



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4**

Science and Ecosystem Support Division
Enforcement and Investigations Branch
980 College Station Road
Athens, Georgia 30605-2720

SITE: Barber Orchard
BREAK: 3.4 v.7
OTHER: _____

February 12, 2009

4SESD-EIB

MEMORANDUM

SUBJECT: Quality Assurance Project Plan
Barber Orchard Ground Water Investigation
Waynesville, North Carolina
SESD Project No. 09-0188

FROM: Linda George, Life Scientist *LG*
Superfund and Air Section

THRU: Mike Bowden, Chief *MB*
Superfund and Air Section

TO: Jon Bornholm, Project Manager
Superfund Division

The attached Quality Assurance Project Plan has been prepared for the sampling investigation that you requested. The sampling event will take place the week of February 23, 2009. If you have any questions or comments, please feel free to call me at (706) 355-8718.

Attachment



10782382



Quality Assurance Project Plan
U.S. Environmental Protection Agency
 Science and Ecosystem Support Division
 980 College Station Road
 Athens, GA 30605

SESD Project ID # 09-0188
 SESD Category 3 QAPP

SECTION A: Project Planning Elements		
A1. Title (Project Name):	Barber Orchard Monitor Well Sampling	
Project Location:	Waynesville, North Carolina	
Project Requestor and Organization:	Jon Bornholm, R4-SD, 61 Forsyth Street, Atlanta, Georgia	
Project Leader's Name, Position, and Organization:	Linda George, Life Scientist, SESD	
Project Leader's Signature:	<i>Linda George</i>	Date: 2/12/09
Technical Reviewer's Name and Position:	<i>Kevin Simmons</i> Life Scientist <i>Kevin Simmons</i>	
Technical Reviewer's Signature:	<i>Kevin Simmons</i>	Date: 2/13/09
Section Chief/DAO's Name and Position:	<i>Mike Bowden</i>	
Section Chief/DAO's Signature:	<i>MBowden</i>	Date: 2/13/09
A2. Table of Contents	N/A	
A3. Distribution List	Jon Bornholm, Superfund Division	
A4. Project Personnel (list below):	Organization (list below):	Responsibilities (list below):
Linda George	SESD	Project leader
Jon Vail	SESD	Safety, Sampler
Brian Herndon	ILS, Inc.	Forms
Nathan Mangle	ILS, Inc.	Sampler
A5. Problem Definition (Objectives) and Background:	<p>The Barber Orchard Site is located approximately 3 miles west of Waynesville, Haywood County, NC, and consists of approximately 500 acres. This property was used as a commercial apple orchard from 1903 until the mid 1980's when a bank foreclosed on the owner's loan. In the late 1980's, some of the land was parceled off and sold for residential properties, church properties, and commercial or light industrial property. The majority of the remaining acreage is being developed into residential property. In 1999, elevated concentrations of arsenic, lead, and organic pesticides were found in the soil, and/or</p>	



Quality Assurance Project Plan
U.S. Environmental Protection Agency
 Science and Ecosystem Support Division
 980 College Station Road
 Athens, GA 30605

SESD Project ID # 09-0188
 SESD Category 3 QAPP

	<p>in the majority of drinking water wells.</p> <p>The Record of Decision (ROD) for dealing with the contaminated soils was issued in September 2004. The ROD for dealing with the groundwater of the site will be issued after sufficient groundwater data has been collected to support a decision. The SESD began characterizing the levels of ground water contamination in 2004.</p>
<p>A6. Project Description:</p>	<p>During the week of February 23, 2009, SESD personnel will conduct a field investigation at the Barber Orchard Superfund Site in Waynesville, North Carolina. It is anticipated that thirteen monitor wells will be sampled.</p> <p>The monitor wells will be purged with Grundfos® pumps and the samples will be collected using Teflon® bailers. All purge water will be discharged to the ground. The samples will be analyzed for metals and pesticides. One blind duplicate sample will be collected, a preservative blank sample, as well as a MS/MSD sample. The location for the duplicate sample will be decided in the field. The monitor well designations, sample numbers, depths, and purge/sample method are indicated in Table 1. Also included are the depth-to-water measurements from the October 2007 investigation. The location numbers with 0209 added to the end will be used as the sample numbers. The 0209 represents February 2009. For example, the sample from Well MW01 will be identified as MW010209. The latitude and longitude of each well is presented in Table 2. The RPM is responsible for obtaining access to all properties.</p> <p>One of the sampling stations was on a hill. This hill has been removed, and the well was repaired. Elevation will be measured at this location.</p> <p>In addition, 5 gallons of soil will be collected from two locations to be determined in the field for an ORD study. The objective is soil containing arsenic and this will be determined by the use of XRF in the field. Personnel from ORD will take custody of the soil once it has been collected.</p>
Decision(s) to be made based on data:	Continued monitored natural attenuation. The RPM will make the determination if further monitoring is needed.
Applicable regulatory information, action levels, etc.	NA



Quality Assurance Project Plan
U.S. Environmental Protection Agency
 Science and Ecosystem Support Division
 980 College Station Road
 Athens, GA 30605

SESD Project ID # 09-0188
 SESD Category 3 QAPP

Field Study Date:	February 23, 2009
Projected Lab Completion Date:	April 15, 2009
Projected Final Report Completion Date:	May 15, 2009

A7. Quality Objectives and Criteria

All samples/sample locations meet the field investigation objectives and purposes summarized in Section A5 and A6 of this QAPP.

A8. Special Training/Certifications

N/A.

A9. Documents and Records

For this project, SESD will implement the following procedures pertaining to Documents and Records:

SESD Operating Procedure for Report Preparation and Distribution, SESDPROC-003-R2.

SESD Operating Procedure for Logbooks, SESDPROC-010-R3.

SESD Operating Procedure for Control of Records, SESDPROC-002-R4.

SECTION B: Data Generation and Acquisition

B1. Sampling Design

The following matrix lists the proposed numbers and types of samples to be collected. Sample locations are described in Section A6 of this QAPP.

Media:	Number of Samples:	Analyses:
Ground water	14	Metals, pesticides



Quality Assurance Project Plan
U.S. Environmental Protection Agency
 Science and Ecosystem Support Division
 980 College Station Road
 Athens, GA 30605

SESD Project ID # 09-0188
 SESD Category 3 QAPP

B2. Sampling Methods, General Procedures

The following SESD field measurement and sampling procedures will be followed during this field study, as applicable: (List Below)

SESDPROC-100-R2, Field pH Measurement
 SESDPROC-101-R2, Field Specific Conductance Measurement
 SESDPROC-102-R2, Field Temperature Measurement
 SESDPROC-103-R2, Field Turbidity Measurement
 SESDPROC-105-R1, Ground Water Level and Well Depth Measurement
 SESDPROC-110-R2, Global Positioning System
 SESDPROC-202-R1, Management of Investigative Derived Waste
 SESDPROC-203-R1, Pump Operation
 SESDPROC-205-R1, Field Equipment Cleaning and Decontamination
 SESDPROC-301-R1, Ground Water Sampling

B3. Sampling Handling and Custody

All samples will be collected and handled according to the procedures listed in Section B2 of this QAPP. After collection, samples will managed according to the following:

SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual,
 February 2008.
SESD Operating Procedure for Sample and Evidence Management, SESDPROC-005-R1.
*SESD Operating Procedure for Packing, Labeling and Shipping of Environmental and Waste
 Samples* SESDPROC-209-R1.

B4. Analytical Methods

The following is a brief description of the analytical methods for this field investigation:

SESD:	Samples will be analyzed in accordance with the <i>SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual</i> , February 2008.
CLP:	N/A

B5. Quality Control

The following is a brief description of field and laboratory quality control measures to be implemented during this field investigation:

Field:	Field quality control measures will be in accordance with the <i>SESD Operating Procedure for Field Sampling Quality Control</i> , SESDPROC-011-R2, and 40 CFR Part 136, Table II-Required Containers, Preservations Techniques, and Holding Times, Revised as of July 1, 2007.
---------------	---



Quality Assurance Project Plan
U.S. Environmental Protection Agency
Science and Ecosystem Support Division
980 College Station Road
Athens, GA 30605

SESD Project ID # 09-0188
SESD Category 3 QAPP

Laboratory:	Specific laboratory quality control measures are specified in the <i>SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual</i> , February 2008.
B6. Instrument/Equipment Testing, Inspection and Maintenance All field measurement instruments and equipment will be maintained in accordance with the <i>SESD Operating Procedure for Equipment Inventory and Management</i> , SESDPROC-108-R2.	
B7. Instrument/Equipment Calibration and Frequency All field measurement instruments and equipment are calibrated according to the <i>SESD Operating Procedure for Equipment Inventory and Management</i> , SESDPROC-108-R2 and according to specific procedures included within the defined operating procedures for each instrument (see specific field measurement procedures in Section B2 of this QAPP).	
B8. Inspection/Acceptance for Supplies and Consumables All critical supplies and consumables for this field investigation are inspected and maintained in accordance with the following procedures: <i>SESD Operating Procedure for Purchasing of Services and Supplies</i> , SESDPROC-015-R2. <i>SESD Operating Procedure for Field Sampling Quality Control</i> , SESDPROC-011-R2. The SESD Field Quality Manager and the Branch Quality Assurance Officers are responsible for ensuring that these requirements are met.	
B9. Non-direct Measurements: N/A for this category.	
B10. Data Management The field project leader will be responsible for ensuring that all requirements for data management are met. All data generated for this field investigation, whether hand-recorded or recorded and stored in an electronic data logger will be recorded, stored and managed according to the following procedures: <i>SESD Operating Procedure for Control of Records</i> , SESDPROC-002-R4. <i>SESD Operating Procedures for Logbooks</i> , SESDPROC-010-R3.	



Quality Assurance Project Plan
U.S. Environmental Protection Agency
Science and Ecosystem Support Division
980 College Station Road
Athens, GA 30605

SESD Project ID # 09-0188
SESD Category 3 QAPP

SECTION C: Assessment/Oversight and SECTION D: Data Validation/Usability

The SESD *Field Branches Quality Management Plan* (QMP) and the SESD Operating Procedures address the Assessment/Oversight and Data Validation/Usability elements as required. Please consult those documents for more detailed information concerning the SESD Field Branches Quality System.

****Footnotes:** This Quality Assurance Project Plan (QAPP) has been prepared and approved according to the EPA *Requirements for Quality Assurance Project Plans* (EPA QA/R5 EPA/240/B-01/003), U.S. Environmental Protection Agency, Office of Environmental Information, Washington, DC, March 2001(USEPA, 2001). This document will be used to ensure that the environmental data collected for this project are of the type and quality for the intended purposes. **This document is for SESD use only.**



Quality Assurance Project Plan
U.S. Environmental Protection Agency
Science and Ecosystem Support Division
980 College Station Road
Athens, GA 30605

SESD Project ID # 09-0188
SESD Category 3 QAPP

Table 1
Well Information
Barber Orchard
Waynesville, North Carolina

Well Number (Station ID)	Sample Number	Total Depth of Well (ft)	Depth to Water (ft)	Purge Method/ Rate (gal/min)	Sample Method
MW01	MW010209	97	5.20	Grundfos ¹ @1	bailer ²
MW02	MW020209	170	26.22	Grundfos @2	bailer
MW03	MW030209	359	37.95	Grundfos @1	bailer
MW04	MW040209	91	12.12	Grundfos @1	bailer
MW05	MW050209	52	28.40	Grundfos @1	bailer
MW09	MW090209	310	90.92	Grundfos @3	bailer
MW10	MW100209	57.5	13.24	Grundfos @1	bailer
MW11	MW110209	58	25.62	Grundfos ³	bailer
MW12	MW120209	286	52.36	Grundfos @2	bailer
MW13	MW130209	513	63.12	Grundfos @3	bailer
MW14	MW140209	103	35.50	Grundfos @1.25	bailer
MW15	MW150209	106	39.02	Grundfos @3	bailer
MW17	MW170209	73	35.40	Grundfos @1	bailer

All wells are 2" pvc casing with stainless steel screen

Notes:

1. Grundfos® 2 inch submersible pump with check valve.
2. Teflon® closed top bailer.
3. Purged well to dryness in October, 2007, at rate less than 1 gal/min. Allowed to recharge until next morning and sampled with bailer.



Quality Assurance Project Plan
U.S. Environmental Protection Agency
Science and Ecosystem Support Division
980 College Station Road
Athens, GA 30605

SESD Project ID # 09-0188
SESD Category 3 QAPP

Table 2
GPS Coordinates
Barber Orchard
Waynesville, North Carolina

Well Number	Latitude	Longitude
MW01	35.4532	83.0447
MW02	35.4531	83.0447
MW03	35.4531	83.0447
MW04	35.4516	83.0558
MW05	35.4489	83.0488
MW09	35.4463	83.0508
MW10	35.4450	83.0663
MW11	35.4437	83.0635
MW12	35.4437	83.0635
MW13	35.4437	83.0635
MW14	35.4437	83.0635
MW15	35.4430	83.0584
MW17	35.4397	83.0583

Note: WGS 1984, decimal degrees