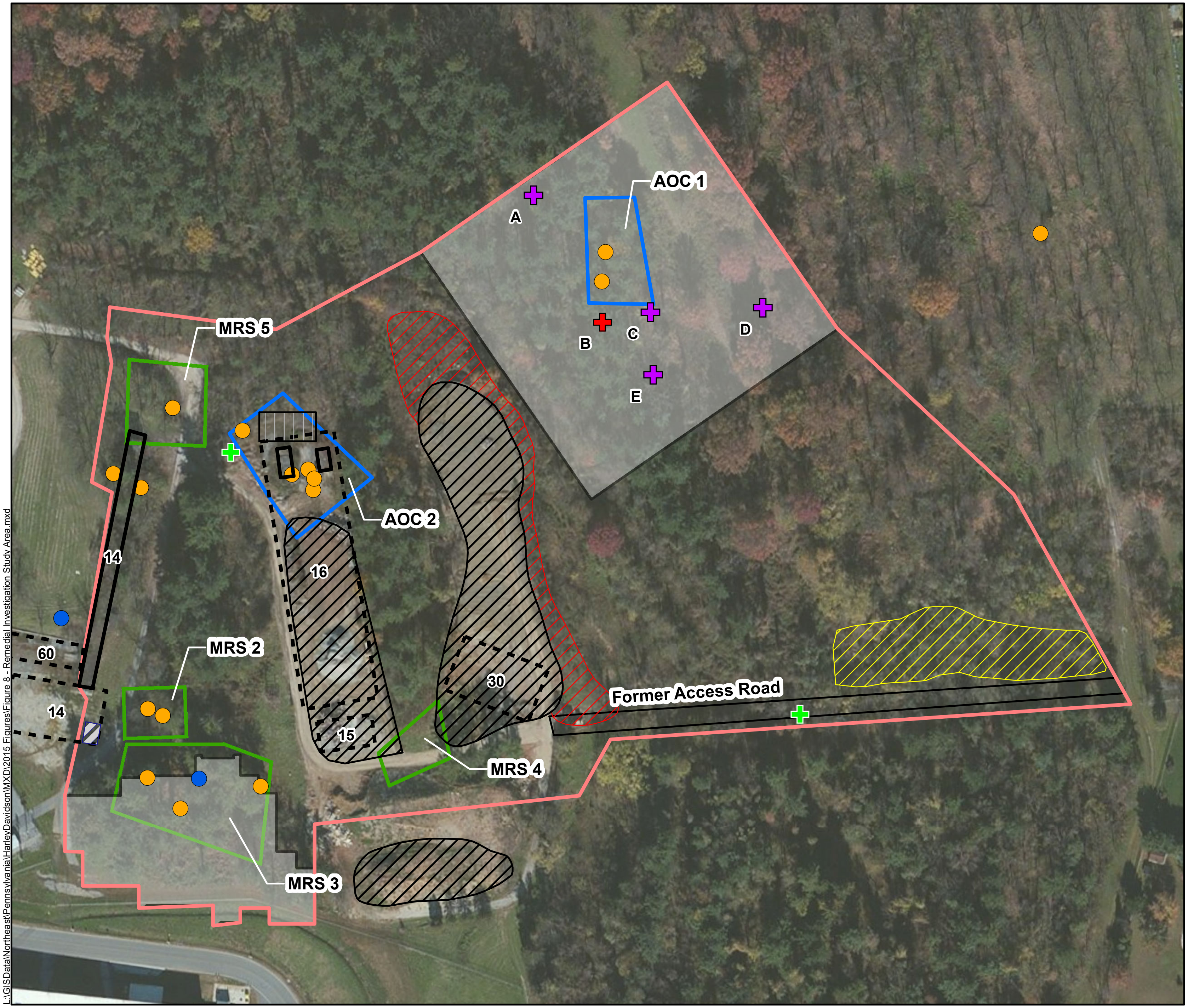



## Legend

- SI 2007 Groundwater Sample
- SI 2007 Soil Sample
- 2007 SAIC Investigation Anomalies indentified as cultural debris by USACE
- 2007 SAIC Investigation Anomaly indentified as munitions debris by USACE
- Munitions Related Items found by H-D
- Proposed RI Boundary (20.34 acres)
- MRS Boundary
- AOC Boundary
- Former Geophysical Survey Area
- 2010-2011 Fill Material
- 2002 Fill Material
- Former Landfill
- Former Building Locations
- Current Building Locations
- 2008 Suspect Soil Pile from Building 16
- 2010 Excavated and Filled Basement

**Note:**
Total RI Acreage: 20.34 Ac
Total Fill Acreage: 1.97 Ac
Total Landfill Acreage: .62 Ac
Accessible RI Acreage: 17.75 Ac

Total RI Acreage excludes Fill Material and Former Landfill acerages

**Figure 8 - Remedial Investigation Study Area**
**MMRP RI Former York Naval Ordnance Plant**

Source:
ESRI 2012

Projection: NAD 83 Maryland StatePlane Feet
Date: April 2015

0 100 200
Feet

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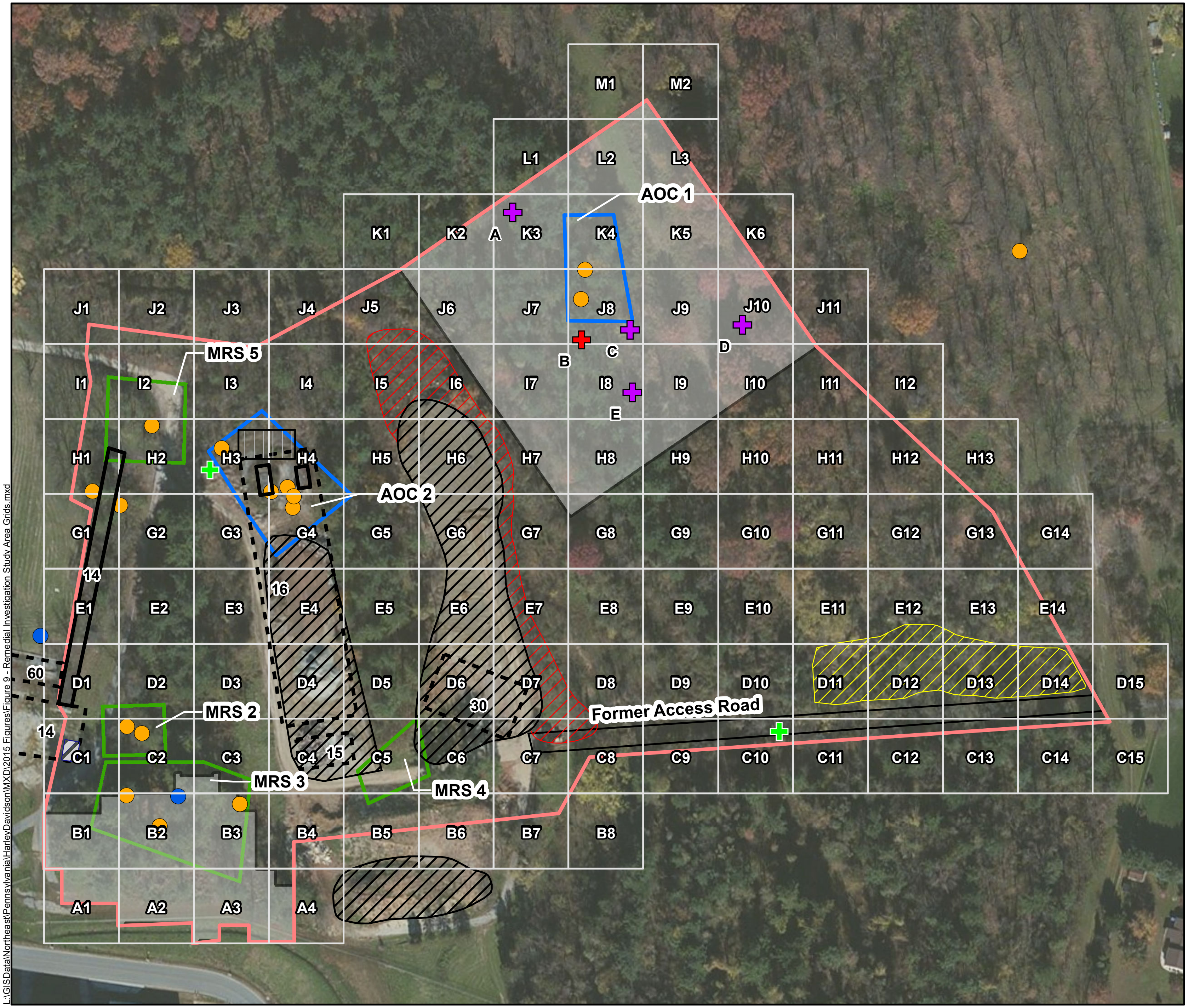



L:\GISData\NortheastPennsylvania\HarleyDavidson\MXD\2015 Figures\Figure 9 - Remedial Investigation Study Area Grids.mxd

**Legend**

- SI 2007 Groundwater Sample
- SI 2007 Soil Sample
- 2007 SAIC Investigation Anomalies indentified as cultural debris by USACE
- 2007 SAIC Investigation Anomaly indentified as munitions debris by USACE
- Munitions Related Items found by H-D
- Proposed RI Boundary (20.34 acres)
- MRS Boundary
- AOC Boundary
- Former Geophysical Survey Area
- 2010-2011 Fill Material
- 2002 Fill Material
- Former Landfill
- 100x100 foot grid
- Former Building Locations
- Current Building Locations
- 2008 Suspect Soil Pile from Building 16
- 2010 Excavated and Filled Basement

**Note:**
Total RI Acreage: 20.34 Ac
Total Fill Acreage: 1.97 Ac
Total Landfill Acreage: .62 Ac
Accessible RI Acreage: 17.75 Ac

Total RI Acreage excludes Fill Material and Former Landfill acreages

**Figure 9 - Remedial Investigation Study Area Grids**
**MMRP RI Former York Naval Ordnance Plant**

Source:
ESRI 2012

Projection: NAD 83 Maryland StatePlane Feet
Date: April 2015

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Feet

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# Appendix A

# Site-Specific Health and Safety Plan

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# SITE SPECIFIC ADDENDUM TO THE GENERAL HEALTH AND SAFETY PLAN FOR THE FORMER YORK NAVAL ORDNANCE PLANT

*Prepared for:*

**Harley-Davidson Motor Company Operations, Inc.**
1425 Eden Road
York, Pennsylvania 17402

*Prepared by:*

**EA Engineering, Science, and Technology, Inc., PBC**
225 Schilling Circle
Hunt Valley, Maryland 21031

April 2015

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This document shall be maintained on site with the *Project Work Plan.* G*eneral Health & Safety Plan (GHASP) for Hazardous Waste & Environmental Services conducted by the Site Characterization and Remediation Group of EA Engineering Science & Technology (July 2014).*

Client: Harley-Davidson Motor Company Operations, Inc.

Project Name/Number: Former York Naval Ordnance Plant (fYNOP)

Site Location/Address: 1425 Eden Road, Springettsbury Township, York, Pennsylvania

Site Description/History: The formerly used defense site (FUDS) was operated under a contract for the manufacture and assembly of 40 millimeter (mm) twin and quadruple guns and gun mounts, 37 mm guns and carriages, 3-inch and 90mm anti-aircraft gun mounts, and Navy shields and gun slides. Two proof testing ranges were constructed onsite for the testing of machine guns (including the 40 mm, 3-inch and 37 mm guns). Facilities constructed in the proof testing area (referred to as the Magazine Area in 1959) included proof testing ranges (Buildings 14 and 16) along with ammunition storage buildings/magazines (Buildings 17 through 23).

In the early 1950s, during the Korean War, the FUDS was used for the manufacture of 3-inch and .50-caliber guns and 20-mm aircraft machine guns. Toward the end of 1955, the plant began to manufacture power drive units for the 5-in./54-caliber guns along with the 20-mm aircraft machine guns. It is likely that proof testing was continued during this period. In addition, it is noted that a mission statement presented in historical documents indicated the YNOP also was authorized to "dispose of unserviceable and/or dangerous ammunition and explosives, from whatever sources received". No information was found to indicate that this process was conducted onsite. In addition, historical maps do not document the location of an open burn/open detonation (OB/OD) area which would likely have been used for this type of operation.

Munitions associated with the .50-caliber, 20-mm, 37 mm, 40 mm and 3-inch guns were likely stored onsite and fired in the proof testing ranges. Previous investigations at the FUDS have identified five range areas (some labeled as disposal areas) along with two areas of concern (AOCs) related to former proof testing operations at the FUDS.

Work Description: The first phase consists of: 1) assessing the presence or absence of MEC and identifying potential AOCs within the FUDS; 2) removing metallic debris from the surface to facilitate additional investigation using analogue or digital geophysics, and; 3) assessing the presence or absence of MC in soil. The second phase consists of: 1) assessing the nature and extent of MEC within AOCs identified in the first phase; 2) assessing the nature and extent of MC contamination (to include 2,4-dinitrotoluene, 2,6-dinitrotoluene, nitroglycerine, antimony, barium, copper, lead, nickel, and zinc) in soil within the AOCS identified in the first phase, and; 3) assessing the risk from MEC using the MEC Hazard Assessment and the risk from MC to human health and the environment.

**APPROVALS**:

This Addendum to the July 2014 GHASP has been prepared under the supervision and review of a Certified Industrial Hygienist certified by the American Board of Industrial Hygiene

Program Health and Safety Manager: Pete Garger ______ 22 April 2015
Pete Garger, CIH (ABIH No. 3118) Date

Project Manager: ______ Michael O'Neill ______ 22 April 2015
Mike O'Neill Date

**EMERGENCY CONTACT INFORMATION:**

| Contacts | Name | Phone Number(s) work/cell |
|---|---|---|
| Project Manager | Mike O'Neill | 410-584-7000/410-207-1500 |
| Program Health and Safety Manager | Pete Garger | 410- 584-7000 / 410-790-6338 |
| Task Manager | Steven Yankay | 410-584-7000/717-487-6632 |
| Site Manager | Steven Yankay | 717-487-6632 |
| Unexploded Ordnance Quality Control/Safety Officer | John Monk | 410-584-7000/717-487-6632 |
| Senior Unexploded Ordnance Officer/Site Manager | Yorky Knowles | 727-688-4856 |
| Client Contact | Sharon Fisher<br>Ralph Golia<br>Rodney Meyers (Leidos) | 717-852-6544/717-818-6516<br>215-230-8282/267-249-0417<br>H-D Office: 717-505-7325<br>Cell: 717-468-1439 |
| Poison Control | | 800-222-1222 |
| National Response Center | | 800-424-8802 |
| EA Medical Services | AllOne Health | 800-350-4511 |
| Corporate Health and Safety Director | Peter Garger | 410-584-7000 / 410-790-6338 |
| Other (as applicable) | Harley-Davidson (Central Security) | 717-852-6000<br>Onsite: *999 |

**MEDICAL EMERGENCY:**

Distance to Nearest Hospital (with emergency room): 2.3 miles

Hospital Name: Memorial Hospital

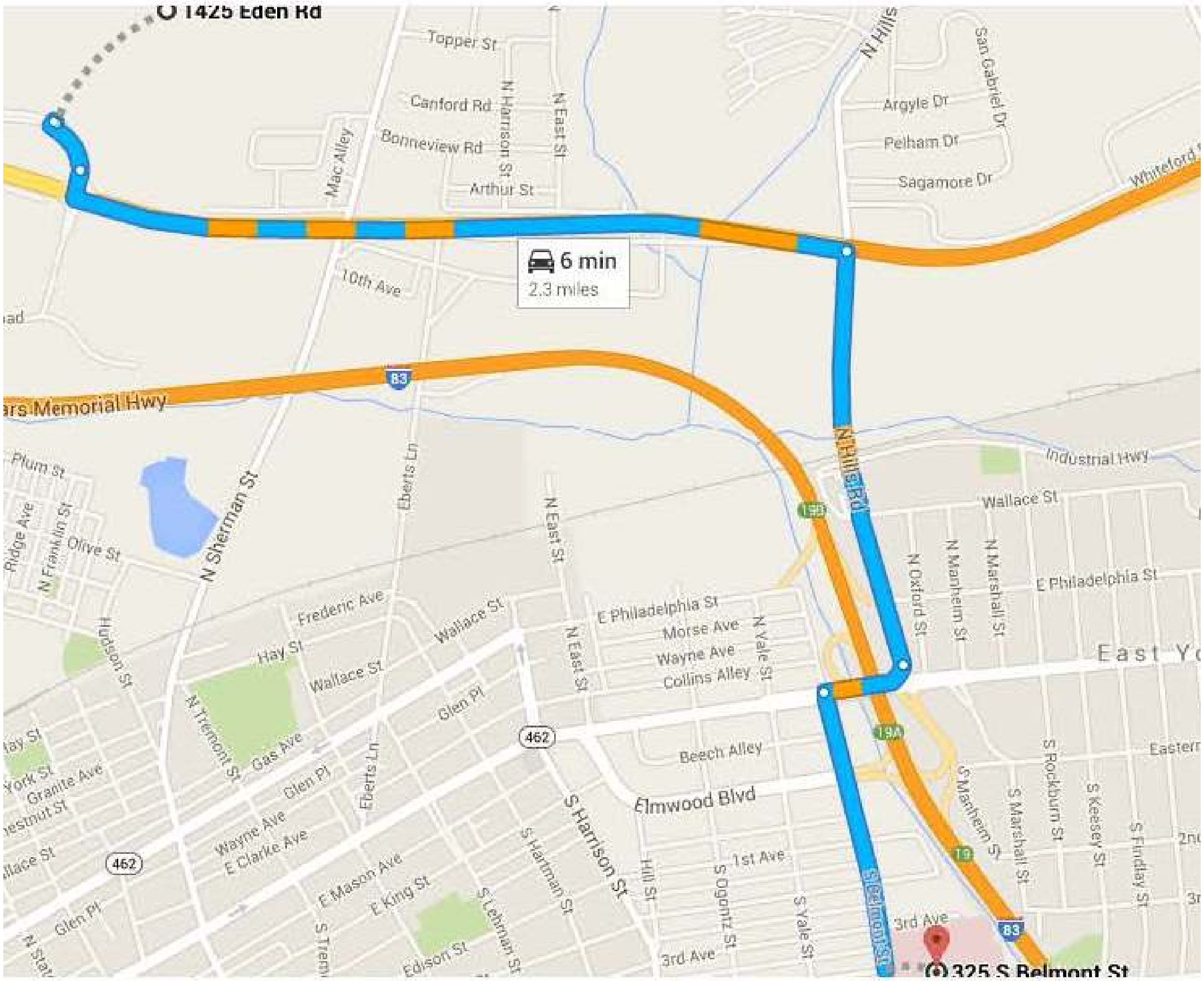
Hospital Phone: (717) 843-8623

Hospital Address: 325 South Belmont Street, York, PA 17403

Route to Hospital (See Map Below)

- Turn LEFT on U.S. 30 East – 1.1 miles
- Turn RIGHT onto North Hills Road – 0.6 miles
- Turn RIGHT onto PA-462 West/East Market Street – 0.1 miles
- Turn LEFT onto South Belmont Street – 0.4 miles

HOSPITAL ROUTE MAP




**HAZARDS OF CONCERN:** Check as many as are applicable. See Section 6 of SCR GHASP for Chemical, Physical, and Biological Hazards.

| | | | |
|---|---|---|---|
| (X) Heat Stress | ( ) Reactive | ( ) Oxygen Deficient | (X) Insect Bite |
| (X) Cold Stress | (X) Noise | ( ) Corrosive | (X) Snake Bite |
| (X) Explosion/Fire | (X) Inorganic | ( ) Toxic | ( ) Excavations |
| (X) Biological | ( ) Organic | ( ) Inert | (X) Vegetation |
| ( ) Radiological | (X) Utilities | ( ) Excavations | ( ) Electrical |
| ( ) Volatile | (X) Lifting | (X) General Physical | |

( ) Confined Space (see Section 9 of GHASP)
( ) Other, specify: ______________________________________________

**CONTROLS OR PROTECTIVE MEASURES:** Check as many as are applicable.
(X) Pre-entry Briefing/Safety Meetings (X) PPE (X) Site control
( ) Operator Training
( ) Permits ______________________________________________
( ) Engineering Controls ______________________________________________
( ) Work Practices ______________________________________________

( ) Other ______

**EXPOSURE PATHWAYS:** (X) Inhalation (X) Ingestion (X) Dermal ( ) Injection

**POTENTIALLY IMPACTED MEDIA:**

( ) Air (X ) Dust/Soil ( ) Surface Water ( ) Sediment ( ) Groundwater ( ) Other

**FIRE/EXPLOSION POTENTIAL:** ( ) High ( ) Medium (X) Low

**SURROUNDING POPULATION:** (X) Residential (X) Industrial ( ) Rural ( ) Urban

**ANTICIPATED LEVEL OF CHEMICAL EXPOSURE: (**List potential contaminants of concern, media, and concentration levels if known. Include previous air sampling if any):

( ) High ( ) Medium (X) Low

Antimony, barium, copper, lead, nickel, zinc, nitroglycerine, and trinitrotoluene degradation products

**OVERALL HAZARD RANKING:** ( ) High ( ) Medium (X) Low

**JUSTIFICATION OF HAZARD RANKING:** (brief narrative of how work activities may encounter hazards and their controls):

Workers may encounter hazards during MEC avoidance; however, appropriate PPE and standard operating procedures will provide protection to workers.

**CHEMICAL HAZARDS (condensed from Table 6-1 of SCR GHASP, add/delete as required):**

| Compound | PEL or TLV/STEL | IDLH | Route of Exposure | Symptoms |
|---|---|---|---|---|
| **Metals** | | | | |
| Antimony (Sb) | 0.5 mg/m$^3$ | 50 mg/m$^3$ | Inhalation and Ingestion via particulates, Skin/Eye Contact | Irritated eyes, skin, nose, throat, mouth; coughing, dizziness, headache, nausea, vomiting, diarrhea, stomach cramps, insomnia, loss of smell. |
| Barium (and soluble compounds as Ba) | 0.5 mg/m$^3$ | 50 mg/m$^3$ | Inhalation and Ingestion via particulates, Skin/Eye Contact | Upper respiratory irritation, muscle spasm, slow pulse, irritated eyes, skin. |
| Copper (Cu) | 1 mg/m$^3$<br>0.1 mg/m$^3$ for fumes as Cu | 100 mg/m$^3$ | Inhalation via particulates, Skin/Eye Contact | Irritated eyes, upper respiratory system; metal fume fever: chills, muscular ache, nausea, fever, dry throat, cough, weakness, lassitude; metallic or sweet taste; discoloration of skin, hair. |
| Lead (and inorganic compounds as Pb) | 0.050 mg/m$^3$<br>0.030 mg/m$^3$ AL | 100 mg/m$^3$<br>(as Pb) | Inhalation and Ingestion via particulates, Skin/Eye Contact | Lassitude, insomnia, pallor, anoxia, weight loss, constipation, abdominal pain, colic, anemia, wrist paralysis. |
| Nickel (Ni) | 1.5 mg/m$^3$ elemental<br>0.1 mg/m$^3$ soluble inorganic compounds<br>0.2 mg/m$^3$ insoluble inorganic compounds | Ca 10 mg/m$^3$ | Inhalation and Ingestion via particulates, Skin/Eye Contact | Sensitive skin, asthma, nasal cavity irritation, pneumonitis, carcinogen. |

| | |
|---|---|
| IDLH | Immediately Dangerous to Life and Health |
| PEL | Permissible Exposure Limit |
| TLV | Threshold Limit Value |
| STEL | Short Term Exposure Limit (15 min) |
| Ca | Carcinogen |
| *Skin* | Skin absorption can contribute to overall body dose |
| mg/m$^3$ | Milligrams per cubic meter |
| AL | Action Level (OSHA) |

**WORKING ALONE:** (X) No ( ) Yes, explain precautions ___________________________________

**UTILITY CLEARANCE:**

One-Call Utility Services (X) Not Required ( ) Required, explain ______________________

Facility-Provided Clearance or Permit ( ) Not Required (X) Required, explain Prior to initiating intrusive work during Phase 2, EA will complete the requirements of Harley-Davidson's "Subsurface Protocol and Utility Clearance" work instruction (YS2.03.300) and form (YS2.03.300.01). Both the work instruction and form are shown in Attachment A.

Geophysical, Pipe Locator, or Other Contractor (X) Not Required ( ) Required, explain ______

**CONTINGENCY PLANS:** Summarize below (Evacuation, assembly point, contingency leader)

If unknown or threatening conditions are experienced, personnel will immediately cease work activities and evacuate the Site. The rally point for evacuation will be the automated security gate located near Gate 5. The evacuation point will be identified to the field crew prior to initiating field activities and during each working days daily safety meeting.

**DEVIATIONS/VARIATIONS FROM GHASP:**

None.

**MEDICAL SURVEILLANCE:**

Do Hazardous Waste Site Workers and Supervisor (s) have Documentation of Required Medical Exams?

(X) Yes ( ) No, Explain ________________________________________

**TRAINING REQUIRED:**

(X) HAZWOPER WORKER (X) HAZWOPER SUPERVISOR (X) FIRST/CPR

( ) CONFINED SPACE (X) OTHER, explain Prior to beginning field work, all personnel will review Harley-Davidson's "Contractor Rules and Practices" (Work Instruction HS2.03.119) and the Training Tracking Form (HS2.03.119) will be updated. Both forms are located in Attachment A. In addition, all personnel will review Harley-Davidson's Alcohol and Drug Policy (Attachment C) and complete the associated release form, as well as, Harley-Davidson's Ordnance Safety Awareness training.

**PROTECTIVE EQUIPMENT:** Protective equipment should be specified by the type of task and site (e.g., soil boring and sampling at landfill). Indicate type and/or material, as necessary. Use additional pages as necessary.

TASK 1: Mobilization and site preparation
INITIAL LEVEL: A - B - C - D - Modified (Circle applicable)

Respiratory: (X) Not needed
( ) SCBA, Airline: ________
( ) APR: ________
( ) Cartridge: ________
( ) Escape Mask: ________
( ) Other: ________

Head and Eye: ( ) Not needed
(X) Safety Glasses: ________
( ) Face Shield: ________
( ) Goggles: ________
(X) Hard Hat: as needed

Hearing Protection: ( ) Not needed
(X) Plugs: if needed
( ) Muffs: ________

Boots: ( ) Not needed
(X) Safety Boots: ________
( ) Overboots: ________

Protective Clothing: (X) Not needed
( ) Encapsulating Suit: ________
( ) Splash Suit: ________
( ) Apron: ________
( ) Tyvek Coverall
( ) Saranex Coverall
( ) Coverall: ________
( ) Other: ________

Gloves: ( ) Not needed
( ) Undergloves: ________
(X ) Gloves: Nitrile
( ) Overgloves: ________
(X ) Other: Leather gloves

TASK 2: MEC Avoidance
INITIAL LEVEL: A - B - C - D - Modified (Circle applicable)

Respiratory: (X) Not needed
( ) SCBA, Airline: ________
( ) APR: ________
( ) Cartridge: ________
( ) Escape Mask: ________
( ) Other: ________

Head and Eye: ( ) Not needed
(X) Safety Glasses: ________
( ) Face Shield: ________
( ) Goggles: ________
(X) Hard Hat: as needed
________

Hearing Protection: (X) Not needed
(X) Plugs: as needed
( ) Muffs: ________

Boots: ( ) Not needed
(X) Safety Boots: ________
( ) Overboots: ________

Protective Clothing: (X) Not needed
( ) Encapsulating Suit: ________
( ) Splash Suit: ________
( ) Apron: ________
( ) Tyvek Coverall
( ) Saranex Coverall
( ) Coverall: ________
( ) Other: ________

Gloves: ( ) Not needed
( ) Undergloves: ________
(X) Gloves: Nitrile
( ) Overgloves: ________
(X ) Other: Leather

**MONITORING EQUIPMENT:** Monitoring equipment should be specified by task and type of site. Indicate type, as necessary. Attach additional sheets, as necessary.

TASKS: Mobilization, site prep/clearing/MEC avoidance

See GHASP for Calibration Procedures or attach if different. Attached table specifies monitoring requirements and action levels

| INSTRUMENT | ACTION GUIDELINES |
|---|---|
| Combustible<br>Gas Indicator\ $O_2$<br>(X) Not needed | 0-10% LEL Continue.<br>10-20% LEL Potential explosion hazard, continuous monitoring.<br>>20% LEL Explosion hazard; interrupt task/evacuate. |
| Oxygen ($O_2$) Percentage: | 20.8% - $O_2$ normal.<br><20.8% - $O_2$ deficient, investigate cause.<br><19.5% $O_2$ Interrupt task/evacuate. |

Type: ______

---

Photoionization Detector — Specify: (COCs)
( ) 11.7 ev ( ) 10.6 ev ( ) 09.8 ev ( ) __ ev
Type: ______
(X) Not needed

---

Flame Ionization Detector — Specify: (COCs)
Type Photovac or OVA (circle applicable or list other): ______
(X) Not needed

---

Detector Tubes Or Chemical Detector — Specify: (COCs, Range, Interferences)
Type ______
(X) Not needed

---

Dust Monitor — Specify: (COCs, Nuisance)
Type ______
(X) Not needed

---

Radiation Survey Meter — Specify: (Radioisotopes; alpha, beta, gamma, x-ray)

| | |
|---|---|
| > Background | Contact RSO/SSHO and PM |
| 3 x Background | Notify CIH and stop work |
| 2.5mR/hr | Interrupt task/evacuate |

(X) Not needed Note: Annual Exposure not to exceed 100 mrem/yr or 50 urem/hr average

---

Other Instruments — Specify:

ENVIRONMENTAL MONITORING REQUIREMENTS

<table>
<tr><th>Instrument</th><th>Location of Monitoring</th><th>Frequency</th><th>Action Level</th><th>Response</th></tr>
<tr><td rowspan="2">None</td><td rowspan="2">None</td><td rowspan="2">None</td><td>None</td><td>None</td></tr>
<tr><td>None</td><td>None</td></tr>
</table>

**DECONTAMINATION PROCEDURES:**

Summarize personnel decontamination/containment and disposal method
( ) Not needed

Wash hands with soap and DI water before touching the sampling equipment, and bottles (including labels). Don new nitrile gloves before, during, and after sampling. Do not wipe bottles dry on clothing. No eating, drinking, or smoking. Paper towels will be disposed of as municipal refuse. PPE will be properly removed and disposed of as municipal refuse.

Summarize equipment decontamination/containment and disposal method
( ) Not needed

Sampling equipment will be dedicated and disposable, and other equipment will be washed with DI water and soap.

Summarize heavy equipment decontamination/containment and disposal method
(X) Not needed

Investigation Derived Waste (IDW) and Waste Disposal
( ) Not needed

PPE and other disposable sampling equipment will be bagged and disposed of as municipal waste.

## HEALTH AND SAFETY PLAN REVIEW RECORD

SITE: ____________________________________

EA Project No.______________________________

I have read the Health and Safety Plan (s) and have been briefed on the nature, level, and degree of exposure likely as a result of participation of field activities. I agree to conform to all the requirements of this Plan.

| Name | Signature | Affiliation | Date |
|---|---|---|---|
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## SITE ENTRY AND EXIT LOG

**Project/Site :** ______________________________

**Project No.:** ______________________________

| Date | Name | Representing | Time In | Time Out |
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## HEALTH AND SAFETY ACTIVITY REPORT

Site: ______________________________________ Location:____________________

Weather Cond.: ______________________ Onsite Hours: From _______ To _______

Changes in PPE Levels* Work Operations Reasons for Change

_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________

Site Safety and Health Plan Violations | Corrective Action Specified | Corrective Action Taken (yes/no)

_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________

Observations and Comments:
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________

Completed by:_____________________________________________ Date: _______________________

Site Health and Safety Supervisor

*Only SSHO may change PPE levels, using only criteria specified in GHASP.

## ENVIRONMENTAL MONITORING RECORD

SITE: ______________________________________________________________________

PROJECT NO.:_____________________________________________________________________

INSTRUMENT: ___________________________________________________________________

CALIBRATION: Gas: ______________ Conc: ___________ Span: ____________

| Time | Monitoring Location | Reading | Corrective Action Taken[a] |
|---|---|---|---|
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Comments: ____________________________________________________________________________

______________________________________________________________________________________

______________________________________________________________________________________

(a) Corrective actions taken must be documented whenever readings at or above action levels are reached.

Recorded By: ________________________________________ Date: _______________

Site Health & Safety Supervisor

# Attachment A

# Harley-Davidson Work Instructions

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| | | |
|---|---|---|
| Process Owner: Paul Antonneau<br>Updated by: Paul Antonneau<br>Effective: 10/16/2014<br><br>Scope: HDMC | **Work Instruction**<br><br>**Contractor Safety**<br><br>***** Uncontrolled *****<br>***** DOCUMENT *****<br>**Please destroy this document after use**<br><br>**Assoc. Policy/Directive/Cert:** HEALTH AND SAFETY POLICY<br>**Assoc. Procedure:** HS2.03<br>**Assoc. Work Instr:** none | Site: H-D Corporate<br>Dept: Safety<br>Group: ALL<br>Number: HS2.03.119<br>Version: 5<br>Status: Active<br>Legacy Number: |

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| **Purpose:** | These work rules and practices have been prepared to ensure that outside contractors perform their work in a safe and compliant manner to reduce the risk of injury or damage to the environment while working at domestic Harley-Davidson Motor Company (HDMC) facilities. These work rules and practices are not intended to be all inclusive or replace Local, State or Federal environmental, health and safety regulations. |
| **Scope:** | a) These work rules and practices apply to all contractors engaged in performing business activities in US Harley-Davidson Motor Company facilities.<br>b) All sales-type business is subject to the visitor's health and safety requirements for each facility, but not the requirements set forth in this presentation.<br>c) Due to their relationship, contingent employees, as supplied by CHAPS or other contract temporary employment agencies, will be subject to a separate health and safety training (orientation) process.<br>d) If any Section in this document references a work instruction that does not exist for the facility where work is being performed, only the requirements outlined in this document are applicable. Contact the appropriate Harley-Davidson resource with questions or for clarification.<br>e) Facilities will have 90 days from the date of approval to implement this work instruction. Contract organizations and employees who are already in the system have until their 1 year expiration from the date of approval to update documents associated with this version of the work instruction. |
| **Definitions:** | a) Contractor: any person, partnership or corporation that is furnishing labor, material, or equipment to HDMC. HDMC has defined the following classifications of contractors:<br>i) Escort Required Contractors: are prohibited from entering the HDMC facilities unless accompanied by an H-D Employee.<br>ii) Grey Badge Contractors: are given badge access to the HDMC facilities on a daily basis.<br>iii) Sign and Go Contractors: are required to sign in with security prior to being given unescorted facility access.<br>iv) Construction Contractor: any person, partnership or corporation which has a contract with HDMC facilities and/or |

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| | their Contractors to furnish labor, material, or equipment as part of the work performed are required to sign in with security prior to being given facility-wide access.<br>b) Subcontractor: a third party called upon by a contractor to perform a task or to provide a service. Subcontractor personnel hereafter are included in any reference to contractor personnel.<br>c) Harley-Davidson Contractor Employee Training Tracking Form: The form used to document all contractors' employees, who have received the orientation, reviewed and understand the HDMC Contractor Health and Safety Rules and Practices.<br>d) Project Champion: H-D Engineer, Supervisor, Manager or H-D Employee who is in charge of the activity or project /task work that is being performed at the H-D Facility. This person is responsible for coordinating all project or task related activity specific to an agreement. This is the H-D employee, who has sponsored or requested that work be performed at the H-D facility.<br>e) Imminent Danger: any condition or work practices that exist which could cause death or serious physical harm. |

## Responsibilities

a) Contractor
   i) Contractor assumes and has full responsibility and liability for the safety of its employees and for the compliance of its subcontractors. This guide contains the minimum safety rules and procedures for performance of work by contractors while at the H-D Facility. The rules and regulations covered are not all inclusive. You must look to your employer for additional safety instructions and standards that apply to you and your job.
   ii) In addition to complying with H-D work practices, contractors, their employees and subcontractors are responsible for compliance with federal environmental, health and safety regulations, including, but not limited to, "*OSHA part 1910, Occupational Safety and Health Standards*," and part 1926, "*Safety and Health Regulations for Construction*," as well as all local and state regulations. In any instance where this document conflicts with federal, state or local laws, the more stringent law takes precedence.
   iii) All contractors will submit to the H-D facility's Project Champion the completed Standardized Contractor Safety Pre-Qualification Form (SCSPF). After review, Harley-Davidson may request the contractor to submit a copy of their written Safety Program.
   iv) All contractors' employees will receive a copy and must be able to furnish the "Harley-Davidson Motor Company Contractor Safety Rules and Practices Booklet" upon request; failure to do so may result in enforcement action.
   v) All contractors will review the following material with all contractor employed personnel and subcontractor employees that will be working at the H-D facility:
      (1) Contractor Orientation Presentation (video and Powerpoint) as appears on H-DSN.com.
      (2) Site-specific Environmental Work Instruction as appears on H-DSN.com.
      (3) Site-specific Waste Disposal Activities Work Instruction as appears on H-DSN.com.
      (4) The Harley-Davidson Contractor (Supplier) Employee Training Tracking Form shall be used to document this training and forwarded to the H-D facility's Project Champion prior to performing work at the H-D facility. Failure to comply with any of the information contained in this document and/or the Contractor Orientation Presentation material will result in the removal of the offending person from the H-D facility.
      (5) The training tracking form is required to be submitted to each site for each contractor employee for which access is being requested. Note: Environmental requirements, Contractor Safety Rules and Practices Booklets and emergency information will vary site-by-site.
      (6) Signature on the training tracking form is required and indicates the contractor has been trained and informed of environmental requirements, including annual refresher on the ISO 14001 Environmental Management System, where applicable.
      (7) Material described in (a)(v)(1), (2) and (3), above, are required to be reviewed initially and annually thereafter based on the review date in order for the contractor to be allowed access to the site. If the date of the review exceeds more than one year, upon the return of the contractor, the review will be required to regain access to the facility. This review will be tracked in the policy tracker software

system.

vi) Advise personnel of all known hazards associated with the task to be performed including any hazard information provided by the H-D facility's Project Champion.

vii) Maintain all equipment and tools in safe operating condition.

viii) Keep work area free from health and safety hazards.

ix) Inform the H-D facility's Project Champion immediately of any inspection requested by a representative of the Local, State or Federal Government. If a regulatory official intends to come on site, Security must be contacted and access granted through Security prior to the official gaining entry to the site. A H-D escort must accompany any governmental inspector.

x) All contractors will re-certify their employees on an annual basis.

b) Harley-Davidson Project Champion

i) Will be primary point of contact between the H-D facility and the Contractor for the project.

ii) Communicate this work instruction to all contractors involved with the project and ensure

iii) Periodically inspect the work area to ensure contractors and their employees comply with this work instruction and all other applicable HDMC work instructions.

iv) Schedule a pre-project review with the Health and Safety Department and Department Manager to review the project and identify potential health and safety issues.

v) Review the Standardized Contractor Safety Pre-Qualification Form (SCSPF) provided by the Contractor with the H-D Health and Safety Department Representative(s) prior to permitting the contractor to perform work on the H-D Facility.

vi) Communicate the work being performed to H-D employees in the affected areas of the project.

vii) Limit the entry of H-D personnel to contractor work areas to avoid hazards created by the contractor and advise the contractor when it is necessary for H-D personnel to be in the work area.

viii) Inform the contractor of the required response of his personnel to emergency signals.

ix) Identify, with the assistance of Maintenance/Facilities personnel, connection points for all services such as steam, water, electricity, fall protection anchor points, etc and defining any limitations as to the use of these services.

## Process

### 1) Enforcement

a) It is the responsibility of the contractor to enforce these rules, and ensure that the work is performed in a safe manner.

b) Every H-D employee has a responsibility to ensure that the H-D facility functions safely. Therefore, any employee may notify a contractor of violation / safety concern if they observe one. In response, the contractor has an obligation to correct the noted violation. If a contractor fails to respond to an H-D employee or is found in violation on more than one occasion, the job supervisor will be notified and must address the contractor's misconduct through coaching, counseling and/or discipline.

c) Certain offenses may be severe enough to result in immediate removal of the contractor by H-D Management, and include but are not limited to:

i) Failure to use lockout/tagout procedures and/or standard operating procedures to ensure proper energy isolation is achieved.

ii) Failure to follow confined space entry procedures

iii) Failure to follow safe electrical work procedures for both energized and de-energized systems

iv) Failure to observe and respect machine guarding.

v) Failure to use fall protection where required.

vi) Failure to safely operate or follow all rules and procedures for Powered Industrial Vehicles.

vii) Engaging in or allowing reckless behavior (such as horseplay).

viii) Bringing alcoholic beverages and/or controlled substances on the H-D Facility.

ix) Suspected of being under the influence of alcohol or a controlled substance.

x) Possession of firearms or ammunition.

xi) Stealing

xii) Intentionally disrupting plant operations.

xiii) Any form of industrial espionage.

xiv) Taking pictures of plant equipment.

d) In addition, legal action may be taken if deemed appropriate.

## 2) General Expectations

a) Identification

i) All contractor personnel and/or subcontractor personnel must be prepared to identify themselves and their employer to H-D Security Personnel.

ii) The Security Department maintains a daily log of contractor activity.

iii) Security and/or the H-D Project Champion has the authority to grant or deny access to the H-D Facility.

iv) Badges and other identification issued by Harley-Davidson must be clearly displayed at all times while on H-D premises.

v) Contractors shall immediately notify H-D Security of any of their employees who have terminated or suspended employment, regardless of reason, with the contractor. It is the contractor's responsibility to recover the identification badge and return it to H-D Security.

b) Facility Access Restrictions

i) Contractor and/or subcontractor activity within the facility shall be restricted to the area of work and a direct path between that area and the point of entrance.

ii) No roaming is permitted.

iii) No sprinkler system shall be shut off or placed out of service unless the appropriate sprinkler impairment process has been completed and appropriate notifications have been made.

iv) The Contractor and/or subcontractor will be responsible to maintain a fire watch for the entire duration that the sprinkler system is out of service.

c) Personal Protective Equipment

i) There are areas within every Harley-Davidson facility that require the use of ANSI-certified safety glasses with side shields and ASTM-certified safety shoes.

ii) Contractors and their employees are required to wear the appropriate protective equipment in areas where Harley-Davidson has deemed protective equipment as mandatory.

## 3) Harley-Davidson Contacts and Emergency Information

a) Use of H-D Facility phones is restricted to business use only.

b) Key telephone numbers for H-D departments have been provided in the site-specific Contractor Safety Rules and Practices Booklet. If additional contact telephone numbers are required, the contractor is expected to work with the H-D Project Champion to obtain those numbers.

c) Emergency contact numbers and information have been provided in the site-specific Contractor Safety Rules and Practices Booklet. **Note:** To facilitate the efficient response, all emergencies must be initially reported through the site Security Department.

d) Emergency Information

i) First aid equipment, fire extinguishers, fire sprinkler system components, eyewash fountains, egress routes, etc. are not to be removed or blocked without permission of the H-D Health and Safety Department.

ii) Accidents and First Aid

(1) In the event of a non-serious injury involving contractor personnel, first aid type care is available through the Health Services department.

(2) For immediate emergency assistance, use any plant phone to contact the site Security Department who will initiate the emergency medical response team.

(3) Harley-Davidson personnel, including the Health Services Department and Project Champion, must be notified immediately of any injury to a contractor or subcontractor employee while working on H-D property.

iii) Fire Emergency

(1) In the event of a fire, individuals discovering a fire shall activate the fire alarm system by activating a pull station.

(2) If this person can do so safely, he/she should contact the Security Department to provide details about the fire emergency. Site security is responsible for contacting and coordinating outside fire emergency services.

iv) Evacuation Emergency

(1) Prior to beginning work at the facility, the contractor shall determine the meeting location and an alternate location for evacuated contractor personnel and appoint head-counting responsibility.

(2) In the event of an evacuation, there will be activation of an audible alarm accompanied by a strobe light, all contractor employees shall report to the predetermined location for headcount.

(3) The headcount person shall report any missing persons to the Security Department.

v) Hazardous Material Release Emergency

(1) In the event of a hazardous material release (which can include spills outdoors, improper disposal of chemicals and uncontrolled leaks indoors), contractor employees shall contact the Security Department from the closest phone to report the problem.

(2) If the area needs to be evacuated, activate a fire alarm pull station.

**4) Access Control**

a) Contractor Facility Access

i) All contractors are to be directed to Security during normal business hours.

ii) For after-hours access, the H-D Project Champion will provide instructions to the appropriate entrance.

iii) Contractors will be required to present a valid government issued photo ID.

iv) Contractors will be required to be escorted by their project champion, unless pre-authorization is granted.

v) Contractors are not permitted to escort another visitor without proper access credentials.

vi) Harley-Davidson Security reserves the right to refuse access to the facility.

vii) Harley-Davidson Security reserves the right to inspect any/all packages, bags, briefcases, purses, tool boxes, equipment, parts, etc. upon entering or exiting the property.

b) Contractor Gate Access

On the occasion when there is a need to drive inside the facility, the following rules need to be observed:

i) Driving inside the fence line is a privilege, not a right.

ii) Contractors should make every effort to limit the number of vehicles parked inside the fence line.

iii) Driving inside the fence line is reserved for contractors who have a true need to work out of their vehicle. All other vehicles may obtain a 30 minute pass to drop equipment at their work area and the vehicle is expected to be parked in an approved parking area.

iv) All vehicles inside the fence line must have a placard/logo on the side with the official company name.

v) Parking should not block or impede traffic, delivery areas, or cause any type of safety issue.

vi) Vehicle passes issued by Security must be fully visible on the dashboard with appropriate information filled out.

vii) All H-D Safety, Security and Environmental policies must be followed.

viii) All vehicles are subject to search by H-D Security at any time.

ix) NO personal vehicles are permitted.

x) Any special needs should be brought to the attention of your Project Champion and Security

Management.

xi) Any violations may result in driving privileges being suspended or terminated from the H-D campus.

**5) Alcohol, Drugs, Firearms, etc.**

a) Alcoholic beverages, non-regulated drugs, explosives, guns, knives, etc. are not permitted on the H-D premises.

**6) Asbestos and Lead Paint**

a) Only Certified Asbestos and Lead Paint Contractors are permitted to handle asbestos containing material or lead paint.

b) Should you encounter suspected ACM (Asbestos Containing Material) or lead paint items immediately stop work and contact the Project Champion.

c) Prior to removal of asbestos materials or lead paint items on site, an approval must be obtained from the H-D Health and Safety Department, as well as the Environmental Department. During any removal project, all applicable Federal, State, and local regulations must be followed.

d) Waste is to be disposed in accordance with environmental regulations.

e) Waste disposal must be coordinated with the Environmental Department. Do not take these wastes off-site unless written authorization is provided.

f) Installation of new materials that contain asbestos is prohibited.

**7) Bulk Liquids**

a) Bulk deliveries of fuels, oils, coolants, or other materials present an increased risk of spills. Immediately notify site security of any spill or emergency.

b) Equipment must be in good working order and Contractor personnel must remain with their load at all times.

c) During bulk liquid offloading and loading, wheels must be chocked and Contractor must have an emergency communication device. Please note spill kit locations prior to offloading / loading.

**8) Cameras**

a) Cameras are prohibited unless specific permission has been requested and granted through the Harley-Davidson Communications Manager.

b) Under no circumstances will permission be granted to photograph any Harley-Davidson manufacturing or design process, vehicle or component under construction unless it is strictly related to the performance of the contractor's project.

c) H-D Security may request additional procedures, such as tamper-proof seals, and/or review of cell phones with photograph and/or video capability.

**9) Chemicals**

a) All chemicals and compressed gases used by contractors to which H-D employees may be exposed must be approved through the site chemical approval process before being brought onto property. The contractor must supply the Project Champion with a Material Safety Data Sheet (MSDS) or Safety Data Sheet (SDS) for each chemical / compressed gas required to complete the project. The Project Champion is responsible for completing the Material Acquisition Request Submittal (MARS) process for the chemical/compressed gas. For additional details, see the site-specific Hazard Communication work instruction. ***NOTE:*** Safety Data Sheets are a new requirement by OSHA under the Hazard Communication standard transition to the Globally Harmonized System (GHS).

b) In addition, if a chemical will be used in a manner other than the original process description, including but not limited to method of application (spray vs. brush) or mixture concentration (dilution %), the Project Champion is responsible for the MARS approval to be completed and approved before the modified process can be used. For additional details, see the site-specific Hazard Communication work instruction.

c) The contractor is responsible for providing their employees and subcontractors with Right-To-Know training on the chemicals that will be used on the project.

   i) The Project Champion will review with the contractor the list of Harley-Davidson chemicals used in the area where the contractor will be working. During this discussion all known chemical hazards associated with the area in which they will work will be discussed. This will include area ventilation requirements or restriction, PPE usage, H-D employees working in the area, etc. In addition, any special known hazards related to their work as it involves the plant will also be discussed.

   ii) MSDSs or SDSs for each Harley-Davidson chemical used in the area are available for reference.

   iii) If a contractor will be using an H-D chemical that is already onsite, the H-D Project Champion will discuss the chemical and it's usage with the Contractor. The contractor will be provided with a copy of the MSDS to review and will be responsible for training its' employees on the associated hazards and controls to be used with that chemical.

   iv) Contractors are required to notify the Project Champion and Area Manager, for the area where the chemical is used AND associated areas where it would be reasonable and predictable for H-D employees to be exposed to the chemical, of the hazards associated with the chemical and control methods being used. It is the responsibility of the Project Champion and associated Area Manager(s) to ensure that all employees in the affected areas are trained on the hazards and controls associated with the chemicals being used by the contractor.

   v) The contractor may request copies of MSDS or SDS by contacting the H-D Project Champion or Health and Safety Department. If the H-D Project Champion or Health and Safety are not available, contact Security with the MSDS or SDS request.

   vi) If, in the course of the work, the contractor finds hazardous or unlabeled materials which must be relocated in order to perform the work safely, contact the H-D Project Champion.

   vii) If, at any time a contractor's employee is splashed with a chemical, immediately wash it off. Know the location of the nearest emergency showers and eyewash stations. Splashes in the eye are particularly critical. Wash eyes immediately for a period of no less than 15 minutes.

   viii) Contractor personnel should be aware of the meaning and contents of the H-D labeling system. H-D uses the Hazardous Material Labeling System (HMIS) and National Fire Protection Association (NFPA) labeling systems for secondary chemical container labeling. Contact the Environmental Department with questions regarding labeling for waste chemicals and chemical by-products.

   ix) Discharging or dumping of chemicals into the sanitary or storm sewer system is not allowed. To dispose of chemicals, contractors must contact the H-D Environmental Department.

   x) The contractor must ensure that each chemical container being brought and/or stored on-site has a chemical label that identifies the contents and associated hazards.

   xi) The quantity of chemicals the contractor stores on-site must be limited to the amount necessary, and must be contained in appropriate storage facilities / cabinets.

      (1) In the event of a chemical spill, the contractor must immediately notify Security. The contractor should evacuate the spill area if a safety hazard exists.

      (2) If worker exposure hazards are not present and if containment activities can be performed in a safe manner, then the contractor shall attempt to contain the spill to prevent it from entering a plant sewer system.

      (3) The contractor is responsible for the implementation of spill containment and clean up measures.

      (4) H-D will assist in clean-up activities if it is an imminent danger to employees or a release to the environment.

      (5) The contractor will be liable for all costs incurred by H-D for clean-up of spills caused by the contractor and the treatment / disposal costs.

      (6) Special care must be taken for the handling, use, and storage of flammable and combustible liquids.

         (a) No paint, adhesives or solvents will be used in such a way that it will be detrimental to the health and/or life of any H-D or contractor employees.

         (b) Adequate ventilation must be provided when H-D employees may be exposed to vapors of these materials. If the area of use can be isolated, those contractor employees working in the area should use the appropriate personal protective equipment.

(c) Extreme caution must be used where flammable materials are used to ensure that there are no sources of ignition such as smoking, spark producing equipment, etc. that could cause a fire or explosion.

(d) Flammable liquids must be dispensed in safety cans with flash screens. These containers must be clearly identified as to their contents. Flammable liquids shall be kept in closed/covered containers when not actually in use.

(e) Flammable paints and solvents must be stored in an approved cabinet when storage is required inside the building. The amount stored shall not exceed 25 gallons of class IA liquids in containers or 125 gallons of class IB, IC, II or III liquids in containers. Containers must be stored properly when not in use.

(f) Acids, alkalines and flammables must not be stored together.

d) Asbestos-containing materials, PCBs, explosives, ozone depleting substances (unless in approved refrigerants) and chlorinated solvents are prohibited.

e) All pesticide and herbicide applications must be done in conformance with FIFRA and applicable state and local laws.

i) If your work requires a pesticide or herbicide, you must submit the training and applicable licenses for your personnel to your H-D Project Champion.

ii) All pesticides and herbicides must be used in accordance with packaging instructions and labels.

iii) Conspicuous signs warning others of the application of pesticides or herbicides must be posted.

f) Work involving refrigerants must follow the H-D refrigerant management program.

i) All refrigerant work must include a report that documents the work performed, the amount of refrigerant used, the amount of refrigerant lost, and the leak rate calculation for the device or equipment.

ii) All licenses for employees doing refrigerant work must be submitted to the H-D Project Champion and the Environmental Department prior to beginning work on site.

**10) Compressed Gas Cylinders**

a) Valve protection caps shall be in place when compressed gas cylinders are transported, moved, or stored (use carts when transporting).
b) Cylinder valves shall be closed when work is finished and when cylinders are empty or are moved.
c) Tank pressure relief and valves should not be altered in any manner.
d) Compressed gas cylinders shall be secured (roped or chained to a cart of strong structural member) in an upright position at all times except when cylinders are actually being hoisted or carried into the user's location.
e) Cylinder gases must be strapped to and transported in a cylinder cart. Incompatible gases may not be transported or stored together.
f) Cylinders shall be kept at a safe distance or shielded from welding or cutting operations, heat or heat sources. Cylinders shall not be placed where they can contact an electrical circuit.
g) Oxygen and gas regulators shall be in proper working order while in use. Use only those regulators specifically recommended for the gas. Torch assemblies must be equipped with reverse flow check valves.
h) Hoses must be stored or otherwise protected from damage, including pedestrian and vehicle traffic.
i) If a leak develops in a cylinder, stop the leak if possible and immediately notify the Security Department at the emergency phone number.
j) Matches, candles, or other open flames must never be used to trace for leaks.
k) Cylinders should be permanently marked or stenciled to identify them.

**11) Confined Space Entry**

a) Personnel that perform confined space entry work must have appropriate training. Documentation of training must be provided upon request.
b) Harley-Davidson has posted warning signs at the entrances of permit-required confined spaces identified at their facilities. However, it must be recognized that situations and tasks may create a hazardous atmosphere that will require a permit in non-posted confined spaces.
c) The H-D Project Champion must authorize confined space entry work.

d) Any entries involving both contractor and Harley-Davidson personnel will be jointly monitored and managed.
e) The facility Confined Space Entry Work instruction applies to all contractor personnel.

**12) Construction Areas**

a) Construction areas must be clearly identified through the use of barricades, ropes, stanchions fences, cones, and appropriate signs. This includes any area used by contractor performing work on premises regardless of the length of time required to do work or type of work to be done.
b) The contractor shall provide any safety markers, barricades, ropes, stanchions, fences, cones, or appropriate signs necessary that are required to keep people out of the construction area.
c) Excavations must be guarded by barriers and by lights (at night). Openings in the ground or in floors (open manholes, pits, sewers, etc.) must be guarded. Excavations must be properly shored to prevent cave-ins.
d) Hard hats must be worn in areas and on projects where there is a danger to the head from falling objects.

**13) Cranes and Hoists**

a) Contractors must meet the requirements as defined by 29 CFR 1926.550 to operate cranes and derricks at Harley-Davidson facilities.
b) All hoist and crane operators must be qualified to operate the equipment.
c) Mobile cranes, including portable crane derricks, power shovels, or similar equipment, should not be operated within 50 feet of overhead electrical power lines unless specific approval has been obtained by the contractor from H-D Project Champion.
d) Accessible areas within the rear-swing radius of the revolving superstructure shall be barricaded to keep unauthorized persons away.
e) Hoisting of equipment or material over the roof of H-D buildings is not allowed unless there is no alternative method. In such a case, the H-D Project Champion must be notified and will consult with the H-D Health and Safety Department to take appropriate action regarding persons occupying the building.
f) When there is no alternative to operating over existing H-D buildings, the following procedures must be followed:
   i) The load must be kept to a minimum height over the building's roof.
   ii) Additional personnel or tag lines must be used to guide the material over the roof area.
   iii) An observer trained in the use of hand signals must be used when the load is out of sight of the operator.
   iv) The facility space under the lifting area needs to be appropriately secured with occupants relocated outside of the space.
g) Contractor personnel are not permitted to use hoists and lifting apparatus belonging to H-D unless approval is obtained from the H-D Project Champion and appropriate training documentation provided.

**14) Electrical Safety / NFPA 70E Requirements**

a) NFPA 70E Requirements
   i) All contractors and suppliers working on energized electrical circuits operating at 50 volts or more at the H-D Facility will be required to follow the requirements outlined in the NFPA 70E standard.
   ii) An Arc Flash study has been conducted at the facility and Arc Flash Hazard labels have been placed on the equipment to identify the type and severity of the hazard.
   iii) Contractors and suppliers working with energized electrical circuits operating at 50 volts or more will be required to have the appropriate training as outlined in the NFPA 70E standard to classify them as a "Qualified Person". The Contractor must provide training documentation to the H-D Project Champion prior to performing this type of work at the H-D Facility.
   iv) Contractors and Suppliers are required to provide their own Personal Protective Equipment (PPE) and any other equipment required to comply with the NFPA 70E standard. Failure to follow this standard will result in removal from the site. **Note:** H-D requires 8 cal/cm2 protective clothing to be worn for Hazard Classifications 2 or less. For additional details, see the site Safe Electrical Work work instruction.
   v) When working on electrical systems, the following procedures must be followed:
      (1) A safe electrical work condition must be created including de-energizing all electrical circuits 50 volts or greater inside the electrical box. Performing trouble-shooting activities are exempt from this requirement.
      (2) Whenever possible, the circuit shall be LOCKED OUT AND TAGGED.
      (3) If lockout is not possible, tagout MUST be used.
   vi) If it is not practical or possible to de-energize and lock out the circuit, the area must be barricaded

and identified to keep unauthorized persons clear of any energized electrical hazard. All energized circuits shall be properly insulated or covered to prevent accidental contact.
   vii) A Live Electrical Work Permit must be completed for any energized electrical work. Trouble-shooting activities are exempt from this requirement.
   viii) Precautions shall be taken to make any necessary wiring inaccessible to unauthorized persons.
   ix) When pulling wires, the breaker box must be de-energized.
b) The non-current carrying metal parts of fixed, portable, or plug-connected equipment should be grounded. Portable tools and equipment protected by an approved system of double insulation need not be grounded.
c) No electrical appliances such as crock pots, radios, TV's, etc. will be allowed.
d) Extension Cords
   i) Extension cords shall be the three-wire type.
   ii) Romex, and similar types of makeshift power extension cords shall not be used. In addition, worn or frayed cords shall not be used. Cords shall be properly rated for the job.
   iii) Extension cords should not be run across aisle ways and corridors where they may create a tripping hazard. They should be hung overhead to reduce the possibility of traffic cutting or fraying the cord.
   iv) Extension cords and temporary lighting cords shall not be fastened with staples, hung from nails or suspended from wires.
   v) Exposed bulbs on temporary lights shall be guarded to prevent accidental contact except where bulbs are deeply recessed in the reflector. Temporary lights shall not be suspended by their electrical cords unless designated for this use.
   vi) Receptacles for attachment plugs shall be of the approved, concealed contact type. Where different voltages, frequencies, or types are supplied receptacles shall be of such design that attachment plugs are not inter-changeable.
e) Performance of electrical work shall be done in accordance with existing Occupational Safety and Health Standards, as well as the current National Electric Code and NFPA Electrical Standard for industrial Machinery, if applicable.
f) If there are any questions regarding the H-D Safe Electrical Work requirements, contact the H-D Project Champion or reference the site Safe Electrical Work work instruction.

**15) Floor Openings**

a) Floor openings 4 feet or greater to the next level shall be guarded by a standard guardrail, including a top rail, mid rail, and 4-inch toe board.
b) If the standard guardrail is not feasible or needs to be by-passed (removal, climb over, elevated above, etc.), an alternate means of fall protection, such as a personal fall arrest system, will be required.

**16) Hazardous Materials Transportation**

a) All applicable federal, state and local requirements for bills of lading, hazardous materials and wastes, manifests and materials of trade must be followed.
b) Excess chemicals brought on site by Contractor must be removed in a compliant manner, including all applicable DOT requirements.

**17) High Hazard Areas**

a) Although this list may not be inclusive, there are certain areas and operations where, because of the nature of the hazards, extra precautions must be taken. Before entering any of the following areas, the contractor is required to check with the H-D Project Champion to review any additional Health and Safety rules which apply.
   i) Confined spaces
   ii) High noise level area
   iii) Chemical or waste storage and dispensing areas
   iv) Roofs
   v) Heat treat
   vi) Overhead wire cages
   vii) Tunnels

**18) Hot Work (Cutting, Welding and Open Flames)**

a) Hot Work (HW) permits are required to perform work tasks considered "hot work," including but not limited to cutting, welding, brazing, grinding and/or other work involving open flames or the production of ignition sources.

b) Hot Work permits can be arranged through your H-D Project Champion. H-D site Security and Health & Safety must be notified of any hot work prior to initiating the work.

c) Contractor foreman/supervisor will complete a HW permit and is responsible for ensuring all appropriate protections are in place to prevent the ignition of a fire, including posting a trained Fire Watch for the requisite period of time, clearing the area, using tarpaulins and providing at least 2 fire extinguishers (in addition to facility fire extinguishers).
   i) Where practical, combustible material shall be relocated at least 35 feet from the worksite.
   ii) Welding or cutting is not permitted in or near areas containing flammable liquids, vapors or dust.
   iii) Welding or cutting is not permitted on containers which have contained flammable liquids until the containers have been thoroughly rinsed or otherwise purged of the presence of all flammable vapors. Air tests must be performed to verify the elimination of flammable vapors.
   iv) Non-combustible or flame proof shield or screens must be provided to protect employees from sparks and direct rays of arc.
   v) When tarpaulins are required for the deflection of hot slag, dust, paint droppings, etc., they must be flame resistant and in good condition.

d) Contractor foreman/supervisor will provide site Security with Part 1 of completed HW permit prior to initiating the work.

e) Contractor foreman/supervisor will post Part 2 of HW permit at the worksite.

f) Fire Watch will be maintained for a period of 1 hour after the hot work is completed.

g) The contractor foreman/supervisor will perform the final inspection 1 hour after completion of the hot work and return Part 2 of the HW permit to Security prior to leaving the site.

h) Security will monitor the hot work area for a period of 3 hours after the final inspection.

i) The top and bottom copies will be matched and stored together after all of the inspections have been completed.

j) No cutting or welding is permitted in sprinkler equipped buildings while sprinklers are out of service.

k) Personnel that perform cutting, welding, brazing must have appropriate training.

l) The H-D facility "Hot Work" work instruction applies to all contractor personnel.

## 19) Housekeeping

a) Material should be carefully stacked and located so that it does not block aisles, doors, self-contained breathing apparatus, fire extinguisher, fire blankets, emergency eyewash fountains, emergency safety showers, fixed ladders, or stairways.

b) Form and scrap lumber and all other debris shall be removed after the project is complete. The waste shall be placed in designated containers either staged on site by H-D or ones acquired specifically for the project.

c) Daily cleaning procedures shall include broom sweeping of all affected areas.

d) At the completion of a project, the area will be thoroughly cleaned by such means as vacuuming, hosing down, etc.

e) Combustible scrap, waste materials, and debris shall be removed daily.

f) Containers shall be provided for collection and separation by type of waste either staged on site by H-D or ones acquired specifically for the project. Covers shall be provided on containers used for flammable, combustible, or harmful substances.

g) Overhead storage of debris, tools, equipment, etc. is prohibited. No loose material shall be left in the area above suspended ceiling panels.

h) Contractors shall not store any equipment, materials, work carts, tools, trash, or debris in front of exit stairways, doors, electrical panels, or emergency equipment.

i) It is the contractor's responsibility to dispose of spent or excess materials used at the site. Chemicals and other materials must be disposed of in compliance with applicable federal, state and local regulations. Contact the site Environmental representative for any additional questions.

j) Smoking is permitted in designated smoking areas ONLY. Do not throw cigarettes, cigars, or matches in trash containers or on the ground. Designated smoking material disposal containers are staged in the designated smoking areas.

## 20) Industrial Hygiene

a) Contractors shall not perform operations that create excessive noise in areas where H-D employees will be affected unless the H-D Project Champion has approval from the H-D Health & Safety Department. The plant wide Hearing Conservation Program applies to all contractor personnel.

b) Contractors shall not perform operations that create excessive gasoline or diesel engine exhaust in areas where

H-D employees will be affected unless the H-D Project Champion has approval from the H-D Environmental and Health & Safety Departments.

c) Contractors shall not perform operations that create excessive dust, odors, fumes, and vapors in areas where H-D employees will be affected unless the H-D Project Champion has approval from the H-D Environmental and Health & Safety Departments.

**21) Ladders**

a) When working on ladders, do not work from top rung or step.
b) Portable ladders must be inspected prior to use each day.
c) The use of ladders with broken or missing rungs or steps, broken or split handrails or with other faulty/defective construction is prohibited.
d) Portable metal ladders shall not be used for electrical work or where they may contact electrical conductors.
e) Portable ladders must be equipped with safety feet.
f) Ladders must not be constructed on the job and "homemade" ladders must not be used.
g) Ladders must be of appropriate length to safely perform the job. Makeshift extensions are not permitted.
h) Additional requirements for ladder use are described in the H-D facility work instruction for walking and working surfaces which applies to all contractor personnel.

**22) Lockout / Tagout**

a) Contractor personnel that perform lockout/tagout to control hazardous energy must have appropriate training. Documentation of training must be provided upon request.
b) Contractors shall supply locks and tags for their employees. The tag must identify both contractor company name and the contractor employee name.
c) Group lockout will need to be performed when working with Harley-Davidson personnel.
d) Locks must only be removed by the person who applied the lock. Contractors will be responsible for any lost production or financial loss incurred by Harley-Davidson as a result of an unattended lock.
e) The H-D facility Lock-out/Tag-out work instruction applies to all contractor personnel.

**23) Overhead Work**

a) Personnel that perform overhead work must have appropriate training. Documentation of training must be provided upon request.
b) The H-D facility Fall Protection (Walking and Working Surfaces) work instruction applies to all contractor personnel.
c) Work areas must be appropriately marked and barricaded where overhead work will be performed. No overhead work may be performed when there is the possibility of an unprotected contractor or Harley-Davidson employee at risk of being struck by a falling object.

**24) Parking and Plant Entry**

a) Vehicular traffic within the H-D facility and on the property poses numerous risks to our employees. While there are posted stop signs as well as painted lines, they alone cannot ensure safety. Emphasis must be placed on eliminating on site vehicular traffic to further ensure the safety of the pedestrians within the facility.
b) To this end, contractors are requested to eliminate all unnecessary on site vehicular traffic. The only exceptions to this rule would be if you are transporting something into the facility that cannot be carried into the facility and if the vehicle that is needed on site is to perform a specific function such as a dump truck, bucket truck etc. Other than for extraordinary circumstances as described above, all entry to this facility is to be on foot.
c) Unless otherwise posted, the speed limit on Harley-Davidson property is 15 m.p.h.
d) Contractor employees shall use the parking facilities designated by Harley-Davidson, only.
e) No material may be stored outside unless approved by the Project Champion and the Environmental Department.
f) Entry to Company property, including parking areas, is deemed consent to inspection of person, vehicle and personal effects at any time, including while entering or leaving the property.
g) Upon entry to the H-D facility, contractors and employees may be asked to provide additional information, documentation or identification dependent to their level of security access.

**25) Permit Systems**

a) Special permit systems are in place to ensure the appropriate communication, work expectations and approvals are obtained prior to and while performing the work. The following require special permits prior to initiating work on-site:
    i) Hot Work

ii) Confined Space Entry
iii) Energized electrical work beyond trouble-shooting
iv) Fire Protection System Impairments

b) Contractors must follow the expectations and training requirements of the permit system. If there are questions, contact the Project Champion or the site Health and Safety Department.

**26) Personal Protective Equipment**

a) In certain H-D operations and areas, personal protection equipment such as safety glasses, protective footwear, goggles, hearing protection, respirators, hard hats and other protective equipment are required. The type of protective equipment to be worn will be determined by exposure to the potential hazard and/or area. When in doubt of safety measures to be followed, consult the Project Champion.
b) Contractors shall ensure that their employees are equipped with approved personal protective equipment and shall enforce its use. H-D will not supply such equipment to contractors.
c) The H-D facility Eye and Face Protection work instruction applies to all contractor personnel.
d) The H-D facility Foot Protection work instruction applies to all contractor personnel.
e) The H-D facility Hand Protection work instruction applies to all contractor personnel.
f) The H-D facility Hearing Conservation Program applies to all contractor personnel. The use of personal headset radios is prohibited.

**27) Powered Industrial Vehicles**

a) Contractor personnel that operate powered industrial vehicles must have appropriate training. Documentation of training must be provided upon request.
b) Gasoline powered or other internal combustion engines must not be operated inside Harley-Davidson facilities without the prior approval from the Harley-Davidson Project Champion. Precautions must be taken to appropriately ventilate the facility of any exhaust and odor.
c) The Project Champion must authorize the use of powered vehicles in the plant.
d) The H-D facility Powered Industrial Vehicle work instruction applies to all contractor personnel.

**28) Roof Work**

a) Fall protection shall be provided while performing work on unprotected roof edges with a ground-to-eves height greater than 15 feet. Individuals are not allowed to access the roof alone. At least 2 people are required at all times.
b) Warning lines are to be used when roof work is more than 10 feet from the roof's edge. Workers, equipment, or material will not be allowed beyond the perimeters of the warning line.
c) Guardrails, positioning systems, or fall arrest systems shall be used when roof work is within 10 feet of the roof edge.
d) Designated hoisting areas are required and are the only places allowed for hoisting materials to and from the roof. These areas shall be protected with guardrails to prevent an accidental fall.
e) Extension ladders used to gain access to the roof must be secured to the edge of the building and must extend at least three (3) feet above the roofline.
f) Additional requirements for roof work are described in the H-D facility Fall Protection Work instruction which applies to all contractor personnel.

**29) Scaffolds**

a) The erection, alteration, and removal of scaffolds, must be under the direction of a competent person.
b) Upright scaffolds should be plumb, secure, and have firm footing.
c) Narrow-base portable maintenance staging must be equipped with outriggers. Stationary metal upright scaffolds should be secured to the building or other adequate structures.
d) Platforms and planks shall be secured or cleated to the scaffold to prevent platform slippage.
e) Platforms should be at least two planks wide and extend over the supporting surfaces or edges not less than 6 inches or more than 12 inches. A plank is defined to be at least 12 inches wide.
f) A safe means shall be available for access to the work platform.
g) Scaffolds more than 6 feet above the ground must have guardrails and toe boards on all open sides and ends.

**30) Special Conditions**

a) Some unique environments exist, such as those commonly controlled by automatic monitoring, alarm or fire control systems. The H-D Project Champion will make the contractor aware of any of the systems before performing

any work.
b) Connections to fire sprinkler systems, chilled water, steam and condensing systems, compressed air systems, etc. must be scheduled through the H-D Project Champion and the Maintenance/Facilities Department prior to the work being started.

**31) Tobacco Use**

a) Starting January 1, 2015, the use of Tobacco Products is prohibited on Harley-Davidson, Inc. company property. The policy does not prohibit visitors from using Tobacco Products in designated areas at the Harley-Davidson Museum, but does prohibit Harley-Davidson employees, contractors, contingents, consultants and others who are working on behalf of the Company from using Tobacco Products while working at the Museum.
b) ***Tobacco Products*** include pipes, cigarettes, e-cigarettes, cigars, snuff, chewing tobacco, and all other tobacco-related products. Tobacco Products does not include FDA-approved tobacco cessation methods such as lozenges, chewing gum, skin patches and other approved methods according to the FDA.
c) ***Company Property*** includes: 1) all buildings, grounds, parking lots, and ramps owned, leased, rented and/or maintained by Harley-Davidson in the U.S.; 2) grounds, streets or sidewalks within 50 feet of any Company building entrances/windows/ventilation systems; and 3) all vehicles owned or leased by Harley-Davidson in the U.S. ***Note:*** *Use of tobacco in personal vehicles that are parked and/or operating on Harley-Davidson property will be considered to be in violation of the tobacco use policy.*

**32) Tools**

a) Hand and power tools should be kept in safe operating condition.
b) Safety guards must be kept in position on power tools and any machines with moving parts. All tools must be guarded in accordance with OSHA 1910 and 1926.
c) All power tools and equipment must be grounded or UL approved as double insulated (see section on Electrical Safety).
d) Tools operated by explosives are not permitted in Harley-Davidson facilities without prior approval.
e) Non-sparking tools may be necessary in certain areas where flammable solvents or materials are handled or where sparks could create an explosion.
f) Generally, the use of H-D tools and equipment by contractors is prohibited. However, if unique circumstances arise, approval may be obtained from the H-D Project Champion.

**33) Utility Clearance**

a) Before a contractor performs any excavation work, the existence and location of underground utilities must be determined. Your H-D Project Champion can assist in obtaining this information.
b) When contractors are working on utilities, the work must be coordinated through the H-D Facilities Department.
c) The H-D facility Utility Clearance work instruction applies to all contractors.

**34) Training**

a) It is the responsibility of the contractor to ensure that their employees are trained in the application of this work instruction in order to complete their work at the H-D facility.
b) Documentation of all training requirements (see contractor responsibilities below) must be submitted for each employee prior to the employee being allowed to work at the H-D facility.
c) All training records identified in any Section above must be available and provided by the contractor to verify the completion of regulatory or other required training for each employee in the H-D facility upon request.

**35) Waste Minimization**

a) Bring only enough materials to complete the job.
b) Contractor is responsible for all housekeeping and proper disposal of materials and wastes while working at H-D. Please consult the Waste Disposal Activities Work Instruction and/or the Environmental Department regarding proper disposal of typical waste streams.
c) All hazardous wastes you generate must be properly packaged, labeled, manifested, transported and disposed. Wastes which remain the responsibility of H-D must be handled by H-D authorized personnel or contractors.
d) Numerous containers for recyclables are available throughout H-D facilities. While on site, contractors are

expected to observe the signs, labels and posted instructions for recyclables.

**36) Workplace Violence**

a) Harley-Davidson has an established Workplace Violence Policy with the purpose of establishing and communicating our zero-tolerance towards threats, threatening behavior, or acts of violence conducted by anyone against employees, visitors, guests, or other individuals on Harley-Davidson property including its facilities and parking areas.

b) If you witness or receive any threats, or if you have been told about a threat a coworker has witnessed or received, notify your Work Group Advisor, Supervisor, Human Resources Representative or Site Security Supervisor immediately. The Site Security Supervisor will contact Corporate Security.

c) If you witness any behavior that may be regarded as violent, contact Site Security immediately or call 911 for outside assistance.

d) Prohibited conduct on Harley-Davidson property includes, but is not limited to, the following examples:

   i) Physical possession of firearms (including air-pistols and air-rifles), switchblades, spring-loaded knives or other knives not required for one's job, explosive materials, toxic agents, and any other object carried for the purpose of injuring or intimidating others. Please be aware that public law enforcement officers, licensed armored courier services or other officials in the performance of their official duties may be in possession of some of these items while on Harley-Davidson property.

   ii) Abusive or threatening language or behavior, including verbal threats, harassing phone calls and stalking.

   iii) Unwanted physical contact such as hitting, fighting, pushing, shoving, or throwing of objects.

   iv) Damaging property as a result of violent acts.

   v) Possession of a weapon in violation of federal, state or local law.

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## Attachment Table

| **Attachment Title**<br>**[ AttachmentName ParentDocumentNumber AttachmentVersionLevel ]** |
|---|
| Contractor Training Form, HS2.03.119 v3 |
| HDMC_Std Contractor Safety PreQual, HS2.03.119 v2 |
| Contractor Management Guidelines, HS2.03.119 v3 |

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## Quality Records

| **Record Description** | **Record Series ID Number**<br><br>**[ 3 alpha & 4 numeric values]** |
|---|---|
| Standardized Contractor Pre-Qualification Form | FAC0201 |
| Contractor Employee Training Tracking Form | FAC0201 |
| | |

**Attachments:**

| | | |
|---|---|---|
| HDMC_Std Contrator Safety PreQual Form HS2.03.119 v2.pdf | 450.3K | 11/1/2013 09:37 AM |
| Contractor Training Form HS2.03.119 v3.doc | 50.0K | 4/25/2014 01:20 PM |
| Contractor Management Guidelines HS2.03.119 v3.pdf | 160.9K | 4/25/2014 01:20 PM |

**If there are associated records with this document you can retrieve retention information by following this path: RIDE/Resource Centers/Legal/Records and Information Management (RIM)/Record Retention Schedules Home/[choose the appropriate schedule].**

**Also, utilize your help chain found on the Home page in QWeb to get the information you need.**

Paul Antonneau
Amy Stout
Stacy Bichler
Beth Mrozinsky
Laura Hintz
Dale Sukow
Jeff (KC) Thomas
Darrell Jeffries

Signed by

# Harley-Davidson Contractor (Supplier) Employee Training Tracking Form

*Place an “X” in each column under “Required Training” after each employee completes the training identified below.*

| Contractor Company Name: | | | Required training* | | | |
|---|---|---|---|---|---|---|
| **Employee Name** | **Signature** | **Date of Training (MM/DD/YR)** | **A** | **B** | **C** | **D** |
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***Required training expectations** ***(Mark with an “X” when completed; Use NA where not applicable):***
A – Contractor Safety Video
B – Contractor Safety Presentation
C – Contractor Safety Rules and Practices Work Instruction
D – Site-Specific Waste Disposal & Environmental Review Work Instructions

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| Updated by: Rodney Myers<br>Effective: 09/11/2008<br>Scope: HDMC | **Work Instruction**<br>**Subsurface Protocol and Utility Clearance**<br>***** Uncontrolled *****<br>***** DOCUMENT *****<br>**Please destroy this document after use**<br>**Assoc. Policy:** HS1.1<br>**Assoc. Procedure:** HS2.03<br>**Assoc. Work Instr:** YS2.03.637 | Site: York<br>Dept: ALL<br>Group: ALL<br>Number: YS2.03.300<br>Version: 4<br>Status: Active<br>Legacy Number: Y09M |
|---|---|---|

**Purpose:** To minimize liability and associated risks in conducting subsurface excavations at Harley-Davidson York.

**Scope:** This work instruction identifies the responsibilities and requirements for performing a utility clearance, and identifying environmental hazards with soil or groundwater prior to conducting subsurface excavations.

**Instruction:** Applies to all employees and contractors who are involved with excavation activities

**Definitions:**

Plant Engineering: Consists of plant engineers and environmental engineers who are both required to assess the excavation area to determine the potential impact from utility and environmental hazards aspects prior to subsurface excavations.

H-D Champion: H-D employee responsible for project that requires subsurface excavation which may encounter utilities or soils or groundwater.

Contractor: Supplier(s) authorized by H-D and may be H-D personnel authorized by the H-D Champion for a project that requires subsurface excavations that may encounter utilities soils or groundwater.

Subsurface Excavation: Any man-made cut, cavity, trench or depression made into the earth's surface (or beneath asphalt/concrete) that is formed by earth removal.

Low-impact excavation: Low-impact excavation includes any excavation method that is sufficiently gentle to minimize the potential for damaging buried utilities. Examples include manual excavation with shovel, hand auger, or vacuum drilling ("air knife" or water-based system).

**Work Instruction:**

The following Subsurface Protocol and Utility Clearance Work Instruction (hereinafter the "WI") identifies the responsibilities of the Contractor and Harley-Davidson Motor Company (H-D) for obtaining environmental and utility clearances prior to conducting any subsurface activities at the York Facility. This WI will help to ensure proper protection and safety for workers (H-D employees and contractor's employees) and compliance with H-D requirements and applicable environmental regulations. Nothing contained herein, and no action by Harley-Davidson pursuant to this WI, is intended or shall be deemed to diminish or eliminate any and all responsibilities, obligations and liabilities of the Contractor under all applicable laws, regulations, rules, standards, guidelines, procedures, agreements and contracts. To the extent there is an actual or perceived conflict between the terms of this WI and other contract terms between Harley-Davidson and the Contractor, the terms of this WI shall govern. The terms of this WI are incorporated into any contract between Harley-Davidson and the Contractor and shall be controlling unless specific terms of such contract impose more specific and stringent requirements with respect to utilities and environmental conditions.

**1. EVALUATION OF ENVIRONMENTAL CONDITIONS**

There are five (5) zones of environmental excavation constraint across the property. Plant Engineering must be contacted to determine which zone(s) are applicable for your work area. These zones include:

Zone A - Clean, unrestricted environmental excavation areas. Subsurface work may be conducted without

any special environmental inspection, training or investigation;
Zone B - Environmental caution areas. In these areas, the potential exists to encounter areas of soil contamination, even though none are confirmed to exist. In this zone, excavations may proceed, but work MUST cease if any suspect soil or potential environmental hazard is encountered and Plant Engineering MUST be contacted;
Zone C - Restricted environmental constraint areas. Precautions must be followed prior to conducting any excavation or subsurface work in these areas. Special training and/or designs may be needed, or environmental investigation or sampling may be required to clear the area for normal construction. Environmental inspection will generally be required for all subsurface work in these areas; and
Zone D - Prohibited excavation for normal construction work. In this zone, potentially hazardous chemicals are known to exist, and excavation should be avoided. When excavation is necessary, special training and planning must be implemented and approved by Plant Engineering prior to proceeding. Environmental inspection is required for all subsurface work in these areas.
Zone E - Prohibited excavation for normal construction work. In this zone, there is a possibility of former military munitions debris, and excavation should be avoided. When excavation is necessary, an ordnance specialist may be needed to clear the area, and work must be approved by Environmental within Plant Engineering prior to proceeding.

H-D Champion and Contractor Responsibility:

1. Site mark-out (see Section 3) and documentation (see Section 4) including identification of the work area on a H-D site map must be conducted by the H-D champion or contractor.
2. Plant Engineering must be contacted to determine which environmental zone(s) are applicable for your work area, and to clarify what (if any) special training or requirements apply for the work area.
3. Due to the potential for worker exposure to hazardous chemicals, workers and contractor/subcontractor companies conducting subsurface work within prohibited or restricted environmental constraint areas (Zones C and D) may be required to meet the criteria of Occupational Safety and Health Administration (OSHA) standards 29 Code of Federal Regulations (CFR) 1910.120, governing hazardous waste operations. In accordance with this regulation, onsite workers shall have and provide proof of 40-hour OSHA training for Hazardous Waste Operations, and shall provide any required Health and Safety monitoring, supervision, and personal protective equipment (PPE). In addition, prior to starting field work, the contractor shall prepare and submit a site-specific Contractor Health and Safety Plan (CHASP), and shall have their own site health and safety representative. [See Plant Engineering's environmental engineer for the latest requirements.]
4. Contractors conducting subsurface work within prohibited or restricted areas must provide proof of insurance in accordance with Harley-Davidson requirements for Environmental Work. [See Plant Engineering's environmental engineer for the latest requirements.] Contractor must meet H-D's minimum Contractor Insurance Requirements at all times, regardless of zone.
5. During excavation activities, the Contractor is responsible to report to Plant Engineering all suspected areas of contamination, unusual odor in the subsurface, liquid, discoloration, buried materials, areas where groundwater is encountered, or where water seeps from an excavation.
6. When assigned, the Contractor is responsible to follow the directions of the Environmental Inspector (EI). The EI will have the authority to stop all work in any area suspected of being contaminated and to exclude access to the suspected area until sampling and analysis is completed or until appropriate procedures are activated.

Harley-Davidson Responsibility:

1. It is Harley-Davidson Motor Company's responsibility to make available to the Contractor data or environmental summaries of testing results within 50 feet of work areas identified within Zones C or D, if so requested by the Contractor.
2. Harley-Davidson Motor Company, will also, to the extent possible, make an employee, who is familiar with the area or areas that are to be subject to subsurface activities and with the relevant drawings of such areas, available to the Contractor for questioning, if so requested by the Contractor.
3. Harley-Davidson Motor Company will provide, when necessary, an Environmental Inspector (EI) or Ordnance Specialist to clear, observe or inspect subsurface work, when required. The primary

responsibility of the EI is to identify potentially contaminated areas, to limit access to suspected contaminated areas, to notify the Contractor of the results of laboratory testing and to direct the handling and disposition of excavated materials suspected of being contaminated.

General Subsurface Environmental Cautions:

1. Soil disposal restrictions apply site-wide. On- or off-site use or disposal of soil within prohibited or restricted environmental constraint areas (Zones C & D) will require testing of materials for proper disposition. No on- or off-site soil disposal is allowed unless it has been authorized, in writing, by Plant Engineering.
2. Groundwater contact restrictions apply site-wide. Groundwater is known to contain chemicals on the EPA's Priority Pollutant List. The depth to groundwater may be within 10 to 20 feet of the ground surface across the site. Surface springs on the property may also contain hazardous chemicals. Direct contact with groundwater and springs should be avoided, regardless of their location on the property. Pumping, discharging or other handling of groundwater, spring water or excavation water is prohibited unless it has been authorized in writing by Plant Engineering.
3. Stormwater management facilities should be designed to protect against infiltration to/from groundwater and springs, and may require certain watertight specifications. Stormwater utility construction and general subsurface work shall not impede the performance of the existing groundwater capture system.
4. There is a significant potential for sinkhole development within the western half of the property. Sinkhole investigations or repairs must be conducted in accordance with procedures approved by Plant Engineering. All excavation activity shall properly incorporate necessary engineering controls, and shall address and minimize stormwater run-off and infiltration potential, to minimize further potential for sinkhole development.

**2. UTILITY INVESTIGATION**

H-D Champion and Contractor Responsibility:

The H-D Champion and Contractor is responsible for requesting from Harley-Davidson the most recently dated utility drawings for the area or areas that are to be subject to subsurface activities. These utility drawings are to include electric, water, sanitary sewer, storm sewer, gas, steam, fuel, sprinkler, production process lines and any other utility which may be situated in the area or areas where the work is to be performed. The H-D Champion and Contractor shall be responsible for reviewing these drawings to determine whether the proposed subsurface work has the potential to damage or affect the operations of the subsurface utilities. There is always the potential for the existence of unmapped utilities and/or location errors in the utility drawings that are presented for review. Whether or not there are location errors in the utility drawings, the H-D Champion and Contractor is responsible to undertake all steps reasonably necessary to locate utilities, including unmapped utilities.

Harley-Davidson Responsibility:

It is Harley-Davidson Motor Company's responsibility to make available to the Contractor drawings of all utilities if such drawings exist and can be obtained through a reasonable search, including but not limited to those identified above, prior to the approval of any subsurface activity. Harley-Davidson Motor Company, will also, to the extent possible, make an employee, who is familiar with the area or areas that are to be subject to subsurface activities and with the relevant drawings of such areas, available to the Contractor for questioning, if so requested by the Contractor.

**3. SITE MARKOUT**

H-D Champion and Contractor Responsibility:

The H-D Champion or Contractor is required to mark on the ground surface the horizontal limits of the subsurface activities prior to proceeding with the work. The proximity of the marked area to all probable surface expressions of subsurface utilities (e.g. manhole covers, vent pipes, etc.) is to be observed and measured. The anticipated depth of excavation shall also be noted on the Subsurface Work Authorization form. In order to assist in verifying utility locations, these surface expressions are to be compared to the utility drawings supplied by Harley-Davidson Motor Company. After marking the ground surface and prior to penetration of the ground surface, the H-D Champion or Contractor must notify Harley-Davidson Motor Company of such location and give Plant Engineering the opportunity to inspect such location(s). In no event shall any subsurface work be performed prior to inspection by Harley-Davidson Plant Engineering.

All discrepancies between the drawings and the surface expressions are to be identified by the Contractor to Harley-Davidson Motor Company prior to the implementation of the work. In addition, Harley-Davidson Motor Company is to be informed by the Contractor of any subsurface utility that is believed to be situated within 10 feet of the proposed work area. In all such cases described in this paragraph, one or more of the following must be followed by the Contractor.

a) Following approval by Harley-Davidson Motor Company, the surface work is to proceed cautiously, with excavation performed by hand to the anticipated depth of the utility, if necessary.

b) Further investigation is to be performed by the Contractor in order to confirm the specific location of the utility in question. This investigation can include the use of metal detectors, geophysical instrumentation, or other means of tracing the utility line.

c) Following Approval by Harley-Davidson Motor Company, modify the work scope to remove the utility from harm's way (e.g., move the work area to a new location).

In situations where known utilities are located more than 10 feet from proposed subsurface work area, Harley-Davidson Motor Company may, at its discretion, still place conditions on the subsurface work. Work scope modifications or a requirement for additional investigation should be considered in instances when the mapped utility locations are suspect based upon the knowledge of Harley-Davidson Motor Company personnel, and/or when discrepancies between utility drawings or discrepancies between utility drawings and surface expressions of those utilities exist.

Harley-Davidson Responsibility:

It is the responsibility of Harley-Davidson Motor Company to inspect each marked limit of the proposed subsurface work to confirm the proximity of the work area in relation known subsurface utilities or environmentally sensitive areas. It is also Harley-Davidson Motor Company's responsibility to request work scope modifications or further investigations if it is not satisfied that the work proposed by the Contractor can be performed without impacting subsurface utilities.

**4. DOCUMENTATION OF APPROVALS**

H-D Champion and Contractor Responsibility:

It is the responsibility of the H-D Champion or Contractor to complete a Subsurface Work Authorization Form (**YS2.03.300.01**) in order to provide documentation that a utility mark-out and environmental evaluation was performed in accordance with these guidelines. The form is to be signed and submitted by the H-D Champion or Contractor to Plant Engineering for approval. No subsurface work is to proceed until this form is signed by three (3) designated Harley-Davidson Motor Company employees (plant engineer, environmental engineer and project champion) and returned to the H-D Champion and Contractor. Any inspections by or approvals of Harley-Davidson required hereunder and the signatures of the designated Harley-Davidson representatives on any authorization forms or any other action by Harley-Davidson pursuant to this WI shall not relieve the Contractor of its duties described herein and shall not negate or diminish the Contractor's responsibility or liability under this WI or any other agreement or under law.

Harley-Davidson Responsibility:

It is the responsibility of Harley-Davidson Motor Company to review the "Subsurface Work Authorization Form" prepared by the Contractor. Three (3) signatures of designated Harley-Davidson Motor Company employees (plant engineer, environmental engineer and project champion) will serve to acknowledge and confirm the information provided by the Contractor, and to authorize the subsurface work to proceed based upon conditions noted. No work is to be performed by the Contractor until all conditions are satisfied.

**Quality Records:**

| Record Description | Record Series ID Number | Link to Retention Schedule |
|---|---|---|
| **YS2.03.300.01 - Subsurface Excavation Clearance Form** | **LEG-03 Legal - Environmental** | **https://hdride.harley-davidson.com/empPortal/pageflows/ContentLanding/showDoc.do?contentId=Documents/RRS-LEG-03_-_Legal_Environmental_032806.pdf** |

Bill Frideger
Bill Law
Dave Adams
David Brautigan
Doug Mucci
Fred Gates
Keith Brodfuehrer
Rachel Kelley
Randy Christianson
Sharon Environmental
Fisher

Signed by

# SUBSURFACE EXCAV ATION CLEARANCE FORM

## WORK DESCRIPTION:

Proposed Date(s) of Work: ______________________________
Contractor Name: ______________________________
Contractor Phone Number: ______________________________
Contractor Contact: ______________________________
Project ID (if applicable): ______________________________
Work Description: ______________________________
Harley-Davidson Project Champion: ______________________________

**Proposed Work Area Location**

(Provide sketch with dimensions to nearest structures or attach drawings if available)

## CONTRACTOR SECTION:

**1.** **Yes** **No** Was the current Site-Wide Subsurface Protocol and Utility Clearance Instructions reviewed and understood? If Yes, proceed. If No, read the Site-Wide Subsurface Protocol and Utility Clearance Instructions and contact Plant Engineering if you have questions.

**2.** **Yes** **No** Were subsurface utility drawings reviewed? If Yes, please identify:

______________________________
______________________________
______________________________

**3.** **Yes** **No** Were outside utility companies contacted (if applicable)? If yes, please identify:

______________________________
______________________________
______________________________

**4.** **Yes** **No** Have the proposed work area limits been marked?

**5.** What is the maximum depth of excavation? ________________ feet

**6.** **Yes** **No** Based upon your review of available information, do any surface expressions of utilities such as manhole covers or vent pipes occur with 50 feet of the work area? If yes, please identify feature and distance to the work area:

______________________________________________________________________

______________________________________________________________________

**7.** **Yes** **No** Have the marked limits of the proposed work area been inspected by the appropriate Harley-Davidson Motor Company employee(s)? Please print the name of the employee(s):

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

**8.** **Yes** **No** Based upon your review of available information, are any subsurface utilities potentially located within 10 feet of the work area? If yes, please identify the precautions that will be taken, below:

Will hand excavate to the anticipated _____ foot depth of the subsurface utility.

Will perform further investigation. This investigation will include:

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

Will modify the work scope in the following manner:

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

Other Comments:

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

Contractor Name (If no contractor H-D champion): ________________________________________

Contractor Signature (If no contractor H-D champion): _____________________________________

Date: _____________________________________

**<u>HARLEY-DAVIDSON SECTION</u>**:

1. **<u>Yes</u>** **<u>No</u>** Was the current Environmental Excavation Constraint map reviewed? If Yes, identify Environmental Sensitive zone(s) (A, B, C, D, or E).

2. **<u>Yes</u>** **<u>No</u>** Is OSHA Training required?

3. **<u>Yes</u>** **<u>No</u>** Is a Contractor Health and Safety Plan required?

4. **<u>Yes</u>** **<u>No</u>** Is an environmental inspector or ordnance specialist required?

5. **<u>Yes</u>** **<u>No</u>** Do special Environmental Insurance requirements apply?

The subsurface work is:

- ☐ Approved with no conditions.
- ☐ Approved with the following conditions:

______________________________________________________________________________
______________________________________________________________________________
___________________________________________________________________________

- ☐ Work is disapproved.

Other Comments:

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
_________________________________________________________________________

Harley-Davidson Plant Engineer
Name: ___________________________________
Signature: ________________________________
Date: ___________________________________

Harley-Davidson Environmental Engineer
Name: ___________________________________
Signature: ________________________________
Date: ___________________________________

Harley-Davidson Project Champion
Name: ___________________________________
Signature: ________________________________
Date: ___________________________________

# Attachment B

# Activity Hazard Analysis

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# ACTIVITY HAZARD ANALYSIS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Activity/Work Task: | **Mobilization** | Overall Risk Assessment Code (RAC) (use highest code from all subtasks): | | | | **M** | |
| Project Location: | Former York Naval Ordnance Plant | Risk Assessment Code (RAC) Matrix | | | | | |
| Project Number: | 6292101 | | Probability | | | | |
| Date Prepared: | 02 February 2015 | Severity | 1 Frequent | 2 Likely | 3 Occasional | 4 Seldom | 5 Unlikely |
| | | 1 Catastrophic | E | E | H | H | M |
| Prepared By: | S. Yankay | 2 Critical | E | H | H | M | L |
| | | 3 Marginal | H | M | M | L | L |
| Reviewed By: | Pete Garger | 4 Negligible | M | L | L | L | L |

Step 1: Review each "hazard" and determine RAC.

Probability = the likelihood to cause an incident, near miss, or accident. Identified as frequent, likely, occasional, seldom, or unlikely.

Severity = the outcome/degree if an incident, near miss, or accident did occur. Identified as catastrophic, critical, marginal, or negligible.

Step 2: Identify the RAC as E, H, M, or L for each hazard on AHA. Select the highest RAC and note at the top of the form.

RAC Chart

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

## TASK BREAKDOWN, HAZARDS AND CONTROLS: SITE MOBILIZATION

| **Work Task Steps** | **Hazards** | **Controls** | **RAC Severity/ Probability /RAC** |
|---|---|---|---|
| General Mobilization Activities | Physical Hazard: Dust | Minimize generation of dust.<br>Stay out of visible dust clouds.<br>Wet soil if necessary to eliminate visible dust. | 3/3/M |
| | Physical Hazard: Noise | Wear hearing protection when operating or working near heavy equipment. | 3/3/M |
| | Physical Hazard: Electrical | Assure electrical work (if necessary) is performed by qualified personnel with verifiable credentials who are familiar with applicable code requirements. | 3/3/M |
| | Physical Hazard: Slips, Trips and Falls | Make sure you have good solid footing and that walking/working surfaces are as clean and dry as possible.<br>Inspect areas daily and record findings on daily inspection reports. | 3/3/M |
| | Physical Hazard: Hand Tools | Inspect tools prior to use; inform supervisors if tools require repair or replacement.<br>Use tools for their intended use only.<br>Don’t use damaged tools.<br>Push, don’t pull wrenches. | 3/3/M |
| | Physical Hazard: Powered Machine Tools | Use, inspect and maintain power tools according to manufacturer’s recommendations. Equip power tools with designed guards. | 3/3/M |

| Work Task Steps | Hazards | Controls | RAC Severity/ Probability /RAC |
|---|---|---|---|
| General Mobilization Activities *(continued)* | Physical Hazard: Powered Machine Tools *(continued)* | Provide electrical power control on each power tool to make it possible for the operator to cut off the power without leaving the point of operation. | 3/3/M |
| | | Connect all electrical power tools to an in-line GFCI. | |
| | Biological Hazards: Insects, Snakes, Wildlife, Vegetation | SSHO will walk site and identify potentially hazardous areas and these will be identified in the daily tailgate briefing. | 4/3/L |
| | | Use repellents and proper clothing for protection against insects including ticks and mosquitoes. | |
| | | Wear protective clothing in areas where poison oak and poison ivy are present. | |
| | | Wear protective clothing, including long pants and sturdy boots for protection against snakes and spiders. | |
| | | Exercise caution when moving obstacles, items that could be home to snakes, spiders or other animals or insects. | |
| | Physical Hazard: Manual Lifting | Follow proper lifting techniques. | 3/3/M |
| | | Use caution and do not twist the back when carrying a load. | |
| | | Do not attempt to lift bulky items or items assessed at over 50lbs. without assistance. | |
| | | Use mechanical devices to move loads when possible. | |
| | | Wear leather gloves for materials handling. | |
| | Physical Hazard: Cold Stress | Wear cold weather clothing and provide shelter as needed based on site conditions. | 3/3/M |
| | | Conduct temperature monitoring when temperatures fall below 45$^{o}$ F. | |
| | Physical Hazard: Heat Stress | Make drinking water available to all workers and encourage workers to drink small amounts of water frequently. | 3/3/M |
| | | Adjust work/rest regimens during hot weather. | |
| | Physical Hazard: Extreme Weather | When there are warnings or indications of severe weather, monitor conditions and take precautions to protect personnel. | 2/4/M |
| | Physical Hazard: Temporary Facilities (if used, not anticipated) | Anchor trailers with rods and cables or by steel straps to ground anchors designed to withstand winds and meet applicable standards. | 3/4/L |
| | | Post signs warning of the presence of construction hazards every 300 feet. | |
| | | Provide one portable toilet with adequate ventilation on site. | |
| | | Provide washing facilities at the portable toilet location to maintain sanitary conditions. | 3/4/L |

| Work Task Steps | Hazards | Controls | RAC<br>Severity/ Probability /RAC |
|---|---|---|---|
| General Mobilization Activities *(continued)* | Physical Hazard: Temporary Facilities (if used, not anticipated) *(continued)* | Provide type II 16-unit first aid kits and make these kits accessible at the site. | 3/4/L |
| | Physical Hazard: Temporary Haul Roads (if used, not anticipated) | Construct haul roads with suitable width for safe operation at the speed anticipated. | 3/4/L |
| | | Post speed limits on haul roads. | |
| Mobilize Crew and Equipment | Physical Hazard: Driving/Vehicle Movement (including trucks, heavy equipment) | Obey traffic rules. | 3/3/M |
| | | 15 mph is the maximum speed allowed in the work area. | |
| | | Use caution when entering roadways. | |
| | | Do not operate vehicles in unsafe conditions (e.g., on steep slopes, in deep mud). | |
| | | Do not use cell phones when operating vehicles. | |
| | | Secure all loads, including equipment within the cab, containerize small equipment and secure container. | |
| | | Wear seat belts, including those provided in cabs of heavy equipment. | |
| | | Use caution and wear orange vests if working near active roads or around heavy equipment. | |
| | | Leave enough time to get to your destination without hurrying. | |
| | | Be aware of heavy equipment and do not park or conduct work in the blind spot of the equipment operator; “blind spots” of some equipment can be very large. | |
| | | Verify back-up alarms are functional for all heavy equipment. Pick-ups or SUVs with obstructed rear-view use a back-up alarm or a spotter when backing-up. | |
| | | Rollover protective structures (ROPS) are required on all heavy equipment, with the exception of trucks used for over–the-road hauling. | |
| | | Inspect drilling equipment and maintain according to the manufacturer’s recommendations. | |
| | | Equipment will be immediately grounded if unauthorized personnel enter the work area. | |
| Utility Clearance | Physical Hazard: Electrocution or Explosion | If overhead utilities are present in work area, place warning signs at ground level. | 2/4/M |
| | | Always check for overhead utilities before using extendable equipment. | |
| | | Maintain at least one mast length or 20 feet (whichever is greater) from all power lines. | |
| | | Contact the utilities company if high voltage lines are present. | |

| Work Task Steps | Hazards | Controls | RAC<br>Severity/ Probability /RAC |
|---|---|---|---|
| Utility Clearance *(continued)* | Physical Hazard: Electrocution or Explosion *(continued)* | Complete utility locates prior to intrusive work in areas where utilities have not been cleared through institutional knowledge by calling the local underground service alert center and/or coordinating with site personnel. | 2/4/M |
| | | Observe the area for indications of utilities. | |
| Handling Flammable Liquid During Fueling | Physical Hazard: Fire | Provide portable fire extinguishers in all equipment and in the field trailer. | 2/4/M |
| | | Inspect fire extinguishers monthly. | |
| | | Obtain hot work permits prior to any welding or torch cutting activities. | |
| MEC Avoidance | Physical Hazard: Explosion | UXO Technicians will inspect any potential MEC. | 2/4/M |

REQUIRED EQUIPMENT, INSPECTION AND TRAINING:

| Equipment | Inspection Requirements | Training Requirements (including Competent Person and Qualified Personnel, if applicable) |
|---|---|---|
| • Common hand tools<br>• Common power tools (chain saws, brush trimmers)<br>• Emergency equipment including first aid kit, eye wash, fire extinguishers | • Inspect PPE prior to each use<br>• Inspect vehicles daily<br>• Use appropriate PPE<br>• Underground hazards require clearance<br>• Inspect emergency equipment/supplies daily (first aid kit, eye wash, fire extinguisher) | • Use and limitations of PPE<br>• Valid driver's license<br>• Lifting<br>• AHA review<br>• First aid/CPR—at least 2 people on site<br>• Hazardous waste sites require 40 hour HAZWOPER training, annual updates for any intrusive activities.<br>• SSHO will require HAZWOPER Supervisor's Training and 30-hour OSHA Construction Safety Course. |

# ACTIVITY HAZARD ANALYSIS

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Activity/Work Task: | **Brush Clearing** | Overall Risk Assessment Code (RAC) (use highest code from all subtasks): | | | | | **M** | |
| Project Location: | Former York Naval Ordnance Plant | Risk Assessment Code (RAC) Matrix | | | | | | |
| Project Number: | 6292101 | | Probability | | | | | |
| Date Prepared: | 02 February 2015 | Severity | 1 Frequent | 2 Likely | 3 Occasional | 4 Seldom | 5 Unlikely | |
| | | 1 Catastrophic | E | E | H | H | M | |
| Prepared By: | S. Yankay | 2 Critical | E | H | H | M | L | |
| | | 3 Marginal | H | M | M | L | L | |
| Reviewed By: | Pete Garger, CIH | 4 Negligible | M | L | L | L | L | |

Step 1: Review each "hazard" and determine RAC.

Probability = the likelihood to cause an incident, near miss, or accident. Identified as frequent, likely, occasional, seldom, or unlikely.

Severity = the outcome/degree if an incident, near miss, or accident did occur. Identified as catastrophic, critical, marginal, or negligible.

Step 2: Identify the RAC as E, H, M, or L for each hazard on AHA. Select the highest RAC and note at the top of the form.

RAC Chart

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

## TASK BREAKDOWN, HAZARDS AND CONTROLS: BRUSH CLEARING

| Work Task Steps | Hazards | Controls | RAC Severity/ Probability /RAC |
|---|---|---|---|
| Brush/Obstacle Removal | Physical Hazard: Driving/Vehicle Movement (including trucks, heavy equipment) | Remain out of the swing radius of excavating equipment, and make sure to have the attention of the equipment operator. | 2/4/M |
| | | Verify back-up alarms are functional for all heavy equipment. Pick-ups or SUVs with obstructed rear-view use a back-up alarm or a spotter when backing-up. | |
| | | Equipment will be immediately grounded if unauthorized personnel enter the work zone. | |
| | | If overhead power lines are in the vicinity of the work area, use a spotter to ensure that equipment maintains proper safe distance. | |
| | | Obey traffic rules. | |
| | | 15 mph is the maximum speed allowed in the work area. | |
| | | Use caution when entering roadways. | |
| | | Do not operate vehicles in unsafe conditions (e.g., on steep slopes, in deep mud). | |
| | | Do not use cell phones when operating vehicles. | |
| | | Secure all loads, including equipment within the cab, containerize small equipment and secure container. | |

| Work Task Steps | Hazards | Controls | RAC Severity/ Probability /RAC |
|---|---|---|---|
| Brush/Obstacle Removal *(continued)* | Physical Hazard: Driving/Vehicle Movement (including trucks, heavy equipment) (*continued)* | Wear seat belts, including those provided in cabs of heavy equipment. | 2/4/M |
| | | Use caution and wear orange vests if working near active roads or around heavy equipment. | |
| | | Leave enough time to get to your destination without hurrying. | |
| | | Be aware of heavy equipment and do not park or conduct work in the blind spot of the equipment operator; "blind spots" of some equipment can be very large. | |
| | | Rollover protective structures (ROPS) are required on all heavy equipment, with the exception of trucks used for over–the-road hauling. | |
| | | Inspect drilling equipment and maintain according to the manufacturer's recommendations. | |
| | Physical Hazard: Manual Lifting | Follow proper lifting techniques. | 3/3/M |
| | | Use caution and do not twist the back when carrying a load. | |
| | | Do not attempt to lift bulky items or items assessed at over 50lbs. without assistance. | |
| | | Use mechanical devices to move loads when possible. | |
| | | Wear leather gloves for materials handling. | |
| | Physical Hazard: Noise | Wear hearing protection when operating or working near heavy equipment (where shouting is required for face-to-face communication within three feet). | 3/3/M |
| | Physical Hazard: Hand Tools | Inspect tools prior to use; inform supervisors if tools require repair or replacement. | 3/3/M |
| | | Use tools for their intended use only. | |
| | | Don't use damaged tools. | |
| | | Push, don't pull wrenches. | |
| | Physical Hazard: Powered Machine Tools | Use, inspect and maintain power tools according to manufacturer's recommendations. | 3/3/M |
| | | Equip power tools with designed guards. | |
| | | Provide electrical power control on each power tool to make it possible for the operator to cut off the power without leaving the point of operation. | |
| | | Connect all electrical power tools to an in-line GFCI. | |
| | Biological Hazards: Insects, Snakes, Wildlife, Vegetation Exposures | Inspect work areas when arriving at a sampling site to identify hazard(s). | 4/3/L |
| | | Use insect repellant as necessary. | |
| | | Stay alert and safe distance away from biological hazards. | |

| Work Task Steps | Hazards | Controls | RAC Severity/ Probability /RAC |
|---|---|---|---|
| Brush/Obstacle Removal *(continued)* | Biological Hazards: Insects, Snakes, Wildlife, Vegetation Exposures *(continued)* | Workers with allergies should carry antidote kits, if necessary. | 4/3/L |
| | | Wear appropriate PPE including work gloves, long sleeves and pants, and snake chaps if probability of encountering snakes, ticks, poison ivy or oak | |
| | Physical Hazard: Cold Stress | Wear cold weather clothing and provide shelter as needed based on site conditions. | 3/3/M |
| | | Conduct temperature monitoring when temperatures fall below 45$^{o}$ F. | |
| | Physical Hazard: Heat Stress | Make drinking water available to all workers and encourage workers to drink small amounts of water frequently. | 3/3/M |
| | | Adjust work/rest regimens during hot weather. | |
| | Physical Hazard: Slips, Trips and Falls | Make sure you have good solid footing and that walking/working surfaces are as clean and dry as possible. | 3/3/M |
| | | Inspect areas daily and record findings on daily inspection reports. | |
| | Chemical Hazard: Exposure to Contaminants of Concern | Wear safety glasses and nitrile gloves. | 3/3/M |
| | | Decontaminate sampling tools and PPE after use. | |
| | | Wash hands and face after sampling events. | |
| | Physical Hazard: Heat Stress | Determine appropriate work schedule; take regular breaks | 3/3/M |
| | | Have adequate water and electrolyte drinks available | |
| | | Designate shaded break areas | |
| | | Be aware of symptoms of heat-related illness | |
| Handling Flammable Liquid During Refueling | Physical Hazard: Fire | Store gasoline in approved flammable liquid containers. | 2/4/M |
| | | Fuel vehicles in areas free of combustible debris/vegetation. | |
| | | Do not fuel in the back of pick-up trucks with bed liners. | |
| | | Turn engines off prior to refueling. | |
| | | Bond and ground containers during transfer of flammable liquids. | |
| | | Have portable fire extinguishers present at all time and inspect monthly. | |

REQUIRED EQUIPMENT, INSPECTION AND TRAINING:

| Equipment | Inspection Requirements | Training Requirements (including Competent Person and Qualified Personnel, if applicable) |
|---|---|---|
| • Level D PPE<br>• Hardhat<br>• Hearing Protection<br>• Safety Glasses<br>• Leather Gloves<br>• Face Shield when using brush trimmers<br>• Power tools/hand tools<br>• Emergency equipment including first aid kit, eye wash, fire extinguishers | • Inspect PPE prior to each use<br>• Inspect vehicle daily<br>• Calibrate environmental monitoring equipment daily prior to use.<br>• Use appropriate PPE<br>• Inspect emergency equipment/supplies daily (first aid kit, eye wash, fire extinguisher) | • Use and limitations of PPE<br>• Valid driver's license<br>• Lifting<br>• AHA review<br>• First aid/CPR—at least 2 people on site<br>• Hazardous waste sites require 40 hour HAZWOPER training, annual updates.<br>• SSHO will require HAZWOPER Supervisor's Training and 30-hour OSHA Construction Safety Course. |

# ACTIVITY HAZARD ANALYSIS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Activity/Work Task: | **Chain Saw Usage** | Overall Risk Assessment Code (RAC) (use highest code from all subtasks): | | | | **M** | |
| Project Location: | Former York Naval Ordnance Plant | Risk Assessment Code (RAC) Matrix | | | | | |
| Project Number: | 6292101 | Severity | Probability | | | | |
| Date Prepared: | 02 February 2015 | | 1 Frequent | 2 Likely | 3 Occasional | 4 Seldom | 5 Unlikely |
| | | 1 Catastrophic | E | E | H | H | M |
| Prepared By: | S. Yankay | 2 Critical | E | H | H | M | L |
| | | 3 Marginal | H | M | M | L | L |
| Reviewed By: | Pete Garger, CIH | 4 Negligible | M | L | L | L | L |

Step 1: Review each "hazard" and determine RAC.

Probability = the likelihood to cause an incident, near miss, or accident. Identified as frequent, likely, occasional, seldom, or unlikely.

Severity = the outcome/degree if an incident, near miss, or accident did occur. Identified as catastrophic, critical, marginal, or negligible.

Step 2: Identify the RAC as E, H, M, or L for each hazard on AHA. Select the highest RAC and note at the top of the form.

RAC Chart

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

## TASK BREAKDOWN, HAZARDS AND CONTROLS: CHAIN SAW USAGE

| Work Task Steps | Hazards | Controls | RAC Severity/Probability/RAC |
|---|---|---|---|
| Preparing 2 cycle oil and gasoline mixture | Physical Hazard: Splash hazards/eye injuries | Proper personnel protective equipment (PPE) will be required, including leather gloves and safety glasses. | 3/3/M |
| | Physical Hazard: Skin exposure to oil/gas mixture | Use a safety gas container for storing and transporting gasoline/oil mix. | 2/3/M |
| | | Mix oil and fuel in a well ventilated area. | |
| | | Proper PPE will be required, including leather gloves and safety glasses. | |
| | Chemical/Physical Hazard: Fires/Explosions | Ensure type ABC, fully charged fire extinguisher on-site. | 3/3/M |
| | | Do not fuel chain saw while running, while hot, or near an open flame. Saws will not be started within 10 feet (3 meters) of fuel container. | |
| | | Stop work if hazardous conditions are identified. | |
| | Chemical/Physical Hazard: Spills | Make sure that there are adequate spill supplies present when handling oils and fuels. | 2/3/M |
| | Physical Hazard: Burns from hot engine | Make yourself aware of engine areas of the saw that will get hot during usage. Allow chainsaw to cool before fueling to prevent fires and burns. Use a funnel and take care not to over fill the tank. | 2/2/M |

| Work Task Steps | Hazards | Controls | RAC Severity/Probability/RAC |
|---|---|---|---|
| | Physical Hazard: Slips, Trips, and Falls | Remove all trip hazards by keeping materials/objects organized and out of walkways. | 3/3/L |
| | | Stay aware of footing and do not run. | |
| | | Wear appropriate PPE including non-slip boots if working on wet or slick surfaces. | |
| Filling bar and chain reservoir | Physical Hazard: Splash hazards/eye injuries | Proper PPE will be required, including leather gloves and safety glasses. | 3/4/L |
| | Physical Hazard: Skin exposure to oil/gas mixture | Use a safety gas container for storing and transporting gasoline/oil mix. | 3/3/M |
| | | Mix oil and fuel in a well ventilated area. | |
| | | Proper PPE will be required, including nitrile gloves and safety glasses. | |
| | Chemical/Physical Hazard: Spills | Make sure that there are adequate spill supplies present when handling oils and fuels. | 3/3/M |
| Cutting with Chainsaw | Physical Hazard: Cuts and lacerations | Understand the operation of the chainsaw and the chain brake prior to using it. If you are not comfortable using this tool, inform your management representative and do not use it. | 2/2/M |
| | | Wear appropriate PPE (hard hat, steel-toe boots, leather gloves, protective leg chaps, hearing protection) when working with or in close proximity to chain saws. | |
| | | Start chainsaw on the ground. Never attempt to start or restart while holding the chainsaw suspended with one hand on the handle and trigger and the other one pulling the cord. | |
| | | Saw in a downward motion. Never saw in an upward motion. Make sure that no part of your body, or anyone else's, is in the path or potential path of the saw. | |
| | | Do not remove or disable guards or chain brake. This includes the tip guard if saw is equipped with one. Do not operate saws that are missing guards or other parts originally installed at the time of manufacture. | |
| | | Avoid making overhead cuts. | |
| | | Make sure that bar and chain lubricant is flowing (procedure is explained in operations manual) and keep this reservoir full. Periodically check to make sure the bar and chain lubricant ports are not getting plugged. | |
| | | Keep cutting chain sharp. Note: as the chain becomes dull, the wood chips will become finer. | |
| | Physical Hazard: Struck by falling trees/limbs | Take care not to cut close to the ground or allow saw cutting chain to run in the soil. | 2/2/M |
| | | Do not use chainsaw when others are in close proximity to you. Stop saw if you notice others entering your immediate working area. Do not allow or ask others to hold wood for you while you cut. | |

| Work Task Steps | Hazards | Controls | RAC Severity/Probability/RAC |
|---|---|---|---|
| Cutting with chainsaw *(continued)* | Physical Hazard: Struck by falling trees/limbs *(continued)* | If you are working with someone using a chainsaw, do not walk up on them without first getting their attention and they have stopped the saw. | 2/2/M |
| | | Only qualified individuals will perform work with a chainsaw and will review the methodology to be used at that time with the SSHO. | |
| | | Keep all crew members out of the area where trees are to be pushed over until the tree has fallen. | |
| | | In addition to safety glasses, wear the supplied chainsaw cutting hard hat with face screen and ear muffs. Always wear the face screen in the down position and ear muffs over the ears when operating the chainsaw. Ear plugs may also be used but are not required as additional hearing protection. | |
| | Physical Hazard: Slips, Trips, and Falls | Remove all trip hazards by keeping materials/objects organized and out of walkways. | 3/3/M |
| | | Stay aware of footing and do not run. | |
| | | Wear appropriate PPE including non-slip steel toe boots if working on wet or slick surfaces. | |
| | Physical Hazard: Heat/Cold Stress | Take breaks as needed. | 3/3/M |
| | | Be aware of weather conditions and dress appropriately. | |
| | | Consume adequate food/beverages. | |
| | | If possible, adjust work schedule to avoid heat/cold stresses. Monitor radio or internet for up-to-date severe weather forecasts. | |
| | | Discontinue work during thunderstorms and severe weather events. | 3/3/M |
| | Biological Hazards: Insects, Snakes, Wildlife, Vegetation | Inspect work areas when arriving at a sampling site to identify hazard(s). | |
| | | Stay alert and safe distance away from biological hazards. | |
| | | Workers with allergies should carry antidote kits, if necessary. | |
| | | Use insect repellant as necessary. | |
| | | Wear appropriate PPE including work gloves, long sleeves and pants. | |
| | | Workers will wear light colored clothing or light tyvek when working in areas where ticks or poison ivy is present. Workers will perform visual inspection of their clothing and exposed areas at the end of the workday. The SSHO will be notified in the event that a tick has attached itself to skin. If a poison ivy exposure occurs the worker will was the affected area with soapy water within a half hour period. If symptoms occur (within 24-48 hrs) notify the SSHO. | |

| Work Task Steps | Hazards | Controls | RAC<br>Severity/Probability/RAC |
|---|---|---|---|
| Tightening, adjusting, and replacing cutting chain | Physical Hazard: Burns/fires | Understand how to tighten, adjust and replace chain before attempting to do so. This information is in the operations manual for the tool, which should be reviewed prior to its use. | |
| | | Do not attempt to perform maintenance on the saw while it is running. | |
| | | Note the sharp edges on the cutting chain and always handle chains with work gloves. Replace any guards that had to be removed during maintenance prior to restarting saw. | |
| | | As stated above, note and do not touch the areas of the saw that will become hot during use. | |
| | | If gas remains in the saw when maintenance is to be performed, allow the tool to cool. | |
| | | Take care not to set and leave a hot chainsaw in dry brush/grass. | |
| | | Ensure type ABC, fully charged fire extinguisher on-site. | |

REQUIRED EQUIPMENT, INSPECTION AND TRAINING:

| Equipment | Inspection Requirements | Training Requirements (including Competent Person and Qualified Personnel, if applicable) |
|---|---|---|
| • PPE<br>• Chain saw<br>• Emergency equipment including first aid kit, eye wash, fire extinguishers, spill kit, radio/cell phone | • Inspect PPE prior to each use<br>• Use appropriate PPE<br>• Inspect chain saw<br>• Inspect emergency equipment/supplies daily (first aid kit, eye wash, fire extinguisher, spill kit) | • Use and limitations of PPE<br>• AHA review<br>• First aid/CPR—at least 2 person on site<br>• Hazardous waste sites require 40 hour HAZWOPER training, annual updates for any intrusive activities.<br>• SSHO will require HAZWOPER 40 hour Worker Training |

# ACTIVITY HAZARD ANALYSIS

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Activity/Work Task: | **Munitions and Explosives of Concern (MEC) Avoidance and Reconnaissance Activities** | Overall Risk Assessment Code (RAC) (use highest code from all subtasks): | | | | | **M** | |
| Project Location: | Former York Naval Ordinance Plant | RAC Matrix | | | | | | |
| Project Number: | 6292101 | | Probability | | | | | |
| Date Prepared: | 02 February 2015 | Severity | 1 Frequent | 2 Likely | 3 Occasional | 4 Seldom | 5 Unlikely | |
| | | 1 Catastrophic | E | E | H | H | M | |
| Prepared By: | S. Yankay | 2 Critical | E | H | H | M | L | |
| | | 3 Marginal | H | M | M | L | L | |
| Reviewed By: | Pete Garger, CIH | 4 Negligible | M | L | L | L | L | |
| Competent Person: | UXOQCS/UXOSO | | | | | | | |

Step 1: Review each "hazard" and determine RAC.
Probability = the likelihood to cause an incident, near miss, or accident. Identified as frequent, likely, occasional, seldom, or unlikely.
Severity = the outcome/degree if an incident, near miss, or accident did occur. Identified as catastrophic, critical, marginal, or negligible.
Step 2: Identify the RAC as E, H, M, or L for each hazard on AHA. Select the highest RAC and note at the top of the form.

RAC Chart
E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

## TASK BREAKDOWN, HAZARDS AND CONTROLS:

| **Work Task Steps** | **Hazards** | **Controls** | **RAC Severity/Probability /RAC** |
|---|---|---|---|
| Instrument-aided Visual Inspection (MEC Avoidance) | Direct contact with MEC (detonation, heat, fragmentation, and overpressure) | Identify areas known or suspected of containing unexploded ordinance (UXO). | 2/4/M |
| | | UXO-qualified personnel will escort non-UXO qualified staff. | |
| | | Non-UXO qualified staff will receive site-specific UXO awareness training. | |
| | | Clear footpaths four feet wide and mark centerline with highly visible flags or survey tape. | |
| | | Clear vehicle access routes 25-feet wide and include an area for turning around and egress. | |
| | | Identified surface anomalies will be marked with red survey markers and avoided | |
| | | Identified subsurface anomalies will be marked with yellow survey markers and avoided | |
| | | Report all potential MEC to UXO-qualified staff. | |
| | | Evacuate to a minimum of 200 feet from potential MEC. | |
| | | Do not use cell phones or radio within 50 feet of potential MEC. | |

| Work Task Steps | Hazards | Controls | RAC Severity/Probability /RAC |
|---|---|---|---|
| Instrument-aided Visual Inspection (MEC Avoidance) *(continued)* | Direct contact with MEC (detonation, heat, fragmentation, and overpressure) *(continued)* | Do not disturb the ground in potential MEC areas without consulting UXO-qualified staff. | |
| | | Do not move UXO; evacuate area and notify UXO Safety Program Manager. | |
| Reconnaissance | Physical Hazard: Slips, Trips, Falls | Keep work area free of excess material and debris. | 3/3/M |
| | | Remove all trip hazards by keeping materials/objects organized and out of walkways. | |
| | | Be aware of uneven surfaces while walking around sampling locations. | |
| | | Wear appropriate Level D PPE (work gloves, boots, etc.) including non-slip rubber boots if working on wet or slick surfaces. | |
| | | Stay aware of footing and do not run. | |
| | Physical Hazard: Cold Stress | Wear appropriate clothing to protect skin from wind and cold temperatures. | 3/3/M |
| | | Designate warm rest areas. | |
| | | Be aware of symptoms of cold-related illness. | |
| | Physical Hazard: Heat Stress | Determine appropriate work schedule; take regular breaks | 3/3/M |
| | | Have adequate water and electrolyte drinks available | |
| | | Designate shaded break areas | |
| | | Be aware of symptoms of heat-related illness | |
| | Physical Hazard: Visibility | Wear high-visibility apparel (fluorescent yellow-green, fluorescent orange-red or fluorescent red). Select color to provide highest contrast to the work environment. | 4/4/L |
| | Physical Hazards: Weather | Monitor weather conditions online or on the radio using a weather station that is part of the National Oceanic and Atmospheric Administration weather radio network or similar notification system. If unfavorable weather conditions arise, the SSHO will evaluate the safety hazards and activities will be halted (by the SSHO). Upon the work stoppage, personnel will retreat to project vehicles. The SSHO will continue to monitor weather conditions and determine if project personnel should leave the site or wait for favorable weather to continue field activities. | 3/3/M |
| | Biological Hazards: Poisonous plants | Inspect work areas when arriving at a sampling site to identify hazard(s). | 3/3/M |
| | | Stay alert and safe distance away from biological hazards. | |
| | | Wear appropriate PPE including work gloves, work boots, long sleeves and pants. Remove gloves prior to touching exposed areas of the body. | 4/4/L |
| | | Workers with allergies should carry antidote kits (epi-pens), if necessary. | |

| Work Task Steps | Hazards | Controls | RAC<br>Severity/Probability /RAC |
|---|---|---|---|
| Reconnaissance *(continued)* | Biological Hazards: Poisonous plants *(continued)* | Wash hands, face, and other exposed areas at the beginning of each break and at the end of the workday. If dermal contact occurs, wash the affected area with soap and water immediately. | 4/4/L |
| | | Wash hands and face prior to eating, drinking, or smoking | |

REQUIRED EQUIPMENT, INSPECTION AND TRAINING:

| Equipment | Inspection Requirements | Training Requirements (including Competent Person and Qualified Personnel, if applicable) |
|---|---|---|
| • Support vehicle<br>• Level D PPE (boots, gloves, etc.)<br>• Emergency equipment including fire extinguishers and first aid kit<br>• For instrument-aided visual inspection - Schonstedt GA-52Cx or the GA-72Cd<br>• Flagging-red and yellow | • Inspect PPE, tools, and equipment prior to each use<br>• Inspect vehicle daily<br>• Inspect emergency equipment/supplies (first aid kit, eye wash, and fire extinguisher) | • Use and limitations of PPE<br>• Valid driver's license<br>• AHA review<br>• Hazardous waste sites require 40 hour HAZWOPER training, annual updates.<br>• Site Manager will require HAZWOPER Supervisor's Training<br>• UXO Techs: Qualifications and training per DoD Explosive Safety Board TP-18<br>• Non-UXO qualified personnel: project-specific training conducted by UXO Tech to ensure that all on-site personnel fully understand the potential munitions onsite and MEC avoidance procedures |

# ACTIVITY HAZARD ANALYSIS

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Activity/Work Task: | **Reconnaissance and Geophysics Survey** | Overall Risk Assessment Code (RAC) (use highest code from all subtasks): | | | | | **M** | |
| Project Location: | Former York Naval Ordinance Plant | Risk Assessment Code (RAC) Matrix | | | | | | |
| Project Number: | 6292101 | | Probability | | | | | |
| Date Prepared: | 02 February 2015 | Severity | 1 Frequent | 2 Likely | 3 Occasional | 4 Seldom | 5 Unlikely | |
| | | 1 Catastrophic | E | E | H | H | M | |
| Prepared By: | S. Yankay | 2 Critical | E | H | H | M | L | |
| | | 3 Marginal | H | M | M | L | L | |
| Reviewed By: | Pete Garger, CIH | 4 Negligible | M | L | L | L | L | |
| Competent Person: | TBD | | | | | | | |

Step 1: Review each "hazard" and determine RAC.

Probability = the likelihood to cause an incident, near miss, or accident. Identified as frequent, likely, occasional, seldom, or unlikely.

Severity = the outcome/degree if an incident, near miss, or accident did occur. Identified as catastrophic, critical, marginal, or negligible.

Step 2: Identify the RAC as E, H, M, or L for each hazard on AHA. Select the highest RAC and note at the top of the form.

RAC Chart

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

## TASK BREAKDOWN, HAZARDS AND CONTROLS: MONTHLY INSPECTION AND MAINTENANCE

| **Work Task Steps** | **Hazards** | **Controls** | **RAC Severity/ Probability /RAC** |
|---|---|---|---|
| Reconnaissance and Geophysics Survey | Physical Hazard: Slips, Trips, Falls | Keep work area free of excess material and debris. | 3/3/M |
| | | Remove all trip hazards by keeping materials/objects organized and out of walkways. | |
| | | Be aware of uneven surfaces while walking around sampling locations. | |
| | | Wear appropriate PPE including non-slip rubber boots if working on wet or slick surfaces. | |
| | | Stay aware of footing and do not run. | |
| | Biological Hazards: Insects, Snakes, Wildlife, Vegetation | Inspect work areas when arriving at a sampling site to identify hazard(s). | 3/3/M |
| | | Use insect repellant as necessary. | |
| | | Stay alert and safe distance away from biological hazards. | |
| | | Wear appropriate PPE including work gloves, long sleeves and pants, and snake chaps if probability of encountering snakes, ticks, poison ivy or oak. | |
| | | Workers with allergies should carry antidote kits, if necessary. | |

REQUIRED EQUIPMENT, INSPECTION AND TRAINING:

| Equipment | Inspection Requirements | Training Requirements (including Competent Person and Qualified Personnel, if applicable) |
|---|---|---|
| • Support vehicle<br>• Ground penetrating radar or magnetometer<br>• PPE<br>• Emergency equipment including fire extinguishers | • Inspect PPE prior to each use<br>• Inspect vehicle daily<br>• Use appropriate PPE<br>• Inspect emergency equipment/supplies | • Use and limitations of PPE<br>• Valid driver's license<br>• AHA review<br>• Mower operator (and any other large equipment operator) will be trained in equipment use and maintenance<br>• Hazardous waste sites require 40 hour HAZWOPER training, annual updates for any intrusive activities.<br>• SSHO will require HAZWOPER Supervisor's Training and 30-hour OSHA Construction Safety Course. |

# ACTIVITY HAZARD ANALYSIS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Activity/Work Task: | **Demobilization** | Overall Risk Assessment Code (RAC) (use highest code from all subtasks): | | | | **M** | |
| Project Location: | Former York Naval Ordnance Plant | Risk Assessment Code (RAC) Matrix | | | | | |
| Project Number: | 6292101 | | Probability | | | | |
| Date Prepared: | 02 February 2015 | Severity | 1 Frequent | 2 Likely | 3 Occasional | 4 Seldom | 5 Unlikely |
| | | 1 Catastrophic | E | E | H | H | M |
| Prepared By: | S. Yankay | 2 Critical | E | H | H | M | L |
| | | 3 Marginal | H | M | M | L | L |
| Reviewed By: | Pete Garger, CIH | 4 Negligible | M | L | L | L | L |

Step 1: Review each "hazard" and determine RAC.

Probability = the likelihood to cause an incident, near miss, or accident. Identified as frequent, likely, occasional, seldom, or unlikely.

Severity = the outcome/degree if an incident, near miss, or accident did occur. Identified as catastrophic, critical, marginal, or negligible.

Step 2: Identify the RAC as E, H, M, or L for each hazard on AHA. Select the highest RAC and note at the top of the form.

RAC Chart
E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

## TASK BREAKDOWN, HAZARDS AND CONTROLS: DIRECT PUSH AND WELL INSTALLATION

| Work Task Steps | Hazards | Controls | RAC Severity/ Probability /RAC |
|---|---|---|---|
| General Demobilization Activities | Biological Hazards: Insects, Snakes, Wildlife, Vegetation | Repellents and proper clothing should be used for protection against insects including ticks and mosquitoes. | 4/3/L |
| | | Protective clothing should be used in areas where poison oak and poison ivy are present. | |
| | | Protective clothing, including long pants and sturdy boots, should be used for protection against snakes and spiders. | |
| | Physical Hazard: Cold Stress | Cold weather clothing and shelter should be provided as needed based on site conditions. | 3/3/M |
| | | Temperature monitoring should be conducted when temperatures fall below 45° F. | |
| | Physical Hazard: Heat Stress | Drinking water should be made available to all workers and encourage workers to drink small amounts of water frequently. | 3/3/M |
| | | Work/rest regimens will be adjusted during hot weather. | |
| | Physical Hazard: Extreme Weather | When there are warnings or indications of severe weather, monitor conditions and take precautions to protect personnel. | 2/4/M |
| | Physical Hazard: Slips, Trips and Falls | Make sure you have good solid footing and that walking/working surfaces are as clean and dry as possible. | 3/3/M |
| | | Inspect areas daily and record findings on daily inspection reports. | |

| Work Task Steps | Hazards | Controls | RAC Severity/ Probability /RAC |
|---|---|---|---|
| General Demobilization Activities *(continued)* | Physical Hazard: Manual Lifting | Follow proper lifting techniques. | 3/3/M |
| | | Use caution and do not twist the back when carrying a load. | |
| | | Do not attempt to lift bulky items or items assessed at over 50lbs. without assistance. | |
| | | Use mechanical devices to move loads when possible. | |
| | | Wear leather gloves for materials handling. | |
| | Physical Hazard: Hand Tools | Inspect tools prior to use. | 3/3/M |
| | | Use tools for their intended use only. | |
| | | Don't use damaged tools. | |
| | | Push, don't pull wrenches. | |
| | Physical Hazard: Powered Machine Tools | Power tools will be used, inspected and maintained according to manufacturer's recommendations. | 3/3/M |
| | | Power tools designed to accommodate guards will be equipped with such guards. | |
| | | The electrical power control will be provided on each power tool to make it possible for the operator to cut off the power without leaving the point of operation. | |
| | | All electrical power tools should be connected in an in-line GFCI. | |
| Demobilize Crew and Equipment | Physical Hazard: Driving/Vehicle Movement (including trucks, heavy equipment) | Obey traffic rules. | 3/3/M |
| | | 15 mph is the maximum speed allowed in the work area. | |
| | | Use caution when entering roadways. | |
| | | Do not operate vehicles in unsafe conditions (e.g., on steep slopes, in deep mud). | |
| | | Do not use cell phones when operating vehicles. | |
| | | Secure all loads, including equipment within the cab, containerize small equipment and secure container. | |
| | | Wear seat belts, including those provided in cabs of heavy equipment. | |
| | | Use caution and wear orange vests if working near active roads or around heavy equipment. | |
| | | Leave enough time to get to your destination without hurrying. | |
| | | Be aware of heavy equipment and do not park or conduct work in the blind spot of the equipment operator; "blind spots" of some equipment can be very large. | |
| | | Verify back-up alarms are functional for all heavy equipment. Pick-ups or SUVs with obstructed rear-view use a back-up alarm or a spotter when backing-up. | |

| Work Task Steps | Hazards | Controls | RAC<br>Severity/ Probability /RAC |
|---|---|---|---|
| Demobilize Crew and Equipment *(continued)* | Physical Hazard: Driving/Vehicle Movement (including trucks, heavy equipment) *(continued)* | Rollover protective structures (ROPS) are required on all heavy equipment, with the exception of trucks used for over–the-road hauling, rubber tired lawn tractors and garden tractors operating on flat terrain ($10^{o}$ slope maximum) | 3/3/M |
| | | Inspect equipment and maintain according to the manufacturer's recommendations. | |

REQUIRED EQUIPMENT, INSPECTION AND TRAINING:

| Equipment | Inspection Requirements | Training Requirements (including Competent Person and Qualified Personnel, if applicable) |
|---|---|---|
| • Level D PPE<br>• Hardhat (as required)<br>• Hearing protection (as required)<br>• Safety glasses (as required)<br>• Leather gloves (as required)<br>• Power tools/hand tools<br>• Emergency equipment including first aid kit, eye wash, fire extinguishers | • Inspect PPE prior to each use<br>• Inspect vehicle daily<br>• Use appropriate PPE<br>• Underground hazards require clearance<br>• Inspect emergency equipment/supplies daily (first aid kit, eye wash, fire extinguisher) | • Use and limitations of PPE<br>• Valid driver's license<br>• Equipment operators will be trained in equipment use and maintenance<br>• Lifting<br>• AHA review<br>• First aid/CPR—at least 2 people on site<br>• Hazardous waste sites require 40 hour HAZWOPER training, annual updates for any intrusive activities.<br>• SSHO will require HAZWOPER Supervisor's Training and 30-hour OSHA Construction Safety Course. |

# ACTIVITY HAZARD ANALYSIS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Activity/Work Task: | **MPPEH Inspection and Disposition** | Overall Risk Assessment Code (RAC) (use highest code from all subtasks): | | | | **H(2)** | |
| Project Location: | Former York Naval Ordnance Plant | Risk Assessment Code (RAC) Matrix | | | | | |
| Project Number: | 6292101 | Severity | Probability | | | | |
| Date Prepared: | 20 February 2015 | | Frequent A | Likely B | Occasional C | Seldom D | Unlikely E |
| | | Catastrophic I | E (1) | E (1) | H (2) | H (2) | M (3) |
| Prepared By: | S. Yankay | Critical II | E (1) | H (2) | H (2) | M (3) | L (4) |
| | | Marginal III | H (2) | M (3) | M (3) | L (4) | L (5) |
| Reviewed By: | P. Garger, CIH | Negligible IV | M (3) | L (4) | L (4) | L (5) | L (5) |

Step 1: Review each "hazard" and determine RAC.

Probability = the likelihood to cause an incident, near miss, or accident. Identified as frequent, likely, occasional, seldom, or unlikely.

Severity = the outcome/degree if an incident, near miss, or accident did occur. Identified as catastrophic, critical, marginal, or negligible.

Step 2: Identify the RAC as E, H, M, or L for each hazard on AHA. Select the highest RAC and note at the top of the form.

RAC Chart

E = Extremely High Risk (1)
H = High Risk (2)
M = Moderate Risk (3)
L = Low Risk (4 or 5)

## TASK BREAKDOWN, HAZARDS AND CONTROLS: MONTHLY INSPECTION AND MAINTENANCE

| **Work Task Steps** | **Hazards** | **Controls** | **RAC Severity/ Probability /RAC** |
|---|---|---|---|
| MPPEH Inspection and Disposition | Physical Hazard: MEC | Specific requirements for MEC disposal are detailed in the WP . | II/C/H(2) |
| | | Assess MEC items to determine if they can be safely moved. | |
| | | If the item cannot be safely moved, it will be blown in place. | |
| | | Items that are not fused and are acceptable to be moved will be marked for collection and storage in accordance with the ESP. | |
| | | Demolition operations must be conducted in accordance with the Demolition SOP. | |
| | Physical Hazard: Hand Tools | Inspect tools prior to use. | III/C/M(3) |
| | | Use tools for their intended use only. | |
| | | Don’t use damaged tools. | |
| | | Push, don’t pull wrenches. | |
| MPPEH | Physical Hazard: Manual | Follow proper lifting techniques. | III/C/M(3) |

| Work Task Steps | Hazards | Controls | RAC Severity/ Probability /RAC |
|---|---|---|---|
| Inspection and Disposition *(continued)* | Lifting | Use caution and do not twist the back when carrying a load. | |
| | | Do not attempt to lift bulky items or items assessed at over 50lbs. without assistance. | |
| | | Use mechanical devices to move loads when possible. | |
| | | Wear leather gloves for materials handling. | |
| | Biological Hazards: Insects, Snakes, Wildlife, Vegetation | UXOSO/SSHO will walk site and identify potential hazardous areas and these will be identified in the daily tailgate safety briefing. | IV/C/L(4) |
| | | Use repellants and proper clothing for for protection against insects including ticks and mosquitoes. | |
| | | Stay alert and safe distance away from biological hazards. | |
| | | Wear appropriate PPE including work gloves, long sleeves and pants, and snake chaps if high probability of encountering snakes, ticks, poison ivy or oak. | |
| | | Workers with allergies should carry antidote kits, if necessary. | |
| | | Exercise caution when moving obstacles, items that could be home to snakes, spiders, or other animals or insects. | |
| | Physical Hazard: Noise | Wear hearing protection. | III/C/M(3) |
| | Chemical Hazards | Review safety data sheets. | III/E/L(5) |
| | | Follow manufacturer's instruction for use, handling and storage. | |
| | | Use recommended protective equipment. | |
| | | Label all containers. | |
| | Physical Hazard: Cold Stress | Wear cold weather clothing and provide shelter as needed based on site conditions. | III/C/M(3) |
| | | Conduct temperature monitoring when temperatures fall below $45^{o}$ F. | |
| | Physical Hazard: Heat Stress | Make drinking water available to all workers and encourage workers to drink small amounts of water frequently. | III/C/M(3) |
| | | Adjust work/rest regimens during hot weather. | |
| | | Determine appropriate work schedule; take regular breaks. | |
| | | Have adequate water and electrolyte drinks available. | |
| | | Designate shaded break areas. | |
| | | Be aware of symptoms of heat-related illness. | |
| MPPEH | Physical Hazard: Weather | Monitor radio for up-to-date severe weather forecasts. | IV/D/L(5) |

| **Work Task Steps** | **Hazards** | **Controls** | **RAC Severity/ Probability /RAC** |
|---|---|---|---|
| Inspection and Disposition *(continued)* | | Discontinue work during thunderstorms, ice, and severe weather events. | |

REQUIRED EQUIPMENT, INSPECTION AND TRAINING:

| **Equipment** | **Inspection Requirements** | **Training Requirements (including Competent Person and Qualified Personnel, if applicable)** |
|---|---|---|
| • Support vehicle<br>• Magnetometer<br>• PPE<br>• Emergency equipment including fire extinguishers<br>• Engineering Controls (i.e., sandbags, shovel, etc.)<br>• Explosives | • Inspect PPE prior to each use<br>• Inspect vehicle daily<br>• Inspect/test magnetometer<br>• Inspect emergency equipment/supplies | • Use and limitations of PPE<br>• Valid driver's license<br>• AHA review<br>• Hazardous waste sites require 40 hour HAZWOPER training, annual updates for any intrusive activities.<br>• UXOSO/SSHO will require HAZWOPER Supervisor's Training and 30-hour OSHA Construction Safety Course.<br>• First aid/CPR—at least 2 people on site<br>• UXO Techs: Qualifications and training per DDESB TP-18<br>• All non-UXO qualified staff will receive site-specific UXO awareness training. |

# Attachment C

# Harley-Davidson Drug and Alcohol Policy

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# HARLEY-DAVIDSON MOTOR COMPANY
# ALCOHOL & DRUG POLICY

## SECTION 1: PURPOSE

The use of alcohol, drugs or other illegal or controlled substances negatively affects the productive, personal, and family lives of employees and the stability of companies. Employees who use, possess, distribute, manufacture or are under the influence of alcohol and/or drugs at work or on Company property present a hazard to themselves and other employees, reduce productivity, may hurt themselves and other employees, and hurt morale. The Company and the Union are committed to addressing the problems of the use of alcohol and/or drugs in order to ensure the safety of the working environment, employees and the public. For these reasons, it is the purpose of this Policy to establish and maintain a work environment free from the effects of alcohol and/or drug use.

## SECTION 2: DEFINITIONS

A. Drugs

"Drugs" are defined as any substance which an individual may not sell, use, possess or distribute under applicable state or federal law. Such as:

| | |
|---|---|
| Amphetamines | Barbiturates |
| Benzodiazepines | Marijuana |
| Cocaine | Methadone |
| Methaqualone | Opiates |
| Phencyclidine | Propoxyphene |

Drugs also include: 1) any prescription drug being used by any person other than the person for whom the drug was prescribed by a licensed medical practitioner; 2) any prescription drug not legally obtained; or 3) any prescription drug being used in a manner, quantity or purpose other than prescribed.

B. Alcohol

"Alcohol" is defined as the intoxicating agent in fermented and distilled liquors, including but not limited to beer, wine and spirits, which if consumed, can cause intoxication.

C. Possess

"Possess" is defined as to have on one's person, personal effects or in one's personal vehicle while on Company property. Generally, "possess" would not include unopened containers of alcohol in a personal vehicle.

D. Company Property

"Company property" is defined as any office, plant, shop, parking lot or vehicle owned or operated by the Company. "Company property" also includes any facility or location at which the Company is conducting or participating in an off-site event.

## SECTION 3: USE, POSSESSION, SALE OR DISTRIBUTION

All employees are expected to report to work in a physical and mental condition that will enable them to perform their jobs in a safe and efficient manner. As such, the following is expressly prohibited under this Policy:

- Possession, use, purchase, sale, manufacture, or distribution of alcohol or drugs (as defined in Section 2 of this Policy) on Company property or while on Company business.
- Reporting to work under the influence or with the presence of alcohol or drugs.
- Operating a Company vehicle, operating equipment, or representing Harley-Davidson at a Company-sponsored event while under the influence of alcohol or drugs.

It is recognized that there may be times when it is acceptable, with prior approval, to engage in moderate social drinking of alcohol during work sponsored functions. However, the spirit and intent of this policy is to eliminate situations where an employee's mental and physical abilities are impaired such that an unsafe or unproductive condition exists. The Company in no way encourages or condones operating equipment or vehicles while in an impaired state. See Corporate Alcohol & Substance Abuse Policy on RIDE.

Further, employees are required to notify Health Services prior to the commencement of their shift if they are under the influence of alcohol or drugs or if they are taking any prescription medication (even if lawfully prescribed and taken as prescribed) which could impair their ability to safely perform their job.

## SECTION 4: ALCOHOL & DRUG TESTING

### A. Basis for Testing

Testing for alcohol and/or drugs shall only be done if a Company representative has "probable suspicion" that an employee is under the influence of alcohol and/or drugs or as otherwise provided for in this Policy.

"Probable Suspicion" must be based on specific personal observations that a Company representative can describe concerning the appearance, behavior, conduct, speech, or breath odor of the employee, etc. Circumstances or observations that lead to a "probable suspicion" determination should be witnessed by two (2) Company representatives, if practicable. These circumstances/observations shall be documented in writing at the time the employee is sent for testing. A copy of such documentation shall be promptly provided to the shop steward or other designated Union representative.

## HARLEY-DAVIDSON MOTOR COMPANY
## ALCOHOL & DRUG POLICY

In addition, "probable suspicion" shall be established any time an employee is: 1) involved in a workplace accident which involves significant damage to property or bodily injury which requires treatment by a health care provider; or 2) a driver of a motorized vehicle (e.g. motorcycle, tow motor, Taylor Dunn, tugger, forklift or electric, gas or propane-powered cart) involved in a workplace accident.

Further, employees shall be required to submit to a drug test prior to their return to work from a leave of absence and/or recall from layoff where the leave and/or layoff is more than four (4) consecutive months in duration.

### B. Procedures

When the Company determines it has "probable suspicion" that an employee is under the influence of alcohol and/or drugs, the Company may require the employee to go to a medical facility or report to an on-site third-party medical provider to provide urine samples for laboratory testing and/or be subject to a breath-alcohol test or blood-alcohol test.

At the time that the employee is told to report for probable suspicion testing, the Company representative shall explain to the employee the consequences of a positive test result and that the consequences of refusal to agree to the testing shall have the same effect as a positive test result. A Union representative shall be present when the employee is told of the "probable suspicion."

The Company will provide the employee and his/her Union representative transportation to and from the medical facility, if applicable.

The employee shall be placed on unpaid leave after the employee has provided a sample for testing. The employee shall remain on unpaid leave until the test results are received. If the test results are negative, all references and documentation related to the testing will be removed, including all records in the employee's personnel file, and the employee shall be made whole for lost wages or benefits.

### C. Testing and Chain-Of-Custody Procedures

Once the employee arrives at the medical location or on-site third party medical provider, the employee shall select one sample collection kit at random from a supply of split sample test kits. As an added precaution, these kits shall be shrink-wrapped or the specimen bottles shall be individually sealed as a safeguard against prior contamination.

In the urine collection procedure, urine shall be obtained directly in two (2) tamper-resistant urine bottles contained in the specimen collection kit. The Company may request the testing personnel administering a urine drug test to take steps such as checking the color and temperature of the urine specimens to detect tampering or substitution, provided that the employee's right of privacy is protected.

The urine containers shall be sealed, labeled and initialed by the employee without the containers leaving the employee's presence. The specimens must be immediately placed in a transportation container, which shall be sealed and again initialed by the employee, and sent to the designated testing laboratory. Should sample tampering be suspected, a second sample, under observation, will be required.

The person responsible for collecting the urine specimen from the employee shall initiate a chain-of-custody form. All handling and transportation of the urine specimen shall be through chain-of-custody procedures as specified in the Mandatory Guidelines for Federal Workplace Drug Testing Programs (hereinafter referred to as the "HHS Guidelines"), published by the U.S. Department of Health and Human Services and Department of Transportation's ("DOT") procedural protocols and safeguards set forth in Part 40 of Title 49 of the Federal Code of Regulations.

D. <u>Laboratory Analysis</u>

The primary and secondary laboratories to which the samples are sent for analysis shall be selected by the Company from among those laboratories certified by the U.S. Department of Health and Human Services or the National Institute for Drug Abuse (NIDA). The Company agrees to notify the Union in advance of those certified laboratories that have been selected or any change in laboratory.

The laboratories shall be instructed to handle and test the urine specimens, and to report the results to the Company's designated Medical Review Officer according to the test methods, cutoff levels and procedures prescribed in the HHS Guidelines and DOT procedural protocols and safeguards, with the following provision for the split sample procedure:

<u>Split Sample Procedure</u>:

When the primary laboratory receives a urine test kit, one sealed urine specimen bottle shall be removed immediately for testing. The shipping container with the remaining sealed bottle shall be immediately placed in secure refrigerated storage.

If the first urine specimen is reported by the primary laboratory as positive, the employee may, within twenty-four (24) hours of being notified of the positive report, request that the second urine specimen be forwarded to the secondary testing laboratory for Gas Chromatography/Mass Spectrometry (GC/MS) testing.

An employee who requests the secondary laboratory test is required to pay for such test and shall at that time execute a special check off authorization to ensure payment for the testing, or have the option to pay for such test before it is performed.

If the employee chooses the optional secondary laboratory test on the "split sample," a mandatory referral can only take place if the secondary laboratory confirms a positive result, based on the GC/MS cutoff levels listed in the HHS Guidelines and DOT procedural protocols and safeguards. If the secondary laboratory test is negative, the Company shall reimburse the employee for all costs associated with the second test.

The results of the second test shall be reported to the Company's designated Medical Review Officer. A complete report of any tests shall be made available, upon request, to the employee.

E. Consequences of a Positive Test or Refusal to Submit to a Test

The threshold limits for test results being considered positive for drugs shall be those established by HHS Guidelines that are in effect at the time the test is administered. The threshold limits for test results being considered positive for alcohol shall be those established by DOT Guidelines that are in effect at the time the test is administered.

Upon a report of any positive drug or alcohol test, the Company has two (2) options.

**OPTION 1:** The first option is applicable if there are no aggravating factors associated with the employee's positive drug or alcohol test (e.g. the employee has not violated other Company policies or rules). Under this option, the employee will be immediately suspended for a minimum of sixty (60) calendar days and will be a mandatory referral to the Employee Assistance Program ("EAP") and shall be required to comply with the recommendations of the EAP and to enter a rehabilitation program if referred. This option shall only be provided to an employee once during his/her employment with the Company. Additionally, the employee will be required to provide a written consent to the treatment facility(ies) to disclose information about treatment and progress to a Company representative attesting to his/her compliance. An employee who refuses to participate in the EAP shall be subject to immediate discharge.

Reinstatement will be subject to a probationary period of twenty-four (24) months of active employment during which time the employee may be subject to testing at any time without the necessity of establishing "probable suspicion." In addition, the employee must be in full compliance with the prescribed treatment, as outlined by the EAP counselor and must remain in compliance through the probationary period, failure to comply with the recommendations of the EAP counselor and/or failure to comply fully with the terms and conditions of the program and/or any positive test result during the probationary period will subject the employee to discharge.

**OPTION 2:** The second option is applicable where there are aggravating factors associated with the employee's positive drug or alcohol test. Under this option, the employee will be immediately discharged.

An employee's refusal to submit to drug and/or alcohol testing, including failure to cooperate with personnel performing the test, attempts to alter any sample or failure to provide a sufficient amount of urine or breath for testing without a medical reason, shall result in immediate discharge.

## SECTION 5: EMPLOYEE INFORMATION & EMPLOYEE ASSISTANCE PROGRAM

The Company shall provide information about this policy and EAP for all employees as described below. Such information shall include:

- A description of the Company's Employee Assistance Program, and how employees may confidentially make use of the program.
- An explanation of medical insurance coverage for alcohol and/or drug treatment.
- Dangers of workplace alcohol and/or drug use.
- The reason why the Company has an Alcohol and Drug Policy.
- Description of circumstances and observations that creates a "probable suspicion" situation.
- Testing for drugs and alcohol.
- Procedures for post accident/injury testing.
- The procedures for establishing "probable suspicion", collecting urine samples and maintaining the chain-of-custody.
- The split sample option.
- The consequences of refusal to submit to a test.
- The consequences of a positive test.
- The consequences of non-compliance with EAP recommendations and/or any rehabilitation program.

The Company will notify the Union in advance regarding any changes to its Employee Assistance Program which includes counseling, evaluation, treatment, and rehabilitation.

## SECTION 6: COMPANY & UNION

The Company and Union agree that differences arising between the Company, the employees, or the Union as to the interpretation, application or violation of this Policy shall be subject to the grievance and arbitration provisions of the parties' current labor agreement. The parties will have open discussions about using technological advancements designed to achieve more accurate test results.

The Company and Union agree that this Policy does not change nor minimize Harley-Davidson's responsibilities to comply with all Department of Transportation (DOT) regulations which may require more stringent guidelines for specific jobs covered by state and federal laws. See Corporate Alcohol & Substance Abuse Policy – Transportation Addendum. Nor does this policy have any effect upon the Company's drug testing policy for pre-employment physicals.

# Appendix B

# Test America Denver Quality Assurance Project Plan

# COMMONWEALTH OF PENNSYLVANIA
# DEPARTMENT OF ENVIRONMENTAL PROTECTION

*BUREAU OF LABORATORIES*

*LABORATORY ACCREDITATION PROGRAM*

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

NELAP RECOGNIZED TNI ACCREDITATION BODY

Certifies That

**68-00664**

**TestAmerica Denver**

**4955 Yarrow Street, Arvada, CO 80002**

Having duly met the requirement of
The act of June 29, 2002 (P.L. 596, No. 90)
dealing with Environmental Laboratories Accreditation
(27 Pa. C.S. §§4104-4113) and the
National Environmental Laboratory Accreditation Program Standard

is hereby approved as an

## Accredited Laboratory

As more fully described in the attached Scope of Accreditation

Expiration Date: **07/31/2015**

Certificate Number: **009**

Aaren Alger

Aaren S. Alger, Chief
Laboratory Accreditation Program
Bureau of Laboratories

Continued accreditation status depends on successful ongoing participation in the program
Certificate not transferable Surrender upon revocation
To be conspicuously displayed at the Laboratory
Not valid unless accompanied by a valid Scope of Accreditation
Shall not be used to imply endorsement by the Commonwealth of Pennsylvania
Customers are urged to verify the laboratory's current accreditation status
PA DEP is a NELAP recognized accreditation body

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Laboratory Scope of Accreditation

**Attached to Certificate of Accreditation 009-001 expiration date July 31, 2015. This listing of accredited analytes should be used only when associated with a valid certificate of accreditation.**

**DEP Laboratory ID: 68-00664** **EPA Lab Code: CO00026** **TNI Code:** **(303) 736-0100**

**TestAmerica Denver**
**4955 Yarrow Street**
**Arvada, CO 80002**

## Matrix: Non-Potable Water

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 1010 | | Ignitability | NELAP | OR | 7/16/2014 |
| EPA 160.4 | | Residue, volatile | NELAP | OR | 7/16/2014 |
| EPA 1664 | B | Non-polar material | NELAP | OR | 7/16/2014 |
| EPA 1664 | A | Oil and grease | NELAP | OR | 7/16/2014 |
| EPA 1664 | B | Oil and grease | NELAP | OR | 7/16/2014 |
| EPA 1664 | A | Total petroleum hydrocarbons (TPH) | NELAP | OR | 7/16/2014 |
| EPA 180.1 | | Turbidity | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Aluminum | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Antimony | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Arsenic | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Barium | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Beryllium | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Boron | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Cadmium | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Calcium | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Chromium | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Cobalt | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Copper | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Iron | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Lead | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Magnesium | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Manganese | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Molybdenum | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Nickel | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Potassium | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Selenium | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Silicon | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Silver | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Sodium | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Thallium | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Tin | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Titanium | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Vanadium | NELAP | OR | 7/16/2014 |
| EPA 200.7 | 4.4 | Zinc | NELAP | OR | 7/16/2014 |
| EPA 200.8 | 5.4 | Antimony | NELAP | OR | 7/16/2014 |
| EPA 200.8 | 5.4 | Arsenic | NELAP | OR | 7/16/2014 |
| EPA 200.8 | 5.4 | Barium | NELAP | OR | 7/16/2014 |
| EPA 200.8 | 5.4 | Beryllium | NELAP | OR | 7/16/2014 |
| EPA 200.8 | 5.4 | Cadmium | NELAP | OR | 7/16/2014 |
| EPA 200.8 | 5.4 | Chromium | NELAP | OR | 7/16/2014 |

Aaron Alger

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Laboratory Scope of Accreditation

Attached to Certificate of Accreditation 009-001 expiration date July 31, 2015. This listing of accredited analytes should be used only when associated with a valid certificate of accreditation.

DEP Laboratory ID: 68-00664 EPA Lab Code: CO00026 TNI Code: (303) 736-0100

## Matrix: Non-Potable Water

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 200.8 | 5.4 | Cobalt | NELAP | OR | 7/16/2014 |
| EPA 200.8 | 5.4 | Copper | NELAP | OR | 7/16/2014 |
| EPA 200.8 | 5.4 | Lead | NELAP | OR | 7/16/2014 |
| EPA 200.8 | 5.4 | Manganese | NELAP | OR | 7/16/2014 |
| EPA 200.8 | 5.4 | Molybdenum | NELAP | OR | 7/16/2014 |
| EPA 200.8 | 5.4 | Nickel | NELAP | OR | 7/16/2014 |
| EPA 200.8 | 5.4 | Selenium | NELAP | OR | 7/16/2014 |
| EPA 200.8 | 5.4 | Silver | NELAP | OR | 7/16/2014 |
| EPA 200.8 | 5.4 | Thallium | NELAP | OR | 7/16/2014 |
| EPA 200.8 | 5.4 | Vanadium | NELAP | OR | 7/16/2014 |
| EPA 200.8 | 5.4 | Zinc | NELAP | OR | 7/16/2014 |
| EPA 245.1 | 3.0 | Mercury | NELAP | OR | 7/16/2014 |
| EPA 300.0 | 2.1 | Bromide | NELAP | OR | 7/16/2014 |
| EPA 300.0 | 2.1 | Chloride | NELAP | OR | 7/16/2014 |
| EPA 300.0 | 2.1 | Fluoride | NELAP | OR | 7/16/2014 |
| EPA 300.0 | 2.1 | Nitrate as N | NELAP | OR | 7/16/2014 |
| EPA 300.0 | 2.1 | Orthophosphate as P | NELAP | OR | 7/16/2014 |
| EPA 300.0 | 2.1 | Sulfate | NELAP | OR | 7/16/2014 |
| EPA 300.0 | 2.1 | Total nitrate-nitrite | NELAP | OR | 7/16/2014 |
| EPA 3005 | A | Preconcentration under acid | NELAP | OR | 7/16/2014 |
| EPA 3010 | A | Hot plate acid digestion (HNO3 + HCl) | NELAP | OR | 7/16/2014 |
| EPA 3020 | A | Hot plate acid digestion (HNO3 only) | NELAP | OR | 7/16/2014 |
| EPA 335.4 | | Total cyanide | NELAP | OR | 7/16/2014 |
| EPA 350.1 | | Ammonia as N | NELAP | OR | 7/16/2014 |
| EPA 351.2 | | Kjeldahl nitrogen, total (TKN) | NELAP | OR | 7/16/2014 |
| EPA 3510 | C | Separatory funnel liquid-liquid extraction | NELAP | OR | 7/16/2014 |
| EPA 3520 | C | Continuous liquid-liquid extraction | NELAP | OR | 7/16/2014 |
| EPA 353.2 | | Nitrate as N | NELAP | OR | 7/16/2014 |
| EPA 353.2 | | Total nitrate-nitrite | NELAP | OR | 7/16/2014 |
| EPA 3535 | | Solid-phase extraction (SPE) | NELAP | OR | 7/16/2014 |
| EPA 3620 | B | Florisil cleanup | NELAP | OR | 7/16/2014 |
| EPA 365.1 | | Orthophosphate as P | NELAP | OR | 7/16/2014 |
| EPA 365.1 | | Phosphorus, total | NELAP | OR | 7/16/2014 |
| EPA 3660 | B | Sulfur cleanup | NELAP | OR | 7/16/2014 |
| EPA 3665 | A | Sulfuric acid/permanganate clean-up | NELAP | OR | 7/16/2014 |
| EPA 410.4 | | Chemical oxygen demand (COD) | NELAP | OR | 7/16/2014 |
| EPA 420.1 | | Total phenolics | NELAP | OR | 7/16/2014 |
| EPA 420.4 | | Total phenolics | NELAP | OR | 7/16/2014 |
| EPA 5030 | B | Aqueous-phase purge-and-trap | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Aluminum | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Antimony | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Arsenic | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Barium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Beryllium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Boron | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Cadmium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Calcium | NELAP | OR | 7/16/2014 |

Aaren Alger

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Laboratory Scope of Accreditation

**Attached to Certificate of Accreditation 009-001 expiration date July 31, 2015. This listing of accredited analytes should be used only when associated with a valid certificate of accreditation.**

**DEP Laboratory ID: 68-00664** **EPA Lab Code: CO00026** **TNI Code:** **(303) 736-0100**

## Matrix: Non-Potable Water

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 6010 | | Chromium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Cobalt | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Copper | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Iron | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Lead | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Lithium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Magnesium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Manganese | NELAP | OR | 7/16/2014 |
| EPA 6010 | B | Metals by ICP/AES | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Molybdenum | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Nickel | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Phosphorus, total | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Potassium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Selenium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Silica, as SiO2 | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Silver | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Sodium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Strontium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Thallium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Tin | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Titanium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Vanadium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Zinc | NELAP | OR | 7/16/2014 |
| EPA 602 | | 1,2-Dichlorobenzene (o-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 602 | | 1,3-Dichlorobenzene (m-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 602 | | 1,4-Dichlorobenzene (p-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 602 | | Benzene | NELAP | OR | 7/16/2014 |
| EPA 602 | | Chlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 602 | | Ethylbenzene | NELAP | OR | 7/16/2014 |
| EPA 602 | | Methyl tert-butyl ether (MTBE) | NELAP | OR | 7/16/2014 |
| EPA 602 | | Toluene | NELAP | OR | 7/16/2014 |
| EPA 602 | | Xylenes, total | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Antimony | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Arsenic | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Barium | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Beryllium | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Cadmium | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Chromium | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Cobalt | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Copper | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Lead | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Manganese | NELAP | OR | 7/16/2014 |
| EPA 6020 | A | Metals by ICP/MS | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Nickel | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Silver | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Thallium | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Zinc | NELAP | OR | 7/16/2014 |

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Laboratory Scope of Accreditation

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DEP Laboratory ID: 68-00664 EPA Lab Code: CO00026 TNI Code: (303) 736-0100

## Matrix: Non-Potable Water

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 608 | | 4,4'-DDD | NELAP | OR | 7/16/2014 |
| EPA 608 | | 4,4'-DDE | NELAP | OR | 7/16/2014 |
| EPA 608 | | 4,4'-DDT | NELAP | OR | 7/16/2014 |
| EPA 608 | | Aldrin (HHDN) | NELAP | OR | 7/16/2014 |
| EPA 608 | | Aroclor-1016 (PCB-1016) | NELAP | OR | 7/16/2014 |
| EPA 608 | | Aroclor-1221 (PCB-1221) | NELAP | OR | 7/16/2014 |
| EPA 608 | | Aroclor-1232 (PCB-1232) | NELAP | OR | 7/16/2014 |
| EPA 608 | | Aroclor-1242 (PCB-1242) | NELAP | OR | 7/16/2014 |
| EPA 608 | | Aroclor-1248 (PCB-1248) | NELAP | OR | 7/16/2014 |
| EPA 608 | | Aroclor-1254 (PCB-1254) | NELAP | OR | 7/16/2014 |
| EPA 608 | | Aroclor-1260 (PCB-1260) | NELAP | OR | 7/16/2014 |
| EPA 608 | | Chlordane (tech.) | NELAP | OR | 7/16/2014 |
| EPA 608 | | Dieldrin | NELAP | OR | 7/16/2014 |
| EPA 608 | | Endosulfan I | NELAP | OR | 7/16/2014 |
| EPA 608 | | Endosulfan II | NELAP | OR | 7/16/2014 |
| EPA 608 | | Endosulfan sulfate | NELAP | OR | 7/16/2014 |
| EPA 608 | | Endrin | NELAP | OR | 7/16/2014 |
| EPA 608 | | Endrin aldehyde | NELAP | OR | 7/16/2014 |
| EPA 608 | | Heptachlor | NELAP | OR | 7/16/2014 |
| EPA 608 | | Heptachlor epoxide | NELAP | OR | 7/16/2014 |
| EPA 608 | | Toxaphene (Chlorinated camphene) | NELAP | OR | 7/16/2014 |
| EPA 608 | | alpha-BHC (alpha-Hexachlorocyclohexane) | NELAP | OR | 7/16/2014 |
| EPA 608 | | beta-BHC (beta-Hexachlorocyclohexane) | NELAP | OR | 7/16/2014 |
| EPA 608 | | delta-BHC (delta-Hexachlorocyclohexane) | NELAP | OR | 7/16/2014 |
| EPA 608 | | gamma-BHC (Lindane, gamma-Hexachlorocyclohexane) | NELAP | OR | 7/16/2014 |
| EPA 610 | | Acenaphthene | NELAP | OR | 7/16/2014 |
| EPA 610 | | Acenaphthylene | NELAP | OR | 7/16/2014 |
| EPA 610 | | Anthracene | NELAP | OR | 7/16/2014 |
| EPA 610 | | Benzo[a]anthracene | NELAP | OR | 7/16/2014 |
| EPA 610 | | Benzo[a]pyrene | NELAP | OR | 7/16/2014 |
| EPA 610 | | Benzo[b]fluoranthene | NELAP | OR | 7/16/2014 |
| EPA 610 | | Benzo[ghi]perylene | NELAP | OR | 7/16/2014 |
| EPA 610 | | Benzo[k]fluoranthene | NELAP | OR | 7/16/2014 |
| EPA 610 | | Chrysene (Benzo[a]phenanthrene) | NELAP | OR | 7/16/2014 |
| EPA 610 | | Dibenzo[a,h]anthracene | NELAP | OR | 7/16/2014 |
| EPA 610 | | Fluoranthene | NELAP | OR | 7/16/2014 |
| EPA 610 | | Fluorene | NELAP | OR | 7/16/2014 |
| EPA 610 | | Indeno(1,2,3-cd)pyrene | NELAP | OR | 7/16/2014 |
| EPA 610 | | Naphthalene | NELAP | OR | 7/16/2014 |
| EPA 610 | | Phenanthrene | NELAP | OR | 7/16/2014 |
| EPA 610 | | Pyrene | NELAP | OR | 7/16/2014 |
| EPA 614 | | Azinphos-methyl (Guthion) | NELAP | OR | 7/16/2014 |
| EPA 614 | | Demeton-O | NELAP | OR | 7/16/2014 |
| EPA 614 | | Demeton-S | NELAP | OR | 7/16/2014 |
| EPA 614 | | Diazinon (Spectracide) | NELAP | OR | 7/16/2014 |
| EPA 614 | | Disulfoton | NELAP | OR | 7/16/2014 |

Aaren Alger

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# Laboratory Scope of Accreditation

**Attached to Certificate of Accreditation 009-001 expiration date July 31, 2015. This listing of accredited analytes should be used only when associated with a valid certificate of accreditation.**

**DEP Laboratory ID: 68-00664** **EPA Lab Code: CO00026** **TNI Code:** **(303) 736-0100**

## Matrix: Non-Potable Water

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 614 | | Malathion | NELAP | OR | 7/16/2014 |
| EPA 614 | | Methyl parathion (Parathion, methyl) | NELAP | OR | 7/16/2014 |
| EPA 614 | | Parathion, ethyl (Ethyl parathion, Parathion) | NELAP | OR | 7/16/2014 |
| EPA 624 | | 1,1,1-Trichloroethane | NELAP | OR | 7/16/2014 |
| EPA 624 | | 1,1,2,2-Tetrachloroethane | NELAP | OR | 7/16/2014 |
| EPA 624 | | 1,1,2-Trichloroethane | NELAP | OR | 7/16/2014 |
| EPA 624 | | 1,1-Dichloroethane | NELAP | OR | 7/16/2014 |
| EPA 624 | | 1,1-Dichloroethene (1,1-Dichloroethylene) | NELAP | OR | 7/16/2014 |
| EPA 624 | | 1,2-Dichlorobenzene (o-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 624 | | 1,2-Dichloroethane | NELAP | OR | 7/16/2014 |
| EPA 624 | | 1,2-Dichloropropane | NELAP | OR | 7/16/2014 |
| EPA 624 | | 1,3-Dichlorobenzene (m-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 624 | | 1,4-Dichlorobenzene (p-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 624 | | 2-Chloroethyl vinyl ether | NELAP | OR | 7/16/2014 |
| EPA 624 | | Acrolein (Propenal) | NELAP | OR | 7/16/2014 |
| EPA 624 | | Acrylonitrile | NELAP | OR | 7/16/2014 |
| EPA 624 | | Benzene | NELAP | OR | 7/16/2014 |
| EPA 624 | | Bromodichloromethane | NELAP | OR | 7/16/2014 |
| EPA 624 | | Bromoform | NELAP | OR | 7/16/2014 |
| EPA 624 | | Bromomethane (Methyl bromide) | NELAP | OR | 7/16/2014 |
| EPA 624 | | Carbon tetrachloride | NELAP | OR | 7/16/2014 |
| EPA 624 | | Chlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 624 | | Chloroethane | NELAP | OR | 7/16/2014 |
| EPA 624 | | Chloroform | NELAP | OR | 7/16/2014 |
| EPA 624 | | Dibromochloromethane | NELAP | OR | 7/16/2014 |
| EPA 624 | | Ethylbenzene | NELAP | OR | 7/16/2014 |
| EPA 624 | | Methylene chloride (Dichloromethane) | NELAP | OR | 7/16/2014 |
| EPA 624 | | Tetrachloroethene (PCE, Perchloroethylene) | NELAP | OR | 7/16/2014 |
| EPA 624 | | Toluene | NELAP | OR | 7/16/2014 |
| EPA 624 | | Trichloroethene (TCE, Trichloroethylene) | NELAP | OR | 7/16/2014 |
| EPA 624 | | Trichlorofluoromethane (Freon 11) | NELAP | OR | 7/16/2014 |
| EPA 624 | | Vinyl chloride (Chloroethene) | NELAP | OR | 7/16/2014 |
| EPA 624 | | Xylenes, total | NELAP | OR | 7/16/2014 |
| EPA 624 | | cis-1,3-Dichloropropene | NELAP | OR | 7/16/2014 |
| EPA 624 | | trans-1,2-Dichloroethene | NELAP | OR | 7/16/2014 |
| EPA 624 | | trans-1,3-Dichloropropene | NELAP | OR | 7/16/2014 |
| EPA 625 | | 1,2,4-Trichlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 625 | | 1,2-Dichlorobenzene (o-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 625 | | 1,3-Dichlorobenzene (m-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 625 | | 1,4-Dichlorobenzene (p-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 625 | | 2,4,5-Trichlorophenol | NELAP | OR | 7/16/2014 |
| EPA 625 | | 2,4,6-Trichlorophenol | NELAP | OR | 7/16/2014 |
| EPA 625 | | 2,4-Dichlorophenol | NELAP | OR | 7/16/2014 |
| EPA 625 | | 2,4-Dimethylphenol | NELAP | OR | 7/16/2014 |
| EPA 625 | | 2,4-Dinitrophenol | NELAP | OR | 7/16/2014 |
| EPA 625 | | 2,4-Dinitrotoluene (2,4-DNT) | NELAP | OR | 7/16/2014 |
| EPA 625 | | 2,6-Dinitrotoluene (2,6-DNT) | NELAP | OR | 7/16/2014 |

Aaren Alger

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Laboratory Scope of Accreditation

Attached to Certificate of Accreditation 009-001 expiration date July 31, 2015. This listing of accredited analytes should be used only when associated with a valid certificate of accreditation.

DEP Laboratory ID: 68-00664 EPA Lab Code: CO00026 TNI Code: (303) 736-0100

## Matrix: Non-Potable Water

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 625 | | 2-Chloronaphthalene | NELAP | OR | 7/16/2014 |
| EPA 625 | | 2-Chlorophenol | NELAP | OR | 7/16/2014 |
| EPA 625 | | 2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol) | NELAP | OR | 7/16/2014 |
| EPA 625 | | 2-Nitrophenol | NELAP | OR | 7/16/2014 |
| EPA 625 | | 3,3'-Dichlorobenzidine | NELAP | OR | 7/16/2014 |
| EPA 625 | | 4-Bromophenyl phenyl ether | NELAP | OR | 7/16/2014 |
| EPA 625 | | 4-Chloro-3-methylphenol | NELAP | OR | 7/16/2014 |
| EPA 625 | | 4-Chlorophenyl phenyl ether | NELAP | OR | 7/16/2014 |
| EPA 625 | | 4-Nitrophenol | NELAP | OR | 7/16/2014 |
| EPA 625 | | Acenaphthene | NELAP | OR | 7/16/2014 |
| EPA 625 | | Acenaphthylene | NELAP | OR | 7/16/2014 |
| EPA 625 | | Anthracene | NELAP | OR | 7/16/2014 |
| EPA 625 | | Benzidine | NELAP | OR | 7/16/2014 |
| EPA 625 | | Benzo[a]anthracene | NELAP | OR | 7/16/2014 |
| EPA 625 | | Benzo[a]pyrene | NELAP | OR | 7/16/2014 |
| EPA 625 | | Benzo[b]fluoranthene | NELAP | OR | 7/16/2014 |
| EPA 625 | | Benzo[ghi]perylene | NELAP | OR | 7/16/2014 |
| EPA 625 | | Benzo[k]fluoranthene | NELAP | OR | 7/16/2014 |
| EPA 625 | | Butyl benzyl phthalate (Benzyl butyl phthalate) | NELAP | OR | 7/16/2014 |
| EPA 625 | | Carbazole | NELAP | OR | 7/16/2014 |
| EPA 625 | | Chrysene (Benzo[a]phenanthrene) | NELAP | OR | 7/16/2014 |
| EPA 625 | | Di-n-butyl phthalate | NELAP | OR | 7/16/2014 |
| EPA 625 | | Di-n-octyl phthalate | NELAP | OR | 7/16/2014 |
| EPA 625 | | Dibenzo[a,h]anthracene | NELAP | OR | 7/16/2014 |
| EPA 625 | | Diethyl phthalate | NELAP | OR | 7/16/2014 |
| EPA 625 | | Dimethyl phthalate | NELAP | OR | 7/16/2014 |
| EPA 625 | | Fluoranthene | NELAP | OR | 7/16/2014 |
| EPA 625 | | Fluorene | NELAP | OR | 7/16/2014 |
| EPA 625 | | Hexachlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 625 | | Hexachlorobutadiene (1,3-Hexachlorobutadiene) | NELAP | OR | 7/16/2014 |
| EPA 625 | | Hexachlorocyclopentadiene | NELAP | OR | 7/16/2014 |
| EPA 625 | | Hexachloroethane | NELAP | OR | 7/16/2014 |
| EPA 625 | | Indeno(1,2,3-cd)pyrene | NELAP | OR | 7/16/2014 |
| EPA 625 | | Isophorone | NELAP | OR | 7/16/2014 |
| EPA 625 | | N-Nitrosodi-n-propylamine | NELAP | OR | 7/16/2014 |
| EPA 625 | | N-Nitrosodimethylamine | NELAP | OR | 7/16/2014 |
| EPA 625 | | N-Nitrosodiphenylamine | NELAP | OR | 7/16/2014 |
| EPA 625 | | Naphthalene | NELAP | OR | 7/16/2014 |
| EPA 625 | | Nitrobenzene | NELAP | OR | 7/16/2014 |
| EPA 625 | | Pentachlorophenol (PCP) | NELAP | OR | 7/16/2014 |
| EPA 625 | | Phenanthrene | NELAP | OR | 7/16/2014 |
| EPA 625 | | Phenol | NELAP | OR | 7/16/2014 |
| EPA 625 | | Pyrene | NELAP | OR | 7/16/2014 |
| EPA 625 | | bis(2-Chloroethoxy)methane | NELAP | OR | 7/16/2014 |
| EPA 625 | | bis(2-Chloroethyl) ether | NELAP | OR | 7/16/2014 |

Aaron Alger

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Laboratory Scope of Accreditation

**Attached to Certificate of Accreditation 009-001 expiration date July 31, 2015. This listing of accredited analytes should be used only when associated with a valid certificate of accreditation.**

**DEP Laboratory ID: 68-00664** **EPA Lab Code: CO00026** **TNI Code:** **(303) 736-0100**

## Matrix: Non-Potable Water

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 625 | | bis(2-Chloroisopropyl) ether | NELAP | OR | 7/16/2014 |
| EPA 625 | | bis(2-Ethylhexyl) phthalate (DEHP) | NELAP | OR | 7/16/2014 |
| EPA 7196 | A | Chromium VI | NELAP | OR | 7/16/2014 |
| EPA 7470 | A | Mercury | NELAP | OR | 7/16/2014 |
| EPA 8011 | | 1,2-Dibromo-3-chloropropane (DBCP, Dibromochloropropane) | NELAP | OR | 7/16/2014 |
| EPA 8011 | | 1,2-Dibromoethane (EDB, Ethylene dibromide) | NELAP | OR | 7/16/2014 |
| EPA 8011 | | Microextractables by GC-ECD | NELAP | OR | 7/16/2014 |
| EPA 8015 | | Diesel-range organics (DRO) | NELAP | OR | 7/16/2014 |
| EPA 8015 | | Ethanol | NELAP | OR | 7/16/2014 |
| EPA 8015 | | Gasoline-range organics (GRO) | NELAP | OR | 7/16/2014 |
| EPA 8015 | | Isobutyl alcohol (2-Methyl-1-propanol) | NELAP | OR | 7/16/2014 |
| EPA 8015 | | Methanol | NELAP | OR | 7/16/2014 |
| EPA 8015 | B | Nonhalogenated organics by GC/FID | NELAP | OR | 7/16/2014 |
| EPA 8015 | | n-Butyl alcohol (n-Butanol, 1-Butanol) | NELAP | OR | 7/16/2014 |
| EPA 8021 | | 1,2-Dichlorobenzene (o-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 8021 | | 1,3-Dichlorobenzene (m-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 8021 | | 1,4-Dichlorobenzene (p-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 8021 | | Benzene | NELAP | OR | 7/16/2014 |
| EPA 8021 | | Chlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 8021 | | Ethylbenzene | NELAP | OR | 7/16/2014 |
| EPA 8021 | | Methyl tert-butyl ether (MTBE) | NELAP | OR | 7/16/2014 |
| EPA 8021 | | Naphthalene | NELAP | OR | 7/16/2014 |
| EPA 8021 | | Toluene | NELAP | OR | 7/16/2014 |
| EPA 8021 | B | VOCs by GC/PID/ELCD | NELAP | OR | 7/16/2014 |
| EPA 8021 | | Xylenes, total | NELAP | OR | 7/16/2014 |
| EPA 8081 | | 4,4'-DDD | NELAP | OR | 7/16/2014 |
| EPA 8081 | | 4,4'-DDE | NELAP | OR | 7/16/2014 |
| EPA 8081 | | 4,4'-DDT | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Aldrin (HHDN) | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Chlordane (tech.) | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Chlorobenzilate | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Diallate (cis or trans) | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Dicofol (Kelthane) | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Dieldrin | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Endosulfan I | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Endosulfan II | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Endosulfan sulfate | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Endrin | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Endrin aldehyde | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Endrin ketone | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Heptachlor | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Heptachlor epoxide | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Isodrin | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Kepone | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Methoxychlor | NELAP | OR | 7/16/2014 |

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# Laboratory Scope of Accreditation

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DEP Laboratory ID: 68-00664 EPA Lab Code: CO00026 TNI Code: (303) 736-0100

## Matrix: Non-Potable Water

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 8081 | | Mirex | NELAP | OR | 7/16/2014 |
| EPA 8081 | A | Organochlorine pesticides by GC/ECD | NELAP | OR | 7/16/2014 |
| EPA 8081 | | alpha-BHC (alpha-Hexachlorocyclohexane) | NELAP | OR | 7/16/2014 |
| EPA 8081 | | alpha-Chlordane | NELAP | OR | 7/16/2014 |
| EPA 8081 | | beta-BHC (beta-Hexachlorocyclohexane) | NELAP | OR | 7/16/2014 |
| EPA 8081 | | delta-BHC (delta-Hexachlorocyclohexane) | NELAP | OR | 7/16/2014 |
| EPA 8081 | | gamma-BHC (Lindane, gamma-Hexachlorocyclohexane) | NELAP | OR | 7/16/2014 |
| EPA 8081 | | gamma-Chlordane | NELAP | OR | 7/16/2014 |
| EPA 8082 | | Aroclor-1016 (PCB-1016) | NELAP | OR | 7/16/2014 |
| EPA 8082 | | Aroclor-1221 (PCB-1221) | NELAP | OR | 7/16/2014 |
| EPA 8082 | | Aroclor-1232 (PCB-1232) | NELAP | OR | 7/16/2014 |
| EPA 8082 | | Aroclor-1242 (PCB-1242) | NELAP | OR | 7/16/2014 |
| EPA 8082 | | Aroclor-1248 (PCB-1248) | NELAP | OR | 7/16/2014 |
| EPA 8082 | | Aroclor-1254 (PCB-1254) | NELAP | OR | 7/16/2014 |
| EPA 8082 | | Aroclor-1260 (PCB-1260) | NELAP | OR | 7/16/2014 |
| EPA 8082 | A | PCBs by GC/ECD | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Atrazine | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Azinphos-ethyl (Ethyl guthion) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Azinphos-methyl (Guthion) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Bolstar (Sulprofos) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Carbophenothion (Trithion) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Chlorpyrifos | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Coumaphos | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Demeton-O | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Demeton-S | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Diazinon (Spectracide) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Dichlorovos (DDVP, Dichlorvos) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Dimethoate | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Disulfoton | NELAP | OR | 7/16/2014 |
| EPA 8141 | | EPN (Santox) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Ethoprop (Prophos) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Famphur | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Fensulfothion | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Fenthion | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Malathion | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Merphos | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Methyl parathion (Parathion, methyl) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Mevinphos | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Naled | NELAP | OR | 7/16/2014 |
| EPA 8141 | A | Organophosphorus compounds by GC/NPD | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Parathion, ethyl (Ethyl parathion, Parathion) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Phorate (Thimet) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Phosmet (Imidan) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Ronnel | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Simazine | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Stirophos (Tetrachlorovinphos) | NELAP | OR | 7/16/2014 |

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### Matrix: Non-Potable Water

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 8141 | | Sulfotepp (Tetraethyl dithiopyrophosphate) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Thionazine (Thionazin, Zinophos) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Tokuthion (Prothiophos) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Trichloronate | NELAP | OR | 7/16/2014 |
| EPA 8151 | | 2,4,5-T | NELAP | OR | 7/16/2014 |
| EPA 8151 | | 2,4,5-TP (Silvex) | NELAP | OR | 7/16/2014 |
| EPA 8151 | | 2,4-D | NELAP | OR | 7/16/2014 |
| EPA 8151 | | 2,4-DB (Butoxon) | NELAP | OR | 7/16/2014 |
| EPA 8151 | A | Chlorinated herbicides by GC/ECD | NELAP | OR | 7/16/2014 |
| EPA 8151 | | Dalapon (2,2-Dichloropropionic acid) | NELAP | OR | 7/16/2014 |
| EPA 8151 | | Dicamba | NELAP | OR | 7/16/2014 |
| EPA 8151 | | Dichloroprop (Dichlorprop) | NELAP | OR | 7/16/2014 |
| EPA 8151 | | Dinoseb (2-sec-Butyl-4,6-dinitrophenol, DNBP) | NELAP | OR | 7/16/2014 |
| EPA 8151 | | MCPA | NELAP | OR | 7/16/2014 |
| EPA 8151 | | MCPP (Mecoprop) | NELAP | OR | 7/16/2014 |
| EPA 8151 | | Picloram (4-Amino-3,5,6-trichloro-2-pyridinecarboxylic acid) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,1,1,2-Tetrachloroethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,1,1-Trichloroethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,1,2,2-Tetrachloroethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,1,2-Trichloroethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,1-Dichloroethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,1-Dichloroethene (1,1-Dichloroethylene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,1-Dichloropropene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,2,3-Trichlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,2,3-Trichloropropane (1,2,3-TCP) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,2,4-Trichlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,2,4-Trimethylbenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,2-Dibromo-3-chloropropane (DBCP, Dibromochloropropane) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,2-Dibromoethane (EDB, Ethylene dibromide) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,2-Dichlorobenzene (o-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,2-Dichloroethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,2-Dichloropropane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,3,5-Trimethylbenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,3-Dichlorobenzene (m-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,3-Dichloropropane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,4-Dichlorobenzene (p-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,4-Dioxane (1,4-Diethyleneoxide) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1-Chlorohexane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 2,2-Dichloropropane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 2-Butanone (Methyl ethyl ketone, MEK) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 2-Chloroethyl vinyl ether | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 2-Chlorotoluene | NELAP | OR | 7/16/2014 |

Aaren Alger

# Laboratory Scope of Accreditation

Attached to Certificate of Accreditation 009-001 expiration date July 31, 2015. This listing of accredited analytes should be used only when associated with a valid certificate of accreditation.

DEP Laboratory ID: 68-00664 EPA Lab Code: CO00026 TNI Code: (303) 736-0100

## Matrix: Non-Potable Water

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 8260 | | 2-Hexanone | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 2-Nitropropane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 2-Pentanone | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 4-Chlorotoluene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 4-Methyl-2-pentanone (MIBK) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Acetone | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Acetonitrile | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Acrolein (Propenal) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Acrylonitrile | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Allyl chloride (3-Chloropropene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Benzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Bromobenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Bromochloromethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Bromodichloromethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Bromoform | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Bromomethane (Methyl bromide) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Carbon disulfide | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Carbon tetrachloride | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Chlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Chloroethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Chloroform | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Chloromethane (Methyl chloride) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Chloroprene (2-Chloro-1,3-butadiene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Cyclohexane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Dibromochloromethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Dibromomethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Dichlorodifluoromethane (Freon 12) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Diethyl ether (Ethyl ether) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Diisopropyl ether (DIPE) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Ethanol | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Ethyl acetate | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Ethyl methacrylate | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Ethylbenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Ethylene oxide | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Hexachlorobutadiene (1,3-Hexachlorobutadiene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Iodomethane (Methyl iodide) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Isobutyl alcohol (2-Methyl-1-propanol) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Isopropyl alcohol (2-Propanol) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Isopropylbenzene (Cumene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Methacrylonitrile | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Methyl tert-butyl ether (MTBE) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Methylene chloride (Dichloromethane) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Methylmethacrylate | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Naphthalene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Pentachloroethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Propionitrile (Ethyl cyanide) | NELAP | OR | 7/16/2014 |

Aaron Alger

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Laboratory Scope of Accreditation

**Attached to Certificate of Accreditation 009-001 expiration date July 31, 2015. This listing of accredited analytes should be used only when associated with a valid certificate of accreditation.**

**DEP Laboratory ID: 68-00664** **EPA Lab Code: CO00026** **TNI Code:** **(303) 736-0100**

## Matrix: Non-Potable Water

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 8260 | | Styrene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Tetrachloroethene (PCE, Perchloroethylene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Toluene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Trichloroethene (TCE, Trichloroethylene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Trichlorofluoromethane (Freon 11) | NELAP | OR | 7/16/2014 |
| EPA 8260 | B | VOCs by GC/MS | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Vinyl acetate | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Vinyl chloride (Chloroethene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Xylenes, total | NELAP | OR | 7/16/2014 |
| EPA 8260 | | cis-1,2-Dichloroethene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | cis-1,3-Dichloropropene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | cis-1,4-Dichloro-2-butene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | n-Butyl alcohol (n-Butanol, 1-Butanol) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | n-Butylbenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | n-Propylbenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | sec-Butylbenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | tert-Butyl alcohol (2-Methyl-2-propanol) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | tert-Butylbenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | trans-1,2-Dichloroethene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | trans-1,3-Dichloropropene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | trans-1,4-Dichloro-2-butene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,2,4,5-Tetrachlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,2,4-Trichlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,2-Dichlorobenzene (o-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,2-Diphenylhydrazine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,3,5-Trinitrobenzene (1,3,5-TNB) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,3-Dichlorobenzene (m-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,3-Dinitrobenzene (1,3-DNB) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,4-Dichlorobenzene (p-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,4-Dinitrobenzene (1,4-DNB) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,4-Naphthoquinone | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,4-Phenylenediamine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1-Chloronaphthalene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1-Naphthylamine (alpha-Naphthylamine) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2,3,4,6-Tetrachlorophenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2,4,5-Trichlorophenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2,4,6-Trichlorophenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2,4-Dichlorophenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2,4-Dimethylphenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2,4-Dinitrophenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2,4-Dinitrotoluene (2,4-DNT) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2,6-Dichlorophenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2,6-Dinitrotoluene (2,6-DNT) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2-Acetylaminofluorene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2-Chloronaphthalene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2-Chlorophenol | NELAP | OR | 7/16/2014 |

Aaron Alger

**The Pennsylvania Department of Environmental Protection Laboratory Accreditation Program is a NELAP recognized Accreditation Body. Customers are urged to verify the laboratory's current accreditation standing.**

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Laboratory Scope of Accreditation

Attached to Certificate of Accreditation 009-001 expiration date July 31, 2015. This listing of accredited analytes should be used only when associated with a valid certificate of accreditation.

DEP Laboratory ID: 68-00664 EPA Lab Code: CO00026 TNI Code: (303) 736-0100

## Matrix: Non-Potable Water

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 8270 | | 2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2-Methylnaphthalene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2-Methylphenol (o-Cresol) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2-Naphthylamine (beta-Naphthylamine) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2-Nitroaniline | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2-Nitrophenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2-Picoline (2-Methylpyridine) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 3+4-Methylphenol (m+p-Cresol) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 3,3'-Dichlorobenzidine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 3,3'-Dimethylbenzidine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 3-Methylcholanthrene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 3-Nitroaniline | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 4,4'-Methylenebis(2-chloroaniline) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 4-Aminobiphenyl | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 4-Bromophenyl phenyl ether | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 4-Chloro-3-methylphenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 4-Chloroaniline | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 4-Chlorophenyl phenyl ether | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 4-Dimethylaminoazobenzene (Dimethylaminoazobenzene) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 4-Nitroaniline | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 4-Nitrophenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 4-Nitroquinoline-1-oxide | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 5-Nitro-o-toluidine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 7,12-Dimethylbenz(a)anthracene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Acenaphthene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Acenaphthylene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Acetophenone | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Aniline | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Anthracene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Aramite | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Benzidine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Benzo[a]anthracene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Benzo[a]pyrene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Benzo[b]fluoranthene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Benzo[ghi]perylene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Benzo[k]fluoranthene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Benzoic acid | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Benzyl alcohol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Benzyl butyl phthalate (Butyl benzyl phthalate) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Carbazole | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Chrysene (Benzo[a]phenanthrene) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Di-n-butyl phthalate | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Di-n-octyl phthalate | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Dibenzo[a,h]anthracene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Dibenzofuran | NELAP | OR | 7/16/2014 |

Aaren Alger

# Laboratory Scope of Accreditation

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**DEP Laboratory ID: 68-00664** **EPA Lab Code: CO00026** **TNI Code:** **(303) 736-0100**

## Matrix: Non-Potable Water

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 8270 | | Diethyl phthalate | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Dimethoate | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Dimethyl phthalate | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Dinoseb (2-sec-Butyl-4,6-dinitrophenol, DNBP) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Diphenylamine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Disulfoton | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Ethyl methanesulfonate | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Famphur | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Fluoranthene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Fluorene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Hexachlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Hexachlorobutadiene (1,3-Hexachlorobutadiene) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Hexachlorocyclopentadiene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Hexachloroethane | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Hexachloropropene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Indeno(1,2,3-cd)pyrene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Isodrin | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Isophorone | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Isosafrole | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Methapyrilene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Methyl methanesulfonate | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Methyl parathion (Parathion, methyl) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | N-Nitrosodi-n-butylamine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | N-Nitrosodi-n-propylamine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | N-Nitrosodiethylamine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | N-Nitrosodimethylamine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | N-Nitrosodiphenylamine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | N-Nitrosomethylethylamine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | N-Nitrosomorpholine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | N-Nitrosopiperidine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | N-Nitrosopyrrolidine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Naphthalene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Nitrobenzene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | O,O,O-Triethyl phosphorothioate | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Parathion, ethyl (Ethyl parathion, Parathion) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Pentachlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Pentachloronitrobenzene (PCNB) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Pentachlorophenol (PCP) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Phenacetin | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Phenanthrene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Phenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Phorate (Thimet) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Phthalic anhydride | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Pronamide (Kerb) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Pyrene | NELAP | OR | 7/16/2014 |

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# Laboratory Scope of Accreditation

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DEP Laboratory ID: 68-00664 EPA Lab Code: CO00026 TNI Code: (303) 736-0100

## Matrix: Non-Potable Water

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 8270 | | Pyridine | NELAP | OR | 7/16/2014 |
| EPA 8270 | C | SOCs by GC/MS | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Safrole | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Sulfotepp (Tetraethyl dithiopyrophosphate) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Thionazine (Thionazin, Zinophos) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | a,a-Dimethylphenethylamine (Phentermine) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | bis(2-Chloroethoxy)methane | NELAP | OR | 7/16/2014 |
| EPA 8270 | | bis(2-Chloroethyl) ether | NELAP | OR | 7/16/2014 |
| EPA 8270 | | bis(2-Chloroisopropyl) ether | NELAP | OR | 7/16/2014 |
| EPA 8270 | | bis(2-Ethylhexyl) phthalate (DEHP) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | o-Toluidine (2-Toluidine, 2-Methylaniline) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | tris-(2,3-Dibromopropyl) phosphate (tris-BP) | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Acenaphthene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Acenaphthylene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Anthracene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Benzo[a]anthracene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Benzo[a]pyrene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Benzo[b]fluoranthene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Benzo[ghi]perylene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Benzo[k]fluoranthene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Chrysene (Benzo[a]phenanthrene) | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Dibenzo[a,h]anthracene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Fluoranthene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Fluorene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Indeno(1,2,3-cd)pyrene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Naphthalene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | PAHs by HPLC/UV/Fluorescence | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Phenanthrene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Pyrene | NELAP | OR | 7/16/2014 |
| EPA 8321 | | 2,4,5-T | NELAP | OR | 7/16/2014 |
| EPA 8321 | | 2,4-D | NELAP | OR | 7/16/2014 |
| EPA 8321 | | 2,4-DB (Butoxon) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Dalapon (2,2-Dichloropropionic acid) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Dicamba | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Dichloroprop (Dichlorprop) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Dinoseb (2-sec-Butyl-4,6-dinitrophenol, DNBP) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Linuron (Lorox) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | MCPA | NELAP | OR | 7/16/2014 |
| EPA 8321 | | MCPP (Mecoprop) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Neburon | NELAP | OR | 7/16/2014 |
| EPA 8321 | A | Non-volatile compounds by HPLC-MS or HPLC-UV | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Oxamyl (Vydate) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Pentachlorophenol (PCP) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Propoxur (Baygon) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Siduron | NELAP | OR | 7/16/2014 |

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# Laboratory Scope of Accreditation

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**DEP Laboratory ID: 68-00664** **EPA Lab Code: CO00026** **TNI Code:** **(303) 736-0100**

## Matrix: Non-Potable Water

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 8330 | | 1,3,5-Trinitrobenzene (1,3,5-TNB) | NELAP | OR | 7/16/2014 |
| EPA 8330 | | 1,3-Dinitrobenzene (1,3-DNB) | NELAP | OR | 7/16/2014 |
| EPA 8330 | | 2,4,6-Trinitrotoluene (2,4,6-TNT) | NELAP | OR | 7/16/2014 |
| EPA 8330 | | 2,4-Dinitrotoluene (2,4-DNT) | NELAP | OR | 7/16/2014 |
| EPA 8330 | | 2,6-Dinitrotoluene (2,6-DNT) | NELAP | OR | 7/16/2014 |
| EPA 8330 | | 2-Amino-4,6-dinitrotoluene (2-Am-DNT) | NELAP | OR | 7/16/2014 |
| EPA 8330 | | 2-Nitrotoluene | NELAP | OR | 7/16/2014 |
| EPA 8330 | | 3-Nitrotoluene | NELAP | OR | 7/16/2014 |
| EPA 8330 | | 4-Amino-2,6-dinitrotoluene (4-Am-DNT) | NELAP | OR | 7/16/2014 |
| EPA 8330 | | 4-Nitrotoluene | NELAP | OR | 7/16/2014 |
| EPA 8330 | | Methyl-2,4,6-trinitrophenylnitramine (Tetryl) | NELAP | OR | 7/16/2014 |
| EPA 8330 | | Nitroaromatics and nitramines by HPLC/UV | NELAP | OR | 7/16/2014 |
| EPA 8330 | | Nitrobenzene | NELAP | OR | 7/16/2014 |
| EPA 8330 | | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) | NELAP | OR | 7/16/2014 |
| EPA 9012 | | Total cyanide | NELAP | OR | 7/16/2014 |
| EPA 9020 | B | Total organic halides (TOX) | NELAP | OR | 7/16/2014 |
| EPA 9030 | B | Sulfide | NELAP | OR | 7/16/2014 |
| EPA 9034 | | Total sulfides | NELAP | OR | 7/16/2014 |
| EPA 9040 | C | pH | NELAP | OR | 7/16/2014 |
| EPA 9050 | | Conductivity | NELAP | OR | 7/16/2014 |
| EPA 9056 | A | Anions by IC | NELAP | OR | 7/16/2014 |
| EPA 9056 | | Bromide | NELAP | OR | 7/16/2014 |
| EPA 9056 | | Chloride | NELAP | OR | 7/16/2014 |
| EPA 9056 | | Fluoride | NELAP | OR | 7/16/2014 |
| EPA 9056 | | Nitrate as N | NELAP | OR | 7/16/2014 |
| EPA 9056 | | Nitrite as N | NELAP | OR | 7/16/2014 |
| EPA 9056 | | Orthophosphate as P | NELAP | OR | 7/16/2014 |
| EPA 9056 | | Sulfate | NELAP | OR | 7/16/2014 |
| EPA 9060 | | Total organic carbon (TOC) | NELAP | OR | 7/16/2014 |
| EPA 9060 | A | Total organic carbon (TOC) | NELAP | OR | 7/16/2014 |
| EPA 9066 | | Total phenolics | NELAP | OR | 7/16/2014 |
| SM 2120 B | | Color | NELAP | OR | 7/16/2014 |
| SM 2310 B | | Acidity as CaCO3 | NELAP | OR | 7/16/2014 |
| SM 2320 B | | Alkalinity as CaCO3 | NELAP | OR | 7/16/2014 |
| SM 2340 C | | Total hardness as CaCO3 | NELAP | OR | 7/16/2014 |
| SM 2510 B | | Conductivity | NELAP | OR | 7/16/2014 |
| SM 2540 B | | Residue, total | NELAP | OR | 7/16/2014 |
| SM 2540 C | | Residue, filterable (TDS) | NELAP | OR | 7/16/2014 |
| SM 2540 D | | Residue, nonfilterable (TSS) | NELAP | OR | 7/16/2014 |
| SM 2540 F | | Residue, settleable | NELAP | OR | 7/16/2014 |
| SM 3500-Cr B | 20-22 | Chromium VI | NELAP | OR | 7/16/2014 |
| SM 3500-Cr D | 18/19 | Chromium VI | NELAP | OR | 7/16/2014 |
| SM 4500-CN- C/E | | Total cyanide | NELAP | OR | 7/16/2014 |
| SM 4500-CN- G | | Amenable cyanide | NELAP | OR | 7/16/2014 |
| SM 4500-H+ B | | pH | NELAP | OR | 7/16/2014 |

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## Matrix: Non-Potable Water

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| SM 4500-NO2- B | | Nitrite as N | NELAP | OR | 7/16/2014 |
| SM 4500-S D | | Sulfide | NELAP | OR | 7/16/2014 |
| SM 4500-S F | | Sulfide | NELAP | OR | 7/16/2014 |
| SM 4500-SO3 B | | Sulfite, SO3 | NELAP | OR | 7/16/2014 |
| SM 5210 B | | Biochemical oxygen demand (BOD) | NELAP | OR | 7/16/2014 |
| SM 5210 B | | Carbonaceous BOD (CBOD) | NELAP | OR | 7/16/2014 |
| SM 5310 B | | Total organic carbon (TOC) | NELAP | OR | 7/16/2014 |

## Matrix: Solid and Chemical Materials

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 1010 | A | Ignitability | NELAP | OR | 7/16/2014 |
| EPA 1311 | | Toxicity characteristic leaching procedure (TCLP) | NELAP | OR | 7/16/2014 |
| EPA 1312 | | Synthetic precipitation leaching procedure (SPLP) | NELAP | OR | 7/16/2014 |
| EPA 3050 | | Acid digestion of solids | NELAP | OR | 7/16/2014 |
| EPA 3050 | B | Acid digestion of solids | NELAP | OR | 7/16/2014 |
| EPA 3052 | | Microwave digestion of solids (HNO3 + HF) | NELAP | OR | 7/16/2014 |
| EPA 3540 | C | Soxhlet extraction | NELAP | OR | 7/16/2014 |
| EPA 3546 | | Microwave extraction | NELAP | OR | 7/16/2014 |
| EPA 3550 | B | Ultrasonic extraction | NELAP | OR | 7/16/2014 |
| EPA 3580 | A | Waste dilution | NELAP | OR | 7/16/2014 |
| EPA 3620 | B | Florisil cleanup | NELAP | OR | 7/16/2014 |
| EPA 3660 | B | Sulfur cleanup | NELAP | OR | 7/16/2014 |
| EPA 3665 | A | Sulfuric acid/permanganate clean-up | NELAP | OR | 7/16/2014 |
| EPA 5035 | | Closed-system purge-and-trap (bisulfate option) | NELAP | OR | 7/16/2014 |
| EPA 5035 | | Closed-system purge-and-trap (methanol option) | NELAP | OR | 7/16/2014 |
| EPA 5035 | | Closed-system purge-and-trap (unpreserved) | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Aluminum | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Antimony | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Arsenic | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Barium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Beryllium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Boron | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Cadmium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Calcium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Chromium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Cobalt | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Copper | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Iron | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Lead | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Lithium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Magnesium | NELAP | OR | 7/16/2014 |

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Laboratory Scope of Accreditation

**Attached to Certificate of Accreditation 009-001 expiration date July 31, 2015. This listing of accredited analytes should be used only when associated with a valid certificate of accreditation.**

**DEP Laboratory ID: 68-00664** **EPA Lab Code: CO00026** **TNI Code:** **(303) 736-0100**

## Matrix: Solid and Chemical Materials

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 6010 | | Manganese | NELAP | OR | 7/16/2014 |
| EPA 6010 | B | Metals by ICP/AES | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Molybdenum | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Nickel | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Phosphorus, total | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Potassium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Selenium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Silica, as SiO2 | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Silver | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Sodium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Strontium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Thallium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Tin | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Titanium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Vanadium | NELAP | OR | 7/16/2014 |
| EPA 6010 | | Zinc | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Antimony | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Arsenic | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Barium | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Beryllium | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Cadmium | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Chromium | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Cobalt | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Copper | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Lead | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Manganese | NELAP | OR | 7/16/2014 |
| EPA 6020 | A | Metals by ICP/MS | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Molybdenum | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Nickel | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Selenium | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Silver | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Thallium | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Vanadium | NELAP | OR | 7/16/2014 |
| EPA 6020 | | Zinc | NELAP | OR | 7/16/2014 |
| EPA 7196 | A | Chromium VI | NELAP | OR | 7/16/2014 |
| EPA 7471 | A | Mercury | NELAP | OR | 7/16/2014 |
| EPA 8011 | | 1,2-Dibromo-3-chloropropane (DBCP, Dibromochloropropane) | NELAP | OR | 7/16/2014 |
| EPA 8011 | | 1,2-Dibromoethane (EDB, Ethylene dibromide) | NELAP | OR | 7/16/2014 |
| EPA 8015 | | Diesel-range organics (DRO) | NELAP | OR | 7/16/2014 |
| EPA 8015 | | Ethanol | NELAP | OR | 7/16/2014 |
| EPA 8015 | | Ethylene glycol | NELAP | OR | 7/16/2014 |
| EPA 8015 | | Gasoline-range organics (GRO) | NELAP | OR | 7/16/2014 |
| EPA 8015 | | Isobutyl alcohol (2-Methyl-1-propanol) | NELAP | OR | 7/16/2014 |
| EPA 8015 | | Isopropyl alcohol (2-Propanol) | NELAP | OR | 7/16/2014 |
| EPA 8015 | | Methanol | NELAP | OR | 7/16/2014 |

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Laboratory Scope of Accreditation

Attached to Certificate of Accreditation 009-001 expiration date July 31, 2015. This listing of accredited analytes should be used only when associated with a valid certificate of accreditation.

DEP Laboratory ID: 68-00664 EPA Lab Code: CO00026 TNI Code: (303) 736-0100

## Matrix: Solid and Chemical Materials

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 8015 | B | Nonhalogenated organics by GC/FID | NELAP | OR | 7/16/2014 |
| EPA 8015 | | n-Butyl alcohol (n-Butanol, 1-Butanol) | NELAP | OR | 7/16/2014 |
| EPA 8015 | | n-Propanol (1-Propanol) | NELAP | OR | 7/16/2014 |
| EPA 8021 | | 1,2-Dichlorobenzene (o-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 8021 | | 1,3-Dichlorobenzene (m-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 8021 | | 1,4-Dichlorobenzene (p-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 8021 | | Benzene | NELAP | OR | 7/16/2014 |
| EPA 8021 | | Chlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 8021 | | Ethylbenzene | NELAP | OR | 7/16/2014 |
| EPA 8021 | | Methyl tert-butyl ether (MTBE) | NELAP | OR | 7/16/2014 |
| EPA 8021 | | Naphthalene | NELAP | OR | 7/16/2014 |
| EPA 8021 | | Toluene | NELAP | OR | 7/16/2014 |
| EPA 8021 | B | VOCs by GC/PID/ELCD | NELAP | OR | 7/16/2014 |
| EPA 8021 | | Xylenes, total | NELAP | OR | 7/16/2014 |
| EPA 8081 | | 4,4'-DDD | NELAP | OR | 7/16/2014 |
| EPA 8081 | | 4,4'-DDE | NELAP | OR | 7/16/2014 |
| EPA 8081 | | 4,4'-DDT | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Aldrin (HHDN) | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Chlordane (tech.) | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Chlorobenzilate | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Diallate (cis or trans) | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Dicofol (Kelthane) | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Dieldrin | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Endosulfan I | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Endosulfan II | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Endosulfan sulfate | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Endrin | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Endrin aldehyde | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Endrin ketone | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Heptachlor | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Heptachlor epoxide | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Isodrin | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Kepone | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Methoxychlor | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Mirex | NELAP | OR | 7/16/2014 |
| EPA 8081 | A | Organochlorine pesticides by GC/ECD | NELAP | OR | 7/16/2014 |
| EPA 8081 | | Toxaphene (Chlorinated camphene) | NELAP | OR | 7/16/2014 |
| EPA 8081 | | alpha-BHC (alpha-Hexachlorocyclohexane) | NELAP | OR | 7/16/2014 |
| EPA 8081 | | alpha-Chlordane | NELAP | OR | 7/16/2014 |
| EPA 8081 | | beta-BHC (beta-Hexachlorocyclohexane) | NELAP | OR | 7/16/2014 |
| EPA 8081 | | delta-BHC (delta-Hexachlorocyclohexane) | NELAP | OR | 7/16/2014 |
| EPA 8081 | | gamma-BHC (Lindane, gamma-Hexachlorocyclohexane) | NELAP | OR | 7/16/2014 |
| EPA 8081 | | gamma-Chlordane | NELAP | OR | 7/16/2014 |
| EPA 8082 | | Aroclor-1016 (PCB-1016) | NELAP | OR | 7/16/2014 |
| EPA 8082 | | Aroclor-1221 (PCB-1221) | NELAP | OR | 7/16/2014 |
| EPA 8082 | | Aroclor-1232 (PCB-1232) | NELAP | OR | 7/16/2014 |

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Laboratory Scope of Accreditation

**Attached to Certificate of Accreditation 009-001 expiration date July 31, 2015. This listing of accredited analytes should be used only when associated with a valid certificate of accreditation.**

**DEP Laboratory ID: 68-00664** **EPA Lab Code: CO00026** **TNI Code:** **(303) 736-0100**

## Matrix: Solid and Chemical Materials

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 8082 | | Aroclor-1242 (PCB-1242) | NELAP | OR | 7/16/2014 |
| EPA 8082 | | Aroclor-1248 (PCB-1248) | NELAP | OR | 7/16/2014 |
| EPA 8082 | | Aroclor-1254 (PCB-1254) | NELAP | OR | 7/16/2014 |
| EPA 8082 | | Aroclor-1260 (PCB-1260) | NELAP | OR | 7/16/2014 |
| EPA 8082 | A | PCBs by GC/ECD | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Atrazine | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Azinphos-ethyl (Ethyl guthion) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Azinphos-methyl (Guthion) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Bolstar (Sulprofos) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Carbophenothion (Trithion) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Chlorpyrifos | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Coumaphos | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Demeton-O | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Demeton-S | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Diazinon (Spectracide) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Dichlorovos (DDVP, Dichlorvos) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Dimethoate | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Disulfoton | NELAP | OR | 7/16/2014 |
| EPA 8141 | | EPN (Santox) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Ethoprop (Prophos) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Famphur | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Fensulfothion | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Fenthion | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Malathion | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Merphos | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Methyl parathion (Parathion, methyl) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Mevinphos | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Naled | NELAP | OR | 7/16/2014 |
| EPA 8141 | A | Organophosphorus compounds by GC/NPD | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Parathion, ethyl (Ethyl parathion, Parathion) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Phorate (Thimet) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Phosmet (Imidan) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Ronnel | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Simazine | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Stirophos (Tetrachlorovinphos) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Sulfotepp (Tetraethyl dithiopyrophosphate) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Thionazine (Thionazin, Zinophos) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Tokuthion (Prothiophos) | NELAP | OR | 7/16/2014 |
| EPA 8141 | | Trichloronate | NELAP | OR | 7/16/2014 |
| EPA 8151 | | 2,4,5-T | NELAP | OR | 7/16/2014 |
| EPA 8151 | | 2,4,5-TP (Silvex) | NELAP | OR | 7/16/2014 |
| EPA 8151 | | 2,4-D | NELAP | OR | 7/16/2014 |
| EPA 8151 | | 2,4-DB (Butoxon) | NELAP | OR | 7/16/2014 |
| EPA 8151 | A | Chlorinated herbicides by GC/ECD | NELAP | OR | 7/16/2014 |
| EPA 8151 | | Dalapon (2,2-Dichloropropionic acid) | NELAP | OR | 7/16/2014 |
| EPA 8151 | | Dicamba | NELAP | OR | 7/16/2014 |
| EPA 8151 | | Dichloroprop (Dichlorprop) | NELAP | OR | 7/16/2014 |

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# Laboratory Scope of Accreditation

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DEP Laboratory ID: 68-00664 EPA Lab Code: CO00026 TNI Code: (303) 736-0100

## Matrix: Solid and Chemical Materials

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 8151 | | MCPA | NELAP | OR | 7/16/2014 |
| EPA 8151 | | MCPP (Mecoprop) | NELAP | OR | 7/16/2014 |
| EPA 8151 | | Picloram (4-Amino-3,5,6-trichloro-2-pyridinecarboxylic acid) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,1,1,2-Tetrachloroethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,1,1-Trichloroethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,1,2,2-Tetrachloroethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,1,2-Trichloroethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,1-Dichloroethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,1-Dichloroethene (1,1-Dichloroethylene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,1-Dichloropropene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,2,3-Trichlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,2,3-Trichloropropane (1,2,3-TCP) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,2,4-Trichlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,2,4-Trimethylbenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,2-Dibromoethane (EDB, Ethylene dibromide) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,2-Dichlorobenzene (o-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,2-Dichloroethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,2-Dichloropropane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,3,5-Trimethylbenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,3-Dichlorobenzene (m-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,3-Dichloropropane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,4-Dichlorobenzene (p-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1,4-Dioxane (1,4-Diethyleneoxide) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 1-Chlorohexane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 2,2-Dichloropropane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 2-Butanone (Methyl ethyl ketone, MEK) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 2-Chloroethyl vinyl ether | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 2-Chlorotoluene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 2-Hexanone | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 2-Nitropropane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 2-Pentanone | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 2-Picoline (2-Methylpyridine) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 4-Chlorotoluene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | 4-Methyl-2-pentanone (MIBK) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Acetone | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Acetonitrile | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Acrolein (Propenal) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Acrylonitrile | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Allyl chloride (3-Chloropropene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Benzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Bromobenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Bromochloromethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Bromodichloromethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Bromoform | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Bromomethane (Methyl bromide) | NELAP | OR | 7/16/2014 |

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Laboratory Scope of Accreditation

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**DEP Laboratory ID: 68-00664** **EPA Lab Code: CO00026** **TNI Code:** **(303) 736-0100**

## Matrix: Solid and Chemical Materials

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 8260 | | Carbon disulfide | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Carbon tetrachloride | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Chlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Chloroethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Chloroform | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Chloromethane (Methyl chloride) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Chloroprene (2-Chloro-1,3-butadiene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Dibromochloromethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Dibromomethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Dichlorodifluoromethane (Freon 12) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Diethyl ether (Ethyl ether) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Ethanol | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Ethyl acetate | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Ethyl methacrylate | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Ethylbenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Ethylene oxide | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Hexachlorobutadiene (1,3-Hexachlorobutadiene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Iodomethane (Methyl iodide) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Isobutyl alcohol (2-Methyl-1-propanol) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Isopropyl alcohol (2-Propanol) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Isopropylbenzene (Cumene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Methacrylonitrile | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Methyl tert-butyl ether (MTBE) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Methylene chloride (Dichloromethane) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Methylmethacrylate | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Naphthalene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Pentachloroethane | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Propionitrile (Ethyl cyanide) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Styrene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Tetrachloroethene (PCE, Perchloroethylene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Toluene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Trichloroethene (TCE, Trichloroethylene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Trichlorofluoromethane (Freon 11) | NELAP | OR | 7/16/2014 |
| EPA 8260 | B | VOCs by GC/MS | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Vinyl acetate | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Vinyl chloride (Chloroethene) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | Xylenes, total | NELAP | OR | 7/16/2014 |
| EPA 8260 | | cis-1,2-Dichloroethene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | cis-1,3-Dichloropropene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | cis-1,4-Dichloro-2-butene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | n-Butyl alcohol (n-Butanol, 1-Butanol) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | n-Butylbenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | n-Propylbenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | sec-Butylbenzene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | tert-Butyl alcohol (2-Methyl-2-propanol) | NELAP | OR | 7/16/2014 |
| EPA 8260 | | tert-Butylbenzene | NELAP | OR | 7/16/2014 |

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## Matrix: Solid and Chemical Materials

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 8260 | | trans-1,2-Dichloroethene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | trans-1,3-Dichloropropene | NELAP | OR | 7/16/2014 |
| EPA 8260 | | trans-1,4-Dichloro-2-butene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,2,4,5-Tetrachlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,2,4-Trichlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,2-Dichlorobenzene (o-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,2-Diphenylhydrazine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,3,5-Trinitrobenzene (1,3,5-TNB) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,3-Dichlorobenzene (m-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,3-Dinitrobenzene (1,3-DNB) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,4-Dichlorobenzene (p-Dichlorobenzene) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,4-Dinitrobenzene (1,4-DNB) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,4-Naphthoquinone | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1,4-Phenylenediamine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1-Chloronaphthalene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 1-Naphthylamine (alpha-Naphthylamine) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2,3,4,6-Tetrachlorophenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2,4,5-Trichlorophenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2,4,6-Trichlorophenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2,4-Dichlorophenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2,4-Dimethylphenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2,4-Dinitrophenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2,4-Dinitrotoluene (2,4-DNT) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2,6-Dichlorophenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2,6-Dinitrotoluene (2,6-DNT) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2-Acetylaminofluorene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2-Chloronaphthalene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2-Chlorophenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2-Methylnaphthalene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2-Methylphenol (o-Cresol) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2-Naphthylamine (beta-Naphthylamine) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2-Nitroaniline | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2-Nitrophenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 2-Picoline (2-Methylpyridine) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 3+4-Methylphenol (m+p-Cresol) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 3,3'-Dichlorobenzidine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 3,3'-Dimethylbenzidine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 3-Methylcholanthrene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 3-Nitroaniline | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 4,4'-Methylenebis(2-chloroaniline) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 4-Aminobiphenyl | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 4-Bromophenyl phenyl ether | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 4-Chloro-3-methylphenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 4-Chloroaniline | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 4-Chlorophenyl phenyl ether | NELAP | OR | 7/16/2014 |

Aaren Alger

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Laboratory Scope of Accreditation

**Attached to Certificate of Accreditation 009-001 expiration date July 31, 2015. This listing of accredited analytes should be used only when associated with a valid certificate of accreditation.**

**DEP Laboratory ID: 68-00664 EPA Lab Code: CO00026 TNI Code: (303) 736-0100**

## Matrix: Solid and Chemical Materials

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 8270 | | 4-Nitroaniline | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 4-Nitrophenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 4-Nitroquinoline-1-oxide | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 5-Nitro-o-toluidine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | 7,12-Dimethylbenz(a)anthracene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Acenaphthene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Acenaphthylene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Acetophenone | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Aniline | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Anthracene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Aramite | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Benzidine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Benzo[a]anthracene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Benzo[a]pyrene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Benzo[b]fluoranthene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Benzo[ghi]perylene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Benzo[k]fluoranthene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Benzoic acid | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Benzyl alcohol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Benzyl butyl phthalate (Butyl benzyl phthalate) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Carbazole | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Chlorobenzilate | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Chrysene (Benzo[a]phenanthrene) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Di-n-butyl phthalate | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Di-n-octyl phthalate | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Dibenz[a,h]acridine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Dibenz[a,j]acridine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Dibenzo[a,e]pyrene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Dibenzo[a,h]anthracene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Dibenzofuran | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Diethyl phthalate | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Dimethoate | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Dimethyl phthalate | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Dinoseb (2-sec-Butyl-4,6-dinitrophenol, DNBP) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Diphenylamine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Disulfoton | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Ethyl methanesulfonate | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Famphur | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Fluoranthene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Fluorene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Hexachlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Hexachlorobutadiene (1,3-Hexachlorobutadiene) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Hexachlorocyclopentadiene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Hexachloroethane | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Hexachloropropene | NELAP | OR | 7/16/2014 |

Aaron Alger

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Laboratory Scope of Accreditation

Attached to Certificate of Accreditation 009-001 expiration date July 31, 2015. This listing of accredited analytes should be used only when associated with a valid certificate of accreditation.

DEP Laboratory ID: 68-00664 EPA Lab Code: CO00026 TNI Code: (303) 736-0100

## Matrix: Solid and Chemical Materials

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 8270 | | Indeno(1,2,3-cd)pyrene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Isodrin | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Isophorone | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Isosafrole | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Methapyrilene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Methyl methanesulfonate | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Methyl parathion (Parathion, methyl) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | N-Nitrosodi-n-butylamine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | N-Nitrosodi-n-propylamine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | N-Nitrosodiethylamine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | N-Nitrosodimethylamine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | N-Nitrosodiphenylamine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | N-Nitrosomethylethylamine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | N-Nitrosomorpholine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | N-Nitrosopiperidine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | N-Nitrosopyrrolidine | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Naphthalene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Nitrobenzene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | O,O,O-Triethyl phosphorothioate | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Parathion, ethyl (Ethyl parathion, Parathion) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Pentachlorobenzene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Pentachloronitrobenzene (PCNB) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Pentachlorophenol (PCP) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Phenacetin | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Phenanthrene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Phenol | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Phorate (Thimet) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Phthalic anhydride | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Pronamide (Kerb) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Pyrene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Pyridine | NELAP | OR | 7/16/2014 |
| EPA 8270 | C | SOCs by GC/MS | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Safrole | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Sulfotepp (Tetraethyl dithiopyrophosphate) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | Thionazine (Thionazin, Zinophos) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | a,a-Dimethylphenethylamine (Phentermine) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | bis(2-Chloroethoxy)methane | NELAP | OR | 7/16/2014 |
| EPA 8270 | | bis(2-Chloroethyl) ether | NELAP | OR | 7/16/2014 |
| EPA 8270 | | bis(2-Chloroisopropyl) ether | NELAP | OR | 7/16/2014 |
| EPA 8270 | | bis(2-Ethylhexyl) phthalate (DEHP) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | o-Toluidine (2-Toluidine, 2-Methylaniline) | NELAP | OR | 7/16/2014 |
| EPA 8270 | | p-(Dimethylamino)azobenzene | NELAP | OR | 7/16/2014 |
| EPA 8270 | | tris-(2,3-Dibromopropyl) phosphate (tris-BP) | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Acenaphthene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Acenaphthylene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Anthracene | NELAP | OR | 7/16/2014 |

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Laboratory Scope of Accreditation

**Attached to Certificate of Accreditation 009-001 expiration date July 31, 2015. This listing of accredited analytes should be used only when associated with a valid certificate of accreditation.**

**DEP Laboratory ID: 68-00664 EPA Lab Code: CO00026 TNI Code: (303) 736-0100**

## Matrix: Solid and Chemical Materials

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 8310 | | Benzo[a]anthracene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Benzo[a]pyrene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Benzo[b]fluoranthene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Benzo[ghi]perylene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Benzo[k]fluoranthene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Chrysene (Benzo[a]phenanthrene) | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Dibenzo[a,h]anthracene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Fluoranthene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Fluorene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Indeno(1,2,3-cd)pyrene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Naphthalene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | PAHs by HPLC/UV/Fluorescence | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Phenanthrene | NELAP | OR | 7/16/2014 |
| EPA 8310 | | Pyrene | NELAP | OR | 7/16/2014 |
| EPA 8321 | | 2,4,5-T | NELAP | OR | 7/16/2014 |
| EPA 8321 | | 2,4,5-TP (Silvex) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | 2,4-D | NELAP | OR | 7/16/2014 |
| EPA 8321 | | 2,4-DB (Butoxon) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Aldicarb (Temik) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Aminocarb | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Carbaryl (Sevin) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Carbofuran (Furaden) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Chlorpropham (Chloropropham) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Dalapon (2,2-Dichloropropionic acid) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Dicamba | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Dichloroprop (Dichlorprop) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Dinoseb (2-sec-Butyl-4,6-dinitrophenol, DNBP) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Diuron | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Fluometuron | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Linuron (Lorox) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | MCPA | NELAP | OR | 7/16/2014 |
| EPA 8321 | | MCPP (Mecoprop) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Methiocarb (Mesurol) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Methomyl (Lannate) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Mexacarbate (Zectran) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Monuron | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Neburon | NELAP | OR | 7/16/2014 |
| EPA 8321 | A | Non-volatile compounds by HPLC-MS or HPLC-UV | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Oxamyl (Vydate) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Propham | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Propoxur (Baygon) | NELAP | OR | 7/16/2014 |
| EPA 8321 | | Siduron | NELAP | OR | 7/16/2014 |
| EPA 8330 | | 1,3,5-Trinitrobenzene (1,3,5-TNB) | NELAP | OR | 7/16/2014 |
| EPA 8330 | | 1,3-Dinitrobenzene (1,3-DNB) | NELAP | OR | 7/16/2014 |
| EPA 8330 | | 2,4,6-Trinitrotoluene (2,4,6-TNT) | NELAP | OR | 7/16/2014 |

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# Laboratory Scope of Accreditation

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DEP Laboratory ID: 68-00664 EPA Lab Code: CO00026 TNI Code: (303) 736-0100

## Matrix: Solid and Chemical Materials

| Method | Revision | Analyte | Accreditation Type | Primary | Effective Date |
|---|---|---|---|---|---|
| EPA 8330 | | 2,4-Dinitrotoluene (2,4-DNT) | NELAP | OR | 7/16/2014 |
| EPA 8330 | | 2,6-Dinitrotoluene (2,6-DNT) | NELAP | OR | 7/16/2014 |
| EPA 8330 | | 2-Amino-4,6-dinitrotoluene (2-Am-DNT) | NELAP | OR | 7/16/2014 |
| EPA 8330 | | 2-Nitrotoluene | NELAP | OR | 7/16/2014 |
| EPA 8330 | | 3-Nitrotoluene | NELAP | OR | 7/16/2014 |
| EPA 8330 | | 4-Amino-2,6-dinitrotoluene (4-Am-DNT) | NELAP | OR | 7/16/2014 |
| EPA 8330 | | 4-Nitrotoluene | NELAP | OR | 7/16/2014 |
| EPA 8330 | | Methyl-2,4,6-trinitrophenylnitramine (Tetryl) | NELAP | OR | 7/16/2014 |
| EPA 8330 | | Nitroaromatics and nitramines by HPLC/UV | NELAP | OR | 7/16/2014 |
| EPA 8330 | | Nitrobenzene | NELAP | OR | 7/16/2014 |
| EPA 8330 | | Nitroglycerin | NELAP | OR | 7/16/2014 |
| EPA 8330 | | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) | NELAP | OR | 7/16/2014 |
| EPA 8330 | | RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine) | NELAP | OR | 7/16/2014 |
| EPA 9012 | | Total cyanide | NELAP | OR | 7/16/2014 |
| EPA 9030 | B | Sulfide | NELAP | OR | 7/16/2014 |
| EPA 9030 | B | Sulfide distillation | NELAP | OR | 7/16/2014 |
| EPA 9034 | | Sulfide | NELAP | OR | 7/16/2014 |
| EPA 9045 | D | pH | NELAP | OR | 7/16/2014 |
| EPA 9056 | A | Anions by IC | NELAP | OR | 7/16/2014 |
| EPA 9056 | | Bromide | NELAP | OR | 7/16/2014 |
| EPA 9056 | | Chloride | NELAP | OR | 7/16/2014 |
| EPA 9056 | | Fluoride | NELAP | OR | 7/16/2014 |
| EPA 9056 | | Nitrate as N | NELAP | OR | 7/16/2014 |
| EPA 9056 | | Nitrite as N | NELAP | OR | 7/16/2014 |
| EPA 9056 | | Orthophosphate as P | NELAP | OR | 7/16/2014 |
| EPA 9056 | | Sulfate | NELAP | OR | 7/16/2014 |
| EPA 9060 | | Total organic carbon (TOC) | NELAP | OR | 7/16/2014 |
| EPA 9071 | | Oil and grease | NELAP | OR | 7/16/2014 |
| EPA 9095 | A | Paint filter liquids test | NELAP | OR | 7/16/2014 |

Aaren Alger

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# Laboratory Status Summary

**DEP Laboratory ID: 68-00664** **EPA Lab Code: CO00026** **(303) 736-0100**

**TestAmerica Denver**
**4955 Yarrow Street**
**Arvada, CO 80002**

## Matrix: Non-Potable Water

| Method | Revision | Analyte | Status | Effective Date |
|---|---|---|---|---|
| EPA 1311 | | Toxicity characteristic leaching procedure (TCLP) | Denied | 7/16/2014 |
| EPA 1312 | | Synthetic precipitation leaching procedure (SPLP) | Denied | 7/16/2014 |
| EPA 8260 | | tert-Amyl ethyl ether (TAEE) | Denied | 7/16/2014 |
| EPA 8270 | | Aminoazobenzene | Denied | 7/16/2014 |

## Matrix: Solid and Chemical Materials

| Method | Revision | Analyte | Status | Effective Date |
|---|---|---|---|---|
| EPA 3005 | A | Preconcentration under acid | Denied | 7/16/2014 |
| EPA 3010 | A | Hot plate acid digestion (HNO3 + HCl) | Denied | 7/16/2014 |
| EPA 3020 | A | Hot plate acid digestion (HNO3 only) | Denied | 7/16/2014 |
| EPA 7470 | A | Mercury | Denied | 7/16/2014 |
| EPA 8151 | | Dinoseb (2-sec-Butyl-4,6-dinitrophenol, DNBP) | Withdrawn | 7/16/2014 |
| EPA 9066 | | Total phenolics | Denied | 7/16/2014 |
| SM 9222 D + EPA 625/R-92/013 Appendix F | | Fecal coliform (Enumeration) | Denied | 7/16/2014 |

07/17/2014

William Cicero
TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002

Re: Certificate of Accreditation
DEP Lab ID No. 68-00664

Dear Laboratory Supervisor:

Enclosed is your new Certificate of Accreditation to operate as a Pennsylvania Accredited Laboratory. This Certificate of Accreditation expires **07/31/2015** unless suspended or revoked earlier. As a laboratory accredited in accordance with the Environmental Laboratory Accreditation Act of June 29, 2002 (P.L 596, No 90) (27 Pa C.S. §§ 4101 – 4113) and The Environmental Laboratory Accreditation Regulations of 25 Pa. Code Chapter 252 you are responsible for continual compliance with the accreditation Act and regulations promulgated thereunder. Failure to comply with all applicable Federal and Departmental laws and regulations may result in suspension or revocation of your laboratory's accreditation.

Your DEP laboratory identification number is **68-00664**. Please use this number on all correspondence with the PA Department of Environmental Protection (Department).

Your laboratory is accredited to perform only the analyses by the methods listed on the Scope of Accreditation that accompanies the Certificate of Accreditation. The Certificate of Accreditation remains the property of the Department and must be displayed in the laboratory.

Please note this certification must be renewed annually. Renewal applications must be submitted to the Department *no later than 60 days prior to the expiration of the certification.* Failure to submit a renewal application within this time period may result in a lapse of the laboratory's accreditation. Should this occur, the laboratory may not conduct any further analyses for which accreditation is required and, if the laboratory is accredited to perform analyses on drinking water, the laboratory must notify the public water suppliers served by the laboratory of the laboratory's failure to renew its certificate of accreditation. Copies of the renewal application may be found on the Department's web site (www.depweb.state.pa.us/labs).

If you have any questions concerning your certificate, you may contact your laboratory's accreditation officer Eric Nkurunziza at 717-346-8201 or ENkurunziz@pa.gov.

Sincerely,

Aaren Alger

Aaren S. Alger, Chief
Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

TESTAMERICA DENVER
4955 Yarrow Street
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ENVIRONMENTAL

Valid To: October 31, 2015 Certificate Number: 2907.01

In recognition of the successful completion of the A2LA evaluation process, (including an assessment of the laboratory's compliance with ISO IEC 17025:2005, the 2003 NELAC Chapter 5 Standard, the requirements of the DoD Environmental Laboratory Accreditation Program (DoD ELAP) as detailed in version 4.2 of the DoD Quality Systems Manual for Environmental Laboratories), and for the test methods applicable to the Wyoming Storage Tank Remediation Laboratory Accreditation Program, accreditation is granted to this laboratory to perform recognized EPA methods using the following testing technologies and in the analyte categories identified below:

Testing Technologies

Atomic Absorption/ICP-AES Spectrometry, ICP/MS, Gas Chromatography, Gas Chromatography/Mass Spectrometry, Gravimetry, High Performance Liquid Chromatography, Ion Chromatography, Misc.- Electronic Probes (pH, $O_2$), Oxygen Demand, Hazardous Waste Characteristics Tests, Spectrophotometry (Visible), Spectrophotometry (Automated), Titrimetry, Total Organic Carbon, Total Organic Halide

| Parameter/Analyte | WY Storage Tank Program | Non-Potable Water | Solid Hazardous Waste (Water) | Solid Hazardous Waste (Solid) |
|---|---|---|---|---|
| Metals | | | | |
| Aluminum | ---------------------- | ---------------------- | EPA 6010B / 6010C | EPA 6010B / 6010C |
| Antimony | ---------------------- | ---------------------- | EPA 6010B / 6010C / 6020 / 6020A | EPA 6010B / 6010C / 6020 / 6020A |
| Arsenic | ---------------------- | ---------------------- | EPA 6010B / 6010C / 6020 / 6020A | EPA 6010B / 6010C / 6020 / 6020A |
| Barium | ---------------------- | ---------------------- | EPA 6010B / 6010C / 6020 / 6020A | EPA 6010B / 6010C / 6020 / 6020A |
| Beryllium | ---------------------- | ---------------------- | EPA 6010B / 6010C / 6020 / 6020A | EPA 6010B / 6010C / 6020 / 6020A |
| Boron | ---------------------- | ---------------------- | EPA 6010B / 6010C | EPA 6010B / 6010C |
| Cadmium | EPA 6010C | ---------------------- | EPA 6010B / 6010C / 6020 / 6020A | EPA 6010B / 6010C / 6020 / 6020A |

| Parameter/Analyte | WY Storage Tank Program | Non-Potable Water | Solid Hazardous Waste (Water) | Solid Hazardous Waste (Solid) |
|---|---|---|---|---|
| Calcium | ---------------------- | ---------------------- | EPA 6010B / 6010C | EPA 6010B / 6010C |
| Chromium | EPA 6010C | ---------------------- | EPA 6010B / 6010C / 6020 / 6020A | EPA 6010B / 6010C / 6020 / 6020A |
| Cobalt | ---------------------- | ---------------------- | EPA 6010B / 6010C / 6020 / 6020A | EPA 6010B / 6010C / 6020 / 6020A |
| Copper | ---------------------- | ---------------------- | EPA 6010B / 6010C / 6020 / 6020A | EPA 6010B / 6010C / 6020 / 6020A |
| Iron | ---------------------- | ---------------------- | EPA 6010B / 6010C | EPA 6010B / 6010C |
| Lead | EPA 6010C | ---------------------- | EPA 6010B / 6010C / 6020 / 6020A | EPA 6010B / 6010C / 6020 / 6020A |
| Lithium | ---------------------- | ---------------------- | EPA 6010B / 6010C | EPA 6010B / 6010C |
| Magnesium | ---------------------- | ---------------------- | EPA 6010B / 6010C | EPA 6010B / 6010C |
| Manganese | ---------------------- | ---------------------- | EPA 6010B / 6010C / 6020 / 6020A | EPA 6010B / 6010C / 6020 / 6020A |
| Mercury | ---------------------- | ---------------------- | EPA 7470A | EPA 7471A / 7471B |
| Molybdenum | ---------------------- | ---------------------- | EPA 6010B / 6010C / 6020 / 6020A | EPA 6010B / 6010C / 6020 / 6020A |
| Nickel | ---------------------- | ---------------------- | EPA 6010B / 6010C / 6020 / 6020A | EPA 6010B / 6010C / 6020 / 6020A |
| Potassium | ---------------------- | ---------------------- | EPA 6010B / 6010C | EPA 6010B / 6010C |
| Selenium | ---------------------- | ---------------------- | EPA 6010B / 6010C / 6020 / 6020A | EPA 6010B / 6010C / 6020 / 6020A |
| Silica | ---------------------- | ---------------------- | EPA 6010B / 6010C | EPA 6010B / 6010C |
| Silicon | ---------------------- | ---------------------- | EPA 6010B / 6010C | EPA 6010B / 6010C |
| Silver | ---------------------- | ---------------------- | EPA 6010B / 6010C / 6020 / 6020A | EPA 6010B / 6010C / 6020 / 6020A |
| Sodium | ---------------------- | ---------------------- | EPA 6010B / 6010C | EPA 6010B / 6010C |
| Strontium | ---------------------- | ---------------------- | EPA 6010B / 6010C | EPA 6010B / 6010C |
| Thallium | ---------------------- | ---------------------- | EPA 6010B / 6010C / 6020 / 6020A | EPA 6010B / 6010C / 6020 / 6020A |
| Tin | ---------------------- | ---------------------- | EPA 6010B / 6010C | EPA 6010B / 6010C |

| Parameter/Analyte | WY Storage Tank Program | Non-Potable Water | Solid Hazardous Waste (Water) | Solid Hazardous Waste (Solid) |
|---|---|---|---|---|
| Titanium | ---------------------- | ---------------------- | EPA 6010B / 6010C | EPA 6010B / 6010C |
| Vanadium | ---------------------- | ---------------------- | EPA 6010B / 6010C / 6020 / 6020A | EPA 6010B / 6010C / 6020 / 6020A |
| Zinc | ---------------------- | ---------------------- | EPA 6010B / 6010C / 6020 / 6020A | EPA 6010B / 6010C / 6020 / 6020A |
| Nutrients | | | | |
| Nitrate (as N) | ---------------------- | By calculation | By calculation / EPA 9056 / 9056A | By calculation / EPA 9056 / 9056A |
| Nitrate-nitrite (as N) | ---------------------- | EPA 353.2 | EPA 353.2 / 9056 / 9056A | EPA 9056 / 9056A |
| Nitrite (as N) | ---------------------- | SM 4500-NO2 B | SM 4500-NO2 B; EPA 9056 / 9056A | EPA 9056 / 9056A |
| Orthophosphate (as P) | ---------------------- | ---------------------- | EPA 9056 / 9056A | EPA 9056 / 9056A |
| Total phosphorus | ---------------------- | ---------------------- | EPA 6010B / 6010C | EPA 6010B / 6010C |
| Demands | | | | |
| Total Organic Carbon | ---------------------- | ---------------------- | EPA 9060 / 9060A | EPA 9060 / 9060A |
| Total Organic Halides | ---------------------- | ---------------------- | EPA 9020B | ---------------------- |
| Wet Chemistry | | | | ---------------------- |
| Alkalinity (Total Bicarbonate, Carbonate, and Hydroxide Alkalinty) | ---------------------- | SM 2320 B_1997 | SM 2320 B | SM 2320 B |
| Ammonia | ---------------------- | EPA 350.1 | EPA 350.1 | ---------------------- |
| Biological Oxygen Demand | ---------------------- | SM 5210B | SM 5210B | ---------------------- |
| Bromide | ---------------------- | ---------------------- | EPA 9056 / 9056A | EPA 9056 / 9056A |
| Chloride | ---------------------- | ---------------------- | EPA 9056 / 9056A | EPA 9056 / 9056A |
| Chemical Oxygen Demand | ---------------------- | EPA 410.4 | EPA 410.4 | |
| Conductivity | ---------------------- | ---------------------- | EPA 9050 / 9050A | EPA 9050 / 9050A |
| Cyanide | ---------------------- | ---------------------- | 9012A / 9012B | 9012A / 9012B |
| Ferrous Iron | ---------------------- | SM 3500 Fe B, D | SM 3500 Fe B, D | ---------------------- |
| Fluoride | ---------------------- | ---------------------- | EPA 9056 / 9056A | EPA 9056 / 9056A |
| Hexavalent Chromium | EPA 7196A | ---------------------- | EPA 7196A | ---------------------- |
| pH | ---------------------- | ---------------------- | EPA 9040B / 9045C | EPA 9040B / 9045C |
| Oil and Grease (HEM and SGT-HEM) | ---------------------- | ---------------------- | EPA 1664A/ 1664B | 9071B |
| Percent Moisture | ---------------------- | ---------------------- | ---------------------- | ASTM D2216 |
| Perchlorate | ---------------------- | ---------------------- | EPA 6860 | EPA 6860 |
| Phenols | ---------------------- | ---------------------- | EPA 9066 | EPA 9066 |
| Solids, Total | ---------------------- | SM 2540 B | SM 2540 B | SM 2540 B |
| Solids, Total Suspended | ---------------------- | SM 2540 D | SM 2540 D | SM 2540 D |
| Solids, Total Dissolved | ---------------------- | SM 2540 C | SM 2540 C | SM 2540 C |
| Sulfate | ---------------------- | ---------------------- | EPA 9056 / 9056A | EPA 9056 / 9056A |
| Sulfide, Total | ---------------------- | ---------------------- | EPA 9034 | EPA 9034 |
| Sulfide | ---------------------- | ---------------------- | EPA 9030B | EPA 9030B |
| Total Kjeldahl Nitrogen | ---------------------- | ---------------------- | EPA 351.2 | ---------------------- |

| Parameter/Analyte | WY Storage Tank Program | Non-Potable Water | Solid Hazardous Waste (Water) | Solid Hazardous Waste (Solid) |
|---|---|---|---|---|
| Purgeable Organics (volatiles) | | | | ---------------------- |
| Acetone | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Acetonitrile | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Acrolein | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Acrylonitrile | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Allyl Chloride | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| tert-Amyl Methyl Ether | EPA 8260B | | | |
| Benzene | EPA 8260B / 8021B | ---------------------- | EPA 8260B / 8021B / AK101/ OK DEQ GRO | EPA 8260B / 8021B / AK101/ OK DEQ GRO |
| Bromobenzene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Bromochloromethane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Bromodichloromethane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Bromoform | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Bromomethane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 2-Butanone | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| n-Butyl alcohol | ---------------------- | ---------------------- | EPA 8260B / 8015B / 8015C | EPA 8260B / 8015B / 8015C |
| tert-Butyl alcohol | EPA 8260B | | | |
| n-Butylbenzene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| sec-Butylbenzene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| tert-Butylbenzene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Carbon disulfide | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Carbon tetrachloride | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Chlorobenzene | ---------------------- | ---------------------- | EPA 8260B / 8021B | EPA 8260B / 8021B |
| 2-Chloro-1,3-butadiene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Chloroethane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 2-Chloroethyl vinyl ether | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Chloroform | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1-Chlorohexane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Chloromethane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Chloroprene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 4-Chlorotoluene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 2-Chlorotoluene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Cyclohexane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Cyclohexanone | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Dibromochloromethane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1,2-Dibromo-3-chloropropane (DBCP) | ---------------------- | EPA 504 | EPA 504 / 8260B / 8011 | EPA 8260B / 8011 |
| Dibromochloromethane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Dichlorodifluoromethane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Dibromomethane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1,2 Dibromoethane (EDB) | EPA 8011 | EPA 504 | EPA 504 / 8260B / 8011 | EPA 8260B / 8011 |
| 1,2-Dichlorobenzene | ---------------------- | ---------------------- | EPA 8260B / 8021B | EPA 8260B / 8021B |
| 1,3-Dichlorobenzene | ---------------------- | ---------------------- | EPA 8260B / 8021B | EPA 8260B / 8021B |

| Parameter/Analyte | WY Storage Tank Program | Non-Potable Water | Solid Hazardous Waste (Water) | Solid Hazardous Waste (Solid) |
|---|---|---|---|---|
| 1,4-Dichlorobenzene | ---------------------- | ---------------------- | EPA 8260B / 8021B | EPA 8260B / 8021B |
| cis-1,4-Dichloro-2-butene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| trans-1,4-Dichloro-2-butene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1,1-Dichloroethane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1,2-Dichloroethane | EPA 8260B | ---------------------- | EPA 8260B | EPA 8260B |
| 1,1-Dichloroethene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1,2-Dichloroethene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| cis-1,2-Dichloroethene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| trans-1,2-Dichloroethene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Dichlorofluoromethane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1,2-Dichloropropane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1,3-Dichloropropane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 2,2-Dichloropropane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1,1-Dichloropropene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1,3-Dichloropropene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| cis-1,3-Dichloropropene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| trans-1,3-Dichloropropene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Diethyl ether | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Di-isopropylether | EPA 8260B | ---------------------- | EPA 8260B | EPA 8260B |
| 1,4-Dioxane | ---------------------- | ---------------------- | EPA 8260B / 8260B SIM | EPA 8260B / 8260B SIM |
| Ethanol | ---------------------- | ---------------------- | EPA 8260B / 8015B / 8015C | EPA 8260B / 8015B / 8015C |
| Ethyl Acetate | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Ethyl Benzene | EPA 8260B/8021B | ---------------------- | EPA 8260B / 8021B / AK101/ OK DEQ GRO | EPA 8260B / 8021B/ AK101/ OK DEQ GRO |
| Ethyl Methacrylate | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Ethyl tert-Butyl Ether | EPA 8260B | | | |
| Ethylene Glycol | ---------------------- | ---------------------- | EPA 8015C | EPA 8015C |
| Gas Range Organics (GRO) | EPA 8015C | ---------------------- | EPA 8015B / 8015C / AK101 / 8015D | EPA 8015B / 8015C / AK101 / 8015D |
| Hexane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 2-Hexanone | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Hexachlorobutadiene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Isobutyl Alcohol (2-Methyl-1-propanol) | ---------------------- | ---------------------- | EPA 8260B / 8015B / 8015C | EPA 8260B / 8015B / 8015C |
| Isopropyl Alcohol | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Isopropylbenzene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1,4-Isopropyltoluene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Iodomethane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Methacrylonitrile | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Methanol | ---------------------- | ---------------------- | EPA 8015B / 8015C | EPA 8015B / 8015C |
| Methyl Acetate | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Methyl Cyclohexane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Methylene Chloride | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Methyl Ethyl Ketone (MEK) | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Methyl Isobutyl Ketone | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Methyl Methacrylate | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |

| Parameter/Analyte | WY Storage Tank Program | Non-Potable Water | Solid Hazardous Waste (Water) | Solid Hazardous Waste (Solid) |
|---|---|---|---|---|
| Methyl tert-Butyl Ether (MtBE) | EPA 8260B / 8021B | ---------------------- | EPA 8260B / 8021B / OK DEQ GRO | EPA 8260B / 8021B/ OK DEQ GRO |
| 4-Methyl-2-Pentanone | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Naphthalene | EPA 8260B / 8021B | ---------------------- | EPA 8260B/ OK DEQ GRO | EPA 8260B / OK DEQ GRO |
| 2-Nitropropane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 2,2' Oxybisethanol | ---------------------- | ---------------------- | EPA 8015C | EPA 8015C |
| 2-Pentanone | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Propionitrile | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| n-Propylbenzene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Propylene Glycol | ---------------------- | ---------------------- | EPA 8015C | EPA 8015C |
| Styrene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1,1,1,2-Tetrachloroethane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1,1,2,2-Tetrachloroethane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Tetrachloroethene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Tetrahydrofuran | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Toluene | EPA 8260B / 8021B | ---------------------- | EPA 8260B / 8021B / AK101 / OK DEQ GRO | EPA 8260B / 8021B / AK101 / OK DEQ GRO |
| Total Petroleum Hydrocarbons (TPH) | ---------------------- | EPA 1664A EPA 1664B | EPA 1664A EPA 1664B | ---------------------- |
| 1,2,3-Trichlorobenzene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1,1,1-Trichloroethane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1,1,2-Trichloroethane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Trichloroethene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Trichlorofluoromethane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1,2,3-Trichlorobenzene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1,2,4-Trichlorobenzene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1,2,3-Trichloropropane | ---------------------- | EPA 504.1 | EPA 504.1 / 8260B / 8011 | EPA 8260B / 8011 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Triethylene Glycol | ---------------------- | ---------------------- | EPA 8015C | EPA 8015C |
| 1,2,3-Trimethylbenzene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1,2,4-Trimethylbenzene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| 1,3,5-Trimethylbenzene | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Vinyl Acetate | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Vinyl Chloride | ---------------------- | ---------------------- | EPA 8260B | EPA 8260B |
| Xylenes, total | EPA 8260B / 8021B | ---------------------- | EPA 8260B / 8021B / AK101 / OK DEQ GRO | EPA 8260B / 8021B / AK101 / OK DEQ GRO |
| 1,2-Xylene | EPA 8260B / 8021B | ---------------------- | EPA 8260B / 8021B / AK101 / OK DEQ GRO | EPA 8260B / 8021B / AK101 / OK DEQ GRO |
| M+P-Xylene | EPA 8260B / 8021B | ---------------------- | EPA 8260B / 8021B / AK101 / OK DEQ GRO | EPA 8260B / 8021B / AK101 / OK DEQ GRO |
| Methane | ---------------------- | ---------------------- | RSK-175 | ---------------------- |
| Ethane | ---------------------- | ---------------------- | RSK-175 | ---------------------- |
| Ethylene (Ethene) | ---------------------- | ---------------------- | RSK-175 | ---------------------- |
| Acetylene | ---------------------- | ---------------------- | RSK-175 | ---------------------- |

| Parameter/Analyte | WY Storage Tank Program | Non-Potable Water | Solid Hazardous Waste (Water) | Solid Hazardous Waste (Solid) |
|---|---|---|---|---|
| Acetylene Ethane | ---------------------- | ---------------------- | RSK-175 | ---------------------- |
| Extractable Organics (semivolatiles) | | | | |
| Acenaphthene | ---------------------- | ---------------------- | EPA 8270C / 8270D / 8270SIM | EPA 8270C / 8270D / 8270SIM |
| Acenaphthylene | ---------------------- | ---------------------- | EPA 8270C / 8270D / 8270SIM | EPA 8270C / 8270D / 8270SIM |
| Acetophenone | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2-Acetylaminofluorene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Alachlor | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 4-Aminobiphenyl | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Aniline | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Anthracene | ---------------------- | ---------------------- | EPA 8270C / 8270D / 8270SIM | EPA 8270C / 8270D / 8270SIM |
| Aramite | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Atrazine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Azobenzene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Benzaldehyde | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Benzidine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Benzoic acid | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Benzo (a) Anthracene | ---------------------- | ---------------------- | EPA 8270C / 8270D / 8270SIM | EPA 8270C / 8270D / 8270SIM |
| Benzo (b) Fluoranthene | ---------------------- | ---------------------- | EPA 8270C / 8270D / 8270SIM | EPA 8270C / 8270D / 8270SIM |
| Benzo (k) Fluoranthene | ---------------------- | ---------------------- | EPA 8270C / 8270D / 8270SIM | EPA 8270C / 8270D / 8270SIM |
| Benzo (ghi) Perylene | ---------------------- | ---------------------- | EPA 8270C / 8270D / 8270SIM | EPA 8270C / 8270D / 8270SIM |
| Benzo (a) Pyrene | ---------------------- | ---------------------- | EPA 8270C / 8270D / 8270SIM | EPA 8270C / 8270D / 8270SIM |
| Benzyl Alcohol | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Bis (2-chloroethoxy) methane | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Bis (2-chloroethyl) Ether | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Bis (2-chloroisopropyl) Ether (2,2'Oxybis(1-chloropropane) | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |

| Parameter/Analyte | WY Storage Tank Program | Non-Potable Water | Solid Hazardous Waste (Water) | Solid Hazardous Waste (Solid) |
|---|---|---|---|---|
| Bis (2-ethylhexyl) Phthalate | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 4-Bromophenyl Phenyl Ether | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Butyl Benzyl Phthalate | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2-sec-Butyl-4,6-Dinitrophenol | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Carbazole | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 4-Chloroanilene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Chlorobenzilate | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 4-Chloro-3-Methylphenol | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 1-Chloronaphthalene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2-Chloronaphthalene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2-Chlorophenol | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 4-Chlorophenyl Phenyl Ether | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Chrysene | ---------------------- | ---------------------- | EPA 8270C / 8270D / 8270SIM | EPA 8270C / 8270D / 8270SIM |
| Cresols | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Diallate | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Dibenzo (a,h) Anthracene | ---------------------- | ---------------------- | EPA 8270C / 8270D / 8270SIM | EPA 8270C / 8270D / 8270SIM |
| Dibenzofuran | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 1,2-Dichlorobenzene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 1,3-Dichlorobenzene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 1,4-Dichlorobenzene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 3,3’-Dichlorobenzidine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2,4-Dichlorophenol | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2,6-Dichlorophenol | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Diethyl phthalate | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Dimethoate | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 3,3-Dimethylbenzidine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |

| Parameter/Analyte | WY Storage Tank Program | Non-Potable Water | Solid Hazardous Waste (Water) | Solid Hazardous Waste (Solid) |
|---|---|---|---|---|
| p-Dimethylaminoazobenzene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 7,12-Dimethylbenz(a)anthracene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Alpha-,alpha-Dimethylphenethylamine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2,4-Dimethylphenol | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Dimethyl Phthalate | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Di-n-Butyl Phthalate | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Di-n-Octyl Phthalate | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 1,3-Dinitrobenzene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 1,4-Dinitrobenzene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2,4-Dinitrophenol | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2,4-Dinitrotoluene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2,6-Dinitrotoluene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 1,4-Dioxane | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Diphenylamine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 1,2-Diphenylhydrazine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Disulfoton | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Diesel Range Organics (DRO) | EPA 8015C | ---------------------- | EPA 8015B / 8015C, AK102, TX 1005 / 8015D / OK DEQ DRO | EPA 8015B / 8015C, AK102, TX 1005 / 8015D / OK DEQ DRO |
| Ethyl Methanesulfonate | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Famphur | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Fluoroanthene | ---------------------- | ---------------------- | EPA 8270C / 8270D / 8270SIM | EPA 8270C / 8270D / 8270SIM |
| Fluorene | ---------------------- | ---------------------- | EPA 8270C / 8270D / 8270SIM | EPA 8270C / 8270D / 8270SIM |
| Gasoline Range Organics | ---------------------- | ---------------------- | TX 1005 / OK DEQ GRO | TX 1005 / OK DEQ GRO |
| Hexachlorobenzene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Hexachlorobutadiene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Hexachlorocyclopentadiene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |

| Parameter/Analyte | WY Storage Tank Program | Non-Potable Water | Solid Hazardous Waste (Water) | Solid Hazardous Waste (Solid) |
|---|---|---|---|---|
| Hexachloroethane | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Hexachloropropene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Indeno (1,2,3-cd) Pyrene | ---------------------- | ---------------------- | EPA 8270C / 8270D / 8270SIM | EPA 8270C / 8270D / 8270SIM |
| Isodrin | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Isophorone | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Isosafrole | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Methapyrilene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 3-Methylcholanthrene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2-Methyl-4,6-Dinitrophenol | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Methyl Methane Sulfonate | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2-Methylcholanthrene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 1-Methylnaphthalene | ---------------------- | ---------------------- | EPA 8270C / 8270D / 8270SIM | EPA 8270C / 8270D / 8270SIM |
| 2-Methylnaphthalene | ---------------------- | ---------------------- | EPA 8270C / 8270D / 8270SIM | EPA 8270C / 8270D / 8270SIM |
| 2-Methylphenol | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 3+4-Methylphenol | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Naphthalene | ---------------------- | ---------------------- | EPA 8270C / 8270D / 8270SIM | EPA 8270C / 8270D / 8270SIM |
| 1,4-Naphthoquinone | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 1-Naphthylamine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2-Naphthylamine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2-Nitroaniline | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 3-Nitroaniline | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 4-Nitroaniline | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Nitrobenzene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2-Nitrophenol | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 4-Nitrophenol | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Nitroquinoline-1-Oxide | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |

| Parameter/Analyte | WY Storage Tank Program | Non-Potable Water | Solid Hazardous Waste (Water) | Solid Hazardous Waste (Solid) |
|---|---|---|---|---|
| N-Nitrosodiethylamine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| N-Nitrosodimethylamine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| N-Nitrosodi-n-Butylamine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| N-Nitrosodi-n-Propylamine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| N-Nitrosodiphenylamine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| N-Nitrosomethylethylamine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| N-Nitrosomorpholine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| N-Nitrosopiperidine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| N-Nitrosopyrrolidine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 5-Nitro-o-Toluidine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2,2-oxybis(1-chloropropane) | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Parathion, Methyl | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Parathion, Ethyl | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Pentachlorobenzene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Pentachloroethane | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Pentachloronitobenzene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Pentachlorophenol | ---------------------- | ---------------------- | EPA 8270C / 8270D / 8321A / 8321B | EPA 8270C / 8270D / 8321A / 8321B |
| Phenacetin | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Phenanthrene | ---------------------- | ---------------------- | EPA 8270C / 8270D / 8270SIM | EPA 8270C / 8270D / 8270SIM |
| Phenol | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Phorate | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2-Picoline | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Pronamide | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Pyrene | ---------------------- | ---------------------- | EPA 8270C / 8270D / 8270SIM | EPA 8270C / 8270D / 8270SIM |
| Pyridine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |

| Parameter/Analyte | WY Storage Tank Program | Non-Potable Water | Solid Hazardous Waste (Water) | Solid Hazardous Waste (Solid) |
|---|---|---|---|---|
| Safrole | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Sulfotepp | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 1,2,4,5-Tetrachlorobenzene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2,3,4,6-Tetrachlorophenol | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Thionazin | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| o-Toluidine | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 1,2,4-Trichlorobenzene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2,4,5-Trichlorophenol | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 2,4,6-Trichlorophenol | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| o,o,o-Triethyl Phosphorothioate | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| 1,3,5-Trinitrobenzene | ---------------------- | ---------------------- | EPA 8270C / 8270D | EPA 8270C / 8270D |
| Motor Oil (Residual Range Organics) | ---------------------- | ---------------------- | EPA 8015B / 8015C, AK103 / OK DEQ RRO | EPA 8015B / 8015C, AK103 / OK DEQ RRO |
| Pesticides/Herbicides/PCBs | | | | |
| Aldrin | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| Atrazine | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Azinophos ethyl | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Azinophos methyl | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| alpha-BHC | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| beta-BHC | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| delta-BHC | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| gamma-BHC | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| Bolstar | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| alpha-Chlordane | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| gamma-Chlordane | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| Chlordane (technical) | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |

| Parameter/Analyte | WY Storage Tank Program | Non-Potable Water | Solid Hazardous Waste (Water) | Solid Hazardous Waste (Solid) |
|---|---|---|---|---|
| Chloropyrifos | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Coumaphos | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| 2,4-D | ---------------------- | ---------------------- | EPA 8151A / 8321A | EPA 8151A /8321A |
| Dalapon | ---------------------- | ---------------------- | EPA 8151A / 8321A | EPA 8151A / 8321A |
| 2,4-DB | ---------------------- | ---------------------- | EPA 8151A / 8321A | EPA 8151A / 8321A |
| 4,4’-DDD | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| 4,4’-DDE | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| 4,4’-DDT | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| Demeton-O | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Demeton-S | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Demeton, total | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Diazinon | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Dicamba | ---------------------- | ---------------------- | EPA 8151A / 8321A | EPA 8151A / 8321A |
| Dichlorovos | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Dichloroprop | ---------------------- | ---------------------- | EPA 8151A / 8321A | EPA 8151A / 8321A |
| Dieldrin | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| Dimethoate | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Dinoseb | ---------------------- | ---------------------- | EPA 8151A / 8321A | EPA 8321A |
| Disulfoton | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Endosulfan I | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| Endosulfan II | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| Endonsulfan sulfate | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| Endrin | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| Endrin aldehyde | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| Endrin ketone | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| EPN | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |

| Parameter/Analyte | WY Storage Tank Program | Non-Potable Water | Solid Hazardous Waste (Water) | Solid Hazardous Waste (Solid) |
|---|---|---|---|---|
| Ethoprop | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Ethyl Parathion | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Famphur | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Fensulfothion | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Fenthion | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Heptachlor | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| Heptachlor Epoxide | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| Hexachlorobenzene | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| Malathion | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| MCPA | ---------------------- | ---------------------- | EPA 8151A / 8321A | EPA 8151A / 8321A |
| MCPP | ---------------------- | ---------------------- | EPA 8151A / 8321A | EPA 8151A / 8321A |
| Merphos | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Methoxychlor | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| Methyl parathion | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Mevinphos | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Naled | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| PCB-1016 (Arochlor) | ---------------------- | ---------------------- | EPA 8082 / 8082A | EPA 8082 / 8082A |
| PCB-1221 | ---------------------- | ---------------------- | EPA 8082 / 8082A | EPA 8082 / 8082A |
| PCB-1232 | ---------------------- | ---------------------- | EPA 8082 / 8082A | EPA 8082 / 8082A |
| PCB-1242 | ---------------------- | ---------------------- | EPA 8082 / 8082A | EPA 8082 / 8082A |
| PCB-1248 | ---------------------- | ---------------------- | EPA 8082 / 8082A | EPA 8082 / 8082A |
| PCB-1254 | ---------------------- | ---------------------- | EPA 8082 / 8082A | EPA 8082 / 8082A |
| PCB-1260 | ---------------------- | ---------------------- | EPA 8082 / 8082A | EPA 8082 / 8082A |
| PCB-1262 | ---------------------- | ---------------------- | EPA 8082 / 8082A | EPA 8082 / 8082A |
| PCB-1268 | ---------------------- | ---------------------- | EPA 8082 / 8082A | EPA 8082 / 8082A |
| Phorate | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Phosmet | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Propazine | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Ronnel | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Simazine | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |

| Parameter/Analyte | WY Storage Tank Program | Non-Potable Water | Solid Hazardous Waste (Water) | Solid Hazardous Waste (Solid) |
|---|---|---|---|---|
| Stirophos | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Sulfotepp | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| 2,4,5-T | ---------------------- | ---------------------- | EPA 8151A / 8321A | EPA 8151A / 8321A |
| Thionazin | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Tokuthion | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| 2,4,5-TP | ---------------------- | ---------------------- | EPA 8151A / 8321A | EPA 8151A / 8321A |
| Toxaphene | ---------------------- | ---------------------- | EPA 8081A / 8081B | EPA 8081A / 8081B |
| Trichloronate | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| o,o,o-Triethylphos Phorothioate | ---------------------- | ---------------------- | EPA 8141A / 8141B | EPA 8141A / 8141B |
| Explosives | | | | |
| 1,3,5-Trinitrobenzene | ---------------------- | ---------------------- | EPA 8330A / 8330B / 8321A / 8321B | EPA 8330A / 8330B / 8321A / 8321B |
| 1,3-Dinitrobenzene | ---------------------- | ---------------------- | EPA 8330A / 8330B / 8321A / 8321B | EPA 8330A / 8330B / 8321A / 8321B |
| 2,4,6-Trinitrotoluene | ---------------------- | ---------------------- | EPA 8330A / 8330B / 8321A / 8321B | EPA 8330A / 8330B / 8321A / 8321B |
| 3,5-Dinitroaniline | ---------------------- | ---------------------- | EPA 8330B | EPA 8330B |
| 2,4-Dinitrotoluene | ---------------------- | ---------------------- | EPA 8330A / 8330B / 8321A / 8321B | EPA 8330A / 8330B / 8321A / 8321B |
| 2,6-Dinitroltoluene | ---------------------- | ---------------------- | EPA 8330A / 8330B / 8321A / 8321B | EPA 8330A / 8330B / 8321A / 8321B |
| 2-Amino-4,6-Dinitrotoluene | ---------------------- | ---------------------- | EPA 8330A / 8330B / 8321A / 8321B | EPA 8330A / 8330B / 8321A / 8321B |
| 2-Nitrotoluene | ---------------------- | ---------------------- | EPA 8330A / 8330B / 8321A / 8321B | EPA 8330A / 8330B / 8321A / 8321B |
| 3-Nitrotoluene | ---------------------- | ---------------------- | EPA 8330A / 8330B / 8321A / 8321B | EPA 8330A / 8330B / 8321A / 8321B |
| 4-Amino-2,6-Dinitrotoluene | ---------------------- | ---------------------- | EPA 8330A / 8330B / 8321A / 8321B | EPA 8330A / 8330B / 8321A / 8321B |
| 4-Nitrotoluene | ---------------------- | ---------------------- | EPA 8330A / 8330B / 8321A / 8321B | EPA 8330A / 8330B / 8321A / 8321B |

| Parameter/Analyte | WY Storage Tank Program | Non-Potable Water | Solid Hazardous Waste (Water) | Solid Hazardous Waste (Solid) |
|---|---|---|---|---|
| Nitrobenzene | ---------------------- | ---------------------- | EPA 8330A / 8330B / 8321A / 8321B | EPA 8330A / 8330B / 8321A / 8321B |
| Nitroglycerin | ---------------------- | ---------------------- | EPA 8330A / 8330B / 8321A / 8321B | EPA 8330A / 8330B / 8321A / 8321B |
| Octahydro-1,3,5,7-Tetrabitro-1,3,5,7-Tetrazocine (HMX) | ---------------------- | ---------------------- | EPA 8330A / 8330B / 8321A / 8321B | EPA 8330A / 8330B / 8321A / 8321B |
| Pentaerythritoltetranitrate (PETN) | ---------------------- | ---------------------- | EPA 8330A / 8330B / 8321A / 8321B | EPA 8330A / 8330B / 8321A / 8321B |
| Picric acid | ---------------------- | ---------------------- | EPA 8330A / 8330B / 8321A / 8321B | EPA 8330A / 8330B / 8321A / 8321B |
| RDX (Hexahydro-1,3,5-Trinitro-1,3,5-Triazine) | ---------------------- | ---------------------- | EPA 8330A / 8330B / 8321A / 8321B | EPA 8330A / 8330B / 8321A / 8321B |
| Tetryl (Methyl 2,4,6-Trinitrophenylnitramine | ---------------------- | ---------------------- | EPA 8330A / 8330B / 8321A / 8321B | EPA 8330A / 8330B / 8321A / 8321B |
| Perfluorinated Hydrocarbons (PFCs) and Perfluorinated Sulfonates (PFSs) | | | | |
| Perfluorobutanoic Acid | ---------------------- | SOP DV-LC-0012 | SOP DV-LC-0012 | SOP DV-LC-0012 |
| Perfluoropentanoic Acid | ---------------------- | SOP DV-LC-0012 | SOP DV-LC-0012 | SOP DV-LC-0012 |
| Perfluorohexanoic Acid | ---------------------- | SOP DV-LC-0012 | SOP DV-LC-0012 | SOP DV-LC-0012 |
| Perfluoroheptanoic Acid | ---------------------- | SOP DV-LC-0012 | SOP DV-LC-0012 | SOP DV-LC-0012 |
| Perfluorooctanoic Acid | ---------------------- | SOP DV-LC-0012 | SOP DV-LC-0012 | SOP DV-LC-0012 |
| Perfluorononanoic Acid | ---------------------- | SOP DV-LC-0012 | SOP DV-LC-0012 | SOP DV-LC-0012 |
| Perfluorodecanoic Acid | ---------------------- | SOP DV-LC-0012 | SOP DV-LC-0012 | SOP DV-LC-0012 |
| Perfluoroundecanoic Acid | ---------------------- | SOP DV-LC-0012 | SOP DV-LC-0012 | SOP DV-LC-0012 |
| Perfluorododecanoic Acid | ---------------------- | SOP DV-LC-0012 | SOP DV-LC-0012 | SOP DV-LC-0012 |
| Perfluorotridecanoic Acid | ---------------------- | SOP DV-LC-0012 | SOP DV-LC-0012 | SOP DV-LC-0012 |
| Perfluorotetradecanoic Acid | ---------------------- | SOP DV-LC-0012 | SOP DV-LC-0012 | SOP DV-LC-0012 |
| Perfluorobutane Sulfonate | ---------------------- | SOP DV-LC-0012 | SOP DV-LC-0012 | SOP DV-LC-0012 |
| Perfluorohexane Sulfonate | ---------------------- | SOP DV-LC-0012 | SOP DV-LC-0012 | SOP DV-LC-0012 |
| Perfluorooctane Sulfonate | ---------------------- | SOP DV-LC-0012 | SOP DV-LC-0012 | SOP DV-LC-0012 |
| Perfluorodecane Sulfonate | ---------------------- | SOP DV-LC-0012 | SOP DV-LC-0012 | SOP DV-LC-0012 |
| Perfluorooctane Sulfonamide | ---------------------- | SOP DV-LC-0012 | SOP DV-LC-0012 | SOP DV-LC-0012 |
| Hazardous Waste Characteristics | | | | |
| Conductivity | ---------------------- | ---------------------- | EPA 9050A | EPA 9050A |
| Corrosivity | ---------------------- | ---------------------- | EPA 9040B | 9045C |
| Ignitibility | ---------------------- | EPA 1010/EPA 1010A | EPA 1010 / 1010A | EPA 1010 / 1010A |
| Paint Filter Liquids Test | ---------------------- | ---------------------- | EPA 9095A | EPA 9095A |
| Synthetic Precipitation Leaching Procedure (SPLP) | ---------------------- | ---------------------- | EPA 1312 | EPA 1312 |

| Parameter/Analyte | WY Storage Tank Program | Non-Potable Water | Solid Hazardous Waste (Water) | Solid Hazardous Waste (Solid) |
|---|---|---|---|---|
| Toxicity Characteristic Leaching Procedure | ---------------------- | ---------------------- | EPA 1311 | EPA 1311 |
| Organic Prep Methods | | | | |
| Separatory Funnel Liquid-Liquid Extraction | ---------------------- | ---------------------- | EPA 3510C | ----------------------- |
| Continuous Liquid-Liquid Extraction | ---------------------- | ---------------------- | EPA 3520C | ----------------------- |
| Soxhlet Extraction | ---------------------- | ---------------------- | ----------------------- | EPA 3540C |
| Microwave Extraction | ---------------------- | ---------------------- | ----------------------- | EPA 3546 |
| Ultrasonic Extraction | ---------------------- | ---------------------- | ----------------------- | EPA 3550B |
| Ultrasonic Extraction | ---------------------- | ---------------------- | ----------------------- | EPA 3550C |
| Waste Dilution | ---------------------- | ---------------------- | EPA 3580A | EPA 3580A |
| Solid Phase Extraction<br>Volatiles Purge and trap<br>Volatiles Purge and Trap for Soils | ---------------------- | ---------------------- | EPA 3535A<br>EPA 5030B | EPA 5030B<br>EPA 5035 |
| Organic Cleanup Procedures | | | | |
| Florisil Cleanup | ---------------------- | ---------------------- | EPA 3620B | EPA 3620B |
| Florisil Cleanup | ---------------------- | ---------------------- | EPA 3620C | EPA 3620C |
| Sulfur Cleanup | ---------------------- | ---------------------- | EPA 3660B | EPA 3660B |
| Sulfuric Acid/Permanganate Cleanup | ---------------------- | ---------------------- | EPA 3665A | EPA 3665A |
| Metals Digestion | | | | |
| Acid Digestion Total Recoverable or Dissolved Metals | ---------------------- | ---------------------- | EPA 3005A | ---------------------- |
| Acid Digestion for Total Metals | ---------------------- | ---------------------- | EPA 3010A | ---------------------- |
| Acid Digestion for Total Metals | ---------------------- | ---------------------- | EPA 3020A | ---------------------- |
| Acid Digestion of Sediments, Sludges and Soils | ---------------------- | ---------------------- | ---------------------- | EPA 3050B |

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for technical competence in the field of

## Environmental Testing

In recognition of the successful completion of the A2LA evaluation process that includes an assessment of the laboratory's compliance with ISO/IEC 17025:2005, the 2003 NELAC Chapter 5 Standard, and the requirements of the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) as detailed in version 4.2 of the DoD Quality System Manual for Environmental Laboratories (QSM); accreditation is granted to this laboratory to perform recognized EPA methods as defined on the associated A2LA Environmental Scope of Accreditation. This accreditation demonstrates technical competence for this defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).

AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION CORPORATE SEAL 1978 DISTRICT OF COLUMBIA A2LA

Presented this 5th day of November 2013.

President & CEO
For the Accreditation Council
Certificate Number 2907.01
Valid to October 31, 2015

*For the tests to which this accreditation applies, please refer to the laboratory's Environmental Scope of Accreditation.*

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# Appendix C

# Standard Operating Procedures (SOPs)

# Standard Operating Procedure No. 003
# for
# Subsurface/Utility Clearance

*Prepared by*

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Revision 0
December 2014

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# CONTENTS

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# 1. SCOPE AND APPLICATION

## 1.1 PURPOSE

The purpose of this Standard Operating Procedure is to prevent injury to workers and damage to subsurface structures (including tanks, pipe lines, water lines, gas lines, electrical service, etc.) during ground disturbance activities (including drilling, augering, sampling, use of direct-push technologies, excavation, trenching, concrete coring or removal, fence post installation, grading, or other similar operations).

## 1.2 LIMITATIONS

The procedures set forth in this document are the suggested procedures but may not be applicable to particular sites based on the site-specific considerations. The Project Manager is responsible for making a site-specific evaluation of each site to determine whether the Subsurface/Clearance Procedures should be utilized or require modification. If safety or other site-specific considerations require a modified or different procedure, the Project Manager should review the modified procedure with the Business Unit Director, Profit Center Manager, or Senior Technical Reviewer.

## 1.3 SCOPE

This procedure provides minimum guidance for subsurface clearance activities, which must be followed prior to and during ground disturbance activities at EA project sites. Even after completing the subsurface clearance activities required in this procedure, all ground disturbance activities should proceed with due caution.

Deviations from this procedure may be provided on an exception basis for specific situations, such as underground storage tank systems removals, verified aboveground/overhead services/lines, undeveloped land/idle facilities, shallow groundwater conditions, soil stability, or well construction quality assurance/quality control concerns, etc.

EA or its subcontractors are responsible for, and shall ensure that, all ground disturbance activities are completed safely, without incident, and in accordance with applicable federal, state, and local regulations.

This procedure shall not override any site-specific or consultant/contractor procedures that are more stringent or provide a greater degree of safety or protection of health or the environment.

# 2. PROCEDURES

The EA Project Manager or his designee must complete the Subsurface Clearance Procedure Checklist (Appendix A) in conjunction with the following procedures. The checklist must be completed before initiating any ground disturbance activities. The completed checklist must be submitted to the appropriate team individuals, subcontractors, and/or the client and included in the project files.

## 2.1 SAFETY

A Health and Safety Plan must be available onsite and followed by all contractors and subcontractors.

All work areas shall be defined and secured with safety cones, safety tape, construction fence, other barriers, or signs as appropriate.

Site work permits must be obtained as required by site procedures. Based on site conditions or classification, the use of intrinsically-safe equipment may be required.

To ensure the safety of all onsite personnel and subsurface structure integrity, consideration should be given to de-energizing and locking out selected site utilities or temporarily shutting down a portion of or the entire facility.

## 2.2 PREPARATION TASKS

**Objective—**To gather all relevant information about potential subsurface structures prior to the actual site visit.

### 2.2.1 Obtain Permits and Site Access

The consultant/contractor is responsible for following all applicable laws, guidance, and approved codes of practice; obtaining all necessary permits and utility clearances; and securing site access permission.

### 2.2.2 Historic Site Information

Obtain most recent as-built drawings and/or site plans (including underground storage tank, product, and vent lines) as available.

NOTE: As-built drawings may not accurately depict the locations and depths of improvements and subsurface structures and should, therefore, not be **solely** relied upon.

EA should obtain any other site information such as easements, right-of-ways, historical plot plans, fire insurance plans, tank (dip) charts, previous site investigations, soil surveys, boring logs, and aerial photographs, etc. as relevant to the planned ground disturbance activities.

Where applicable, EA should also contact contract personnel who may have historic site knowledge.

### 2.2.3 Mark-Outs

**Objective—**To identify location of subsurface structures on surface.

EA must ensure that a thorough mark-out at the site is completed to locate electrical, gas, telephone, water, sewer, low voltage electric lines, product delivery pipelines, fiber optic, and all other subsurface utilities/services.

- Where available, public utility companies must be contacted to identify underground utilities. (This can be accomplished through the One-Call system in most instances.)

- In addition, where available and warranted by site conditions, a private utility/pipeline mark-out company should be contracted to perform an electronic subsurface survey to identify the presence of suspected hazardous or critical underground utilities and subsurface structures. In some cases, this is necessary to confirm public utility mark-outs in the vicinity of planned ground disturbance activities.

EA will review all available site plan subsurface information with the private mark-out company to assist in locating utilities and other subsurface structures.

NOTE: Mark-outs may not accurately depict the exact locations of improvements and subsurface structures and should, therefore, not be **solely** relied upon.

Where possible, EA personnel are encouraged to be onsite at the time of subsurface mark-outs. This is to ensure accuracy and understanding of subsurface structures identified and provides an opportunity to exchange information with mark-out company personnel regarding planned work activities.

Subsurface structures should be marked throughout the entire work area(s) with adequate materials (e.g., site conditions may require paint and tape/flags). Ground disturbance activities must be started within 30 days of mark-out, unless local ordinances specify a shorter time period. If activities are not started within required time period or markings have faded, mark-outs must be redone.

EA personnel will record time and date of mark-out request and list all companies contacted by the service and confirmation number. This should be available for review onsite and checked off after visual confirmation of markings.

### 2.2.4 Initial Site Visit

**Objective—**To compare the site plan to actual conditions based on information gathered in Procedures 2 and 3 above, obtain additional site information needed, and prepare a vicinity map.

EA will document all findings and update the site plan with this information. On third party sites, close coordination with the site owner's representatives for mark-outs, review of as-builts, and other information reviews should be conducted prior to work. Project Managers are encouraged to provide updated as-built information to the client.

In some regions, it may be more effective and efficient to conduct the site visit at the same time the contractor and drill rig are mobilized to the site. The inspection should include the following activities and may include others as determined by the consultant/contractor and the Project Manager.

### 2.2.5 Utilities

EA shall perform a detailed site walk-through for the purpose of identifying all aboveground indicators of subsurface utilities/services that may be leading to or from buildings within the planned work area. The inspection shall include, but not be limited to, the following:

- Utility mark-outs
- Aboveground utilities
- Area lights/signs
- Phones
- Drains
- Junction boxes
- Natural gas meters or connections
- Other utilities including: fire hydrants, on/below grade electrical transformers, splice cages, sewer lines, pipeline markers, cable markers, valve box covers, clean-outs/traps, sprinkler systems, steam lines (including insulated tanks that may indicate steam lines), and cathodic protection on lines/tanks
- Observe paving scars (i.e., fresh asphalt/concrete patches, scored asphalt/concrete).

**NOTE**: In many cases, the onsite location of low-voltage electrical lines and individual property water and sewer line branches may be approximated by using the following technique:

- Locate the entry/connection location at the facility building
- Attempt to identify utility connections for the mains (water sewer, etc.) by locating clean-outs, valve manways, etc. The location path of the utility is likely with the area between the main connection and facility building connection. Subsurface electrical line locations from the facility building to signs, lamps, etc. can be estimated with the same process.

### 2.2.6 Other Subsurface Systems

Some other subsurface systems to be cognizant of during subsurface activities include product delivery systems (i.e., at gas stations) and existing remediation systems.

### 2.2.7 Selection of Ground Disturbance Locations

EA will utilize the information collected to this point in combination with regulatory requirements and project objectives to select ground disturbance locations. Ground disturbance locations should also consider the location of overhead obstructions (e.g., power lines). Work at active gasoline retail locations must consider several special considerations that should be outlined in the site-specific safety and health plan.

### 2.2.8 Review of Selected Locations with the Client

EA will review the selected ground disturbance locations with the client. EA will not proceed with the subsurface activities until the plan has been discussed with the client. During execution of the project, subsurface activities are required outside of the area previously approved by the client. EA will submit these changes to the client for approval prior to execution.

### 2.2.9 Ground Disturbance Activity Sequence

EA will plan ground disturbance activities starting at the point farthest from the location of suspected underground improvements. This is done to determine the natural subsurface conditions and to allow EA site personnel to recognize fill conditions.

Experience has shown that the following warning signs may indicate the presence of a subsurface structure:

- Warning tape (typically indicative of underground services).
- Pea gravel/sand/non-indigenous material (typically indicative of tanks or lines).
- Red concrete (typically indicative of electrical duct banks).

- The abrupt absence of soil recovery in a hand auger. This could indicate pea gravel or sand that has spilled out of the auger. This may not be indicative in areas where native soil conditions typically result in poor hand auger recoveries.

- Any unexpected departure from the native soil or backfill conditions as established by prior onsite digging.

If any of these conditions is encountered by EA site personnel, digging should stop and the client should be contacted.

## 3. SUBSURFACE CLEARANCE METHODS

The method used to delineate the subsurface should be compatible with the inherent associated risk given the type of facility/property, soil stratigraphy, and the location of the ground disturbance activity, such that required delineation is obtained. It should be noted that in areas where there is paving, sufficient paving should be removed to allow clear visibility of the subsurface conditions during clearance activities. The following is a list of potential clearance methods that may be used on a job site:

- Vacuum digging
- Probing
- Hand digging
- Hand augering
- Post-hole digging.

EA personnel will evaluate the potential for electrical shock or fire/explosion for each subsurface disturbance project and will evaluate as necessary the use of non-conductive or non-sparking tools (i.e., fiberglass hand shovels, and thick electrically insulating rubber grips on hand augers or probes). The potential need for the use of non-conductive materials, electrical safety insulated gloves, and footwear will also be evaluated on a case-by-case basis.

### 3.1 SUBSURFACE CLEARANCE PROCEDURES FOR DRILLING, DIRECT-PUSH TECHNOLGY, AUGERING, FENCE POST INSTALLATION, OR OTHER BOREHOLE INSTALLATION ACTIVITIES

The area to be delineated will exceed the diameter of the largest tool to be advanced and sufficiently allow for visual inspection of any obstructions encountered.

## 3.2 SUBSURFACE CLEARANCE PROCEDURES FOR TRENCHING/ EXCAVATION ACTIVITIES

Appropriate subsurface clearance methods should be conducted along the length and width of the excavation at a frequency sufficient to ensure adequate precautions have been applied to the entire work area. The frequency and density of investigations will be based on site knowledge, potential hazards, and risks of the work area to surrounding locations (e.g., proximity to a residential area or school).

Whenever subsurface structures are exposed, EA will cease work and mark the area (e.g., flags, stakes, cross bracing) to ensure the integrity of these exposed structures is maintained during subsequent trenching/excavation/backfilling.

Uniform color codes for marking of underground facilities are provided in Appendix B.

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# Appendix A

# Subsurface Clearance Procedure Checklist

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# Subsurface Clearance Procedure Checklist

Site Identification: ______________________________

Project Consultant/Contractor: ______________________________

**Section 1: Safety, Preparation Tasks, and Mark-Outs**

| Activity | Yes | No | N/A | Comments including Justification if Response Is No or Not Applicable |
|---|---|---|---|---|
| Health and Safety Plan is available and all contractors and subcontractors are familiar with it. | | | | |
| All applicable local, state, and federal permits have been obtained. | | | | |
| Site access/permission has been secured. | | | | |
| Most recent as-built drawings and/or site plans (including underground storage tank, product, and vent lines) obtained. | | | | |
| Reviewed site information to identify subsurface structures relevant to planned site activities (easements, rights-of-way, historical plot plans, fire insurance plans, tank dip charts, previous site investigations, soil surveys, boring logs, aerial photographs, etc.). | | | | |
| Utility mark-outs have been performed by public utility company(s). Mark-outs clear/visible. | | | | |
| Subsurface structure mark-outs performed by private mark-out company. Mark-outs clear/visible. | | | | |
| Additional Activities: Were dig locations reviewed with site representative? | | | | |

**Section 2: Initial Site Visit and Selecting Ground Disturbance Locations**

| Activity | Yes | No | N/A | Comments including Justification if Response Is No or Not Applicable |
|---|---|---|---|---|
| Location of all aboveground indicators of subsurface utilities/services that may be leading to or from buildings within the planned work area has been identified. | | | | |
| Location of utility mark-outs by all utility companies previously contacted has been identified within required time period. | | | | |
| Location of all subsurface structure mark-outs by private mark-out company has been identified within required time period. | | | | |
| Location of area lights/signs and associated subsurface lines identified. | | | | |
| Location of all phones and associated subsurface lines identified. | | | | |
| Location of all drains and associated interconnecting lines identified. | | | | |
| Location of all electrical junction boxes and associated interconnecting lines identified | | | | |
| Location of all natural gas meters or connections and all interconnecting lines identified | | | | |

Completed by: ______________________________
Name

Signature: ______________________________ ______________
Company Date

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# Appendix B

# Uniform Color Codes for Excavation

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## APWA UNIFORM COLOR CODE

**WHITE** - Proposed Excavation

**PINK** - Temporary Survey Markings

**RED** - Electric Power Lines, Cables, Conduit and Lighting Cables

**YELLOW** - Gas, Oil, Steam, Petroleum or Gaseous Materials

**ORANGE** - Communication, Alarm or Signal Lines, Cables or Conduit

**BLUE** - Potable Water

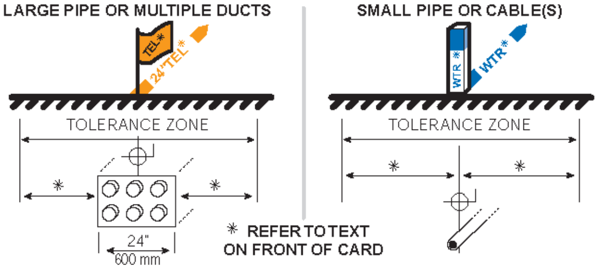
**PURPLE** - Reclaimed Water, Irrigation and Slurry Lines

**GREEN** - Sewers and Drain Lines

### TYPICAL MARKING

LARGE PIPE OR MULTIPLE DUCTS

SMALL PIPE OR CABLE(S)




* REFER TO TEXT ON FRONT OF CARD

Customize with your center's phone and address information

## GUIDELINES FOR UNIFORM TEMPORARY MARKING OF UNDERGROUND FACILITIES

This marking guide provides for universal use and understanding of the temporary marking of subsurface facilities to prevent accidents and damage or service interruption by contractors, excavators, utility companies, municipalities or any others working on or near underground facilities.

**ONE-CALL SYSTEMS**
The One-Call damage prevention system shall be contacted prior to excavation.

**PROPOSED EXCAVATION**
Use white marks to show the location, route or boundary of proposed excavation. Surface marks on roadways do not exceed 1.5" by 18" (40 mm by 450 mm). The facility color and facility owner identity may be added to white flags or stakes.

**USE OF TEMPORARY MARKING**
Use color-coded surface marks (i.e., paint or chalk) to indicate the location or route of active and out-of-service buried lines. To increase visibility, color coded vertical markers (i.e., stakes or flags) should supplement surface marks. Marks and markers indicate the name, initials or logo of the company that owns or operates the line, and width of the facility if it is greater than 2" (50 mm). Marks placed by other than line owner/operator or its agent indicate the identity of the designating firm. Multiple lines in joint trench are marked in tandem. If the surface over the buried line is to be removed, supplementary offset markings are used. Offset markings are on a uniform alignment and clearly indicate the actual facility is a specific distance away.

**TOLERANCE ZONE**
Any excavation within the tolerance zone is performed with non-powered hand tools or non-invasive method until the marked facility is exposed. The width of the tolerance zone may be specified in law or code. If not, a tolerance zone including the width of the facility plus 18" (450 mm) measured horizontally from each side of the facility is recommended.

**ADOPT UNIFORM COLOR CODE**
The American Public Works Association encourages public agencies, utilities, contractors, other associations, manufacturers and all others involved in excavation to adopt the APWA Uniform Color Code, using ANSI standard Z535.1 Safety Colors for temporary marking and facility identification.

Rev. 4/99

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# Standard Operating Procedure No. 011
# for
# Vegetation Removal

*Prepared by*

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Revision 0
February 2015

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# CONTENTS

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# 1. PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to provide EA Engineering, Science and Technology, Inc., PBC (EA) employees and subcontractors with the minimum procedures and safety and health requirements applicable to perform vegetation removal operations on sites contaminated with munitions and explosives of concern (MEC).

# 2. SCOPE

This SOP applies to all EA site personnel, including contractor and subcontractor personnel, involved in the conduct of vegetation removal operations on a site potentially contaminated with MEC. This policy is not a stand-alone document; rather, it is to be used together with the applicable project-specific Work Plan; Site-Specific Health and Safety Plan Addendum; Quality Assurance Project Plan (QAPP); applicable federal, state, and local regulations; and contract restrictions and guidance. Consult the documents listed in Section 10.0 of this SOP for additional compliance issues.

# 3. MAINTENANCE

The Project Manager (PM), in collaboration with the Senior Unexploded Ordnance Supervisor (SUXOS) is responsible for the maintenance of this procedure. Approval authority rests with the Project Quality Control Manager (PQCM).

# 4. PERSONNEL REQUIREMENTS/RESPONSABILITIES

## 4.1 PROJECT MANAGER

The PM shall be responsible for ensuring the availability of the resources needed to implement this SOP, and will also ensure that this SOP is incorporated into plans, procedures, and training for sites where this SOP is to be implemented.

## 4.2 RESPONSIBLE PERSONNEL

Only those personnel that meet the requirements set forth by the Client and EA will be utilized at the project site to facilitate safe and efficient vegetation removal operations.

## 5. TRAINING

All training on equipment will be either formal or on-the-job (OJT) training. This training will be documented by site personnel and subject to review for accuracy and completeness.

## 6. PERSONAL PROTECTIVE EQUIPMENT

Level D personal protective equipment (PPE) is required for all personnel engaged in vegetation removal operations. Clothing includes, but is not limited to:

- Coveralls or work clothing as prescribed
- Work gloves, leather or canvas as appropriate
- Safety Glasses
- Hard Hats (if necessary)
- Composite toed safety boots
- Hearing protection, noise attenuators, or ear plugs
- Dust mask, as required by wind conditions and/or the presence of airborne particulate matter
- Other personal protective equipment (PPE) as needed. (e.g., face shield, chainsaw chaps, etc.).

## 7. TEAM COMPOSITION

The Vegetation Removal Team will consist of three qualified personnel, as a minimum. These personnel may include any or all of the following:

- Unexploded ordnance (UXO) Technician III
- UXO Technician II or I
- Laborers.

### 7.1 UXO TECHNICIAN III

The UXO Technician III is UXO qualified and directs the operation and other team personnel within the context of removal requirements. In addition, the UXO Technician III must be familiar with the equipment being utilized.

## 7.2 OPERATOR

The operator(s) will be qualified and trained on the equipment being utilized (e.g., chainsaw, weed eater, hand tools etc.) and operate the equipment in a safe and efficient manner. The operator performs daily inspections and maintenance functions as recommended in the operator's manual. The operator will perform other duties as needed or directed.

# 8. SAFETY

Safety is paramount and all personnel will observe those safety precautions/warnings that apply or may apply to vegetation removal operations. The precautions listed below are general in nature and personnel will need to review applicable publications for more specific safety precautions/warnings. Distances listed are the minimum required.

- Teams will be separated by 75 feet (Team Separation Distance):
    - Former York Naval Ordnance Plant – 75 feet.
- Maintain safe separation distance from UXO personnel engaged in intrusive work.
- Distances may be increased by the U.S. Army Corps of Engineers (USACE) Ordnance Explosive (OE) Safety Specialist as determined by site history, UXO items encountered, terrain features, and other factors that may apply.
- Use equipment safety features.
- Safety precautions/warnings found in the operator's manual/manufacture's publications will be observed.
- Maintain 6 inches of ground clearance during removal operations.
- Communications will be maintained between the SUXOS and operator(s) at all times.
- Maintain site control.
- Observe UXO safety precautions for items encountered or suspected.
- Ensure PPE is appropriate, serviceable, and worn/used in a proper manner.

## 9. OPERATIONAL PROCEDURES

Personnel will not enter within 10 ft of an operating piece of equipment. If at any time personnel enter closer than 10 ft, the operator will immediately stop, return the engine to idle speed, and cease operations. Prior to operations commencing, a communications check with all team personnel will be conducted. Hand signals will be devised and used as a means of communication. All team personnel must know these hand signals prior to operations commencing. The hand signals will be documented on the tailgate safety-briefing sheet each morning of operations and at each change of team personnel.

The UXO Technician III will be responsible for the direction and manner in which the vegetation is to be removed. Only low lying brush and trees less than 4 inch diameter will be removed. Prior to removal operations commencing, a visual search/survey is conducted to determine the hazards that may be encountered, which may include munitions and explosives of concern (MEC), terrain slope, vegetation, wildlife, environmental concerns, and PPE requirements. The UXO Technician III will perform a visual search for MEC, ordnance scrap, surface debris, and any other obstruction/object that may pose a hazard to team personnel. Hazardous items, impassable terrain, or vegetation that may affect operations will be marked and team personnel notified.

Team personnel are to ensure that a 6-inch ground clearance is maintained during removal operations. Those areas marked as hazards are to be avoided. The manner in which operations are accomplished will follow safe work practices and procedures. Areas of concern will be addressed to the SUXOS and/or UXO Quality Control Specialist (UXOQCS)/UXO Safety Officer (UXOSO) as needed. All MEC items encountered are marked and avoided. Notification of these items will be made to the appropriate personnel.

## 10. SUMMARY

EA personnel will conduct vegetation removal operations in a safe, efficient, and productive manner and will use this SOP and references, which include changes and revisions.

## 11. REFERENCES

- EA Corporate Safety and Health Program (CSHP)
- SSHP
- Occupational Safety and Health Administration (OSHA) Regulations
- USACE, Engineer Manual 385-1-1
- USACE Engineer Manual 385-1-97
- Operator's Manual(s) and Manufacturer's Publications.

# Standard Operating Procedure No. 012
# for
# Munitions Debris Inspection

*Prepared by*

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Revision 0
February 2015

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# CONTENTS

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# 1. PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to provide the munitions potentially possessing explosive hazards procedures at EA Engineering, Science, and Technology, Inc., PBC (EA). This SOP is not meant to be all inclusive, nor is it applicable in all situations. This policy is not a standalone document; rather, it is to be used in conjunction with the applicable project-specific Work Plan (WP); Accident Prevention Plan (APP)/Site Safety and Health Plan (SSHP); applicable federal, state, and local regulations; contract restrictions; and guidance.

# 2. SCOPE

This SOP applies to all site personnel, including subcontractor personnel, involved in the conduct of operations on munitions response sites requiring munitions debris/scrap inspection and certification activities. This SOP is not intended to contain all of the requirements needed to ensure compliance. Consult the documents listed in the reference sections of the WP and APP/SSHP.

# 3. MAINTENANCE

The Project Manager (PM), in collaboration with the Site Supervisor is responsible for the maintenance of this procedure. Approval authority rests with the Program Quality Control Manager (PQCM).

# 4. MPPEH INSPECTION AND CERTIFICATION

EA MEC Projects will comply with the following procedures for collection, inspection, and certification and final disposal of Material Potentially Presenting an Explosive Hazard (MPPEH), Munitions Debris (MD), Range Related Debris (RRD) and Non-Munitions Related Debris (NMRD).

MPPEH must be controlled and managed (e.g., sorted, segregated, stored, secured from the time of recovery through the release from DoD control to prevent its unauthorized use, transfer or release, and to protect personnel and property from uncontrolled exposures to potential explosive hazards. This must be accomplished by ensuring the chain-of-custody remains intact during the entire process from discovery to final disposition. See Attachment 1—Figure 1: MPPEH Process that depicts the flow of the MPPEH process from recovery to release from DoD control.

## 4.1 ROLES AND RESPONSIBILITIES

The following outlined section, addresses the roles and responsibilities for each position normally involved in military munitions response (MMR) projects in regard to the planning, recovery, inspection process, handling, and storage of MPPEH, MD, RRD and NMRD on MMR projects.

### 4.1.1 Project Manager

- Ensure that current and thorough MPPEH Management procedures are contained in the project plans.
- Ensure that the MPPEH Management, inspection and certification procedures are being followed in accordance with the Site-Specific work plan and SOP.
- Coordinate final disposition of all Materials Documented as Safe (MDAS) with the EA approved recyclable facility.

### 4.1.2 Site Supervisor and Senior Unexploded Ordnance Supervisor

- Responsible for ensuring work and QC plans specify the procedures and responsibilities for processing MPPEH for final disposition as MD, RRD and NMRD.
- Ensure a requisition and turn-in document, DD Form 1348-1A is completed for all MD and RRD to be transferred for final disposition to an approved EA recycle facility.
- Perform a daily inspection (with the UXOQCS) of all MPPEH collected (100%) and released by the UXOTIII to ensure no items with explosive hazards, engine fluids, illuminating dials and other visible liquid hazards, toxic or radiological waste (HTRW) materials are identified as MD, RRD or NMRD.
- Maintain <u>one of two</u> keys to the lockable container.
- Certify all MD and RRD is free of explosive hazards, engine fluids, illuminating dials and other visible liquid HTRW materials.
- Be responsible for ensuring that the daily inspected debris is secured in a closed, lockable container.
- Maintain the MDAS Container Log (Attachment 2, Form 005) for all lockable containers of certified MD.

### 4.1.3 UXO SAFETY OFFICER

- Ensures all procedures for processing MPPEH are being performed safely and consistent with applicable regulations the site specific work plan and associated guidance/planning documents.

### 4.1.4 UXO Quality Control Specialist

- Conduct daily audits of the procedures used by UXO personnel to assess whether the processes and procedures as stated in the Site Specific Work plan and this SOP for MPPEH are being followed.

- Perform a daily inspection (with the SUXOS) of all MPPEH collected (100%) and released by the UXOTIII to ensure no items with explosive hazards, engine fluids, illuminating dials and other visible liquid HTRW materials are identified as munitions debris or range-related debris or NMRD.

- Ensure that the daily inspected MD and RRD is placed in a closed lockable container. All NMRD is to be placed in a second closed lockable container.

- Maintain one of two keys for each lockable container.

### 4.1.5 UXO Technician III

- Performs a 100% daily re-inspection of all recovered items prior to departing the work area to determine if items are free of explosives hazards or other dangerous fillers and engine fluids, illuminating dials and other visible liquid HTRW materials.

- Ensures that segregation is appropriate for all items not requiring demilitarization or venting from those items that do require demilitarization or venting.

- Segregates all MD, NMRD, and RRD prior to the SUXOS and UXOQCS inspection at the MPPEH collection point.

- If at any time an item is questionable, cannot be 100% identified, or its condition undetermined, it will remain at the location discovered prior to being transported to the MPPEH collection point, pending evaluation and disposition by the SUXOS, UXOQCS, and UXOS.

### 4.1.6 UXO Technician II

- Weigh each item and perform a 100% inspection of each item as it is discovered and determine the following:

  — Whether the item is an UXO, MD, RRD or NMRD.

  — Whether the item contains explosives hazards or other dangerous fillers.

  — If the item is suspected to be unacceptable to move and requires detonation.

- Whether the item requires demilitarization or venting to expose dangerous fillers.
- Whether the item requires draining of engine fluids, illuminating dials and other visible liquid HTRW materials.

- Segregate all items not requiring demilitarization or venting from those items that do require demilitarization or venting.
- The SUXOS and UXOSO will be notified immediately if items are found to contain other dangerous fillers. Items will not be moved pending assessment by the SUXOS and UXOSO.

#### 4.1.7 UXO Technician I

UXO Technician I (UXOTI) can tentatively identify a located item as MPPEH, followed by a required confirmation by a UXOTII or UXOTIII.

#### 4.1.8 Unexploded Ordnance Sweep Personnel

Unexploded Ordnance Sweep Personnel (UXOSP) will only mark suspected items and will not be allowed to perform any assessment of suspect items to determine its status.

### 4.2 MUNITIONS DEBRIS CERTIFICATION AND VERIFICATION

The SUXOS will certify (prior to off-site release) that all munitions debris and range-related debris is free of explosive hazards and will verify the MPPEH inspection process has been followed.

DD Form 1348-1A (Attachment 2, Form 001) will be used as certification/verification documentation. All DD 1348-A forms must clearly show the type or printed names of the SUXOS, organization, signature, and EA home office and field office phone number(s) of the personnel certifying and verifying the debris as free of explosive hazards.

#### 4.2.1 Data Elements for DD Form 1348-1A

In addition to the data elements required and any locally agreed to directives, the DD 1348-1A form must clearly indicate the following for scrap metal:

- Basic material content (Type of metal; e.g., steel or mixed)
- Estimated weight
- Unique identification of each of the containers and seals stated as being turned over
- Location where munitions debris or range-related debris was obtained
- Seal identification, if different from the unique identification of the sealed container.

#### 4.2.2 Certification/Verification Statement (HTRW)

The following certification/verification will be entered on each DD 1348-1A for turnover of munitions debris or range-related debris and will be signed by the SUXOS. This statement will be used on any ranges where RRD is being processed along with MD

*This certifies that the material listed has been 100 present properly inspected and, to the best of our knowledge and behalf is free of explosive hazards, engine fluids, illumination dials and other visible liquid HTRW materials.*

#### 4.2.3 Certification/Verification Statement (Munitions Debris only)

The following certification/verification will be entered on each DD 1348-1A for turnover of munitions debris and will be signed by the SUXOS on properties where only munitions debris is being processed:

*This certifies and verifies that the material listed has been 100 percent inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials.*

### 4.3 MAINTAINING THE CHAIN-OF-CUSTODY AND FINAL DISPOSITION

All certified and verified MDAS is no longer considered MPPEH as long as the chain of custody remains intact. The EA PM and SUXOS will arrange for maintaining the chain of custody of all MDAS while being transported offsite for final disposition. See Attachment 2, Form 002 for a copy of the MDAS chain of custody that is to be completed throughout the process. The certified and verified material will only be released to an organization approved by EA beforehand that agree to the following procedure:

- Upon receiving the unopened labeled containers each with its unique identified and unbroken seal ensuring a continued chain of custody, and after reviewing and concurring with all the provided supporting documentation, sign for having received and agreeing with the provided documentation that the sealed containers contained no explosive hazards when received. This will be signed on company letterhead and stating that the contents of these sealed containers will not be sold, traded or otherwise given to another party until the contents have been smelted and are only identifiable by their basic content. See Attachment 2, Form 003 as an example.

- Send notification and supporting documentation to EA documenting the seal containers to the PM that the material has been smelted and are now only identifiable by their basic content. See Attachment 2, Form 004 as an example.

This document will be incorporated by EA into the final report and maintained within the corporate office for a period of no less than three years as documentation supporting the final disposition of munitions debris and range-related debris. A legible copy of inspection, re-inspection, and documentation must accompany the material through final disposition and be maintained for a period of 3 years thereafter and incorporated by EA into any final action reports or the like.

#### 4.3.1 Broken Chain-of-Custody

If the chain of custody is broken, the affected MPPEH must undergo a second 100 % re-inspection. The re-inspection will be conducted and be documented to verify its explosives safety status (identified as either munitions debris or range-related debris).

A legible copy of the re-inspection, and documentation must accompany the material through final disposition and be maintained for a period of 3 years thereafter.

# Attachment A

# MPPEH Process

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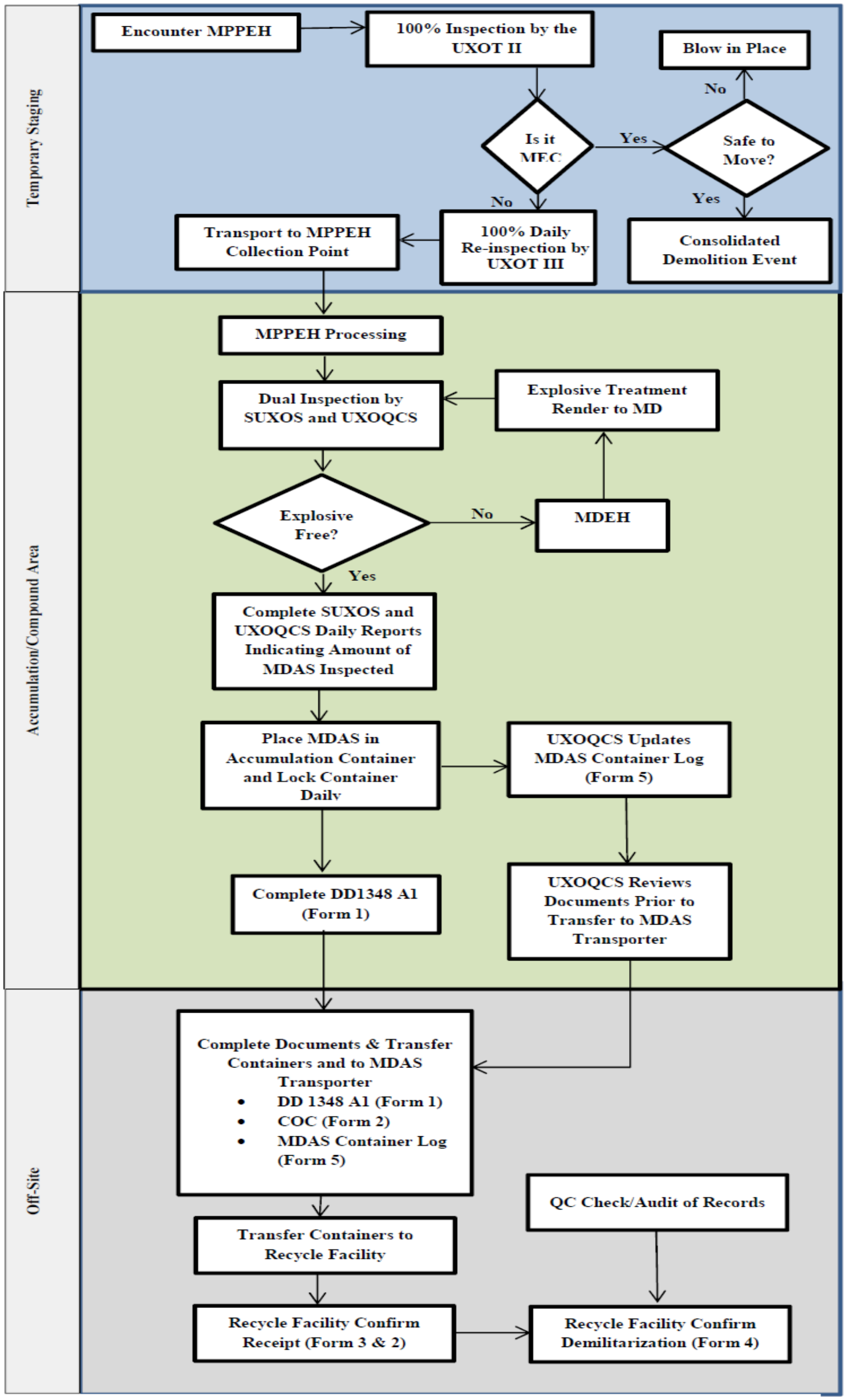


**Figure 1: MPPEH Process**

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# Attachment B

# Documentation Forms

**Form 001 – DD 1348-1A**

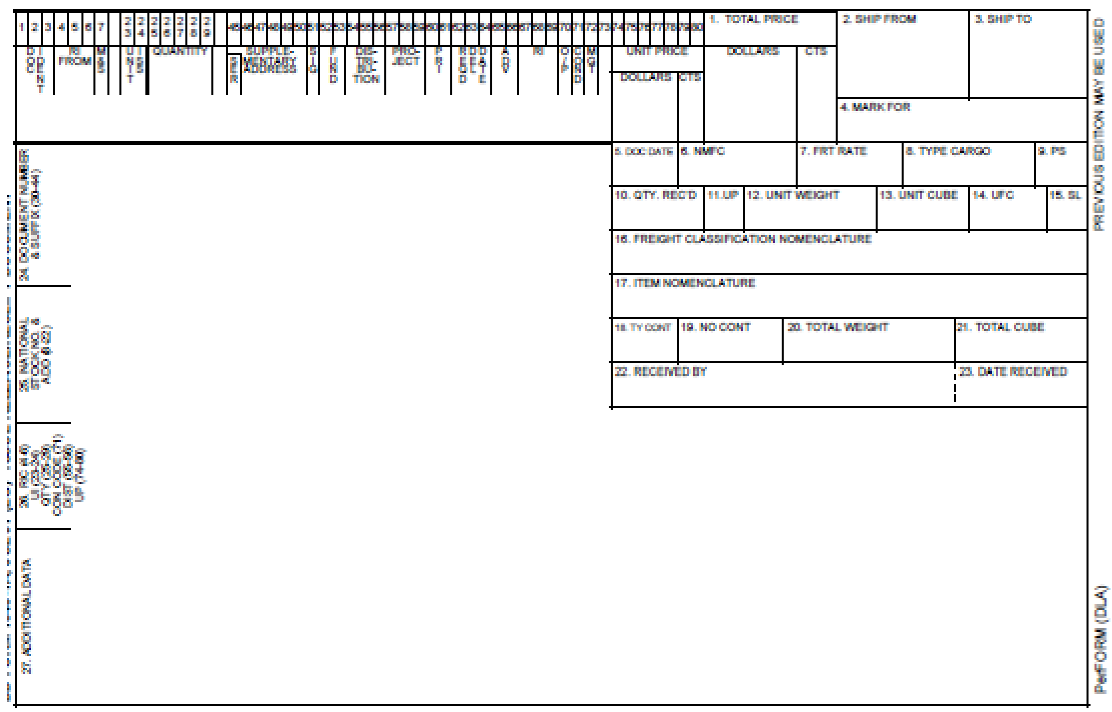
**Form 002 – Material Documented as Safe (MDAS) Chain of Custody**

**Form 003 – Example Material Documented as Safe (MDAS) Receipt Form**

**Form 004 – Example Material Documented as Safe (MDAS) Disposal Confirmation Form**

**Form 005 – Material Documented as Safe (MDAS) Container Log**

**Form 001**
**DD1348-1A**


DOC IDENT | RI FROM | M&S | UNIT ISS | QUANTITY | SER | SUPPLEMENTARY ADDRESS | SIG | FUND | DISTRIBUTION | PROJECT | PRI | REQD DEL DATE | ADV | RI | O/P | COND | MGT | UNIT PRICE (DOLLARS, CTS)
1. TOTAL PRICE (DOLLARS, CTS)
2. SHIP FROM
3. SHIP TO
4. MARK FOR
5. DOC DATE
6. NMFC
7. FRT RATE
8. TYPE CARGO
9. PS
10. QTY. REC'D
11. UP
12. UNIT WEIGHT
13. UNIT CUBE
14. UFC
15. SL
16. FREIGHT CLASSIFICATION NOMENCLATURE
17. ITEM NOMENCLATURE
18. TY CONT
19. NO CONT
20. TOTAL WEIGHT
21. TOTAL CUBE
22. RECEIVED BY
23. DATE RECEIVED
24. DOCUMENT NUMBER & SUFFIX (30-44)
25. NATIONAL STOCK NO. & ADD (8-22)
26. RIC (4-6) UI (23-24) QTY (25-29) CON CODE (71) DIST (55-56) UP (74-80)
27. ADDITIONAL DATA
PREVIOUS EDITION MAY BE USED
PerFORM (DLA)

# Form 002
# Material Documented as Safe Chain-of-Custody Form

| | | | | |
|---|---|---|---|---|
| General ) | **Material Documented as Safe Certification Chain of Custody** | | | |
| | 1. Generator's Name and Mailing Address | | | 1.a Generator's Ph # ( ) |
| | 2. Project Location | | | 2.a Project Ph # ( ) |
| | 3. MPPEH Contractor Name and Mailing Address | | | 3.a MPPEH Contractor Ph# ( ) |
| | 4. Government Assigned Verification Name and Mailing Address (if used) | | | 4.a Verifier Ph # ( ) |
| | 5. Transporter Name and Mailing Address | | | 5.a Transporter Ph # ( ) |
| | 6. Recycler Name and Mailing Address | | | 6.a Recycler Ph # ( ) |
| | 7. Container ID # | 8. Security Seal # | 9. Manifest # | 10. Date |
| Explosives Safety Status Certification and Verification | 11. Description | 12. Material | 13. QTY | 14. Unit (i.e., drum) |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | **15. MATERIAL DOCUMENTED AS SAFE CERTIFICATION:** This certifies and verifies that the material listed has been 100 percent inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials. | | | |
| | **16. SUXOS Certification** | | | |
| | Signature | Address | Date | |
| | Printed/Typed Name | | Phone | |
| | **17. OESS Verification (if required)** | | | |
| | Signature | Address | Date | |
| | Printed/Typed Name | Phone | | |
| Transporter | **18. Transporter Acknowledgement of Receipt of Materials** (Receiving Signature Verifies that Container was Received with Seal Intact) | | | |
| | Signature | Address | Date | |
| | Printed/Typed Name | | Phone | |
| | **19. EA Acknowledgement of Transfer of Materials** (Signature verifies that Container was Transferred to Transporter with Seal Intact ) | | | |
| | Signature | Address | Date | |
| | Printed/Typed Name | | Phone | |
| | **20. Discrepancy Indication Space** | | | |
| | Signature | Address | Date | |
| | Printed/Typed Name | | Phone | |
| | **21. Recycler Acknowledgement of Receipt of Materials** (Receiving Signature Verifies that Drums were Received with Seal Intact) | | | |
| | Signature | Address | Date | |
| | Printed/Typed Name | | Phone | |
| Demil. and/or Recycle Facility | **22. DEMILITARIZATION/RECYCLING CONFIRMATION:** This certifies and verifies that each item or items contained have been demilitarized to the minimum requirements of DOD Instruction 4160.21-M-1, *Defense Demilitarization Manual*. (**To be signed by person performing the demilitarization – Recycler or UXO Technician**) | | | |
| | **23. Recycler** | | | |
| | Signature | Address | Date | |
| | Printed/Typed Name | | Phone | |
| | **24. Senior UXO Supervisor Verification** | | | |
| | Signature | Address | Date | |
| | Printed/Typed Name | | Phone | |
| | **25. Final Disposition** (If other than recycling) | | | |

**Form 003**
**Example Material Documented as Safe Receipt Form**

Company XXXX Recycles
Letterhead

Date: *DDMMYY*

Dear *Mr./Ms.:*

On *DDMMYY*, the contents of sealed container/*s #EA 000X, Seal Serial Number XXXX* were received from EA Engineering, Science and Technology, Inc., *SOMEWHERE* project site.

*Company XXXX Recycles* has received and inspected the sealed container/s and agree that the material received is MD and contains no explosive hazards.

The contents of the sealed container/s are to be processed in accordance with DoD 4160-21 M-1, and will not be sold, traded or otherwise given to another party until the contents have been smelted and only identifiable by their basic content.

Enclosed is the signed Chain of Custody that was received along with the containers.

Signed:

Name:

Point of Contact Information:

**Form 004**
**Example Material Documented as Safe Disposal Confirmation Form**

| Company XXXX Recycles Letterhead |
|---|

Date: *DDMMYY*

Dear *Mr./Ms.:*

I certify that the contents of sealed container/*s #EA 000X, Seal Serial Number XXXX* received on *DDMMYY* from EA Engineering, Science, and Technology, Inc. from *SOMEWHERE* project site were demilitarized in accordance with guidelines in DoD 4160.21-lVI-l and have been smelted and are only identifiable by their basic content.

Signed:

Name:

Point of Contact Information:

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**Form 005**
**Material Documented as Safe Container Log**

| Date | MDAS Type (Steel, Iron…) | Quantity | Certifier | Verifier | Container ID | Seal Number | COC Number | Total Items |
|---|---|---|---|---|---|---|---|---|
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# Standard Operating Procedure No. 013
# for
# Surface Clearance Operations

*Prepared by*

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Hunt Valley, Maryland  21031

Revision 0
February 2015

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# CONTENTS

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## 1. PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to provide all EA Engineering, Science, and Technology, Inc., PBC (EA) employees and subcontractors with the minimum procedures and safety and health requirements applicable to the conduct of analog detection and removal actions at sites potentially containing munitions and explosives of concern (MEC).

This SOP addresses work activities that are pertinent to both Phase 1 and Phase 2 of fYNOP RI activities. Activities such as MEC disposal will only be applied to Phase 2. The remainder of this SOP can also be used following reacquisition of digitally collected geophysical anomalies.

## 2. SCOPE

This SOP applies to all EA site personnel, including contractor and subcontractor personnel, involved in the conduct of analog detection and magnetometer assisted surface clearance YNOP. The following EA policies and procedures are not all inclusive nor are they applicable in all situations. This SOP is not a stand-alone document and is to be used together with the entire Work Plan, other EA SOPs, applicable federal, state, and local regulations, and contract restrictions and guidance.

## 3. MAINTENANCE

The Project Manager (PM), in collaboration with the Site Supervisor is responsible for the maintenance of this procedure. Approval authority rests with the Program Quality Control Manager (PQCM).

## 4. PERSONNEL REQUIREMENTS/RESPONSIBILITIES

The PM is responsible for ensuring availability of resources to safely and effectively implement this SOP.

The SUXOS will ensure that this SOP is implemented in plans, procedures, and training. In addition, he is responsible for oversight and supervision of field personnel, and ensuring compliance with this SOP.

### 4.1 UXO SAFETY OFFICER

The UXOSO's duties shall include, but are not limited to: analyzing MEC, explosives operational risk, hazards, and safety requirements; establishing and ensuring compliance with all site-specific safety requirements for MEC and explosives operations; enforcing personnel limits and safety exclusion zones (EZ) for MEC clearance operations (if required); and all activities associated with MEC and explosives transportation, storage, and destruction (if required).

## 4.2 UXO QUALITY CONTROL SPECIALIST

The UXO Quality Control Specialist (UXOQCS) duties shall include, but are not limited to: establishing and ensuring compliance with site-specific quality control requirements for MEC and explosives operations and all activities associated with MEC and explosives transportation, storage, and destruction in accordance with the approved Work Plan.

# 5. OPERATIONS

## 5.1 MAGNETOMETER ASSISTED SURFACE CLEARANCE

All analog detection and removal activities at MEC sites will be under the supervision of unexploded ordnance (UXO) qualified personnel. Non-essential personnel will not be allowed in the EZ MEC clearance operations unless prior approval is given by the contracting officer representative. If access is required by non-UXO qualified and non-authorized personnel, all work will stop while they are in the EZ.

Work may continue if authorized visitors are in the EZ. This authorizing process will include approval by the EA PM, EA Corporate Safety and Health Director, and the onsite UXO health and safety officer. Project personnel listed in the Work Plan, including the geophysical teams, the reacquisition team, and the field sampling teams, do not require this approval process. All authorized visitors will be given a safety briefing prior to entering EZ and will be provided a UXO-qualified escort regardless of their qualifications.

During operations, EA personnel will strictly adhere to the APP and the following general safety practices:

- Operations will be conducted during daylight hours only.
- Access to operating areas will be limited to only those personnel necessary to accomplish the specific operation.
- UXO will not be handled, disturbed, or moved.
- During MEC operations the minimum separation distance (MSD) between MGFD and non-UXO operations is the hazardous fragmentation distance (HFD) of the munitions with the greatest fragmentation distance (MGFD), as stated in the approved Explosives Safety Plans.
- During demolition operations personnel remaining on site will be limited to those personnel needed to safely and efficiently prepare the item(s) for destruction.

- All personnel will attend the daily safety briefing (tailgate safety briefing) or a supplemental safety briefing provided by the UXOSO prior to entering the operating area.

- **Anyone** can stop operations for an unsafe act or situation.

- Safety violations and/or unsafe acts will be immediately reported to the UXOQCS / UXOSO.

- Failure to comply with safety rules/procedures may result in termination of employment.

## 5.2 GRID LAYOUT

Depending on the method selected and approved by the customer, the site layout and search grids will be established using a Global Positioning System (GPS) or compass and measuring tape. Grid establishment will consist of GPS operators and at least one UXO Technician II or above who will provide UXO avoidance including checking the intended survey stake locations with a magnetometer prior to driving stakes into the ground. This will prevent driving stakes into potential subsurface MEC.

## 5.3 ANALOG SWEEP PROCEDURES

MEC surface sweep operations will include minimum of a UXO Technician III and a UXO Technician II. During intrusive operations UXO Technicians I will operate under the supervision of UXO Technicians II or III. UXO operations will only be performed by qualified UXO Technicians, which are defined as:

- MEC identification
- Access procedures such as excavation, either by hand or using heavy equipment
- Handling of MEC, explosives, or explosive items
- Disposal, including movement, transportation, and final disposal of MEC.

Analog detector sweeps are particularly effective in areas where vegetation and terrain limit the use of larger digital systems. Also, magnetometer and dig approaches should be used when there is insufficient difference between MEC at the site and other metallic fragments and debris, such that digital discrimination is ineffective or cost prohibitive.

### 5.3.1 Pre-Survey Field Operations

Each piece of field equipment scheduled for that day's use will be function tested prior to commencement of work. Routine testing procedures will be identified, including the criteria for acceptable performance using an instrument verification strip (IVS), and the action to be taken if the equipment is not performing with the parameters established by the manufacturer or fails to detect the items placed within the IVS at the prescribed depths and axis. A maintenance/ calibration log will be maintained for each unit showing the manufacturer, model, serial number, and dates of repair, maintenance and calibration. Instrumentation used in the field will be tested with sufficient frequency and in such a manner that accuracy and reproducibility of results are consistent with the manufacture's specifications. Testing, repair, or replacement records will be filed and maintained by the SUXOS and may be subject to audit at any time.

The manufacturer's written maintenance schedule shall be followed to minimize the downtime of the measurement systems. The operator's responsibility will be to adhere to this maintenance schedule and to arrange necessary and prompt service as required. At a minimum, equipment used daily will be cleaned at the end of each work day and kept in good operating condition. Service to the equipment, instrument, tools, etc. shall be performed by qualified personnel. In the absence of manufacturer's recommended maintenance criteria, a maintenance procedure will be developed based upon previous use of the equipment.

Equipment pre-operation procedures will be observed by the SUXOS and/or UXOQCS and recorded in the daily log. If equipment field checks indicate that a piece of equipment is not operating correctly and field repair cannot be made, the equipment will be tagged and removed from service. The SUXOS and/or UXOQCS will request repair or replacement from logistics. Replacement equipment will meet the same specifications for accuracy and sensitivity as the equipment removed from service. Metal detectors will be field tested each day on a known target to ensure they are operating properly. Fisher and Schonstedt metal detectors do not require calibration; they have a simple "Go/No Go" field operational check. Failure to detect the test target is reason to reject the instrument and return it to the manufacturer for repairs. During daily operations, random checks of metal detectors will be performed to ensure the equipment is operating correctly. Daily maintenance will include cleaning, minor repairs to the equipment, and battery changes when needed. Repairs may include replacing control knobs and tightening connections as the stated in the manufacturer's manual. Major repairs will be accomplished by returning the equipment to the manufacturer. Batteries will be removed from metal detectors when stored for more than 24 hours and before shipment. Documentation of the status of the metal detectors will be recorded on the Technician III's daily journal and site log.

#### 5.3.2 Survey Field Operations

Initially, individual search lanes will be established approximately 5 feet (ft) wide. Each lane will be surveyed using a Schonstedt magnetometer. The operation will begin at one end of each lane and move in a forward direction toward the opposing baseline. During the forward movement the technician moves the magnetometer back and forth from one side of the lane to the other. Both forward movement and the swing of the magnetometer are performed at a pace that ensures the entire lane is searched and that the instrument is able to appropriately respond to metallic surface debris and subsurface anomalies. When a ring-off occurs the UXO Technician halts and investigates if the source is from a metallic object on the surface or a subsurface anomaly.. Throughout this operation the team leader closely monitors the team's individual performance to ensure these procedures are being performed correctly.

### 5.4 SURFACE MEC/UXO

MEC will be identified by two UXO Technician IIIs or greater and the condition determined to be acceptable or unacceptable to move. If the item is determined to be acceptable to move the item can be consolidated with other MEC items for disposal. If determined to be unacceptable to move it will be marked (flagged) in accordance with the approved Work Plan pending disposition. If disposal cannot be arranged the same day as the MEC/ is identified, a guard will be posted during the non-working hours to ensure the item is not disturbed or moved.

## 6. RECORD KEEPING

The team leader (UXO Technician III) will record at a minimum will contain a record of the following:

- Weather
- Instrument details and serial number
- Team personnel
- Grids worked
- GPS location
- Start and stop times
- MEC items encountered.

The data to be recorded for each item discovered during anomaly excavation will include the following (as applicable):

- Type (e.g., munitions debris, material potential presenting an explosive hazard [MPPEH], UXO, and non-MEC Scrap)

- Description (e.g., “projo, 20-millimeter [mm], practice, MK105” and “base, coupling, firing device”)

- Initial Condition (e.g., expended, inert, live, and to be determined)

- Approximate length

- Approximate width

- Depth

- Approximate weight

- Found in a pit?

- Piece of fragmentation?
- Initial disposition (e.g., left in place and removed to scrap pile)
- Requires demolition?

All data will be turned into the Site Geophysicist at the end of the day.

## 7. REFERENCES

Applicable sections of EPA, 40 CFR Parts 260 to 299, Protection of Environment

Applicable sections of DOT, 49 CFR Parts 100 to 199, Transportation

AR 385-64, Ammunition and Explosives Safety Standards

AR 200-1, Environmental Protection and Enhancement

AR 385-10, The Army Safety Program

AR 385-16, System Safety Engineering and Management

AR 385-40 w/USACE supplement, Accident Reporting and Records

DA PAM 385-64, Ammunition and Explosives Safety Standards

DOD 4145.26-M, Contractors' Safety Manual for Ammunition and Explosives

DOD Manual 6055.09-M, DOD Ammunition and Explosives Safety Standards

DOD 4160.21-M, Defense Reutilization and Marketing Manual

EA Corporate Safety and Health Program (CSHP)

OSHA, 29 CFR 1910, Occupational Safety and Health Standards

OSHA, 29 CFR 1926, Construction Standards

TM 9-1300-200, Ammunition General

TM 9-1300-214, Military Explosives

USACE EM 385-1-1, Safety and Health Requirements Manual

USACE EM 385-1-97, Explosives Safety and Health Requirements Manual

USACE ER 385-1-92, Safety and Occupational Health Document Requirements for Hazardous Waste Remedial Actions

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# Standard Operating Procedure No. 025
# for
# Soil Sampling

*Prepared by*

EA Engineering, Science, and Technology, Inc., PBC
225 Schilling Circle, Suite 400
Hunt Valley, Maryland  21031

Revision 0
December 2014

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# CONTENTS

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# 1. SCOPE AND APPLICATION

The purpose of this Standard Operating Procedure is to delineate protocols for sampling surface and subsurface soils. Soil samples give an indication of the area and depth of site contamination, so a representative sample is very important.

# 2. MATERIALS

The following materials may be required:

| | |
|---|---|
| Bucket auger or push tube sampler | Split-spoon, Shelby tube, or core barrel sampler |
| Drill rig and associated equipment | Stainless steel bowl |
| Personal protective equipment as required by the Health and Safety Plan | Stainless steel spoon, trowel, knife, spatula (as needed) |

# 3. PROCEDURE

## 3.1 SUBSURFACE SAMPLES

Don personal protective equipment. Collect split-spoon, core barrel, or Shelby Tube samples during drilling. Upon opening sampler, or extruding sample, immediately screen soil for volatile organic compounds using either a photoionization detector or flame ionization detector. If sampling for volatile organic compounds, determining the area of highest concentration, use a stainless steel knife, trowel, or laboratory spatula to peel and sample this area. Log the sample in the Field Logbook while it is still in the sampler. Peel and transfer the remaining sample in a decontaminated stainless steel bowl. Mix thoroughly with a decontaminated stainless steel spoon or trowel. Place the sample into the required number of sample jars. Preserve samples as required. Discard any remaining sample into the drums being used for collection of cuttings. Decon sampling implements. All borings will be abandoned.

NOTE: If sample recoveries are poor, it may be necessary to composite samples before placing them in jars. In this case, the procedure will be the same, except that two split-spoon samples will be mixed together. The Field Logbook should clearly state that the samples have been composited, which samples were composited, and why the compositing was done.

Samples taken for geotechnical analysis will be undisturbed samples, collected using a thin-walled (Shelby tube) sampler.

### 3.2 SURFICIAL SOIL SAMPLES

Don personal protective equipment. Remove vegetative mat. Collect a sample from under the vegetative mat with a stainless steel trowel, push tube sampler, or bucket auger. If a representative sample is desired over the depth of a shallow hole or if several shallow samples are to be taken to represent an area, composite as follows:

- As each sample is collected, place a standard volume in a stainless steel bowl.

- After all samples from each hole or area are in the bucket, homogenize the sample thoroughly with a decontaminated stainless steel spoon or spatula.

If no compositing is to occur, place sample directly into the sample jars. Place the leftover soil in the auger borings and holes left by sampling. If necessary, add clean sand to bring the subsampling areas back to original grade. Replace the vegetative mat over the disturbed areas. Samples for volatile organic compounds will not be composited. A separate sample will be taken from a central location of the area being composited and transferred directly from the sampler to the sample container. Preserve samples as required. Decon sampling implements.

## 4. MAINTENANCE

Not applicable.

## 5. PRECAUTIONS

Refer to the Health and Safety Plan.

Soil samples will not include vegetative matter, rocks, or pebbles, unless the latter are part of the overall soil matrix.

## 6. REFERENCES

ASTM International. Method D1586-84, Penetration Test and Split-Barrel Sampling of Soils.

———. Method D1587-83, Thin Walled Sampling of Soils.

Department of the Army, Office of the Chief of Engineers. 1972. Engineer Manual 1110-2-1907 Soil Sampling. 31 March.

# Appendix D

# Field Forms

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# E A ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.
# SUXOS DAILY REPORT

**Project No**. **Day/Date** ________________ **Report No.**_________
**Project Title & Location:**
**Weather:** Clear ____ Partly Cloudy _____ Cloudy ____ Rainfall___ (% of workday)
**Temperature During Workday:** High___ Low___Humidity_______

**1. WORK PERFORMED BY CONTRACTORS/SUBCONTRACTORS**

| Contractor | Crafts | Hours | Description of Work |
|---|---|---|---|
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**2. OPERATING EQUIPMENT DATA (Not hand tools)**

| Equipment | Date of Arrival / Departure | Owned or Rented | Hours Used | Hours Idle | Hours of Rep./Main |
|---|---|---|---|---|---|
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**3. WORK PERFORMED TODAY** (Indicate location and description of work performed by prime and/or subcontractors).

**4. QUALITY CONTROL INSPECTIONS AND RESULTS** (Include a description of preparatory, initial or follow-up inspections/meetings; check of subcontractors work, materials delivered to site, comments on proper storage of materials, include comments on corrective actions to be taken).
Inspect delivered

**5. QUALITY CONTROL TESTING AND RESULTS** (Comment on tests and equipment checks)

**6. DAILY SAFETY INSPECTIONS** (Include comments on new hazards to be added to Hazard Analysis and corrective action of any safety issues).

**E A ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.**
**DAILY QUALITY CONTROL REPORT**

**Project No.:_________** **Day/Date: _________** **Report No.:______**



| **7. REMARKS** (Include conversations with or instructions from the Government representatives; delays of any kind that impact the job; conflicts in the contract documents; comments on change orders; and environmental considerations; etc.). |
|---|
| |

**8. CONTRACTOR'S VERIFICATION:** I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

**Site Supervisor / SUXOS**

**E A Engineering, Science and Technology Inc.**

# Tailgate Safety Briefing

| **1. Reason for Briefing:** | | | |
|---|---|---|---|
| | Daily Safety Briefing | | New Site Procedure |
| | Initial Safety Briefing | | New Site Information |
| | New Task Briefing | | Review of Site Information |
| | Periodic Safety Meeting | | Other: (Specify) |

**2. Personnel Attending:**

| Name | Signature | Position |
|---|---|---|
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**Briefing Given By:**

**3. Topics:** ( Check All That Apply )

| | | | |
|---|---|---|---|
| | Site Safety Personnel | | Decontamination Procedures |
| | Site/Work Area Description | | Emergency Response/Equipment |
| | Physical Hazards | | On-Site Injuries/Illnesses |
| | Chemical/Biological Hazards | | Reporting Procedures |
| | Heat/Cold Stress | | Directions to Medical Facility |
| | Work/Support Zones | | Drug and Alcohol Policies |
| | PPE | | Medical Monitoring |
| | Safe Work Practices | | Evacuation/Egress Procedures |
| | Air Monitoring | | Communications |
| | Task Being Performed | | Confined Spaces |
| | OE Precautions | | Other: |

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## Tailgate Safety Briefing (Continued)

| **4. Remarks:** |
| --- |
| |
| |
| |
| |

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***Team Leader Grid Sheet***

*Project: Harley Davidson* *MRS #_________Grid #_______* *Date________*

*Team____________* *Team Leader________________*

| | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | | |

***SW Corner***

| *Date* | *Number of Digs* | *MEC (#/type)* | *MDAS (lbs/type)* | *OD (lbs)* | *Area Complete* | *% of Grid Complete* | *Average Depth* |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| *Total:* | | | | | | | |

| *UXO/MEC or Other Significant Items:* |
|---|
| |
| |
| |
| |

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**Team Leader Grid Sheet** *(continued)*

*GPS Locations ID of MEC and/or significant MDAS:*

| *Item* | *Northing* | *Easting* |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |

*Photograph ID of MEC, significant MDAS, and all MDAS:*

| *Item* | *Photo ID #* |
|---|---|
| | |
| | |
| | |
| | |
| | |

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# DAILY QC REPORT

PROJECT:________________________________________________________________

LOCATION OF WORK:_______________________________________________________

DESCRIPTION OF WORK:____________________________________________________

WEATHER: ☐ (CLEAR) ☐ (FOG) ☐ (P. CLOUDY) ☐ (RAIN) ☐ (WINDY)

TEMPERATURE: MIN._______ $^0$F MAX._______ $^0$F

1. WORK COMPLETED TODAY:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

2. WORK COMPLETED BY QC STAFF:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

3. ALL WORK PERFORMED IN CONFORMANCE WITH WORK PLAN REQUIREMENTS? YES ☐ NO ☐

IF NOT EXPLAIN

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

4. NON-CONFORMANCE/DEFICIENCIES REPORTED:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

5. COMMENTS______________________________________________________________

________________________________________________________________________

________________________________________________________________________

CERTIFICATION: I certify that the above report is complete and correct and that I, or my representative, have inspected all work identified on this report and have determined to the best of my knowledge and belief that noted work activities are in compliance with work plans and specifications, except as may be noted above.

Project QC Specialist Date

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# *FIELD PERSONNEL QUALIFICATIONS AND VERIFICATION FORM*

***CANDIDATE:_______________________________________*** ***POSITION/LEVEL:______________________________________***

***PROJECT:_________________________________________***

| ***REVIEW ITEMS*** | | ***CANDIDATE QUALIFICATIONS*** | ***VERIFIED BY & DATE*** |
|---|---|---|---|
| ***EXPERIENCE*** | ***REQUIRED: AREA & YEARS*** | | |
| | ***ACTUAL: AREA AND YEARS*** | | |
| ***EDUCATION*** | ***REQUIRED: AREA & YEARS*** | | |
| | ***ACTUAL: AREA AND YEARS*** | | |
| ***CERTIFICATION & REGISTRATIONS*** | ***REQUIRED: AREA & YEARS*** | | |
| | ***ACTUAL: AREA AND YEARS*** | | |
| ***TRAINING*** | ***REQUIRED: AREA & YEARS*** | | |
| | ***ACTUAL: AREA AND YEARS*** | | |
| ***OTHER*** | ***REQUIRED: AREA & YEARS*** | | |
| | ***ACTUAL: AREA AND YEARS*** | | |

<table>
<tr><th colspan="3">Field Change Request (FCR) Form</th></tr>
<tr><td colspan="2">FCR #:</td><td>DATE:</td></tr>
<tr><td colspan="2">PROJECT NAME:</td><td>CLIENT REP:</td></tr>
<tr><td colspan="3">1. Description (Items involved, submit sketch, if applicable): ( Use continuation sheet if necessary)</td></tr>
<tr><td colspan="3">2. Reason for Change (Use continuation sheet if necessary)</td></tr>
<tr><td colspan="3">3. Recommended Disposition (Submit sketch, if applicable): (Use continuation sheet if necessary)</td></tr>
<tr><td>Preparer of FCR (Print name and sign)</td><td>Preparer’s Title</td><td>Date</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>PM- Reviewed (Print name and sign)</td><td>Accepted (Y/N)</td><td>Date</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>QCM – Reviewed (Print name and sign)</td><td>Accepted (Y/N)</td><td>Date</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>SUXOS – Reviewed (Print name and sign)</td><td>Accepted (Y/N)</td><td>Date</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>Client – Reviewed (Print name and sign)</td><td>Accepted (Y/N)</td><td>Date</td></tr>
<tr><td colspan="3"></td></tr>
</table>

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# NON-CONFORMANCE REPORT

PROJECT: NCR NO. DATE:

TO:

ORIGINAL TO EA CORPORATE QC MANAGER

ITEM: ____________________________________________________________

WORK PLAN REFERENCE

REQUIREMENT:______________________________________________________

NONCONFORMANCE:

---

ISSUED BY: NAME: TITLE: ORGANIZATION:

DATE:

DISPOSITION: _________ACCEPT ________REJECT

DISPOSITION APPROVALS:

| | |
|---|---|
| UXOQCS DATE | FCR REQUIRED? ☐ YES ☐ NO |
| PROJECT MANAGER DATE | DISTRIBUTION |

REMARKS:

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# CORRECTIVE ACTION PLAN

| (2) CAR# | (3) PRIORITY: HIGH ☐ NORMAL ☐ | (4) DATE PREPARED: |
|---|---|---|

PART A: NOTICE OF DEFICIENCY

| | |
|---|---|
| (5) PROJECT: | |
| (6) PROJECT MGR: | (7) QC MGR/STAFF: |
| (8) CONSTRUCTION MGR: | (9) MRS MANAGER: |
| (10) ISSUED TO (INDIVIDUAL & ORGANIZATION) | |
| (11) REQUIREMENT & REFERENCE | |
| (12) PROBLEM DESCRIPTION & LOCATION:<br><br>(13) CAP REQUIRED? YES ☐ NO ☐ (14) RESPONSE DUE: | |
| (15) ISSUED BY (PRINTED NAME & TITLE)<br><br>SIGNATURE: DATE: | (16) MANAGEMENT CONCURRENCE: |

PART B CORRECTIVE ACTION

| | |
|---|---|
| (17) PROPOSED CORRECTIVE ACTION/ACTION TAKEN | |
| (18) PART B COMPLETED BY (NAME & TITLE) DATE | (19) QC CONCURRENCE |

PART C

| |
|---|
| (20) CAR VERIFICATION AND CLOSE OUT: (CHECK ONLY ONE & AND EXPLAIN STIPULATIONS, IF ANY)<br>☐ APPROVED FOR CLOSURE WITHOUT STIPULATIONS<br>☐ APPROVED FOR CLOSURE WITH FOLLOWING STIPULATIONS<br>COMMENTS/STIPULATIONS: |
| (21) CLOSED BY (PRINTED NAME AND TITLE)<br><br>SIGNATURE: DATE: |

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# CORRECTIVE ACTION PLAN INSTRUCTION SHEET

(1) QC Manager: Verify that the total number of pages includes all attachments.

(2) QC Manager: Fill in CAR number from CAR log.

(3) CQC System Manager: Fill in appropriate priority category. High priority indicates resolution of deficiency requires expediting corrective action plan and correction of deficient conditions noted in the CAR and extraordinary resources may be required due to the deficiencies impact on continuing operations. Normal priority indicates that the deficiency resolution process may be accomplished without further impacting continuing operations.

(4) CAR Requestor: Fill in date CAR is initiated.

(5) CAR Requestor: Identify project name, number, CTO, and WAD.

(6) CAR Requestor: Identify Project Manager

(7) CAR Requestor: Identify CQC System Manager.

(8) CAR Requestor: Identify project organization, group, or discrete work environment where deficiency was first discovered.

(9) CAR Requestor: Identify line manager responsible for work unit where deficiency was discovered.

(10) QC Manager: Identify responsible manager designated to resolve deficiency (this may not be work unit manager).

(11) CAR Requestor: Identify source of requirement violated in contract, work planning document, procedure, instruction, etc; use exact reference to page and, when applicable, paragraph.

(12) CAR Requestor: Identify problem as it relates to requirement previously stated. Identify location of work activities impacted by deficiency.

(13) QC Manager: Identify if Corrective Action Plan (CAP) is required. CAP is typically required where one or more of the following conditions apply: CAR priority is High; deficiency requires a rigorous corrective action planning process to identify similar work product or activities affected by the deficiency; or deficiency requires extensive resources and planning to correct the deficiency and to prevent future recurrence.

(14) QC Manager: Identify date by which proposed corrective action is due to QC for concurrence.

(15) QC Manager: Sign and date CAR and forward to responsible manager identified in (10) above.

(16) Responsible Manager: Initial to acknowledge receipt of CAR.

(17) Responsible Manager: Complete corrective action plan and identify date of correction. Typical corrective action response will include statement regarding how the condition occurred, what the extent of the problem is (if not readily apparent by the problem description statement in [12]), methods to be used to correct the condition, and actions to be taken to prevent the condition from recurring. If a CAP is required, refer to CAP only in this section.

(18) Responsible Manager: Sign and date corrective action response.

(19) QC Manager: Initial to identify concurrence with corrective action response from responsible manager.

(20) QC Manager: Check appropriate block to identify if corrective action process is complete so that CAR may be closed. Add close-out comments relevant to block checked.

(21) QC Manager: Indicate document closeout by signing and dating.

EA Engineering, Science, and Technology, Inc.

# CORRECTIVE ACTION REQUEST (CAR)

**PART A: TO BE COMPLETED BY PROJECT MANAGER OR DESIGNEE**

| | | |
|---|---|---|
| **(1) PROJECT:** | | |
| **(2) PROJECT MGR:** | **(3) QC MGR/STAFF:** | |
| **(4) CAR NO (S) AND DATE (S) ISSUED** | | |
| **(5) DEFICIENCY DESCRIPTION AND LOCATION** | | |
| **(6) PLANNED ACTIONS** | **(7) ASSIGNED RESPONSIBILITY** | **(8) COMPLETION DUE DATE** |
| **(9) PROJECT MANAGER SIGNATURE:** | **DATE:** | |

PART B TO BE COMPLETED BY QCS SYSTEM MANGER OR DESIGNEE

| | |
|---|---|
| **(10) CAP REVIEWED BY** | **DATE** |
| **(11) REVIEWER COMMENTS** | |
| **(12) CAP DISPOSITION: (CHECK ONLY ONE AND EXPLAIN STIPULATIONS, IF ANY.**<br>☐ **APPROVED WITHOUT STIPULATIONS**<br>☐ **APPROVED WITH STIPULATIONS**<br>☐ **APPROVED DELAYED, FURTHER PLANNING REQUIRED**<br><br>**COMMENTS:** | |
| **(13) QC MANAGER SIGNATURE** | **DATE** |

EA Engineering, Science, and Technology, Inc.

## CORRECTIVE ACTION REQUEST (CAR) INSTRUCTION SHEET

(1) QC Manager: Verify that the total number of pages includes all attachments.

(2) QC Manager: Fill in CAR number from CAR log.

(3) CQC System Manager: Fill in appropriate priority category. High priority indicates resolution of deficiency requires expediting corrective action plan and correction of deficient conditions noted in the CAR and extraordinary resources may be required due to the deficiencies impact on continuing operations. Normal priority indicates that the deficiency resolution process may be accomplished without further impacting continuing operations.

(4) CAR Requestor: Fill in date CAR is initiated.

(5) CAR Requestor: Identify project name, number, CTO, and WAD.

(6) CAR Requestor: Identify Project Manager

(7) CAR Requestor: Identify CQC System Manager.

(8) CAR Requestor: Identify project organization, group, or discrete work environment where deficiency was first discovered.

(9) CAR Requestor: Identify line manager responsible for work unit where deficiency was discovered.

(10) QC Manager: Identify responsible manager designated to resolve deficiency (this may not be work unit manager).

(11) CAR Requestor: Identify source of requirement violated in contract, work planning document, procedure, instruction, etc; use exact reference to page and, when applicable, paragraph.

(12) CAR Requestor: Identify problem as it relates to requirement previously stated. Identify location of work activities impacted by deficiency.

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(18) Responsible Manager: Sign and date corrective action response.

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(20) QC Manager: Check appropriate block to identify if corrective action process is complete so that CAR may be closed. Add close-out comments relevant to block checked.

(21) QC Manager: Indicate document closeout by signing and dating.

# Appendix E

# Summary of Previous Investigations and Findings

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### Site Wide Investigations

Since 1984, numerous environmental investigations and remedial efforts have been conducted at the fYNOP and H-D facility as part of the ongoing potentially responsible party (PRP) HTRW project. Media samples, including groundwater and soil, have been collected for analysis from areas throughout the fYNOP (SAIC 2006, Alion 2007).

A Resource Conservation and Recovery Act (RCRA) Facility Assessment completed in January 1989, describes solid waste management units (SWMUs) 20 and 21 as containing fired, 37 mm shells and shell fragments, along with sand deposits. The SWMU's were discovered during the 1984 Gettysburg Electronics survey, however, the findings area described as only one area. Gettysburg Electronics performed a systematic search for buried drummed wastes over a 59-acre portion at the eastern end of the facility. According to the Gettysburg Electronics report, one pit was excavated on the hillside east of Building 30. This pit was located in the pine woods at approximately N9075 and E19325 (coordinate system unknown, possibly a local grid system), and covered an area approximately 30-foot in diameter. The shell fragments were buried with a sand deposit and contained no live rounds, according to the report. The report further stated that there was no indication of an environmental problem associated with the area. There was no indication in the report as to the status of the sand and suspect MD observed during the 1984 investigation (Alion 2007). Maps presented by H-D's contractor, SAIC, indicate the suspected location of this area to the north and east of the proof testing ranges (Alion 2007) (Figure 2-2). No historic documentation was found to indicate the source of the materials (Alion 2007). In May 2007, several smaller anomalies were identified by SAIC in the area of SWMUs 20 and 21 while conducting geophysical reconnaissance surveys in the area northwest of Building 16. In a memorandum to the USACE, SAIC stated that "the nature of the anomalies cannot be determined without further investigation and that any intrusive investigations will be performed by Qualified UXO technicians" (Alion 2007).

### Inventory Project Report

In 1991, CENAB prepared an Inventory Project Report (INPR) for the fYNOP. The Findings and Determination of Eligibility (FDE), signed 5 June 1991, determined that the site was eligible under DERP-FUDS for further assessment. The INPR recommended a project to address remaining hazards associated with DoD and other previous owner operations, specifically a PRP/HTRW project was recommended and approved. An addendum was completed for the INPR in April 1992 and an Ordnance and Explosive Waste (OEW) project was recommended to address hazards associated with munitions (to include unexploded ordnance [UXO]) potentially remaining at the fYNOP due to former proof testing operations.[1] The INPR addendum identified munitions used and suspected to be used at the fYNOP and evaluated the Risk Assessment Code (RAC) score associated with the fYNOP (USACE 1991, USACE 1992, and USACE 1995). The INPR reported a RAC score of 4 for the entire fYNOP.[2]

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[1] The term OEW is no longer used in the DERP-FUDS program.

[2] RAC scores range from 1, being the highest category of risk, to 5, being the lowest.

**Explosive Ordnance Disposal (EOD) Unit Removal Actions**

In April 1993, an underground concrete pit/structure (MRS 2) was discovered to contain MEC. Items identified in the concrete pit included 20-mm, 37-mm, and 3-inch naval gun rounds as well as assorted small arms ammunition. H-D notified the Springettsbury Township Police Department of the discovery. The U.S. Army EOD Unit from Fort Indiantown Gap, Pennsylvania, performed a 14-day cleanup in this area. Numerous 20mm, 37mm, and 3-in naval gun rounds were removed from the former misfire pit. The concrete pit/structure, which was located between Buildings 14 and 16, was subsequently termed the Building 14 misfire pit as discussed in Section 2.4.5 below (SAIC 2006, Alion 2007).

Records also indicate that the EOD team responded to an ordnance discovery at Building 16 (AOC #2) in November 2002. This response included the removal and detonation of 40mm antiaircraft practice, and 37mm dummy fused projectiles. A misfire pit near Building 16 was not located during this response action; however, the EOD team indicated that the area had the potential for ordnance contamination (SAIC 2006, Alion 2007).

**Archive Search Report**

The USACE Rock Island District prepared an ASR for the fYNOP in 1995 (USACE 1995). The ASR included a description of previous investigations performed, site description, historical ordnance presence, site eligibility, visual site inspection observations, evaluation of ordnance hazards, the presentation of site-specific ordnance technical data, and a description of other environmental hazards observed during the ASR site visit. The ASR identified 5 areas for further investigation designated Areas A through E and summarized as follows:

- **Parking Lot/Dump (Area A**) [corresponds to MRS 1] **–** This area located in the west parking lot was reported to contain ammunition (corroded bullets and empty shell casings discovered during drilling). The ASR describes the area as an historical landfill or general dump and indicates that the area is considered as having OEW contamination. The ASR team did not locate any ordnance in this area during the site visit (USACE 1995).
- **Proof Ranges Sand Pits (Area B**) [corresponds to MRS 5 and AOC 2] **–** This area is comprised of the sand backstop at the ends of both the single (Building 14) and double (Building 16) proof (firing) ranges. The ASR describes the area as having the potential for OEW contamination. The ASR team did not locate any ordnance in Area B or the buildings and land surrounding Area B during the site visit (USACE 1995).
- **Building 14 Misfire Pit (Area C)** [corresponds to MRS 2] – The ASR confirmed that this area is comprised of an in-ground concrete bunker structure and that this area was the site of the 1993 removal action by the Fort Indiantown Gap EOD. The ASR team did not locate any ordnance in Area C and the ASR describes the area as having no potential for OEW contamination (USACE 1995).
- **Suspect 20mm Dump Site (Area D)** [corresponds to MRS 3] – The ASR team documented that this area was located on a map received from H-D personnel indicating the presence of a 20mm dump between buildings 14 and 16. The ASR team did not

locate any ordnance in Area D; however, the ASR documents that the area has the potential for "OEW" contamination (USACE 1995).

- **Building 16 Misfire Pit (Area E)** [corresponds to MRS 4] **–** The ASR confirmed that only one misfire pit (Area B) was annotated on the map received from H-D personnel. However, the ASR indicated that a similar pit near a door in close proximity to the gun mounts in Building 16 could be present. A survey of the area by the ASR team failed to locate the presence of a pit/bunker. The ASR team concluded that although no ordnance was located in Area E, the area has the potential for "OEW" contamination (USACE 1995).
- **Remaining lands (Area F) –** The ASR documented that no historical information and no information gathered during the ASR (including visual surveys) indicated any confirmed or potential contamination from "OEW" in the remaining lands (USACE 1995).

The ASR noted that Chemical Warfare Material was not used or stored at fYNOP (USACE 1995).

**Archive Search Report Supplement**

In 2004, the USACE Rock Island District completed an ASR Supplement for the fYNOP (USACE 2004a). The ASR Supplement identified five (5) ranges and/or "burial pits" at the YfNOP. 3 These ranges/burial areas include: Burial Area (Parking Lot), Burial Area (Building 14 Misfire Pit), Burial Area (20-mm Dump), Burial Area (Building 16 Misfire Pit), Proof Range.4

The ASR Supplement identified munitions used and suspected to be used at each area and evaluated the risk (RAC score) associated with each of the burial areas/ranges at the fYNOP (USACE 2004a). As noted in Table 2-1, MRS 1 and MRS 3 (the Burial Area [Parking Lot] and the Burial Area [20-mm Dump], respectively) were assigned a RAC score of 5, indicating the lowest possible hazard severity level. Contributing to the low hazard severity of the RAC scores for these two areas was the type of ordnance (practice) and the location (subsurface) of the MD found/suspected in these areas. RAC scoring for the other areas, (MRS 2, MRS 4, and MRS 5 had a RAC score of 3) is driven by the potential for MEC to be present in these areas and the accessibility of the areas (USACE 2004a). It is noted that the scoring for the ASR Supplement was completed prior to USACE conducting the time critical removal action (TCRA) at the fYNOP.

**Time Critical Removal Action**

In 2004, Plexus Scientific Corporation (Plexus), under contract to CENAB, completed a TCRA on four suspect disposal areas at the fYNOP (Plexus 2004). The objective of the TCRA was to remove inert projectiles and potential propellant-filled casings from the four suspect disposal areas. Areas

---

[3] The ASR Supplement uses the term "burial pit" to refer to an area which is known or suspected to contain ammunitions or ammunition debris (also known as MD). Boundaries are likely arbitrary based on historical documents, photos, interviews, and/or a site inspection. Burials typically are associated with demilitarization sites, range debris dumps, etc. No standard layout is available for burial pits (USACE 2004a). An MRS is any area on a defense site that is known or suspected to contain UXO, DMM, or MC) (e.g., former ranges or munitions burial areas).

[4] The area designated as the Proof Range only includes the location occupied by Building No. 14, although the ASR included both proof ranges (Buildings 14 and 16).

included in the scope of the TCRA included: misfire pit near Building 14 (MRS 2), misfire pit near Building 16 (AOC 2), a suspect 20-millimeter (mm) dump site (MRS 3), and two proof bunkers (butt stops and sand piles) located near Building 16 (AOC 2). The Removal Action, which constitutes a Munitions Response (MR) for Munitions and Explosives of Concern (MEC), was conducted in a single mobilization from 16 August to 30 September 2004. The scope of work for the Removal Action consisted of mobilization and site preparation; MEC characterization activities; MEC removal operations; Ordnance and Explosives (OE)/MEC disposition; and material management. Below is a summary of the findings.

Building 16 Proof Bunkers (AOC 2) - Approximately 125 cubic yards (CY) of slag, projectiles and sand was removed from the two proof bunkers (i.e., target stop butts and sand piles) located on the east and west sides of Building 16. Steel plates were removed from structurally unsound roofs within the bunkers and air drying was performed to facilitate removal of the projectiles and other waste contained therein. Slag was segregated from other material removed from the bunkers. The remaining material removed from the bunkers was sifted on site using a mobile screen plant and vacuum truck to segregate the projectiles from the sand. Approximately 4.5 tons of projectiles suspected to be MEC and other debris were segregated during screen plant operations. About 400-500 pounds of the suspect MEC had identification features of sand filled or black powder-filled projectiles (Plexus 2004).5

Building 14 Misfire Pit (MRS 2) - The Plexus team performed geophysical surveying, cleared and grubbed, dewatered, and removed the concrete structure of the misfire pit due east and southeast of Building 14 at a location identified by the USACE Baltimore District and H-D (GPS location - N240581, E2259315). The excavated pit was backfilled with the soil removed during excavation of the structure (Plexus 2004, Alion 2007).

Suspect 20-mm Dump Site (MRS 3) – Clearing/grubbing, land surveying and geophysical surveying were performed on approximately 2.5 acres at the suspect location of a 20-mm dump site (Plexus 2004, Alion 2007). A magnetometer survey performed on 25-ft. transects in that area did not detect breaks indicative of past trenching or landfill operations. Magnetometer and metal detector surveying identified 31 contacts in this area; all of the contacts were excavated. One of the contacts was a 37-mm target practice round (MEC); the other contacts were inert metal parts. The single 37-mm round was judged to be an anomaly; the 37-mm round and other debris were removed from this AOC (Plexus 2004, Alion 2007).

---

[5] The TCRA used the term "MEC" throughout to refer to the projectiles recovered in the Building 16 backstop area during the removal operation. This terminology mainly refers to the items prior to their characterization for disposal. As presented in Section 5.3 of the TCRA the items were certified as inert and classified as wholly-inert projectiles (Section 2.4.6.6 of the SI). The current DoD/Army terminology describes materials potentially presenting an explosive hazard as MPPEH, and typically this would apply to items that have not been certified by a UXO technician as MEC or MD. Alion has revised the TCRA terminology used to describe the findings prior to certification and after certification by a UXO technician. The terms "projectile or MPPEH" are used initially when referring to the non-certified items recovered during the TCRA (Section 2.4.6.7). The term "MD" describes the certified findings of the TCRA as discussed in the waste disposal section of the TCRA report- addressed in Section 2.4.6.7 of the SI.

Building 16 Misfire Pit (MRS 4) - The USACE Baltimore District and H-D identified the misfire pit southeast of Building 16 and due east of Building 15 adjacent to a fire hydrant, recessed within a 4 foot (ft) by 4 ft revetment (GPS location - N240609, E2259630). Plexus excavated this area and did not find a misfire pit in this location. No further action was recommended at the Building 16 misfire pit location (Plexus 2004, Alion 2007).

MEC Disposition – Ten representative projectiles (37mm projectile some of which were identified as suspect armor-piercing [AP]) were drilled to determine if their contents posed an explosive safety hazard. Results of physical inspection and field EXPRAY testing of the contents by a Senior Unexploded Ordnance Supervisor (SUXOS) determined the drilled projectiles were sand-filled and did not pose an explosive safety hazard. Based on the prior site history and results of the drilled projectiles inspection/testing, the remaining projectiles were sheared on site to expose the hollow cavities to ensure they posed no explosive safety hazard. EXPRAY testing was also performed. None of the projectiles was found to contain explosive residues and were certified by the on-site SUXOS to be Wholly-Inert Projectiles (WIPs) (Plexus 2004, Alion 2007).

Materials Management – The sheared WIPs, classified as MD in accordance with DoD/Army terminology were drained of sand, placed into wooden boxes along with other MD removed from the bunkers and the suspect 20-mm dump site, and the MD was transported to an off-site lead smelter under chain-of-custody for recycling. Smelting of 4.5 tons of this material was performed on 8 October 2004, completing demilitarization of this material. Slag (MD) found in the sand in the east target stop butt was tested and found to contain lead at sufficient concentrations to cause this material to be classified as hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Plexus removed approximately 20 CY of slag and a small amount of sand in direct contact with the sand from the bunkers and placed it in a pile at a paved location immediately south of the Building 16 target stop butts and Building 15 as designated by H-D. The slag was placed on top of the ground surface and was covered by polyethylene plastic for disposition by H-D. The SUXOS physically inspected the slag to ensure no MEC was present prior to placement in the stockpile (Plexus 2004, Alion 2007).

Laboratory analysis performed by others for H-D confirmed the remaining sand in the east target stop butt did not exhibit characteristics of a RCRA hazardous waste for lead as previously suspected. That sand was then removed from the bunkers, sifted in the on-site screen plant and placed in piles at locations on the YNOP site designated by H-D. The sand was placed on top of the ground surface and was covered by polyethylene plastic for disposition by H-D. The SUXOS physically inspected the sifted sand to ensure MEC was not present prior to placement in the stockpiles (Plexus 2004, Alion 2007).

**Removal Action**

In March 2007, Harley-Davidson's contractor, SAIC, discovered a suspect projectile about 400 feet east of Building 30 while marking proposed boring locations near an old landfill. The item was measured as approximately 40mm diameter by 4inches. The projectile was removed on 22 March 2007 by the Pennsylvania State Troopers' Hazardous Device and Explosive Section (Alion 2007). The identification of the projectile (MEC versus MD) is unknown.

A 37mm projectile was found by a contractor on March 25, 2008 between Buildings 14 and 16. This area of the facility is currently being accessed by Harley-Davidson workers approximately ten (10) times each day. The identification of the projectile (MEC versus MD) is unknown.

**2007 Site Investigation**

The SI field work included a single sampling event which was conducted on the 12th and 13th of July 2007. The SI field work was conducted in accordance with the PWP (Alion 2005) and the Final SS-WP (Alion 2007). A qualitative site reconnaissance for MEC and sample collection and analyses for MC was completed. A total of 5.05 acres was assessed through qualitative reconnaissance. A total of 11 surface soil (includes 2 background surface soil samples), 5 subsurface soil, and 5 groundwater samples were collected. One additional dust sample (from the ground surface adjacent to a ventilation duct) was collected from within the eastern backstop of Building 16. Given the location/accessibility of the dust, the sample was compared against surface soil screening criteria. In accordance with the SS-WP, surface soil samples were collected as composite samples (seven-point wheel composite) while the subsurface soil and groundwater samples and the dust sample were collected as discrete samples.

The initial summary of risk from MEC and MC for the fYNOP MRAs is concluded from the 2007 SI report as presented in detail in Section 2.7. The fYNOP is a low risk for MEC (low probability of encountering MEC) given previous removal actions and findings to date. Based on sampling results, the fYNOP does pose a risk to human health and the environment due to elevated concentrations of metals (specifically, antimony, copper, lead, nickel, and zinc) that exceed the Act 2 SWHS in three MRAs (MRS 5, AOC 1, AOC 2).

Along with the findings of the SI report, numerous recommendations were identified to protect Harley-Davidson workers or contractors accessing the identified MRAs and AOCs. Harley-Davidson has a security-controlled access gate and fence installed in 2012, as well as, access-limiting engineering controls (i.e. plywood doors and covers) to prevent contact with ventilations systems and the backstops at Building 16. These controls reduce the potential for contact with lead impacted dust. Additionally, “Do Not Enter” sings and orange snow fencing is posted at the entrance to the concrete structures/backstops in AOC 2.

**2007 Electromagnetic Survey**

Following the 2007 Site Investigation, the former spent 37-mm shell disposal area was identified as AOC1. Two OE safety specialists from the USACE Baltimore District mobilized to the fYNOP on May 26, 2009. The purpose of this visit was to inspect potential anomaly areas that were not previously cleared in AOC1 and identified as Anomaly A, B, C, D, and E (shown on Figure 6) using analog and digital geophysical methods. Work began at Anomaly B, followed by locations E, C, A, and D. Using a metal detector, magnetic meter, and a shovel, the ground area at each anomaly was scanned and probed by the OE specialists. The EM31 data, in addition to the instrument readings and observations conducted by the USACE, were used to confirm the status of MD at each location. “No Contacts” (meaning no evidence of MD) were confirmed at all but Anomaly B. At the Anomaly B area, many small targets were found in an area measuring approximately 20 feet by 10 feet. This vicinity was generally level and appeared to be partially cut into the hillside where it is heavily wooded. Single targets were confirmed to be many iron fragments within the top six to eight inches of the surface. At least two of these fragments were confirmed to be fired projectiles.  None of the fragments were removed from the area.

**Eastern Landfill (SWMU 17)**

The Eastern Landfill (SWMU 17) is located in the eastern portion of the Site.  According to the 2009 Supplemental RI, the former landfill was in operation from 1964 through 1987.  A geophysical survey was conducted by REWAI in 1986 and identified a large conductivity anomaly beginning 300 feet west of the perimeter road (the eastern Site boundary) and stretching west (SAIC 2009). Additionally four test pits were excavated in 1986 to a maximum of 8 feet.  Numerous, cultural, metallic and non-metallic debris was identified in the test pits, however, no munitions or MD was found.  Subsequent soil samples collected from the test pits indicated elevated concentrations of VOCs in excess of the PADEP soil-to-groundwater MSCs.

During the 1999 site-wide RI sampling, soil gas samples and soil samples from 5 test pits were collected in the former landfill area.  No soil sample detected constituents (VOCs) exceeded applicable soil screening criteria (SAIC 2009).  A supplemental RI was conducted in 2009 and included 11 subsurface soil borings.  Recovered soil included anthropogenic fill material and no detected analyte concentrations exceed PADEP Act 2 soil-to-groundwater or direct contact MSCs.

**Other Remedial Activities**

Numerous remedial actions have occurred across fYNOP including the removal of former bunkers and magazines (Buildings 17 through 23) and a partial demolition of Building 16 in 2002.  Also at Building 16, hazardous sand from the east backstop and dust from a former air handling unit was removed by SAIC in 2004.  Additionally, impacted soil was removed from directly in front of Building 16 in 2008 and stockpiled behind the east butt.  Both removal actions will be confirmed during performance of the RI.

**Restructuring Activities**

As part of a Sitewide restructuring project of the Harley-Davidson facility, Building 15, 30, 60, and portions of Building 14 were demolished in 2010-2011.  Also during the restructuring project, soil was stockpiled in the northeast portion of the fYNOP following excavation from associated construction/demolition activities and the excavation of 2 stormwater management ponds.  The stockpiled soil was spread and graded north of the former Building 30 location, and south of the former Building 15 location.  Soil place north of Building 30 overlays fill material spread by Plexus in 2002.  The combination of material means as much as 15 feet of fill material may cover the original fYNOP ground surface.

Also, as part of the restructuring project, a security fence was installed in 2012 to further restrict access to the northeast portion of fYNOP.  Currently, no Harley-Davidson employee or contractor accesses this area daily.  SAIC conducts quarterly inspections of fencing, warning signs, barriers, and locks for the remaining buildings and backstops.

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# Appendix F

# Appendix F, Harley-Davidson Sample Nomenclature and Data Deliverable Requirements

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**TABLE B-3**
**SAMPLE NUMBERING SCHEME**

| | |
|---|---|
| mm = Sample Station/Media Type | <u>Examples</u><br>Soil Boring = SB<br>Surface Soil Sample = SS<br>Sediment Sample = SD<br>Test Pit = TP<br>Monitoring Well = MW (or CW)<br>Residential Well = RW<br>Surface Water Sample = SW<br>Spring = SP<br>Soil Gas = SG<br>Roll-off = RO<br>Waste Characterization = WC<br>Quality Control sample = QC |
| NNN = Sample Number | The Field Manager will maintain a listing of three digit station identifiers and correlate them to specific sampling/station locations. |
| nn/nn = Sample Interval in Feet Below Ground Surface (for soils), or Feet below measuring point (for water) | <u>Examples</u><br><u>Soil Sampling:</u><br>12/15= Top of interval is 12 feet and bottom of interval is 15 feet below ground surface.<br><br><u>Water Sampling:</u><br>12/12= Pump depth/intake depth set at 12 feet below measuring point.<br>0/0= indicates that intake depth is unknown.<br><u>Roll Off or Soil Pile Sampling:</u><br>0/0.5 = surface soil sample taken from top 6 inches.<br>X/X = depth for composite sampling. |
| z = Sample Type | <u>Examples</u><br>0 = Primary Investigative Sample<br>1 = Field Duplicate Sample<br>2 = Trip Blank<br>3 = Equipment Rinsate<br>4 = Site Source Water Blank<br>5 = Investigation Derived Waste (IDW) (total analysis)<br>5T = Investigation Derived Waste (IDW) (TCLP analysis) |

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# TABLE B-5
# LABORATORY STANDARD DATA DELIVERABLES FORMS LIST

| Method Requirements | Deliverables |
|---|---|
| **Requirements for all methods:** | |
| - Holding time information and methods requested | Signed chain-of-custody forms |
| - Discussion of laboratory analysis, including any laboratory problems | Case narratives |
| - LCS (run with each batch of samples processed) | Results (control charts when available) |
| **Organics: GC/MS analysis** | |
| - Sample results, including TICs | EPA Form 1 or equivalent |
| - Surrogate recoveries | EPA Form 2 or equivalent |
| - Matrix spike/spike duplicate data | EPA Form 3 or equivalent |
| - Method blank data | EPA Form 4 or equivalent |
| - GC/MS tune | EPA Form 5 or equivalent |
| - GC/MS initial calibration data | EPA Form 6 or equivalent |
| - GC/MS continuing calibration data | EPA Form 7 or equivalent |
| - GC/MS internal standard area data | EPA Form 8 or equivalent |
| **Organics: GC analysis** | |
| - Sample results | EPA Form 1 or equivalent |
| - Surrogate recoveries | EPA Form 2 or equivalent |
| - Matrix spike/spike duplicate data | EPA Form 3 or equivalent |
| - Method blank data | EPA Form 4 or equivalent |
| - Initial calibration data | EPA Form 6 or equivalent |
| If calibration factors are used | A form listing each analyte, the concentration of each standard, the relative calibration factor, the mean calibration factor, and the %RSD |
| - Calibration curve if used | Calibration curve and correlation coefficient |
| - Continuing calibration data | EPA Form 9 or equivalent |
| - Positive identification (second column confirmation) | EPA Form 10 or equivalent |
| **Metals** | |
| - Sample results | EPA Form 1 or equivalent |
| - Initial and continuing calibration | EPA Form 2 or equivalent, dates of analyses and calibration curve, and the correlation coefficient factor |
| - Method blank | EPA Form 3 or equivalent and dates of analyses |
| - ICP interference check sample | EPA Form 4 or equivalent and dates of analyses |
| - Spike sample recovery | EPA Form 5A or equivalent |
| - Postdigestion spike sample recovery for ICP metals | EPA Form 5B or equivalent |
| - Postdigestion spike for GFAA | EPA Form 5B or equivalent |
| - Duplicates | EPA Form 6 or equivalent |
| - LCS | EPA Form 7 or equivalent |
| - Standard additions (when implemented) | EPA Form 8 or equivalent |
| - Holding times | EPA Form 13 or equivalent |
| - Run log | EPA Form 14 or equivalent |
| **Wet Chemistry** | |
| - Sample results | Report result |
| - Matrix spike recovery | % Recovery |
| - Matrix spike duplicate or duplicate | % Recovery and % RPD |
| - Method blank | Report results |
| - Initial calibration | Calibration curve and correlation coefficient |
| - Continuing calibration check | Recovery and % difference |
| - LCS | LCS result and control criteria |

GC = gas chromatography
ICP = inductively coupled plasma
MS = mass spectrometry
RPD = relative percent difference
TIC = tentatively identified compound
GFAA = graphite furnace atomic absorption
LCS = laboratory control standard
PCB = polychlorinated biphenyl
RSD = relative standard deviation

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# TABLE B-6
# LABORATORY STANDARD ELECTRONIC DATA DELIVERABLES (EDD)

| EDD Fields (Max Length) | Description |
|---|---|
| SMP_ID (15 ) | The original client sample identification number. For Lab QC samples this field may be left empty or filled with a place holder like 'QC' or 'NA' for LCS and blanks. The original client sample ID should be used for MS, MSD, and SUR samples. |
| LAB_ID (15) | The laboratory's sample identification number. |
| DATE_SMP (10) | The date the sample was collected in the field (MM/DD/YYYY). |
| TIME_SMP (10) | The time the sample was collected in the field (MM/DD/YYYY). |
| DATE_REC (10) | The date the sample was received by the laboratory (MM/DD/YYYY). |
| DATE_EXT (10) | The date the sample was extracted (MM/DD/YYYY). The extraction refers to any preparatory techniques such as extraction, digestion, and separation. |
| DATE_ANA(10) | The date the sample was analyzed (MM/DD/YYYY). |
| TIME_ANA(5) | The time the sample was analyzed (HH:MM). |
| MATRIX (10) | The sample matrix. Valid values are Water, Solid, or Air. |
| METHOD (21) | The method requested by the client (i.e., SW846 8080). This should not be the lab method number. |
| RES_TYPE (4) | The laboratory result type. Currently the loading routine only handles the following values: |
| | REG-results of a primary analysis of a client sample |
| | REA- results of a reanalysis of a client sample |
| | DIL- results of an analysis of a diluted client sample |
| | LCS-results of a laboratory control sample as %recovery |
| | LCST-expected (true) result of a laboratory control sample as a concentration |
| | LCSF-actual (final) result of a laboratory control sample as a concentration |
| | SUR-surrogate recovery as % recovery |
| | MS-matrix spike recovery as a % recovery |
| | MST- expected (true) result of a matrix spike sample as a concentration |
| | MSF- actual (final) result of a matrix spike sample as a concentration |
| | MSD-matrix spike duplicate recovery as relative percent difference |
| | MSDT- expected (true) result of a matrix spike duplicate sample as a concentration |
| | MSDF- actual (final) result of a matrix spike duplicate sample as a concentration |
| | BLK-result of a laboratory blank sample. |
| CAS_NUM (15) | The CAS number or blank if no CAS number is available. |
| PARAMTR (50) | Chemical name for the analytic parameter. |
| RESULTS (N) | The analytic result |
| UNITS (15) | The units for the result. |
| LABQUAL (6) | The qualifiers assigned by the laboratory. |
| DET_LIMIT (N) | The Contract-Required Detection Limit for the analyte being measured. It should be reported in the same units as the result. |
| REP_LIMIT (N) | The Contract-Required Reporting Limit for the analyte being measured. It should be reported in the same units as the result. |
| UNC (N) | The 2 sigma error in the net count rate for radiological analyses. Should be expressed in the same units as the analytic result. |
| DILUTION (N) | The overall dilution of the sample aliquot. A value of one should correspond to nominal conditions for the method. Values less than one correspond to concentrations. |
| SMP_WT (N) | The weight or volume of the sample used for the analysis. |
| WT_UNITS (2) | The units for the sample weight or volume. |
| FILTERED (1) | Must have 'F' if the sample was filtered either by the lab or in the field. |
| PCT_SOL (N) | Percent solids |
| TIC (10) | Enter 'TIC' or retention time for tentatively identified compound. Blank if not a TIC. |

The laboratory EDD may be delivered either as an Excel spreadsheet or as a comma or tab delimited file readable by Excel. The file name must include the SDG number or equivalent. For example, if multiple files were submitted for the same SDG, the filename could be the SDG number followed by a sequential number for each file in the SDG. A file cannot contain more than one SDG. Multiple analytic fractions may be present in the file. The first row of the file should contain the field names. The expected field names and comments about them are listed below. Fields do not have to be present in the order specified and additional fields may be included; however, columns must be present for all fields identified below.  N-Indicates that the field requires a numeric entry.

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