



May 19, 2014

Mr. Matthew Huyser, PE
On-Scene Coordinator
U.S. Environmental Protection Agency
61 Forsyth Street, SW, 11th Floor
Atlanta, Georgia 30303

Subject: Assessment Letter Report, Revision 1
Francis Street Site
Waycross, Ware County, Georgia
EPA Contract No. EP-W-05-054
TDD No. TTEMI-05-003-0168

Dear Mr. Huyser,

The Tetra Tech Superfund Technical Assessment and Response Team (START) is submitting this letter report summarizing assessment activities conducted on December 19, 2013 at the Francis Street Site in Waycross, Ware County, Georgia. This report incorporates revisions based on comments made on the letter report submitted April 3, 2014. This report contains six enclosures. Enclosure 1 contains figures depicting the Site and sampling locations. Enclosure 2 contains tables presenting the analytical results for soil and sediment samples collected during field activities. Enclosure 3 contains the photographic log. Enclosure 4 provides the Tetra Tech START field logbook notes. Enclosure 5 provides the analytical data package. Enclosure 6 provides the Tetra Tech data validation report.

1.0 BACKGROUND

The former Seven Out facility was a wastewater treatment facility located on about 2.36 acres at 901 Francis Street, Waycross, Ware County, Georgia (see Figure 1 in Enclosure 1). The Site consists of a small service building and a tank farm containing dozens of vertical and horizontal tanks, with associated piping and valve works, although most structures were removed in November 2013. The Site is bounded by Francis Street to the north, Folks Street to the east, and property owned by CSX railroad to the south and west. Site stormwater discharges into a small drainage trench at the southeast corner of the Site and flows into a drainage ditch along the southern boundary. The drainage ditch flows west for about 1,100 feet before it discharges into a drainage canal (see Figure 2 in Enclosure 1).

The Seven Out site previously received industrial wastewater for on-site treatment, but failed to meet effluent discharge requirements and subsequently lost its discharge permit in March 2004. However, the facility continued to accept waste until full storage capacity was reached. At some time later in 2004, the owners abandoned the facility, leaving approximately 350,000 gallons of liquid waste and 150,000 gallons of sludge or solids stored at the Site.

In August 2004, Tetra Tech, at the direction of the U.S. Environmental Protection Agency (EPA), performed a removal assessment at the Site to characterize waste liquid, sludges, and solids present at the Site. Detectable concentrations of organic and inorganic chemicals were found in the tank samples, but not at levels that would qualify any of the materials as hazardous. Three soil samples were collected from the Site during the removal assessment. One soil sample, SO-SW, collected directly outside of the



southern containment wall, contained benzo(b)fluoranthene at a level exceeding the Region 9 Preliminary Remediation Goal (PRG) for residential soil. Benzo(a)anthracene, benzo(a)pyrene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene were detected at levels that exceeded the Region 9 PRGs for residential and industrial soil. All of the chemicals with detections above PRGs are part of a group of organics known as polycyclic aromatic hydrocarbons (PAH). Sample SO-SW was the only sample that exceeded the PRG, suggesting that contamination was not a widespread concern. Furthermore, a soil sample collected the same day from a location downgradient of sample SO-SW did not contain contaminants at levels exceeding PRGs. Contamination levels detected in SO-SW also did not exceed EPA Regional Screening Levels (RSLs) or Removal Action Levels (RALs), which are used to provide guidance during an emergency response or time-critical removal action. For these reasons, the contaminated soil was not remediated.

In January 2005, EPA mobilized to the Site to conduct an emergency removal action to address wastewater that was observed overtopping the on-site secondary containment walls and flowing into a nearby drainage ditch. EPA removed approximately 350,000 gallons of wastewater and other liquid wastes. The solids and sludge located within the treatment area were not addressed at that time.

EPA cost-recovery activities identified several entities as potentially responsible parties (PRP) for the Site. In 2008, the PRPs entered into an Agreement and Order on Consent (AOC) with EPA to conduct removal activities in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). These removal activities included removing all process solids and sludges from the Site and decommissioning the tanks. The removal concluded in late 2009 and EPA issued a Notice of Completion letter on November 16, 2009. The property is currently vacant.

In 2013, local residents expressed concerns regarding possible contamination coming from the Site. A sediment sample collected on behalf of a resident from the drainage canal at Folks Park contained PAHs above EPA RSLs for residential soil. In response to these concerns, EPA conducted a soil and sediment assessment to evaluate whether residual contamination from the Site is contributing to contamination within the drainage ditch and drainage canal. The letter report details the assessment process and summarizes the results.

2.0 SITE RECONNAISSANCE ACTIVITIES

On November 14, 2013, the EPA On-scene Coordinator (OSC) and the Tetra Tech site manager met at the Site to visually assess suitable sampling locations. A total of two soil sampling locations and six sediment sampling locations were identified.

3.0 SAMPLING DESIGN

The goal of the assessment was to generate data that could be used to evaluate the possibility that the Site has contributed, or is currently contributing, to contamination in the drainage ditch and drainage canal. Generating these data involved collecting soil and sediment samples to be used to determine the presence or absence of contamination at locations upgradient and downgradient of the Site.

Incremental sampling methodology (ISM) was applied to the extent possible during assessment activities. ISM consists of dividing the sampled area into discrete areas, or “decision units” (DUs), and collecting 30 or more aliquots (or “increments”) of media from each DU. All increments are homogenized together in the field and the entire sample is submitted to the laboratory. The laboratory then performs another homogenization and analyzes the sample. The ISM method was selected to obtain a representative value

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for each area as a whole. For an in-depth discussion of the field and laboratory protocols used during this assessment, see Section 1.4 of Final Quality Assurance Project Plan: Francis Street Assessment, December 10, 2013. Five-point composite samples were collected at locations where area size or topography made ISM sampling impractical (see Figure 2 in Enclosure 1).

On December 19, 2013, the EPA OSC and Tetra Tech arrived at the Site to conduct assessment activities. The Tetra Tech site manager, one Tetra Tech field team member, the EPA Task Monitor, and personnel from the Ware County Health Department and the Georgia Department of Public Health completed the field work in 1 day.

A total of 10 sediment samples were collected. Eight of the 10 samples were 30-increment samples that underwent the ISM protocol in the field and at the laboratory. Because of its size, one sediment sample (FSA-SD-DU02) was a 15-increment sample that underwent the ISM protocol in the field and at the laboratory. Because of its size and terrain, one sediment sample (FSA-SD-CO) was a five-point composite that underwent the ISM protocol in the laboratory only. The two soil samples and one duplicate soil sample collected at the Site were all five-point composites and did not receive any ISM processing.

Composite soil sample FSA-SF-CT was collected from a small concrete trench along the eastern side of the former Seven Out property. The sample was collected with a hand auger from 0 to 6 inches below ground surface (bgs). Although the trench does not appear to be the main drainage pathway for the majority of the Site, it does appear to capture some runoff from the northeastern portion of the Site.

Composite soil sample FSA-SF-SCW was collected outside the southern containment wall in the same location as soil sample SO-SW, collected during the 2004 removal assessment¹. The sample was collected with a hand auger from 0 to 6 inches bgs. This sample was collected to compare PAH concentrations detected in 2004 with current concentrations. The soil duplicate sample, FSA-SF-SCW-DUP, was also collected at this location.

Sediment sample FSA-SD-DU01 was collected from DU 01, the drainage ditch upgradient of the former Seven Out Site. The sample was a 30-increment ISM sample, with increments collected from 0 to 3 inches below sediment grade (bsg). The sediment sample was collected as a drainage ditch background sample to assess contamination levels upgradient of the former Seven Out facility.

Sediment sample FSA-SD-DU02 was collected from DU 02, the small drainage trench running between the former Seven Out facility and the drainage ditch that served as the main drainage pathway for Seven Out runoff. The quality assurance project plan (QAPP) specified that a 30-increment ISM sediment sample was to be collected from this DU; however, based on the short length of the DU, a 15-increment ISM sediment sample was collected instead. This sample represents the only deviation from the QAPP during field work. The sample collected from DU 02 was from 0 to 3 inches bsg to assess water entering the drainage ditch from the former Seven Out Site.

Three sediment samples (FSA-SD-DU03-A, FSA-SD-DU03-B, and FSA-SD-DU03-C) were collected from DU 03, the section of the drainage ditch running from downgradient of the drainage trench to the railroad tracks west of the Site. Three sediment samples (“triplicate sampling”) were collected to allow calculation of a total relative standard deviation (RSD) value to assess contaminant homogeneity within the DU. Additionally, one sample (FSA-SD-DU03-A) was selected for laboratory triplicate analysis to

¹ Tetra Tech. “Seven Out, LLC Site: Removal Assessment Report.” Prepared for USEPA Region 4. December 9, 2004.

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allow calculation of an analytical RSD value. The samples collected from DU 03 were 30-increment ISM composite samples collected from 0 to 3 inches bsg to assess contamination levels downgradient of the former Seven Out facility, but immediately upgradient of the drainage canal.

Three sediment samples (FSA-SD-DU04-A, FSA-SD-DU04-B, and FSA-SD-DU04-C) were collected from DU 04, the drainage canal upgradient of the confluence with the drainage ditch, between Alpha Street and the railroad overpass. Similar to DU 03, triplicate sampling was conducted to allow calculation of a total RSD. Additionally, one sample (FSA-SD-DU04-A) was selected for laboratory triplicate analysis to allow calculation of an analytical RSD value. The samples collected from DU 04 were 30-increment ISM composite samples collected from 0 to 3 inches bsg and were intended to assess contamination levels in the drainage canal upgradient of the confluence with the drainage ditch.

Sediment sample FSA-SD-CO was a five-point composite sediment sample collected from 0 to 3 inches bsg at the confluence of the drainage canal and the drainage ditch, between the railroad overpass and the Highway 82 overpass. The short length and terrain of this stretch of canal did not permit collection of a full 30-increment composite sediment sample. However, this sample received the same ISM laboratory protocol as all other sediment samples. This sediment sample was collected to assess contamination at the confluence of the drainage canal and the drainage ditch.

Sediment sample FSA-SD-DU05 was a 30-increment composite sediment sample collected from the drainage canal, between the Highway 82 overpass and Folks Street. The sample was a 30-increment ISM sediment sample collected from 0 to 3 inches bsg. This sample was intended to assess possible contamination in the drainage canal downgradient of the confluence with the drainage ditch.

4.0 ANALYTICAL RESULTS

This section discusses the results of laboratory analysis of the soil and sediment samples collected during the December field event. Analytical results are compared to Georgia Environmental Protection Division (GaEPD) standards and EPA RSLs and Removal Management Levels (RMLs). The GaEPD standards chosen for comparison are Type 1 (standardized, residential properties) Risk Reduction Standards (RRS) for soil. Results are presented in the tables in Enclosure 2.

Tetra Tech conducted a Stage 4 data validation (see Enclosure 6), which includes a quality assurance and quality control (QA/QC) comparison between the data listed in the electronic data deliverable and the electronic portable document format copy of the analytical data package. Analytical results were validated in accordance with the associated EPA SW-846 methods and the EPA National Functional Guidelines for Superfund Organic Methods Data Review, EPA-540-R-08-01, June 2008. Analytical results flagged with a “J” indicate that the analyte was positively identified and that the associated value is approximate. Analytical results flagged with a “J+” indicate that the analyte was positively identified and that the associated value is approximate and may be biased high. Analytical results flagged with a “U” indicate that the analyte was analyzed for, but not detected; the number reported is the laboratory-derived reporting limit (RL) for the constituent in that sample. For the complete analytical results, see Table 1 and 2 in Enclosure 2.

4.1 RESULTS COMPARED TO GAEPD TYPE 1 RRS

For all chemicals of concern in this investigation, the Type 1 RRSs were equivalent to the notification concentrations found in Appendix I of 391-3-19-.07 of The Rules and Regulations of the State of Georgia. These are the same values used as a cleanup standard for a previous removal action along the drainage canal².

4.1.1 On-site Soil Samples (GaEPD RRS)

The soil samples collected outside of the southern containment wall contained benzo(a)pyrene at concentrations exceeding the GaEPD Type 1 soil RRS. Benzo(a)pyrene was detected at 1,800 µg/kg in soil sample FSA-SF-SCW and 2,100 µg/kg in soil sample FSA-SF-SCW-DUP; these concentrations exceed the GaEPD Type 1 soil RRS of 1,640 µg/kg. No other analytes were detected at concentrations exceeding GaEPD Type 1 soil RRS at the southern containment wall location.

No analytes were detected above GaEPD Type 1 soil RRS in the soil sample collected from the concrete trench at the northeast corner of the Site.

4.1.2 Background Sediment Sample (GaEPD RRS)

Sediment sample FSA-SD-DU01, collected from DU01, contained no analytes at concentrations exceeding GaEPD Type 1 soil RRS.

4.1.3 On-site Sediment Sample (GaEPD RRS)

Sediment sample FSA-SD-DU02, collected from DU02, contained no analytes at concentrations exceeding GaEPD Type 1 soil RRS.

4.1.4 Downgradient Drainage Ditch Sediment Sample (GaEPD RRS)

Sediment samples FSA-SD-DU03-A, FSA-SD-DU03-B, and FSA-SD-DU03-C, collected from DU03, contained no analytes at concentrations exceeding GaEPD Type 1 soil RRS.

4.1.5 Upgradient Drainage Canal Sediment Sample (GaEPD RRS)

Sediment samples FSA-SD-DU04-A, FSA-SD-DU04-B, and FSA-SD-DU04-C, collected from DU04, contained no analytes at concentrations exceeding GaEPD Type 1 soil RRS.

4.1.6 Drainage Ditch/Drainage Canal Confluence Sediment Sample (GaEPD RRS)

Sediment sample FSA-SD-CO, collected at the confluence of the drainage canal and drainage ditch, contained no analytes at concentrations exceeding GaEPD Type 1 soil RRS.

4.1.7 Downgradient Drainage Canal Sediment Sample (GaEPD RRS)

Sediment sample FSA-SD-DU05, collected from the drainage canal, downgradient of the confluence with the drainage ditch, contained no analytes at concentrations exceeding GaEPD Type 1 soil RRS.

² Williams Environmental Services, Inc. "Compliance Status Report, Volume 1: Waycross MGP Drainage Canal Project." Prepared for Atlanta Gas Light Company. May 24, 2000.

4.2 RESULTS COMPARED TO EPA RSLs and RMLs

The EPA RSL for residential soil for all contaminants discussed is lower than the RSL for industrial soil, which is lower than the EPA RML for residential soil. (In other words, if a contaminant is said to exceed the EPA RML for residential soil, it can be assumed that it also exceeded the EPA RSL for residential and industrial soil.) No analytical results exceeded the EPA RML for industrial soil.

4.2.1 On-site Soil Samples (EPA RSL/RML)

Soil samples collected from the former Seven Out site contained PAHs at levels exceeding comparison levels. Soil sample FSA-SF-CT, collected from the concrete trench at the northeast corner of the site, contained benzo(a)pyrene at 77 J+ micrograms per kilogram ($\mu\text{g}/\text{kg}$) and dibenz(a,h)anthracene at 16 $\mu\text{g}/\text{kg}$, which exceeds the EPA RSL of 15 $\mu\text{g}/\text{kg}$ for residential soil.

Soil samples FSA-SF-SCW and FSA-SF-SCW-DUP, collected from outside the southern containment wall at the location of 2004 soil sample SO-SW, contained five PAHs at levels that exceeded comparison levels. Benzo(a)anthracene (up to 2,100 $\mu\text{g}/\text{kg}$), benzo(b)fluoranthene (up to 3,100 $\mu\text{g}/\text{kg}$) and indeno(1,2,3-cd)pyrene (up to 1,700 $\mu\text{g}/\text{kg}$) were detected at levels exceeding their respective EPA RSLs for residential soil. Dibenz(a,h)anthracene was detected at 440 $\mu\text{g}/\text{kg}$, which exceeds the EPA RSL of 210 $\mu\text{g}/\text{kg}$ for industrial soil. Benzo(a)pyrene was detected at 1,800 $\mu\text{g}/\text{kg}$, which exceeds the EPA RML of 1,500 $\mu\text{g}/\text{kg}$ for residential soil.

4.2.2 Background Sediment Sample (EPA RSL/RML)

Sediment sample FSA-SD-DU01, collected from DU01, contained the same five PAHs exceeding comparison levels as the on-site soil samples. Benzo(a)anthracene (370 $\mu\text{g}/\text{kg}$), benzo(b)fluoranthene (1,500 $\mu\text{g}/\text{kg}$), dibenz(a,h)anthracene (150 $\mu\text{g}/\text{kg}$), and indeno(1,2,3-cd)pyrene (600 $\mu\text{g}/\text{kg}$) were detected above the EPA RSLs for residential soil. Benzo(a)pyrene was detected at 580 $\mu\text{g}/\text{kg}$, which exceeds the EPA RSL of 210 $\mu\text{g}/\text{kg}$ for industrial soil.

4.2.3 On-site Sediment Sample (EPA RSL/RML)

Sediment sample FSA-SD-DU02, collected from DU02, contained the same five PAHs exceeding comparison levels as the on-site soil and background sediment samples. Benzo(a)anthracene (320 $\mu\text{g}/\text{kg}$), benzo(b)fluoranthene (760 $\mu\text{g}/\text{kg}$), dibenz(a,h)anthracene (87 $\mu\text{g}/\text{kg}$), and indeno(1,2,3-cd)pyrene (340 $\mu\text{g}/\text{kg}$) were detected above the EPA RSLs for residential soil. Benzo(a)pyrene was detected at 390 $\mu\text{g}/\text{kg}$, which exceeds the EPA RSL of 210 $\mu\text{g}/\text{kg}$ for industrial soil.

4.2.4 Downgradient Drainage Ditch Sediment Sample (EPA RSL/RML)

Sediment samples FSA-SD-DU03-A, FSA-SD-DU03-B, and FSA-SD-DU03-C, collected from DU03, contained the same five PAHs exceeding comparison levels as the on-site soil and sediment samples and the background sediment sample. Benzo(a)anthracene (up to 190 $\mu\text{g}/\text{kg}$), benzo(b)fluoranthene (up to 690 $\mu\text{g}/\text{kg}$), dibenz(a,h)anthracene (up to 78 $\mu\text{g}/\text{kg}$) and indeno(1,2,3-cd)pyrene (up to 290 $\mu\text{g}/\text{kg}$) were detected above the EPA RSLs for residential soil. Benzo(a)pyrene was detected as high as 290 $\mu\text{g}/\text{kg}$, which exceeds the EPA RSL of 210 $\mu\text{g}/\text{kg}$ for industrial soil.

4.2.5 Upgradient Drainage Canal Sediment Sample (EPA RSL/RML)

Sediment samples FSA-SD-DU04-A, FSA-SD-DU04-B, and FSA-SD-DU04-C, collected from DU04, contained only benzo(a)pyrene at a concentration exceeding EPA comparison levels. Benzo(a)pyrene was detected as high as 35 µg/kg, which exceeds the EPA RSL of 15 µg/kg for residential soil.

4.2.6 Drainage Ditch/Drainage Canal Confluence Sediment Sample (EPA RSL/RML)

No PAHs were detected above comparison levels in sediment sample FSA-SD-CO, collected at the confluence of the drainage canal and drainage ditch. Benzo(a)pyrene was detected at a concentration equal to a EPA comparison level. Benzo(a)pyrene was detected at 15 J+ µg/kg, equal to the EPA RSL of 15 µg/kg for residential soil.

4.2.7 Downgradient Drainage Canal Sediment Sample (EPA RSL/RML)

Sediment sample FSA-SD-DU05, was collected from the drainage canal, downgradient of the confluence with the drainage ditch. No contaminants were detected at levels exceeding EPA RSLs.

4.3 SAMPLE REPRESENTATIVENESS

Triplicate sampling was implemented in DU03 and DU04 to assess contaminant homogeneity within the DUs. RSD values (the standard deviation divided by the sample mean) calculated from triplicate sampling above 30 percent are considered “high” and suggest that analytical results may not be representative of actual conditions³. Total RSD values for the five PAHs detected above PRG in 2004 were less than 30 percent in both sets of triplicate samples, indicating an acceptable level of representativeness. Total RSD calculations, as well as analysis of field and laboratory RSD values, are provided in Table 2 of Enclosure 2.

5.0 COMPARISON TO PREVIOUS ASSESSMENTS

Soil sample FSA-SF-SCW was intended to replicate soil sample SO-SW, collected outside the south containment wall during the 2004 removal assessment. A comparison of 2004 and 2013 analytical results is presented in the table below:

Analyte	Units	SO-SW 2004	FSA-SF-SCW 2013	FSA-SF-SCW-DUP 2013
Benzo(a)anthracene	µg/kg	2,400	1,600	2,100
Benzo(a)pyrene	µg/kg	2,800	1,800	2,100
Benzo(b)fluoranthene	µg/kg	1,800	3,100	3,100
Dibenz(a,h)anthracene	µg/kg	650	440	410 J+
Indeno(1,2,3-cd)pyrene	µg/kg	3,000	1,600	1,700

Notes:

DUP	Duplicate sample	SCW	Southern containment wall
FSA	Francis Street Assessment	SO	Soil Sample
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.	SW	Southwest corner
		SF	Surface soil sample
		µg/kg	Micrograms per kilogram

³ The 30 percent RSD threshold is based on Interstate Technology Regulatory Council ISM guidance (http://www.itrcweb.org/ism-1/7_3_Assessment_of_Error.html) and Alaska Department of Environmental Conservation ISM guidance (http://dec.alaska.gov/spar/csp/guidance/multi_increment.pdf).

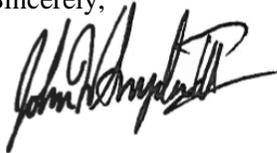
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6.0 ADDITIONAL SITE ACTIVITIES

On February 28, 2014, the EPA OSC and Tetra Tech site manager returned to the Site to survey the drainage ditch from the east end of DU01 to the west end of DU03. The survey was conducted with a theodolite and surveyor's rod. The ditch was found to have an overall slope of 0.00285 (3.19 feet of fall over the 1,120 feet length) west, towards the drainage canal. The elevation profile is depicted on Figure 9 in Enclosure 2.

If you have any questions regarding this report, please call me (John Snyder) at (678) 775-3085.

Sincerely,



John Snyder, PG
Tetra Tech START III Site Manager



Andrew F. Johnson
Tetra Tech START III Program Manager

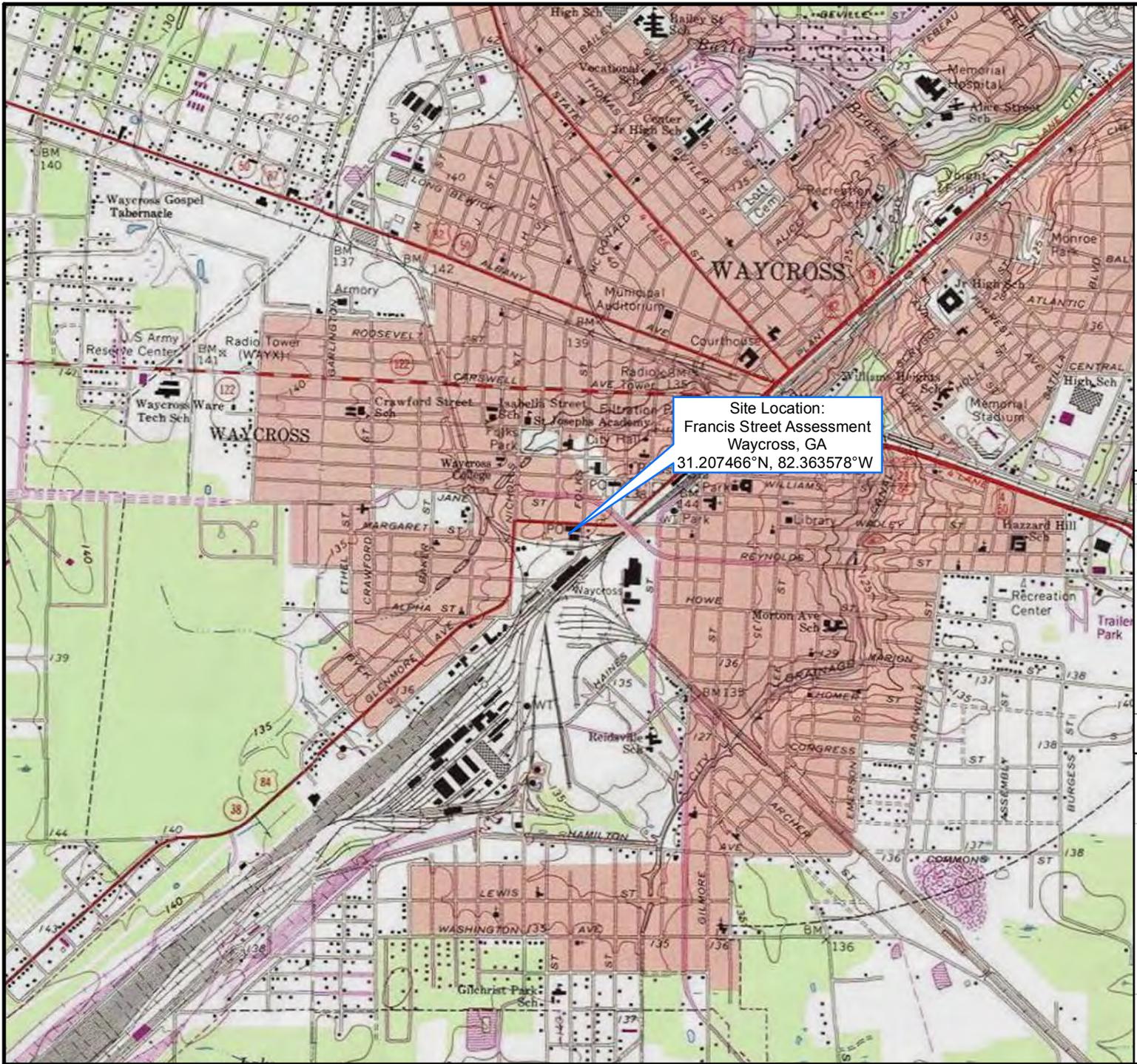
Enclosures (6)

cc: Katrina Jones, EPA Project Officer
Angel Reed, START III Document Control Coordinator

ENCLOSURE 1

FIGURES

(Nine Pages)



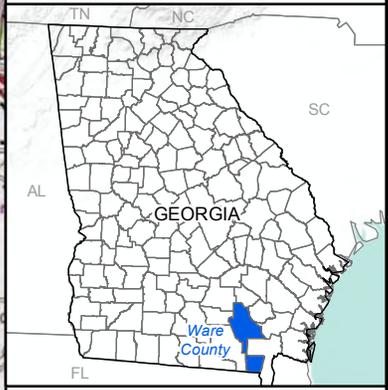
Site Location:
Francis Street Assessment
Waycross, GA
31.207466°N, 82.363578°W



0 1,000 2,000 Feet

1:24,000

Map Source:
Modified from USGS, Waycross West, GA 1967
& Waycross East, GA 1967 Quadrangles.

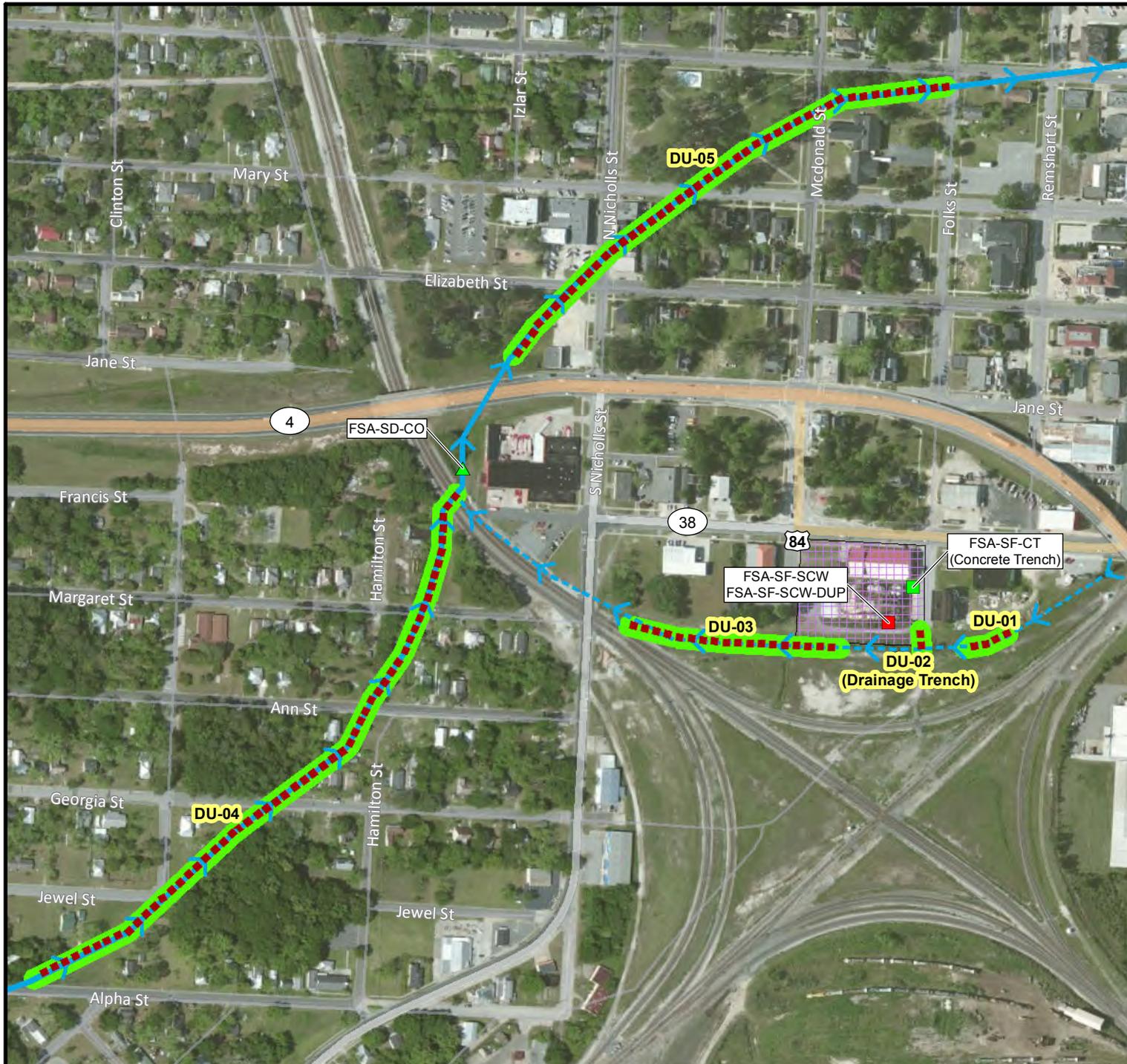


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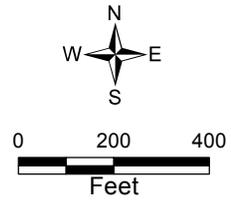
FIGURE 1
Site Location

TDD Name: Francis Street Assessment
TDD No.: TTEMI-05-003-0168
City: Waycross **County:** Ware **State:** Georgia

 **TETRA TECH**
Date: 11/13/2013
Analyst: dale.vonbusch



- Legend**
- ▲ Sediment Sample with No Exceedance
 - Surface Soil Sample with No Exceedance
 - Surface Soil Sample with Contamination above Type I GaEPD RSSs
 - Decision Unit with No Exceedance
 - Drainage Canal
 - - - Drainage Ditch
 - Former Seven Out Facility



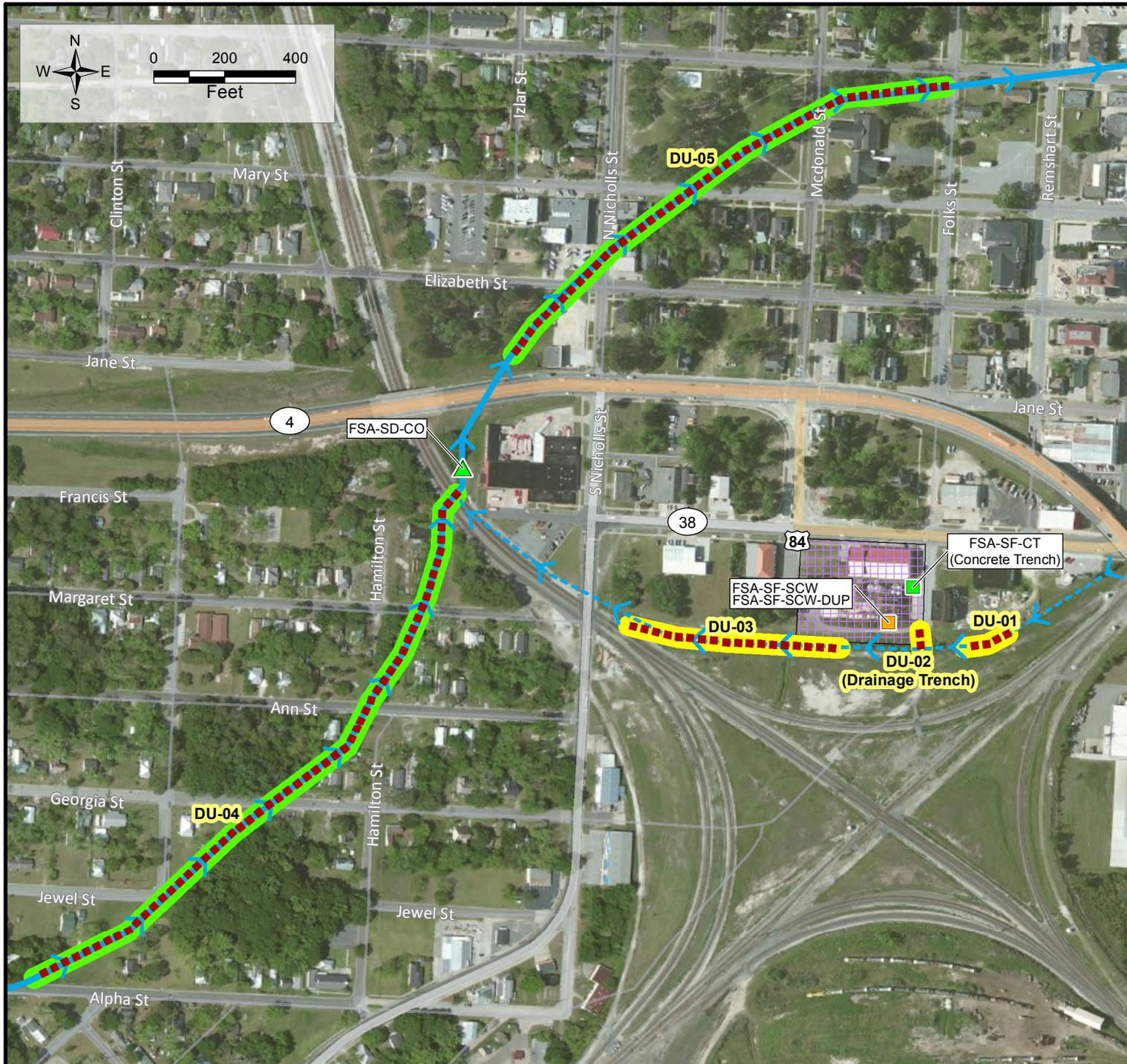
Notes:
 B(a)A - Benzo(a)anthracene
 CO - Confluence
 CT - Concrete trench
 DU - Decision unit
 FSA - Francis Street Assessment
 GaEPD - Georgia Department of Environmental Protection Division
 RSS - Risk Reduction Standard
 SCW - South containment wall
 SD - Sediment
 SF - Surface soil

Map Source:
 Modified from Bing Maps Imagery, 2012.



FIGURE 3
 Sampling Results
 Compared to GaEPD RSSs
TDD Name: Francis Street Assessment
TDD No.: TTEMI-05-003-0168
City: Waycross **County:** Ware **State:** Georgia

Tetra Tech **Date:** 3/20/2014
Analyst: dale.vonbusch



Legend

- Drainage Canal
- Drainage Ditch
- Former Seven Out Facility

Benzo(a)anthracene Results

- Sediment Sample with No Exceedance
- Surface Soil Sample with No Exceedance
- Surface Soil Sample with Industrial RSL Exceedance (2,100 µg/kg)
- Decision Unit with No Exceedance
- Decision Unit with Residential RSL Exceedance (150 µg/kg)

Notes:

- CO - Confluence
- CT - Concrete trench
- DU - Decision unit
- FSA - Francis Street Assessment
- RML - Removal Management Level
- RSL - Regional Screening Level
- SCW - South containment wall
- SD - Sediment
- SF - Surface soil
- µg/kg – micrograms per kilogram

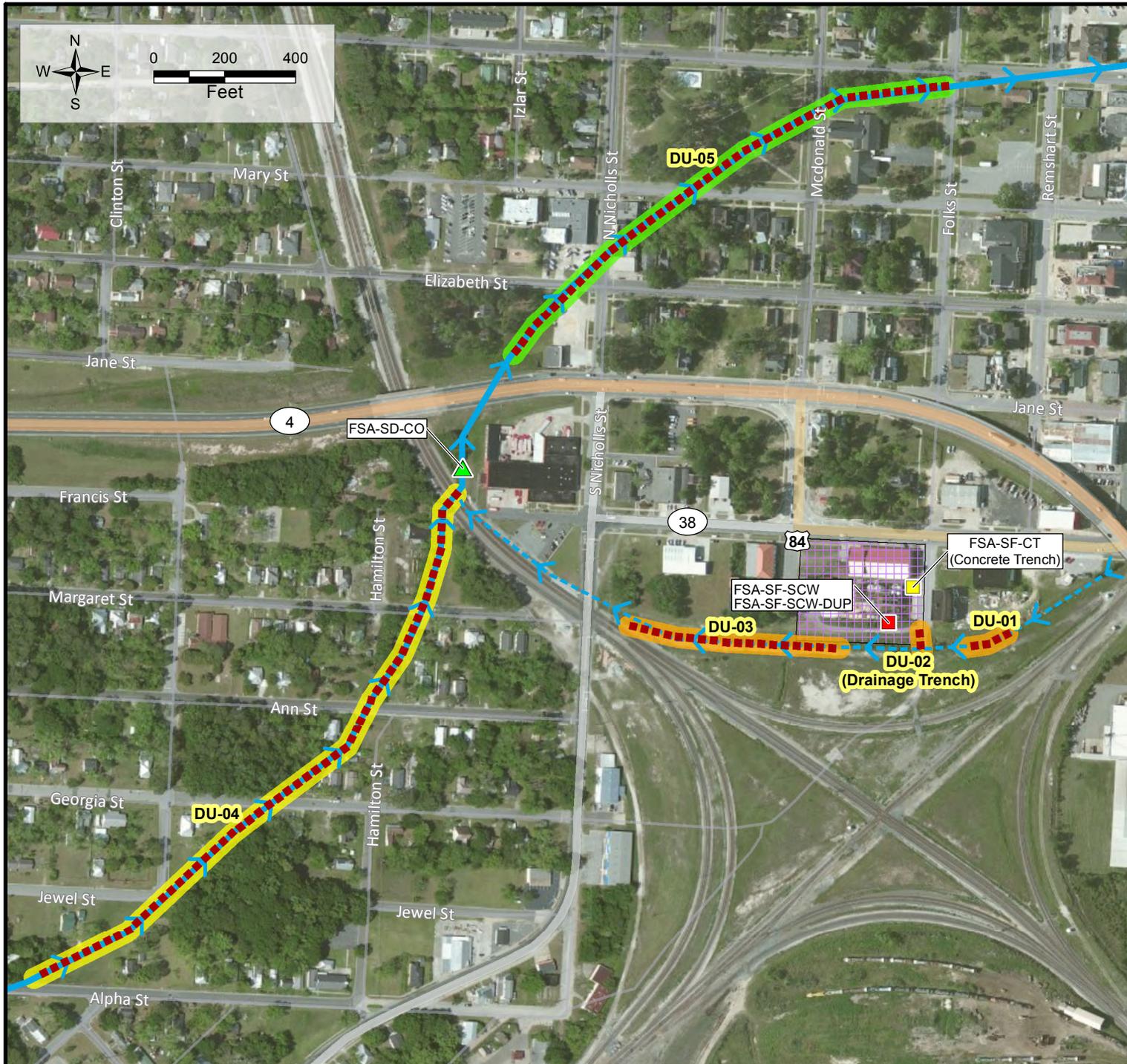
Map Source:
Modified from Bing Maps Imagery, 2012.



FIGURE 4
Benzo(a)anthracene
Sampling Results

TDD Name: Francis Street Assessment
TDD No.: TTEMI-05-003-0168
City: Waycross **County:** Ware **State:** Georgia

TETRA TECH
Date: 2/5/2014
Analyst: dale.vonbusch



Legend

- Drainage Canal
- Drainage Ditch
- Former Seven Out Facility

Benzo(a)pyrene Results

- Sediment Sample with No Exceedance
- Surface Soil Sample with Residential RSL Exceedance (15 µg/kg)
- Surface Soil Sample with Residential RML Exceedance (1,500 µg/kg)
- Decision Unit with No Exceedance
- Decision Unit with Residential RSL Exceedance (15 µg/kg)
- Decision Unit with Industrial RSL Exceedance (210 µg/kg)

Notes:

- CO - Confluence
- CT - Concrete trench
- DU - Decision unit
- FSA - Francis Street Assessment
- RML - Removal Management Level
- RSL - Regional Screening Level
- SCW - South containment wall
- SD - Sediment
- SF - Surface soil
- µg/kg – micrograms per kilogram

Map Source:
Modified from Bing Maps Imagery, 2012.

United States Environmental Protection Agency Region 4

FIGURE 5
Benzo(a)pyrene Sampling Results

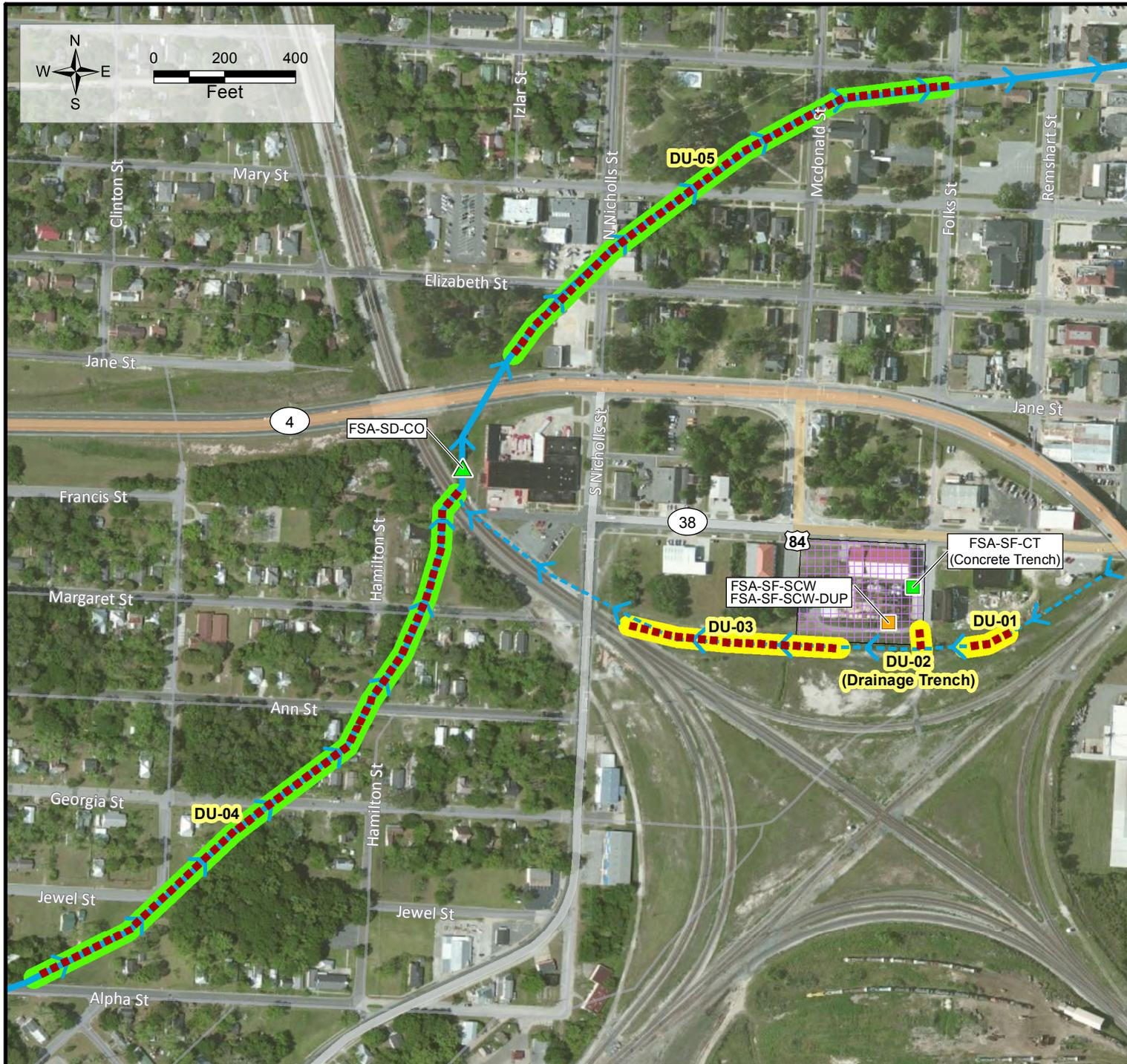
TDD Name: Francis Street Assessment

TDD No.: TTEMI-05-003-0168

City: Waycross **County:** Ware **State:** Georgia

TETRA TECH

Date: 2/5/2014
Analyst: dale.vonbusch



Legend

- Drainage Canal
- Drainage Ditch
- Former Seven Out Facility

Benzo(b)fluoranthene Results

- Sediment Sample with No Exceedance
- Surface Soil Sample with No Exceedance
- Surface Soil Sample with Industrial RSL Exceedance (2,100 µg/kg)
- Decision Unit with No Exceedance
- Decision Unit with Residential RSL Exceedance (150 µg/kg)

Notes:

- CO - Confluence
- CT - Concrete trench
- DU - Decision unit
- FSA - Francis Street Assessment
- RML - Removal Management Level
- RSL - Regional Screening Level
- SCW - South containment wall
- SD - Sediment
- SF - Surface soil
- µg/kg – micrograms per kilogram

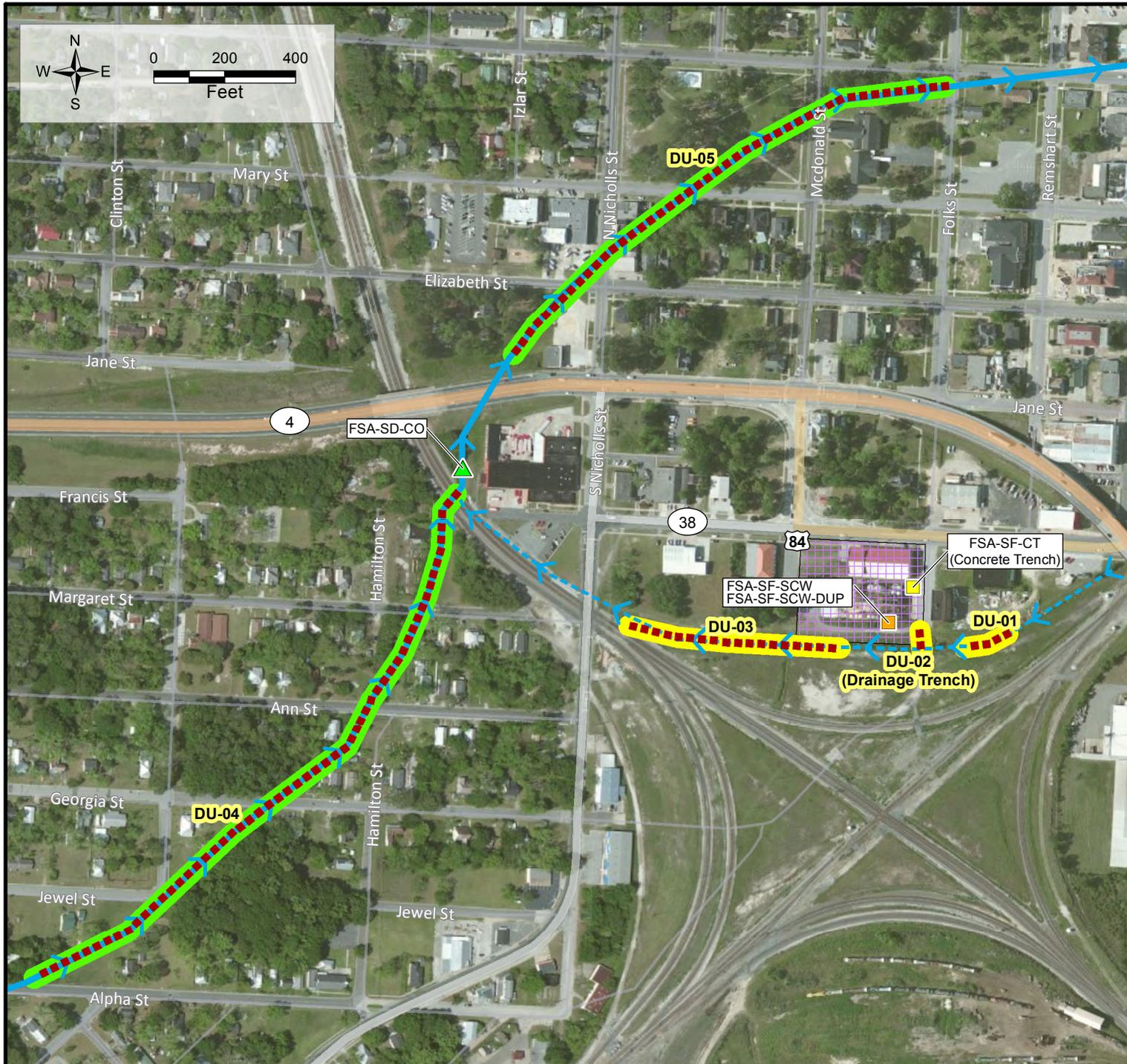
Map Source:
Modified from Bing Maps Imagery, 2012.



FIGURE 6
Benzo(b)fluoranthene
Sampling Results

TDD Name: Francis Street Assessment
TDD No.: TTEMI-05-003-0168
City: Waycross **County:** Ware **State:** Georgia

TETRA TECH
Date: 2/5/2014
Analyst: dale.vonbusch



- Legend**
- Drainage Canal
 - Drainage Ditch
 - Former Seven Out Facility
- Dibenz(a,h)anthracene Results**
- Sediment Sample with No Exceedance
 - Surface Soil Sample with Residential RSL Exceedance (15 µg/kg)
 - Surface Soil Sample with Industrial RSL Exceedance (210 µg/kg)
 - Decision Unit with No Exceedance
 - Decision Unit with Residential RSL Exceedance (15 µg/kg)

- Notes:**
- CO - Confluence
 - CT - Concrete trench
 - DU - Decision unit
 - FSA - Francis Street Assessment
 - RML - Removal Management Level
 - RSL - Regional Screening Level
 - SCW - South containment wall
 - SD - Sediment
 - SF - Surface soil
 - µg/kg – micrograms per kilogram

Map Source:
Modified from Bing Maps Imagery, 2012.



FIGURE 7
Dibenzo(a,h)anthracene
Sampling Results

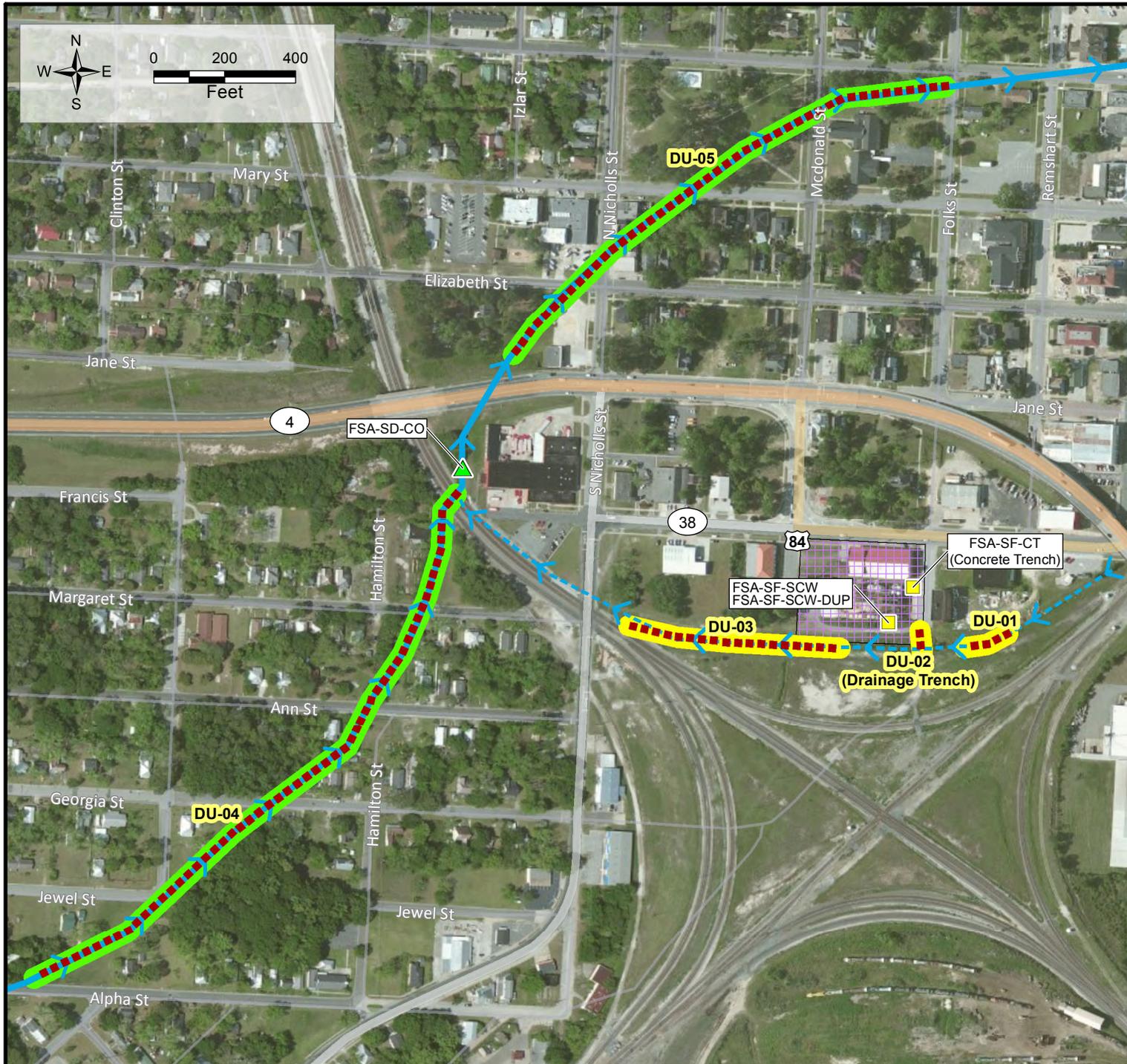
TDD Name: Francis Street Assessment

TDD No.: TTEMI-05-003-0168

City: Waycross **County:** Ware **State:** Georgia

TETRA TECH

Date: 2/5/2014
Analyst: dale.vonbusch



Legend

- Drainage Canal
- Drainage Ditch
- Former Seven Out Facility

Indeno(1,2,3-cd)pyrene Results

- Sediment Sample with No Exceedance
- Surface Soil Sample with Residential RSL Exceedance (150 µg/kg)
- Decision Unit with No Exceedance
- Decision Unit with Residential RSL Exceedance (150 µg/kg)

Notes:

CO - Confluence
 CT - Concrete trench
 DU - Decision unit
 FSA - Francis Street Assessment
 RML - Removal Management Level
 RSL - Regional Screening Level
 SCW - South containment wall
 SD - Sediment
 SF - Surface soil
 µg/kg – micrograms per kilogram

Map Source:
 Modified from Bing Maps Imagery, 2012.



FIGURE 8
 Indeno(1,2,3-cd)pyrene
 Sampling Results

TDD Name: Francis Street Assessment

TDD No.: TTEMI-05-003-0168

City: Waycross **County:** Ware **State:** Georgia

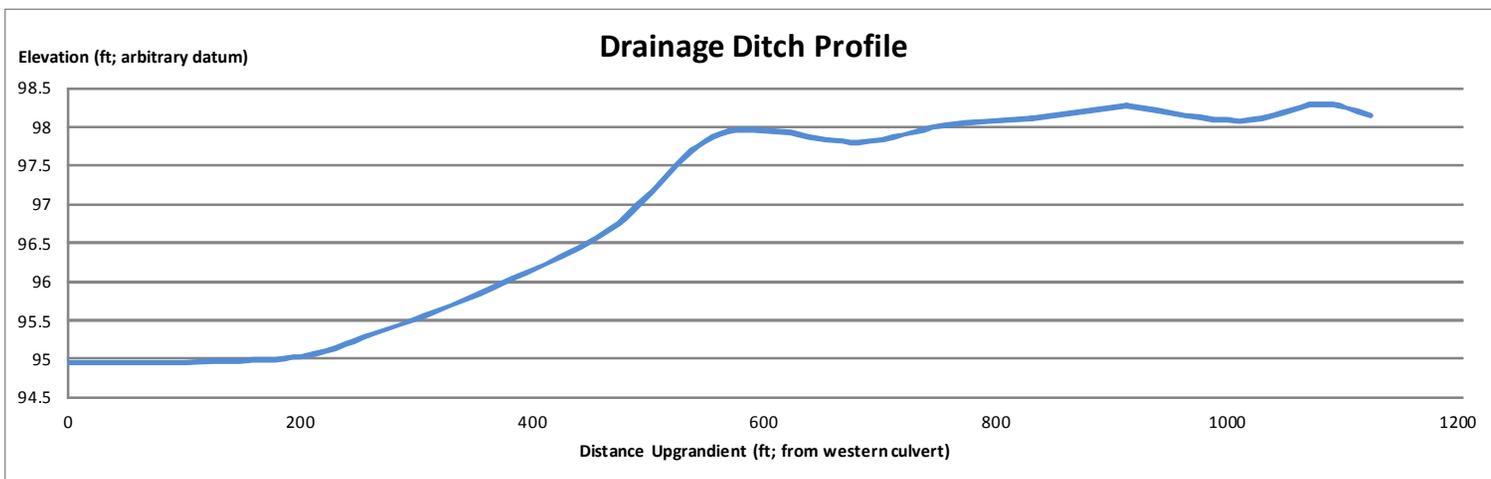
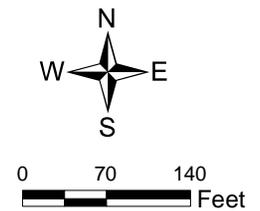
TETRA TECH

Date: 2/5/2014
Analyst: dale.vonbusch



Legend

-  Measured Segment of Drainage Ditch
-  Decision Unit
-  Former Seven Out Facility



Notes:
DU - Decision unit

Map Source:
Modified from Bing Maps Imagery, 2012.



FIGURE 9
Drainage Ditch
Elevation Profile

TDD Name: Francis Street Assessment
TDD No.: TTEMI-05-003-0168
City: Waycross **County:** Ware **State:** Georgia

 **TETRA TECH**
Date: 4/3/2014
Analyst: dale.vonbusch

ENCLOSURE 2

TABLES

(Five Pages)

TABLE 1
FRANCIS STREET ASSESSMENT
ANALYTICAL RESULTS FOR SOIL AND SEDIMENT SAMPLES COMPARED TO GAEPD TYPE 1 RRS

Analyte	GAEPD Type I Risk Reduction Standard	FSA-SF-CT	FSA-SF-SCW	FSA-SF-SCW-DUP	FSA-SD-DU01	FSA-SD-DU02	FSA-SD-DU03-A	FSA-SD-DU03-B
Semivolatile Organic Compounds (µg/kg)								
2-Methylnaphthalene	NL	39	560	470 J+	110	130	73 J	44
Acenaphthene	300,000	11 J+	130 J	54 J+	12 J	21 J	8 J	8
Acenaphthylene	130,000	35	570	690 J+	200	150	100	93
Anthracene	500,000	22	760	560 J+	230	140	100	110
Benzo[a]anthracene	5,000	58	1,600	2,100	370	320	190	180
Benzo[a]pyrene	1,640	77 J+	1,800	2,100	580	390	290	280
Benzo[b]fluoranthene	5,000	130 J+	3,100	3,100	1,500	760	670	630
Benzo[g,h,i]perylene	500,000	63	1,400	1,500	540	310	260	240
Benzo[k]fluoranthene	5,000	43	1,100	1,100	430	240	210	200
Chrysene	5,000	75 J+	2,300	2,800	510	420	270	250
Dibenz(a,h)anthracene	5,000	16	440	410 J+	150	87	75	75
Fluoranthene	500,000	160 J+	4,800	5,300	580	790	340	310
Fluorene	360,000	14 J+	360 J	120 J+	21 J+	32	13	11
Indeno[1,2,3-cd]pyrene	5,000	64	1,600	1,700	600	340	290	270
Naphthalene	100,000	76	540	400 J+	85 J+	120	53	39
Phenanthrene	110,000	94 J+	3,000	4,200	230	480	140 J	95
Pyrene	500,000	160 J+	4,500	5,800	670	780	400	370

Notes:

- CO Confluence
- CT Concrete trench
- DU Decision unit
- DUP Duplicate
- FSA Francis Street Assessment
- GAEPD Georgia Environmental Protection Division
- J The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
- J+ The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
- µg/kg Micrograms per kilogram
- NL Not listed
- SCW South containment wall
- SD Sediment
- SF Surface soil
- U The analyte was analyzed for, but not detected; the number reported is the laboratory-derived reporting limit (RL) for the constituent in that sample.
- Shaded The reported value exceeded the GAEPD Type I Risk Reduction Standard for soils

TABLE 1
FRANCIS STREET ASSESSMENT
ANALYTICAL RESULTS FOR SOIL AND SEDIMENT SAMPLES COMPARED TO GAEPD TYPE 1 RRS

Analyte	GAEPD Type I Risk Reduction Standard	FSA-SD-DU03-C	FSA-SD-DU04-A	FSA-SD-DU04-B	FSA-SD-DU04-C	FSA-SD-CO	FSA-SD-DU05
Semivolatile Organic Compounds (µg/kg)							
2-Methylnaphthalene	NL	48	3.3 J	4.1 J	4.2 J	2.2 J	3.9 J+
Acenaphthene	300,000	8.6	0.74 J	1.2 J	1.4 J	9.5	0.91 J+
Acenaphthylene	130,000	95	4.4 J	5.3	6.6	1.2 J	2.7 J+
Anthracene	500,000	110	4.3 J	5.4	6.1	1.8 J	2.6 J+
Benzo[a]anthracene	5,000	180	16 J	16	24	4.5 J	13 J+
Benzo[a]pyrene	1,640	290	23 J	24	35	6	15 J+
Benzo[b]fluoranthene	5,000	690	39 J	39	53	10	20 J+
Benzo[g,h,i]perylene	500,000	270	22 J	22	30	5.4	12 J+
Benzo[k]fluoranthene	5,000	220	13 J	12	17	3 J	8 J+
Chrysene	5,000	260	21 J	21	31	6.8	16 J+
Dibenz(a,h)anthracene	5,000	78	5.3 J	6	7.3	4.8 U	3.1 J+
Fluoranthene	500,000	310	29 J	28	38	10	20 J+
Fluorene	360,000	11	2.2 J	2.6 J	3 J	17	1.7 J+
Indeno[1,2,3-cd]pyrene	5,000	290	22 J	22	30	5.1	11 J+
Naphthalene	100,000	44	4.1 J	5.3	5.8	3.3 J	3.6 J+
Phenanthrene	110,000	87	10	9.2	12	6	6.1 J+
Pyrene	500,000	370	32 J	35	41	14	27 J+

Notes:

- CO Confluence
- CT Concrete trench
- DU Decision unit
- DUP Duplicate
- FSA Francis Street Assessment
- GAEPD Georgia Environmental Protection Division
- J The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
- J+ The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
- µg/kg Micrograms per kilogram
- NL Not listed
- SCW South containment wall
- SD Sediment
- SF Surface soil
- U The analyte was analyzed for, but not detected; the number reported is the laboratory-derived reporting limit (RL) for the constituent in that sample.
- Shaded The reported value exceeded the GAEPD Type I Risk Reduction Standard for soils

TABLE 2
FRANCIS STREET ASSESSMENT
ANALYTICAL RESULTS FOR SOIL AND SEDIMENT SAMPLES COMPARED TO EPA RSLs AND RMLs

Analyte	Regional Screening Level		Removal Management Level		FSA-SF-CT	FSA-SF-SCW	FSA-SF-SCW-DUP	FSA-SD-DU01	FSA-SD-DU02	FSA-SD-DU03-A	FSA-SD-DU03-B
	Residential Soil	Industrial Soil	Residential Soil	Industrial Soil							
Semivolatile Organic Compounds (µg/kg)											
2-Methylnaphthalene	16,000	53,000	690,000	6,600,000	39	560	470 J+	110	130	73 J	44
Acenaphthene	340,000	33,000,000	10,000,000	99,000,000	11 J+	130 J	54 J+	12 J	21 J	8 J	8.3
Acenaphthylene	NL	NL	NL	NL	35	570	690 J+	200	150	100	93
Anthracene	1,700,000	17,000,000	52,000,000	500,000,000	22	760	560 J+	230	140	100	110
Benzo[a]anthracene	150	2,100	15,000	210,000	58	1,600	2,100	370	320	190	180
Benzo[a]pyrene	15	210	1,500	21,000	77 J+	1,800	2,100	580	390	290	280
Benzo[b]fluoranthene	150	2,100	15,000	210,000	130 J+	3,100	3,100	1,500	760	670	630
Benzo[g,h,i]perylene	NL	NL	NL	NL	63	1,400	1,500	540	310	260	240
Benzo[k]fluoranthene	1,500	21,000	150,000	2,100,000	43	1,100	1,100	430	240	210	200
Chrysene	15,000	210,000	1,500,000	21,000,000	75 J+	2,300	2,800	510	420	270	250
Dibenz(a,h)anthracene	15	210	1,500	21,000	16	440	410 J+	150	87	75	75
Fluoranthene	230,000	2,200,000	6,900,000	66,000,000	160 J+	4,800	5,300	580	790	340	310
Fluorene	230,000	2,200,000	6,900,000	66,000,000	14 J+	360 J	120 J+	21 J-	32	13	11
Indeno[1,2,3-cd]pyrene	150	2,100	15,000	210,000	64	1,600	1,700	600	340	290	270
Naphthalene	3,600	18,000	360,000	1,800,000	76	540	400 J+	85 J-	120	53	39
Phenanthrene	NL	NL	NL	NL	94 J+	3,000	4,200	230	480	140 J	95
Pyrene	170,000	1,700,000	5,200,000	50,000,000	160 J+	4,500	5,800	670	780	400	370

Notes:

- CO Confluence
- CT Concrete trench
- DU Decision unit
- DUP Duplicate
- EPA U.S. Environmental Protection Agency
- FSA Francis Street Assessment
- J The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
- J+ The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
- µg/kg Micrograms per kilogram
- NL Not listed
- SCW South containment wall
- SD Sediment
- SF Surface soil
- U The analyte was analyzed for, but not detected; the number reported is the laboratory-derived reporting limit (RL) for the constituent in that sample.
- ITALICS* Results equal or exceed the EPA Regional Screening Levels for residential soil
- BOLD** Results equal or exceed the EPA Regional Screening Levels for industrial soil
- Results equal or exceed the EPA Removal Management Levels for residential soil

TABLE 2
FRANCIS STREET ASSESSMENT
ANALYTICAL RESULTS FOR SOIL AND SEDIMENT SAMPLES COMPARED TO EPA RSLs AND RMLs

Analyte	Regional Screening Level		Removal Management Level		FSA-SD-DU03-C	FSA-SD-DU04-A	FSA-SD-DU04-B	FSA-SD-DU04-C	FSA-SD-CO	FSA-SD-DU05
	Residential Soil	Industrial Soil	Residential Soil	Industrial Soil						
Semivolatile Organic Compounds (µg/kg)										
2-Methylnaphthalene	16,000	53,000	690,000	6,600,000	48	3.3 J	4.1 J	4.2 J	2.2 J	3.9 J+
Acenaphthene	340,000	33,000,000	10,000,000	99,000,000	8.6	0.74 J	1.2 J	1.4 J	9.5	0.91 J+
Acenaphthylene	NL	NL	NL	NL	95	4.4 J	5.3	6.6	1.2 J	2.7 J+
Anthracene	1,700,000	17,000,000	52,000,000	500,000,000	110	4.3 J	5.4	6.1	1.8 J	2.6 J+
Benzo[a]anthracene	150	2,100	15,000	210,000	180	16 J	16	24	4.5 J	13 J+
Benzo[a]pyrene	15	210	1,500	21,000	290	23 J	24	35	6	15 J+
Benzo[b]fluoranthene	150	2,100	15,000	210,000	690	39 J	39	53	10	20 J+
Benzo[g,h,i]perylene	NL	NL	NL	NL	270	22 J	22	30	5.4	12 J+
Benzo[k]fluoranthene	1,500	21,000	150,000	2,100,000	220	13 J	12	17	3 J	8 J+
Chrysene	15,000	210,000	1,500,000	21,000,000	260	21 J	21	31	6.8	16 J+
Dibenz(a,h)anthracene	15	210	1,500	21,000	78	5.3 J	6	7.3	4.8 U	3.1 J+
Fluoranthene	230,000	2,200,000	6,900,000	66,000,000	310	29 J	28	38	10	20 J+
Fluorene	230,000	2,200,000	6,900,000	66,000,000	11	2.2 J	2.6 J	3 J	17	1.7 J+
Indeno[1,2,3-cd]pyrene	150	2,100	15,000	210,000	290	22 J	22	30	5.1	11 J+
Naphthalene	3,600	18,000	360,000	1,800,000	44	4.1 J	5.3	5.8	3.3 J	3.6 J+
Phenanthrene	NL	NL	NL	NL	87	10	9.2	12	6	6.1 J+
Pyrene	170,000	1,700,000	5,200,000	50,000,000	370	32 J	35	41	14	27 J+

Notes:

- CO Confluence
- CT Concrete trench
- DU Decision unit
- DUP Duplicate
- EPA U.S. Environmental Protection Agency
- FSA Francis Street Assessment
- J The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
- J+ The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
- µg/kg Micrograms per kilogram
- NL Not listed
- SCW South containment wall
- SD Sediment
- SF Surface soil
- U The analyte was analyzed for, but not detected; the number reported is the laboratory-derived reporting limit (RL) for the constituent in that sample.
- ITALICS* Results equal or exceed the EPA Regional Screening Levels for residential soil
- BOLD** Results equal or exceed the EPA Regional Screening Levels for industrial soil
- Results equal or exceed the EPA Removal Management Levels for residential soil

TABLE 3
FRANCIS STREET ASSESSMENT
RELATIVE STANDARD DEVIATION ANALYSIS¹

Analyte (ng/kg)	Total RSD Analysis (performed on field triplicates)					Laboratory RSD Analysis (performed on laboratory triplicates)					Total RSD ²	Laboratory RSD ³	Field RSD ⁴
	FSA-SD-DU03-A	FSA-SD-DU03-B	FSA-SD-DU03-C	DU Standard Deviation	Sample Mean	FSA-SD-DU03-A	FSA-SD-DU03-A	FSA-SD-DU03-A	Sample Standard Deviation	Sample Mean			
2-Methylnaphthalene	73,000	44,000	48,000	15,716	55,000	73,000	62,000	47,300	12,894	60,767	28.6%	21.2%	7.4%
Acenaphthene	8,000	8,300	8,600	300	8,300	8,000	7,900	6,880	620	7,593	3.6%	8.2%	-4.5%
Acenaphthylene	100,000	93,000	95,000	3,606	96,000	100,000	96,900	85,400	7,692	94,100	3.8%	8.2%	-4.4%
Anthracene	100,000	110,000	110,000	5,774	106,667	100,000	101,000	102,000	1,000	101,000	5.4%	1.0%	4.4%
Benzo[a]anthracene	190,000	180,000	180,000	5,774	183,333	190,000	172,000	187,000	9,644	183,000	3.1%	5.3%	-2.1%
Benzo[a]pyrene	290,000	280,000	290,000	5,774	286,667	290,000	257,000	283,000	17,388	276,667	2.0%	6.3%	-4.3%
Benzo[b]fluoranthene	670,000	630,000	690,000	30,551	663,333	670,000	661,000	607,000	34,073	646,000	4.6%	5.3%	-0.7%
Benzo[g,h,i]perylene	260,000	240,000	270,000	15,275	256,667	260,000	255,000	227,000	17,786	247,333	6.0%	7.2%	-1.2%
Benzo[k]fluoranthene	210,000	200,000	220,000	10,000	210,000	210,000	210,000	180,000	17,321	200,000	4.8%	8.7%	-3.9%
Chrysene	270,000	250,000	260,000	10,000	260,000	270,000	259,000	238,000	16,258	255,667	3.8%	6.4%	-2.5%
Dibenz(a,h)anthracene	75,000	75,000	78,000	1,732	76,000	75,000	76,700	73,900	1,411	75,200	2.3%	1.9%	0.4%
Fluoranthene	340,000	310,000	310,000	17,321	320,000	340,000	293,000	267,000	37,000	300,000	5.4%	12.3%	-6.9%
Fluorene	13,000	11,000	11,000	1,155	11,667	13,000	12,000	11,000	1,000	12,000	9.9%	8.3%	1.6%
Indeno[1,2,3-cd]pyrene	290,000	270,000	290,000	11,547	283,333	290,000	287,000	249,000	22,855	275,333	4.1%	8.3%	-4.2%
Naphthalene	53,000	39,000	44,000	7,095	45,333	53,000	49,900	40,500	6,509	47,800	15.6%	13.6%	2.0%
Phenanthrene	140,000	95,000	87,000	28,572	107,333	140,000	95,900	86,000	28,748	107,300	26.6%	26.8%	-0.2%
Pyrene	400,000	370,000	370,000	17,321	380,000	400,000	358,000	331,000	34,771	363,000	4.6%	9.6%	-5.0%

Analyte (ng/kg)	Total RSD Analysis (performed on field triplicates)					Laboratory RSD Analysis (performed on laboratory triplicates)					Total RSD ²	Laboratory RSD ³	Field RSD ⁴
	FSA-SD-DU04-A	FSA-SD-DU04-B	FSA-SD-DU04-C	DU Standard Deviation	Sample Mean	FSA-SD-DU04-A	FSA-SD-DU04-A	FSA-SD-DU04-A	Sample Standard Deviation	Sample Mean			
2-Methylnaphthalene	3,300	4,100	4,400	569	3,933	3,300	5,870	4,470	1,287	4,547	14.5%	28.3%	-13.8%
Acenaphthene	740	1,200	1,400	338	1,113	740	1,500	769	431	1,003	30.4%	42.9%	-12.5%
Acenaphthylene	4,400	5,300	6,600	1,106	5,433	4,400	8,550	4,350	2,411	5,767	20.4%	41.8%	-21.4%
Anthracene	4,300	5,400	6,100	907	5,267	4,300	8,020	4,370	2,128	5,563	17.2%	38.2%	-21.0%
Benzo[a]anthracene	16,000	16,000	24,000	4,619	18,667	16,000	56,400	13,300	24,142	28,567	24.7%	84.5%	-59.8%
Benzo[a]pyrene	23,000	24,000	35,000	6,658	27,333	23,000	77,400	20,800	32,062	40,400	24.4%	79.4%	-55.0%
Benzo[b]fluoranthene	39,000	39,000	53,000	8,083	43,667	39,000	98,400	35,600	35,317	57,667	18.5%	61.2%	-42.7%
Benzo[g,h,i]perylene	22,000	22,000	30,000	4,619	24,667	22,000	55,800	19,900	20,148	32,567	18.7%	61.9%	-43.1%
Benzo[k]fluoranthene	13,000	12,000	17,000	2,646	14,000	13,000	34,700	10,900	13,177	19,533	18.9%	67.5%	-48.6%
Chrysene	21,000	21,000	31,000	5,774	24,333	21,000	73,900	17,900	31,475	37,600	23.7%	83.7%	-60.0%
Dibenz(a,h)anthracene	5,300	6,000	7,300	1,015	6,200	5,300	12,700	5,090	4,334	7,697	16.4%	56.3%	-39.9%
Fluoranthene	29,000	28,000	38,000	5,508	31,667	29,000	64,600	22,900	22,522	38,833	17.4%	58.0%	-40.6%
Fluorene	2,200	2,600	3,000	400	2,600	2,200	3,000	2,150	477	2,450	15.4%	19.5%	-4.1%
Indeno[1,2,3-cd]pyrene	22,000	22,000	30,000	4,619	24,667	22,000	57,200	20,000	20,924	33,067	18.7%	63.3%	-44.6%
Naphthalene	4,100	5,300	5,800	874	5,067	4,100	8,850	5,140	2,497	6,030	17.2%	41.4%	-24.2%
Phenanthrene	10,000	9,200	12,000	1,442	10,400	10,000	12,400	9,160	1,681	10,520	13.9%	16.0%	-2.1%
Pyrene	32,000	35,000	41,000	4,583	36,000	32,000	74,100	27,100	25,837	44,400	12.7%	58.2%	-45.5%

Notes:

- ¹ All results and calculations are presented without regard for data qualifiers
 - ² Total RSD is calculated by dividing the Total RSD Analysis standard deviation by the Total RSD Analysis sample mean.
 - ³ Laboratory RSD is calculated by dividing the Laboratory RSD Analysis standard deviation by the Laboratory RSD Analysis sample mean.
 - ⁴ Field RSD is calculated by subtracting the Laboratory RSD value from the Total RSD value.
- DU Decision unit
FSA Francis Street Assessment
ng/kg Nanograms per kilogram
% percent
RSD Relative standard deviation
SD Sediment sample

ENCLOSURE 3
PHOTOGRAPHIC LOG
(Six Pages)



**OFFICIAL PHOTOGRAPH NO. 1
U.S. ENVIRONMENTAL PROTECTION AGENCY**

TDD Number: TTEMI-05-003-0168

Location: Francis Street Assessment

Orientation: West

Date: December 19, 2013

Photographer: John Snyder, Tetra Tech

Witness: Amber Skiles, Tetra Tech

Subject: The former Seven Out wastewater treatment facility (located at 901 Francis Street, Waycross, Ware County, Georgia) as well as surrounding stormwater drainage pathways, was the focus of the Francis Street Assessment. The former facility has been decommissioned, and most of the structures and equipment associated with former operations have been demolished and removed. Soil samples FSA-SF-SCW and FSA-SF-SCW-DUP were collected south (out of frame) of the former filter press platform visible on the left of the frame.



**OFFICIAL PHOTOGRAPH NO. 2
U.S. ENVIRONMENTAL PROTECTION AGENCY**

TDD Number: TTEMI-05-003-0168

Location: Francis Street Assessment

Orientation: Northwest

Date: December 19, 2013

Photographer: John Snyder, Tetra Tech

Witness: Amber Skiles, Tetra Tech

Subject: Soil sample FSA-SF-CT was collected from a small concrete trench at the northeast corner of the former Seven Out Site.



**OFFICIAL PHOTOGRAPH NO. 3
U.S. ENVIRONMENTAL PROTECTION AGENCY**

TDD Number: TTEMI-05-003-0168

Location: Francis Street Assessment

Orientation: South

Date: December 19, 2013

Photographer: John Snyder, Tetra Tech

Witness: Amber Skiles, Tetra Tech

Subject: Tetra Tech field team members, U.S. Environmental Protection Agency (EPA) personnel, Ware County Health Department personnel, and Georgia Department of Public Health personnel participated in the sampling event. Sediment samples from five decision units (DU) were collected using incremental sampling methodology (ISM). ISM sampling was conducted using a specialized ISM sampler and stainless steel bowls and spoons.



OFFICIAL PHOTOGRAPH NO. 4
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number: TTEMI-05-003-0168 **Location:** Francis Street Assessment
Orientation: East **Date:** December 19, 2013
Photographer: John Snyder, Tetra Tech **Witness:** Amber Skiles, Tetra Tech
Subject: The portion of the drainage ditch east of the former Seven Out Site was designated DU-01 and served as the background sediment sample location.



**OFFICIAL PHOTOGRAPH NO. 5
U.S. ENVIRONMENTAL PROTECTION AGENCY**

TDD Number: TTEMI-05-003-0168

Location: Francis Street Assessment

Orientation: West

Date: December 19, 2013

Photographer: John Snyder, Tetra Tech

Witness: Amber Skiles, Tetra Tech

Subject: The portion of the drainage ditch running between the former Seven Out Site and the railroad tracks west of the Site was designated DU-03.



OFFICIAL PHOTOGRAPH NO. 6
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number: TTEMI-05-003-0168

Location: Francis Street Assessment

Orientation: South

Date: December 19, 2013

Photographer: John Snyder, Tetra Tech

Witness: Amber Skiles, Tetra Tech

Subject: The portion of the drainage canal running between the Highway 82 overpass (background of frame) and Folk Street was designated DU-05.

ENCLOSURE 4
LOGBOOK NOTES
(12 Sheets)

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Francis Street
Assessment



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ALL-WEATHER
UNIVERSAL

№ 371

Waycross, Georgia

05-003-0168

11/14/13

1410 - START Snyder on-site —
 Property mortgage owner on site
 as well

Weather: Breezy, clear, 65° —

Objective: recon site w/ OSC —
 Hnyser. Will attend Public Availability
 Session

1445 - OSC Hnyser on site —

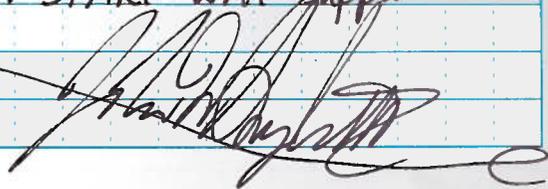
1500 - EPA ³⁰³ ² ^{line} Carpentero on site —
 Mortgage holder Charles Tealon —
 Dual State LLC (owner)
 386-679-1667

1515 - EPA/START walk site, discuss
 sampling approach

1545 - EPA Lane offsite to set up
 meeting

1615 - EPA/START return to site —
 "First Coast News" on-site

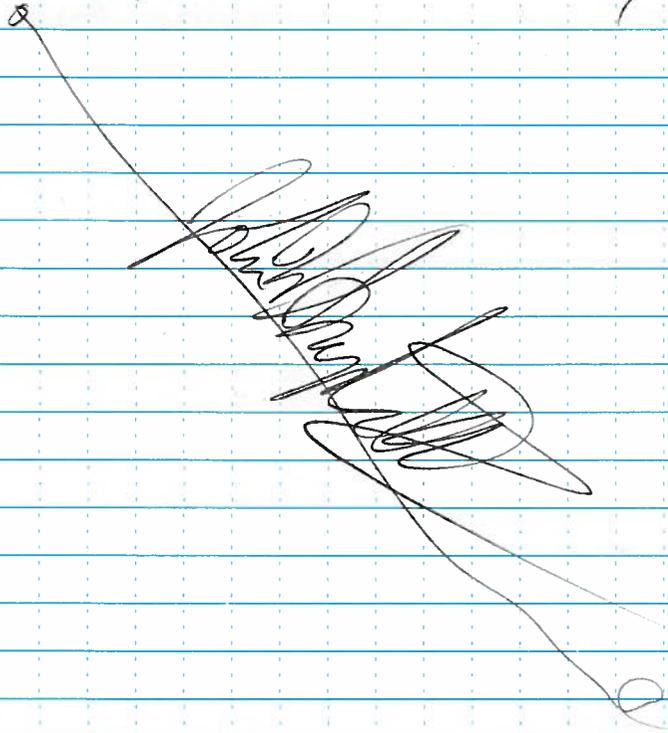
1630 - EPA/START off site; tonight EPA
 hosts Public Availability Session @
 Town Hall. START will support



Scale: 1 square = _____

12/18/13

travel day —
 1330 - START Snyder + Stiles
 depart Duluth Office —
 1700 - Arrive in Waycross; —
 Ensure background files —
 loaded correctly onto —
 GPS. Depart site for —
 hotel; done for the day —



Scale: 1 square = _____

Rite in the Rain

12/19/13

0700 - START Snyder (NS) + Skiles (AS)

on-site; begin equipment prep -
Objective: conduct soil + sediment
sampling on site + off site

Weather: clear, high of 74°, currently 40°

H+S topics to cover: traffic, sun/hydr.

0730 DOH Stephen Johnson -

on-site ~~(912) 288-1266~~ 1266 (912) 288-1266Stephen will be helping tomorrow
if needed - just stopped to meet
+ greet.

0750 - Noreen Kloc (GaPOH) -

Dept of Public Hazard on site -

0815 - OSC Huyser on site -

H+S Meeting

0855 - Collect soil sample FSA -
SF-CT from 0-6" bgs (NS/MSN)

0912 - Collect soil sample FSA

SF-SCW from 0-6" bgs

0918 - Collect soil sample FSA SF-EKW-DUP
from 0-6" bgs0935 - Kelly McDonner w. In Public -
Health on site

Scale: 1 square = _____

12/19/13

1045 - Collect sediment sample
FSA-SD-DU05 for 30-increment
composite (10 stations, 3 increments
per station)1120 - Collect sediment sample
FSA-SD-CO from 5-pt composite -
in "confluence" area. 0-3" bgs -1235 - Collect sediment sample
FSA-SD-DU04-A (30-pt comp) -1240 - Collect sediment sample
FSA-SD-DU04-B (30-pt comp) -1245 - Collect sediment sample
FSA-SD-DU04-C (30-pt comp) -

1255 - Break for lunch

1345 - Back on site

1500 - Collect sediment sample
FSA-SD-DU03-A from DU03 -
(30 pt composite; 0-3" bgs)1505 - Collect sediment sample
FSA-SD-DU03-B from DU03 -
(30 pt composite from 0-3" bgs) -1510 - Collect sediment sample
FSA-SD-DU03-C from DU03
(30 pt composite from 0-3" bgs) -Scale: 1 square = _____
 Note in the Rain

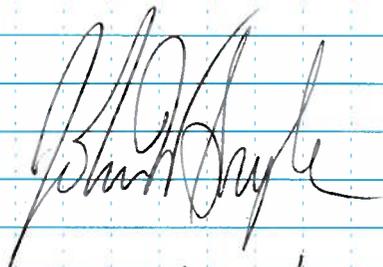
12/17/13

- 1520 - OSC Haysler offsite to -
 procure brotz sampling equip.
- 1545 - Collect sediment sample
 FSA-SD-DU01 from DU-01
 (0-3" bgs) (MS/MSD) -
- Deviation from QAPP: The -
 sediment sample collected -
 from DU02 will be a -
 15 pt composite due to DU size
 (5 stations x 3 increments/station)
- 1610 - Collect sample (sediment)
 FSA-SD-DU02 (3x5 increments) from
 0-3" bgs
- 1615 - Field blank FSA-FB-01 collected
- 1620 - Equipment blank FSA-FB-01 collected
- 1730 - START/EPA/DoH offsite
- Done for day



End

(photolog on pp 46, 47)



12/31/13

2/28/14

1015 - START Snyder + OSC
 Hysos on-site to
 conduct land survey of
 drainage ditch for inclusion
 in final Assessment Report.
 Survey to be conducted w/
 theodolite + rod.

1020 - H+S meeting

1030 - Begin survey

1345 - Offsite



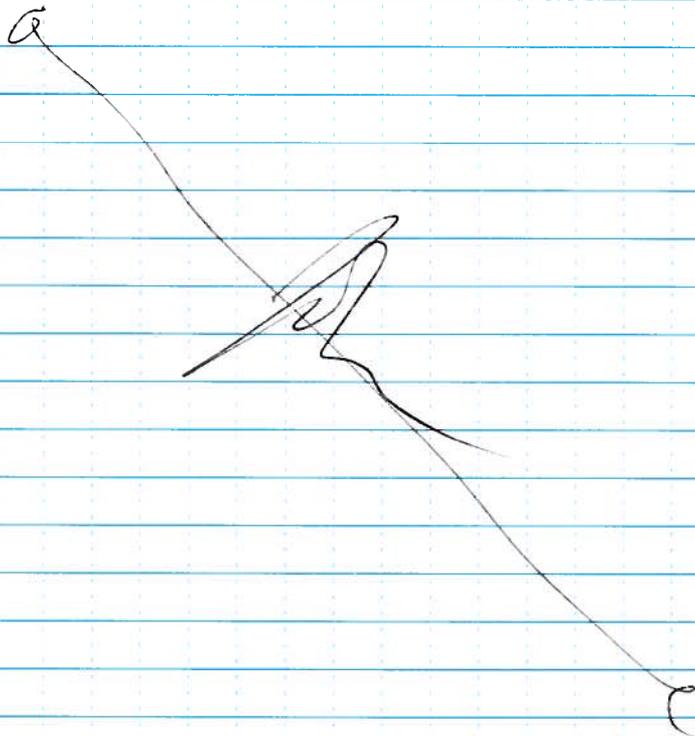
Scale: 1 square = _____

2/28/14

Survey notes

begin on

pg 8



Scale: 1 square = _____

2/28/2014

1021 - CSC HIKER START SWYDER
 TRAVEL OF DITCH BEHIND SEWER
 OUT FACILITY

TOPCON AG-308 TRAVEL

TACHEOMETRIC CONSTANTS ASSUMED

$$D = Cs + k \text{ where } C = 100$$

D = HORIZONTAL DIST $k = 0$

S = STADA READING

$$\text{AND } S = D \cos \theta = C \cos^2 \theta$$

$$V = D \sin \theta = C \cos \theta \sin \theta$$

S = HORIZ DIST AT ANGLE

D = DIST TO ROD

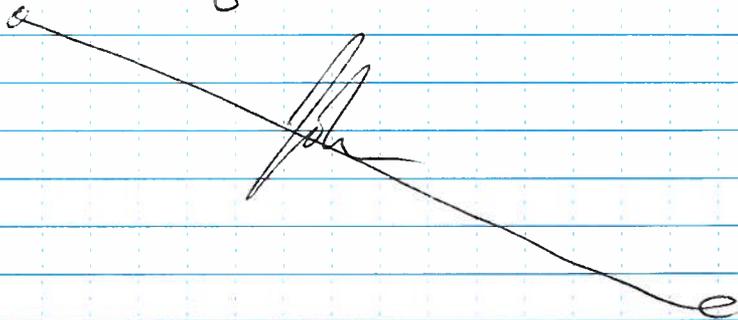
V = VERTICAL DIST TO CENTERLINE

$$\text{ELEV. } \Delta H = V + HI - CL$$

CL = CENTERLINE

HI = HEIGHT OF INSTRUMENT

θ = ANGLE OF SCOPE



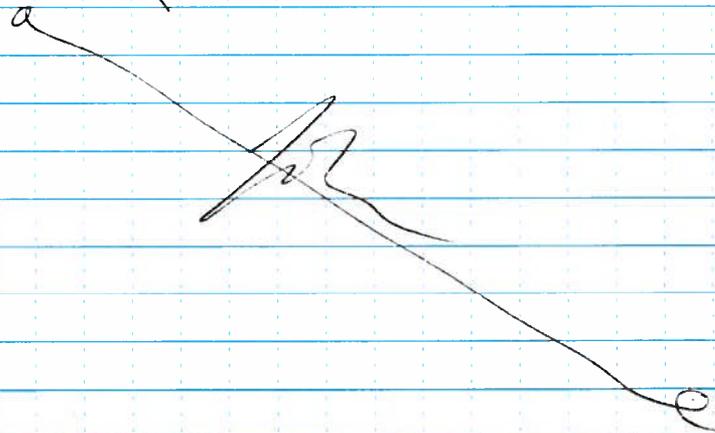
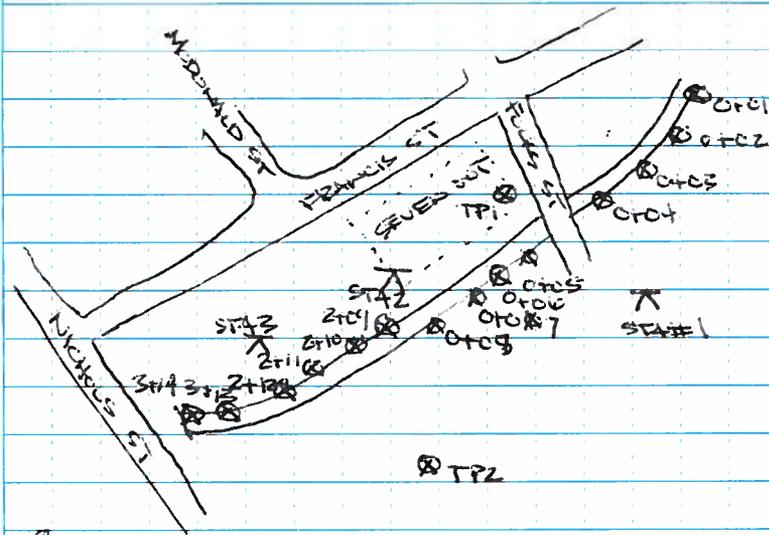
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2/28/2014

PROFILE LEVELING

N. HUISER T

J SWYDER O



Scale: 1 square = _____

Write in the Rain

2/28/14

STA	ES (+)	HI	FS (-)	BEV (FT)	US (FT)	CL (FT)	LS (FT)
TP1	8.1 ^S			0	9.4 ^S	8.1 ^S	6.9 ^D
		8.15			15.05	16.70	15.49
0+0 ⁰¹			16.76	16.76 ⁰¹	18.05	16.70	15.49
0+0 ⁰²			9.86	98.29	10.92	9.80	8.80
0+0 ⁰³			10.08	98.07	10.9 ^{US 3}	10.0 ⁸	9.33
0+0 ⁰⁴			9.88	98.27	10.27	9.93	9.49
0+0 ⁰⁵			10.04	98.11	10.43	10.04	9.60
0+0 ⁰⁶			10.14	98.01	10.89	10.14	9.40
0+0 ⁰⁷			10.35	97.80	11.45	10.3 ³⁵	9.25
0+0 ⁰⁸			10.25	97.90	12.91	10.2 ²⁵	9.60
TP2			6.32	10.83	8.23	6.3 ²	4.41

Scale: 1 square =

2/28/14

TOT (FT)	EV	NOTE
0°0'	0°0'	
0°0'	0°0'	INLET AT N CORNER CN PUMP
0°15'	0°31'	LDS TOP
70°58.5'	0°0'	LDS PALM
02°52'	0°0'	LDS BRUSH
29°32.5'	0°0'	LDS PALM #2
330°21'	0°0'	↓ AFTER CONFLUENCE
307°35'	0°0'	LDS BIG GREEN BRUSH
298°03.5'	0°0'	LDS IN LINE W/TANK FARM EDGE
292°28.5'	0°0'	LDS CENTER OF (P) LOT
267°08.5'		TELEPHONE POLE

Scale: 1 square =

Rite in the Rain

2/28/14

STA	BS	HI	FS	ELEV	US	CL	IS
TP2	6.24			101.83	7.32	6.24	5.20
		106.07					
Z+09			11.39	96.68	11.80	11.39	10.98
Z+10			12.23	95.84	13.17	12.23	11.27
Z+11			12.75	95.32	14.14	12.75	11.30
Z+12			13.07	95.00	14.83	13.07	11.30
TP2	6.24			101.83		6.24	
TP2	3.17			101.83	4.17	3.20	
		105.00					
Z+13			10.06	94.94	10.98	10.06	9.13
						10.55	
					13.52	12.00	10.48

Scale: 1 square = _____

2/28/14

TOT	CH	CV	NOTE
	0° 0'	0° 0'	TELEPHONE POLE FROM STA 2
	46° 12.5'	0° 0'	TREE ^W E EDGE OF (P) LOT, RDB
	60° 02.5'	0° 0'	RDB W EDGE OF 700T BLDG
	70° 21.5'	0° 0'	RDB
	73° 13.5'	0° 0'	RDB
			CHECK FROM STA 2
	0° 0'	0° 0'	BACKSIGHT FROM STA 3
	129° 34.5'	0° 0'	RDB FROM STA 3
	135° 59.5'	0° 0'	
	135° 59.5'	0° 17'	

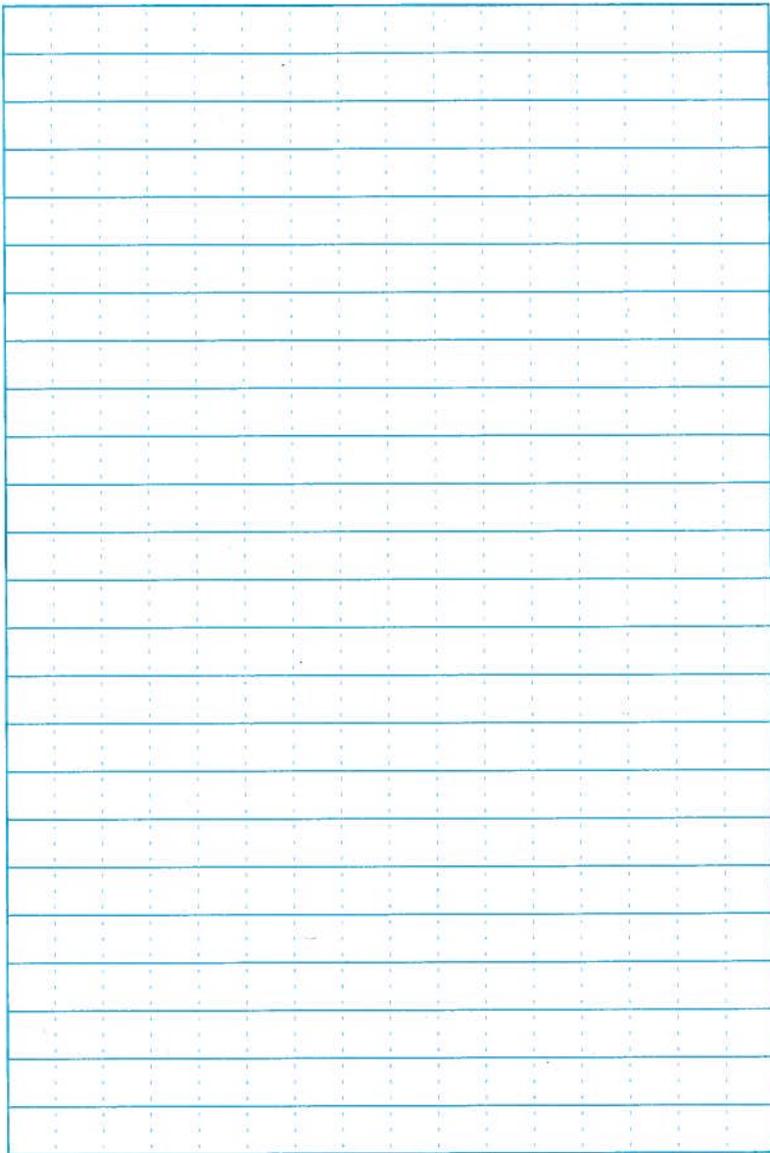
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Rite in the Rain

End

John H. Dwyer

3/12/14



Scale: 1 square = _____

cont'd from 46

Photo #	DATE	TIME	Photo oriented	Subject
62	96	1003	S	START JS + EPA-MH sampling DUOS
↓	97	1014	S	START JS + AS sampling DUOS
↓	98	1025	Dunno	Section of DUOS
↓	99	1032	SW	START JS + AS sampling DUOS
63	00	1032	N	Section of DUOS
↓	01	1033	SW	↓
↓	02	1058	SW	Equipment decom ↓
↓	03	1352	W	DU-03
↓	04	1742	NW	Concrete trench
↓	05	1742	SE	DU-03
↓	06	1723	E	DU-01
↓	07	1723	W	DU-03

[Handwritten signature]

Scale: 1 square = _____

Write in the Rain.

Photo log

Photos	DATE	TIME	Photos	dir	Subject
6241	11/13	1515	S	E	Former Seven Out facility
6242	11/14	1519	S	W	↓
6243	11/14	1519	S	SW	↓
6275	↑	0921	AS	S	START prepping for fieldwork
6276	↑	0921	AS	W	Standing water on site
6277	↑	0921	AS	S	START prepping for fieldwork
6278	↑	0922	AS	NW	Location of FSA-SF-CT
6280	↑	0943	AS	N	South ^{JS} end North end of DU-05
6281	↑	0952	AS	SW	START JS in DU-05
6282	↑	0952	AS	SE	START JS + EPA MH sampling DU-05
6283	↑	0952	AS	SE	↓
6284	↑	0953	AS	SW	↓
6285	↑	0955	AS	SW	↓
6286	12/19	0956	AS	SE	DU-05 culvert
6287	12/19	0956	AS	SW	START JS + EPA MH sampling DU-05
6288	12/19	0957	AS	S	↓
6289	12/19	0957	AS	S	↓
6290	12/19	0958	AS	SW	↓
6291	12/19	1000	AS	E	JS Section of DU-05
6292	12/19	1001	AS	S	↓
6293	12/19	1001	AS	S	START JS + EPA MH sampling DU-05
6294	12/19	1002	AS	S	START JS + AS sampling DU-05
6295	12/19	1002	AS	S	START JS + EPA MH sampling DU-05

Scale: 1 square =

John D. ... cont'd pg 47

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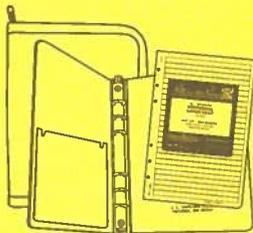
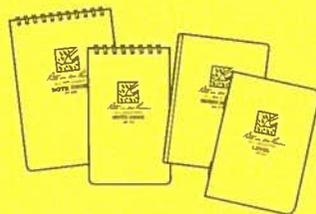
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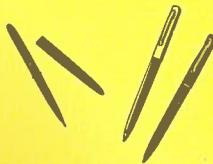
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Loose Leaf
with Ring Binder

Memo Books



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Notebooks

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