

Quality Assurance Project Plan

Macon Naval Ordnance Plant Superfund Site, Docket No-CERCLA-04-2018-3760

18 March 2019

Project No.: 0482419



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1. INTRODUCTION

1.1 Study Area Background / Site History

The Site is located at 600 Guy Paine Road in Macon, Bibb County, Georgia. The Site location is shown in Figure 1. The Site is bounded to the north by Guy Paine Road, to the east by Mead Road and the abandoned Central of Georgia railroad tracks, to the southeast by the City of Macon Water Authority (MWA) Rocky Creek Water Reclamation Facility, to the south by the AWI Site OU2 and Rocky Creek, and to the west by the AWI Site OU1. A general layout of the Site and surrounding properties is shown on Figure 2.

Current land use in the area is primarily industrial and commercial. Many of the buildings and infrastructure at the Site were originally part of the MNOP property. The total current area of the Site is approximately 254 acres, but the facility historically included additional areas (such as portions of AWI Site OU2), with a maximum extent of approximately 433 acres.

The U.S. Navy acquired the property for a portion of the Site in 1941, followed by additional purchases in 1948 and 1960. Portions of the facilities were constructed by Reynolds Corporation on behalf of the United States Navy beginning in 1941. Reynolds Corporation produced munitions at the MNOP under contract with and on behalf of the U.S. Navy until 1945. The Navy, under the U.S. Department of Defense, assumed operations in 1945 and continued to assemble or manufacture ordnance until 1965. Production operations included manufacturing of metal parts, their assembly and explosive loading to produce ammunition components for the armed services, including flares, small primers, detonators and other triggering mechanisms. Production facilities included laboratories, storage sheds, production sheds and maintenance shops. Prior to 1947, operations at the Site primarily involved assembly and loading of ordnance. Machining and manufacturing of ordnance components was conducted at the Milledgeville, Georgia ordnance plant and shipped to the Site for assembly. In 1947, the Navy closed the Milledgeville, Georgia and consolidated the machining and manufacturing operations with their operations at the Site. After 1958, production shifted to astronautic, missile and rocket components, anti-submarine warfare (ASW) devices and expendable ordnance components. Machining operations included screw machines. turret lathes, milling machines, shapers, planers, jib borers, heat treat ovens, die casting facilities, and two metal plating lines. Raw materials would enter the Site from the southeast rail spur off the Central of Georgia rail line spur. Materials would proceed to the manufacturing area of Building 5, or to various blending/weighing areas (Buildings 38-41). Drying buildings (Buildings 55-60) or testing laboratories (such as Building 7-B) might receive raw as well as finished products. Finished products would proceed to Buildings 106 through 109 for assembly or to other storage areas within Building 5 or 105. After assembly, finished products were staged in out-bunkers or Building 198 (from approximately 1964 to 1980). Shipment off-site typically occurred through the northwest rail spur on the north side of Buildings 5 and 105. Solvents were stored in buildings 99, 175, and 190-193. Oil recovery operations occurred at a building on the top of a small hill or slope on the northwest side of the Site. Discharge from the operation was to a concrete sump, which then drained to the base of the slope onto a broad, flat-lying area. Previous interviews conducted with site personnel indicated soil from this area was reportedly removed historically to address prior discharges, but no information on timing or quantities was available (ESE, 1990).

Support operations included housing, administration, two powerhouses, water supply and wastewater and service buildings to the north of the Site. A Tuscaloosa formation water supply well (or on-Site supply well) is present at the Site, south of Building 5-B, but it is no longer in use. Four 15,000-gallon fuel oil aboveground storage tanks (ASTs, two at each powerhouse), a 4,000-gallon mineral spirits UST, a 12,000-gallon cutting oil UST as well as a 2,000-gallon gasoline underground storage tank (UST), a 5,600-gallon diesel fuel UST and a 250-gallon kerosene UST were also in use at the site. A wastewater

treatment plant (WWTP) received sanitary wastewater from the Site through the early 1970s. The wastewater plant consisted of a grit chamber, digester, primary and secondary sedimentation tanks, sludge beds and a trickling filter. Treated effluent was discharged to the low-lying area and ditch along the eastern margins of the site. Historic drawings (Stevens and Wilkinson, 1957) and interviews (RUST, 1997) indicate that prior to 1973, plating effluent was drained to the storm sewer system, possibly including trichloroethene (TCE) that used to clean the metal parts prior to plating (see Figure 3). The storm water conveyance system directly discharged through a 24" concrete spillway at the ditch along the western Site boundary. After 1974, site sewers were re-routed to convey wastewater off-site to the municipal sanitary sewer system.

The facility was declared surplus by the Navy, and the property was sold in December 1965 to the Maxson Electronics Company (Maxson) of New York. Maxson continued to produce ordnance under contract with the Navy until it sold the property to Allied Chemical Corporation (Allied) in 1973. Allied manufactured automobile seat belts at the Site and made beneficial use of all or nearly all the buildings, USTs/ASTs, and utilities. Allied activities involved chrome plating, but the wastewater from this operation was treated using a Chevron Precipitator, with the sludges reportedly disposed off-site, and clarified effluent discharged to the sanitary sewer (RUST, 1997).

Allied sold the property in 1980 to the Macon-Bibb County Industrial Authority (MBCIA), which renamed the property the Allied Industrial Park (AIP). MBCIA currently leases or sells buildings as office and warehouse space to various industrial and commercial businesses on the Site property. Each of the businesses involves warehousing, distribution and/or manufacturing.

More recently, in August of 2011 a complaint was filed with Georgia EPD alleging a diesel fuel spill was ongoing for approximately six months at the Gray Brothers Tree Service property due to improperly maintained equipment and vehicles on the property leaking diesel fuel, hydraulic fluid and motor oil. As of October 2012, all violations have been corrected by removal of affected soils (ERIS, December 2018).

During construction of a small portion of the Texbond facility in late 2016/early 2017, subsurface soils excavated from footings were re-located on-site and used as fill on the vacant area west of the current Texbond facility by spreading the soils over the surface and re-establishing vegetation.

On 6/28/2018, a fire occurred at the GS Materials LLC facility, located at 490 Guy Paine Rd (along the northern perimeter of the facility). The fire was extinguished, but was reported to have had the potential to release acetone and thyrine (ERIS, December 2018). Debris remaining after the fire were in process of being removed in early 2019, and additional investigation may be required by the owners once the debris has been removed.

Seventeen (17) water supply wells, nearby water bodies, wetlands, and one emergency response facility were identified within a one-mile radius of the Site. Water supply wells located or downgradient of the Site include the inactive on-Site supply well, immediately downgradient of Building 5, Armstrong Production well AWL-06, and GHW-01, located at the cement plant in the southeast corner of the facility (locations are shown in Figure 3). An additional supply well for a mobile home park is located nearly two miles south of the site, beyond both Rocky Creek and Tobesofkee Creek.

1.2 Purpose

The QAPP addresses the data quality objectives (DQO), analytical methodologies, specific quality assurance/quality control (QA/QC) activities, laboratory requirements, and data assessment activities designed to achieve the project quality objectives (PQO). This QAPP, in conjunction with the SAP, is required reading for all staff participating in the work associated with this field investigation, and shall be in the possession of the field teams collecting the types of samples outlined herein. All contractors and subcontractors shall be required to comply with the procedures documented in the QAPP and SAP in order to maintain comparability and representativeness of the collected and generated data.

2. QAPP WORKSHEET #1 & 2. TITLE AND APPROVAL PAGE

18 March 2019

Quality Assurance Project Plan

Naval Ordnance Plant

Martin D Cook

Martin D. Crook Project Manager

1.1-

William A. Butler, P.E., BCEE Partner In Charge

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3. QAPP WORKSHEET #3 & 5. PROJECT ORGANIZATION AND QAPP DISTRIBUTION

QAPP Recipients	Project Title/Role	Organization	Telephone Number	Email Address	Document Control Number
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Steve Thornley	Project Manager	Beacon Environmental Services, Inc.	410-838-8780	steve.thornley@beacon-usa.com	9

4. QAPP WORKSHEET #4, 7, & 8. PERSONNEL QUALIFICATIONS AND SIGN-OFF SHEET

Name	Project Title/Role	Signature	Date
Martin D. Crook	Project Manager		
William A. Butler	Partner In Charge		
Caroline Pasternak	QA/QC Officer		
Ed Hollifield	Remedial Investigation SME		

5. QAPP WORKSHEET #6. COMMUNICATION PATHWAYS

Communication Driver	Organization	Name	Contact Information	Procedure (timing, pathway, documentation, etc.)
Regulatory agency interface	ERM	Martin Crook	See Worksheet #3 and 5 for contact information	ERM PM will interface with regulatory agency PM via email should significant issues with the implementation of this QAPP occur, when comments to the submittals occur, and when new field sampling plans are identified for implementation.
Field progress reports	ERM	ERM Field Task Leader Martin Crook	See Worksheet #3 and 5 for contact information	ERM FTL will provide daily updates to the ERM PM. Field progress will be tracked and updates will be provided in monthly progress reports, due on the 15 th of each month.
QAPP updates/changes	ERM	Martin Crook	See Worksheet #3 and 5 for contact information	ERM PM to provide updated controlled copies to individuals listed on Worksheet #3 and 5, and acknowledgement signatures will be returned to the ERM PM.

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Sample receipt variances	Laboratory PM ERM QA/QC Officer	See Worksheet #3 and 5 for contact information	See Worksheet #3 and 5 for contact information	Laboratory PM will submit sample receipt information to ERM QA/QC Officer and variances will be communicated by ERM QA/QC Officer to the Laboratory PM.
Laboratory Project Managers	Laboratory PM	See Worksheet #3 and 5 for contact information	See Worksheet #3 and 5 for contact information	Individual laboratory PMs will receive direction from ERM and is responsible for communicating and complying with QAPP requirements. Copies of the analytical data reports and electronic data deliverables (EDDs) will be forwarded to ERM.
Analytical corrective actions	Laboratory PM	See Worksheet #3 and 5 for contact information	See Worksheet #3 and 5 for contact information	Corrective actions related to project analytical work will be communicated to the ERM QA/QC Officer.
Data verification issues, e.g., incomplete records	ERM QA/QC Officer	See Worksheet #3 and 5 for contact information	See Worksheet #3 and 5 for contact information	ERM QA/QC Officer to identify verification gaps and communicate to affected personnel and the ERM PM.
Site Access	MBCIA	Tyler Garrison	478-223-0576	Contact MBCIA at least 24 hours prior to travelling to or mobilizing to the site, and provide a schedule and description of site activities.

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6. QAPP WORKSHEET #9. PROJECT PLANNING SESSION SUMMARY

An initial scoping session was held on November 14, 2018, and a site visit and site walk on December 13, 2019. The detailed technical planning session was held on February 8, 2019.

The purpose of the session was to review the existing data set for the site, evaluate the conclusions of the screening of the available with respect to human health and ecological risk, and review the work proposed for Phase I of the RI.

Participant	Project Title/Role	Organization / Representing
Martin D. Crook	Project Manager	ERM
William A. Butler	Partner In Charge	ERM
Angela Levert	Human Health Risk Assessment SME	ERM
Ed Hollifield	Remedial Investigation SME	ERM
Steven Peterson	Ecological Risk Assessment SME	ERM
Nadine Weinberg	Vapor Intrusion SME	ERM
Bart Seitz	Attorney	Unimax
Nicholas Santella	Project Geologist	Unimax
Robert Prezbindowski	Remediation Manager	Arconic
Chris Walker	Attorney	Arconic
Prashant Gupta	Remediation Manager	Honeywell

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7. QAPP WORKSHEET #10. CONCEPTUAL SITE MODEL

Background information

A relatively large body of chemical analytical data has been collected to characterize soil, sediment, and groundwater within the Site, and the available data were used to develop the following interpretation of constituent distribution. Based on a review of the comprehensive data set for the Site, examination of available data relative to potential source areas, and assessment of the extent of constituent presence and movement, chemical characterization needs for specific areas of uncertainty are identified in Draft Remedial Investigation/Feasibility Study Work Plan Section 3.1.3.

Sources of known or suspected hazardous waste

Potential sources of constituent release during historical operations at the Site were identified and investigated in prior studies, including the following:

- former WWTP;
- storm water drain outfalls;
- metal plating facility (Building 5);
- electrical transformer houses;
- former solvent storage sheds (Buildings 99, 175, 190-193);
- explosives assembly and loading area (Buildings 106, 106A and 109);
- oil recovery area; and
- ASTs and USTs.

Known or suspected contaminants or classes of contaminants

The primary groundwater constituents of concern at the Site include TCE, cDCE, and VC. The presence of cDCE and VC may be attributable to naturally occurring biodegradation of TCE. Based upon concentration and broad distribution, TCE is considered the primary indicator constituent and risk driver for development of the RI.

Primary release mechanism

The main TCE plume is present at a former stormwater discharge outfall located adjacent to the former WWTP at the western property boundary, and the former WWTP and outfall are suspected sources of TCE. A middle TCE plume appears to originate from the former plating operation in Building 5 and possibly from a source in Building 6. A third, lower concentration TCE plume originates near former Building 108. These two lower concentration TCE plumes are potentially associated with former solvent storage sheds identified in the vicinity of the apparent origins of these plumes.

Secondary contaminant migration

The potential for constituent migration into indoor air is largely controlled by the presence and concentrations of TCE and other VOCs in shallow groundwater, but also by overlying building construction. Additionally, the extent of migration of constituents in soil vapor may be affected by utility trenches and corridors or other subsurface structures that can serve as preferential pathways for vapor-phase constituents of potential concern.

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Fate and transport considerations

Surface soil on site (defined as the upper 12 inches) is a potential exposure medium for direct contact by people who routinely work at or visit the Site.

No current or reasonably anticipated direct human exposure to the shallow water table zone exists, which is encountered generally between 5.6 to 47.4 ft bls. Potential constituent migration pathways include transport of VOCs from shallow groundwater to indoor and/or ambient air, horizontal transport of constituents downgradient to surface water, and vertical transport of constituents to deeper groundwater.

Most of the drainage features within the Site are periodically dry, and where water is present, there is limited attraction or opportunity for contact in the industrial setting.

Sediment in drainage features that are periodically dry within the Site is a potential exposure medium for direct contact by people who routinely work at the site, similar to soil. In limited locations that routinely hold water, the sediment is generally less available for direct human contact.

Potential receptors and exposure pathways

The most likely current and future human receptors at the Site are industrial/commercial workers who maintain jobs at the businesses located on the property, as well as groundskeepers and visitors. Public access to the former recreational area is restricted due to the presence of the communication tower and security fence. Utility and construction workers are potential receptors should utilities require maintenance or repair or in the event of new commercial construction. Potential exposure pathways that will be further evaluated include direct contact to soil, drinking water use, and vapor intrusion to indoor air.

Off-site to the south of the Site, potential receptors are recreational users of Rocky Creek. Because the area is often partially submerged, access to Rocky Creek is difficult for the public. Additionally, the location is less likely to be casually accessed by the general public because of the surrounding industrial area (GDPH, 2013).

Land use considerations

The Site is zoned for industrial use and portions of the property are an active industrial park. The MBCIA has sold or currently leases buildings on the property as office and warehouse space for various industrial and commercial uses. No residences are located on the Site or neighboring property. The northeast corner of the Site was acquired by the City of Macon and was used for recreational purposes (e.g., baseball/softball fields) in the past, but is no longer in use. This portion of the Site currently houses a communications tower and access is limited to authorized personnel by fencing.

Key physical aspects of the site

The Site resides on an upland surface and southern tip of a tongue-shaped peninsula, which it shares with the southernmost portion of the city of Macon, Georgia. The peninsula is surrounded on three sides (west, south, and east) by the floodplains of Rocky Creek and the Ocmulgee River. A series of progressively raised alluvial terraces extend from the floodplain of Rocky Creek to an abandoned railroad spur that runs west to east across the southern third of the Site. The land surface elevation ranges from approximately 375 feet above mean sea level (ft amsl) in the north-central portion of the site to 275 ft msl along Rocky Creek. The Ocmulgee River is located approximately 2.3 miles east of the Site and is accompanied by a well-developed floodplain that averages 2 miles in width (SAIC, 2000). The primary land cover feature surrounding both Rocky Creek and the Ocmulgee River is Freshwater Forested/Shrub Wetlands (ERIS, December 2018).

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8. QAPP WORKSHEET #11. PROJECT/DATA QUALITY OBJECTIVES

1. State the Problem.

VOCs are present in groundwater that may be transferred to soil vapor which may migrate into buildings on site.

VOC COPCs in groundwater may present a risk to drinking water use.

Additional soil sources may be present that may transfer VOC COPCs to soil vapour which may migrate into buildings on site, or contribute to additional/sustained concentrations of VOC COPCs to groundwater.

PCBs identified in surface soil may result in direct contact hazard in the former recreation area.

Identify the Goals of the Study

The goals of the study are as follows:

- Further define sources of COPCs and to address the uncertainties and data gaps identified in the CSM;
- Enhance definition of nature and extent of Site-related COPCs in soil and groundwater;
- Understand the transport and fate of COPCs in environmental media at the Site;
- Refine the preliminary identification (provided in this plan) of complete or potentially complete exposure pathways considering current and future land use, evaluate current and future human health and ecological risks posed by the COPCs present at the Site, and complete a risk assessment in accordance with EPA guidance; and
- Support the development and evaluation of remedial alternatives for the Site.

3. Identify Information Inputs

Definitive data will be collected (i.e., soil, groundwater, soil gas, indoor air and ambient (outdoor) air samples) to assist in the delineation of contaminated groundwater, evaluate direct contact to surface soils and evaluate the potential for vapour intrusion to indoor air. The data collected will support the feasibility study.

4. Define the Boundaries of the Study

The area of the Study includes both the MNOP site boundary, as well as areas south of the site between the MNOP site and Rocky Creek, including portions of the AWI Site OU2. The lateral extent of the area of investigation includes the railroad lines that run parallel to both the east and western margins of the Site.

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5. Develop the Analytic Approach

Passive soil vapour surveys will be set up to test soil gas for VOC COPCs to determine if/where sources are present in the areas indicated on Figure 3.

The parameters of interest for groundwater includes both primary VOC COPCs as well as natural attenuation indicator parameters in a select number of locations to delineate the current extent of COPCs in groundwater and evaluate the potential for biodegradation of the COPCs.

Surface soils in the AIP-111 area will be tested for PCBs to confirm the concentrations previously identified.

Subsurface soils in the area of the passive soil gas surveys will be tested for VOC COPCs to identify if sources are present.

Sub-slab soil gas, indoor air and ambient (outdoor) air will be sampled for VOC COPCs for the site to evaluate the potential for vapour intrusion in specific Site buildings.

6. Specify Performance or Acceptance Criteria

The definitive soil gas, soil, groundwater, indoor and ambient (outdoor) air data collected for the field investigation will be used to further identify potential sources, and evaluate the potential for vapour intrusion to indoor air in applicable Site buildings. The performance and acceptance criteria will be those that support the sampling rationale specified above under Boundaries of the Investigation and in the FSP.

7. Develop the Detailed Plan for Obtaining Data

The basis for sampling design and rationale is briefly discussed under Goals and Boundaries of the Field Investigation. A more detailed discussion on the sampling design and the basis for its selection is presented in the FSP, with the analytical design requirements presented in Worksheets #19/30, 20, 24, 25, 26/27, 28 and 30.

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9. QAPP WORKSHEET #12. MEASUREMENT PERFORMANCE CRITERIA

9.1 QAPP WORKSHEET #12-1. VOLATILE ORGANIC COMPOUNDS GROUNDWATER AND SOIL

Matrix: Groundwater and Soil

Analytical Group or Method: Volatile Organic Compounds (VOCs) by EPA 8260B

Data Quality Indicator (DQI)	QC sample or measurement performance activity	Measurement Performance Criteria	
Overall Precision	Field duplicates	%Relative Percent Difference (RPD) ≤ 35% when analytes are detected in both samples ≥ sample-specific LOQ	
Analytical Precision (laboratory)	Laboratory Control Sample Duplicates	RPD ≤ 30%	
Analytical Accuracy/Bias (laboratory)	Laboratory Control Samples	Percent recoveries (%R) Analyte-specific	
Analytical Accuracy/Bias (matrix interference)	Matrix Spike Duplicates	RPD ≤ 30%, %R Analyte-specific	
Overall Accuracy/Bias (contamination)	Trip and Equipment Blanks	No target analyte concentrations ≥ ½ LOQ	
Sensitivity	LOQ verification sample (spiked at LOQ)	Recovery within ±25% of LOQ	
Completeness	See Worksheet #34	See Worksheet #34	

9.2 QAPP WORKSHEET #12-1. METALS/IONS IN GROUNDWATER

Matrix: Groundwater

Analytical Group or Method: Metals and/or lons by EPA SW6010D, SW9056, SM4500, AN2320B

Matrix: Groundwater	QC sample or measurement performance activity	Measurement Performance Criteria
Analytical Group or Method: Metals and/or lons by EPA SW6010D, SW9056, SM4500, AN2320B		
Data Quality Indicator (DQI)		
Overall Precision	Field duplicates	%Relative Percent Difference (RPD) ≤ 35% when analytes are detected in both samples ≥ sample-specific LOQ
Analytical Precision (laboratory)	Laboratory Control Sample Duplicates	RPD ≤ 30%
Analytical Accuracy/Bias (laboratory)	Laboratory Control Samples	Percent recoveries (%R) Analyte-specific
Analytical Accuracy/Bias (matrix interference)	Matrix Spike Duplicates	RPD ≤ 30%, %R Analyte-specific
Overall Accuracy/Bias (contamination)	Trip and Equipment Blanks	No target analyte concentrations ≥ ½ LOQ
Sensitivity	LOQ verification sample (spiked at LOQ)	Recovery within ±25% of LOQ
Completeness	See Worksheet #34	See Worksheet #34

9.3 QAPP WORKSHEET #12-2. DISSOLVED GASSES IN GROUNDWATER

Matrix: Groundwater

Analytical Group or Method: Dissolved gasses by EPA RSK-175

Data Quality Indicator (DQI)	QC sample or measurement performance activity	Measurement Performance Criteria
Overall Precision	Field duplicates	%Relative Percent Difference (RPD) ≤ 35% when analytes are detected in both samples ≥ sample-specific LOQ
Analytical Precision (laboratory)	Laboratory Control Sample Duplicates	RPD ≤ 30%
Analytical Accuracy/Bias (laboratory)	Laboratory Control Samples	Percent recoveries (%R) Analyte-specific
Analytical Accuracy/Bias (matrix interference)	Matrix Spike Duplicates	RPD ≤ 30%, %R Analyte-specific
Overall Accuracy/Bias (contamination)	Equipment Blanks	No target analyte concentrations ≥ ½ LOQ
Sensitivity	LOQ verification sample (spiked at LOQ)	Recovery within ±25% of LOQ
Completeness	See Worksheet #34	See Worksheet #34