COMPLIANCE STATUS REPORT FOR THE DAVIDSON-KENNEDY COMPANY FACILITY 1195 VICTORY DRIVE ATLANTA, FULTON COUNTY, GEORGIA HSI No. 10866

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ABREVIATIONS

BRL Below Reportable Limit
CSR Compliance Status Report
CSM Conceptual Site Model

EPA United States Environmental Protection Agency
EPD Georgia Environmental Protection Division

HSI Hazardous Site Inventory
HSRA Hazardous Site Response Act

Kemron Kemron Environmental Services
MCL Maximum Contaminant Level

mg/Kg milligrams per kilogram
NC Notification Concentration
Peachtree Peachtree Environmental

PCE tetrachloroethene

RRS risk reduction standard

SVOC semi-volatile organic compound
USGS United States Geological Survey
VRP Voluntary Remediation Program
VOC volatile organic compound

CERTIFICATION OF COMPLIANCE WITH RISK REDUCTION STANDARDS

"I certify under penalty of law that this report and all attachments were prepared under the direction of former President and current Consultant to Davidson-Kennedy Company, Mr. Joe Rubin, in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Based on my review of the findings of this report with respect to the risk reduction standards of the Rules for Hazardous Site Response, Rule 391-3-19-.07, I have determined that the Davidson-Kennedy Company Facility property in Atlanta, Fulton County, Georgia (Parcel No. 14 012100070024) is in compliance with Type 4 risk reduction standards and the adjoining residential property to the east (Fulton County Parcel No. 14 012100070016) is in compliance with Type 2 risk reduction standards."

O.M. Walstad, Jr., Secretary

Davidson-Kennedy Company

1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

Peachtree Environmental (Peachtree) is submitting this Compliance Status Report (CSR) on behalf of Davidson-Kennedy Company (D-K) for the D-K facility located at 1195 Victory Drive in Atlanta, Fulton County, Georgia (the "Property"), Georgia Hazardous Site Inventory (HSI) No. 10866. This CSR details activity conducted at the Property since it was accepted into the Voluntary Remediation Program (VRP) in June 2011, and focuses on corrective action undertaken since the Seventh (7th) VRP Semiannual Progress Report submitted December 30, 2014.

Prior to initiating field activities, D-K received a letter on May 22, 2015 whereby the Georgia Environmental Protection Division (EPD) approved "the revised corrective action plan, subject to the comments provided below (by EPD in the letter), which should be addressed in accordance with the Act" (see **Appendix A** for a copy of the EPD approval letter and D-K's responses). Moreover, in the approval letter, EPD agreed "with the proposed approach to address exceedances in Domain 2 and Domain 3 and methodology proposed to bring those exposure domains into compliance with the compliance criteria of 400 mg/Kg" (see **Appendix A**).

The Revised Corrective Action Plan (CAP)/ Preliminary Risk Evaluation (PRE) Report was initially submitted on March 24, 2015 (see **Appendix B-1**) as a revision to the original CAP submitted in the Sixth (6th) Semiannual Progress Report (see **Appendix B-2**), A subsequent revision to the Revised CAP/PRE in May 2015 (see **Appendix B-3**) documents agreements made during a meeting between D-K and its attorney Mr. John Spinrad of Arnall, Golden, Gregory, Peachtree and EPD on April 23, 2015 and in subsequent e-mails. The results and outcomes of other e-mail correspondence and meetings held around that time to discuss the CAP are addressed in the excerpts provided in Appendices B-4 and B-5.

EPD has copies on file of seven previous semiannual progress reports, the last submittal being the 7th Semiannual Progress Report submitted on December 30, 2014, as well as other reports and documents submitted through December 30, 2015. These other reports and documents include those submitted by Peachtree and other consultants and contractors before entry of the Property into the VRP program in July of 2011.

1.2 Property Description

The Property consists of one parcel of land (Parcel ID No. 14 012100070024) totaling approximately 9.17 acres. The Property has a latitude coordinate of 33°42'27.41" North and a longitude coordinate of 84°25'35.39" West. A Property Location Map is included as **Figure 1**.

The Property is bordered to the south by Victory Drive with industrial facilities beyond; Lanier Drive and residential developments to the east; industrial facilities to the north; and a Norfolk Southern railway and MARTA rail line to the west, with Georgia Highway 29 and Fort McPherson beyond. A stream enters the Property on the northern property boundary (see **Photo 1**) and flows approximately 200 feet south into a subgrade pipe on the Property (see **Photo 2**) which outfalls beyond the southeast corner of the Property (see **Photo 3**).

There are currently no operations at the Property. The previous structures, except for an unoccupied office building (see **Photo 4**), have been demolished and removed from the Property. Also, some former building foundations/slabs still exist. Access to the Property is available via a gated access road along Lanier Drive and a currently blocked (formerly gated) access road at the northwestern corner along Victory Drive. Also, there are other non-fenced (but relatively inaccessible) boundaries of the Property. A Property Layout Map is provided as **Figure 2**.

Topography of the surrounding area has been modified by urban development. The western portion of the Property, which includes most of the former building foundations/slabs, is situated on relatively flat, filled land with topographic relief to the east-southeast. The eastern portion of the Property is also situated on relatively flat land at lower elevation, in some instances approximately 18 feet lower than the western portion of the Property. Steep embankments are present along the transition between the western to eastern portions of the Property. Surface drainage and groundwater flow on the Property are similar to the topographic relief with gradients to the southeast. A United States Geological Survey (USGS) Topographic Map is included as **Figure 3**.

1.3 ACTIVITIES CONDUCTED PRIOR TO VRP ENROLLMENT

Kemron Environmental Services (Kemron) conducted a Phase II Environmental Site Assessment (ESA) of the Property in July 2005 and issued a final report in August 2005. The Phase II ESA included the installation of six temporary groundwater monitoring wells and the advancement of 15 hand auger soil borings at the Property. Lead and multiple semi-volatile organic compounds (SVOCs) were detected in soil above their respective Hazardous Site Response Act (HSRA) Notification Concentrations (NC). Moreover, multiple SVOCs and one volatile organic compound (VOC), 1,2-dichloroethane, were detected in groundwater above their respective laboratory reporting limit; however, only 1,2-dichloroethane was detected above its Maximum Contaminant Level (MCL).

Based on the results of the Phase II ESA, Kemron returned to the Property in August 2005 to perform an Expanded Environmental Assessment to assess additional areas of concern at the Property and delineate previously identified lead and SVOC contamination in soil. The Expanded Environmental Assessment included the installation of four temporary groundwater monitoring wells and the advancement of 88 shallow soil borings and 11 deep soil borings.

Kemron issued an Expanded Environmental Assessment Report in September 2005. Lead, benzene, and multiple SVOCs were detected in soil above their respective NC. In addition, multiple SVOCs and VOCs were detected in groundwater above their respective laboratory reporting limit, with one SVOC (fluoranthene) and two VOCs (tetrachloroethene and benzene) detected above their respective MCLs.

Based on the results of the aforementioned investigations, on-site soil containing lead, SVOCs, and benzene at concentrations exceeding their respective NC was planned for removal from the Property. A total of 13 areas (designated as excavation areas A to M) were identified as requiring corrective action. Kemron performed the soil excavation and confirmation sampling between July and December of 2006. Excavation areas A, B, C, D, E, F, G, H, and I exhibited concentrations

of lead in soil above the NC. Excavation areas J, K, L, and M exhibited concentrations of multiple SVOCs above their respective NC. Excavation area K additionally exhibited concentrations of benzene and xylenes above their respective NC. According to Kemron's Soil Excavation and Disposal Summary Report dated February 6, 2007, a total of 28,106.62 tons of soil containing lead, SVOCs, benzene, and/or xylenes at concentrations exceeding their respective NC have been removed from the Property and disposed of as non-hazardous waste at the Eagle Point Landfill in Ball Ground, Georgia. Excavated areas are shown on **Figure 2**. A copy of the Kemron figure from the Release Notification depicting the locations of the various areas excavated and the locations of the confirmation samples is included as **Figure 4** in this report (from the Revised CAP dated May 2015).

A HSRA Release Notification was prepared by Kemron on behalf of D-K for the identification of multiple VOCs and SVOCs in groundwater at the Property and was submitted to the Georgia Environmental Protection Division (EPD) on February 13, 2007. The Release Notification also included a discussion of the soil remediation activities previously conducted at the Property and a copy of Kemron's Soil Excavation and Disposal Summary Report.

The EPD visited the Property on August 27, 2007 to collect soil, sediment, and surface water samples. The EPD collected eleven soil samples (DK-1, DK-2, and DK-6 through DK-14) from on-site surface soil at a depth of 0 to 6 inches. In addition, the EPD collected three sediment samples (DK-3, DK-4, and DK-5) as well as three surface-water samples (also identified as DK-3, DK-4, and DK-5) at the same locations as the sediment samples, from the on-site intermittent stream that traverses the northern boundary of the Property. Please note that the sediment and surface water samples designated as DK-3 were collected from an off-site outfall on the south side of Victory Drive. The DK-5 and DK-4 sediment and surface water samples were collected from the above ground stream segment on the Property north of the culverted section. Similarly, soil samples DK-6 and DK-7 were collected off-site from the adjoining residential property to the east.

The EPD sample results included detections of metals (lead and arsenic) and various SVOCs in 9 of the 13 soil samples collected. The sample locations for the stream and sediment samples taken by EPD (DK-3, DK-4, and DK-5) are shown in **Figure 5** in this report (originally from the Revised CAP dated March 2015 in **Appendix B-5**). Soil samples from the off-site residential area taken by EPD (DK-6 and DK-7) are shown in **Figure 6** in this report.

EPD listed the Davidson-Kennedy Company Facility on the HSI in a letter dated October 26, 2007 as a Class II Site. The Property was listed for the On-site Exposure pathway (soil). The Property did not list based upon groundwater scoring.

1.4 ENROLLMENT OF THE PROPERTY IN THE VOLUNTARY REMEDIATION PROGRAM (VRP)

Peachtree submitted a VRP Application to the EPD on behalf of Davidson-Kennedy Company on May 24, 2010, followed by amendments to the application in March and May of 2011. The EPD provided comments relative to its review of the March and May 2011 amendments to the VRP Application in a letter dated June 30, 2011 and simultaneously approved the VRP Application in

a separate letter. The comments and conditions for enrollment in the VRP were addressed in the First (1st) Semiannual VRP Progress Report dated December 2011.

Monitoring well MW-11 was installed on the southeastern property boundary in October of 2011 to delineate VOCs and PAHs in groundwater. The well was installed topographically downslope and in the apparent hydraulic downgradient direction of regulated substances historically detected in groundwater at the Property. Analytical testing results from the groundwater sample collected from monitoring well MW-11 indicated that VOCs and PAHs were below the laboratory reporting limits. The analytical laboratory data report was included in the 1st VRP Semiannual Progress Report submitted to the EPD in December of 2011.

In accordance with the provision detailed in Section 12-8-107(g)(2) of the VRP Act, since the Property was not listed on the Hazardous Site Inventory (HSI) as a result of a release to groundwater exceeding a reportable quantity and the groundwater plume had not migrated to or beyond the downgradient property boundary, Davidson-Kennedy was not required to perform corrective action or to certify compliance for groundwater as part of the VRP requirements.

1.5 DESCRIPTION OF SOURCES

The precise source(s) and mechanism(s) of the release of regulated substances at the Property is not known; however, it is likely that the release of regulated substances occurred during industrial operations on and near the Property dating back to the early 1900s, which have included railroad car repair operations, steel fabrication and iron works.

Groundwater and soil data collected since 2005 have identified soil contamination in areas of fill of varying depths which are likely attributable to historical grading and leveling of the Property for the construction of buildings and operational areas. These urban fill areas contain varying concentrations of regulated substances, including various Resource Conservation and Recovery Act (RCRA) metals, VOCs, SVOCs. Urban fill presents a unique situation where there is not a reasonably defined source area, but rather a widespread matrix of heterogeneous material exhibiting varying degrees of impact by regulated substances.

2.0 SOIL ASSESSMENT

2.1 SOIL ASSESSMENT UNDER VRP

In November 2011, Peachtree collected 35 soil samples to laterally delineate concentrations of selected metals and SVOCs in surface soils. Vertical delineation samples were also collected. The November 2011 sample locations were selected based upon analytical data gaps from soil borings advanced by Kemron in 2005 and data collected by the EPD in 2007. In addition, one groundwater monitoring well was installed on the southeastern property boundary to demonstrate groundwater delineation at the Property boundary. The sampling activities were documented in the 1st VRP Semiannual Progress Report for the VRP Property in December 2011.

In 2012, Peachtree advanced four off-site soil borings (OS-1 to OS-4) to delineate the extent of the substances previously detected in the DK-6 and DK-7 samples collected by EPD in 2007. Shallow (0 to 0.5 foot) and deeper (3 feet) soil samples were obtained at each boring and submitted for analytical testing for lead via United States Environmental Protection Agency (EPA) Method 6010. Lead was detected in the samples at concentrations below the calculated anthropogenic background concentration of 224 milligrams per kilogram (mg/Kg). The sampling activities were documented in the Second (2nd) VRP Semiannual Progress Report for the Property in June 2012, which concluded that off-site property horizontal delineation was complete. The extent of the off-site area is included in this report as **Figure 7.**

An anthropogenic background concentration of 224 mg/Kg for the Property was established through off-site testing, as documented in the VRP Application. Peachtree mobilized to the Property on May 23, 2013 and June 18, 2013 to collect soil samples at locations where on-site property delineation of lead below the 224 mg/Kg anthropogenic background concentration was not complete. A total of 14 soil samples was collected from twelve soil borings (SB-1 through SB-12) and analyzed for lead and/or selected PAHs. The results of the May and June 2013 sampling were documented in the Fourth (4th) VRP Semiannual Progress Report for the Property in June 2013. The horizontal extent of lead and other metals in on-site soil is included in this report as **Figure 8**.

On November 8, 2013, Peachtree collected three on-site soil samples (DK-19A, DK-21A, and DK-43A) at locations where vertical delineation was not deemed complete. The soil samples were analyzed for arsenic, lead, and chromium, respectively. The results of the vertical delineation sampling were provided in the Fifth (5th) VRP Semiannual Progress Report in December 2013. The vertical extent of lead and other metals in on-site soil is included in this report as **Figure 9**.

3.0 SOIL CORRECTIVE ACTION PLAN

Areas of urban fill are present throughout the VRP Property. Urban fill presents a unique situation where there is not a reasonably defined source area, but rather a widespread matrix of heterogeneous material exhibiting varying degrees of impact by regulated substances. As such, a cleanup based upon individual soil sample results may incorrectly mischaracterize risk. The paragraphs below document major steps in the development of the Corrective Action Plan, with a focus on the activities since the 7th and last VRP Semiannual Progress Report on December 30, 2014.

3.1 Initial Kriging (January 2012)

The VRP Property was evaluated based upon geostatistical weighted-averages (kriging) of predefined exposure domains that recognized the inherent spatial distribution in order to accurately characterize the risk for the Property from lead contamination. Lead was evaluated since it is the most widespread regulated constituent in soil.

The initial kriging of the site was performed in January 2012 and was presented to EPD as part of the 2nd VRP Semiannual Progress Report in June 2012. Approximately 130 data points were utilized for the initial kriging effort, which met the minimum requirements for number of points utilized to produce usable results.

The site was divided into five exposure domains of approximately two acres each, and the 95% Upper Confidence Level (UCL) of the mean was calculated for each exposure domain from the kriged lead analysis. Note that the size of the domains was selected to be consistent with EPA guidance which specified that the domain size for industrial areas not be greater than 2 acres.

The kriging domain UCL averaging resulted in an identification of 1,100 cubic yards of material on site that exceeded, on average, the HSRA Type 3 Risk Reduction Standard of 400 mg/Kg for lead. More details of this analysis can be found in a report entitled Geostatistical Soils Evaluation of the Davidson Kennedy Site, prepared by NewFields, which is included in the 2nd VRP Semiannual Progress Report.

Subsequently, EPD expressed concern with the value used for extensive fill material used on site (approximately 18 mg/Kg) since only one data point (a composite made up of samples from five locations) was utilized to characterize all fill material. Therefore, 10 samples were collected in October 2013 at various points from the backfill utilized in the former (2007) excavation, and had an average lead concentration of approximately 36 mg/Kg. In November 2013, a re-analysis of the Kriging model was performed using the new soil data, and the re-analysis resulted in an identification of approximately 1,180 cubic yards of lead-impacted soils that required removal to bring the domain area average in each domain into compliance with the HSRA Type 3 RRS for lead of 400 mg/Kg (an addition of 80 cubic yards to the previous total). These results were submitted to EPD for their evaluation of the geostatistical/kriging approach.

EPD provided comments regarding the kriging model during a June 12, 2013 meeting and via email, and Peachtree responded to the comments and questions in a letter dated December 27, 2013. In a letter dated April 3, 2014, Georgia EPD stated that Peachtree had satisfactorily

addressed EPD's questions regarding the geo-statistical soil evaluation, and concurred with the area-averaging approach and the goal of an average lead concentration of less than 400 mg/Kg in each exposure domain.

3.2 Initial Preliminary Risk Evaluation (March 2014)

Peachtree submitted an ecological Preliminary Risk Evaluation (PRE)/Screening Level Ecological Risk Assessment (SLERA) for the Property in March 2014. Peachtree had not received formal comments from EPD on the PRE; however, Peachtree and D-K met with EPD in May of 2014 to discuss the PRE and other issues. During the meeting, it was decided that additional samples of the on-site surface water and sediments from the stream and streambed should be collected.

3.3 EPD Concurrence with Horizontal and Vertical Soil Delineation (April 2014)

In an April 3, 2014 letter, EPD concurred that soil and groundwater delineation on the Property, both horizontal and vertical, had been completed in accordance with Items 5.b and 5.c of the VRP Application checklist and based on the groundwater exemption of Section 12-8-107(g)(2) of the VRP Act. The delineation of contamination on and off the property is presented in the following excerpts:

- Excerpt from Fifth (5th) VRP Semiannual Progress Report (Horizontal delineation both on and off site) – Appendix B-4
- Excerpt from Fifth (5th) VRP Semiannual Progress Report (Vertical delineation on site) – Appendix B-5

3.4 INITIAL CORRECTIVE ACTION PLAN (JUNE 2014) (SEE EXCERPT IN APPENDIX B-2)

A VRP CAP to remove soil in the most heavily impacted areas remaining on the site, including a description of post-excavation confirmation soil samples, was included in the 6th Semiannual VRP Progress Report (Section 4.0) submitted in June 2014. Excerpts from this Initial CAP are presented in Appendix B-2 of this report, and presents the preliminary remediation plans for excavating on site soils contaminated by both lead and PAH's as identified by the initial Kriging effort. The areas to be excavated to a depth of 2 feet were presented in a figure in the 6th VRP Semiannual Progress Report.

3.5 REVISED CORRECTIVE ACTION PLAN AND FINAL PRELIMINARY RISK EVALUATION (MARCH 2015) (SEE APPENDIX B-1)

In the 3rd Quarter of 2014, Peachtree discovered additional usable data from the original confirmation samples utilized to estimate the extent of excavation in 2007. These data were actually identified earlier and considered for use, but Peachtree could only find paper copies of the results with illegible labeling of the sample locations, from which it would have been very difficult to establish precise locational information.

Recognizing that these data would significantly improve confidence in the Kriging results, Peachtree renewed efforts and was able to find the original digital CAD drawings (in the archives of the firm which performed the excavation), which provided legible location information.

Peachtree reported discovery of these additional data points in the 7th VRP Semiannual Progress Report, presented to EPD on December 30, 2014.

The additional data resulted in a total of 622 sample data points, which included the original 130 data points. This allowed for significant improvement of the statistical confidence in the kriging results. This revised kriging analysis was performed and presented to EPD. The presentation and assumptions of the revised kriging effort are presented in **Appendix C**, **Geostatistical Analysis**.

In a meeting on January 26, 2015, EPD verbally approved the revised kriging analysis using the expanded data set. Peachtree included mention of this approval in a meeting summary memo dated April 24, 2015 and further reflected the approval in the Revised Corrective Action Plan dated May 2015 (see **Appendix B-3**).

The final Preliminary Risk Evaluation was included in the Revised Corrective Action Plan dated March 2015 and is presented in this report in **Appendix D**.

3.6 SECOND REVISED CORRECTIVE ACTION PLAN (May 2015) (SEE APPENDIX B-3)

In a final revision to the Corrective Action Plan dated May 2015, Peachtree incorporated the modifications requested by EPD, which dealt with the following:

- 1. Identification of the source of data used for the final kriging
- 2. Identification of 30'x30' blocks on site where an XRF Analyzer would be used to characterize the soil
- 3. Peachtree's detailed approach to characterizing soil within the 30'x30' blocks during the excavation activities
- 4. Inclusion of a figure showing the kriging results of shallow (0-1') soil and the new excavation parameters.
- 5. Inclusion of a figure showing the kriging results of 0-2' soil as part of the sensitivity analysis in the final CSR
- 6. Peachtree's method of dealing with acute exposures (determined to be discrete concentrations of approximately 10,000 mg/Kg of lead using the Georgia Adult Lead Model)
- 7. Inclusion of the geostatistical analysis (i.e. kriging) approach and results using the 0-1' Kriging in the final CSR

The revised kriging resulted in the removals discussed in Section 4.0.

4.0 REMEDIATION

4.1 FIELD ACTIVITIES

The objectives of the site remediation were twofold:

- 1. Remove solid waste, included discarded car and truck tires that had accumulated on site from other sources.
- 2. Excavate and dispose off-site previously defined impacted soils from areas on-site and one small off-site residential area.

Day-by-day field activities conducted between July 13 and 17, 2015 were summarized in an e-mail from the Construction Manager to the Project Director dated September 8, 2015 and provided in **Appendix E.** A total of approximately 73.4 tons of soil were excavated. Also, 155 cubic yards of solid waste and debris were removed from the Property during field activities. In addition, approximately 245 discarded tires were removed from the Property and recycled.

Figure 10 illustrates the areas of investigation/excavation. Further discussion concerning the field confirmation sampling and excavation limits is presented in Section 4.2.

Some of the specific activities leading to the removal of various contaminants both on and off-site are discussed below. The revised and final kriging analysis guided the excavation activities.

4.2 REMOVAL OF SOIL IMPACTED BY LEAD

Peachtree excavated impacted surficial (0 to 1 feet) lead-contaminated soil in the on-site area identified by the kriging analysis, referred to as the "Compliance Area" (see **Photo 5**) In addition, Peachtree obtained permission for off-site access from Ms. Tracy Dummett, owner of the off-site property to the east at 1705 Lanier Drive, to perform voluntary off-site soil excavation (see **Appendix F**) (see **Photo 6**). Please refer to **Figure 10** for the locations and extents of the excavation areas. The excavation work was conducted July 13-17, 2015.

Excavated lead-contaminated material was placed directly into transportation vehicles (i.e., dump trucks) for off-site disposal (see **Photo 7**). The extent of excavation of impacted soil was confirmed through post-excavation verification sampling. The total volume of soil removed was 73.4 tons, including 5.53 tons from the off-site property. The lead-impacted soil was transported to Advanced Disposal Eagle Point Landfill in Ball Ground, Georgia. Copies of the non-hazardous waste manifests are included in **Appendix G**.

An XRF analyzer was utilized in the field to gain real-time data regarding the excavation boundaries and further characterize potential elevated/hot spot lead soil impacts. The XRF was calibrated daily and throughout field activities in accordance with EPA standard operating procedures. Daily calibration results are included as **Appendix H**.

¹ Compliance Area – refers to the impacted soils on-site that at a minimum need to be excavated such that exposure domain averages would be below the 400 mg/Kg RRS criteria post removal.

Confirmation soil samples were collected along the sidewalls of the Compliance Area excavation at an approximate rate of one sample for every 20 linear feet of sidewall and at the bottom of the excavation, at an approximate rate of one sample for every 500 square feet (see **Photo 8**). Similarly, confirmation sampling was performed in the off-site excavation area as well. The laboratory analytical results for the confirmation samples are included in **Appendix I** for the onsite excavation and **Appendix J** for the off-site excavation.

Prior to the initiation of excavation activities, two areas were further investigated/sampled to evaluate whether additional excavation would be necessary to address potential "hot-spots" (>10,000 mg/Kg) that could prevent compliance with the 400 mg/Kg RRS. These two areas are identified on **Figure 10**.

The first area was identified as a data gap zone where limited sampling was necessary to provide horizontal delineation/control along the western portion of the facility proximal the active rail line. This area was heavily overgrown with vegetation; therefore, prior to investigation activities, heavy equipment was used to clear the area for proper access. Upon clearing the vegetation, it was observed that competent concrete covered this entire area, which indicated why sampling had not previously been performed in this area (see **Photo 9**). With the discovery of concrete, further sampling was deemed unnecessary and the limits of the concrete cap were surveyed and mapped (see **Figure 10**).

The second area was identified as two discrete data gap zones with limited sampling to support horizontal delineation/control along the southern boundary of the historical excavation performed by Kemron (see **Figure 10**). Once this area was cleared of vegetation for access, eight grab soil samples (DKREM-1 through DKREM-8) were collected and analyzed for lead in the field using the XRF.

Based on the results of the eight XRF samples, it was concluded that no additional on-site excavation was necessary outside of the previously identified Compliance Area (illustrated on **Figure 10**). These analytical results were incorporated in the final confirmation geostatistical analysis (**Appendix C**).

After excavation of the Compliance Area was completed, a total of 11 confirmation soil samples (DKREM-9 through DKREM-19) were collected and analyzed via XRF to confirm that concentrations were below 1,995 mg/Kg². Once the XRF confirmed that the results were adequately below the 1,995 mg/Kg RAL, the samples were submitted to Analytical Environmental Services, Inc. (AES) in Atlanta, Georgia for final confirmatory analysis of lead by EPA Method 6010C.

In September of 2014, XRF analyses were taken of potential hot spots in the area beyond the southwest wall of the Compliance Area and resulted in the elimination of concern about residual hot spots that would result in exceedance of compliance criteria for that exposure

² It was pre-determined that 1,995 mg/Kg was the Remedial Action Level (RAL) and that all post excavation sample data points would need to be below the RAL so that the exposure domain average would be below (i.e., compliant with) the 400 mg/Kg RRS criteria.

domain. Confirmation soil samples for laboratory analysis (PT-1 through PT-4) were also taken in this area at a depth of one foot using a hand auger (see **Figure 10**). The analytical results of the confirmation samples PT-1 through PT-4 showed that contaminated material in that area had been removed. The laboratory data from the September 2014 sampling event is included in **Appendix I**.

The results of the post-excavation confirmation sampling were utilized in the kriging model. The final geostatistical/kriging results for lead for the 5 exposure domains at the VRP Property are summarized below and are presented in the Geostatistical Lead Analysis report included in **Appendix C.**

Summary of Final Geostatistical/kriging Results for Lead in all 5 Exposure Domains

Exposure Domain	95% UCL of Mean (0-1 FT)
Domain 1	263.5 mg/kg
Domain 2	370.1 mg/kg
Domain 3	309.0 mg/kg
Domain 4	387.1 mg/kg
Domain 5	295.4 mg/kg

Note that all five UCL mean values for lead are below the 400 mg/Kg RRS criteria.

As shown in **Figure 10**, five confirmation soil samples (DKREM-20 through DKREM-24) were collected from the off-site excavation area and submitted to AES for the analysis of lead by EPA Method 6010C. The concentrations of lead in the confirmation soil samples ranged from 11.2 mg/Kg to 14.9 mg/Kg. Based on the results of the confirmation soil samples, the lead-impacted soil above the Type 2 Residential RRS had been removed. The analytical results from the analysis of off-site confirmation samples are included as **Appendix J**.

4.3 REMOVAL OF SOIL IMPACTED BY SEMI-VOLATILE ORGANIC COMPOUNDS

Soil impacted above the Type 4 RRS of 7.8 mg/Kg for benzo(a)pyrene, the only SVOC above the RRS, was also excavated. Benzo(a)pyrene was detected at a concentration of 44 mg/Kg in shallow (1' foot) soil sample SB-5, obtained by Peachtree in June 2013, the only sample exhibiting a concentration of SVOCs above the Type 4 standard. This sample location falls within the Compliance Area and thus was removed with the lead contaminated soil.

Confirmation sampling was conducted as described above in the area of SB-5 and analyzed for SVOCs. More specifically, four of the confirmation soil samples (DKREM-9 through DKREM-12) collected from the Compliance Area excavation were also analyzed for benzo(a)pyrene by EPA Method 8270D (see **Appendix I).** The concentrations of benzo(a)pyrene in the confirmation soil samples ranged from 1.8 mg/Kg to 3.4 mg/Kg. Based on the results of the confirmation soil samples, the benzo(a)pyrene-impacted soil above the Type 4 RRS had been removed.

4.4 HOT SPOTS INVESTIGATION

One point of particular concern to both Davidson-Kennedy and EPD was the sample identified as DK-24, which showed a concentration of lead of 28,600 mg/Kg, an order of magnitude higher than the next highest reading on site (see **Photo 10**). Although this location was in an exposure domain that was already <400 mg/Kg on average (see **Photo 10**). This particular "hot spot" was of concern due to its high concentration.

At the request of EPD, this spot was resampled to evaluate the possibility of inconsistencies in sampling or analytical techniques. The updated result for lead, taken at a depth of approximately 12 inches (similar to the original sample), was 36.3 mg/Kg, which is more in line with other samples taken in the proximity. Therefore, sample DK-24 was considered an anomaly and removed from the data set.

As discussed above, other potential hot spots were eliminated from further consideration either when it was discovered that the hot spot in question was underlain by shallow concrete or through further analysis using the XRF. Therefore, while an initial concern, no hot spots at the Property were identified as needing removal either for regulatory compliance or in response to concerns over high concentrations.

4.5 BACKFILL

Given the relatively shallow depth of excavation (1 foot), the on-site excavation areas were not backfilled, but instead were graded to reduce ponding and to promote drainage (see **Photo 11**).

Backfill was placed and graded at the off-site area and seed and straw were placed onto the backfilled soils (see **Photo 12**). The backfill material used at the off-site property was obtained from Stephens Industries, LP, who provided a letter dated June 1, 2015 that, to the best of their knowledge, the material was free of hazardous materials. The Soil Backfill Material letter is provided in **Appendix L.**

The backfill material was also analyzed to confirm that it met Type 1 RRS for VOCs, SVOCs and RCRA metals. The analytical results of the backfill analysis, included as **Appendix J**, showed that the backfill utilized was acceptable for use as backfill.

4.6 GENERAL SITE CLEANUP AND SITE SECURITY

Debris, including scrap tires and general debris, was removed and properly disposed during the corrective action (see **Photo 13 & 14**). Also, during the corrective action herein described, the front gate, already in bad repair and basically not functional, was removed by the City of Atlanta. Peachtree replaced the fence with concrete barriers and other pieces of concrete from around the site to limit access and reduce dumping on the site, which had been taking place periodically (see **Photo 15**).

5.0 CONCEPTUAL SITE MODEL

Groundwater and soil delineation data collected as part of assessment activities were utilized to update the Conceptual Site Model (CSM) of the VRP Property. These data identified areas of fill of varying depths which are likely attributable to grading and leveling of the VRP Property for the construction of buildings and operational areas dating back to pre-1920s. These urban fill areas contained varying concentrations of regulated substances, namely metals and PAHs. Urban fill presents a unique situation where there is not a reasonably defined source area, but rather a widespread matrix of heterogeneous material exhibiting varying degrees of impact by regulated substances.

5.1 SOIL DELINEATION STANDARDS

Soil was delineated to the following standards:

REGULATED CONSTITUENT	DELINEATION STANDARD (MG/KG)						
METALS							
Lead	224*						
Arsenic	20						
Barium	1,000						
Cadmium	2						
Chromium	100						
Mercury	0.5						
VOLATILE ORGA	NIC COMPOUNDS						
Benzene	0.5						
Xylene	1,000						
SEMI-VOLATILE OR	GANIC COMPOUNDS						
Fluoranthene	500						
Phenanthrene	110						
Pyrene	500						
Acenaphthene	300						
Benzo(a)anthracene	5						
Benzo(a)pyrene	1.64						
Benzo(b)fluoranthene	5						
Benzo(k)flouranthene	5						
Benzo(g,h,i)perylene	500						
Chrysene	5						
Indeno(1,2,3-cd)pyrene	5						

^{*}Property specific anthropogenic background concentration approved by the Georgia EPD on October 14, 2011. Delineation criteria, unless otherwise noted, is the Type 1 Risk Reduction Standard.

5.2 EXPOSURE PATHWAY EVALUATION

Characteristics of exposure pathways remained relatively consistent with what was described in the May 2011 VRP Application and subsequent Semiannual VRP Progress Reports.

5.3 PRELIMINARY RISK EVALUATION

The analytical results for the sediment samples collected at the Davidson-Kennedy property in December of 2014 were initially reported to EPD in the 7th Semiannual VRP Progress Report submitted on December 29, 2014. During the subsequent preparation of the Preliminary Risk Evaluation, Peachtree identified a peculiarity with the semi-volatile organic compound (SVOC) results for the sediment samples DK-3 and DK-5. Peachtree noticed that the seven SVOC constituents detected in DK-3 were the exact same seven constituents detected in sediment sample DK-5. More concerning, however, was that the concentrations of each constituent were almost identical.

Considering the distance between the two samples (DK-5 was collected approximately 650 feet upstream from DK-3) and the degree of similarity between the laboratory results, Peachtree requested that the laboratory reanalyze sediment samples DK-3 and DK-5 for SVOCs. The reanalyzed sample results showed significant decreases in SVOC concentrations in sediment sample DK-3, while the results for DK-5 were relatively unchanged.

Based on the reanalysis of sediment samples DK-3 and DK-5, Peachtree concluded that during the initial laboratory analyses conducted on December 3, 2014, the DK-5 sample was mistakenly analyzed twice and one set of results was reported for DK-3. Therefore, Peachtree disregarded the laboratory results reported for sediment sample DK-3 from December 3, 2015, and instead relied upon the reanalysis of DK-3 performed on December 24, 2015.

Peachtree has not observed any receptors (benthic macroinvertebrates, fish, birds, mammals, etc.) in the on-site intermittent stream, and the only aquatic vegetation observed in the stream has been filamentous algae. In addition, no threatened and/or endangered plant or animal species have been identified at the VRP Property. Based on the absence of observed receptors and the intermittent nature of the on-site stream, there is adequate information to conclude that ecological risks are negligible and there are no complete pathways for ecological receptors. The PRE prepared for the VRP Property was previously submitted to the EPD with the revised CAP in March 2015. It is also included as **Appendix L** to this report along with the revised laboratory results for the sediment and surface was samples collected in December 2014.

6.0 UNIFORM ENVIRONMENTAL COVENANT

A Uniform Environmental Covenant (UEC) was submitted separately for review and is included in this CSR in **Appendix M**. This UEC describes restrictions on future uses of the property and also specifies obligations of the Property Owner going forward for monitoring environmental conditions on the site which could in particular affect environmental quality of surface water flowing through the site.

7.0 CONCLUSIONS

Based on the recent remediation activities and confirmation sampling conducted at the Property, the final kriging results indicate that the UCLs for each of the five exposure domains on the Property are now below the non-residential Type 4 RRS of 400 mg/Kg. In addition, benzo(a)pyrene, has been remediated at the VRP Property to below the Type 4 RRS of 7.8 mg/Kg. Therefore, the Property is in compliance with HSRA RRSs and is a candidate for removal from the HSI upon approval of this final CSR by EPD.

The off-site lead impacts identified on the adjoining property to the east were also successfully (and voluntarily) remediated by D-K to below Residential Type 2 RRS of 270 mg/Kg.

A Uniform Environmental Covenant has been approved by EPD which specifies the Property owner's (currently the Davidson-Kennedy Company) obligations going forward.

A monthly summary of Professional Engineer/Geologist hours expended as part of this final CSR (semiannual progress report) is included as **Appendix N**.

8.0 CERTIFICATION

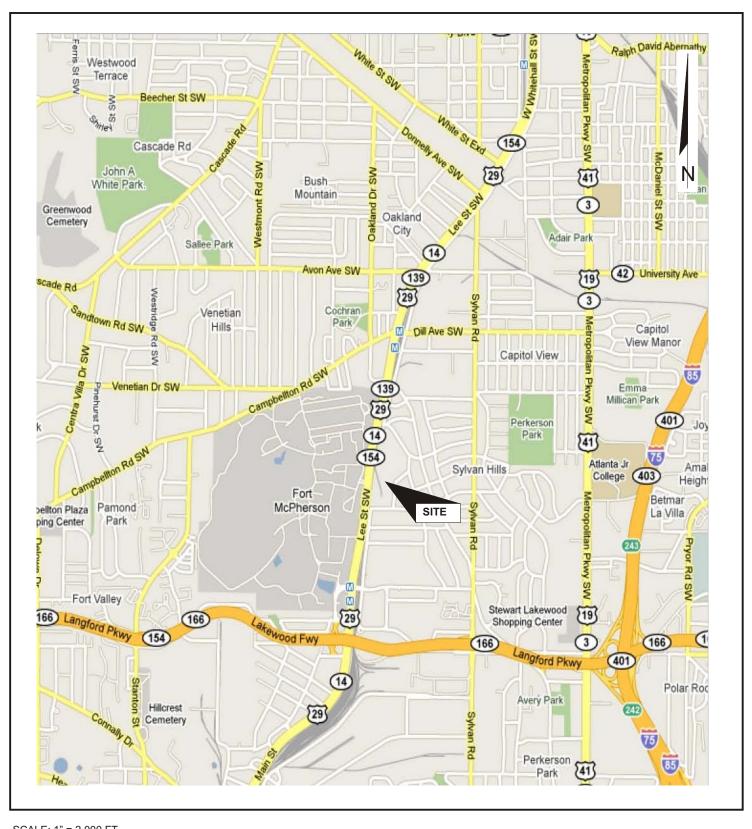
"I certify that I am a qualified groundwater scientist who has received a baccalaureate or post graduate degree in the natural sciences or engineering, and have sufficient training and experience in groundwater hydrology and related fields, as demonstrated by state registration and completion of accredited university courses, that enable me to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that this report was prepared by me or by a subordinate working under my direction."

John P. Martiniere, Jr., P.E.

Georgia Registration No. 11858



FIGURES



SCALE: 1" = 2,000 FT



DAVIDSON-KENNEDY COMPANY ATLANTA, FULTON COUNTY, GEORGIA HSI#10866

FIGURE 1 PROPERTY LOCATION MAP



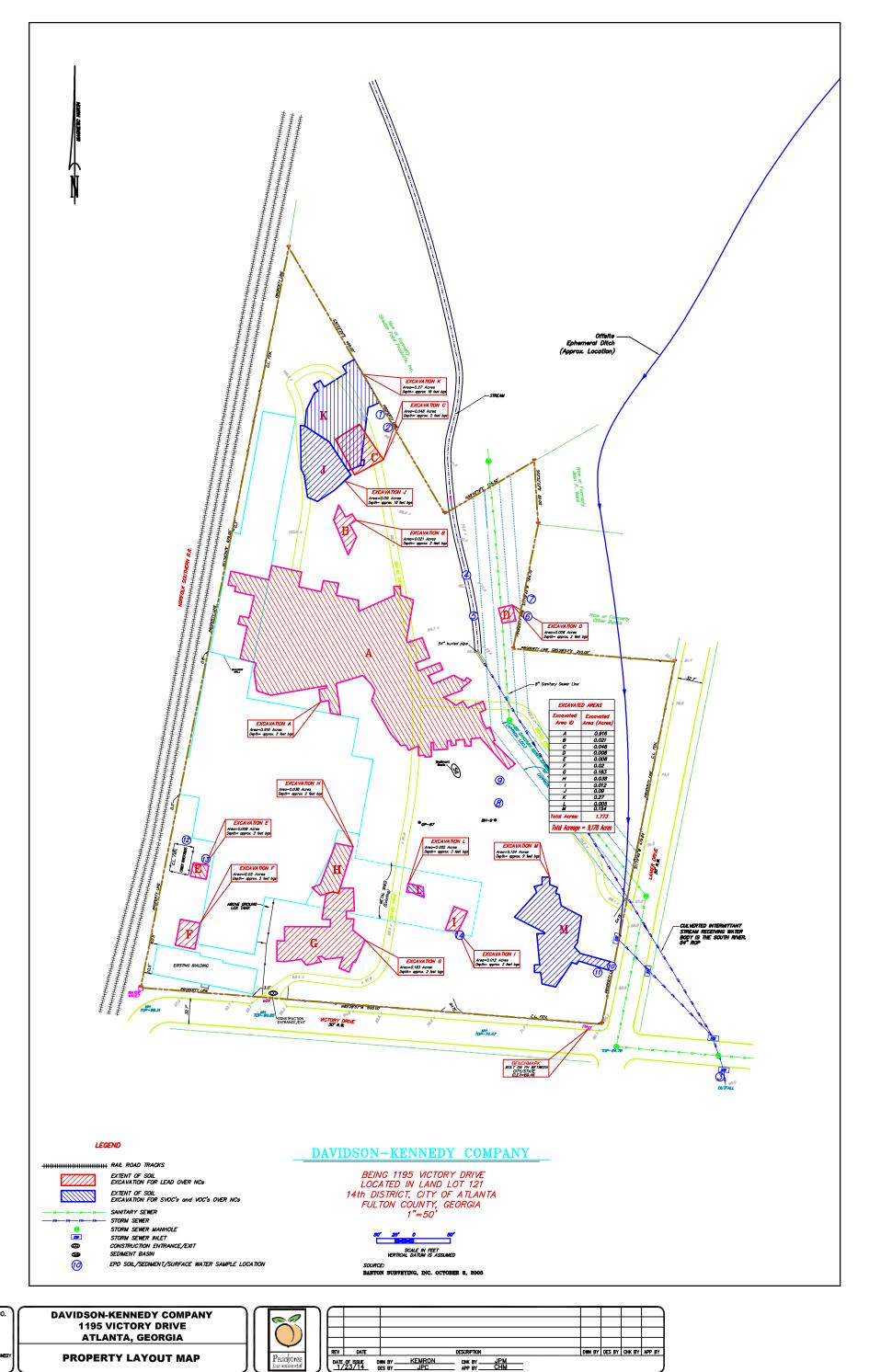
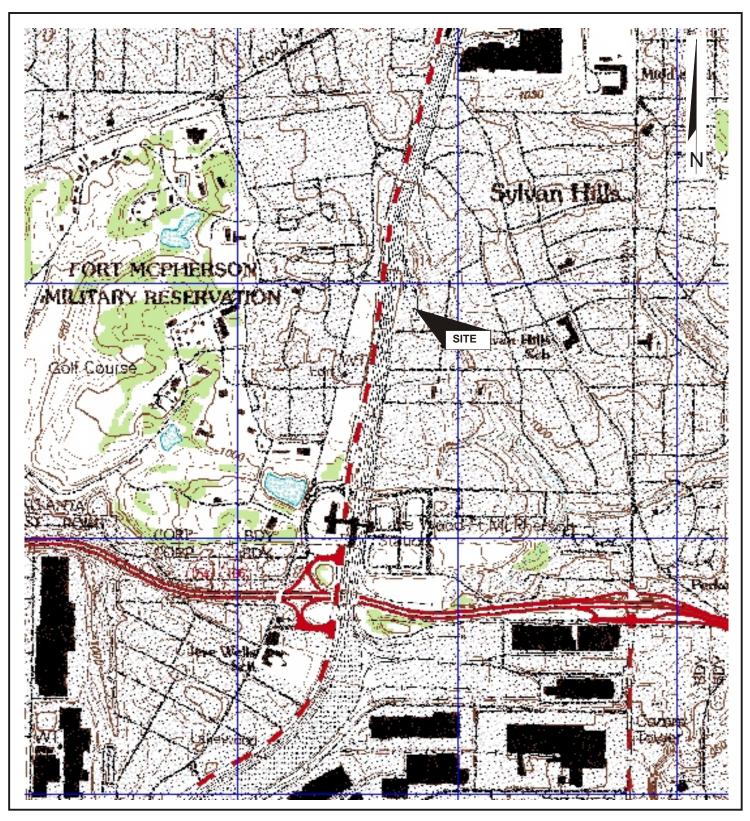


FIGURE NO.

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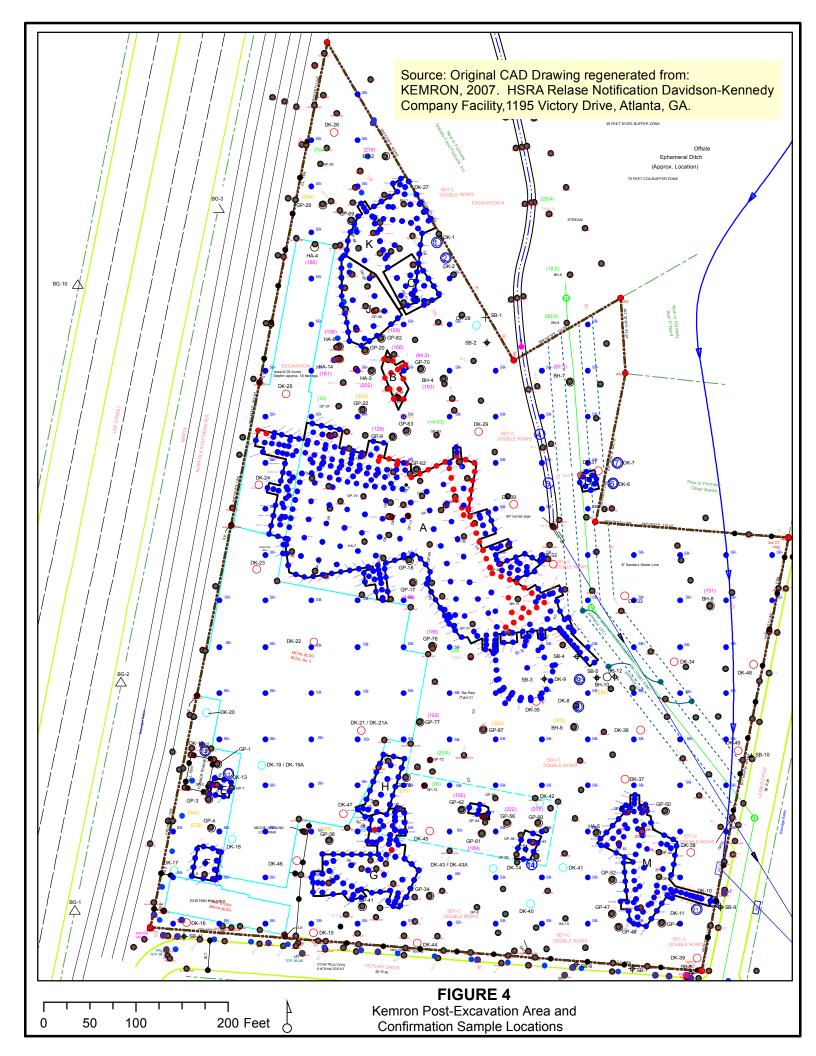
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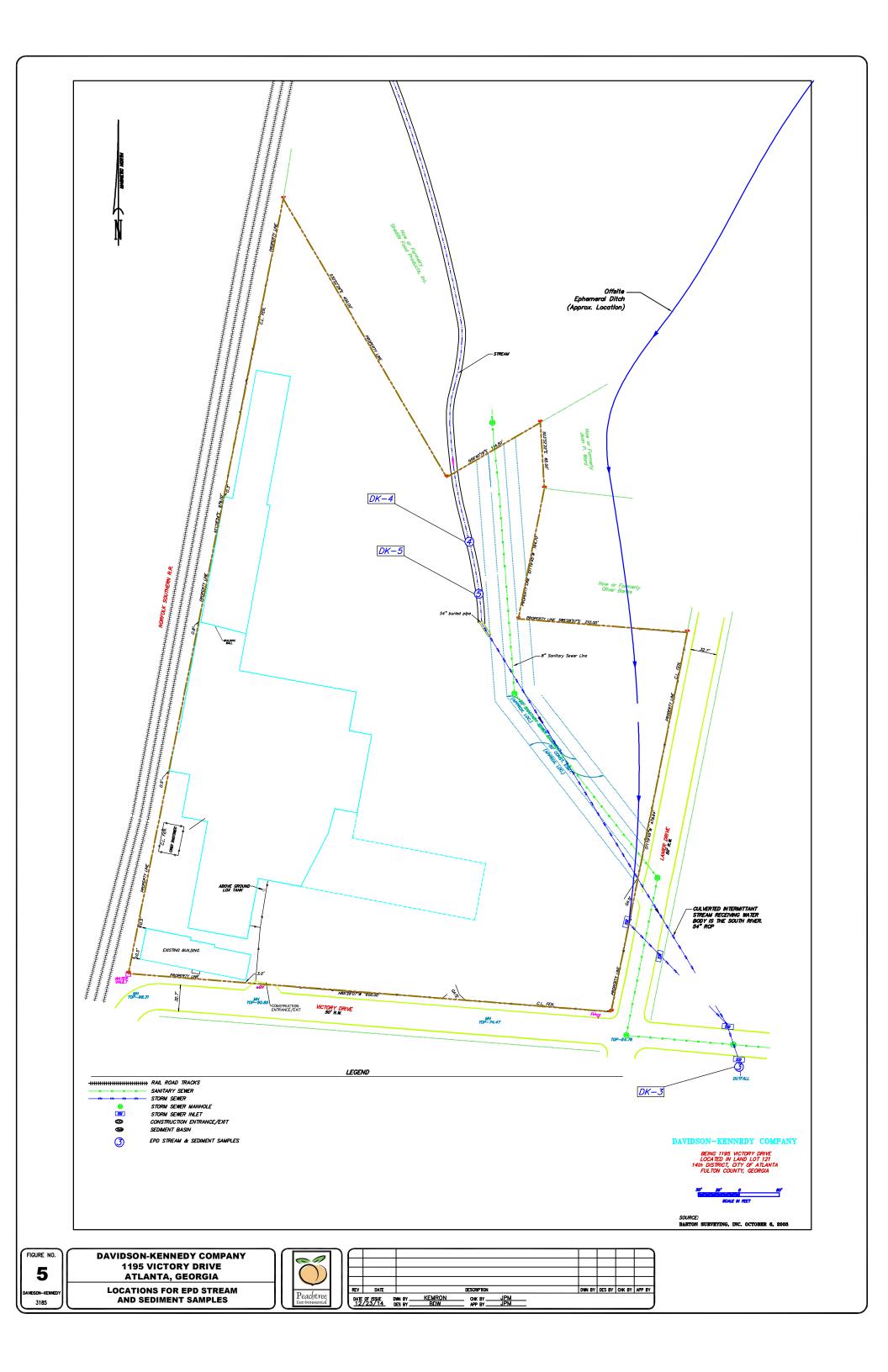


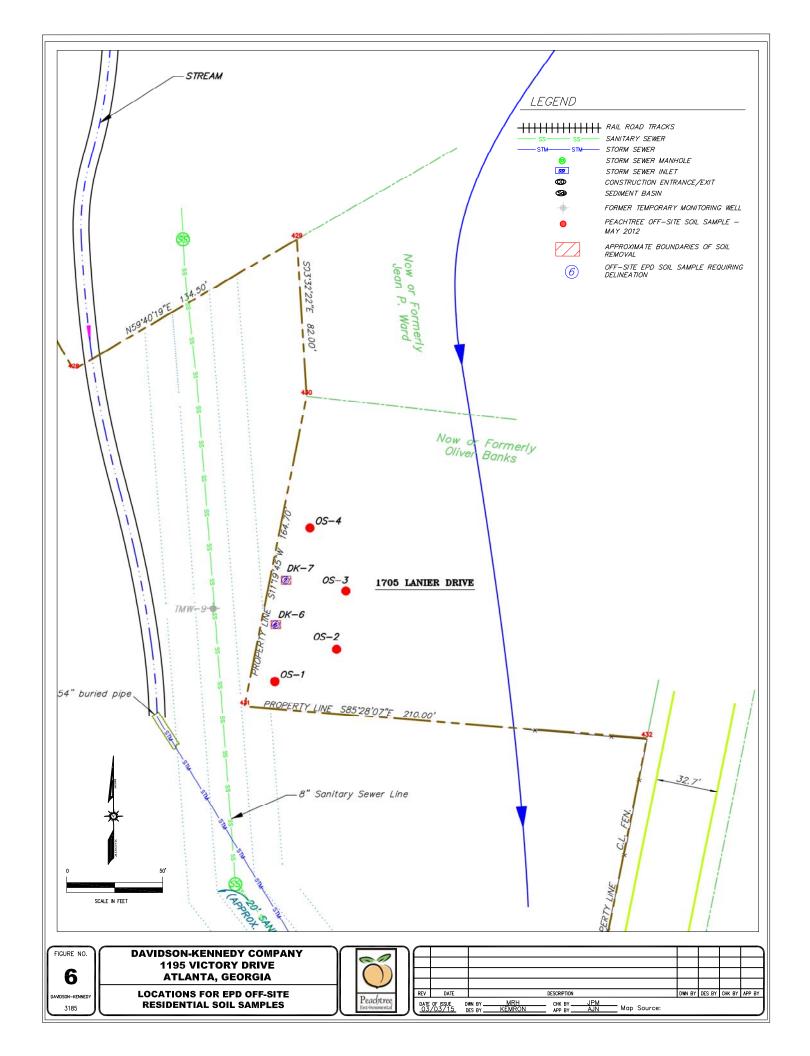
DAVIDSON-KENNEDY COMPANY ATLANTA, FULTON COUNTY, GEORGIA HSI#10866

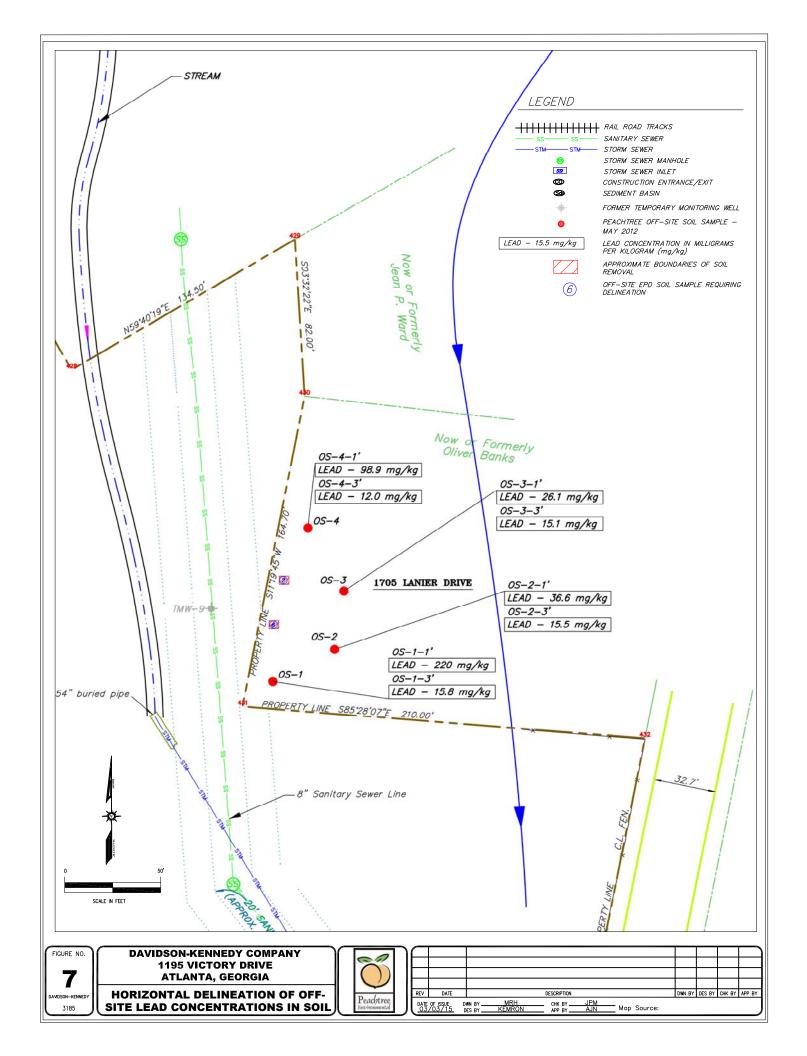
FIGURE 3 USGS TOPOGRAPHIC MAP











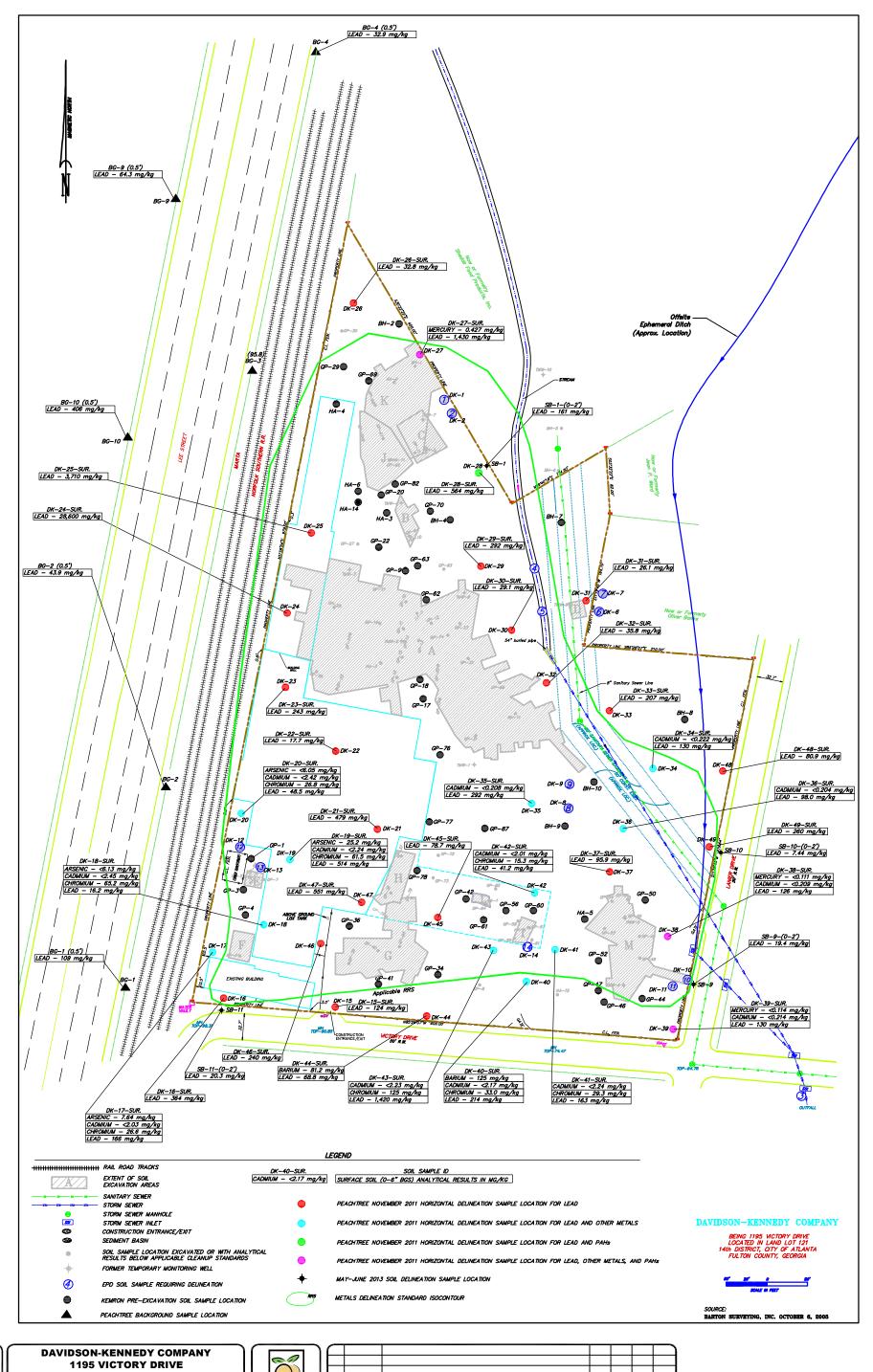


FIGURE NO. 8

3185

ATLANTA, GEORGIA

HORIZONTAL DELINEATION OF ON-SITE LEAD AND OTHER METALS IN SOIL



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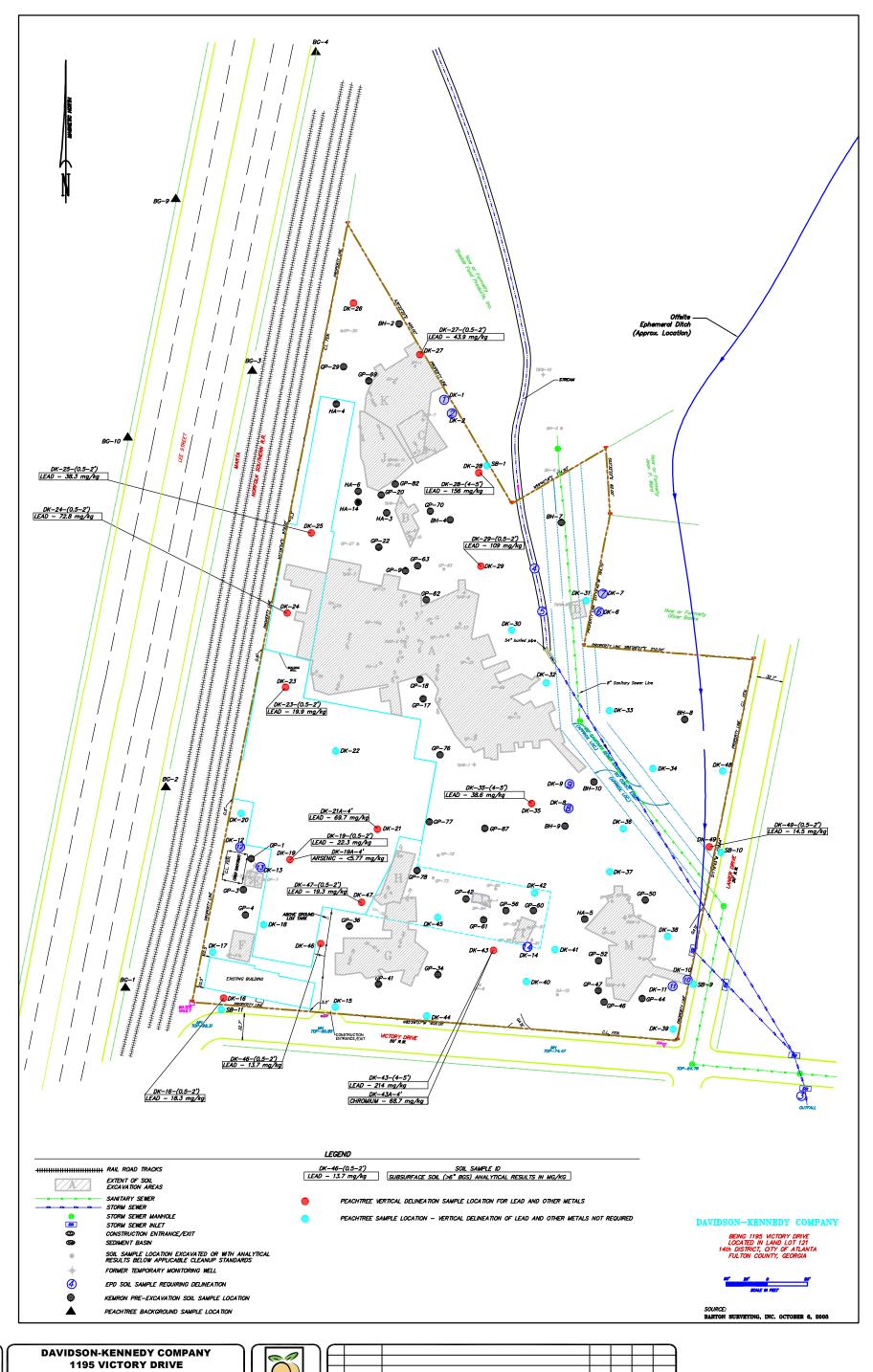


FIGURE NO. 9 3185

ATLANTA, GEORGIA

VERTICAL DELINEATION OF ON-SITE LEAD AND OTHER METALS IN SOIL



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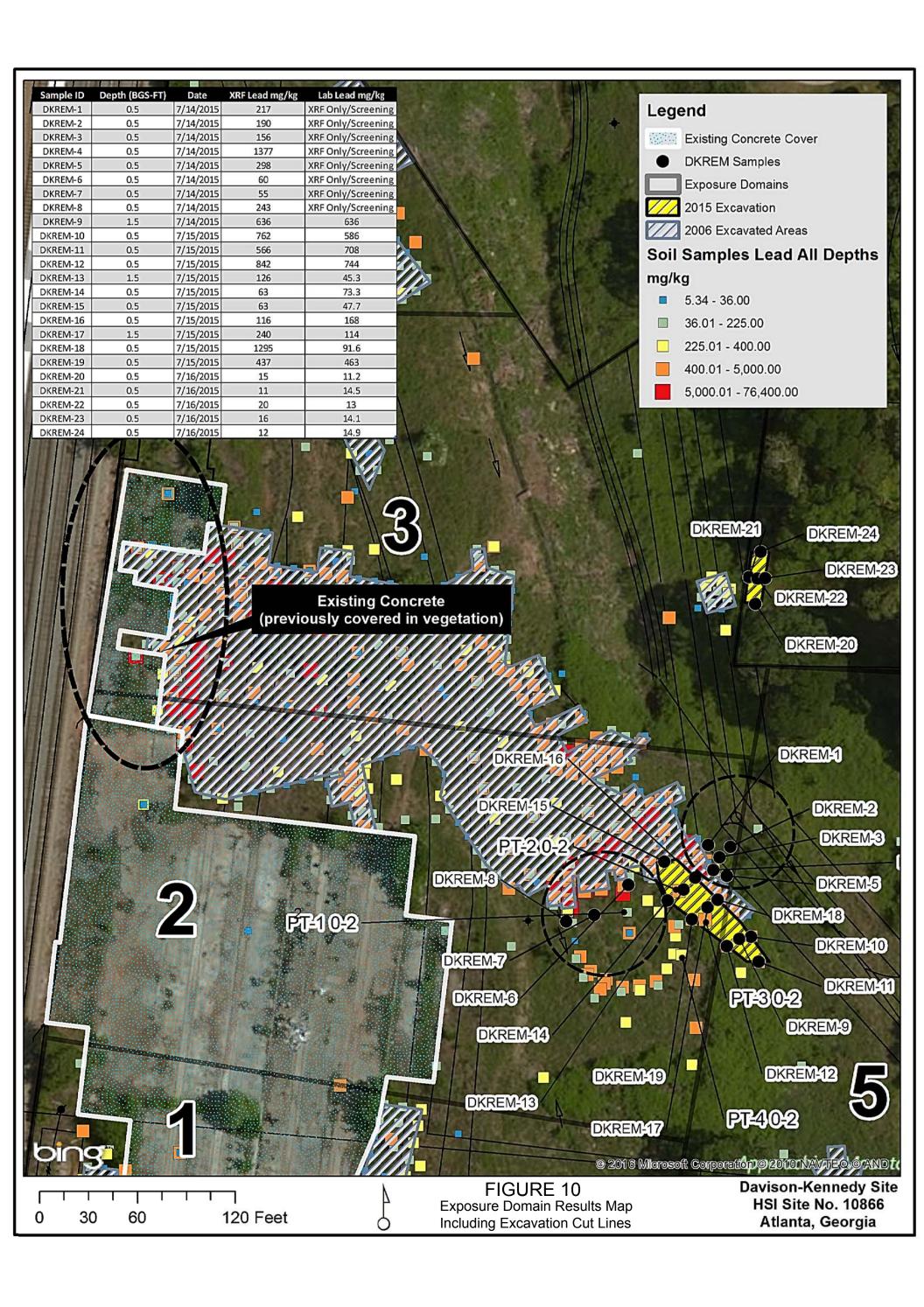




PHOTO LOG



Photo 1 On-site stream.



Photo 2 On-site stream enters culvert.



Photo 3 Off-site stream outfall from culvert.



Photo 4 Shot of building (unoccupied office building).



Photo 5 Compliance Area.



Photo 6 Off-site residential area.



Photo 7 Dump truck being loaded for off-site disposal.



Photo 8 Confirmation sample locations in compliance area.



Photo 9 Western part of Property underlain by concrete.



Photo 10 Hot spot (> 28,000 mg/Kg) resampled and eliminated from the data set.



Photo 11 Compliance area in January 2016.



Photo 12 Off-site excavation in January 2016.



Photo 13 Concrete pad after debris removal - A.



Photo 14 Concrete pad after debris removal - B.



Photo 15 Concrete barrier placed across front of entrance.



APPENDIX A

EPD Letter Approving D-Ks Corrective Action Plan with Responses

Georgia Department of Natural Resources

Environmental Protection Division-Land Protection Branch 2 Martin Luther King Jr., Dr., Suite 1054 East, Atlanta, Georgia 30334

e 1034 East, Atlanta, Georgia 30334 (404) 657-8600; Fax (404) 657-0807 Judson H. Turner, Director

May 22, 2015

Davidson-Kennedy Company c/o Mr. Joseph H. Rubin 5273 Redfield Road Dunwoody, Georgia 30338

RE:

7th Semi-Annual VRP Progress Report, December 2014 Revised Corrective Action Plan and Final Preliminary Risk Evaluation, May 2015 Davidson-Kennedy Company Property, HSI Site No. 10866 1195 Victory Drive, Atlanta, Fulton County, Georgia Tax Parcel 14-0121-0007-002-4

Dear Mr. Rubin:

The Georgia Environmental Protection Division (EPD) has reviewed the December 2014 VRP Progress Report and the Revised Corrective Action Plan (CAP) and Final Preliminary Risk Evaluation (PRE) dated May 2015, submitted for the above referenced Site pursuant to the Georgia Voluntary Remediation Program Act (the Act). The Revised CAP/PRE report was initially submitted March 24, 2015, and the May 2015 revision is based on our April 23, 2015 meeting and subsequent emails, which are also incorporated into this review. EPD approves the revised corrective action plan, subject to the comments provided below, which should be addressed in accordance with the Act:

Remedial Plan

- 1. EPD agrees with the proposed approach to address exceedences in Domain 2 and Domain 3 and methodology proposed to bring those exposure domains into compliance with the compliance criteria of 400 mg/Kg. Please collect confirmation samples for laboratory analysis from all areas excavated to meet compliance criteria. Post excavation results from exceedence blocks should not be used to demonstrate compliance with the compliance criteria until all exceedence blocks have been excavated.
- 2. XRF analysis must be completed in accordance with procedures described in USEPA Region 4 Science and Ecosystem Support Division Field Branches Quality System and Technical Procedures, X-Ray Fluorescence Measurement, dated December 20, 2011. Please provide a calibration curve for the XRF analysis and a comparison of XRF results and laboratory analytical results.
- 3. EPD understands that the proposed cutline for the 'Mandatory/Compliance Excavation is based on four samples collected in September 2014. Please confirm the proposed southwest wall of the compliance excavation area extends far enough to remove any material above 10,000 mg/Kg or that results in the exceedence of the compliance criteria for that exposure domain. A description of the sampling procedure and the laboratory data

Davidson Kennedy Company May 22, 2015 Page 2

from the September 2014 event should be included in the Compliance Status Report (CSR).

4. EPD's approval of this report and of the remedial approach in general, is contingent on the revised geostastical analysis which will include a sensitivity analysis, to be included in the final CSR. Please implement corrective action as described paying special attention to areas of kriged elevated lead concentrations where previous data is not available.

Uniform Environmental Covenant

5. The December 2014 report states that a revised draft of the uniform environmental covenant (UEC) for the above referenced property will be submitted under separate cover. Please submit the revised UEC, which incorporates comments from EPD's October 23, 2014 letter, by August 1, 2015.

Preliminary Risk Evaluation

- EPD agrees with the conclusions provided in the PRE; therefore, no additional remediation
 is necessary at this time to mitigate ecological risk provided that the UECs include
 inspection and maintenance requirements that eliminate erosion of potentially
 contaminated material into surface water.
- 7. EPD acknowledges that analytical results provided for sample DK-3 in the December 2014 report were not accurate due to a laboratory error, and that the corrected results are included in the March 2015 PRE. Lab reports for the most recent surface water and sediment sampling must be included in the final compliance status report along with a short description of the error.

Davidson-Kennedy Company must address these comments to EPD's satisfaction in order to demonstrate compliance with the provisions, purposes, standards and policies of the Act. EPD may, at its sole discretion, review and comment on documents submitted by Davidson-Kennedy Company. However, failure of EPD to respond to a submittal within any timeframe does not relieve Davidson-Kennedy Company from complying with the provisions, purposes, standards and policies of the Act.

The next progress report, due December 30, 2015, should include the results of the remedial plan implementation. If you have any questions, please contact John Maddox of the Response and Remediation Program at (404) 463-0076.

Sincerely,

Jason Metzger Unit Coordinator

Response and Remediation Program

C: John P. Martiniere Jr., P.E. – Peachtree Environmental

File: HSI #10866



Peachtree Environmental 3000 Northwoods Parkway Suite 105 Norcross, Georgia 30071-1597 770-449-6100 / fax 770-449-6119

January 14, 2016

Mr. Jason Metzger Response and Remediation Program Georgia Department of Natural Resources / EPD 2 Martin Luther King, Jr. Drive, SE Suite 1054 Atlanta, GA 30334-9000

RE: Response to May 22, 2015 EPD Comment Letter regarding Seventh (7th) Semiannual VRP Progress Report and Revised Remedial Plan Approval Letter Davidson-Kennedy Company Property, HSI Site No. 10866 1195 Victory Drive, Atlanta, Fulton County, Georgia Tax Parcel 14-0121-0007-002-4

Dear Mr. Metzger:

Peachtree Environmental (Peachtree) has reviewed the Georgia Environmental Protection Division (EPD) May 22, 2015 comment letter regarding the Seventh (7th) Semiannual VRP Progress Report for the Davidson-Kennedy Company Property dated December 2014 and the Revised Corrective Action Plan (CAP) and Final Preliminary Risk Evaluation (PRE) dated May 2015, initially submitted in March 2015 with several explanatory e-mails subsequently submitted for the above referenced Property..

Peachtree has prepared responses to the specific comments of the letter, as follows:

Remedial Plan

Comment 1:

EPD agrees with the proposed approach to address exceedances in Domain 2 and Domain 3 and methodology proposed to bring those exposure domains into compliance with the compliance criteria of 400 mg/Kg. Please collect confirmation samples for laboratory analysis from all areas excavated to meet compliance criteria. Post excavation results for exceedance blocks should not be used to demonstrate compliance with the compliance criteria until all exceedance blocks have been excavated.

Response:

So noted. After using XRF Analyzer on site to guide the extent of excavation, confirmation samples were collected for laboratory analysis from the excavated areas to meet compliance criteria, which consisted of one on-site area (the "compliance area") and one off-site area. The confirmation samples were collected after excavation was complete for the compliance and off-site areas.

Comment 2:

XRF analysis must be completed in accordance with procedures described in USEPA Region 4 Science and Ecosystem Support Division Field Branches Quality System and Technical Procedures, X-Ray Florescence Measurement, dated December 20, 2011. Please provide a calibration curve for the XRF analysis and a comparison of XRF results and laboratory analytical results.

Response:

Calibration data for the XRF are presented in Appendix G and a comparison of XRF results and laboratory analytical results for the compliance area is presented as part of Figure 10.

Comment 3:

EPD understands that the proposed cutline for the Mandatory/Compliance Excavation is based on four samples collected in September 2014. Please confirm the proposed southwest wall of the compliance excavation area extends far enough to remove any material above 10,000 mg/Kg or that results in the exceedance of the compliance criteria for that exposure domain. A description of the sampling procedure and the laboratory data from the September 2014 event should be included in the Compliance Status Report (CSR).

Response:

XRF analyses were performed at potential hot spots in the area beyond the southwest wall and demonstrated that residual concentrations would not result in exceedance of compliance criteria for that exposure domain. Post-excavation confirmation samples were also taken for laboratory analysis that showed that contaminated material in that area had been removed. The sampling procedure is discussed in Section 4.2of the report and the laboratory data from the September 2014 event is included in Appendix I.

Comment 4:

EPD's approval of this report and of the remedial approach in general, is contingent on the revised geostatistical analysis which will include a sensitivity analysis, to be included in the final CSR. Please implement corrective action as described paying special attention to areas of kriged elevated lead concentrations where previous data is not available.

Response:

A sensitivity analysis has been included in Appendix C, Geostatistical Analysis. The corrective action was guided by the Kriging results in areas where previous data were not available.

Uniform Environmental Covenant

Comment 5:

The December 2014 report state that a revised draft of the uniform environmental covenant (UEC) for the above referenced property will be submitted under separate cover. Please submit the revised UEC, which incorporates comments from EPD's October 23, 2014 letter, by August 1, 2015.

Response:

A final draft UEC was recently submitted to EPD and approved with a few minor corrections, which have been made. The final approved UEC will be included in the final CSR submission.

Preliminary Risk Evaluation

Comment 6:

EPD agrees with the conclusions provided in the PRE; therefore, no additional remediation is necessary at this time to mitigate ecological risk provided that the UECs include inspection and maintenance requirements that eliminate erosion of potentially contaminated material into surface water.

Response:

The final approved UEC includes inspection and maintenance procedures to minimize erosion of potentially contaminated material into surface waters.

Comment 7:

EPD acknowledges that analytical results provided for sample DK-3 in the December 2014 report were not accurate due to a laboratory error, and that the corrected results are included in the March 2015 PRE. Lab reports for the most recent surface water and sediment sampling must be included in the final compliance status report along with a short description of the error.

Response:

The analytical results for the sediment samples collected at the Davidson-Kennedy property in December of 2014 were initially reported to EPD in the 7th Semiannual VRP Progress Report submitted on December 29, 2014. During the subsequent preparation of the Preliminary Risk Evaluation, Peachtree identified a peculiarity with the semi-volatile organic compound (SVOC) results for the sediment samples DK-3 and DK-5. Peachtree noticed that the seven SVOC constituents detected in DK-3 were the exact same seven constituents detected in sediment sample DK-5. More concerning, however, was that the concentrations of each constituent were almost identical.

Considering the distance between the two samples (DK-5 was collected approximately 650 feet upstream from DK-3) and the degree of similarity between the laboratory results, Peachtree requested that the laboratory reanalyze sediment samples DK-3 and DK-5 for SVOCs. The reanalyzed sample results showed significant decreases in SVOC concentrations in sediment sample DK-3, while the results for DK-5 were relatively unchanged.

Based on the reanalysis of sediment samples DK-3 and DK-5, Peachtree concluded that during the initial laboratory analyses conducted on December 3, 2014, the DK-5 sample was mistakenly analyzed twice and one set of results was reported for DK-3. Therefore, Peachtree disregarded the laboratory results reported for sediment sample DK-3 from December 3, 2015, and instead relied upon the reanalysis of DK-3 performed on December 24, 2015.

The revised analytical results are summarized in a table Appendix D. The original lab analyses are included in Appendix D also.

Davidson-Kennedy Company has attempted to address Georgia EPD's comments in this response letter and in the CSR. Furthermore, the CSR presents the results of the corrective action plan implementation as required by the comment letter. Therefore, the Davidson-Kennedy Company believes that it has demonstrated compliance with the requirements of the Voluntary Remediation Program Act and hereby respectfully requests that the Property be removed (delisted) from the Hazardous Sites Inventory (HSI).

Please feel free to contact either of the undersigned if you have any questions or require additional information.

Respectfully submitted,

Brad A. White, PG

Professional Geologist

770-449-6100, ext. 223

cc. Mr. John Maddox, EPD

John P. Martiniere, Jr., PE

Technical Director

770-449-6100, ext. 225



APPENDIX B

Corrective Action Plan and Various Documents Revising the Initial Plan



APPENDIX B-1

Revised Corrective Action Plan (CAP) and Final Preliminary Risk Evaluation (PRE) March 2015

3.0 CONCEPTUAL SITE MODEL

Groundwater and soil delineation data collected as part of assessment activities in October and November 2011 were utilized to update the Conceptual Site Model (CSM) and complete horizontal delineation on the VRP Property. These findings were presented in the December 2011 Semi-Annual Update Report. These data indicated areas of fill of varying depths which are likely attributable to grading and Property leveling for the construction of buildings and operational areas in the early development of the Property dating back to pre-1920s. These urban fill areas contain varying concentrations of regulated substances, namely Metals and PAHs.

Off-property samples collected by the EPD in 2007 indicated that further delineation of regulated constituents is required to the east. These delineation activities were implemented in May of 2012. Horizontal delineation of previous sample locations at the Property was implemented in May and June 2013. Vertical delineation of previous sample locations at the Property was implemented in November 2013. These delineation activities are described in further detail in the following sections.

3.1 May 2012 Off-Property Soil Horizontal Delineation Results

The EPD collected a total of two (2) samples in August of 2007 on a property located at 1705 Lanier Drive. This property is located immediately adjacent to the eastern boundary of the D-K Property. A total of two (2) surface soil samples, DK-6 and DK-7, were collected and analyzed for RCRA Metals and Semi-volatile Organic Compounds (SVOCs). Sample analytical testing results indicated no detections of SVOCs above the laboratory method detection limits (MDL). Arsenic, Barium, and Chromium were detected above the laboratory MDL, but below applicable Type 1 RRS. Lead was detected above the anthropogenic background concentration of 224 mg/kg, as follows:

- DK-6 GEPD Lead Result: 330 mg/kg (No SVOCs detected)
- DK-7 GEPD Lead Result: 260 mg/kg (No SVOCs detected)

In May 2012, Peachtree installed a total of four (4) soil borings (OS-1 to OS-4) to delineate the previous detections in DK-6 and DK-7. The shallow (0 to 0.5 foot) and deeper subsurface intervals (3 feet) were recovered from each soil boring and submitted for analytical testing for Lead via EPA Method 6010. Peachtree's soil sample locations were recorded via a Trimble hand-held GPS unit and plotted on a survey of the D-K Property and adjacent residential lot. As depicted on Figure 7 in the June 2012 VRP Semiannual Report, the May 2012 soil samples were collected 25 feet to the north, south, and east of soil samples DK-6 and DK-7.

Analytical testing results reported shallow surface interval concentrations of Lead ranging from 26.1 mg/kg in sample OS-3-1 to 220 mg/kg in sample OS-1-1. Deeper interval Lead concentrations ranged from 12.0 mg/kg in sample OS-4-3 to 15.8 mg/kg in sample OS-1-3. Analytical results for the May 2012 off-property assessment activities were presented on Table 4 and summarized on Figure 7 in the June 2013 VRP Semiannual Report.

Copies of the May 2012 laboratory analytical data report were included in Appendix D in the June 2012 VRP Semiannual Report.

Based on a comparison to the calculated anthropogenic Lead background concentration of 224 mg/kg, off-property horizontal delineation of DK-6 and DK-7 is complete.

3.2 On-Property Soil Horizontal Delineation – Western and Southern Property Boundary

Horizontal delineation activities on the VRP Property were initiated in November 2011. A total of thirty-five (35) soil borings were advanced in order to delineate concentrations of select metals and PAHs in surface soils. The November 2011 sample locations were selected based upon analytical data gaps from soil borings conducted by Kemron in 2005 and data collected by the Georgia EPD and Kemron in 2007. Based on the analytical results, the following nine (9) soil samples on the western and southern property boundary were above the anthropogenic Lead background concentration of 224 mg/kg:

- DK-12 GEPD Lead Result: 1,900 mg/kg
- DK-13 GEPD Lead Result: 1,500 mg/kg
- DK-16 Peachtree Lead Result: 364 mg/kg
- DK-23 Peachtree Lead Result: 243 mg/kg
- DK-24 Peachtree Lead Result: 28,600 mg/kg
- DK-25 Peachtree Lead Result: 3,710 mg/kg
- GP-1 Kemron Lead Result: 307 mg/kg
- GP-3 Kemron Lead Result: 342 mg/kg
- GP-4 Kemron Lead Result: 278 mg/kg
- GP-29 Kemron Lead Result: 254 mg/kg

In February and April 2011, Peachtree conducted an anthropogenic background study for Lead impacts to surface soils from the former Ft. McPherson Army Base incinerator. A series of ten (10) background soil samples were collected from the right-of-way of Lee Street located between the Davidson-Kennedy property and the incinerator. Five (5) of the samples (BG-1 to BG-5) were collected from the eastern right-of-way of Lee Street and five (5) samples (BG-6 to BG-10) were collected form the western side right-of-way along Lee Street. Samples were collected from the surface (0 to 6 inches) interval utilizing a decontaminated stainless steel sampling spoon. Recovered samples were placed in laboratory-supplied containers and submitted to Analytical Environmental Services, Inc. for testing of RCRA Metals via EPA Method 6010. The sampling methodology, analytical testing results, and statistical analysis of the background study were initially presented in

the May 2011 Amended VRP Application submission to the Georgia EPD. Soil samples BG-1, BG-2, BG-3, BG-9, and BG-10 were utilized to delineate Lead impacts to the west of the aforementioned nine (9) soil sample locations. The analytical results from each of the April 2011 soil sample locations are as follows:

• BG-1 – Lead Result: 109 mg/kg

BG-2 – Lead Result: 43.9 mg/kg

• BG-3 – Lead Result: 95.8 mg/kg

BG-9 – Lead Result: 64.3 mg/kg

BG-10 – Lead Result: 406 mg/kg

Based on a comparison of the Lead results from Peachtree's 2011 background study to previous soil sample locations DK-12, DK-13, DK-16, DK-23, DK-24, DK-25, GP-1, GP-3, GP-4, and GP-29, Peachtree has determined that horizontal delineation of surface soils is complete along the western property boundary.

On the southern property boundary, horizontal delineation of Lead was incomplete, based on the detection of Lead at DK-16 above 224 mg/kg. As such, Peachtree collected a surficial soil sample (SB-11) twenty (20) feet south of DK-16, within the right-of-way along Victory Drive in June 2013. Based on the analytical results of 20.3 mg/kg, Peachtree has determined that horizontal delineation of surface soils is complete along the southern property boundary.

Kemron's August 2005 soil analytical results for sample locations outside of the excavation area were summarized on Table 5 in the June 2013 VRP Semiannual Report. The February/April 2011 background study analytical results (and statistical analysis) and May/June 2013 analytical results were summarized on Table 6 and 7, respectively, in the June 2013 VRP Semiannual Report. The soil sample locations, analytical results, and horizontal extent contours were illustrated on Figure 9 in the June 2013 VRP Semiannual Report.

3.3 On-Property Soil Horizontal Delineation – Eastern Property Boundary

As previously noted, horizontal delineation activities on the VRP Property were initiated in November 2011. A total of thirty-five (35) soil borings were advanced in order to delineate concentrations of select metals and PAHs in surface soils. The November 2011 sample locations were selected based upon analytical data gaps from soil borings conducted by Kemron in 2005 and data collected by the Georgia EPD and Kemron in 2007.

Based on the results of these past investigations, it was determined that the horizontal extent of Lead and select PAHs was incomplete at locations on the eastern (and northeastern) property boundary. As such, Peachtree collected a total of eleven (11)

samples from ten (10) soil boring locations (SB-1 through SB-10) in an effort to delineate impacts above applicable delineation standards.

The following details the locations and constituents requiring horizontal delineation, and the results of Peachtree May 2013 horizontal delineation activities.

3.3.1 May 2013 Horizontal Delineation of Total Lead Results

Based on a comparison of aforementioned historic Lead results to the 224 mg/Kg anthropogenic background concentration for the VRP Property, Peachtree determined that horizontal delineation of Lead was incomplete at the following soil sample locations on the eastern and northeastern property boundaries:

DK-10 - GEPD Lead Result: 1,200 mg/kg

DK-11 - GEPD Lead Result: 280 mg/kg

DK-28 - Peachtree Lead Result: 564 mg/kg

DK-49 - Peachtree Lead Result: 260 mg/kg

In May 2013, Peachtree installed three (3) soil borings (SB-1, SB-9, and SB-10) to delineate previous detections of Lead in shallow soils above 224 mg/kg at DK-10, DK-11, DK-28, and DK-49. The shallow (0 to 2 ft-bgs) and deeper subsurface intervals (4 ft-bgs) were recovered from each soil boring and submitted for analytical testing for Lead via EPA Method 6010. Peachtree's soil sample locations were recorded via a hand-held GPS unit and plotted on a survey of the D-K Property. SB-1 was collected 20 feet northeast of DK-28; SB-9 was collected within the right-of-way 10 feet east of DK-10 and 25 feet east of DK-11; and SB-10 was collected within the right-of-way 20 feet east of DK-49.

Analytical testing results reported shallow surface interval concentrations of Lead, as follows:

• SB-1-(0-2') – Lead Result: 161 mg/kg

SB-9-(0-2') – Lead Result: 19.4 mg/kg

• SB-10-(0-2') – Lead Result: 7.44 mg/kg

Based on a comparison to the calculated anthropogenic Lead background concentration of 224 mg/kg, horizontal delineation of Lead at DK-10, DK-11, DK-28, and DK-49 is complete. Analytical results for horizontal delineation assessment activities for Lead were summarized on Table 7 and were presented on Figure 9 in the June 2013 VRP Semiannual Report. Copies of the May and June 2013 laboratory analytical data report were included in Appendix C in the June 2013 VRP Semiannual Report.

3.3.2 May 2013 Horizontal Delineation of Select PAH Results

Based on a comparison of aforementioned historic PAH results to the respective Type 1 RRS, Peachtree determined that horizontal delineation of select PAHs was incomplete at the following shallow surface interval (less than 2 ft-bgs) soil sample locations on the eastern and northeastern property boundaries:

- DK-9 Kemron Benzo(a)pyrene Result: 2.2 mg/kg
- DK-10 GEPD Benzo(a)anthracene Result: 5.8 mg/kg; Benzo(a)pyrene Result: 11 mg/kg; Benzo(b)fluoranthene Result: 14 mg/kg; Chyrsene Result: 7.9 mg/kg; and Indeno(1,2,3-cd)pyrene Result: 9 mg/kg
- DK-11 Kemron Benzo(a)pyrene Result: 2.5 mg/kg
- DK-28 Peachtree Benzo(a)pyrene Result: 4.2 mg/kg

In addition, Peachtree determined that horizontal delineation of Benzo(a)pyrene was incomplete at the following deeper surface interval (greater than 2 ft-bgs) soil sample locations:

- GP-44 (4 ft-bgs) Kemron Benzo(a)pyrene Result: 4.0 mg/kg
- GP-46 (8 ft-bgs) Kemron Benzo(a)pyrene Result: 1.8 mg/kg
- GP-47 (4 ft-bgs) Kemron Benzo(a)pyrene Result: 3.7 mg/kg
- BH-8 (8-10 ft-bgs) Kemron Benzo(a)pyrene Result: 1.7 mg/kg (Based on discussions with EPD, the 1.7 mg/kg result is considered within range of the Type 1 RRS of 1.64 mg/kg and therefore no horizontal or vertical delineation at BH-8 would be required.)

In May 2013, Peachtree installed nine (9) soil borings (SB-1 through SB-9) to delineate previous detections of select PAHs in shallow (0 to 2 ft-bgs) and deeper (greater than 2 ft-bgs) soils above respective Type 1 RRS. The shallow and deeper subsurface intervals were recovered from each soil boring and submitted for analytical testing for Lead via EPA Method 6010. Peachtree's soil sample locations were recorded via a hand-held GPS unit and plotted on a survey of the D-K Property. SB-1 was collected 20 feet northeast of DK-28; SB-2 was collected 20 feet south of DK-28; SB-3 was collected 25 feet west of DK-9; SB-4 was collected 25 feet north of DK-9; SB-5 was collected 25 feet east of DK-9; SB-6 was collected within the right-of-way 50 feet south of GP-47; SB-7 was collected within the right-of-way 40 feet south of GP-46; SB-8 was collected within the right-of-way 50 feet south of GP-44; and SB-9 was collected within the right-of-way 10 feet east of DK-10 and 25 feet east of DK-11; and SB-10 was collected within the right-of-way 20 feet east of DK-49.

Analytical testing results reported shallow surface interval concentrations of select PAHs, as follows:

- SB-1-(0 2 ft-bgs) Benzo(a)pyrene Result: <0.41 mg/kg
- SB-2-(0 2 ft-bgs) Benzo(a)pyrene Result: <0.41 mg/kg
- SB-3-(0 2 ft-bgs) Benzo(a)pyrene Result: <0.41 mg/kg
- SB-4-(0 2 ft-bgs) Benzo(a)pyrene Result: <0.52 mg/kg
- SB-5-(0 2 ft-bgs) Benzo(a)pyrene Result: 44 mg/kg
- SB-6-4 ft-bgs Benzo(a)pyrene Result: <0.39 mg/kg
- SB-7-8 ft-bgs Benzo(a)pyrene Result: <0.39 mg/kg
- SB-8-4 ft-bgs Benzo(a)pyrene Result: <0.39 mg/kg
- SB-9-(0 2 ft-bgs) Benzo(a)anthracene Result: <0.38 mg/kg;
 Benzo(a)pyrene Result: <0.38 mg/kg;
 Benzo(b)fluoranthene Result: <0.38 mg/kg;
 Chyrsene Result: <0.38 mg/kg;
 and Indeno(1,2,3-cd)pyrene Result: <0.38 mg/kg
- SB-9-4' Benzo(a)pyrene Result: <0.39 mg/kg

Based on a comparison to the respective Type 1 RRS, horizontal delineation of PAHs at DK-10, DK-11, DK-28, GP-44, GP-46, and GP-47 is complete. However, due to the detection of Benzo(a)pyrene at SB-5-(0-2'), horizontal delineation at DK-9 was incomplete.

On June 18, 2013, Peachtree returned to the Property to install soil boring SB-12 and collect soil sample SB-12-(0-2') 25 feet east of SB-5. Analytical results indicated Benzo(a)pyrene at concentrations below the laboratory method detection limit (MDL), thus horizontal delineation is complete at DK-9. Analytical results for horizontal delineation assessment activities for select PAHs were summarized on Table 8 and presented on Figure 10A (less than 2 ft-bgs) and Figure 10B (greater than 2 ft-bgs) in the June 2013 VRP Semiannual Report. Likewise, shallow (less than 2 ft-bgs) and deep (greater than 2 ft-bgs) isoconcentration maps for Benzo(a)pyrene, Benzo(a)anthrancene, Benzo(b)fluoranthene, Chrysene, and Indeno(1,2,3cd)pyrene were included as Figures 11A-B, 12A-B, 13A-B, 14A-B, and 15A-B. respectively, in the June 2013 VRP Semiannual Report. Copies of the May and June 2013 laboratory analytical data report were included in Appendix C in the June 2013 VRP Semiannual Report.

3.4 BACKFILL SCREENING RESULTS

Peachtree mobilized to the Property on October 30, 2013 to collect soil samples in backfill locations across the Property. A total of ten (10) soil samples were collected from ten (10) soil borings and field screened for Lead using an XRF handheld unit. The XRF

results were averaged for utilization in the kriging model. Soil sample identifications, depths, and results are included below:

- DK-AREA G 1.5 ft-bgs XRF Lead Result: 36 mg/kg
- DK-AREA H 1.5 ft-bgs XRF Lead Result: 46 mg/kg
- DK-AREA M 4 ft-bgs XRF Lead Result: 37 mg/kg
- DK-AREA A1 3 ft-bgs XRF Lead Result: 34 mg/kg
- DK-AREA A2 3 ft-bgs XRF Lead Result: 43 mg/kg
- DK-AREA A3 3 ft-bgs XRF Lead Result: 28 mg/kg
- DK-AREA K 4 ft-bgs XRF Lead Result: 45 mg/kg
- DK-AREA J 4 ft-bgs XRF Lead Result: 20 mg/kg
- DK-AREA E 1 ft-bgs XRF Lead Result: 34 mg/kg
- DK-AREA F 1 ft-bgs XRF Lead Result: 34 mg/kg

Based on the average of the ten (10) backfill locations field screened, the average Lead concentration was calculated to be 36 mg/kg. This concentration was utilized as the input for the average backfill concentration at the VRP Property. XRF soil sample locations are illustrated on **Figure 5**. The results of the kriging model re-analysis are provided in Section 3.7.



APPENDIX B-2

Original Corrective Action Plan (CAP) (Excerpt from VRP 6th Semiannual Progress Report)

3.5 On-Property Soil Vertical Delineation

Horizontal and vertical delineation activities on the VRP Property were initiated in November 2011. A total of thirty-five (35) soil borings were advanced in order to delineate concentrations of select metals and PAHs in surface soils. The November 2011 sample locations were selected based upon analytical data gaps from soil borings conducted by Kemron in 2005 and data collected by the Georgia EPD and Kemron in 2007. In May, June, and November 2013, Peachtree collected additional soil samples to complete horizontal and vertical delineation of COCs. The following sections discuss the results of these investigations.

3.5.1 November 2011 - 2013 Vertical Delineation of Select Metals Results

Based on Peachtree's November 2011 analytical results, the following 14 surficial soil samples (0.5 ft-bgs) were above the anthropogenic Lead background concentration of 224 mg/kg and/or exceeded the Type 1 RRS for Arsenic and Chromium, and required vertical delineation:

- DK-16 Lead Result: 364 mg/kg
- DK-19 Lead Result: 514 mg/kg; Arsenic Result: 25.2 mg/kg
- DK-21 Lead Result: 479 mg/kg
- DK-23 Lead Result: 243 mg/kg
- DK-24 Lead Result: 28,600 mg/kg
- DK-25 Lead Result: 3,710 mg/kg
- DK-27 Lead Result: 1,430 mg/kg
- DK-28 Lead Result: 564 mg/kg
- DK-29 Lead Result: 292 mg/kg
- DK-35 Lead Result: 292 mg/kg
- DK-43 Lead Result: 1,420 mg/kg; Chromium Result: 125 mg/kg
- DK-46 Lead Result: 240 mg/kg
- DK-47 Lead Result: 551 mg/kg
- DK-49 Lead Result: 260 mg/kg

The deeper soil samples were analyzed in November 2011 following the evaluation of surficial soil samples. In addition, soil samples DK-19A, DK-21A, and DK-43A

were collected in November 2013 for the purpose of vertically delineating Arsenic, Lead, and Chromium impacts, respectively, at DK-19, DK-21, and DK-43. The results of the completed vertical delineation samples and associated depths are provided below:

- DK-16 (0.5 2 ft-bgs) Lead Result: 18.3 mg/kg
- DK-19 (0.5 2 ft-bgs) Lead Result: 514 mg/kg
- DK-19A (4 ft-bgs) Arsenic Result: <5.77 mg/kg
- DK-21A (4 ft-bgs) Lead Result: 69.7 mg/kg
- DK-23 (0.5 2 ft-bgs) Lead Result: 19.9 mg/kg
- DK-24 (0.5 2 ft-bgs) Lead Result: 72.8 mg/kg
- DK-25 (0.5 2 ft-bgs) Lead Result: 38.3 mg/kg
- DK-27 (0.5 2 ft-bgs) Lead Result: 43.9 mg/kg
- DK-28 (4 5 ft-bgs) Lead Result: 156 mg/kg
- DK-29 (0.5 2 ft-bgs) Lead Result: 109 mg/kg
- DK-35 (4 5 ft-bgs) Lead Result: 38.6 mg/kg
- DK-43 (4 5 ft-bqs) Lead Result: 214 mg/kg
- DK-43A (4 ft-bgs) Chromium Result: 68.7 mg/kg
- DK-46 (0.5 2 ft-bgs) Lead Result: 13.7 mg/kg
- DK-47 (0.5 2 ft-bgs) Lead Result: 19.3 mg/kg
- DK-49 (0.5 2 ft-bgs) Lead Result: 14.5 mg/kg

Based on the analytical results of Peachtree's investigations, the vertical delineation of metals on the Property is complete. It should be noted that analytical results from the 0.5-2 ft-bgs depth interval in soil samples DK-28, DK-35, and DK-43 exceeded 224 mg/kg and thus vertical delineation was completed at the 4-5 ft-bgs depth interval. Likewise, deeper soil samples DK-27 (9 – 10 ft-bgs) and DK-29 (4 – 5 ft-bgs) were collected to determine if any deeper soils potentially to remain on the Property were impacted with Lead above 224 mg/kg. Based on these results, Lead was detected at concentrations of 337 mg/kg and 1,780 mg/kg in samples DK-27 (9 – 10 ft-bgs) and DK-29 (4 – 5'), respectively. The next depth interval at each of these sample locations (DK-27 (14 – 15 ft-bgs) and DK-29 (9 – 10 mg/kg)) indicated Lead concentrations of 90.0 mg/kg and 186 mg/kg, respectively. The results of the

horizontal and vertical delineation of metals in on-site soils are presented on **Figures 6A** and **6B**, respectively.

Peachtree did not attempt to vertically delineate previous soil samples collected by Georgia EPD and Kemron (BH-9, BH-10, GP-1, GP-3, GP-4, GP-18, GP-22, GP-29, GP-36, GP-62, GP-63, and GP-87) as the exact location / coordinates of the soil samples were not known.

3.5.2 November 2011 and May 2013 Vertical Delineation of PAHs Results

Based on Peachtree's November 2011 and May 2013 analytical results, the following surficial soil samples were above Type 1 RRS concentration of 1.64 mg/kg for Benzo(a)pyrene and required vertical delineation:

- DK-28 Benzo(a)pyrene Result: 4.20 mg/kg
- SB-5 Benzo(a)pyrene Result: 44 mg/kg

The deeper soil sample (8 – 10 ft-bgs) from DK-28 was analyzed in November 2011 following the evaluation of the surficial soil sample result. In addition, a deeper soil sample (4 ft-bgs) from SB-5 was analyzed in May 2013 following the evaluation of the surficial soil sample result. The results of the completed vertical delineation samples and associated depths are provided below:

- DK-28 (8 10 ft-bgs) Benzo(a)pyrene Result: <1.6 mg/kg
- SB-5 (4 ft-bgs) Benzo(a)pyrene Result: <0.39 mg/kg

Based on the results of Peachtree's investigations, the vertical delineation of Benzo(a)pyrene on the Property is complete. The analytical results for the vertical and horizontal delineation of PAHs (Benzo(a)pyrene, Benzo(a)anthracene, Benzo(b)fluroanthene, Chrysene, and Indeno(1,2,3-cd)pyrene) in on-site soils are presented on **Figures 7A-B**, **8A-B**, **9A-B**, **10A-B**, and **11A-B**, respectively. Peachtree did not attempt to vertically delineate previous soil samples collected by Georgia EPD and Kemron (DK-10, DK-11, GP-44, GP-46, and GP-47), as the exact location / coordinates of the soil samples were not known.



APPENDIX B-3

Revised Corrective Action Plan (CAP) May 2015

4.0 REMEDIATION PLAN

Between August 2005 and August 2007, Davidson-Kennedy voluntarily implemented assessment and corrective measures at the Property, and removed over 28,000 tons of accessible soil impacted with lead, VOCs, and SVOCs from 13 Excavation Areas, designated A through M. The excavated soil was disposed of at a permitted, off-property Subtitle D landfill. Post-excavation confirmatory sampling consisted of the collection and analysis of over 1,000 soil samples to verify that HSRA NCs were met in the areas where excavation activities had been conducted.

Based upon a Kriging geospatial statistical analysis, approximately 1,200 cubic yards of impacted soils still require removal to bring the VRP Property into compliance with the HSRA Type 3 RRS for lead of 400 mg/kg. In an April 3, 2014 letter, Georgia EPD approved the Kriging analysis.

Peachtree proposes to excavate impacted surficial (0 to 2 feet) soil in the areas identified by the Kriging analysis. Excavated material will be placed directly into transportation vehicles (i.e., dump trucks or trailers) or a roll-off box for off-site disposal. As stated above, the current estimated volume of soil to be excavated is approximately 1,200 cubic yards. However, the extent of excavation of impacted soil will be confirmed through post-excavation verification sampling. The results of the post-excavation verification sampling will be entered into the Kriging model with the excavated soil results removed, and the excavation will continue if warranted based on the model output. The estimated area requiring excavation is illustrated on **Figure 5**.

Confirmation soil samples will be collected along the sidewalls at an approximate rate of one sample for every 20 linear feet of sidewall and at the bottom of the excavation, at an approximate rate of one sample for every 500 square feet.

Lead has been detected at an off-site, residential property in shallow (0 to 2 feet) samples DK-6 and DK-7 at concentrations exceeding residential RRSs. In 2012, Peachtree advanced soil borings OS-1 though OS-4 on the off-site property to delineate the extent of lead previous detected at DK-6 and DK-7. Peachtree will continue to pursue access to the off-site property so that affected soil can be excavated at the same time as the soil excavation on the Property.

Soil impacted with PAHs above the Type 4 RRS will also be excavated. The default Type 4 RRS for benzo(a)pyrene (BAP) is 7.8 mg/kg, and BAP was detected at a concentration of 44 mg/kg in shallow (0 to 2 feet) soil sample SB-5, obtained by Peachtree in June 2013. Therefore, the soil will be excavated at the SB-5 location to a depth of 2 feet, and sidewall and excavation floor samples will be obtained. Based on the confirmation soil sample results, soil excavation will continue until soil exhibiting concentrations in excess of the Type 4 RRS has been removed.

In August 2007, Georgia EPD detected BAP at a concentration of 13 mg/kg in shallow (0 to 2 feet) sample DK-10, obtained near Excavation Area M, where various SVOCs had previously been detected in soil at concentrations over their respective NCs. BAP

had not been detected in 2006 in post-excavation soil sample CM-W33J, obtained from the sidewall of Excavation Area M near the DK-10 location. In June 2013, Peachtree collected shallow (0 to 2 feet) soil sample SB-9 at or near the DK-10 location; neither benzo(a)pyrene nor other PAHs were detected above the laboratory reporting limit in the SB-9 soil sample. As the results of soil samples CM-W33J and SB-9 both indicate that the BAP previously reported at DK-10 is either not present or of extremely limited extent, no soil excavation will be performed at the former DK-10 location.



APPENDIX B-4

Horizontal Delineation (Excerpt from VRP 5th Semiannual Progress Report)

REVISED CORRECTIVE ACTION PLAN (CAP) AND FINAL PRELIMINARY RISK EVALUATION FOR THE DAVIDSON-KENNEDY COMPANY FACILITY 1195 VICTORY DRIVE ATLANTA, FULTON COUNTY, GEORGIA

HSI # 10866

DOCUMENT PREPARED FOR:

DAVIDSON KENNEDY COMPANY

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March 2015

THE INFORMATION CONTAINED IN THIS REPORT TITLED "REVISED CORRECTIVE ACTION PLAN (CAP) AND FINAL PRELIMINARY RISK EVALUATION FOR THE DAVIDSON-KENNEDY COMPANY ATLANTA, FULTON COUNTY, GEORGIA"

HSI#10866

IS INTENDED FOR THE
USE OF DAVIDSON-KENNEDY COMPANY, THEIR OFFICERS
AND DESIGNEES
AND THE
GEORGIA DEPARTMENT OF NATURAL RESOURCES

Project No. 3185

DOCUMENT PREPARED BY:

Brad D. White, PROJECT MANAGER

DOCUMENT REVIEWED BY:

John P. Martiniere, Jr., P.E., PROJECT DIRECTOR

CERTIFICATION

"I certify that I am a qualified groundwater scientist who has received a baccalaureate or post graduate degree in the natural sciences or engineering, and have sufficient training and experience in groundwater hydrology and related fields, as demonstrated by state registration and completion of accredited university courses, that enable me to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that this report was prepared by me or by a subordinate working under my direction."

John P. Martiniere, Jr., P.E. Georgia Registration No. 11858 No. 011858
PROFESSIONAL

MARTINIER

MARTINIER



Peachtree Environmental

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March 20, 2015

Mr. John Maddox Georgia Environmental Protection Division Response and Remediation Program 2 Martin Luther King, Jr. Drive SE Suite 1054 East Atlanta, GA 30334-9000

Dear Mr. Maddox:

This letter presents the revised Corrective Action Plan (CAP) and the final Preliminary Risk Evaluation (PRE) discussed in our meeting with EPD (the Meeting) on January 26, 2015 and referenced in the 7th Semiannual Progress Report (the 7th Progress Report) submitted in December 2014. The initial PRE was submitted on March 14, 2014 and the initial CAP was submitted in the 6th Semiannual Progress Report submitted in June 2014. Updates on the PRE were submitted in the 7th Semiannual Progress Report submitted in December 2014. The final PRE is presented in **Appendix A** of this report; the revised CAP is presented in the paragraphs below.

CORRECTION ACTION PLAN (CAP)

In the 7th Progress Report and in the Meeting on January 26, 2015, Peachtree reported discovery of additional usable data for near surface lead samples that allowed a more robust Kriging effort to determine what contaminated areas must be removed to provide area averaging results which meet Risk Reduction Standards (RRSs). The paragraphs below summarize the historical progression of domain averaging on the site.

DOMAIN AREA AVERAGING AND GEOSPATIAL ANALYSIS OF SOIL DATA

Areas of urban fill are present throughout the VRP Property. Urban fill presents a unique situation where there is not a reasonably defined source area, but rather a widespread matrix of heterogeneous material exhibiting varying degrees of impact by regulated substances. As such, a cleanup based upon individual soil sample results may incorrectly mischaracterize risk.

The VRP Property was evaluated based upon statistical "averages" of pre-defined exposure domains in order to more realistically characterize the risk for the Property from lead contamination. Lead was evaluated since it is the most widespread regulated constituent in soil.

The initial Kriging of the site was performed in January 2012 and presented to EPD as part of the Second Semiannual VRP Progress Report in June 2012. The Kriging and domain averaging resulted in an identification of 1,100 cubic yards of material on site that needed to be excavated and disposed.

Subsequently, EPD expressed concern with the value used for extensive fill material used on site since only one data point (a composite made up of samples from five locations) was utilized to characterize all fill material. Therefore, in November 2013, a re-analysis of the Kriging model was performed using soil data from 10 samples collected in October 2013 at various points from the backfill utilized in the former (2007) excavation. The reanalysis resulted in an identification of approximately 1,180 cubic yards of lead-impacted soils that required removal to bring the domain area average in each domain into compliance with the HSRA Type 3 RRS for lead of 400 mg/kg (an addition of 80 cubic yards to the previous total). These results were submitted to EPD for their evaluation of the Kriging approach.

EPD provided comments regarding the Kriging model during a June 12, 2013 meeting and via email, and Peachtree responded to the comments and questions in a letter dated December 27, 2013. In a letter dated April 3, 2014, Georgia EPD stated that Peachtree had satisfactorily addressed EPD's questions regarding the geo-statistical soil evaluation, and concurred with the area-averaging approach and the goal of an average lead concentration of less than 400 mg/kg in each exposure domain.

A VRP Corrective Action Plan to remove soil in the most heavily impacted areas, including a description of post-excavation confirmation soil samples, was included in the 6th Semiannual VRP Progress Report (Section 4.0) submitted in June 2014.

In the 3rd Quarter of 2014, Peachtree discovered additional usable data from the original confirmation samples utilized to determine the extent of excavation in 2007. These data were actually identified earlier and considered for use, but Peachtree could only find paper copies of the results with illegible labeling of the sample location IDs, from which it would have been difficult to establish necessary locational information. Recognizing that these data would significantly improve confidence in the Kriging results, Peachtree renewed efforts and was able to find the original digital CAD drawings (in the archives of the firm which performed the excavation), which provided legible locational information.

The additional 622 data points added to the approximate 130 data points utilized in the initial efforts allowed re-Kriging of the 5 domains to significantly improve confidence in the results. These results, which reduced the excavation volume required to be removed, were discussed with EPD in the Meeting in early 2015. The presentation showing the re-Kriging assumptions and estimates is presented in **Appendix B.**

At EPD's request, Peachtree has revised the CAP based on the updated Kriging results and hereby presents the revised CAP in the following paragraphs.

REVISED CAP

Between August 2005 and August 2007, Davidson-Kennedy voluntarily implemented assessment and corrective measures at the Property, and removed over 28,000 tons of accessible soil impacted with lead, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) from 13 Excavation Areas, designated A through M. The excavated soil was disposed of at a permitted, off-property Subtitle D landfill. Post-excavation confirmatory sampling consisted of the collection and analysis of over 1,000 soil samples to verify that HSRA Notification Concentrations (NCs) were met in the areas where excavation activities had been conducted.

City of Atlanta Building Permit

Although we had originally planned to obtain a City of Atlanta Building permit, it was decided that since our on site activity will have nothing to do with buildings or structures as stated in the Atlanta Municipal Code, such a permit is not necessary. Similarly, there is no requirement for a Fulton County Land Disturbance Permit since the area of disturbance (~2,500 square feet) is well below the County threshold of 5,000 square feet. Also, there is no requirement for a permit under the National Pollution Discharge Elimination System (NPDES) since the area to be disturbed is less than 1 acre.

On Site Excavation

In an April 3, 2014 letter, EPD approved the Kriging approach. In the Meeting on January 26, 2015, EPD verbally approved the revised Kriging analysis using the expanded data set discussed at the Meeting. The revised Kriging has resulted in the removals discussed in the following paragraphs.

Lead. Accordingly, Peachtree proposes to excavate impacted surficial (0 to 1 feet) lead-contaminated soil in the on-site area identified by the Kriging analysis, referred to as the "Compliance Area". The currently estimated volume of on-site soil to be excavated, between 65 cubic yards and 100 cubic yards (depending on confirmation analyses), will still require removal to bring the VRP Property into compliance with the HSRA Type 3 RRS for lead of 400 mg/kg.

Excavated lead-contaminated material will be placed directly into transportation vehicles (i.e., dump trucks or trailers) or a roll-off box for off-site disposal. However, the extent of excavation of impacted soil will be confirmed through post-excavation verification sampling. The results of the post-excavation verification sampling will be entered into the Kriging model with the excavated soil results removed, and the excavation will continue if warranted based on the model output. The estimated area requiring excavation on—site is illustrated on **Figure 1.**

Confirmation soil samples will be collected along the sidewalls of the Compliance Area

excavation at an approximate rate of one sample for every 20 linear feet of sidewall and at the bottom of the excavation, at an approximate rate of one sample for every 500 square feet. The boundaries of the excavation will be stepped out until XRF analysis indicates the likelihood that confirmation samples taken as described above will show that the contaminated soil has been removed. Then samples will be taken and submitted to a laboratory for analysis.

SVOCs. Soil impacted with SVOCs above the Type 4 RRS will also be excavated. The default Type 4 RRS for benzo(a)pyrene (BAP) is 7.8 mg/kg, and BAP was detected at a concentration of 44 mg/kg in shallow (1' foot) soil sample SB-5, obtained by Peachtree in June 2013, the only sample exhibiting a concentration of SVOCs above the Type 4 standard. This sample location falls within the Compliance Area and thus will be removed with the lead contaminated soil. Confirmation sampling will be conducted as described above in the area of SB-5 and analyzed for SVOCs. The results of the post-excavation verification sampling will be entered into the Kriging model with the excavated soil results removed, and the excavation will continue if warranted based on the model output.

Hot Spots. One point of particular concern to both Davidson-Kennedy and EPD was the sample identified as DK-24, which showed a concentration of lead of 28,600 mg/kg, an order of magnitude higher than the next highest reading on site. Although this location was eliminated from the area requiring excavation through the Kriging exercise, this particular "hot spot" remained of concern due to its high concentration. At the request of EPD at the Meeting, this spot was resampled to eliminate any inconsistencies in sampling or analytical techniques. The updated result for lead, taken at a depth of approximately 12 inches similar to the original sample, was 36.3 mg/kg, which is more in line with other samples taken in the proximity. Therefore, the point DK-24 was removed from the data set and is no longer of concern. The laboratory analytical report is included in **Appendix C.**

In addition, if schedule and budget allow, Davidson-Kennedy may voluntarily remediate one or more of three remaining "hot spots" which had results ranging from ~1,200 mg/kg to ~3,500 mg/kg for lead, even though EPD did not indicate continuing concern with these spots at the Meeting. These hot spots would be excavated to a depth of 1 foot. An XRF Analyzer would be utilized to give an indication that the hot spot has been removed; however, no post-excavation sampling and laboratory analysis will be performed on these areas. It should be noted that even if these hot spots are not removed, their inclusion in the data set does not cause their respective exposure domains to exceed the 400 mg/kg standard.

Site Restoration. Since the excavation will most likely only be to a depth of 1 foot in most areas, it is not anticipated that it will be necessary to backfill the excavated areas on site. These areas will be graded over to reduce the potential for pooling of water. On site debris will also be removed during field activities, including scrap tires and other major miscellaneous wastes, and properly disposed.

Off Site Excavation

The EPD collected a total of two (2) samples in August of 2007 on a property located at 1705 Lanier Drive. This property is located immediately adjacent to the eastern boundary of the D-K Property. The EPD-collected samples were split with Kemron Environmental Services, Inc. (Kemron). A total of two (2) surface soil samples, DK-6 and DK-7, were collected and analyzed for RCRA Metals and Semi-volatile Organic Compounds (SVOCs). Sample analytical testing results were as follows:

- DK-6 EPD Lead Results: 330 mg/kg / Kemron Results: Lead 468 mg/kg;
- DK-7 EPD Lead Results: 260 mg/kg / Kemron Results: Lead 244 mg/kg;

In May 2012, Peachtree installed a total of four (4) soil borings (OS-1 to OS-4) to delineate the previous detections in DK-6 and DK-7. The shallow (0 to 0.5 foot) and deeper subsurface intervals (3 feet) were recovered from each soil boring and submitted for analytical testing for lead via EPA Method 6010. Locations for Peachtree's samples collected for off-property delineation were recorded via a Trimble hand-held GPS unit and plotted on a survey of the D-K Property and adjacent residential lot.

Analytical testing results reported shallow surface interval concentrations of lead ranging from 26.1 mg/kg in sample OS-3-1 to 220 mg/kg in sample OS-1-1. Deeper interval Lead concentrations ranged from 12.0 mg/kg in sample OS-4-3 to 15.8 mg/kg in sample OS-1-3. Analytical results for off-property assessment activities are presented in the 2nd Semiannual Progress Report submitted in June 2012.

Based on a comparison to the calculated anthropogenic lead background concentration of 224 mg/kg, off-site horizontal and vertical delineation of contamination found at DK-6 and DK-7 was deemed to be complete in June 2012.

These sample points are shown on **Figure 2**, with the proposed approximate areas of excavation identified.

Peachtree has obtained off-site access permission from Ms. Tracy Dummett, owner of the off site property at 1705 Lanier Drive. The e-mail with Ms. Dummett's permission is included as **Appendix D.**

The affected off site soil will be excavated at the same time as the soil excavation on the Property. Confirmation sampling will be performed in this area as well. Excavation will initially be performed around the two sample sites in a 5-10 foot square to a depth of 1 foot. The boundaries of the excavation will be stepped out until XRF analysis indicates the likelihood that confirmation samples taken as described above will show that the contaminated soil above the Type 2 RRS has been removed. Then samples will be taken and submitted to a laboratory for analysis. Excavation volume will likely be between 2 cubic yards and 30 cubic yards. The excavated area will be backfilled with clean fill dirt

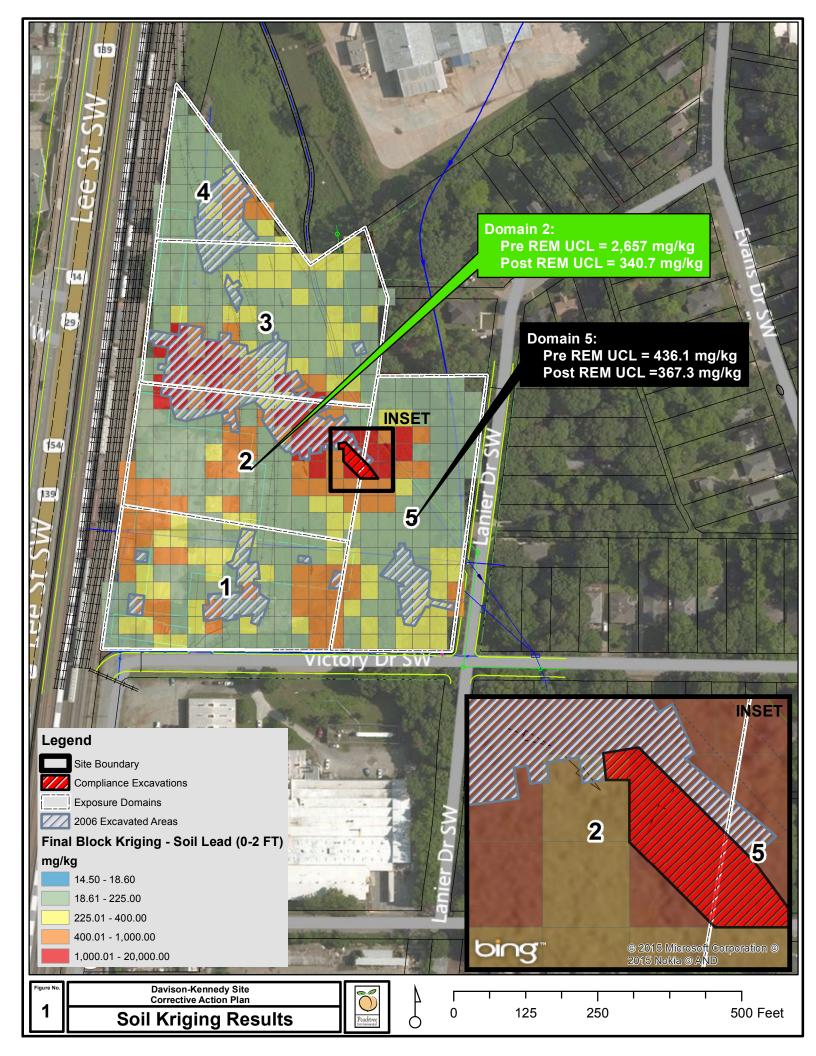
obtained from an off- site source and analyzed to ensure that it meets Type 1 RRS. The disturbed area will be reseeded.

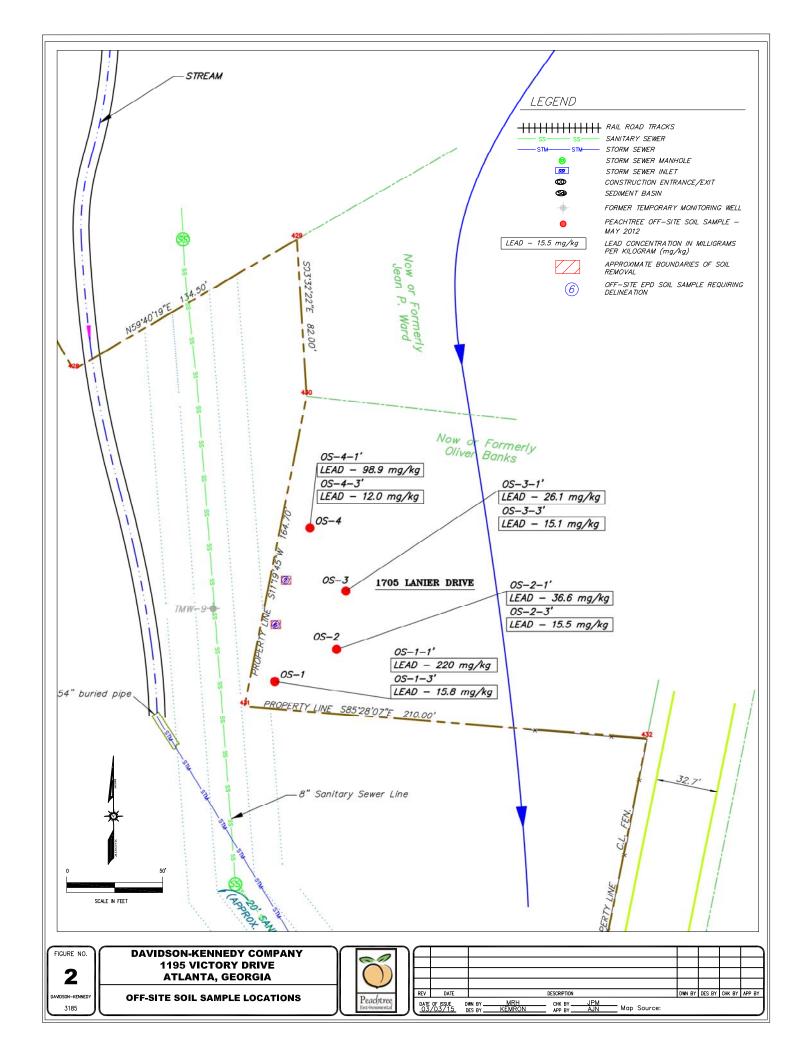
CAP Cost Estimate

A cost estimate for implementation of this Corrective Action Plan and associated activities is provided as **Appendix E**.



FIGURES







APPENDIX A

DAVIDSON-KENNEDY PRE (Removed from Final CSR to Avoid Duplication)



APPENDIX B

PRESENTATION TO EPD RESULTS OF REKRIGING

Geostatistical Analysis - Updated Soil Lead Data

Davidson-Kennedy Site Atlanta, Georgia

Peachtree Environmental January 26, 2015



Chronology of Significant Events

- Feb-2012: Original Kriging/Domain Averaging Submission with Financial Assurance Letter to EPD
- Jun-2013: EPD informally submitted questions to Peachtree re the Kriging analysis
- Dec-2013: Response to EPD questions re Kriging
- Apr-2014: EPD approval of Kriging/Domain Averaging approach
- Jun-2014: Presentation of VRP CAP as part of June S/A Progress Report



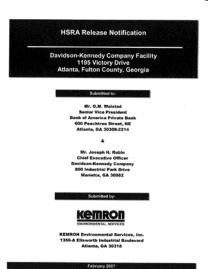
Chronology of Significant Events

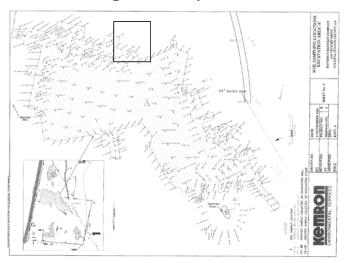
- Jul-2014: Discovery of additional data and CAD files
- Aug-2014: ReKriged with full data set

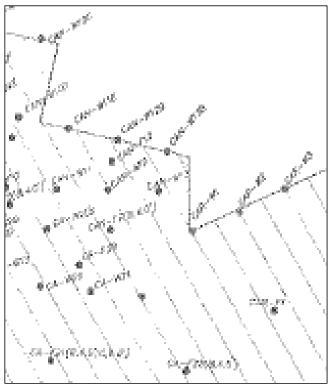


Step 1: Data Compilation

- Compiled **ALL** available soil data (612 samples)
 - Previous analysis relied upon 134 samples
 - Unable to use Kemron collected data (illegible)
 - Obtained original CAD digital maps



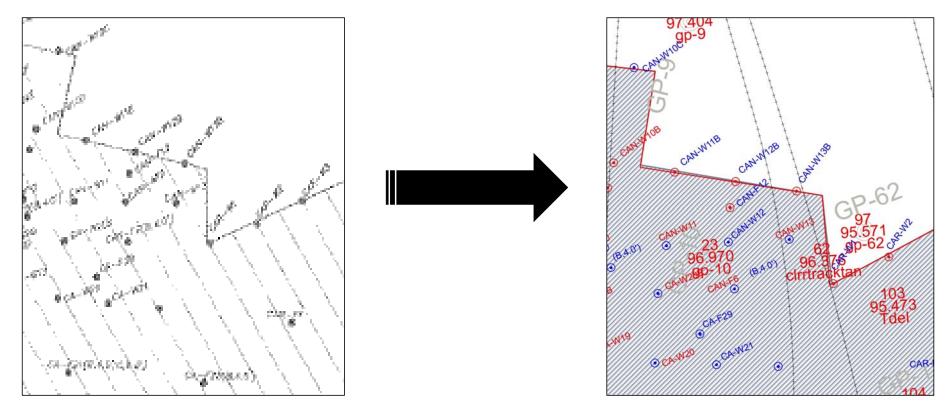






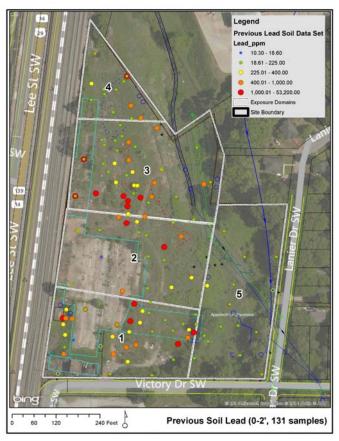
ATTORNEY/CLIENT AND WORK-PRODUCT PRIVILEGE

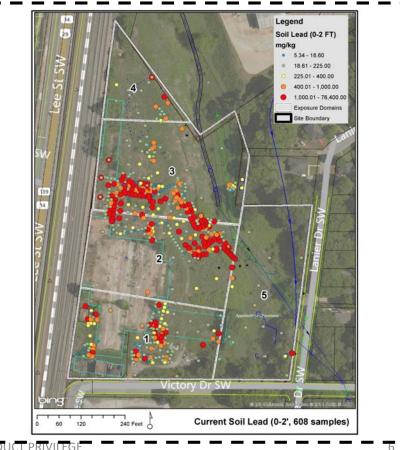
Step 1: Data Compilation (cont.)





Step 1: Data Compilation (cont.)







Chronology of Significant Events

- Sep-2014: Sampling in specific area to supplement new data
- Oct-2014: ReKriging to identify excavation required and identify "hot spots"
- Oct-2014: Receipt of Comment Letter from EPD

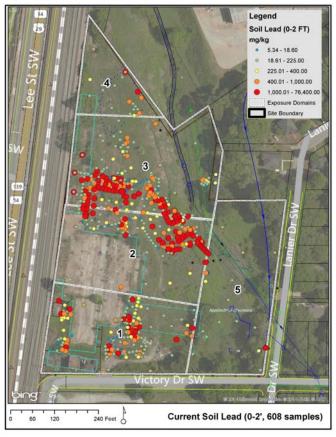


D-K Geostatistical Analysis Steps

- 1. Compilation of all available point sampled data
- 2. Perform geostatistical analysis (block kriging) on full pre-removal point sample data (converts points to spatial 30'x30' blocks)
- 3. Replace kriged blocks that have been excavated with clean fill (i.e. 36 ppm block concentration)
- 4. Calculated 95% UCL of mean for each (5) exposure domain
- 5. Determine which domains have 95% UCL > 400 ppm
- Identify blocks/areas of domains causing 95% UCL > 400 ppm, determine needs (excavation/sampling)



Step 2: Geostatistical Analysis (Block Kriging)



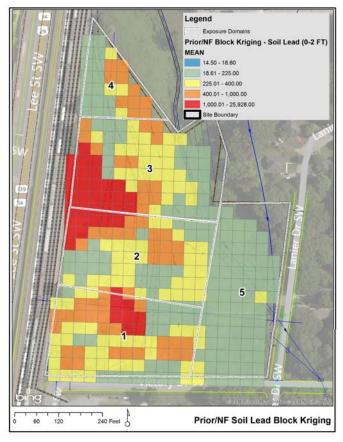


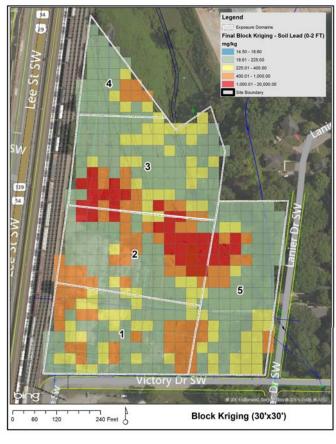


Block Kriging (30'x30')

Final Block Kriging - Soil Lead (0-2 FT)

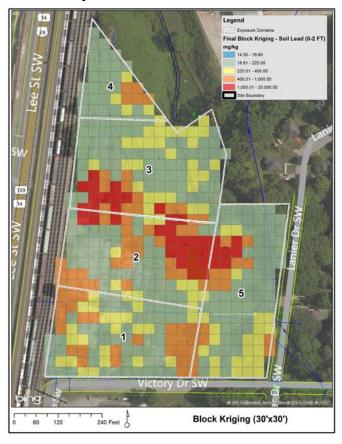
Previous Block Kriging vs. Current



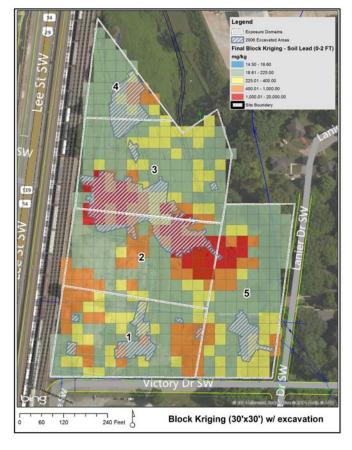




Step 3: Removal of Past Excavated Areas

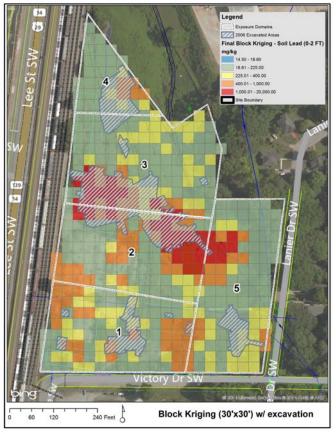


Replace excavated blocks with a value of 36 ppm, which corresponds to backfill lead concentration

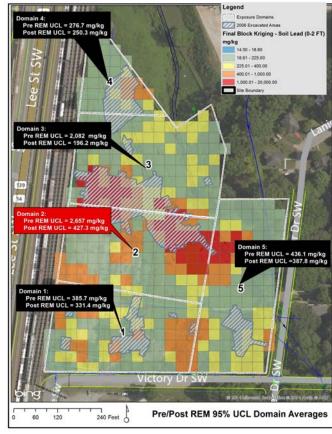




Step 4: Calculate Pre/Post Removal Domain Averages

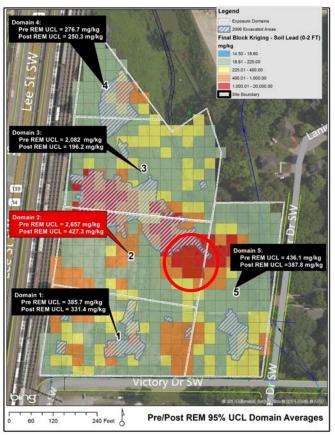


Calculated 95% UCL of mean for each domain using kriged block values for preexcavation and post excavation (36 ppm)





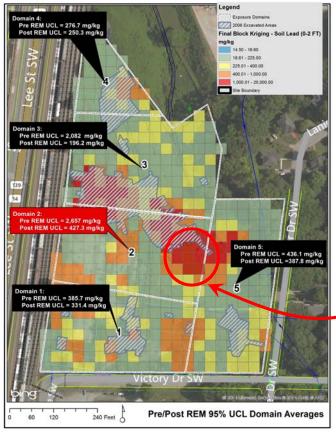
Step 5: Identify Exceedance Domains



Exposure Domain	Pre-Remedy Lead - ppm	Post-Remedy Lead - ppm
1	385.7	331.4
2	2,657	427.3
3	2,082	196.2
4	276.7	250.3
5	436.1	387.8



Step 6: Identify Blocks causing Domain Exceedances

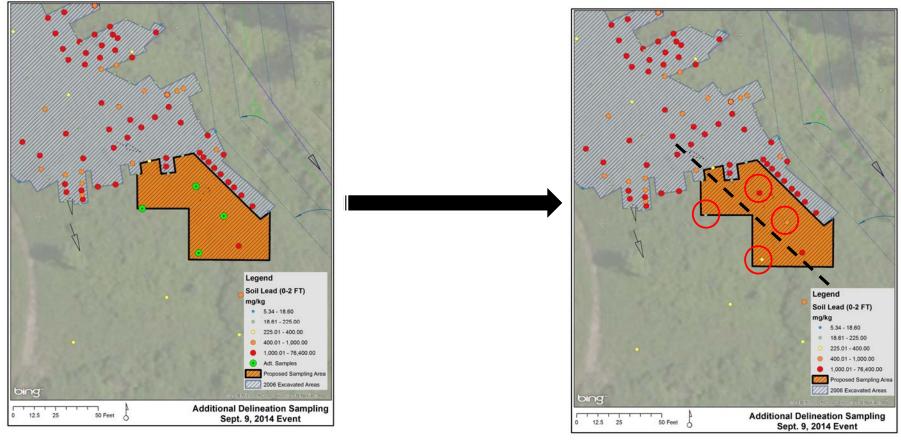


Exposure Domain	Pre-Remedy 1 Lead - ppm	Post-Remedy 1 Lead - ppm	Post-Remedy 2 Lead - ppm
1	385.7	331.4	NA/Same
2	2,657	427.3	299.6
3	2,985	231.2	NA/Same
4	976.5	375.4	NA/Same
5	480.2	365.2	NA/Same

- If these blocks are removed:
 - UCL average passes 400 ppm criteria

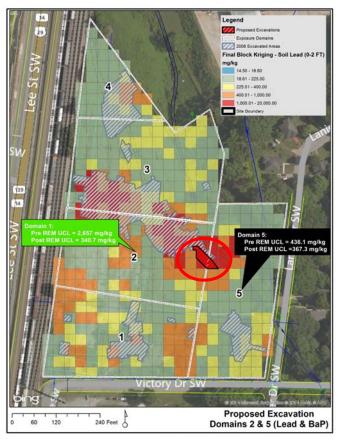


Area 5 – Further Sampling/Delineation





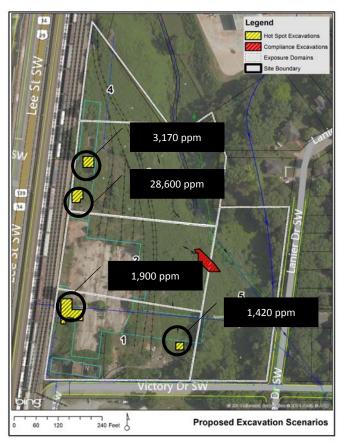
Domain 2 Removal Analysis (Lead & BaP)



Exposure Domain	Current Lead - ppm	Post-Remedy 1 Lead - ppm
1	331.4	NA/Same
2	485.4	340.7
3	196.2	NA/Same
4	250.3	NA/Same
5	387.8	367.3



Hot Spots Removal Options



Exposure Domain	Current Lead - ppm	Post-Remedy 1 Lead - ppm	Post-Remedy 2 Lead - ppm
1	331.4	331.4	249.6
2	485.4	340.7	NA/Same
3	196.2	196.2	192.6
4	250.3	250.3	NA/Same
5	387.8	367.3	NA/Same



Subsequent Activities

- Meeting with EPD, January 26, 2015
- Preparation/Submission of Revised Corrective Action Plan (CAP)
- EPD Approval of Revised CAP
- Preparation of detailed site excavation plan (internal)
- City of Atlanta Permit (initiate ASAP)
- Field Activities/Excavation
- Final CSR Preparation/Submittal





APPENDIX C

ANALYTICAL REPORT

ANALYTICAL ENVIRONMENTAL SERVICES, INC.



February 11, 2015

John Martiniere Peachtree Environmental 3000 Northwoods Parkway, Suite 105 30071 Norcross GA

TEL: (770) 449-6100 FAX: (770) 513-9848

RE: Davidson Kennedy Site

Order No: 1501N02 Dear John Martiniere:

Analytical Environmental Services, Inc. received 1 samples on 1/29/2015 1:12:00 PM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.

AES' certifications are as follows:

-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/14-06/30/15.

-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Dorothy deBruyn Project Manager

Revision 2/11/2015

SPECIAL INSTRUCTIONS/COMMENTS:

and John Martiniers

amail results to Read white

Do not onalyze HOLD SAMPLES

CHAIN OF CUSTODY

Work Order: 1501N02

3080 Presidential Drive, Atlanta GA 30340-3704 Date: 1 29 15 Page | of | **AES** TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188 3000 Northwoods Pkny, is ANALYSIS REQUESTED Peachtree Environmental Visit our website Norcoss, 6A 30075' www.aesatlanta.com to check on the status of FAX: 770-449-6119
SIGNATURE: RADOL. PHONE: 770-449-6100 your results, place bottle SAMPLED BY: R. JINhite orders, etc. SAMPLED PRESERVATION (See codes) # SAMPLE ID REMARKS Grab I DATE TIME DK-34-A 1/29/15 10:25 50 DK-34-B 10:31 50 HOLD SAMPLE ١ HOLD SAMPLE DK-34-C 10:35 50 ١ DK-34-D 1D:38 50 HOLD SAMPLE ٥> 10:44 HOLD SAMPLE DK-34-E HOLD SAMPLE DK-34-F 10:51 30 8 Q 11 13 14 PROJECT INFORMATION RELINQUISHED BY DATE/TIME RECEIVED BY DATE/TIME RECEIPT PROJECT NAME: 1/20/15 BLANK Cataya Roves 1/29/15 1:12p Davidson-Kennedy Total # of Containers PROJECT #: 3185 Turnaround Time Request SITE ADDRESS: 1195 Victory Drive O

DATA PACKAGE: I II III IV SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

INVOICE TO:

OUOTE #:

(IF DIFFERENT FROM ABOVE)

GREYHOUND

OUT

SHIPMENT METHOD

OTHER

VIA:

VIA: CLIENT FedEx UPS MAIL COURIER

Fax? Y/N

Standard 5 Business Days

Next Business Day Rush

Same Day Rush (auth req.)

2 Business Day Rush

Atlanta, Georgia SEND REPORT TO: Peachtree Environmenta

PO#

Other

STATE PROGRAM (if any):

9

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O

E-mail? Y/N;

Analytical Environmental Services, Inc

Client: Peachtree Environmental
Project: Davidson Kennedy Site

Lab ID: 1501N02

Case Narrative

Date:

11-Feb-15

Per Brad White via email on 2/11/15, Sample id's to be changed to DK-24 from DK-34.

Analytical Environmental Services, Inc

Client: Peachtree Environmental **Client Sample ID:** DK-24-A

Project Name: Davidson Kennedy Site **Collection Date:** 1/29/2015 10:25:00 AM

Lab ID: 1501N02-001 Matrix: Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW3	8050B)			
Lead	36.3	5.86		mg/Kg-dry	202372	1	01/30/2015 13:00	JL
PERCENT MOISTURE D2216								
Percent Moisture	17.0	0		wt%	R284931	1	02/02/2015 10:00	SG

Date:

11-Feb-15

Qualifiers:

Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

Analyte not NELAC certified

Analyte detected in the associated method blank

Greater than Result value

E Estimated (value above quantitation range)

Spike Recovery outside limits due to matrix

Narr See case narrative

Less than Result value

Not confirmed

Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Peachtree Env		Work Orde	r Number 1501NoZ
Checklist completed by amm B 1/29 Signature Date	115		
Carrier name: FedEx UPS Courier Client US	S Mail Other	r	_
Shipping container/cooler in good condition?	Yes _	No	Not Present
Custody seals intact on shipping container/cooler?	Yes	No	Not Present
Custody seals intact on sample bottles?	Yes	No	Not Present
Container/Temp Blank temperature in compliance? (0°≤6°C)*	*Yes <u>/</u>	No _	
Cooler #1 3.1° Cooler #2 Cooler #3	Cooler #4	Coo	oler#5 Cooler #6
Chain of custody present?	Yes _	No	•
Chain of custody signed when relinquished and received?	Yes	No _	
Chain of custody agrees with sample labels?	Yes <u></u>	No	
Samples in proper container/bottle?	Yes _	No	
Sample containers intact?	Yes _	No	
Sufficient sample volume for indicated test?	Yes <u></u>	No	
All samples received within holding time?	Yes _	No	
Was TAT marked on the COC?	Yes 🗾	No	
Proceed with Standard TAT as per project history?	Yes	No	Not Applicable
Water - VOA vials have zero headspace? No VOA vials su	bmitted _	Yes	No
Water - pH acceptable upon receipt?	Yes	No	Not Applicable
Adjusted?			
Sample Condition: Good Other(Explain)			
(For diffusive samples or AIHA lead) Is a known blank includ	led? Yes	^	No /

See Case Narrative for resolution of the Non-Conformance.

\\Aes_server\l\Sample Receipt\My Documents\COCs and pH Adjustment Sheet\Sample_Cooler_Recipt_Checklist_Rev1.rtf

^{*} Samples do not have to comply with the given range for certain parameters.

Analytical Environmental Services, Inc

Client: Peachtree Environmental

ANALYTICAL QC SUMMARY REPORT

Date:

11-Feb-15

BatchID: 202372

Davidson Kennedy Site **Project Name:** Workorder:

1501N02

Sample ID: MB-202372	Client ID:			Units:	mg/Kg	Prep Date:	01/29/2015	Run No: 284779
SampleType: MBLK	TestCode:	METALS, TOTAL SW6010C		BatchID:	202372	Analysis Date:	01/29/2015	Seq No: 6038647
Analyte	Result	RPT Limit SPK value	SPK Ref Val	%REC Lov	v Limit High I	Limit RPD Ref	Val %RPD	RPD Limit Qual
Lead	BRL	5.00						
Sample ID: LCS-202372	Client ID:			Units:	mg/Kg	Prep Date:	01/29/2015	Run No: 284779
SampleType: LCS	TestCode:	METALS, TOTAL SW6010C		BatchID:	202372	Analysis Date:	01/29/2015	Seq No: 6038648
Analyte	Result	RPT Limit SPK value	SPK Ref Val	%REC Lov	v Limit High I	Limit RPD Ref	Val %RPD	RPD Limit Qual
Lead	47.66	5.00 50.00		95.3 80	120	0		
Sample ID: 1501J89-001CMS	Client ID:			Units:	mg/Kg-dry	Prep Date:	01/29/2015	Run No: 284779
SampleType: MS	TestCode:	METALS, TOTAL SW6010C		BatchID:	202372	Analysis Date:	01/29/2015	Seq No: 6038650
Analyte	Result	RPT Limit SPK value	SPK Ref Val	%REC Lov	v Limit High I	Limit RPD Ref	Val %RPD	RPD Limit Qual
Lead	64.50	6.02 60.18	9.441	91.5 75	12:	5		
Sample ID: 1501J89-001CMSD	Client ID:			Units:	mg/Kg-dry	Prep Date:	01/29/2015	Run No: 284779
SampleType: MSD	TestCode:	METALS, TOTAL SW6010C		BatchID:		Analysis Date:	01/29/2015	Seq No: 6038651
Analyte	Result	RPT Limit SPK value	SPK Ref Val	%REC Lov	v Limit High I	Limit RPD Ref	Val %RPD	RPD Limit Qual
Lead	63.95	6.02 60.18	9.441	90.6 75	12:	5 64.50	0.855	20

Qualifiers: Greater than Result value

> BRL Below reporting limit

Estimated value detected below Reporting Limit

Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

Page 6 of 6



APPENDIX D

ACCESS AGREEMENT

Michelle R. Hollister

From: Tracy Dummett <tracydummett@comcast.net>

Sent: Tuesday, November 18, 2014 10:52 AM

To: John P. Martiniere, Jr. **Subject:** Re: Lanier Drive Property

Sure, do what you need to do.

On Nov 18, 2014, at 10:00 AM, "John P. Martiniere, Jr." < jmartiniere@peachtreeenvironmental.com > wrote:

Good morning, Ms. Dummett.

On behalf of the Davidson-Kennedy company, which owns the property next to your Lanier Drive property, I am requesting permission to conduct a cleanup that is required by the Georgia Environmental Protection Division. You may recall that someone from Peachtree Environmental contacted you several years ago (May 2012) about taking some soil samples on your property to see if there were any environmental impacts, for which you granted your permission. We determined that there is a small area of soil on your property near the property line that could have an impact, possibly from airborne contaminants from Ft. MacPherson. Davidson-Kennedy has agreed to remove this soil on your property at no cost to you while it is taking care of similar areas on its own property.

Based on the sampling results, we expect that the entire field project will take less than a week and probably not more than parts of a day or two on your property. Any soil that is removed will be replaced with clean soil and the area will be re-seeded. To do this work, we need permission to come onto your property with a small backhoe and a truck, most likely from the Lanier Drive side. Mr. Carlton Gordon, your tenant on the property, has given his permission to do this work, but as the property owner, we need your permission as well.

We still have a few steps to take to obtain EPD approval of our plans and similar sign offs, so our schedule is still somewhat uncertain. However, we expect to do the work either by the end of this year or in the first quarter of 2015. We will let you know when a more definite schedule is set.

Please reply to this e-mail giving your permission to do the work described above. If you have any questions, please call me.

Thank you for your consideration and cooperation.

Best regards,

John P. Martiniere, Jr. P.E.

Peachtree Environmental

3000 Northwoods Parkway, Suite 105 Norcross, GA 30071 Office 770.449.6100 ext. 225 Cell 404.234.3063



APPENDIX E

COST ESTIMATE

TABLE 1 ESTIMATED PROJECT COSTS

Project Name: Davidson-Kennedy

Engineers Estimate of Remediation Cost

File No: 3185-509 Prepared By: JPB Date: 03/03/15 Checked By: JPM

Date.	03/03/15			Checked By:	OI IVI	
				Cost		
Quantity	Units	Description				Subtotal
Task 1		Oversight of Field Activities, Field XRF Screening, & Confirmation Sampling Analytical Costs - 1 week				
		LABOR			\$	29,553.00
		EQUIPMENT/EXPENSES/MATERIALS			\$	4,185.00
		SUBCONTRACTORS				
		Analytical Environmental Services, Inc. (AES) - Lab Testing			\$	2,100.00
			Subt	total Task 1 =>	\$	35,838.00
Task 2		Mobilization & Site Preparation (including Erosion & Sedimentation Controls)				
		LABOR			\$	1,750.00
		EQUIPMENT/EXPENSES/MATERIALS			\$	6,489.44
		SUBCONTRACTORS			\$	680.00
			Subt	total Task 2 =>	\$	8,919.44
Task 3		Pb Area Soil Excavation (On Site & Off Site), PAH Area Soil Excavation, Hauling and Disposal, Site Restoration				
		LABOR			\$	7,875.00
		EQUIPMENT/EXPENSES/MATERIALS			\$	6,777.78
		SUBCONTRACTORS			\$	23,474.00
			Subt	total Task 3 =>	\$	38,126.78
SUBTOTAL ESTIMATED PROJECT COST => \$ Contingency on Tasks 2 & 3 10% \$			\$ \$	82,884.22 14,113.87		
		TOTAL ESTIMATED PROJECT COST INCLU	IDING CO	NTINGENCY=>	\$	96,998.09



APPENDIX B-5

Vertical Delineation (Excerpt from VRP 5th Semiannual Progress Report)

REVISED CORRECTIVE ACTION PLAN (CAP) AND FINAL PRELIMINARY RISK EVALUATION FOR THE DAVIDSON-KENNEDY COMPANY FACILITY 1195 VICTORY DRIVE ATLANTA, FULTON COUNTY, GEORGIA

HSI # 10866

DOCUMENT PREPARED FOR:

DAVIDSON KENNEDY COMPANY

5273 REDFIELD ROAD

DUNWOODY, GEORGIA 30338

DOCUMENT SUBMITTED TO:

GEORGIA DEPARTMENT OF NATURAL RESOURCES 2 MARTIN LUTHER KING, JR. DRIVE, SE, SUITE 1154 ATLANTA, GEORGIA 30334

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REVISED MAY 2015



Peachtree Environmental

3000 Northwoods Parkway, Suite 105 Norcross, Georgia 30071 770-449-6100 / fax 770-449-6119

May 18, 2015

Mr. John Maddox Georgia Environmental Protection Division Response and Remediation Program 2 Martin Luther King, Jr. Drive SE Suite 1054 East Atlanta, GA 30334-9000

Dear Mr. Maddox:

This letter presents the final revisions to the "Revised Corrective Action Plan (CAP) and the Final Preliminary Risk Evaluation (PRE)" report dated March 2015, which was discussed in our meeting with EPD (the Meeting) on April 23, 2015. The items in this revision were addressed in 1) a Meeting Summary distributed by Peachtree on April 24, 2015; 2) an e-mail from Jason Metzger on May 5, 2015; and a further e-mail from Peachtree on May 6, 2015.

Listed below are the items committed to be provided by Peachtree in the Meeting and subsequent e-mails. We understand from Mr. Metzger's e-mail that Peachtree will be able to proceed directly to the preconstruction field meeting and subsequent site remediation upon receiving EPD's letter approving the Revised CAP and subsequent modifications.

1. Peachtree committed to provide a reference to the report that contains the confirmation data utilized in the most recent Kriging effort.

Peachtree originally had a paper copy of the data included with the 2007 HSRA notification, but, because the figures showing the sampling locations were unclear, Peachtree was not able to interpret locational information. As a result, these data were not used in the original Kriging exercise. Subsequently, Peachtree obtained the CAD drawings of the same data, which did allow locations to be more precisely determined. We have supplied the CAD drawings as **Figure 1** to this report.

1

2. Peachtree committed to provide the locations of the Kriged blocks where XRF readings will be taken during the excavation. The purposes of taking the additional readings will be: 1) to address blocks where, due to the revised Kriging results using samples taken at 1' only, the current average is greater than 400 mg/kg; and 2) to increase confidence that acute exposure risks will not remain after the excavation.

Peachtree's approach will be as follows:

Peachtree originally utilized data for both 1' and 2' samples in performing the Kriging for area averaging on the Property. The results were presented in the Revised Correction Action Plan, submitted in March 2015. In the April 23, 2015 meeting, EPD indicated its focus was on the top 1' for determining the amount of contaminated soil to be removed to protect human health. Therefore, Peachtree has performed another Kriging exercise of the Property using only samples taken at 1'.

Using only the 1' sample depth resulted in losing many of the data points that had been used to determine which blocks needed to be removed to achieve an average of less than 400 mg/kg. This has resulted in eight additional blocks in exposure domains 2 and 3 with an average¹ of greater than 400 mg/kg.

The compliance criteria are based upon the calculation of a 95% Upper Confidence Level (UCL) of the mean of all the 30'x30' blocks located within each discrete ~ 2 acre exposure domain (Domains 1-5). For clarity and context, note that the individual 30'x30' block concentration values are calculated using the previously referenced geostatistical kriging area weighting method. When the UCL of the mean for each of the 5 exposure domains were calculated it was determined that Domains 2 and 3 are above the 400 mg/kg compliance criteria. It was thus necessary to determine which high concentration 30'x30' blocks (defined as 'exceedance blocks') within these domains (Domains 2 and 3, see **Figure 2**) were causing the exceedances. For this determination, a trial & error analysis of the 95% UCL domain mean mathematics demonstrated the following:

- Domain 2: the 95% UCL of the mean will be below (pass) the 400 mg/kg criteria if no block concentrations exceed 2,538 mg/kg.
- Domain 3: the 95% UCL of the mean will be below (pass) the 400 mg/kg criteria if no block concentrations exceed 1,995 mg/kg.

Therefore, the following remedial decision criteria will be used during corrective action activities:

¹ Exposure domain mean is defined as the 95% Upper Confidence Limit (UCL) of the mean.

- Peachtree will take one or more additional XRF readings in the exceedance blocks for Domain 2 and 3 as indicated in **Figure 2**.
 - For Domain 2, if the average of all of the new XRF data points in any block is greater than or equal to 2,538 mg/kg, the entire 30'x30'x1' block will be removed.
 - ➤ If the average of all of the additional data points is less than 2,538 mg/kg, then the block will not be excavated.
 - ➤ The only exception will be if there is a single sample that is greater than 10,000 mg/kg (with the remainder of the samples in that block averaging less than 2,538 mg/kg). In this situation, that particular "hot spot" will be excavated and the area in the immediate vicinity of the "hot spot" re-analyzed with the XRF to ensure compliance.
 - For Domain 3, if the average of all of the new XRF data points in any block is greater than or equal to 1,995 mg/kg, the entire 30'x30'x1' block will be removed.
 - ➤ If the average of all of the additional data points is less than 1,995 mg/kg, then the block will not be excavated.
 - ➤ The only exception will be if there is a single sample that is greater than 10,000 mg/kg (with the remainder of the samples in that block averaging less than 1,995 mg/kg). In this situation, that particular "hot spot" will be excavated and the area in the immediate vicinity of the "hot spot" re-analyzed with the XRF to ensure compliance.
- 3. EPD requested that Peachtree check to see if contingent samples taken at stepout points from the location of resampling of (sample point DK-24) were still being held by the laboratory.
 - Sample point DK-24 had originally shown a level of greater than 28,000 mg/kg, which far exceeded any other remaining sample result in the area. The resampling showed a result of 36.3 mg/kg in the same location, which indicates that it is likely that the high reading is not reflective of conditions which actually exist at that point, i.e., that the sample result was artificially high or was the result of including a lead granule in the sample itself. Therefore, with EPD's permission, the potential hot spot has been removed from further consideration as part of the data set. Peachtree has confirmed that the samples taken adjacent to DK-24 at the time of the resampling that were being held at the lab, are no longer available. However, the particular block containing the resampled point is one that will be assessed using XRF samples, and therefore will be evaluated and addressed, if necessary. (See Item 6 below)
- 4. Peachtree was asked to provide a figure developed utilizing 0-1' Kriging showing the new excavation parameters.

Figure 2 shows the areas to be excavated and/or rechecked using the XRF. The Compliance area volume for excavation is 53 yd3. The other areas which might undergo excavation ranging from 0.5 yd3 – 33.3 yd3 are identified with a green dot; however, the amount excavated cannot be determined until the XRF is utilized in the field.

5. Peachtree was asked to utilize the original 0 – 2' Kriging as part of the sensitivity analysis.

Peachtree will use the 0-2' Kriging as part of the sensitivity analysis in the final CSR, which will be submitted along with details of the geostatistical approach, including variography.

6. Peachtree was asked to provide our approach to dealing with the acute exposures.

Peachtree has outlined below our approach to determining and potentially mitigating acute exposures:

The Georgia Adult Lead Model (GALM) is a bio-kinetic model used to calculate Preliminary Remediation Goals (PRGs) for lead in soil based on acceptable levels of lead in human blood. Using the model's default values, including an Exposure Frequency of 219 days per year, the PRG for lead in soil is 930 mg/kg (see page 1 of 3 of **Attachment 2**).

In order to consider acceptable concentrations of lead in soil for acute (infrequent, short-term) exposures, the Exposure Frequency was reduced to one day per year (see page 2 of 3 of **Attachment 2**). All other model parameters were kept at the same default values, and the resulting PRG for lead in soil was 312,620 mg/kg.

A 30-day scenario was also considered. When the Exposure Frequency is set to 30 days per year (see page 3 of 3 of **Attachment 2**), the PRG for lead in soil is 9,937 mg/kg.

Peachtree concludes that, for this Property, if surficial soil with lead concentrations greater than 10,000 mg/kg is removed, there will be no unacceptable exposure to adult individuals on site for as many as 30 days per year. Peachtree has proposed to remove individual XRF sample points greater than 10,000 mg/kg to further reduce the risk from acute exposures (see Item 2 above).

7. Peachtree was asked to consider the residential samples taken by EPD as indicative of a general area of contamination rather than two discreet points, given lack of specific locational information for those two samples.

Due to the lack of specific locational data, Peachtree will use the general location of EPD's two sample points along with its professional judgment to identify, remove and confirm with the XRF an area for removal of contaminated soil above a Type

2 Risk Reduction Standard. Final confirmation will be achieved with samples taken and submitted to a laboratory.

8. Peachtree was asked to include one specific item in the final CSR.

After completion of field activities, Peachtree will prepare a final CSR which will include, among other things, a detailed discussion of the geostatistical approach utilized, including variography. This discussion was provided with the originally used data set, but has changed with the inclusion of the additional data points. The submittal will demonstrate that the approach was consistent with generally accepted ASTM and USEPA geostatistical methodology.

If the above revisions are acceptable to EPD, Davidson-Kennedy would appreciate a prompt approval of both the CAP (as modified) as well as the Final PRE, submitted in March 2015. If there are any questions regarding either submission, please feel free to contact either of the undersigned.

Sincerely,

PEACHTREE ENVIRONMENTAL

John P. Martiniere, Jr., P.E.

Project Director

770-449-6100, Ext. 225, or

Direct Line: 770-749-7469

James R. Henderson

Senior Project Geostatistician

(770) 449-6100

Attachments:

Attachment 1

Figure 1 – Original CAD Drawing from Kemron HSRA Release Notification 2007

Figure 2 – Compliance Excavation & Proposed XRF Confirmatory Area

Attachment 2

Georgia Adult Lead Model

cc: J. Metzger, EPD (via electronic mail)

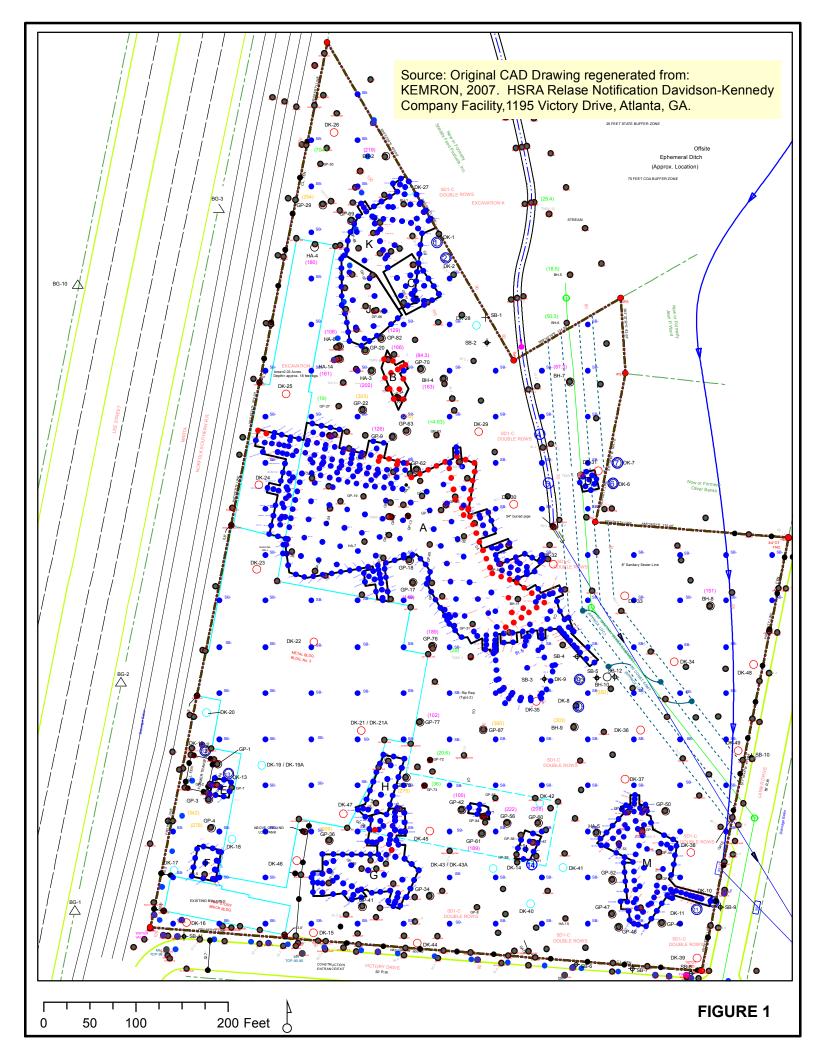
- J. Rubin, Davidson-Kennedy (via electronic mail)
- J. Spinrad, Esq., AG&G (via electronic mail)

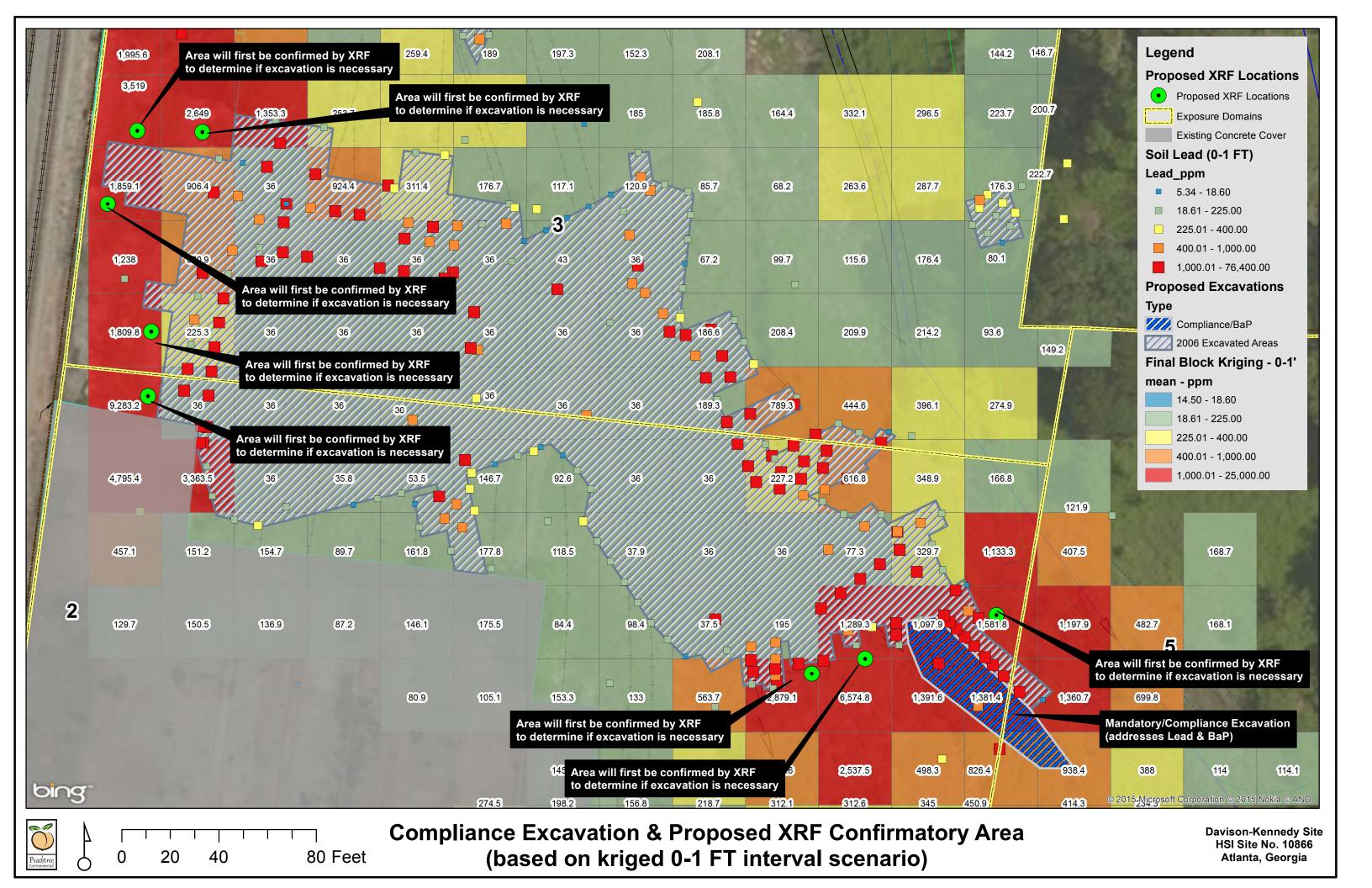
File 3185



ATTACHMENT 1

FIGURES 1 AND 2







ATTACHMENT 2

GEORGIA ADULT LEAD MODEL

Georgia Adult Lead Model Calculations of Preliminary Remediation Goal (PRG) U.S. EPA Technical Review Workgroup for Lead. Adult Le

modified from: U.S. EPA Technical Review Workgroup for Lead, Adult Lead Committee Original Version Date 6/21/09

Variable	Description of Variable	Units	Value
PbB _{fetal, 0.95}	95 th percentile PbB in fetus	ug/dL	10
R _{fetal/maternal}	Fetal/maternal PbB ratio		0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4
GSD _i	Geometric standard deviation PbB		2.04
PbB_0	Baseline PbB	ug/dL	1.38
IR _s	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050
$AF_{S,D}$	Absorption fraction (same for soil and dust)		0.12
$EF_{S,D}$	Exposure frequency (same for soil and dust)	days/yr	219
C_{w}	Concentration of lead in groundwater	μg/L	15
I _w	Intake rate of water from on-site groundwater	L/day	1
A_{w}	Absolute gastrointesstinal absorption factor		0.2
AT _{S, D}	Averaging time (same for soil and dust)	days/yr	365
PRG		ppm	930

Georgia Adult Lead Model Calculations of Preliminary Remediation Goal (PRG) modified from: U.S. EPA Technical Review Workgroup for Lead, Adult Lead Committee Original Version Date 6/21/09

Variable	Description of Variable	Units	Value
PbB _{fetal, 0.95}	95 th percentile PbB in fetus	ug/dL	10
R _{fetal/maternal}	Fetal/maternal PbB ratio		0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4
GSD _i	Geometric standard deviation PbB		2.04
PbB ₀	Baseline PbB	ug/dL	1.38
IR_{S}	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050
AF _{S, D}	Absorption fraction (same for soil and dust)		0.12
EF _{S, D}	Exposure frequency (same for soil and dust)	days/yr	1
C_{w}	Concentration of lead in groundwater	μg/L	15
I _w	Intake rate of water from on-site groundwater	L/day	1
A_{w}	Absolute gastrointesstinal absorption factor		0.2
AT _{S, D}	Averaging time (same for soil and dust)	days/yr	365
PRG		ppm	312,620

Georgia Adult Lead Model Calculations of Preliminary Remediation Goal (PRG) rom: U.S. EPA Technical Review Workgroup for Lead, Adult Lead

modified from: U.S. EPA Technical Review Workgroup for Lead, Adult Lead Committee Original Version Date 6/21/09

Variable	Description of Variable	Units	Value
PbB _{fetal, 0.95}	95 th percentile PbB in fetus	ug/dL	10
R _{fetal/maternal}	Fetal/maternal PbB ratio		0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4
GSD _i	Geometric standard deviation PbB		2.04
PbB_0	Baseline PbB	ug/dL	1.38
IR _s	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050
AF _{S, D}	Absorption fraction (same for soil and dust)		0.12
EF _{S, D}	Exposure frequency (same for soil and dust)	days/yr	30
C_{w}	Concentration of lead in groundwater	μg/L	15
I _w	Intake rate of water from on-site groundwater	L/day	1
A_{w}	Absolute gastrointesstinal absorption factor		0.2
$AT_{S,D}$	Averaging time (same for soil and dust)	days/yr	365
PRG		ppm	9,937



APPENDIX C

Geostatistical Analysis

VERSION: 1.0

JANUARY 12, 2016



GEOSTATISTICAL ANALYSIS

DAVIDSON-KENNEDY SITE, HSI SITE NO. 10866 ATLANTA, GEORGIA

PREPARED FOR: PEACHTREE ENVIRONMENTAL

TRUGROUND ENVIRONMENTAL, LLC
ATLANTA, GEORGIA

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Table 2.2 Lead Soil Data Utilized
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Table 8.2 UCL Exposure Domain Concentration Comparisons (0-1 FT vs 0-2 FT)
FIGURES
Figure 5.1.1 – Lead Sample Results (0-1 FT) – mg/kg
Figure 5.2.1-a – Probability Plot Lead
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Figure 6.1 Lead 0-1 FT Omni-Directional Variogram

ATTACHMENTS

10.0

TABLES

Table 2.1 Lead Summary Statistics

Attachment A – Geostatistical GIS Data Output/DVD-ROM

Attachment B – VSP Geostatistical Summary Report

Figure 7.1.1 Lead 0-1 FT in Kriging Contour Map
Figure 7.1.2 Lead 0-1 FT Kriging Estimation Error Map
Figure 8.1 Lead 0-1 FT Kriging With Excavated Area Overlay

Figure 8.2 Remedial Decision Block Overlay (30'x30')

Figure 8.3 Mean Post Remedial Lead Block Concentrations (30'x30')

Attachment C – ProUCL Analysis Results

Figure 8.4 Exposure Domain Overlay

Attachment D – Sensitivity Analysis Results



1.0 Introduction

This report documents the results of a geostatistical analysis of past soil data collected within the Former Davidson-Kennedy Site in Atlanta, GA (Site). The purpose of this analysis is to use geostatistical techniques to assess and determine post remediation compliance with Georgia Environmental Protection (GAEPD) Risk Reduction Standards for surface soils at the Site, in accordance with the Compliance Status Report (CSR) for the Davidson-Kennedy Company Facility (HSI No. 10866).

1.1 Background

A description of the Site history including recent remedial activities has been presented in Section 1.0 of the above referenced CSR and therefore will not be repeated here.

2.0 Scope of Analysis

The scope of this geostatistical analysis includes the following:

- Perform exploratory review of existing lead soil data at the Site;
- Perform necessary geostatistical analyses of lead in soil including variography and kriging to assess and quantify data worth and/or data gaps;
- Development of concentration boundary maps based on geostatistical kriging to support delineation and risk assessment;
- Calculation of 95% Upper Confidence Limit of the mean concentrations for identified Exposure Domains/Units to assess compliance with Georgia Hazardous Site Response Act (HSRA) Risk Reduction Standards (RRS) for lead; and
- Sensitivity analysis by comparing the 0-1 FT soil data set to the 0-2 FT soil data set.

2.1 Existing Data

Data used for the analysis consisted of available XRF and laboratory lead data collected in 2005, 2006, 2011, 2014 and 2015. Table 1 (attached) provides a full summary of all surface soil data utilized in the geostatistical analysis. The following table provides summary statistics of the compiled lead data that represents soil prior to any remedial/removal action of soils.



Table 2.1 Total Lead Summary Statistics (0-1 FT)

Statistic	Value
Count	465
Minimum Value	5.0 ppm
Maximum Value	76,400 ppm
2 nd Maximum Value	55,600 ppm
Average Value	2,072.0 ppm
Depth Interval	0-1 FT

2.2 Report Structure

This report is presented in the following sections, as:

Section 3: Data Analysis Methodology

Section 4: Data Compilation

Section 5: Exploratory Data Analysis

• Section 6: Variogram Analysis of Lead

• Section 7: Geostatistical/Kriging Analysis of Lead

Section 8: RRS Compliance Assessment

Section 9: Sensitivity Analysis

• Section 10: References

3.0 Data Analysis Methodology

3.1 Geographical Information System

A geographic information system (GIS) database was developed prior to this geostatistical analysis. In addition to pertinent site information, such as registered aerial photographs and former and current structures and site features, the GIS also included soil sampling results for the entire Site. Information relating to or within the Site were taken as a subset of the base GIS. Site analytical data were imported into a Microsoft Access database to allow for querying and statistical summarization of the data.

GIS is used as a means for exploratory data analysis, iso-concentration mapping and visual presentation of findings and conclusions. The completed geostatistical output, including variography, and kriging grid files are provided in Attachment A.

3.2 Statistical Methods

Environmental field data usually display a wide range of variability at a site. Such variations led the United States Environmental Protection Agency (USEPA) to recommend the use of statistical methods for



environmental remedy decision making (e.g., USEPA, 1989a, 1997). As part of the exploratory data analysis, Site soil data are subjected to statistical analyses, including probability plot analysis. These techniques are standard procedures that are discussed widely in statistical text books, such as Helsel and Hirsch (1995) or Haan (1997).

Probability plots are highly effective graphical tools for determining the type of the statistical distribution of measured values of a contaminant. A straight-line probability plot of the raw data indicates that the data are normally distributed. In absence of a straight line, if the data are log-transformed (taking the natural log of raw data), which results in a straight-line then this would imply a log-normal distribution. A segmented probability plot usually suggests the presence of multiple populations among measured values. In many instances, the presence of multiple populations can be attributed to the co-existence of residual and hot spot data.

3.3 Geostatistical Methods

Geostatistics is a collection of techniques for the analysis of spatially correlated data. These techniques incorporate the spatial characteristics of actual data into statistical estimation processes. Geostatistics permit the performance of critical tasks, such as: optimization of mapping of spatial variables, estimating average block values, and the optimal design of sampling and monitoring schemes. Classical or non-spatial statistical methods assume that the collected data is unbiased, un-clustered, and independent (i.e., devoid of any correlations). In practice, however, field environmental data are collected in a biased fashion, are clustered around critical locations, and are expected to display a degree of spatial structure. Geostatistics, in contrast to classical statistics, recognizes these properties and, according to well-defined criteria, provides the statistical tools for (Matheron, 1971; Journel and Huijbregts, 1978 Isaaks and Srivastava, 1989; ASCE, 1990a/b):

- Quantifying correlation structures of the spatial data sets;
- Calculating the most accurate estimations based on sample results and other relevant information;
- Quantifying the accuracy of these estimations;
- Generating equally-likely realizations of a random field conditional to the available field measurements; and
- Selecting the variables and locations to be sampled, if necessary.

USEPA has taken the lead in promotion of geostatistics by producing the first public-domain software package, known as GEO-EAS (Geostatistical Environment Assessment Software) developed by Englund and Sparks (EPA/600/4-88/033a, 1988). This package was followed by another USEPA package, known as GEOPACK, developed by Yates and Yates (EPA/600/8-90/004, 1990). The successful results of application of GEOEAS prompted USEPA to recommend its use in spatial environmental data analysis, as stated in "Guidance for Data Usability in Risk Assessment" (EPA/540/G-90/008, 1990) and "Basics of Pump-and-Treat Ground-Water Remediation Technology" (EPA/600/8-90/003, 1990). The American Society of Testing and Material (ASTM, 1994, 1996a/b) has issued a series of standard guides for geostatistical site investigations.



3.4 Methodology – Geostatistics

This section provides further information regarding geostatistical techniques. Conceptually, the geostatistical techniques quantify the correlation between data points. Put somewhat differently, if we know the value of a measurement, e.g., concentration of contamination at a point "A", geostatistics quantify the extent to which we can predict the contamination concentration at a point "B". If the prediction can be made with a high degree of accuracy, the data are said to be strongly correlated and the data set is said to display spatial structure. If, on the other hand, knowing the concentration of contaminant at point A tells us nothing about the concentration at point B, points A and B are said to be uncorrelated, and the data set displays no spatial structure (i.e., is random). For example, in a hypothetical, circular, uniform plume of contamination, knowing the concentration of contamination at any point in the plume (point A) allows one to predict the concentration of contamination at any other point in the plume (point B) to a high degree of accuracy, i.e., points A and B are strongly correlated. To the extent contaminant concentrations within the plume vary, the degree of correlation between any point A and any point B weakens. If the correlation continues to weaken to the point where we observe no relationship between points A and points B, then the data are considered to be completely random.

Geostatistics utilizes rapid computational procedures to compare all points in a data set with all other points in the data set to provide a consistent measure of their degree of correlation. The computed correlation between data points (i.e., the plot of the "variogram" of the data set) allows for the assessment of the type of spatial structure existing in the data set.

In addition, geostatistics allows for the estimation of the aerial extent and orientation of identified spatial structures. Estimating the aerial extent of the plume is mathematically accomplished by determining the "range" of the variogram of the data set. Generally, if we know the contaminant concentration at point A in a plume, and point B (unknown concentration) is immediately adjacent to point A, we would expect that the concentration at point B to be more or less equal to the concentration at point A. In other words, knowing the concentration at point A allows us to predict the concentration at point B to a high degree of accuracy. As the distance between points A and B increase, we would expect that our ability to predict concentrations at Point B to decrease (e.g. the natural variability of the plume would confound our attempts to predict, or we might encounter the edge of the plume). At some distance between points A and B we would likely be unable to predict a contaminant concentration at point B to any significant degree of accuracy. Using the above example (circular, uniform plume), if point A is at the center of the plume and we know the concentration there, as we move point B farther and farther from A, a strong correlation exists until the distance between points A and B exceed the radius of the plume. That distance, whatever it is, is the "range" of point A.

By data analysis and not by prior knowledge, we can compute the likely orientation of a spatial structure by calculating the overall range of point A in all directions (an "omni-directional analysis") and comparing that range to a range calculated along a specific axis. If the range of the data along a specific axis is greater than the calculated range in all directions, we know that the structure has a non-circular shape. If the range along the east-west axis, for example, is greater than the range calculated along any other axis, we know that the structure generally has an east-west orientation.



3.5 Variogram Analysis

A geostatistical analysis must be initiated by a variogram¹ analysis for quantifying the correlation between data points. The spatial structures of field data are determined through computation of sample variograms. For this purpose, all pairs of measurement values in a data set are compared to each other in order to provide a consistent measure of their degree of spatial correlation. The resulting differences between paired measurements are then grouped according to their separation distance and the orientation of their separation vector. For each specific orientation (direction), the grouped differences are plotted with respect to their separation distances, yielding the so-called sample variogram plot. This plot allows the user to quantify and model the spatial correlation among the investigated data along targeted directions.

To construct the sample variogram, all pairs of measurements are identified. For n measurements, there are n(n-1)/2 measurement-pairs (e.g., 100 measurements yield 4,950 pairs). For each pair of measurements, three values are calculated: (1) one-half of their squared difference, (2) their separation distance, and (3) the relative geographical orientation of two measurement points. For example, in the following diagram (Diagram 1), the pair of measurement points A and B have a one-half-squared-difference of 50 ppm² (=0.5(15-5)²), are separated by 120 feet, and are oriented along the Northeast-Southwest direction.

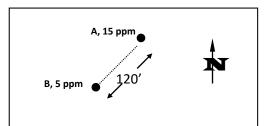


Diagram 1. Pair of Samples

Having computed all the pair values, the sample variogram can be constructed. For this purpose, first, the desired direction of the variogram must be defined. As noted above, a variogram can be computed along various axes to allow us to evaluate correlation structures of the data set along

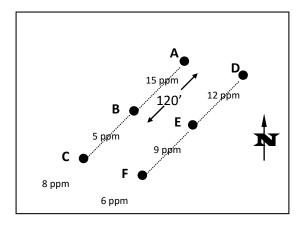
different directions. For each selected direction, all pairs having the desired alignment are identified. For example, in the hypothetical example below (Diagram 2), there are 6 measurement points (A, B, C, D, E and F). There are a total of 15 pairs (A:B, A:C, A:D, A:E, A:F, B:C, B:D, B:E, B:F, C:D, C:E, C:F, D:E, D:F and E:F). When computing the variogram along the northeast-southwest direction, 6 pairs (A:B, A:C, B:C, D:E, D:F and E:F) are used. For pairs having the same separation distance, the average one-half-squared difference value is computed. For example, in the diagram below, along the northeast-southwest direction, of the 6 identified pairs, four of them (A:B, B:C, D:E, E:F) are 120 feet apart with an average one-half-squared-difference of 15.875 ppm² (=.5[(15-5)²+(5-8)²+(12-9)²+(9-6)²]/4). The other two pairs (A:C and D:F) are 240 feet apart with an average one-half-squared-difference of 21.25 ppm² (=.5[(15-8)²+(12-6)²]/2). The plot of these average one-half-squared-differences versus their separation distances is referred to as the sample variogram plot².



¹ EPA/600/4-88/033a defines the variogram as the plot of the variance (one-half the mean squared difference) of paired sample results as a function of their separation distance.

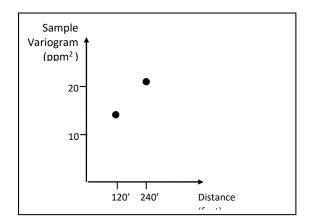
² The plot of all one-half-squared-differences versus their separation distances is referred to as the variogram cloud diagram, which is commonly used in exploratory review of variograms.

Diagram 2: Hypothetical Data Set



For the hypothetical example above, the sample variogram plot for the northeast-southwest direction is shown below (Diagram 3).

Diagram 3: Sample Variogram Plot



Mathematically, the variogram is defined as:

$$\gamma_{ij} = \frac{1}{2} E[Z_i - Z_j]^2$$

where,

 y_{ij} = (semi-)variogram between Z_i and Z_j ;

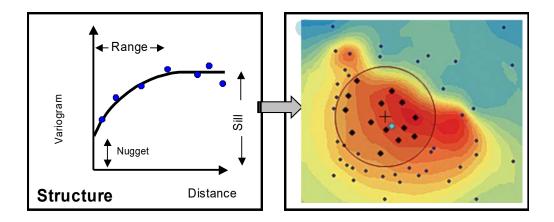
 Z_i = data value at the ith sample locations; and

E = the expected value operator.

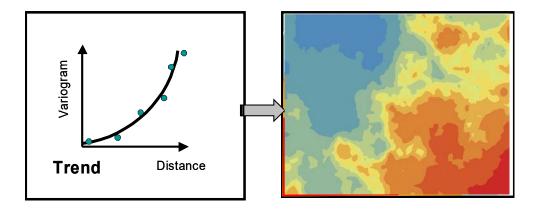


Each data set has its own sample variogram characteristics. The variogram of a data set exhibiting correlation is qualitatively and quantitatively different from the variogram of a data set that is random. For data, which display well-defined correlation, the variogram plot can be used to measure the spatial extent of related data (i.e., its "range"). For example, consider the following hypothetical examples:

Structured Variogram: This type of variogram plot (see below) indicates that the nearby data points in the data set are related to each other. That is, they exhibit a spatial pattern. The spatial extent of the pattern can be calculated based on the size of the range, as shown in below. Types of environmental data that will exhibit structured variograms are old or weathered releases or plumes (see below).

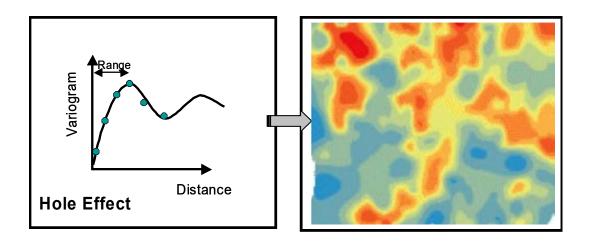


Trend: This type of variogram plot (see below) indicates that the measured values are gradually increasing from one zone to another. Types of data that will exhibit trend variograms are on-going or active releases such as a leaking underground storage tank (see below).

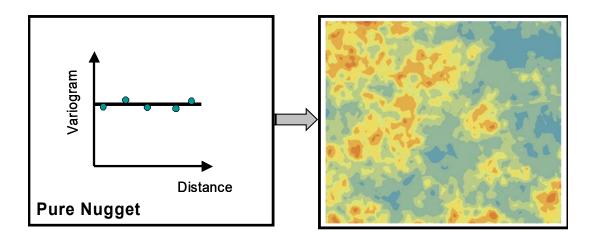




Hole-Effect Variogram: This type of variogram plot (see below) indicates that the related data are clustered in isolated pockets. The average size of these isolated pockets can be calculated based on the range, as shown below. Types of data that will indicate a hole-effect include areas with multiple "hotspots" surrounded by ambient or unimpacted type data.



Pure-Nugget Variogram: This type of variogram plot (see below) indicates a case where the data are devoid of any spatial structure, i.e. completely random. Types of data that will exhibit pure-nugget variograms are ambient or unimpacted areas (see below).



In this investigation, directional variograms of various contiguous measurements are also assessed. This is performed by comparing the fitted omni-directional model to directional sample variograms. This was completed during the variography process, the results indicated that investigated variables are devoid of any discernible directional tendencies. Therefore, only the omni-directional variograms are presented.



3.6 Geostatistical Estimation

Upon determination of the variogram model, point or block kriging can be done. For point kriging, we need to know the location of the point. For block kriging, we need to know the dimensions of the block, as well as the location of its center. The process is described in the following example.

In the above diagram, the estimated concentration at point "I" is a "linear" sum of its neighboring measured concentrations and is expressed as:

$$C_I = W_{\Delta}C_{\Delta} + W_{B}C_{B} + \cdots + W_{F}C_{F}$$

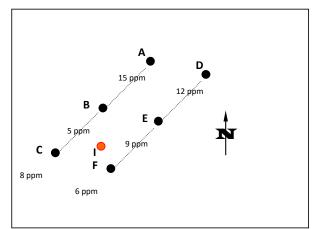
Note that the "W" (the kriging or estimation weights are not known yet). The estimation standard deviation of $C_1(S_1)$ is:

$$\mathbf{S}_{\mathbf{I}} = \mathbf{W_A}^2 \mathbf{N} + \mathbf{W_A} \mathbf{W_B} \boldsymbol{\gamma}_{\mathbf{A},\mathbf{B}} + \mathbf{W_A} \mathbf{W_C} \boldsymbol{\gamma}_{\mathbf{A},\mathbf{C}} + \dots + \mathbf{W_E} \mathbf{W_F} \boldsymbol{\gamma}_{\mathbf{E},\mathbf{F}} - \mathbf{W_A} \boldsymbol{\gamma}_{\mathbf{A},\mathbf{I}} - \dots - \mathbf{W_F} \boldsymbol{\gamma}_{\mathbf{F},\mathbf{I}}$$

N is the nugget effect, and $\gamma_{A,B}$ is the variogram between point A and B whose value is computed based on the fitted variogram model, as a function of the distance between points A and B and the direction between them. S_r^2 is referred to as the estimation or kriging variance.

Point Kriging is now performed automatically by selecting the set of values for W_A through W_F to minimize the S_I (i.e., the Best Estimator), such that the sum of the selected weights will be exactly equal to one (i.e., the Unbiased Estimator). This minimization is conducted through a process known as the Lagrange Multiplier Technique. The resulting estimated value is referred to as the Best, Linear, Unbiased Estimator

or "BLUE".



Similar to the above process, block kriging can be performed where "I" represents a block with defined boundaries. Under this scenario, χ_{A} is the variogram between block I and point A. This process allows kriging to compute the average value over a block along with its measure of accuracy.

3.7 Geostatistical Software

In this investigation, Visual Sample Plan (VSP) 7.4 software is used (www.vsp.pnnl.gov). This software is produced on the basis of GSLIB (Deutsch and Journel, 1992), which was also the foundation of USEPA GEO-EAS. The output files of this software is compatible with ArcView GIS software environment. The original digital VSP output including probability plots, variography and kriging estimates are also provided electronically in Attachment A. The VSP Geostatistical Summary Report is provided in Attachment B.



3.8 Geostatistical Standards

In this investigation, the geostatistical analyses and computations are conducted and reported according to the following American Society of Testing and Material (ASTM) Standards:

- D5549 Standard Guide for Reporting Geostatistical Site Investigations (ASTM, 1994);
- D5922 Standard Guide for Analysis of Spatial Variation in Geostatistical Site Investigations (ASTM, 1996); and
- D5923 Standard Guide for Selection of Kriging Methods in Geostatistical Site Investigations (ASTM, 1996).
- D5924 Standard Guide for Selection of Simulation Approaches in Geostatistical Site Investigations (ASTM, 1994).

4.0 Data Compilation

The compiled data included the lead measured concentrations, as well as physical information on the actual sample, such as sample date, depth, type and coordinate location. Once the data were compiled into the GIS, exploratory statistical summaries were performed, such as depth averaging.

Before data were subjected to any further analysis, the following issues were addressed:

• GAEPD requested that only the shallow surface soil interval be evaluated (0-1 FT) for risk assessment exposure reasons. This data is compiled in Table 2.2.

5.0 Exploratory Data Analysis

5.1 Spatial Distribution of Lead

Elevated lead concentrations are predominantly present in the central portion of the property with some isolated elevated concentrations in the southern portion of the property. Visually there is sample coverage throughout the entire property with dense coverage in the central area near the railroad spur lines. Inspection of current (2013) aerial photography indicates heavy vegetation throughout the property. The distribution and concentration gradients under pre-remedial/excavation conditions are illustrated on Figure 5.1.1 (below).



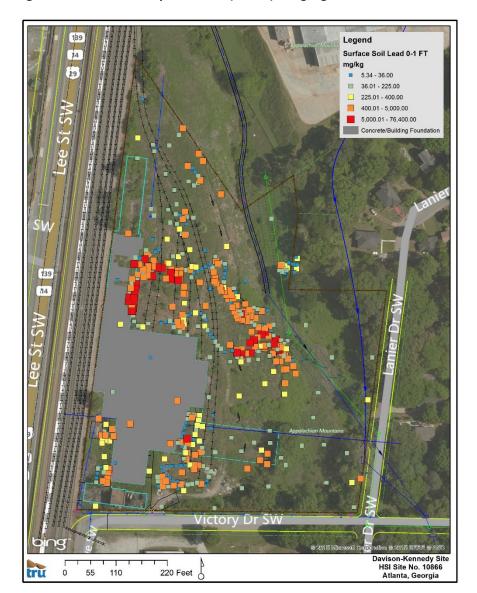


Figure 5.1.1 – Lead Sample Results (0-1 FT) – mg/kg

5.2 Probability Plots of Lead

To investigate the statistical distribution of the lead surface soil data, the corresponding probability plots (including raw and log-transformed data) are displayed on Figures 5.2.1-a, and 5.2.1-b, respectively. The summary of findings are:

Probability plot of lead data (Figure 5.2.1-a) displays a curved/segmented shape that is attributable to non-normality of the measured data. The probability plot of log-transformed lead data (Figure 5.2.1-b), even though slightly segmented, is much closer to a straight line and is thus determined to be a non-normal population distribution. In order to analyze the underlying variogram of Site lead data, log-transformed lead data are used.



Figure 5.2.1-a – Probability Plot Lead (generated via VSP)

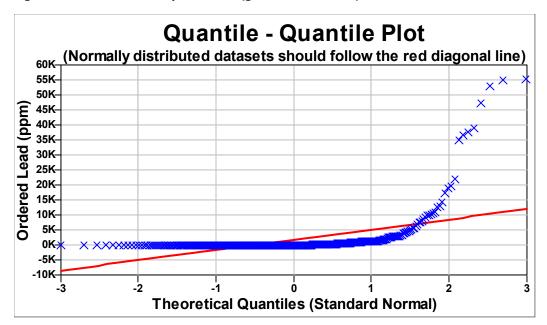
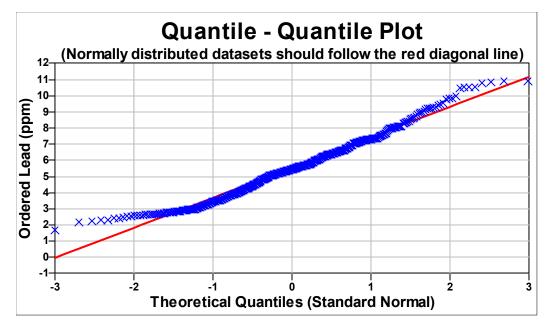


Figure 5.2.1-b – Probability Plot Lead Log-Transformed Data (generated via VSP)





6.0 Variogram Analysis of Lead

6.1 Lead – 0-1 FT Sample Interval

As previously described, the first step in a geostatistical analysis is variography, the omni-directional variogram of log-transformed lead 0-1 FT surface soil data is presented in Figure 6.1. The data set displays a consistent 'structured' spatial correlation. The fitted omni-directional variogram of lead has a range of 50 FT. This demonstrates that the lead data is spatially correlated and that concentrations can be estimated with a measurable level of statistical confidence between sample points that are no greater than 50 FT apart. As further note, if the variogram had indicated a hole-effect, re-evaluation would need to occur to determine if the varying depth intervals were actually representing unique and discrete impacts.

Geostatistical Analysis X Variogram Calculation Variogram Model Kriging Options | Post-Processing Mapping | Data Entry Semivariogram of Logarithms and Fitted Model 3.75 3.25 2.25 0.75 40 50 60 70 90 100 110 120 130 140 Distance Show variance Show # of pairs Nugget 2.2 Model Spherical ▾ Sill 1.5 Range 50 Total Sill: 3.7 Adjust the parameters above to fit a model as closely as possible to the experimental variogram points. Once you are satisfied with your fitted model, proceed to the Kriging Options tab to use this model in kriging Help

Figure 6.1 Lead 0-1 FT Omni-Directional Variogram (generated via VSP)



7.0 Geostatistical Estimation - Kriging

Kriging is a weighted moving average method used to interpolate values from a sample data set onto a regular grid for contouring. The kriging weights are computed from the previously calculated variogram model, specifically based on the degree of correlation among sample values in the area as a function of the distance and direction between samples. Kriging smoothes, or regresses, estimates based on the proportion of total sample variance accounted for by random "noise". The noisier the data set, the less individual samples represent their immediate vicinity, and the more they are smoothed. This often results in a conservative overestimation of impacted area boundaries. Kriging also neglects physical and natural boundaries, e.g. swales, buildings, concrete, etc. Therefore professional interpretation and judgment must be used when contouring the kriged output. Given a variogram representative for the area to be estimated, kriging will compute the most precise estimates possible from the available data. Kriging can adjust for anisotropy (directional tendencies) in the correlation by increasing the weights in the higher correlated direction. However, for these data sets no directional correlation was apparent. Additionally, with each kriging estimate for the lead concentration value comes a kriging variance (often referred to estimation error) which quantifies the statistical confidence of the kriged concentration.

7.1 Lead Kriging Results

Using the fitted omni-directional variogram models, kriging contour maps of both lead concentrations and associated estimation variance were generated. The kriging results showing the delineation boundaries for the background and the RRS for lead are illustrated in the Figures 7.1.1.

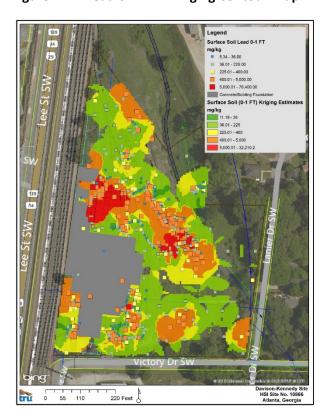
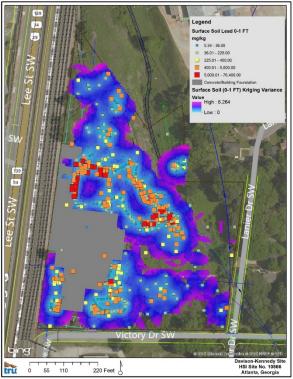


Figure 7.1.1 Lead 0-1 FT in Kriging Contour Map







The above Figure shows a color gradient indicating areas where low estimation standard error is encountered (blue) versus areas where high estimation error is encountered (purple). With respect to the identification of 'data gaps', a combination of several factors are considered including the high estimation error areas identified, the range of correlation from the variography, and the delineation/characterization performance standard. This analysis involves a certain degree of engineering judgment; however as a rule of thumb a 'data gap' is considered as a high variance area (purple) larger than the original range of correlation from the variography (50 ft). In this case, none of the high estimation error areas are greater than 50 ft.

It's important to explain that kriging estimation error is a function of two components: 1) variability in concentration among neighboring samples and 2) separation distance between these same samples. Thus, it is possible to have high estimation error under circumstances where although sample separation distances are relatively small, the variability in the corresponding sample concentrations is high thus driving the higher estimation error values (purple areas). Conversely, it's possible to have low estimation error in situations where although the sample separation distances are great, the corresponding sample concentrations are very similar thus driving a lower estimation error value.

As whole, the existing data set is geostatistically robust and is adequate for characterization of lead concentrations within the property boundary. The geostatistical analysis did not specifically identify a true data gap. Thus, utilizing this data set for further delineation in support of risk characterization and is statistically defensible.



8.0 RRS Compliance Assessment

Upon completion of the geostatistical analysis, it is now necessary to apply the results of previous remedial actions (i.e. soil excavation/backfill) prior to assessment of RRS compliance. To do this the following step-wise methodology was utilized:

- 1. Replace pre-remediation kriged soil data with post-remediation clean fill data,
- 2. Exposure Domain overlay with calculation of 95% Upper Confidence Level (UCL) of the mean, and
- 3. 95% UCL of Mean per each Exposure Domain compared to RRS to assess compliance.

Step 1: Remove Excavated Areas from Kriged Results

This steps consists of updating the kriging results to account for the past and recent soil excavation activities. First, the excavation boundaries were overlaid across the soil lead kriging results and point kriging results that fell within the excavation boundary were replaced with a clean soil backfill surrogate value of 36 ppm³. For areas that were not backfilled, the sample concentrations that remained at the bottom and side-walls of the excavation were used accordingly. Figure 8.1 below illustrates this step.

Legend
Concrete Building Foundation
2015 Excavation
2016 Excavation
2017 Solid Concrete Building Foundation
2018 Excavation
2019 Excavation
20

Figure 8.1 Lead 0-1 FT Kriging With Excavated Area Overlay



16

³ 36 mg/kg corresponds to the measured concentration of lead from the clean backfill source.

Step 2: Remedial Block Overlay

This step consists of the separate overlay of a 30'x30' systematic block grid across the entire post remediation/excavation kriged surface. The use of a 30' block was based on engineering judgment, i.e. a 30' remedial block is considered a minimum size for cost effective mass excavation and/or treatment using conventional heavy equipment. Figure 8.2 below illustrates the remedial block grids overlaid onto the post remediation/excavation kriged contour map.

Legend

Remedial Decision Blocks (2013/27)

Concrete/Building Foundation

Backfilled Area

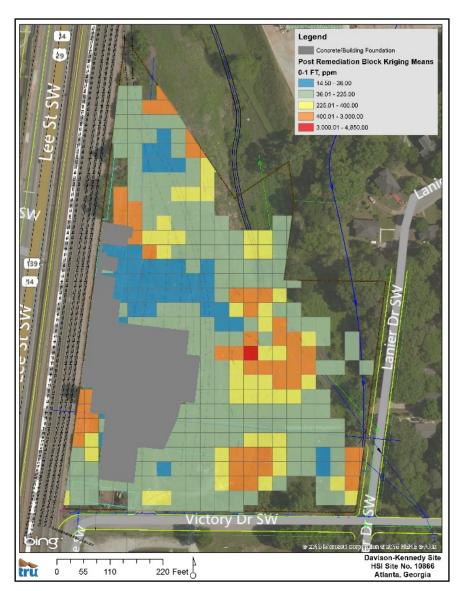
Figure 8.2 Remedial Decision Block Overlay (30'x30')

Step 3: Mean Kriged Block Calculation

This step consists of the calculation of the average or mean value of all the individual kriged grid cell estimates within each 30'x30' remedial block. Note each kriged grid cell is approximately 5'x5', thus approximately thirty-six (36) kriged grid cell estimates are averaged per 30'x30' remedial block. The Figures below illustrates the mean block concentrations.



Figure 8.3 Mean Post Remedial Lead Block Concentrations (30'x30')

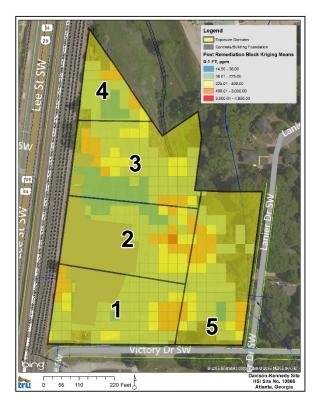




Step 4: Exposure Domain UCL Calculations

This step involves the overlay of the five (5) pre-determined industrial risk based exposure domains across the site. These domains are on average approximately 2 acres in size.

Figure 8.4 Exposure Domain Overlay



Next, the 95% UCL of the mean lead concentration for each Domain was calculated using the exposed soil remedial blocks located within the boundary limits of each respective Domain. The results are tabulated below:

Table 8.1 – UCL Exposure Domain Concentrations (0-1 FT)

Exposure Domain	95% UCL of Mean (0-1 FT)
Domain 1	263.5 mg/kg
Domain 2	370.1 mg/kg
	3, 3
Domain 3	309.0 mg/kg
Domain 4	387.1 mg/kg
	<u> </u>
Domain 5	295.4 mg/kg



To calculate the 95% UCL values, EPA's ProUCL Software was used, the results of these calculations can be found in Attachment B (the original ProUCL input and output files can also be found in Attachment C.)

The HSRA Type 3 RRS for lead is 400 mg/kg, which is for non-residential (i.e. commercial/industrial) land-use. Regulatory compliance has been defined as the 95% UCL values for each domain being below the Type 3 RRS of 400 mg/kg. As tabulated above all 5 of the exposure domains are well below this standard, indicating compliance for non-residential use.

9.0 Sensitivity Analysis

In order to evaluate the sensitivity of compliance as a function of the sample size and depth interval, the geostatistical analysis was repeated using the lead soil data from the 0-2 FT depth interval (i.e. versus the 0-1 FT interval). The intent is to evaluate the sensitivity in UCL concentrations to a varying surface soil depth exposure scenario.

The full results, specifically the probability plots, variography, kriging and UCL calculation results for this analysis can be found in Attachment D. However, the final 95% UCL Exposure Domain lead concentrations and presented here.

Tabulated below is a direct comparison of the 0-1 FT and 0-2 FT 95% UCL Domain concentrations. There are obvious differences between the UCL concentrations for each depth interval scenario, however, all of the Domains are in compliance with the 400 mg/kg RRS. Thus, regardless of the depth interval employed for a risk exposure scenario the Site is in compliance.

Table 8.2 – UCL Exposure Domain Concentration Comparisons (0-1 FT vs 0-2 FT)

Exposure Domain	95% UCL of Mean 0-1 FT	95% UCL of Mean 0-2 FT	Percent Difference %
Domain 1	263.5 mg/kg	318.1 mg/kg	-20.7%
Domain 2	370.1 mg/kg	356.2 mg/kg	3.8%
Domain 3	309.0 mg/kg	280.6 mg/kg	9.2 %
Domain 4	387.1 mg/kg	223.7 mg/kg	42.2%
Domain 5	295.4 mg/kg	356.0 mg/kg	-20.5%



10.0 References

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TABLES



TABLE 2.2 Lead Data Used in Geostatistical Analysis

	ccaa Data C	ocu iii de	ostatisticai i	Allulysis	
Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CAR-W29K	0.75	11/29/2006	15.8	2217724.172	1348785.001
CAR-W29J	0.75	11/29/2006	2790	2217714.815	1348788.306
CD-W4	1	8/15/2006	232	2217713.02	1348985.097
CD-F3	1	8/15/2006	46.8	2217710.995	1348979.672
CAR-W29I	0.75	11/27/2006	3170	2217708.264	1348794.8
CD-F2	1	8/15/2006	253	2217707.833	1348989.153
CD-W1	1	8/15/2006	18.6	2217707.647	1348972.862
CD-F1	1	8/15/2006	52.5	2217705.043	1348983.864
CAR-W29H	0.75	11/20/2006	1010	2217703.889	1348799.459
CD-W3	1	8/15/2006	264	2217701.556	1348992.567
CD-F4	1	8/15/2006	72.2	2217701.444	1348976.57
CAR-W29G	0.75	11/16/2006	1610	2217700.646	1348802.492
CAR-W28D	0.75	10/31/2006	32.2	2217699.521	1348817.462
CD-F5	1	8/15/2006	232	2217698.281	1348986.994
CAR-W28C	0.75	10/24/2006	1900	2217697.916	1348818.633
CAR-W29F	0.75	11/9/2006	10900	2217696.104	1348807.136
CD-W2	1	8/15/2006	192	2217695.405	1348980.189
CAR-W28B	1	10/10/2006	910	2217693.661	1348821.573
CAR-W27-28B	0.75	10/24/2006	13.6	2217693.018	1348832.201
CAR-W29E	0.75	11/2/2006	5440	2217692.304	1348810.893
CAR-W29D	0.75	10/31/2006	3340	2217688.952	1348814.339
CAR-W27-28	1	10/10/2006	8000	2217688.45	1348829.989
CAR-W29C	0.75	10/24/2006	1630	2217686.023	1348817.138
CAR-W29B	1	10/10/2006	5700	2217683.826	1348819.81



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CAR-W27C	1	10/10/2006	118	2217683.246	1348838.321
CAR-W25D	1	10/10/2006	44.7	2217682.709	1348861.527
CSB-13B	6	11/1/2006	151	2217681.556	1348779.296
CSB-12	6	10/30/2006	375	2217679.553	1348772.347
CAR-W26B	1	9/26/2006	23	2217678.776	1348848.906
CSB-13	6	10/30/2006	692	2217678.753	1348778.475
CSB-11	6	10/30/2006	346	2217678.102	1348761.473
CI-W5	6	8/28/2006	198	2217675.984	1348584.155
CSB-10	6	10/30/2006	300	2217674.243	1348752.24
CAR-W25C	0.75	10/5/2006	694	2217674.144	1348857.717
CAR-W30B	1	10/10/2006	149	2217673.733	1348818.114
CAR-W27B	1	9/26/2006	4460	2217672.593	1348837.572
CI-W4	6	8/28/2006	244	2217671.911	1348574.36
CAR-W25CF	2	10/5/2006	423	2217670.418	1348856.339
CAR-W25CFB	6	10/12/2006	490	2217670.418	1348856.339
CAR-W25CFC	8	10/25/2006	34.8	2217670.418	1348856.339
CI-W6	6	8/28/2006	53.5	2217670.005	1348594.365
CAR-F19	4	10/3/2006	710	2217669.695	1348829.139
CAR-F19B	6	10/10/2006	34.1	2217669.695	1348829.139
CSB-14	6	10/30/2006	295	2217669.33	1348786.877
CSB-9B	6	11/1/2006	112	2217668.807	1348742.108
CSB-9	6	10/30/2006	608	2217667.639	1348744.784
CI-F1	12	8/28/2006	167	2217666.879	1348585.232
CAR-W26	0.75	9/21/2006	6410	2217665.551	1348846.747
CAR-W31D	0.75	10/31/2006	107	2217665.216	1348807.449
CAR-W25	0.75	9/21/2006	3880	2217664.646	1348854.019



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CAR-W25B	1	9/28/2006	892	2217664.646	1348854.019
CAR-W31C	0.75	10/24/2006	1630	2217664.091	1348811.716
CAR-W31	0.75	9/21/2006	28900	2217664.048	1348816.614
CAR-W31B	1	10/10/2006	3470	2217664.048	1348816.614
CI-F2	12	8/28/2006	156	2217663.166	1348576.127
CSB-15	6	10/30/2006	261	2217662.375	1348794.156
CI-W3	6	8/28/2006	369	2217661.585	1348565.62
CAR-W20F	0.75	10/16/2006	17.1	2217660.935	1348895.107
CAR-W20E	0.75	10/11/2006	1900	2217657.981	1348890.759
CAR-W24B	0.75	9/28/2006	20.5	2217657.864	1348861.173
CSB-8B	6	11/1/2006	266	2217657.81	1348739.156
CI-W1	6	8/28/2006	60.3	2217657.534	1348586.127
CAR-W27	0.75	9/21/2006	5900	2217657.478	1348840.726
CSB-8	6	10/30/2006	602	2217657.424	1348742.051
CAR-F18	3	10/3/2006	1060	2217656.084	1348846.823
CAR-F18B	6	10/10/2006	531	2217656.084	1348846.823
CAR-F18C	8	10/25/2006	95.5	2217656.084	1348846.823
CI-W2	6	8/28/2006	113	2217654.723	1348576.597
CAR-W32	1	10/10/2006	366	2217654.123	1348814.929
CAR-W21D	1	10/5/2006	194	2217652.404	1348879.874
CAR-F20	4	10/3/2006	11700	2217651.383	1348821.743
CAR-F20B	6	10/10/2006	1860	2217651.383	1348821.743
CAR-F20C	8	10/25/2006	534	2217651.383	1348821.743
CAR-F20D	10	10/31/2006	671	2217651.383	1348821.743
CAR-F20E	12	11/2/2006	70.1	2217651.383	1348821.743
CSB-F	8	11/15/2006	881	2217651.299	1348774.259



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CSB-FB	10	11/17/2006	12.5	2217651.299	1348774.259
CSB-16C	6	11/15/2006	70.4	2217651.214	1348808.719
CAR-W24	0.75	9/21/2006	849	2217651.168	1348856.251
CAR-W28	0.75	9/21/2006	1760	2217649.405	1348834.706
CAR-W19E	1	10/11/2006	204	2217648.825	1348894.837
CSB-16B	4	10/30/2006	760	2217647.928	1348803.485
CAR-W33B	1	10/24/2006	209	2217647.681	1348807.451
CSB-16	6	10/30/2006	76200	2217647.355	1348798.587
CSB-7	6	10/30/2006	407	2217647.057	1348741.162
CSB-7B	6	11/1/2006	103	2217646.261	1348738.352
CAR-W33	0.75	10/10/2006	937	2217644.265	1348813.502
CAR-W21C	1	9/29/2006	3160	2217644.008	1348875.948
CAR-W20-21CF	2	9/29/2006	238	2217643.926	1348879.261
CAR-W20D	1	10/5/2006	730	2217643.422	1348884.577
CAR-F9	2	9/22/2006	1490	2217642.937	1348839.075
CAR-F9B	4	9/29/2006	63.2	2217642.937	1348839.075
CAR-W23	0.75	9/21/2006	57.2	2217642.479	1348861.342
CAR-W29	0.75	9/21/2006	55600	2217641.332	1348828.685
CAR-W18E	0.75	10/11/2006	101	2217640.321	1348898.542
CSB-6	6	10/30/2006	3480	2217637.319	1348746.061
CSB-6B	6	11/1/2006	1440	2217636.052	1348743.429
CAR-W19D	1	10/5/2006	2150	2217635.557	1348887.323
CAR-W21B	1	9/26/2006	764	2217634.747	1348871.483
CAR-W34	1	10/10/2006	35100	2217634.277	1348801.067
CAR-W34B	1.25	10/18/2006	3630	2217634.277	1348801.067
CAR-W20C	1	9/29/2006	1460	2217634.013	1348880.242



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CAR-W22	1	9/21/2006	45.9	2217633.789	1348866.432
CSB-6C	6	11/9/2006	982	2217633.593	1348739.765
CAR-W30	0.75	9/21/2006	37700	2217633.259	1348822.664
CAR-W18-19CF	2	9/29/2006	1760	2217632.691	1348889.358
CAR-W18-19CFB	4	10/5/2006	1490	2217632.691	1348889.358
CAR-W18-19CFC	5	10/11/2006	1340	2217632.691	1348889.358
CAR-W18-19CFD	7	10/24/2006	101	2217632.691	1348889.358
CAR-W18D	0.75	10/5/2006	1580	2217631.051	1348894.064
CAR-F10	2	9/22/2006	3570	2217630.526	1348833.558
CAR-F10B	4	9/29/2006	700	2217630.526	1348833.558
CAR-F10C	6	10/10/2006	67.3	2217630.526	1348833.558
CSB-6D	6	11/15/2006	183	2217630.034	1348734.333
CSB-5	6	10/30/2006	1030	2217627.453	1348750.902
CAR-W19C	1	9/29/2006	4450	2217626.287	1348882.997
CAR-F7	2	9/22/2006	1450	2217625.946	1348849.152
CAR-F7B	4	9/29/2006	164	2217625.946	1348849.152
CAR-W21	0.75	9/21/2006	408	2217625.901	1348869.026
CSB-5B	6	11/1/2006	1010	2217625.511	1348748.72
CAR-W20B	1	9/26/2006	1640	2217625.095	1348875.87
CAR-W35	0.75	10/10/2006	76400	2217623.947	1348799.86
CAR-W35B	1	10/18/2006	3170	2217623.947	1348799.86
CAR-W16D	0.75	10/5/2006	25.1	2217623.132	1348909.073
CSB-5C	6	11/9/2006	144	2217623.035	1348746.881
CAR-W16C	1	9/29/2006	1520	2217622.048	1348906.464
CAR-W16CF	2	9/29/2006	939	2217622.048	1348906.464
CAR-W18C	1	9/29/2006	3320	2217621.939	1348889.47



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CSB-4	6	10/30/2006	1810	2217621.313	1348759.747
CSB-4B	6	11/1/2006	63.5	2217618.624	1348758.608
CSB-3	6	10/30/2006	15.5	2217617.892	1348769.406
CAR-W19B	0.75	9/26/2006	4000	2217616.882	1348878.592
CSB-2	6	10/30/2006	57.1	2217616.517	1348780.266
CAR-W20	0.75	9/21/2006	1560	2217616.243	1348871.827
CSB-1	6	10/30/2006	9890	2217615.688	1348789.356
CAR-F26	2	10/12/2006	27700	2217615.276	1348816.488
CAR -F26B	3	10/18/2006	443	2217615.276	1348816.488
CAR-F26C	5	10/24/2006	63.4	2217615.276	1348816.488
CAR-W36E	0.75	11/14/2006	2480	2217615.082	1348792.376
CAR-W36B	0.75	10/24/2006	846	2217614.59	1348801.71
CAR-W36D	0.75	11/9/2006	424	2217614.589	1348795.019
CAR-W36	0.75	10/12/2006	682	2217614.529	1348808.619
CAR-W36C	0.75	11/2/2006	8710	2217614.283	1348797.656
CAR-W36F	0.75	11/16/2006	55.2	2217613.603	1348789.651
CSB-1B	6	11/9/2006	240	2217613.528	1348787.335
CAR-W18B	0.75	9/26/2006	7060	2217613.085	1348885.172
CAR-F8	2	9/22/2006	191	2217612.835	1348833.461
CAR-W17B	1	9/26/2006	68.9	2217610.296	1348889.929
CAR-W16CFB	4	10/5/2006	135	2217609.868	1348902.253
CAR-F11	2	9/22/2006	263	2217606.63	1348853.872
CAR-W19	0.75	9/21/2006	3090	2217606.538	1348874.519
CAR-W14C	1	9/29/2006	249	2217605.642	1348922.884
CAR-W37C	0.75	11/2/2006	1490	2217605.382	1348796.592
CAR-F25	2	10/12/2006	2390	2217605.064	1348831.011



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CAR-F25B	4	10/24/2006	281	2217605.064	1348831.011
CAR-W37D	0.75	11/9/2006	82.6	2217604.787	1348791.253
CAR-W37	0.75	10/12/2006	607	2217604.585	1348806.934
CAR-W37B	0.75	10/24/2006	10600	2217604.521	1348801.362
CAR-W16B	1	9/26/2006	1390	2217604.132	1348902.532
CAR-W18	0.75	9/21/2006	4710	2217603.325	1348880.987
CAR-W13C	1	9/29/2006	19.7	2217601.472	1348931.999
CAR-W17	0.75	9/21/2006	2260	2217598.958	1348890.062
CAR-W12C	1	9/29/2006	179	2217597.622	1348941.031
CAR-W14B	1	9/26/2006	1220	2217596.003	1348917.659
CAR-W16	0.75	9/21/2006	1160	2217594.59	1348899.137
CAR-W38	0.75	10/12/2006	20.1	2217594.57	1348805.328
CAR-F24	2	10/12/2006	492	2217592.723	1348845.57
CAR-F24B	4	10/24/2006	772	2217592.723	1348845.57
CAR-F24C	6	10/31/2006	216	2217592.723	1348845.57
CAR-W13B	1	9/26/2006	1030	2217592.638	1348926.394
CAR-F22	2	10/12/2006	794	2217590.616	1348810.098
CAR-F22B	4	10/24/2006	105	2217590.616	1348810.098
CAR-W15	0.75	9/21/2006	27.4	2217590.223	1348908.211
CAR-W13CF	2	9/29/2006	697	2217589.517	1348934.216
CAR-W13CFB	4	10/5/2006	633	2217589.517	1348934.216
CAR-W13CFC	7	10/11/2006	444	2217589.517	1348934.216
CAR-W13CFD	9	10/24/2006	239	2217589.517	1348934.216
CAR-W12B	1	9/26/2006	1190	2217588.031	1348937.077
CAR-W14	0.75	9/21/2006	2990	2217585.905	1348917.309
CAR-F23	2	10/12/2006	224	2217582.169	1348863.362



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CAR-W13	1	9/21/2006	626	2217581.654	1348926.439
CA-W35	0.75	8/28/2006	28.4	2217579.574	1348984.135
CAR-F21	2	10/12/2006	1430	2217579.503	1348826.162
CAR-F21B	4	10/24/2006	1710	2217579.503	1348826.162
CAR-F21C	6	10/31/2006	1120	2217579.503	1348826.162
CAR-F21D	8	11/2/2006	54.6	2217579.503	1348826.162
CA-W34	0.75	8/28/2006	53.2	2217578.542	1348993.792
CA-W36	0.75	8/28/2006	22	2217578.395	1348974.134
CAR-W12	1	9/21/2006	1560	2217577.662	1348934.869
CAR-W39	0.75	10/12/2006	12.5	2217577.528	1348802.792
CA-W37	1	8/28/2006	16.4	2217577.217	1348964.132
CA-W38	0.75	8/28/2006	64.5	2217576.331	1348954.102
CA-W39	0.75	8/28/2006	106	2217575.463	1348944.092
CAR-W11	0.75	9/21/2006	334	2217575.349	1348942.077
CAR-F13	2	9/22/2006	283	2217574.04	1348891.046
CA-W40	0.75	8/28/2006	2940	2217571.023	1348936.18
CA-F33	2	8/28/2006	788	2217570.202	1348946.763
CA-F33B	4	9/21/2006	686	2217570.202	1348946.763
CA-F33C	5	10/5/2006	594	2217570.202	1348946.763
CA-F33D	6	10/11/2006	360	2217570.202	1348946.763
CAR-W40	0.75	10/12/2006	162	2217570.14	1348809.853
CAR-F17	2	9/22/2006	249	2217568.994	1348843.822
CA-F34	2	8/28/2006	175	2217568.944	1348965.292
CA-W33	0.75	8/28/2006	73.1	2217568.919	1348996.76
CAR-W10	0.75	9/14/2006	653	2217568.368	1348943.774
CAR-F12	2	9/22/2006	69.9	2217566.107	1348909.527



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CA-F35	2	8/28/2006	40.5	2217565.627	1348988.714
CAR-W41	0.75	10/12/2006	207	2217563.289	1348816.559
CAR-F16	2	9/22/2006	3390	2217561.671	1348862.9
CAR-F16B	4	10/12/2006	1510	2217561.671	1348862.9
CAR-F16C	6	10/24/2006	441	2217561.671	1348862.9
CAR-F16D	8	10/31/2006	86.4	2217561.671	1348862.9
CAR-W9	0.75	9/14/2006	530	2217560.931	1348952.266
CA-W32	0.75	8/28/2006	548	2217559.295	1348999.728
CA-W32B-F	2	9/21/2006	107	2217558.908	1349004.278
CAR-F6	2	9/14/2006	590	2217558.334	1348928.014
CAR-F6B	3	10/12/2006	564	2217558.334	1348928.014
CAR-F6C	5	10/24/2006	594	2217558.334	1348928.014
CAR-F6D	7	10/31/2006	97.7	2217558.334	1348928.014
CA-W32B	0.75	9/21/2006	61.4	2217558.031	1349009.683
CAR-W42	0.75	10/30/2006	80.7	2217557.981	1348824.893
CAR-W8	0.75	9/14/2006	2690	2217557.916	1348963.326
CAR-F15	2	9/22/2006	400	2217555.973	1348882.068
CAR-F15B	4	10/12/2006	902	2217555.973	1348882.068
CAR-F15C	6	10/24/2006	56.7	2217555.973	1348882.068
CAR-W7	0.75	9/14/2006	594	2217554.553	1348975.948
CAR-W43	0.75	10/30/2006	20.9	2217552.341	1348833.381
CAR-W6	0.75	9/14/2006	222	2217551.932	1348985.671
CAR-F5	2	9/14/2006	645	2217551.684	1348947.637
CAR-F5B	3	10/12/2006	317	2217551.684	1348947.637
CAR-F14	2	9/22/2006	279	2217548.033	1348900.735
CG-W1	0.75	8/25/2006	186	2217547.966	1348545.637



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CAR-F4	2	9/14/2006	525	2217546.843	1348967.957
CAR-F4B	3	10/12/2006	267	2217546.843	1348967.957
CAR-W5	0.75	9/14/2006	17.7	2217546.766	1348992.716
CAR-W44	0.75	10/30/2006	25.6	2217546.718	1348841.759
CG-W25	0.75	8/25/2006	114	2217543.781	1348534.475
CAR-W45	0.75	10/30/2006	66.3	2217541.112	1348850.052
CG-W24	0.75	8/25/2006	28.5	2217540.185	1348524.964
CG-W2	0.75	8/25/2006	81.1	2217539.772	1348551.589
CAR-F3	2	9/14/2006	23.9	2217539.233	1348918.872
CAR-W47	0.75	10/30/2006	32.4	2217538.451	1348871.741
CAR-W4	0.75	9/14/2006	14.7	2217537.715	1348987.711
CG-W23	0.75	8/25/2006	24	2217536.792	1348515.368
CAR-W46	0.75	10/30/2006	290	2217535.473	1348858.396
CAR-F2	2	9/14/2006	41.3	2217533.74	1348938.585
CAR-W48	0.75	10/30/2006	157	2217533.047	1348879.222
CG-W3	0.75	8/25/2006	41.8	2217531.709	1348557.056
CG-F5	2	8/25/2006	71.6	2217531.124	1348534.07
CG-W22E	1.25	9/8/2006	23.3	2217530.888	1348505.525
CG-W5DEB	0.75	9/22/2006	183	2217530.674	1348586.843
CG-W5EE	0.75	9/22/2006	203	2217529.238	1348596.774
CAR-W3	1	9/14/2006	14.8	2217528.888	1348982.962
CAR-F1	2	9/14/2006	43.2	2217528.654	1348959.119
CG-W5FE	1	9/27/2006	28	2217528.112	1348606.945
CG-W22	0.75	8/25/2006	613	2217527.456	1348518.868
CC-W4	0.75	8/24/2006	78	2217527.359	1349175.64
CAR-W49	0.75	10/30/2006	16.9	2217527.068	1348885.371



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CG-F 8	2	9/6/2006	12.4	2217526.524	1348514.34
CG-W 5 D E	0.75	9/18/2006	1060	2217525.648	1348586.697
CG-W22B	1.25	9/6/2006	472	2217524.874	1348509.626
CG-F9	2	9/8/2006	165	2217524.247	1348507.936
CG-W4B	2	9/6/2006	82.2	2217524.137	1348572.003
CH-W1	1	8/21/2006	263	2217524.044	1348666.1
CG-W22C	1.25	9/8/2006	307	2217522.977	1348504.523
CH-W16	1	8/21/2006	239	2217521.914	1348656.014
CG-W4	0.75	8/25/2006	540	2217521.55	1348558.536
CC-W3	0.75	8/24/2006	51.9	2217521.156	1349183.594
CC-W5	0.75	8/24/2006	50	2217520.67	1349167.974
CAR-W2	0.75	9/14/2006	12.7	2217520.185	1348977.886
CG-W5F	1	9/27/2006	93.7	2217520.154	1348611.747
CG-F11	4	9/18/2006	19.5	2217519.34	1348587.943
CH-W15	1	8/21/2006	317	2217519.14	1348645.58
CG-F15	2	9/22/2006	534	2217518.484	1348598.094
CG-F15B	5	9/27/2006	22	2217518.484	1348598.094
CG-W21	0.75	8/25/2006	82.1	2217518.345	1348521.135
CAR-W50	0.75	10/30/2006	18.3	2217518.002	1348888.786
CG-F17	5	9/27/2006	74.8	2217517.792	1348606.939
CG-F 7	2	9/6/2006	59.6	2217517.347	1348565.75
CG-W22W	1.25	9/8/2006	134	2217517.102	1348510.012
CH-W14	1	8/21/2006	75	2217516.565	1348635.041
CC-W2	0.75	8/24/2006	35.3	2217514.979	1349191.597
CG-W5C	1.25	9/8/2006	3200	2217514.488	1348581.926
CG-W 5 D	1	9/18/2006	693	2217514.488	1348581.926



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CG-W5E	0.75	9/22/2006	520	2217514.488	1348581.926
CG-F10	2	9/8/2006	3760	2217514.457	1348576.548
CG-F10B	4	9/18/2006	23.9	2217514.457	1348576.548
CH-W13	1	8/21/2006	301	2217514.151	1348625.018
CG-W 5 B	1.75	9/6/2006	1410	2217513.781	1348572.228
CH-W2	1	8/21/2006	37.5	2217512.328	1348667.628
CC-W6	0.75	8/24/2006	74.3	2217512.125	1349162.503
CA-F22	2	8/9/2006	1100	2217511.999	1348946.108
CA-F22B	4	8/25/2006	44.5	2217511.999	1348946.108
CC-F2	2	8/24/2006	297	2217511.845	1349166.662
CH-W12	1	8/21/2006	35.2	2217511.729	1348615.068
CG-W5	0.75	8/25/2006	1300	2217511.674	1348559.95
CAR-W1	0.75	9/14/2006	15.1	2217511.129	1348973.481
CG-F4	2	8/25/2006	39.5	2217510.762	1348538.256
CC-F1	2	8/24/2006	60.5	2217510.636	1349183.186
CH-F3	2	8/21/2006	66.7	2217509.901	1348657.901
CH-W11	1	8/21/2006	285	2217508.892	1348604.147
CC-W1	0.75	8/24/2006	32.1	2217508.739	1349199.503
CAR-W51	0.75	10/30/2006	26.9	2217508.564	1348885.272
CG-W20	0.75	8/25/2006	220	2217507.826	1348519.113
CH-F2	2	8/21/2006	188	2217507.015	1348642.899
CG-F6	2	8/25/2006	208	2217505.617	1348555.168
CA-F23	2	8/9/2006	252	2217505.198	1348925.791
CAN-W13B	1	9/22/2006	18.9	2217505.104	1348988.641
CG-F13	2	9/18/2006	31.6	2217504.223	1348576.715
C-CK-W4B-7	7	10/25/2006	15.8	2217504.149	1349166.854



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CAN-W13	1	9/12/2006	631	2217503.915	1348980.764
CA-F24	2	8/9/2006	49.9	2217503.486	1348905.631
CG-W6	0.75	8/25/2006	331	2217502.996	1348559.953
CG-F16	2	9/22/2006	25.3	2217502.478	1348596.691
CG-F12	2	9/18/2006	356	2217501.753	1348587.163
CH-F1	2	8/21/2006	16.4	2217501.446	1348625.135
CH-W3	1	8/21/2006	39.3	2217501.029	1348669.048
CG-W5W	1.25	9/8/2006	1540	2217500.347	1348573.082
CAR-W52	0.75	10/30/2006	15.9	2217499.126	1348881.759
CG-W19	1	8/23/2006	48.3	2217498.633	1348517.354
CH-W10	1	8/21/2006	1260	2217498.464	1348606.191
CH-W4	1	8/21/2006	195	2217498.114	1348659.052
C-CK-F4	18	8/29/2006	35.8	2217497.911	1349173.407
CA-W22E	0.75	10/9/2006	39.6	2217497.731	1348838.954
CG-W5 D W	0.75	9/18/2006	2040	2217497.44	1348586.281
CB-W1	0.75	9/22/2006	50.6	2217496.551	1349058.031
CB-W7B	0.75	9/28/2006	57	2217496.244	1349095.704
CG-W 5 W B	1	9/18/2006	662	2217495.36	1348572.541
CAN-W12B	1.25	9/22/2006	15.5	2217495.152	1348990.182
CAN-F6	2	9/14/2006	1290	2217494.974	1348972.602
CAN-F6B	4	9/21/2006	17.9	2217494.974	1348972.602
CH-W5	1	8/21/2006	13.6	2217494.91	1348649.265
C-CK-F5	18	8/29/2006	23.3	2217494.9	1349193.564
CB-W8	1	9/22/2006	23	2217494.87	1349080.173
CG-W7	1	8/23/2006	20.4	2217494.369	1348559.22
CAN-F12	2	9/22/2006	15.5	2217494.253	1348985.941



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CAN-W12	1	9/12/2006	196	2217493.986	1348980.317
CA-W22-DE	2	9/28/2006	43.1	2217493.696	1348847.433
CG-F3	2	8/23/2006	125	2217492.802	1348541.851
CB-F3	2	9/28/2006	479	2217492.482	1349093.049
CB-F3B	4	10/18/2006	620	2217492.482	1349093.049
CB-F3C	6	10/31/2006	15	2217492.482	1349093.049
CG-W5EW	0.75	9/22/2006	51.1	2217492.246	1348597.199
CH-W6	1	8/21/2006	34.7	2217492.127	1348638.905
CA-W21	1.5	8/8/2006	14.7	2217492.051	1348960.228
CB-F1	2	9/22/2006	34.1	2217491.51	1349068.592
CG-W5DWB	0.75	9/22/2006	71.1	2217491.353	1348587.034
C-CK-F3	18	8/29/2006	<0.05	2217491.028	1349181.622
CA-W22E2	1	9/15/2006	332	2217490.863	1348862.666
CG-W5WC	1	9/22/2006	146	2217490.219	1348573.247
CAR-W53	0.75	10/30/2006	312	2217489.688	1348878.245
CA-F29	2	8/25/2006	10.6	2217489.338	1348965.245
CH-W7	1	8/21/2006	24.2	2217489.038	1348628.813
CA-W22E1	1	9/15/2006	284	2217488.807	1348871.786
CA-W22D	1.5	9/28/2006	1690	2217488.659	1348839.788
CA-W22DF	2	9/28/2006	2020	2217488.659	1348839.788
CH-F4	2	8/30/2006	357	2217488.328	1348607.973
CB-W7	1	9/22/2006	856	2217488.283	1349090.16
CG-W31B	0.75	9/28/2006	20.5	2217487.442	1348511.922
CA-W22DFB	4	10/9/2006	148	2217487.198	1348848.748
CG-W18	1	8/23/2006	105	2217487.079	1348520.401
C-CK-F2	18	8/29/2006	<0.05	2217486.485	1349170.724



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CB-W2	0.75	9/22/2006	67.5	2217486.05	1349057.755
CH-W8	1	8/21/2006	25	2217486.033	1348618.943
CA-W22C	1	9/15/2006	591	2217485.865	1348855.766
CH-W10B	1	8/30/2006	20.4	2217485.863	1348599.939
CAN-W11B	2	9/22/2006	24.5	2217485.199	1348991.723
CA-F21	2	8/9/2006	3440	2217485.139	1348946.207
CA-F21B	4	8/25/2006	1530	2217485.139	1348946.207
CA-F21C	6	9/18/2006	22.6	2217485.139	1348946.207
CA-W22-F2-5'	3	9/15/2006	327	2217484.462	1348860.964
CG-W8	1	8/23/2006	26.7	2217484.303	1348558.538
CAN-W11	1	9/12/2006	586	2217483.838	1348979.743
CA-W22B	1	9/7/2006	634	2217483.492	1348865.351
CG-W31	1	9/20/2006	429	2217483.437	1348518.734
CH-W9	1	8/21/2006	1430	2217483.086	1348609.05
CA-F20	2	8/9/2006	27.2	2217482.649	1348926.097
CA-W20B	0.75	8/22/2006	525	2217482.479	1348971.856
CB-W6	0.75	9/22/2006	17.8	2217482.365	1349098.93
CA-W22-F1-15'	3	9/15/2006	12.8	2217482.318	1348870.239
CA-W20	1	8/8/2006	1880	2217481.984	1348960.517
CB-F2	2	9/22/2006	25	2217481.301	1349085.993
CA-W22-DW	0.75	9/28/2006	128	2217481.212	1348846.358
CA-W22	1.25	8/8/2006	467	2217481.04	1348875.171
CA-F19	2	8/9/2006	38.3	2217480.937	1348905.937
CB-W3	0.75	9/22/2006	319	2217480.896	1349068.277
C-CK-F1	18	8/29/2006	<0.05	2217480.415	1349190.001
CG-F19	2	9/28/2006	69.2	2217478.806	1348513.918



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CAN-W10C	1	9/28/2006	252	2217478.588	1349008.865
CA-W22W2	1	9/15/2006	766	2217478.538	1348859.473
CA-F18	2	8/9/2006	116	2217477.962	1348885.622
CH-W9B	1	8/30/2006	62.1	2217477.22	1348607.213
CG-W30B	0.75	9/28/2006	9.4	2217477.119	1348508.861
CG-W17	1	8/23/2006	16.9	2217476.449	1348523.269
CA-W22W1	1	9/15/2006	1610	2217476.387	1348868.513
CAN-W10B	1.5	9/22/2006	2340	2217475.247	1348993.264
CB-W4	0.75	9/22/2006	168	2217475.181	1349079.799
CAN-F5	2	9/14/2006	868	2217474.823	1348976.121
CAN-F5B	4	9/21/2006	54.7	2217474.823	1348976.121
CAN-F11	2	9/22/2006	177	2217474.27	1348989.119
CG-F2	2	8/23/2006	83.3	2217474.137	1348545.835
CG-W9	1	8/23/2006	14.3	2217474.129	1348557.915
CAN-W10	1	9/12/2006	1500	2217473.777	1348979.346
CB-W5	0.75	9/22/2006	199	2217472.628	1349100.406
CA-W19B	0.75	8/22/2006	438	2217472.379	1348973.234
CA-W19	1.5	8/8/2006	3350	2217471.917	1348960.806
CAN-W9-10 CF	2	9/28/2006	14.6	2217471.043	1349002.237
CA-W23	2	8/8/2006	65.5	2217470.407	1348872.511
CG-W30	1	9/20/2006	1400	2217468.804	1348515.381
CA-W22-W2B	1	9/28/2006	87.1	2217468.219	1348855.908
CA-W22-WBF	2	9/28/2006	65.9	2217468.219	1348855.908
CA-F28	2	8/25/2006	20.1	2217467.551	1348967.576
CAN-W9C	1	9/28/2006	62.4	2217466.783	1349009.742
CG-W16	1	8/23/2006	31.7	2217466.65	1348525.876



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CA-W22-W1B	1	9/28/2006	14.9	2217466.289	1348865.286
CAN-W9B	1.25	9/22/2006	1280	2217465.295	1348994.805
CG-W10	1	8/23/2006	9.81	2217464.05	1348557.232
CAN-W9	1	9/12/2006	864	2217463.703	1348981.039
CA-F15	2	8/9/2006	244	2217463.029	1348929.487
CA-W18B	0.75	8/22/2006	39100	2217462.097	1348974.537
CA-W18	0.75	8/8/2006	9440	2217461.903	1348961.095
CA-F16	2	8/9/2006	8340	2217461.317	1348909.327
CA-F16B	4	8/25/2006	162	2217461.317	1348909.327
CA-W24	1	8/8/2006	37.2	2217460.649	1348870.021
CG-W15	1	8/23/2006	8.86	2217459.227	1348531.587
CG-W29	1	9/20/2006	95.2	2217456.536	1348513.072
CAN-W8	1	9/12/2006	3300	2217455.343	1348996.346
CAN-W8B	2	9/22/2006	19.5	2217455.343	1348996.346
CG-F14	2	9/20/2006	21.4	2217455.246	1348527.385
CG-F1	2	8/23/2006	52	2217454.696	1348549.669
CAN-F10	2	9/22/2006	73.3	2217454.501	1348992.322
CAN-F4	2	9/14/2006	65.2	2217454.345	1348978.52
CG-W11	1	8/23/2006	11.4	2217454.022	1348556.664
CA-W17B	1.75	8/22/2006	22400	2217452.054	1348975.981
CA-W17	1	8/8/2006	4200	2217451.922	1348962.437
CG-W14	1	8/23/2006	15.9	2217450.928	1348538.276
CA-W25	1	8/8/2006	30	2217450.891	1348867.532
CA-F27	2	8/25/2006	19.3	2217447.246	1348970.319
CG-W13	1	8/23/2006	9.81	2217446.63	1348546.671
CAN-W7B	1.25	9/22/2006	16.4	2217445.391	1348997.887



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CG-W28	1	9/20/2006	685	2217444.851	1348514.241
CG-W27	1	9/20/2006	1030	2217444.169	1348524.302
CAN-W7	1	9/12/2006	10100	2217443.668	1348984.265
CG-W26	1	9/20/2006	1510	2217443.454	1348534.825
CA-F14	2	8/9/2006	189	2217443.424	1348933.512
CA-W16B	1.25	8/22/2006	987	2217442.195	1348977.254
CA-W16	1.75	8/8/2006	8200	2217441.941	1348963.779
CG-W12	1	8/23/2006	16.8	2217441.906	1348555.89
CA-F13	2	8/9/2006	443	2217441.712	1348913.352
CA-F13B	4	8/25/2006	19.6	2217441.712	1348913.352
CA-W26	1	8/8/2006	17.2	2217441.133	1348865.042
CG-F18	2	9/28/2006	146	2217439.051	1348524.574
CA-F12	2	8/9/2006	9	2217438.737	1348893.037
CA-F11	2	8/9/2006	299	2217436.083	1348872.954
CAN-W6B	2	9/22/2006	17.9	2217435.438	1348999.428
CG-W28B	1	9/28/2006	35.1	2217434.674	1348513.962
CAN-F9	2	9/22/2006	1410	2217434.569	1348995.217
CAN-F9B	4	9/28/2006	22.7	2217434.569	1348995.217
CAN-F3	2	9/14/2006	901	2217434.226	1348981.026
CAN-F3B	4	9/21/2006	82.7	2217434.226	1348981.026
CG-W27B	0.75	9/28/2006	183	2217433.962	1348524.475
CAN-W6	1	9/12/2006	8320	2217433.583	1348985.85
CG-W26B	0.75	9/28/2006	45.2	2217433.24	1348533.919
CA-W15B	2	8/22/2006	1260	2217432.228	1348978.516
CA-W15	1.75	8/8/2006	29800	2217432	1348965.374
CA-W27	1.75	8/8/2006	40.7	2217431.329	1348862.737



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CA-F26	4	8/25/2006	1080	2217429.634	1348973.158
CA-F26B	7.5	9/8/2006	500	2217429.634	1348973.158
CA-F26C	10	9/18/2006	14.8	2217429.634	1348973.158
CAN-W5C	1	9/28/2006	20.3	2217428.909	1349020.117
CAN-W5B	1	9/21/2006	1820	2217425.486	1349000.969
CAN-W4-5CF	2	9/28/2006	82.4	2217424.361	1349014.222
CA-F7	2	8/9/2006	372	2217423.594	1348937
CAN-W5	1	9/12/2006	451	2217423.583	1348987.265
CA-W14B	1.5	8/22/2006	78.2	2217422.198	1348979.774
CA-W14	1	8/8/2006	13000	2217422.09	1348967.165
CA-F8	2	8/9/2006	30.1	2217421.882	1348916.84
CA-F6	2	8/9/2006	14.5	2217421.766	1348957.552
CA-W28	2	8/8/2006	14.8	2217421.523	1348860.446
CA-F9	2	8/9/2006	82.8	2217418.907	1348896.525
CA-F10	2	8/9/2006	72.4	2217416.253	1348876.442
CAN-F8	2	9/22/2006	214	2217414.611	1348998.285
CAN-F2	4	9/14/2006	414	2217413.959	1348983.524
CAN-F2B	8	9/21/2006	360	2217413.959	1348983.524
CAN-W4-10	1	9/12/2006	5810	2217413.616	1348988.825
CAN-W4B-10	1	9/21/2006	3360	2217413.616	1348988.825
CAN-W4C-10	1	9/28/2006	5.34	2217413.616	1348988.825
CAN-W4-36	3	9/12/2006	242	2217413.616	1348988.825
CA-W13B	0.75	8/22/2006	2960	2217412.523	1348981.123
CA-W13	1	8/8/2006	2060	2217412.179	1348968.956
CA-W29	1.25	8/8/2006	46.7	2217411.716	1348858.154
CAN-W3-10	1	9/12/2006	1580	2217410.996	1349013.697



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CAN-W3-36	3	9/12/2006	198	2217410.996	1349013.697
CA-F25	4	8/25/2006	28.6	2217410.246	1348976.295
CAN-W3C-10	1	9/29/2006	180	2217409.005	1349023.199
CAN-W3C-36	3	9/29/2006	45.1	2217409.005	1349023.199
CAN-W3CF	5	9/29/2006	538	2217409.005	1349023.199
CAN-W3CFB	7	10/9/2006	63.8	2217409.005	1349023.199
CA-F5	2	8/9/2006	402	2217406.131	1348960.285
CA-F5B	4	8/23/2006	20.2	2217406.131	1348960.285
CAN-W3B-10	1	9/21/2006	55100	2217405.582	1349004.051
CA-F4	2	8/9/2006	22500	2217403.641	1348940.174
CA-F4B	4	8/23/2006	147	2217403.641	1348940.174
CA-W12B	0.75	8/22/2006	725	2217402.431	1348982.377
CA-W12	1	8/8/2006	177	2217402.269	1348970.747
CA-F3	2	8/9/2006	3560	2217401.93	1348920.015
CA-F3B	4	8/23/2006	66.6	2217401.93	1348920.015
CA-W30	1	8/8/2006	358	2217401.912	1348856.643
CAN-W2CF	5	9/28/2006	40	2217401.043	1349015.238
CAN-F1	2	9/14/2006	52.2	2217399.914	1348985.511
CAN-W2C-10	1	9/28/2006	<4.96	2217399.053	1349024.74
CAN-W2C-36	3	9/28/2006	26.6	2217399.053	1349024.74
CA-F2	2	8/9/2006	3750	2217398.954	1348899.699
CA-F2B	4	8/23/2006	22.8	2217398.954	1348899.699
CA-F1	2	8/9/2006	210	2217396.3	1348879.617
CAN-W2B-10	1	9/21/2006	14.2	2217395.63	1349005.592
CAN-W2B-36	3	9/21/2006	5740	2217395.63	1349005.592
CAN-F7	2	9/22/2006	118	2217394.708	1349001.445



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CAN-W2-10	1	9/12/2006	784	2217393.725	1348992.128
CAN-W2-36	3	9/12/2006	442	2217393.725	1348992.128
CA-W31	1	8/8/2006	42.9	2217392.12	1348858.998
CA-W11	1	8/8/2006	671	2217391.436	1348969.738
CA-W10	1	8/8/2006	58	2217389.589	1348959.838
CA-W9	1	8/8/2006	19300	2217387.742	1348949.938
CA-W8	0.75	8/8/2006	14400	2217385.895	1348940.038
CAN-W1B-10	1	9/21/2006	139	2217385.677	1349007.133
CAN-W1B-36	3	9/21/2006	152	2217385.677	1349007.133
CA-W7	0.75	8/8/2006	22200	2217384.023	1348929.84
CAN-W1-10	1	9/12/2006	12700	2217383.756	1348993.523
CAN-W1-36	3	9/12/2006	2190	2217383.756	1348993.523
CA-W1	1	8/8/2006	53.4	2217383.103	1348868.608
CA-W6	1	8/8/2006	19700	2217382.867	1348919.947
CA-F32	2	8/28/2006	659	2217381.747	1348964.959
CA-F32B	7.5	9/8/2006	245	2217381.747	1348964.959
CA-W5	0.75	8/8/2006	36900	2217381.664	1348909.976
CA-W4	1	8/8/2006	47400	2217380.96	1348897.213
CA-W2	1	8/8/2006	65.9	2217380.638	1348880.801
CAW-F5	5.5	9/8/2006	17.9	2217379.961	1348988.685
CA-W3	0.75	8/8/2006	7700	2217379.45	1348890.645
CA-W10B	0.75	8/23/2006	1330	2217379.141	1348960.414
CA-F31	2	8/28/2006	159	2217378.942	1348944.276
CA-W4B	0.75	8/22/2006	4740	2217378.458	1348897.452
CA-W3B	0.75	8/22/2006	17600	2217378.024	1348890.673
CAW-F4	5.5	9/8/2006	60.8	2217377.471	1348968.575



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CA-W9B	0.75	8/23/2006	47.6	2217377.157	1348950.729
CA-W2B	3	9/7/2006	43.9	2217376.644	1348880.986
CAW-WN3-18	1.5	9/27/2006	23.7	2217376.583	1349008.402
CAW-WN3-48	4	9/27/2006	39.6	2217376.583	1349008.402
CA-W3C	3	9/7/2006	76.3	2217376.485	1348890.668
CA-W8B	0.75	8/23/2006	759	2217375.796	1348941.297
CAW-F3	5.5	9/8/2006	266	2217375.531	1348953.504
CAW-W11-18"	1.5	9/8/2006	42.6	2217374.894	1348998.304
CAW-W11-18C	1.5	9/27/2006	63	2217374.894	1348998.304
CAW-W11-18D	1.5	10/6/2006	67.9	2217374.894	1348998.304
CAW-W11-48"	4	9/8/2006	6690	2217374.894	1348998.304
CAW-W11-48B	4	9/22/2006	1850	2217374.894	1348998.304
CAW-W11-48C	4	9/27/2006	494	2217374.894	1348998.304
CAW-W11-48D	4	10/6/2006	239	2217374.894	1348998.304
CAW-W11-BF	5	9/22/2006	112	2217374.894	1348998.304
CA-W7B	0.75	8/23/2006	140	2217374.371	1348930.949
CAW-W10-18B	1.5	9/22/2006	139	2217373.431	1348989.323
CA-W6B	0.75	8/23/2006	5320	2217372.984	1348921.007
CAW-F2	5.5	9/8/2006	691	2217372.486	1348935.464
CAW-F2B	7.5	9/18/2006	810	2217372.486	1348935.464
CAW-F2C	9.5	9/21/2006	46.3	2217372.486	1348935.464
CAW-W9-18"	1.5	9/8/2006	108	2217372.001	1348979.354
CAW-W9-48"	4	9/8/2006	33.7	2217372.001	1348979.354
CA-W5B	0.75	8/22/2006	11100	2217371.537	1348911.968
CAW-F1	5.5	9/8/2006	548	2217371.044	1348918.334
CAW-F1B	7.5	9/18/2006	15.4	2217371.044	1348918.334



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CAW-W8-18"	1.5	9/8/2006	59.3	2217370.571	1348969.385
CAW-W8-48"	4	9/8/2006	22	2217370.571	1348969.385
CAW-W1	4	9/7/2006	93.5	2217369.923	1348899.209
CAW-W7-18"	1.5	9/8/2006	99.7	2217369.057	1348959.751
CAW-W7-48"	4	9/8/2006	22.6	2217369.057	1348959.751
CAW-W10-18"	1.5	9/8/2006	64600	2217369.015	1348990.126
CAW-W10-48"	4	9/8/2006	31.6	2217369.015	1348990.126
CAW-W10-48C	4	9/27/2006	27.3	2217369.015	1348990.126
CAW-W6-18"	1.5	9/8/2006	20.8	2217367.357	1348948.974
CAW-W6-48"	4	9/8/2006	408	2217367.357	1348948.974
CAW-WN2-18	1.5	9/27/2006	116	2217366.589	1349010.348
CAW-WN2-48	4	9/27/2006	19.7	2217366.589	1349010.348
CAW-W5-18	1.5	9/7/2006	107	2217365.036	1348932.963
CAW-W5-48	4	9/7/2006	235	2217365.036	1348932.963
CAW-W4-18	1.5	9/7/2006	129	2217363.422	1348921.515
CAW-W4-48	4	9/7/2006	139	2217363.422	1348921.515
CAW-W10-BF	3	9/22/2006	7820	2217363.374	1348991.416
CAW-W10-BFB	5	9/27/2006	160	2217363.374	1348991.416
CAW-W3-18	1.5	9/7/2006	54.1	2217361.86	1348910.619
CAW-W3-48	4	9/7/2006	260	2217361.86	1348910.619
CAW-W 6 B-F	5.5	9/18/2006	218	2217361.31	1348950.627
CAW-W2-18	1.5	9/7/2006	37.8	2217360.406	1348900.924
CAW-W2-48	4	9/7/2006	19	2217360.406	1348900.924
CAW-WN1-18	1.5	9/27/2006	133	2217358.639	1349011.873
CAW-WN1-48	4	9/27/2006	18.9	2217358.639	1349011.873
CAW-W12-BF	5	9/27/2006	933	2217357.648	1349007.433



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CAW-W12-BFB	6	10/6/2006	839	2217357.648	1349007.433
CAW-W12-BFC	8	10/11/2006	327	2217357.648	1349007.433
CAW-W11CF	5	9/27/2006	198	2217356.277	1348999.786
CAW-W 6 B-18	1.5	9/18/2006	33.8	2217355.052	1348951.402
CAW-W 6 B-48	4	9/18/2006	80.1	2217355.052	1348951.402
CAW-W12-18	1.5	9/21/2006	1060	2217349.779	1349010.577
CAW-W12-18B	1.5	9/27/2006	7440	2217349.779	1349010.577
CAW-W12-18C	1.5	10/6/2006	128	2217349.779	1349010.577
CAW-W12-48	4	9/21/2006	3110	2217349.779	1349010.577
CAW-W12-48B	4	9/27/2006	19.6	2217349.779	1349010.577
CAW-W12-48C	4	10/6/2006	50.2	2217349.779	1349010.577
CE-W5	0.75	11/14/2006	32.1	2217337.114	1348627.346
CE-W6	0.75	11/14/2006	19.3	2217336.138	1348617.878
CF-W7C	0.75	11/16/2006	227	2217331.031	1348550.72
CE-W7	0.75	11/14/2006	318	2217330.249	1348611.502
CF-W7B	0.75	11/14/2006	611	2217329.907	1348550.986
CE-W4	0.75	11/14/2006	34.8	2217329.102	1348630.002
CF-W8B	0.75	11/14/2006	171	2217328.805	1348540.835
CF-W7	0.75	11/10/2006	800	2217328.484	1348551.227
CF-W9B	0.75	11/14/2006	263	2217327.526	1348530.81
CF-W10C	0.75	11/16/2006	148	2217327.138	1348520.645
CF-W8	0.75	11/10/2006	535	2217327.111	1348541.175
CF-W10B	0.75	11/14/2006	680	2217325.865	1348520.87
CF-W9	0.75	11/10/2006	1020	2217325.832	1348531.15
CE-F1	2	11/14/2006	101	2217325.724	1348621.405
CF-W10	0.75	11/10/2006	421	2217324.507	1348521.153



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
CF-W6	0.75	11/10/2006	278	2217321.896	1348554.325
CE-W8	0.75	11/14/2006	395	2217320.895	1348612.522
CE-W3	0.75	11/14/2006	66.1	2217319.071	1348631.021
CE-W2	0.75	11/14/2006	228	2217316.102	1348623.065
CF-F1	2	11/10/2006	35.1	2217314.637	1348537.637
CE-W1	0.75	11/14/2006	244	2217314.456	1348613.114
CF-W11	0.75	11/10/2006	17.8	2217313.809	1348520.634
CF-W5	0.75	11/10/2006	22.8	2217311.745	1348555.587
CF-W4	0.75	11/10/2006	54.9	2217304.933	1348552.294
CF-W3	0.75	11/10/2006	16.3	2217303.648	1348542.454
CF-W2	0.75	11/10/2006	13.8	2217302.341	1348532.191
CF-W1	0.75	11/10/2006	174	2217301.166	1348522.292
BH-1	0.5	8/23/2005	221	2217470.593	1349255.884
BH-10	5	8/24/2005	350	2217719.637	1348749.73
BH-11	0.5	8/24/2005	405	2217621.206	1348830.858
BH-2	5	8/24/2005	219	2217451.15	1349306.703
BH-3	0.5	8/24/2005	449	2217503.354	1349150.044
BH-4	5	8/23/2005	163	2217527.444	1349066.557
BH-7	0.5	8/24/2005	87.3	2217656.113	1349068.331
BH-8	5	8/24/2005	151	2217817.805	1348830.332
BH-9	0.5	8/24/2005	303	2217689.507	1348693.393
DK-1	0.5	8/27/2007	1200	2217509.898	1349215.667
DK-10	0.5	8/27/2007	1200	2217847.765	1348507.613
DK-11	0.5	8/27/2007	280	2217829.13	1348499.281
DK-12	0.5	8/27/2007	1900	2217316.418	1348653.007
DK-13	0.5	8/27/2007	1500	2217342.289	1348628.614



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
DK-14	0.5	8/27/2007	420	2217657.549	1348540.742
DK-15	0.5	11/22/2011	124	2217441.716	1348457.655
DK-16	0.5	11/22/2011	364	2217312.851	1348463.644
DK-16	2	11/22/2011	18.3	2217312.851	1348463.644
DK-16	5	11/22/2011	20.6	2217312.851	1348463.644
DK-17	0.5	11/22/2011	166	2217294.835	1348521.304
DK-18	0.5	11/22/2011	16.2	2217350.937	1348556.92
DK-19	0.5	11/22/2011	514	2217375.663	1348639.538
DK-19	2	11/22/2011	22.3	2217375.663	1348639.538
DK-19	5	11/22/2011	20	2217375.663	1348639.538
DK-2	0.5	8/27/2007	750	2217520.432	1349197.82
DK-20	0.5	11/22/2011	48.5	2217314.286	1348694.306
DK-21	0.5	11/22/2011	479	2217473.98	1348680.937
DK-22	0.5	11/22/2011	17.7	2217417.781	1348775.577
DK-23	0.5	11/22/2011	243	2217353.348	1348852.886
DK-23	2	11/22/2011	19.9	2217353.348	1348852.886
DK-23	5	11/22/2011	20.4	2217353.348	1348852.886
DK-24	0.5	11/22/2011	28600	2217348.502	1348944.075
DK-24	2	11/22/2011	72.8	2217348.502	1348944.075
DK-24	5	11/22/2011	91.8	2217348.502	1348944.075
DK-25	0.5	11/22/2011	3170	2217368.384	1349043.567
DK-25	2	11/22/2011	38.3	2217368.384	1349043.567
DK-25	5	11/22/2011	29.8	2217368.384	1349043.567
DK-26	0.5	11/22/2011	32.8	2217396.276	1349330.667
DK-27	0.5	11/22/2011	1430	2217477.478	1349269.231
DK-27	2	11/21/2011	43.9	2217477.478	1349269.231



DK-27	5				
		11/21/2011	48	2217477.478	1349269.231
DK-27	10	11/21/2011	337	2217477.478	1349269.231
DK-27	15	11/21/2011	90	2217477.478	1349269.231
DK-28	0.5	11/22/2011	564	2217556.042	1349126.611
DK-28	2	11/21/2011	707	2217556.042	1349126.611
DK-28	5	11/21/2011	156	2217556.042	1349126.611
DK-28	10	11/21/2011	46.7	2217556.042	1349126.611
DK-29	0.5	11/22/2011	292	2217568.387	1349011.126
DK-29	2	11/21/2011	109	2217568.387	1349011.126
DK-29	5	11/21/2011	1780	2217568.387	1349011.126
DK-29	10	11/21/2011	186	2217568.387	1349011.126
DK-29	15	11/21/2011	221	2217568.387	1349011.126
DK-29	20	11/21/2011	18.9	2217568.387	1349011.126
DK-30	0.5	11/22/2011	29.1	2217609.938	1348933.22
DK-31	0.5	11/22/2011	26.1	2217693.114	1348973.401
DK-32	0.5	11/22/2011	35.8	2217655.156	1348869.914
DK-33	0.5	11/22/2011	207	2217730.228	1348838.045
DK-34	0.5	11/22/2011	130	2217786.295	1348768.316
DK-35	0.5	11/22/2011	292	2217648.981	1348719.413
DK-35	2	11/21/2011	264	2217648.981	1348719.413
DK-35	5	11/21/2011	38.6	2217648.981	1348719.413
DK-36	0.5	11/22/2011	98	2217756.863	1348692.768
DK-37	0.5	11/22/2011	95.9	2217745.988	1348638.76
DK-38	0.5	11/22/2011	126	2217818.615	1348562.451
DK-39	0.5	11/22/2011	130	2217833.805	1348446.48
DK-40	0.5	11/22/2011	214	2217659.24	1348498.23



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
DK-41	0.5	11/22/2011	163	2217690.598	1348539.834
DK-42	0.5	11/22/2011	41.2	2217661.053	1348608.835
DK-43	0.5	11/22/2011	1420	2217618.609	1348535.278
DK-43	2	11/22/2011	1900	2217618.609	1348535.278
DK-43	5	11/22/2011	214	2217618.609	1348535.278
DK-43	10	11/22/2011	14.1	2217618.609	1348535.278
DK-44	0.5	11/22/2011	68.8	2217547.687	1348450.662
DK-45	0.5	11/22/2011	78.7	2217551.479	1348573.871
DK-46	0.5	11/22/2011	240	2217419.387	1348536.666
DK-46	2	11/22/2011	13.7	2217419.387	1348536.666
DK-46	5	11/22/2011	19.9	2217419.387	1348536.666
DK-47	0.5	11/22/2011	551	2217462.494	1348589.789
DK-47	2	11/22/2011	19.3	2217462.494	1348589.789
DK-47	5	11/22/2011	29.4	2217462.494	1348589.789
DK-48	0.5	11/22/2011	80.9	2217866.774	1348769.78
DK-49	0.5	11/22/2011	260	2217858.066	1348675.698
DK-49	2	11/22/2011	14.5	2217858.066	1348675.698
DK-49	10	11/22/2011	10.3	2217858.066	1348675.698
DK-6	0.5	8/27/2007	330	2217710.299	1348959.863
DK-7	0.5	8/27/2007	260	2217711.743	1348982.689
DK-8	0.5	8/27/2007	420	2217692.175	1348716.185
DK-9	0.5	8/27/2007	1300	2217690.941	1348745.618
GP-1	0.5	8/24/2005	307	2217330.726	1348638.731
GP-10	0.5	8/25/2005	242	2217484.659	1348964.643
GP-11	0.5	8/25/2005	1330	2217482.308	1348929.827
GP-12	0.5	8/25/2005	1200	2217515.688	1348938.677



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
GP-13VB	3	8/25/2005	472	2217512.627	1348899.499
GP-14	0.5	8/25/2005	754	2217493.594	1348906.43
GP-15	0.5	8/25/2005	310	2217483.791	1348894.905
GP-16	0.5	8/25/2005	1270	2217480.664	1348869.947
GP-17	0.5	8/25/2005	140	2217513.971	1348843.575
GP-18	0.5	8/25/2005	325	2217508.523	1348868.224
GP-19	0.5	8/25/2005	53200	2217455.953	1348935.434
GP-2	0.5	8/24/2005	1050	2217325.24	1348614.665
GP-20	0.5	8/25/2005	166	2217446.117	1349093.698
GP-21	0.5	8/25/2005	353	2217450.613	1348982.321
GP-22	0.5	8/25/2005	305	2217448.03	1349029.539
GP-23	0.5	8/25/2005	174	2217411.445	1348851.617
GP-24	5	8/25/2005	445	2217421.393	1348921.733
GP-25	0.5	8/25/2005	1370	2217400.984	1348953.337
GP-26	5	8/25/2005	10100	2217386.237	1348873.586
GP-27	0.5	8/25/2005	19.4	2217422.789	1349032.273
GP-28	5	8/25/2005	234	2217417.212	1349163.223
GP-29	0.5	8/25/2005	254	2217390.816	1349250.786
GP-3	0.5	8/24/2005	342	2217324.765	1348600.104
GP-30A	5	8/25/2005	70.7	2217384.274	1349295.065
GP-31	0.5	8/25/2005	1480	2217577.502	1348801.711
GP-32	5	8/25/2005	577	2217740.901	1348527.837
GP-33	0.5	8/25/2005	752	2217548.131	1348938.832
GP-34	5	8/25/2005	431	2217557.304	1348503.479
GP-35	0.5	8/25/2005	607	2217453.416	1348512.818
GP-36	0.5	8/25/2005	309	2217450.218	1348559.094



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
GP-37A	0.5	8/25/2005	1280	2217505.616	1348648.117
GP-38A	0.5	8/25/2005	10200	2217494.254	1348602.735
GP-39A	0.5	8/25/2005	271	2217492.347	1348571.395
GP-4	0.5	8/24/2005	278	2217328.787	1348568.145
GP-40	0.5	8/25/2005	444	2217485.641	1348530.42
GP-41	0.5	8/25/2005	253	2217489.523	1348488.6
GP-42B	0.5	8/25/2005	100	2217582.356	1348597.93
GP-5	0.5	8/24/2005	793	2217326.216	1348517.009
GP-56A	0.5	8/25/2005	222	2217630.176	1348584.776
GP-57B	3	8/25/2005	107	2217658.932	1348566.123
GP-58	0.5	8/25/2005	278	2217645.898	1348574.154
GP-59	0.5	8/25/2005	458	2217643.863	1348550.84
GP-60	0.5	8/25/2005	208	2217662.488	1348586.747
GP-61A	0.5	8/25/2005	189	2217604.532	1348572.822
GP-62	0.5	8/25/2005	356	2217507.97	1348967.053
GP-63	0.5	8/25/2005	292	2217494.844	1349009.47
GP-64A	3	8/25/2005	19.5	2217482.751	1349044.918
GP-65	0.5	8/25/2005	601	2217526.821	1348886.817
GP-67A	0.5	8/25/2005	129	2217440.99	1349165.361
GP-68	0.5	8/25/2005	113	2217427.819	1349206.533
GP-69	0.5	8/25/2005	187	2217421.41	1349234.838
GP-7	0.5	8/24/2005	622	2217346.285	1348612.729
GP-70	0.5	8/25/2005	84.3	2217504.445	1349076.58
GP-71	0.5	8/25/2005	135	2217477.853	1349148.652
GP-72A	0.5	8/25/2005	20.6	2217546.51	1348651.18
GP-73A	0.5	8/25/2005	36	2217542.937	1348622.676



GP-74	0.5				
	0.5	8/26/2005	19.7	2217535.53	1348924.528
GP-75	0.5	8/26/2005	93.3	2217532.624	1348844.103
GP-76	0.5	8/26/2005	189	2217538.643	1348775.525
GP-77	0.5	8/26/2005	102	2217533.104	1348692.788
GP-78	0.5	8/26/2005	275	2217523.252	1348631.402
GP-79	0.5	8/26/2005	311	2217519.573	1348597.506
GP-8	0.5	8/24/2005	74.9	2217607.739	1348492.884
GP-80	0.5	8/26/2005	634	2217510.221	1348536.372
GP-82A	0.5	8/26/2005	129	2217461.628	1349108.379
GP-83	0.5	8/26/2005	18.5	2217525.752	1349004.947
GP-87	0.5	8/26/2005	360	2217598.648	1348685.68
GP-88	0.5	8/26/2005	204	2217600.272	1348868.755
GP-9	0.5	8/25/2005	126	2217480.362	1349002.518
HA-10A	0.5	7/27/2005	704	2217478.633	1349041.411
HA-11A	0.5	7/27/2005	166	2217452.5	1349139.93
HA-12A	0.5	7/28/2005	197	2217676.699	1348552.597
HA-13A	0.5	7/28/2005	549	2217333.18	1348614.67
HA-14A	0.5	7/27/2005	161	2217419.293	1349083.41
HA-15A	5	7/27/2005	50.4	2217698.179	1348483.773
HA-2A	0.5	7/26/2005	204	2217447.784	1349234.936
НА-ЗА	0.5	7/26/2005	202	2217452.878	1349072.279
HA-4A	0.5	7/27/2005	180	2217385.459	1349204.385
HA-5A	0.5	7/26/2005	50.8	2217721.459	1348578.186
HA-6A	0.5	7/27/2005	106	2217418.076	1349098.551
HA-7A	0.5	7/29/2005	527	2217459.862	1348887.261
HA-8A	0.5	7/27/2005	1410	2217659.923	1348561.398



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
HA-9A	0.5	7/27/2005	149	2217497.531	1348950.686
TMW-1A	0.5	7/25/2005	39	2217578.966	1348766.093
TMW-2A	0.5	7/26/2005	3320	2217482.274	1348915.875
TMW-3A	0.5	7/26/2005	34.3	2217414.513	1349001.45
TMW-4A	0.5	7/26/2005	509	2217470.329	1349083.233
TMW-5A	0.5	7/26/2005	161	2217769.203	1348580.535
TMW-6A	0.5	7/27/2005	217	2217774.666	1348498.903
TMW-7	0.5	8/23/2005	710	2217486.321	1349190.276
TMW-8	0.5	8/23/2005	420	2217549.561	1348978.208
TMW-9	0.5	8/23/2005	489	2217675.818	1348967.735
DKREM-1	0.5	7/14/2015	217	2217699.637	1348828.35
DKREM-10	0.5	7/15/2015	586	2217725.895	1348772.067
DKREM-11	0.5	7/15/2015	708	2217730.589	1348756.81
DKREM-12	0.5	7/15/2015	744	2217710.871	1348766.349
DKREM-13	1.5	7/15/2015	45.3	2217684.399	1348800.874
DKREM-14	0.5	7/15/2015	73.3	2217674.66	1348794.35
DKREM-15	0.5	7/15/2015	47.7	2217672.596	1348818.087
DKREM-16	0.5	7/15/2015	168	2217691.515	1348808.276
DKREM-17	1.5	7/15/2015	114	2217699.144	1348790.021
DKREM-18	0.5	7/15/2015	91.6	2217705.284	1348794.747
DKREM-19	0.5	7/15/2015	463	2217689.585	1348782.809
DKREM-2	0.5	7/14/2015	190	2217713.093	1348827.218
DKREM-20	0.5	7/16/2015	11.2	2217728.753	1348975.989
DKREM-21	0.5	7/16/2015	14.5	2217724.696	1348992.55
DKREM-22	0.5	7/16/2015	13	2217730.041	1348991.564
DKREM-23	0.5	7/16/2015	14.1	2217734.642	1348991.856



Sample ID	Depth (FT)	Date	Lead ppm	Easting	Northing
DKREM-24	0.5	7/16/2015	14.9	2217731.891	1349008.096
DKREM-3	0.5	7/14/2015	156	2217706.347	1348820.647
DKREM-4	0.5	7/14/2015	1377	2217702.657	1348812.97
DKREM-5	0.5	7/14/2015	298	2217710.906	1348809.289
DKREM-6	0.5	7/14/2015	60	2217650.633	1348803.951
DKREM-7	0.5	7/14/2015	55	2217629.786	1348785.337
DKREM-8	0.5	7/14/2015	243	2217612.647	1348781.354
DKREM-9	1.5	7/14/2015	636	2217718.608	1348770.714
PT-4 0-2	1.0	9/9/2014	308	2217683.019	1348760.638
PT-3 0-2	1.0	9/9/2014	517	2217697.819	1348782.462
PT-2 0-2	1.0	9/9/2014	1650	2217681.513	1348800.022
PT-1 0-2	1.0	9/9/2014	176	2217649.906	1348786.977



ATTACHMENT A CD Attached



ATTACHMENT B



Geostatistical Analysis

Summarv

This report summarizes the process and parameters used to calculate a spatial estimate of contaminant concentration over a regular grid of locations in the sample area.

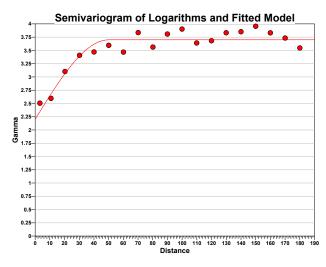
Primary Analysis Objective and Analytical Approach

The goal of geostatistical analysis is to use previously sampled locations to estimate concentration values over a regular grid of locations in the sample area. There are two main stages to the analysis in VSP. An experimental variogram is calculated to create a model of the spatial relationship between sampled locations. This model can then be used in kriging, a generalized weighted linear regression algorithm that generates an estimate of concentrations across the site.

Variogram

The following table and figure summarize the variogram analysis and model used in the kriging estimation.

SUMMARY OF VA	ARIOGRAM ANALYSIS
Variogram Type	Semivariogram of Logarithms
Variogram 0	Control Parameters
Distance Between Lags	10 feet
Lag Tolerance Length	5 feet
Number of Lags	20
Vario	gram Model
Nugget	2.2
Model type 1	Spherical
Range 1	50 feet
Sill 1	1.5

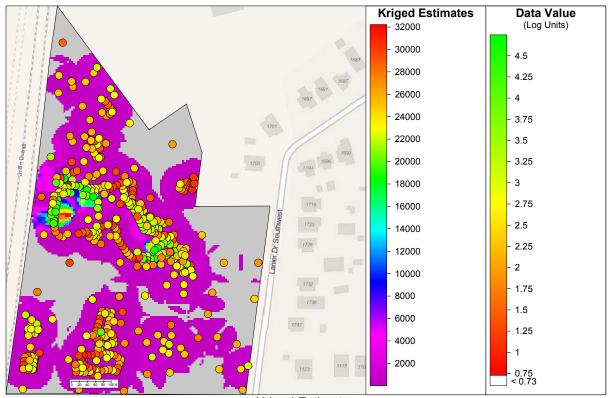


SUMMARY OF KR	GING ESTIMATION								
Kriging Type	Ordinary Kriging								
Grid									
Number of X Nodes	134								
Number of Y Nodes	197								
X Origin	2217257.16								

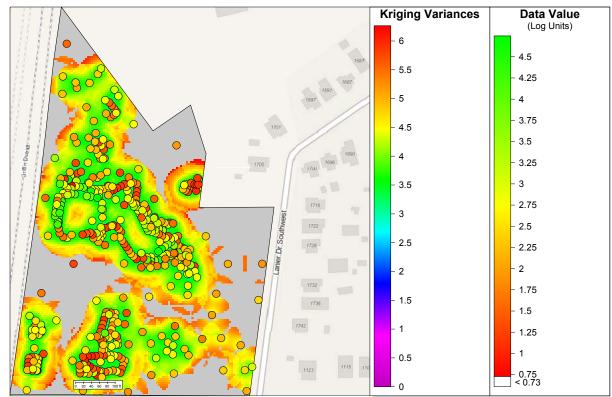
Y Origin	1348456.85
X Block Size	5 feet
Y Block Size	5 feet
Search/Discre	etization
Use Octant Search	False
Kriging Minimum	1
Kriging Maximum	4
Max Search Radius	50 feet
Min Search Radius	50 feet

Site Map With Kriging Results

The following figures show the results from the kriging estimation. The maps shown are from the active (most recently created) kriging estimation. The top figure shows the estimate values with the variance of the estimates shown in the lower figure. Areas within the sample area but without color-shading indicate areas where estimation was not possible due to lack of data within the search neighborhood.



Kriged Estimates



Estimation Variances

This report was automatically produced $\!\!\!^\star$ by Visual Sample Plan (VSP) software version 7.4.

This design was last modified 8/14/2015 3:32:48 PM.

Software and documentation available at http://vsp.pnnl.gov

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 $\ensuremath{^{\star}}$ - The report contents may have been modified or reformatted by end-user of software.

ATTACHMENT C



	Α	В	С	D	E	F	G	Н		J	K	L
1					UCL Statis	tics for Unc	ensored Full	Data Sets				
2				1								
3			cted Options									
4	Da	ate/Time of Co		8/14/2015 4:								
5			From File	FinalBlksED	_UCLi.xls							
6			II Precision	ON								
7		Confidence		95%								
8	Number	of Bootstrap	Operations	2000								
9												
10												
11	DOMAIN 1											
12												
13							Statistics					
14			Total	Number of O	bservations	82				r of Distinct (
15									Numbe	r of Missing (
16					Minimum	6.822					Mean	
17					Maximum						Median	
18					SD					Std. E	rror of Mean	
19				Coefficient	of Variation	1.031					Skewness	2.23
20												
21							GOF Test					
22				Shapiro Wilk T					<u> </u>	ilk GOF Test		
23				5% Shapiro V		0		Data No		5% Significar	nce Level	
24					est Statistic	0.247				GOF Test		
25			5	% Lilliefors C		0.0978			t Normal at	5% Significar	nce Level	
26		Data Not Normal at 5% Significance Level										
27												
28					As	suming Nori	nal Distribut					
29			95% No	ormal UCL				95%		sted for Ske	•	
30				95% Stud	lent's-t UCL	253.7				ed-CLT UCL		
31									95% Modifi	ed-t UCL (Jo	hnson-1978)	254.7
32												
33							GOF Test					
34					est Statistic	2.24	_			Gamma GC		
35					ritical Value	0.772	D:			ted at 5% Sig		/el
36					est Statistic	0.149				ff Gamma G		
37					ritical Value	0.101				ted at 5% Sig	riiticance Le	/ei
38				Dat	a NOT GAMI	iia Distribut	ed at 5% Sig	milicance Lo	evei .			
39						Commo	Statistics					
40					k hat (MLE)		Ciausucs		Į.	star (bias co	rected MI EV	1.374
41					a hat (MLE)					star (bias coi	•	
42					u hat (MLE)				ineta	•	as corrected)	
43			K A I	LE Mean (bias							as corrected)	
44			IVII	LE INICALI (DIAS	s corrected)	۷۱۵.۵			Annrovimato	Chi Square	•	
45			Adius	sted Level of S	Significance	0.0471				djusted Chi S		
46			Aujus	oleu Level Of S	agrinicance	U.U4/1			A	ujusi c u CIII S	yuare value	181
47					۸۵۰	suming Go~	ma Distribut	tion				
48		95% Approvi	mate Camma	UCL (use wh		250.9	ווומטוטפוע פוווו		liusted Com	ma UCL (use	when n/En	251.6
49		90 % Whhioxii	mate Gallilla	use wr	1611 11/-30))	230.8		90% A(ıjusteti Gallil	ilia OCL (USE	wileli II<00)	201.0
50						l oene	COF Tast					
51						Lognorma	GOF Test					

50	Α	В		С	D Shapiro Wilk	Test St		F 0.975	G	H Shar	iro Wilk Lo	J gnormal G	K OF Test	L
52					5% Shapiro			0.369		-		-	nificance Level	
53					Lilliefors						liefors Logn			
54 55				5	5% Lilliefors	Critical '	Value	0.0978					nificance Level	
56						Data a	ppear	Lognormal	at 5% Signif	• • • • • • • • • • • • • • • • • • • •				
57														
58								Lognorma	I Statistics					
59					Minimum of	Logged	Data	1.92				Mean	of logged Data	4.97
60					Maximum of	Logged	l Data	7.034				SD	of logged Data	0.887
61														
62							Assu	ıming Logno	ormal Distrib	ution				
63						95% H	I-UCL	263.5			90%	Chebyshe	v (MVUE) UCL	284.4
64				95%	Chebyshev	(MVUE)) UCL	317.1			97.5%	Chebyshe	v (MVUE) UCL	362.4
65				99%	Chebyshev	(MVUE)) UCL	451.6						
66														
67						-			tion Free UC					
68					Data appea	ar to foll	ow a I	Discernible	Distribution	at 5% Signif	ficance Lev	el		
69														
70									tribution Fre	e UCLs				
71						95% CLT		253.3					Jackknife UCL	253.7
72					Standard B			253.1			0.50/		ootstrap-t UCL	263.2
73					95% Hall's B			264.7 259.7			95%	Percentile	Bootstrap UCL	254.6
74		95% BCA Bootstrap							95% Chebyshev(Mean, Sd) UCL 3				0.10.0	
75	90% Chebyshev(Mean, Sd) 97.5% Chebyshev(Mean, Sd)							286.2					•	319.2
76			9.	7.5% CI	nebyshev(M	ean, Sd) UCL	365			99% C	nebyshev(N	Mean, Sd) UCL	454.9
77								Currented	UCL to Use					
78						95% H	LUCI	263.5	UCL to Use					
79						95 /6 [I-UCL	203.5						
80		Note: Sugge	estion	s renar	ding the sele	ection of	a 95%	SUCL are no	ovided to hel	n the user to	select the n	nost annror	oriate 95% UCL	
81										•			nd laci (2002)	•
82		111000100				•			ons results wi				` ′	
83									nay want to c					
84														
85 86				Prol	JCL compu	tes and	outpu	ts H-statisti	c based UCI	Ls for histori	ical reasons	only.		
87		H-statistic	often										chnical Guide.	
88				lt	is therefore	recomi	mende	ed to avoid t	the use of H-	statistic bas	sed 95% UC	Ls.		
89	Us	e of nonpara	ametr	ic meth	ods are pre	eferred t	o com	pute UCL9	o for skewed	data sets w	hich do not	follow a ga	amma distribut	ion.
90														
91														
-	DOMAIN 2													
93														
94								General	Statistics					
95				Tota	Number of	Observa	ations	69					t Observations	64
96											Numbe	r of Missing	Observations	0
97							imum	20.63					Mean	307.5
98						Max	imum						Median	153.6
99							SD	622.4				Std.	Error of Mean	74.93
100					Coefficie	nt of Var	riation	2.024					Skewness	6.159
101														
102								Normal	GOF Test					

	Α	В		С	D Chanira Will	E Test Statistic	F 0.4	G	Н	Shanira V	J Vilk GOF Tes	K	L
103						Wilk P Value			Doto N	-	t 5% Significa		
104						Test Statistic			Data i		s GOF Test	ince Level	
105						Critical Value			Data N		t 5% Significa	nco Lovol	
106					J /6 LIIIIEIOIS			│ 5% Significaı		NOL INOTITIAL A	1 3 % Significa	IIICE LEVEI	
107						Data No	t Normal at	J /o Significat	ice revei				
108						Δ	seumina Nor	mal Dietribut	tion				
109				95% 1	Normal UCL		Assuming Normal Distribution 95% UCLs (Adjus					ewness)	
110				30 /0 1		tudent's-t UCI	432.5			, ,	ted-CLT UCL		490.1
111					3370 01	iddenit 3-t 00t	402.0			•	fied-t UCL (Jo	` '	
112										33 70 WOOI	100-1001 (00	Jiii3011-1370 ₎	771.7
113							Gamma	GOF Test					
114					A-D	Test Statistic			And	erson-Darlin	g Gamma G	OF Test	
115						Critical Value		D			uted at 5% Sig		vel
116						S Test Statistic					off Gamma C		
117						Critical Value		D		_	uted at 5% Sig		vel
118						ata Not Gam							
119									<u> </u>				
120							Gamma	Statistics					
121 122						k hat (MLE	0.892			I	k star (bias co	rrected MLE	0.863
123					Th	eta hat (MLE	344.5			Theta	a star (bias co	orrected MLE	356.2
124						nu hat (MLE	123.2				nu star (bi	as corrected)	119.1
125					MLE Mean (b	ias corrected	307.5				MLE Sd (bi	as corrected)	330.9
126		(5:65 55:15)								Approxima	te Chi Square	e Value (0.05)	94.94
127				Adj	usted Level o	of Significance	0.0465				Adjusted Chi	Square Value	94.48
128													
129						As	suming Gan	nma Distribu	tion				
130	(95% Approx	imate	Gamn	na UCL (use	when n>=50)	385.9		95% /	Adjusted Gan	nma UCL (us	e when n<50)	387.8
131													
132							Lognorma	I GOF Test					
133					Shapiro Wilk	Test Statistic	0.966		Sha	apiro Wilk Lo	ognormal GO	F Test	
134					5% Shapiro	Wilk P Value	0.168		Data appe	ear Lognorma	al at 5% Signi	ficance Leve	ı
135					Lilliefors	Test Statistic	0.0719		L	illiefors Log	normal GOF	Test	
136					5% Lilliefors	Critical Value	0.107		Data appe	ear Lognorma	al at 5% Signi	ficance Leve	1
137						Data appea	r Lognormal	at 5% Signif	icance Le	vel			
138													
139								al Statistics					
140						f Logged Data						f logged Data	
141					Maximum o	f Logged Data	8.486				SD o	f logged Data	1.052
142													
143								ormal Distrib	ution				
144						95% H-UCI					6 Chebyshev	,	
145						(MVUE) UCI				97.5%	6 Chebyshev	(MVUE) UCL	535.7
146				99%	% Chebyshev	(MVUE) UCI	690.8						
147													
148						•		ution Free UC					
149					Data appea	ar to follow a	Discernible	Distribution	at 5% Sigi	nificance Lev	/el		
150													
151						<u> </u>		tribution Fre	e UCLs				
152						95% CLT UCI						ackknife UCL	
153				95	% Standard E	Bootstrap UCI	428.5				95% Bo	otstrap-t UCL	. 631.4

	Α	В	С	D	Е	F	G	Н	I	J	K	L
154				95% Hall's Bo	•	948.5			95% I	Percentile B	ootstrap UCL	440.8
155				95% BCA Bo								
156				nebyshev(Mea						• •	ean, Sd) UCL	634.1
157			97.5% Ch	nebyshev(Mea	an, Sd) UCL	775.4			99% Cr	ebyshev(Me	ean, Sd) UCL	1053
158												
159					050/ 11 1101		UCL to Use					
160					95% H-UCL	370.1		I		I		
161		Nata Occasio		line also e e le es		(LIOL					OF0/ HOL	
162											iate 95% UCL	
163		These rec		ns are based	•						1 laci (2002)	
164			and Singn	and Singh (2						d data sets.		
165				For add	uttonal insig	nt the user n	nay want to c	onsuit a stat	istician.			
166			Deal	ICI sammuta		to U statisti	a based LICI	a fan biatan	iaal waaaana	anlı		
167		L statistic		JCL compute in unstable	-					•	nical Cuida	
168		n-statistic		is therefore r		•			•		inical Guide.	
169	He	e of nonners									nma distribut	ion
170	US	e oi nonpara	mearc mea	ous are prefe	sireu io com	ihai a OOF90	JIUI SKEWEQ	uala SEIS W	mich ud flot	ioliow a gal	ากาล นเอยามน์โ	
171												
172	DOMAIN 3											
1/3	DOMAIN 3											
174						General	Statistics					
175			Total	Number of O	bservations	94			Numbe	r of Distinct	Observations	78
176							Number of Missing Obse					0
177					Minimum	20.92					Mean	201.6
178					Maximum	1399					Median	142.2
179					SD	238.9				Std. F	Error of Mean	24.65
180				Coefficient	of Variation	1.185					Skewness	2.884
181												
182 183						Normal (GOF Test					
184			S	Shapiro Wilk T	est Statistic	0.672			Shapiro Wi	lk GOF Tes	t	
185				5% Shapiro V				Data No	t Normal at 5	5% Significa	nce Level	
186				Lilliefors T	est Statistic	0.225			Lilliefors	GOF Test		
187			5	5% Lilliefors C	ritical Value	0.0914		Data No	ot Normal at 5	5% Significa	nce Level	
188					Data Not	Normal at 5	S% Significa	nce Level				
189												
190					As	suming Nori	mal Distribut	tion				
191			95% No	ormal UCL				95%	UCLs (Adju	sted for Ske	ewness)	
192				95% Stud	dent's-t UCL	242.5			95% Adjuste	d-CLT UCL	(Chen-1995)	249.9
193									95% Modifie	ed-t UCL (Jo	hnson-1978)	243.7
194							1				L	
195						Gamma	GOF Test					
196				A-D T	est Statistic	1.911		Ander	son-Darling	Gamma GO	OF Test	
197				5% A-D C	ritical Value		D	ata Not Gam	ıma Distribut	ed at 5% Sig	nificance Lev	el
198				K-S T	est Statistic	0.102			grov-Smirno			
199					ritical Value					ed at 5% Sig	nificance Lev	el
200				Dat	a Not Gam	na Distribut	ed at 5% Sig	nificance Le	evel			
201												
202							Statistics					
203					k hat (MLE)	1.173				,	rrected MLE)	1.143
204				Thet	a hat (MLE)	171.8			Theta	star (bias co	rrected MLE)	176.4

	Α	В	}	С		D	Е	F	G	Н	I	J	K	L	
205							nu hat (MLE)	220.6				nu star (bi	as corrected)	214.9	
206					MI	_E Mean (b	ias corrected)	201.6				MLE Sd (bia	as corrected)	188.6	
207										ı	Approximate	Chi Square	Value (0.05)	181.9	
208					Adjus	ted Level c	of Significance	0.0474			Ac	djusted Chi S	Square Value	181.5	
209															
210							As	suming Gam	ma Distribu	tion					
211		95% Ap	proxir	mate Ga	mma	UCL (use	when n>=50))	238.1		95% Ad	justed Gamr	na UCL (use	when n<50)	238.7	
212															
213								Lognorma	I GOF Test						
214					S	hapiro Wilk	Test Statistic	0.946		Shap	iro Wilk Log	normal GO	F Test		
215					,	5% Shapiro	Wilk P Value	0.00147		Data Not L	ognormal at	t 5% Signific	ance Level		
216						Lilliefors	Test Statistic	0.131		Lill	iefors Logno	ormal GOF	Test		
217					5	% Lilliefors	Critical Value	0.0914		Data Not L	ognormal at	t 5% Signific	ance Level		
218							Data Not L	ognormal a	5% Signific	ance Level					
219															
220								Lognorma	I Statistics						
221						Minimum o	f Logged Data	3.041				Mean of	logged Data	4.823	
222					N	Maximum o	f Logged Data	7.243				SD of	logged Data	0.981	
223															
224							Ass	uming Logno	rmal Distrib	ution					
225							95% H-UCL	252.3			90%	Chebyshev	(MVUE) UCL	271.7	
226				!	95%	Chebyshev	(MVUE) UCL	304.4			97.5%	Chebyshev	(MVUE) UCL	349.7	
227					99%	Chebyshev	(MVUE) UCL	438.8							
228															
229							Nonparame	etric Distribu	tion Free UC	CL Statistics					
230							Data do not f	ollow a Disc	ernible Distr	ibution (0.05	5)				
231															
232							Nonpa	rametric Dis	tribution Fre	e UCLs					
233						Ç	95% CLT UCL	242.1	95% Jackknife UCL 242.5						
234					95%	Standard E	Bootstrap UCL	242.9	95% Bootstrap-t UCL						
235					9	5% Hall's E	Bootstrap UCL	253			95% I	Percentile Be	ootstrap UCL	243.8	
236						95% BCA E	Bootstrap UCL	248.9							
237				90	% Ch	ebyshev(M	lean, Sd) UCL	275.5			95% Ch	ebyshev(Me	ean, Sd) UCL	309	
238				97.5	% Ch	ebyshev(M	lean, Sd) UCL	355.5			99% Ch	ebyshev(Me	ean, Sd) UCL	446.8	
239															
240								Suggested	UCL to Use						
241				959	% Che	ebyshev (M	lean, Sd) UCL	309						<u> </u>	
242															
243		Note: S	ugge	stions re	egard	ing the sele	ection of a 95%	6 UCL are pr	ovided to hel	p the user to	select the m	ıost appropri	ate 95% UCL		
244					_		d upon the res	-		-					
245				and S	Singh	and Singh	(2003). Howe	ver, simulation	ns results wi	Il not cover a	II Real World	d data sets.			
246						For a	dditional insig	ht the user n	nay want to c	onsult a stati	stician.				
247							-								
248															
	DOMAIN	4													
249															
250								General	Statistics						
251					Total	Number of	Observations				Number	r of Distinct (Observations	28	
252													Observations	3	
253							Minimum	36					Mean	229.9	
254							Maximum	856					Median	171.9	
255															

	Α	В	С	D	Е	F	G	Н	I	J K	L	
256					SD	207.2				Std. Error of Mean	36.07	
257				Coefficien	t of Variation	0.901				Skewness	1.712	
258												
259						Normal (GOF Test					
260			S	Shapiro Wilk	Test Statistic	0.791			•	lk GOF Test		
261			5% S	<u> </u>	Critical Value	0.931		5% Significance Level				
262				Lilliefors	Test Statistic	0.28	Lilliefors GOF Test					
263			5	% Lilliefors (Critical Value	0.154			t Normal at 5	5% Significance Level		
264					Data Not	Normal at 5	% Significa	nce Level				
265												
266					As	suming Norr	mal Distribu					
267			95% No	ormal UCL					• •	sted for Skewness)		
268				95% Stu	ıdent's-t UCL	291			•	d-CLT UCL (Chen-1995)	300.7	
269									95% Modifie	ed-t UCL (Johnson-1978)	292.8	
270												
271							GOF Test					
272					Test Statistic	0.844				Gamma GOF Test		
273					Critical Value	0.765	D			ed at 5% Significance Lev	el	
274					Test Statistic	0.173				ff Gamma GOF Test		
275					Critical Value	0.156				ed at 5% Significance Lev	el	
276		Data Not Gamma Distributed at 5% Significance Level										
277												
278							Statistics					
279					k hat (MLE)	1.494				star (bias corrected MLE)	1.379 166.7	
280					eta hat (MLE)	153.8			,			
281					nu hat (MLE)	98.63				nu star (bias corrected)	91	
282			M	LE Mean (bia	as corrected)	229.9		MLE Sd (bias corrected)				
283			A 11		. 0	0.0440				Chi Square Value (0.05)	70	
284			Adjus	sted Level of	Significance	0.0419			Ac	ljusted Chi Square Value	69.05	
285					A a.	······································	ma Diatribu	dia				
286		DE0/ A =====:	t- O	LICL (vee v	AS: vhen n>=50))	298.8	ma Distribu		:ata d Oaman	ma UCL (use when n<50)	302.9	
287	•	95% Approxi		d OCL (use w	vnen n>-50))	290.0		95% Au	justeu Gami	na oct (use when n<50)	302.9	
288						Lognorma	I GOF Test					
289				Chanira Wilk	Test Statistic	0.918	GOF TEST	Shon	iro Wilk I og	normal GOF Test		
290					Critical Value			<u>-</u>		t 5% Significance Level		
291			3 /0 3		Test Statistic	0.331			•	ormal GOF Test		
292			5		Critical Value	0.154				t 5% Significance Level		
293				,,, Lillotota (5% Signific		-ognorniai a	O / O OIGHINGUING LEVEL		
294					54ta 110t L	-gnomai ai	. 5 /5 Oigilillo	CITO EGVE				
295						Lognorma	I Statistics					
296				Minimum of	Logged Data	3.584				Mean of logged Data	5.067	
297					Logged Data	6.752				SD of logged Data	0.913	
298			<u>'</u>		- 5500 5010	J., JL				00gg00 Data	3.010	
299					Assı	ımina Loano	rmal Distrib	oution				
300					95% H-UCL	351.1			90%	Chebyshev (MVUE) UCL	364.5	
301			95%	Chebyshev	(MVUE) UCL					Chebyshev (MVUE) UCL	502.8	
302					(MVUE) UCL					2 22,21131 (02) 002		
303					32, 002	330.0						
304					Nonnarame	tric Distribu	tion Free LIG	CL Statistics				
305				ı	Data do not fo							
306					uo 110t 1	a Didu			-,			

	Α	В	С	D	Е	F	G	Н	I	J	K	L			
307					Nonns	rametric Dis	tribution Fre	a IICI s							
308					5% CLT UCL			e ools		95% 1	ackknife UCL	291			
309			95%		ootstrap UCL						otstrap-t UCL	306.1			
310					ootstrap UCL		95% Percentile Bootstrap UCL 287								
311					ootstrap UCL			35 % reiceitule Bootsuap OCL 267.							
312					ean, Sd) UCL				95% C	hebyshev(M	ean, Sd) UCL	387.1			
313				-	ean, Sd) UCL					• .	ean, Sd) UCL	588.8			
314										, ,					
315 316						Suggested	UCL to Use								
317		95% Chebyshev (Mean, Sd) UCL 387.1													
318															
319		Note: Sugge	stions regard	ling the sele	ction of a 95°	% UCL are pr	ovided to hel	p the user	to select the r	nost appropr	riate 95% UCL				
320		These rec	commendation	ns are based	d upon the re	sults of the si	mulation stud	dies summa	arized in Sing	h, Singh, and	d laci (2002)				
321			and Singh	and Singh (2003). Howe	ver, simulation	ons results wi	Il not cover	all Real Wor	ld data sets.					
322				For ac	ditional insig	ght the user n	nay want to c	onsult a sta	atistician.						
323															
324															
	DOMAIN 5	5													
326															
327	General Statistics														
328			Total	Number of (Observations	60					Observations Observations	59			
329								0							
330					Minimum			250.8 178.1							
331					Maximum			Median Std. Error of Mean							
332					SD			25.38							
333				Coefficien	nt of Variation	0.784					Skewness	1.578			
334															
335				Namina M/III.	Took Charles		GOF Test		Ohanina M	SUL OOF To-					
336					Test Statistic			Data N	=	ilk GOF Tes					
337					Test Statistic			Data N	lot Normal at	GOF Test	nce Level				
338			E		Critical Value			Data N	lot Normal at		unaa Laval				
339			<u></u>	% Lillelois (t Normal at 5	5% Significa		iot Normai at	5 % Significa	ilce Level				
340						t Normal at C	7/0 Olgillical	ice Level							
341					Δε	suming Nor	mal Distribut	ion							
342			95% No	ormal UCL		Journing Hon			% UCLs (Adj	usted for Ski	ewness)				
343					udent's-t UCL	293.2			• •		(Chen-1995)	298			
344											ohnson-1978)	294			
345							1			,-,-		L			
346						Gamma	GOF Test								
347 348				A-D	Test Statistic			Ande	erson-Darling	g Gamma Go	OF Test				
349				5% A-D (Critical Value	0.764	D				gnificance Lev	rel			
350				K-S	Test Statistic	0.113		Kolmo	ogrov-Smirno	off Gamma G	OF Test				
351				5% K-S (Critical Value	0.116	Detected	d data appe	ear Gamma D	istributed at	5% Significan	ce Level			
352				Detected da	ata follow A	ppr. Gamma	Distribution	at 5% Sign	ificance Lev	el					
353															
354						Gamma	Statistics								
355					k hat (MLE)	1.931			k	star (bias co	orrected MLE)	1.845			
356				The	eta hat (MLE)	129.9			Theta	star (bias co	orrected MLE)	135.9			
357				-	nu hat (MLE)	231.7				nu star (bi	ias corrected)	221.5			
JU/						1				•					

	Α	В	1	С	\top	D		E	F	G		Н	Т	I			J			K	Т	L
358				N	/ILE N	∕lean (bi	ias co	orrected)	250.8							MLE	∃Sd ((bias	cor	recte	d)	184.6
359									•				Αp	proxir	nate	Chi	Squa	are V	/alue	(0.0)	5)	188
360				Adju	ısted	Level o	f Sigr	nificance	0.046						Ad	just	ed Ch	ni Sq	quare	e Valu	ле	187.3
361										•												
362									_	amma Disti	ribut											
363		95% Approx	kimate	Gamn	na U0	CL (use	wher	n n>=50)	295.4			95%	Adju	sted G	amm	na U	ICL (ı	ıse v	wher	า n<5	0)	296.6
364																						
365										nal GOF Te	est											
366								t Statistic					_	o Wilk	_							
367								P Value				Data app								e Lev	el ——	
368								t Statistic						fors Lo								
369					5% Li	illiefors		cal Value				Data app		_ognor	mal a	at 5	% Sig	nific	ance	e Lev	el ——	
370							Data	a appea	r Lognorm	al at 5% Si	gnif	icance Le	evel									
371																						
372										nal Statistic	cs											
373								ged Data												ed Da		5.244
374					Maxi	mum of	Logg	ged Data	6.947								SD	of lo	ogge	ed Da	ta	0.769
375																						
376							050			normal Dis	strib	ution			20/ 4	21			•> •• •	<u></u>		207.0
377				050/				% H-UCL			90% Chebyshev (MVUE) UCL 97.5% Chebyshev (MVUE) UCL									337.2		
378						-		UE) UCL						97.	5% (Jhe	byshe	ev (N	/IVUI	E) UC	;L	428.2
379				99%	Che	bysnev	(IVIVI	UE) UCL	532.1													
380																						
381								•		bution Free												
382					Data	a appea	ar to	tollow a	Discernib	e Distribut	ion a	at 5% Sig	Initic	ance L	.eve	l						
383								N														
384							NEO/ 6			istribution	Fre	e UCLS					050/		1.1			202.2
385				050				CLT UCL												ife UC		293.2
386								trap UCL						0.1	F0/ F					o-t UC		297.8
387								trap UCL trap UCL	300.4 296.7					9:	0% F	erc	entile	ВОС	DISTI	ap UC	,L	292.6
388				000/ C				Sd) UCL						OE0	Ch	o by re	ah ay (1/100	- C	d) UC	21	361.4
389						` `		Sd) UCL												d) UC		
390			97	.5% C	перу	Silev(ivi	ean,	Su) UCL	409.2					997	o CH	еру	snev(iviea	III, S	u) UC	,L	503.3
391									Suggest	ed UCL to U	loo											
392				0E9/ /	Annr	wimata	Com	ama LICI		ed UCL to t	Jse											
393				90% F	-hbr	жинате	Gam	nma UCL	295.4						1						+	
394		Note: Sugge	octions	rogor	dina	the sele	otion	of a OEC	/ LICL ara	provided to	hol	n the user	r to o	oloct +L	20.55	oct :	nnro	nric	to O	50/_ 11/		
395																						
396		THESE IEC								simulation tions result									aci (<u> </u>	
397			and	Jongi	ı alıü		-			may want					VOLIC	ud	ia set	ა.				
398						1 01 0	uuiiiC	ai IIISI <u>G</u>	in the use	may want	.0 0	orisuit a St	iaust	iciall.								
399																						

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DOMAIN Pre REM Pb Block Mean Post REM Pb Block Mean
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                    321.1466938 44.55636
       1
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4 4 4 4	154.7324005 150.209223 274.2434697 421.8381178	142.2758 36 36 136.155
4 4 4 4	154.7324005 150.209223 274.2434697 421.8381178 179.3674439	142.2758 36 36 136.155 179.3674
4 4 4 4 4	154.7324005 150.209223 274.2434697 421.8381178 179.3674439 165.8485565	142.2758 36 36 136.155 179.3674 58.28836
4 4 4 4 4 4	154.7324005 150.209223 274.2434697 421.8381178 179.3674439 165.8485565 309.6413061	142.2758 36 36 136.155 179.3674 58.28836 36
4 4 4 4 4 4 4	154.7324005 150.209223 274.2434697 421.8381178 179.3674439 165.8485565 309.6413061 700.9199168	142.2758 36 36 136.155 179.3674 58.28836 36 180.4165
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4 4 4 4 4 4 4 4 4	154.7324005 150.209223 274.2434697 421.8381178 179.3674439 165.8485565 309.6413061 700.9199168 200.9821383 210.9206102	142.2758 36 36 136.155 179.3674 58.28836 36 180.4165 200.9821 161.0625
4 4 4 4 4 4 4 4	154.7324005 150.209223 274.2434697 421.8381178 179.3674439 165.8485565 309.6413061 700.9199168 200.9821383	142.2758 36 36 136.155 179.3674 58.28836 36 180.4165 200.9821
4 4 4 4 4 4 4 4 4	154.7324005 150.209223 274.2434697 421.8381178 179.3674439 165.8485565 309.6413061 700.9199168 200.9821383 210.9206102	142.2758 36 36 136.155 179.3674 58.28836 36 180.4165 200.9821 161.0625

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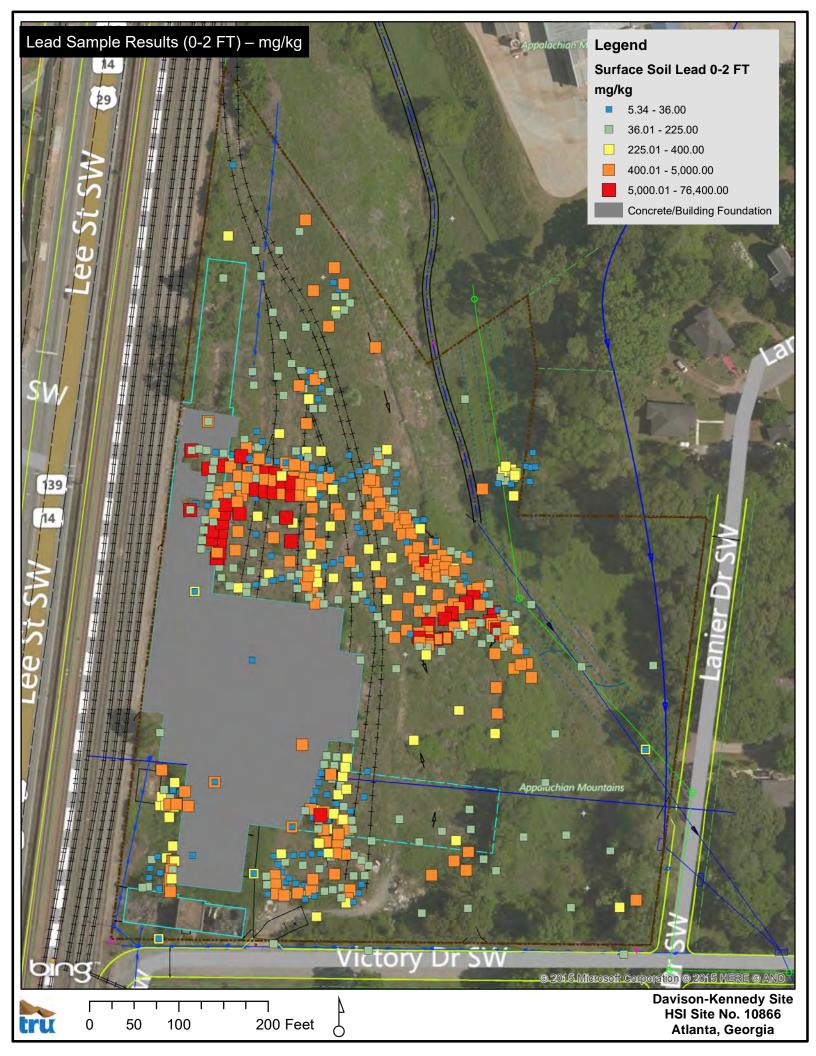
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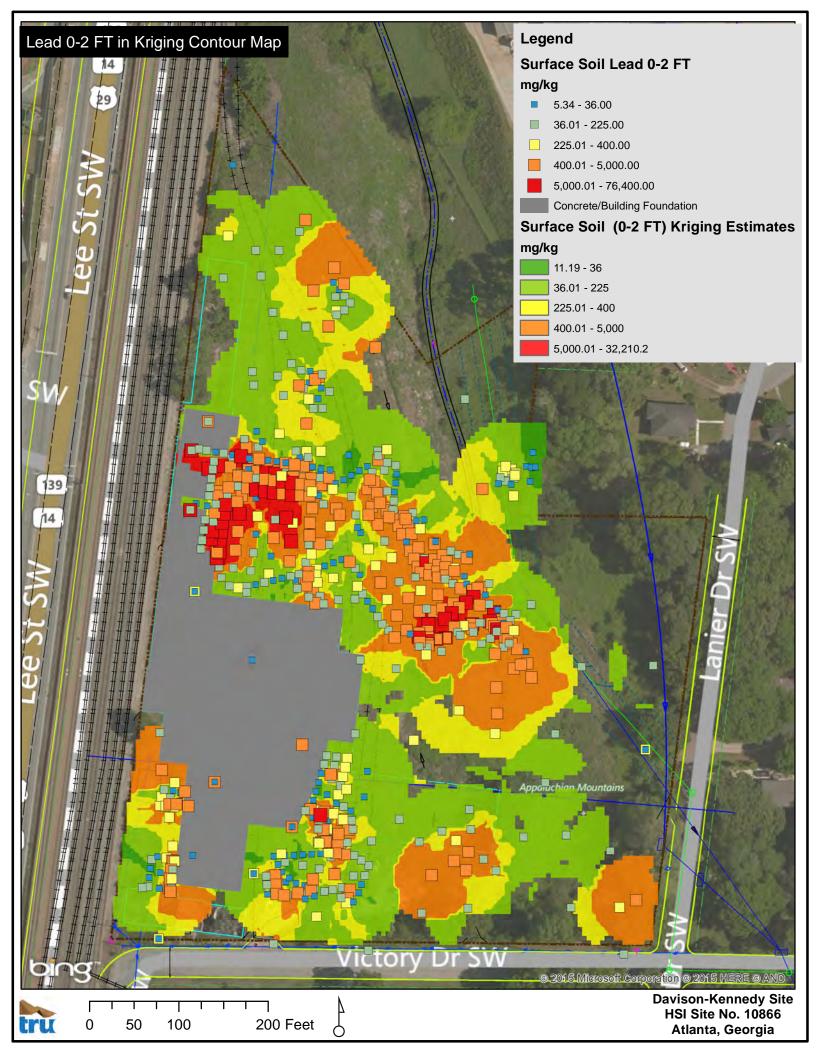
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2		
2	209.026125	209.0261
2	130.2976634	130.2977
2	150.1552339	150.1552
1	994.8618042	994.8618
1	819.1765137	415.141
2	350.4310354	350.431
2	491.0230018	491.023
		000 7000
2	742.3384111	656.7269
5	170.361145	170.3611
2	1388.414047	267.3556
2	1310.240881	650.4659
2	494.5394449	494.5394
5	198.2437494	198.2437
2	2546.855128	
	2040.000120	
2	1295.895451	608.4518
2	366.8359155	357.7321
2	174.3148908	17/ 21/0
5	169.023691	169.0237
2	19847.54555	30
2	25365.88618	36
3	3841.992131	36
3	856.1053581	
		36
3	685.8109137	36
3	313.4805292	36
3	1001.178282	36
3	1286.716051	189.9857
2		
3	1114.081463	795.0628
3	69.02187917	69.02188
3		
3	84.46678461	84.46678
2	71 51106140	62 62002
3	71.51186148	63.62903
3	103.8583624	103.8584
3	4133.002046	21.17647
3	200.0303052	153.7561
5		
3	86.13953818	86.13954
3	84.19919993	84.1992
3	133.4765625	133.4766
3	130.3017513	130.3018
3	143.9367782	50.97242
3	156.9833052	50.89147
3	147.2887783	124.2314
3	181.6076944	181.6077
•	101.00/0044	101.0077

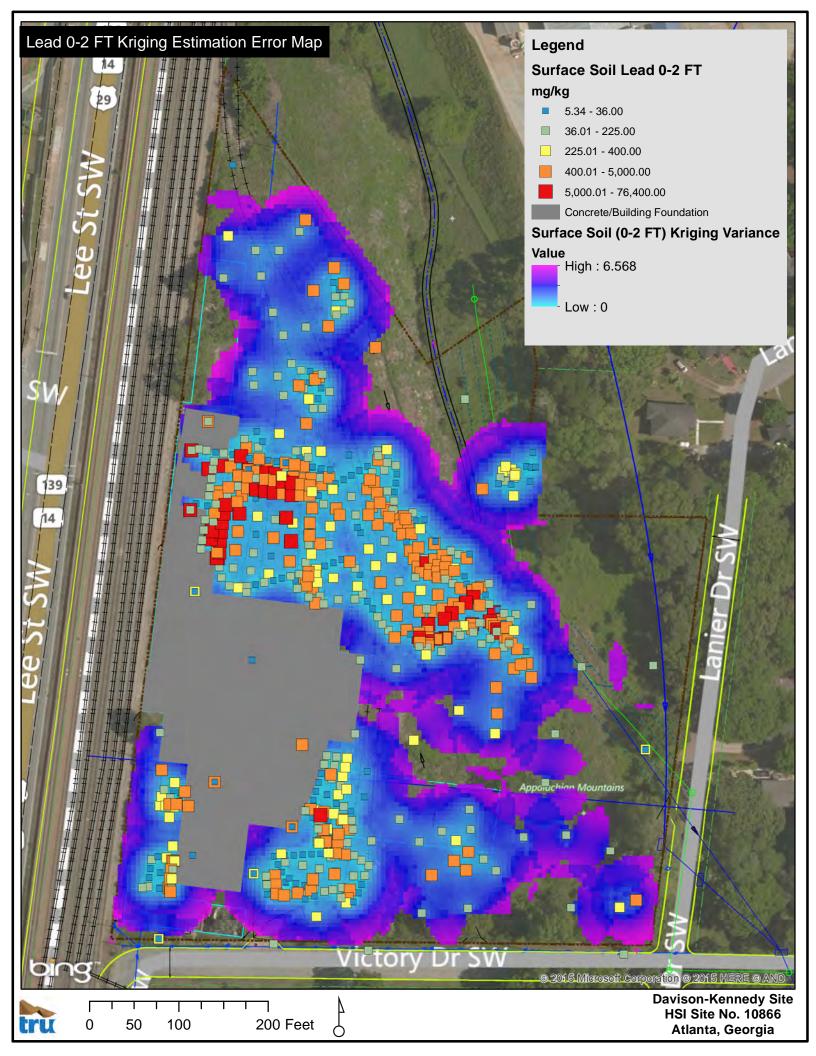
3	365.1626007	365.1626
4	290.4797808	290.4798
4	388.4231995	388.4232
4	432.7913361	432.7913
4	449.7753906	449.7754
4	214.2810059	214.281
4	202.0974435	202.0974
4	821.0487691	790.6905
4	654.736023	654.736
4	218.3764172	218.3764
4	788.110369	217.8587
4	943.7009888	36
4	153.1725532	153.1726
4	773.895056	608.5404
4	918.7019979	36
4	138.9485016	138.9485
4	856.0397568	856.0398

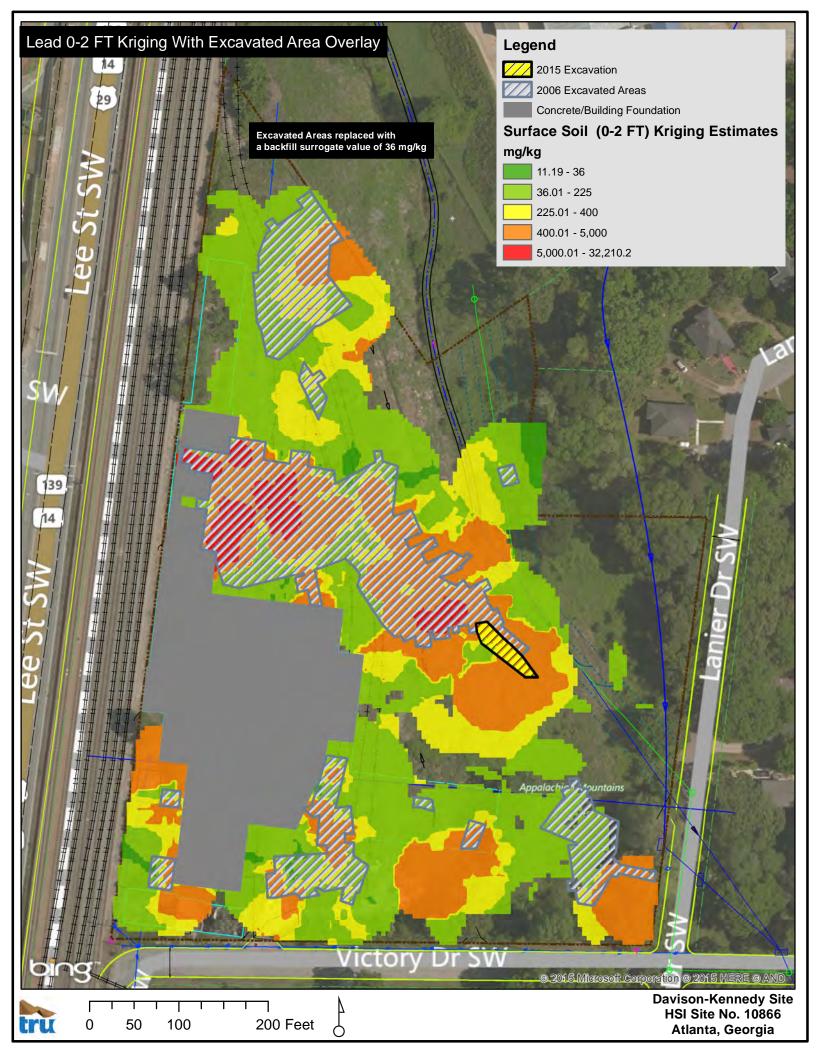
ATTACHMENT D

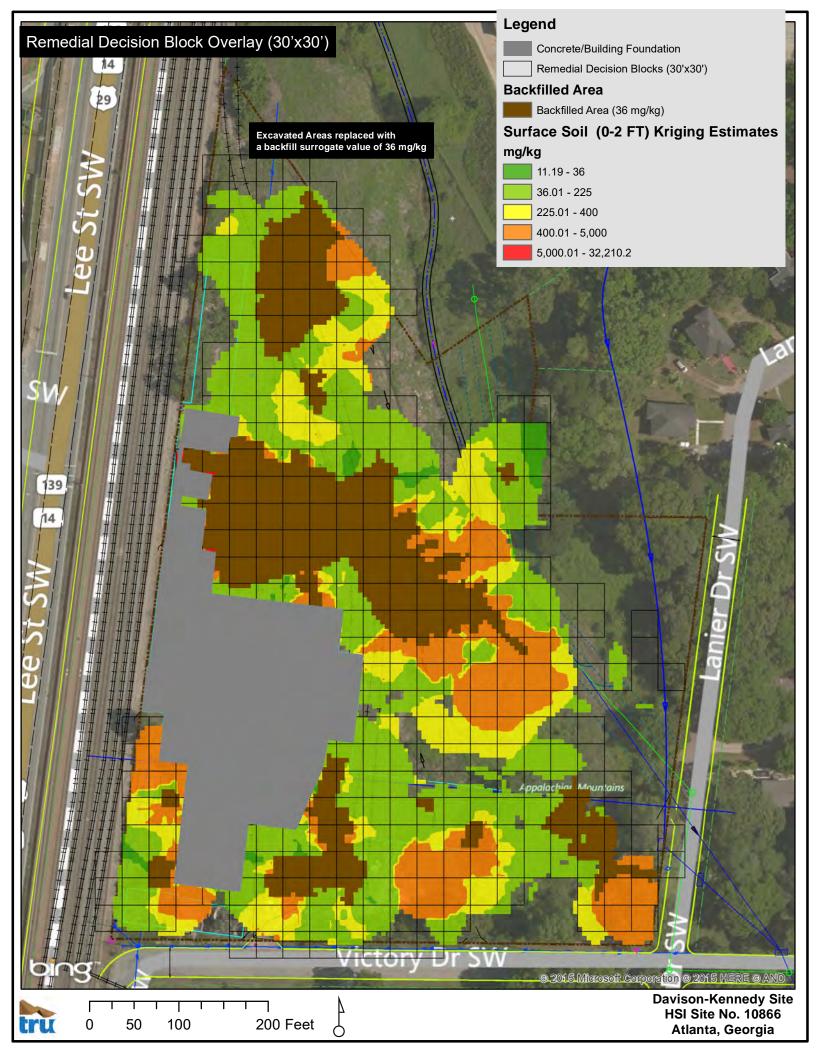


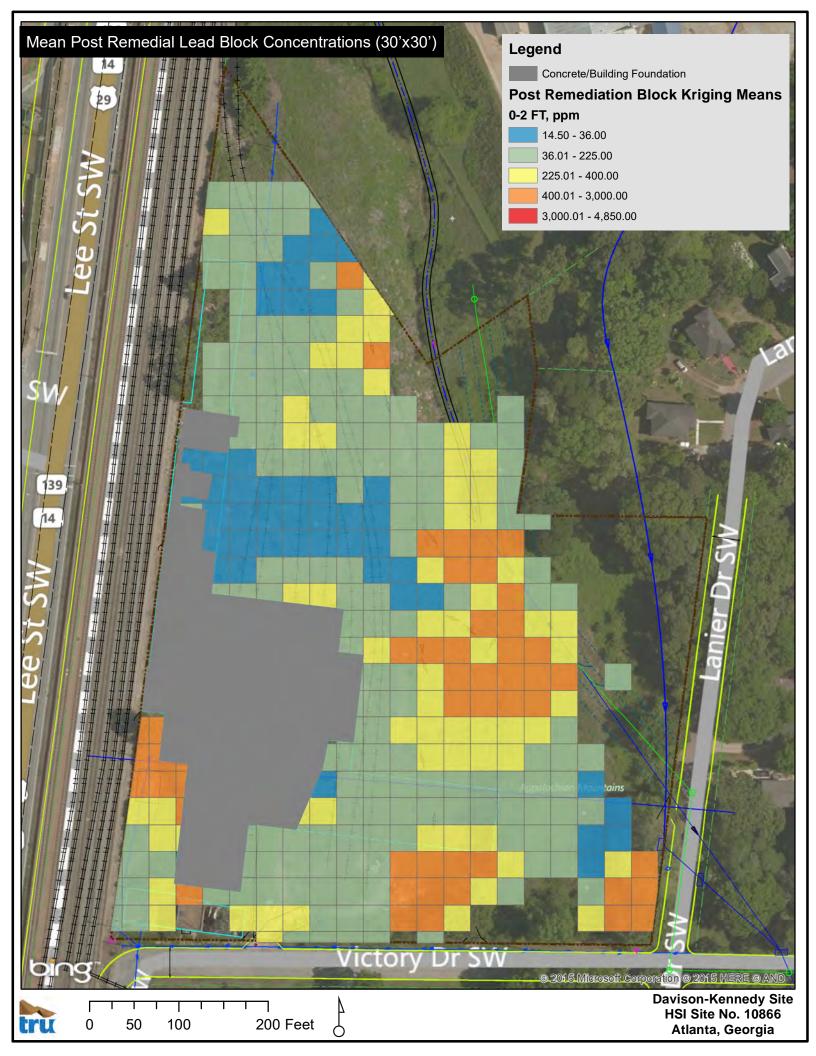


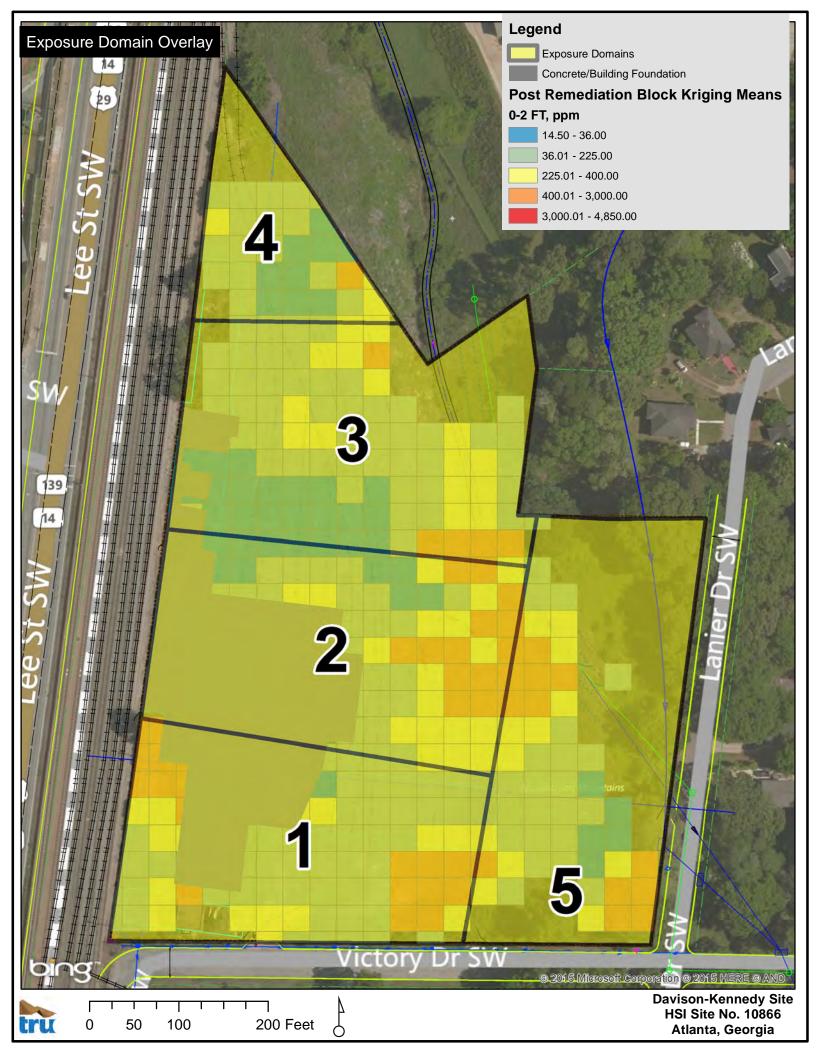












Geostatistical Analysis

Summarv

This report summarizes the process and parameters used to calculate a spatial estimate of contaminant concentration over a regular grid of locations in the sample area.

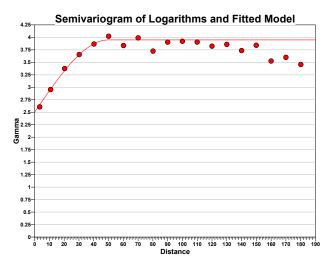
Primary Analysis Objective and Analytical Approach

The goal of geostatistical analysis is to use previously sampled locations to estimate concentration values over a regular grid of locations in the sample area. There are two main stages to the analysis in VSP. An experimental variogram is calculated to create a model of the spatial relationship between sampled locations. This model can then be used in kriging, a generalized weighted linear regression algorithm that generates an estimate of concentrations across the site.

Variogram

The following table and figure summarize the variogram analysis and model used in the kriging estimation.

SUMMARY OF VA	ARIOGRAM ANALYSIS
Variogram Type	Semivariogram of Logarithms
Variogram C	Control Parameters
Distance Between Lags	10 feet
Lag Tolerance Length	5 feet
Number of Lags	20
Vario	gram Model
Nugget	2.5
Model type 1	Spherical
Range 1	50 feet
Sill 1	1.45

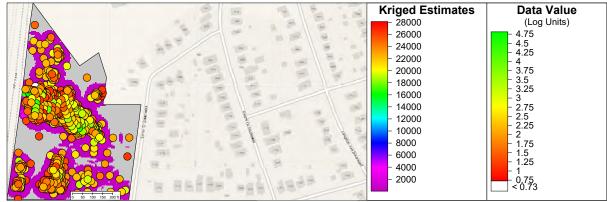


SUMMARY OF KRIGING ESTIMATION										
Kriging Type	Ordinary Kriging									
Grid										
Number of X Nodes	134									
Number of Y Nodes	197									
X Origin	2217257.16									

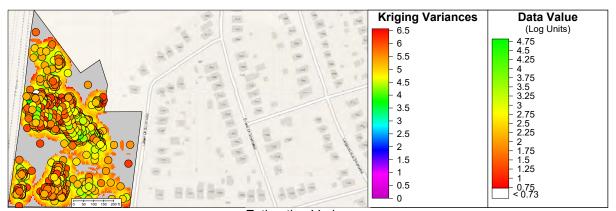
1348456.85
5 feet
5 feet
etization
False
1
4
50 feet
50 feet

Site Map With Kriging Results

The following figures show the results from the kriging estimation. The maps shown are from the active (most recently created) kriging estimation. The top figure shows the estimate values with the variance of the estimates shown in the lower figure. Areas within the sample area but without color-shading indicate areas where estimation was not possible due to lack of data within the search neighborhood.



Kriged Estimates



Estimation Variances

This report was automatically produced* by Visual Sample Plan (VSP) software version 7.4.

This design was last modified 9/4/2015 9:10:34 AM.

Software and documentation available at http://vsp.pnnl.gov

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* - The report contents may have been modified or reformatted by end-user of software.

	Α	В	С	D	E	F	G	Н	l	J	K	L
1					UCL Statis	tics for Unc	ensored Full	Data Sets				
2												
3			ected Options									
4	D	ate/Time of C		9/16/2015 2:								
5				ProUCLInpu	t3.xls							
6			Il Precision	OFF								
7		Confidence		95%								
8	Number	of Bootstrap	Operations	2000								
9												
10	Avg_Posti	DEM (4)										
	Avg_Posti	KEM (1)										
12						General	Statistics					
13			Total	Number of O	hservations	91	Otatiotics		Numbe	r of Distinct C)hservations	91
14			10101	Transcr or o		0 1				r of Missing C		
15					Minimum	38.36			Number	- Or Wildsing C	Mean	267.9
16					Maximum	887					Median	
17					SD	212				Std F	rror of Mean	22.22
18				Coefficient	of Variation	0.791				Ota. L	Skewness	1.354
19						0.70						
20						Normal (GOF Test					
21			S	hapiro Wilk T	est Statistic				Shapiro Wi	ilk GOF Test		
22				5% Shapiro V				Data No	<u>-</u>	5% Significan		
23				· · · · · · · · · · · · · · · · · · ·	est Statistic					GOF Test		
24 25			5	% Lilliefors C	ritical Value	0.0929		Data No	t Normal at !	5% Significan	ce Level	
26					Data Not	Normal at 5	∣ i% Significar	nce Level				
27												
28					Ass	suming Nori	nal Distribut	ion				
29			95% No	ormal UCL				95%	UCLs (Adju	sted for Ske	wness)	
30				95% Stud	dent's-t UCL	304.8			95% Adjuste	ed-CLT UCL ((Chen-1995)	307.8
31									95% Modifi	ed-t UCL (Jol	nnson-1978)	305.3
32							11.					
33						Gamma	GOF Test					
34				A-D T	est Statistic	1.274		Ander	son-Darling	Gamma GO	F Test	
35				5% A-D C	ritical Value	0.766	D			ed at 5% Sig		'el
36					est Statistic	0.0989				ff Gamma G		
37					ritical Value	0.0951				ed at 5% Sig	nificance Lev	'el
38				Dat	ta Not Gamr	na Distribut	ed at 5% Sig	nificance Lo	evel			
39							<u> </u>					
40					1. 1		Statistics			-1 (1.1		4.050
41					k hat (MLE)					star (bias cor	•	
42					ta hat (MLE)				i heta	star (bias cor		144.6
43			B 41		u hat (MLE)					•	s corrected)	337.1
44			IVII	LE Mean (bia:	s corrected)	267.9			Annrovina	MLE Sd (bia	-	196.8 295.6
45			۰۰:۱۵ ۸	sted Level of S	Significance	0.0474				Chi Square		295.6
46			Aajus	sieu Level of S	Significance	0.0474			A	ujusi c u CIII S	quare value	290
47					Δε	sumina Gam	ma Distribu	tion				
48		95% Annrovi	mate Gamma	IICI (usa w		305.5	יייים הופיות פיייי		liusted Cami	ma UCL (use	when n<50\	306.2
49		ου πρριυκί	ato Gaillilla	. JOE (USE WI		555.5		33 /0 AC	gaotoa Gailli	a COL (use		
50						Lognorma	GOF Test					
51						Logilollia	- GOI 1636					

	Α	В	С	D Shapiro Wilk	E Test Statistic	F 0.965	G	H Shar	iro Wilk Loc	J gnormal GO	K K	L		
52				5% Shapiro \		0.0784					ficance Level			
53					Test Statistic	0.0641				ormal GOF				
54 55				5% Lilliefors C	Critical Value	0.0929					ficance Level			
56					Data appear	Lognormal	∣ at 5% Signif							
57														
58						Lognorma	I Statistics							
59				Minimum of L	ogged Data	3.647				Mean of	f logged Data	5.306		
60				Maximum of L	ogged Data	6.788				SD of	f logged Data	0.763		
61														
62					Assu	ıming Logno	rmal Distrib	ution						
63					95% H-UCL	318.1			90%	Chebyshev	(MVUE) UCL	340.8		
64				Chebyshev (,	373.6			97.5%	Chebyshev	(MVUE) UCL	419		
65			99%	Chebyshev (MVUE) UCL	508.3								
66														
67							tion Free UC							
68				Data appear	to follow a l	Discernible	Distribution	at 5% Signif	ficance Leve	əl				
69														
70							tribution Fre	e UCLs						
71					5% CLT UCL	304.4					ackknife UCL	304.8		
72				6 Standard Bo	·	304.3			050/		otstrap-t UCL	307.5 303.4		
73				95% Hall's Bo		305.6		95% Percentile Bootstrap UCL						
74			000/ 0	95% BCA Bo		309.4		204.7						
75				hebyshev(Me		334.5					ean, Sd) UCL	364.7		
76			97.5% C	hebyshev(Me	an, Sa) UCL	406.7			99% CI	nebysnev(ivie	ean, Sd) UCL	489		
77						Suggested	UCL to Use							
78					95% H-UCL	318.1	UCL ID USE					<u> </u>		
79					93 /6 TI-UCL	310.1								
80		Note: Sugge	stions regar	ding the selec	tion of a 95%	SUCL are nr	ovided to hel	n the user to	select the n	nost appropri	iate 95% UCL			
81				ons are based				•				<u> </u>		
82				n and Singh (2										
83					ditional insig									
84 85														
86			Pro	UCL compute	es and outpu	ts H-statisti	c based UCI	s for histori	ical reasons	only.				
87		H-statistic	often result	s in unstable	(both high a	nd low) valu	es of UCL9	5 as shown	in examples	in the Tech	nical Guide.			
88			li	is therefore	recommende	ed to avoid t	he use of H-	statistic bas	sed 95% UC	Ls.				
89	Us	e of nonpara	metric metl	nods are pref	erred to com	pute UCL95	for skewed	data sets w	hich do not	follow a gar	mma distribut	ion.		
90														
91														
	Avg_PostF	REM (2)									-	-		
93														
94						General	Statistics							
95			Tota	I Number of C	Observations	82			Numbe	r of Distinct	Observations	71		
96									Numbe	r of Missing	Observations	0		
97					Minimum	36					Mean	299.5		
98					Maximum	1019					Median	209.6		
99					SD	268.8				Std. E	Error of Mean	29.68		
100				Coefficient	t of Variation	0.897					Skewness	1.176		
101														
102						Normal (GOF Test							

	Α	В		С	D D	E	F	G	Н		J	K	L
103					Shapiro Wilk	Wilk P Value			Data N	· -	Vilk GOF Tes		
104						Test Statistic			Data N		: 5% Significa	nce Level	
105					5% Lilliefors (Data N		: 5% Significa	naa Laval	
106					5% Lillelois (5% Significar		ot Normai at	. 5% Significa	ince Levei	
107						Data No	i Normai at s	5% Significat	ice Levei				
108						Λ.	ouming Nor	mal Distribut	ion				
109				05% N	lormal UCL	As	Sulling Non			/ IICl o (Adi	usted for Sk	ownoss)	
110				90 %		udent's-t UCL	348.8		90 /	` '		(Chen-1995)	352.4
111					95 % 311	Jueni S-i OCL	340.0			•		ohnson-1978)	349.5
112										93 % WOUI	ileu-i OCL (30	Jillison-1970)	349.5
113							Gamma	GOF Test					
114					A-D	Test Statistic		1	Ande	rson-Darlin	g Gamma G	OF Test	
115						Critical Value		D				gnificance Lev	/el
116						Test Statistic					off Gamma C		
117						Critical Value		Detected				5% Significar	ice Level
118								Distribution					
119						•	•						
120							Gamma	Statistics					
121 122						k hat (MLE)	1.245			ķ	star (bias co	rrected MLE)	1.208
123					The	eta hat (MLE)	240.5			Theta	a star (bias co	rrected MLE)	247.9
124						nu hat (MLE)	204.2				nu star (bi	as corrected)	198.1
125				N	//LE Mean (bia	as corrected)	299.5				MLE Sd (bi	as corrected)	272.5
126										Approxima	te Chi Square	e Value (0.05)	166.5
127				Adjı	usted Level of	f Significance	0.0471			A	Adjusted Chi	Square Value	166
128													
129						As	suming Gan	nma Distribu	tion				
130		95% Approx	ximate	Gamr	na UCL (use	when n>=50)	356.2		95% A	djusted Gan	nma UCL (us	e when n<50)	357.3
131													
132							Lognorma	I GOF Test					
133					Shapiro Wilk	Test Statistic	0.906		Sha	piro Wilk Lo	gnormal GO	F Test	
134					5% Shapiro	Wilk P Value	1.4781E-6		Data Not	Lognormal	at 5% Signific	cance Level	
135					Lilliefors	Test Statistic	0.112		Li	lliefors Logi	normal GOF	Test	
136					5% Lilliefors (Critical Value	0.0978		Data Not	Lognormal	at 5% Signific	cance Level	
137						Data Not I	ognormal a	t 5% Signific	ance Level				
138													
139								I Statistics					
140					Minimum of	Logged Data	3.584				Mean o	f logged Data	5.249
141					Maximum of	Logged Data	6.927				SD o	f logged Data	1.034
142													
143								ormal Distrib	ution				
144						95% H-UCL					-	(MVUE) UCL	455
145					6 Chebyshev	· · · · · · · · · · · · · · · · · · ·				97.5%	6 Chebyshev	(MVUE) UCL	598.9
146				99%	6 Chebyshev	(MVUE) UCL	763.1						
147													
148						•		tion Free UC					
149					Data appea	r to follow a	Discernible	Distribution	at 5% Sign	ificance Lev	rel		
150													
151								tribution Fre	e UCLs				
152						5% CLT UCL						ackknife UCL	
153				959	% Standard Bo	ootstrap UCL	349.9				95% Bo	otstrap-t UCL	353.7

	Α	В		С	D	Е	F	G	Н	I J K	L
154						Bootstrap UCL				95% Percentile Bootstrap UCL	350.3
155						Bootstrap UCL					
156						Mean, Sd) UCL				95% Chebyshev(Mean, Sd) UCL	428.8
157			9	7.5% C	nebyshev(N	Mean, Sd) UCL	484.8			99% Chebyshev(Mean, Sd) UCL	594.8
158											
159								UCL to Use			
160				95% A	Approximate	e Gamma UCL	356.2				
161											
162										o select the most appropriate 95% UCL.	
163		These re				-				arized in Singh, Singh, and laci (2002)	
164			ar	d Singh						all Real World data sets.	
165					For	additional insi	ght the user r	nay want to c	onsult a sta	tistician.	
166											
167											
168 ^F	Avg_PostR	REM (3)									
169											
170								Statistics			
171				Tota	l Number o	f Observations	99			Number of Distinct Observations	80
172										Number of Missing Observations	0
173						Minimum				Mean	186.7
174						Maximum				Median	133.6
175						SD				Std. Error of Mean	21.53
176					Coefficie	ent of Variatior	1.147			Skewness	2.976
177											
178								GOF Test			
179					-	k Test Statistic				Shapiro Wilk GOF Test	
180						o Wilk P Value			Data N	ot Normal at 5% Significance Level	
181						s Test Statistic				Lilliefors GOF Test	
182				5	5% Lilliefors	S Critical Value				ot Normal at 5% Significance Level	
183						Data No	t Normal at	5% Significar	nce Level		
184											
185							ssuming Nor	mal Distribut			
186				95% N	ormal UCL				95%	6 UCLs (Adjusted for Skewness)	
187					95% S	student's-t UCL	. 222.5			95% Adjusted-CLT UCL (Chen-1995)	229
188										95% Modified-t UCL (Johnson-1978)	223.6
189											
190								GOF Test			
191						D Test Statistic		_		erson-Darling Gamma GOF Test	
192						Critical Value		D		mma Distributed at 5% Significance Leve	el
193						S Test Statistic				ogrov-Smirnoff Gamma GOF Test	
194						S Critical Value				mma Distributed at 5% Significance Leve	el
195						Data Not Gam	ma Distribut	ed at 5% Sig	nificance L	.evel	
196											
197						11.00=		Statistics			4.000
198						k hat (MLE)				k star (bias corrected MLE)	1.202
199					TI	heta hat (MLE)				Theta star (bias corrected MLE)	155.4
200						nu hat (MLE)				nu star (bias corrected)	237.9
201				M	LE Mean (l	oias corrected)	186.7			MLE Sd (bias corrected)	170.4
202										Approximate Chi Square Value (0.05)	203.2
203				Adju	sted Level	of Significance	0.0476			Adjusted Chi Square Value	202.7
204											

	Α		В		С	D	Е	٨٥٥	F Suming Gam	G nma Distribu	H	1	J	K	L
205		QI	5% Approxi	imate (Camma	IICI (usa)	whon n>=					diusted Cam	nma UCL (use	when n<50)	219.1
206			70 Apploxi	iiiiaie v	Gaiiiiia	OCL (use	WIICH II/-	30))	210.0		95 % F	lujusteu Gan	illa OCL (use	e wileli ii<50)	213.1
207									Lognorma	I GOF Test					
208					S	hapiro Wilk	Test Stat	istic	0.95	1 401 1031	Sha	niro Wilk I o	gnormal GO	F Test	
209						5% Shapiro			0.00258			•	at 5% Signific		
210							Test Stat		0.115				normal GOF		
211					59	% Lilliefors			0.089				at 5% Signific		
212										t 5% Signific					
213							Duta i		ognorma. a	. o /o olgillilo	41100 2010	•			
214									Lognorma	I Statistics					
215 216					ı	Minimum of	Logged I	Data	2.659				Mean of	f logged Data	4.772
217						faximum of			7.169					f logged Data	0.956
218															
219								Assu	ıming Logno	ormal Distrib	ution				
220							95% H-	UCL	231.1			90%	Chebyshev	(MVUE) UCL	248.6
221					95% (Chebyshev	(MVUE)	UCL	277.3			97.5%	Chebyshev	(MVUE) UCL	317.1
222					99% (Chebyshev	(MVUE)	UCL	395.2						
223															
224							Nonpai	rame	tric Distribu	tion Free UC	CL Statistic	s			
225							Data do	not fo	ollow a Disc	ernible Dist	ibution (0.	05)			
226															
227							No	npar	ametric Dis	tribution Fre	e UCLs				
228						9	95% CLT	UCL	222.1				95% Ja	ackknife UCL	222.5
229					95%	Standard E	Bootstrap	UCL	221.8				95% Bo	otstrap-t UCL	231.4
230					9	5% Hall's E	Bootstrap	UCL	232.4			95%	Percentile B	ootstrap UCL	222.5
231						95% BCA E	Bootstrap	UCL	229.6						
232				(90% Ch	ebyshev(M	ean, Sd)	UCL	251.3			95% C	hebyshev(Me	ean, Sd) UCL	280.6
233				97	7.5% Ch	ebyshev(M	ean, Sd)	UCL	321.2			99% C	hebyshev(Me	ean, Sd) UCL	400.9
234										1					
235									Suggested	UCL to Use					
236				9	95% Che	ebyshev (M	ean, Sd)	UCL	280.6						
237															
238		١	lote: Sugge	estions	s regard	ing the sele	ection of a	95%	UCL are pr	ovided to hel	p the user	to select the	most appropr	iate 95% UCL	
239			These red	comme	endation	s are base	d upon th	e res	ults of the si	mulation stud	dies summa	arized in Sing	gh, Singh, and	d laci (2002)	
240				and	d Singh	and Singh	(2003). H	owev	er, simulatio	ons results wi	Il not cover	all Real Wo	rld data sets.		
241						For a	dditional	insig	ht the user n	nay want to c	onsult a sta	itistician.			
242															
243															
244	Avg_Po	stRE	EM (4)												
245															
246										Statistics					
247					Total	Number of	Observat	ions	38					Observations	33
248												Numbe	er of Missing	Observations	0
249							Minir		36					Mean	177.7
250							Maxir		607.3					Median	145.6
251								SD					Std. I	Error of Mean	23
252						Coefficie	nt of Varia	ation	0.798					Skewness	1.475
253															
254							<u> </u>			GOF Test			a		
255					S	hapiro Wilk	l est Stat	istic	0.84			Shapiro W	/ilk GOF Tes	τ	

	А	В		С	D	Е	F	G	Н	I	J	K	L
256				5% S	hapiro Wilk C		0.938		Data No	t Normal at 5	_	nce Level	
257						Test Statistic		Lilliefors GOF Test Data Not Normal at 5% Significance Level					
258				5	% Lilliefors C		-			t Normal at 5	5% Significar	nce Level	
259						Data Not	Normal at 5	% Significar	nce Level				
260													
261						As	suming Norr	nal Distribut					
262				95% No	ormal UCL		-			UCLs (Adju		<u> </u>	
263					95% Stu	dent's-t UCL	216.5			-		(Chen-1995)	221.4
264										95% Modifie	ed-t UCL (Jo	hnson-1978)	217.4
265													
266								GOF Test					
267						Test Statistic				son-Darling			
268						Critical Value		Detected				5% Significan	ce Level
269						Test Statistic				rov-Smirnot			
270						Critical Value	0.145				stributed at 5	5% Significan	ce Level
271					Detected	data appeai	Gamma Di	stributed at 8	5% Significa	nce Level			
272													
273							Gamma	Statistics					
274						k hat (MLE)	1.773				•	rrected MLE)	1.651
275						ta hat (MLE)				Theta		rrected MLE)	107.6
276						nu hat (MLE)					•	as corrected)	125.5
277				М	LE Mean (bia	s corrected)	177.7				•	as corrected)	138.3
278										• •	·	Value (0.05)	100.6
279				Adjus	sted Level of	Significance	0.0434			Ac	djusted Chi S	Square Value	99.67
280													
281								ma Distribu					
282		95% Appro	oxima	ate Gamm	a UCL (use w	vhen n>=50)	221.6		95% Ad	justed Gamr	na UCL (use	when n<50)	223.7
283													
284								GOF Test					
285					Shapiro Wilk T					iro Wilk Log			
286				5% S	hapiro Wilk C					ognormal at			
287						Test Statistic				iefors Logno			
288				5	% Lilliefors C		-	F0/ O!!6		_ognormal at	5% Signific	ance Level	
289						Data Not L	ognormai at	5% Signific	ance Levei				
290							Lognormo	l Ctatiatics					
291					Minimum of L	agged Data	Lognorma 3.584	i Statistics			Moon of	logged Data	4.872
292					Maximum of L	-						logged Data	0.827
293				'		-oggeu Dala	0.403				30 01	Jogged Dald	J.UZ/
294						Δεει	ımina Loana	rmal Distrib	ution				
295						95% H-UCL		חוומו טוסנווט	adoll	QN%-	Chehyshay	(MVUE) UCL	263.5
296				95%	Chebyshev ((MVUE) UCL	352
297					Chebyshev (•				97.5/0	Chobyshev (IVIV OL) OCL	552
298				JJ /0		v OL) UCL	700						
299						Nonnarama	tric Dietribu	tion Free UC	1 Statistics				
300					Data appear	•				icance I ava	1		
301					nara ahhear	to follow a	PISCELLIDIE	บเอน เมนนเปก	at J/6 SIGNIT	icalice Leve	71		
302						Monno	rametric Dict	tribution Fre	م ۱۱۲۱ م				
303					OE.	Nonpai		u ibulion Fre	e OOLS		Q5% Is	ckknife UCL	216.5
304				0E0/	Standard Bo		214.8					otstrap-t UCL	224.4
305					95% Hall's Bo	•	214.8			0F0/. I		otstrap-t UCL	218.2
306					,	ototiah OCF	22 I.Ü			90% F	ercerrule bo	voisii ap UCL	∠10.∠

	Α	В	С	D	E	F	G	Н	ļ	J	K	L
307				95% BCA Bo	·	225.1						
308				nebyshev(Mea		246.7				, ,	Mean, Sd) UCL	277.9
309			97.5% Ch	nebyshev(Mea	an, Sd) UCL	321.3			99% C	hebyshev(N	Mean, Sd) UCL	406.5
310												
311							UCL to Use	l				
312			95	5% Adjusted G	Samma UCL	223.7						
313												
314			•	•		•		•			priate 95% UCL	
315		These rec			•				_		nd laci (2002)	
316			and Singh	and Singh (2						rld data sets	3 .	
317				For add	ditional insig	ht the user n	nay want to c	onsult a stati	stician.			
318												
319												
320	Avg_Postl	REM (5)										
321												
322							Statistics					
323			Total	Number of O	bservations	61					ct Observations	57
324									Numbe	er of Missing	g Observations	0
325					Minimum	36					Mean	295.3
326					Maximum	880					Median	231.4
327					SD	242.5				Std	. Error of Mean	31.06
328				Coefficient	of Variation	0.821					Skewness	0.967
329												
330							GOF Test					
331				Shapiro Wilk T					-	/ilk GOF Te		
332				5% Shapiro V				Data No			cance Level	
333					est Statistic					s GOF Test	-	
334			5	5% Lilliefors C		0.113			t Normal at	5% Signific	cance Level	
335					Data Not	Normal at 5	5% Significa	nce Level				
336												
337					As	suming Nor	mal Distribut					
338			95% No	ormal UCL		T				usted for S		
339				95% Stud	dent's-t UCL	347.2			•		CL (Chen-1995)	350.5
340									95% Modif	fied-t UCL (Johnson-1978)	347.8
341												
342							GOF Test					
343					est Statistic		5		`	g Gamma C		
344					ritical Value	0.769	Detecte				at 5% Significand	ce Level
345					est Statistic		D		*	off Gamma		
346					ritical Value	0.116				Distributed a	at 5% Significand	ce Level
347				Detected	data appeai	r Gamma Di	stributed at	5% Significa	nce Level			
348						0	O4-41-41					
349					1. l /		Statistics					
350					k hat (MLE)	1.473				,	corrected MLE)	1.411
351					ta hat (MLE)	200.5			ı heta	`	corrected MLE)	209.2
352					u hat (MLE)	179.7				,	bias corrected)	172.2
353			M	LE Mean (bia	s corrected)	295.3			A	•	bias corrected)	248.6
354			A 11		Olamië - :	0.0404			• •		re Value (0.05)	142.9
355			Adju	sted Level of S	Significance	0.0461			<i>F</i>	Adjusted Ch	i Square Value	142.2
356							D' : "	Al a m				
357					Ass	suming Gam	nma Distribu	tion				

System		Α	В	ГС			D	T	E	l F	G		Н		1	I			K	$\overline{}$	
Lognormal GOF Test	250		_	_	mma					-	G			djusted	l Gamr	na UCI	_ (use	who))	357.6
Section Shapiro Wilk Test Statistic 0.938 Shapiro Wilk Lognormal GOF Test																					
Shapiro Wilk Test Statistic 0.938										Lognorma	I GOF Tes	st									
Significance Level Data Not Lognormal at 5% Significance Level					Sł	hapiro	o Wilk	Test S	Statistic	0.938			Sha	piro W	ilk Log	norma	I GOI	F Te	est		
					5	- 5% Sh	hapiro \	Wilk P	Value	0.00636			Data Not	Logno	rmal at	5% Si	gnific	ance	 e Level		
Data appear Lognormal at 5% Significance Level						Lill	liefors	Test S	Statistic	0.0861		Lilliefors Lognormal GOF Test									
Data appear Approximate Lognormal at 5% Significance Level					5%	% Lilli	iefors C	Critical	l Value	0.113			Data appe	ar Logr	normal	at 5%	Signif	ican	ce Leve	 el	
							Data a	ppear	Appro	ximate Logr	normal at 5	5%	Significan	ce Lev	el					_	
Lognormal Statistics Statis																					
Maximum of Logged Data 3.584 Mean of logged Data 5.312										Lognorma	l Statistics	s								_	
Maximum of Logged Data 6.78 SD of logged Data 0.931					N	Vinim	num of I	Logge	d Data	3.584						Me	ean of	log	ged Dat	а	5.312
Assuming Lognormal Distribution 371					M	1axim	num of l	Logge	d Data	6.78						;	SD of	log	ged Dat	а	0.931
Assuming Lognormal Distribution 95% H-UCL 407.2 90% Chebyshev (MVUE) UCL 438 373 95% Chebyshev (MVUE) UCL 496.3 97.5% Chebyshev (MVUE) UCL 577.1 374 99% Chebyshev (MVUE) UCL 736																					
95% H-UCL 407.2 90% Chebyshev (MVUE) UCL 438 373 95% Chebyshev (MVUE) UCL 496.3 97.5% Chebyshev (MVUE) UCL 577.1 374 99% Chebyshev (MVUE) UCL 736									Assı	uming Logno	ormal Dist	ribu	ution								
97.5% Chebyshev (MVUE) UCL							-	95%	H-UCL	407.2					90%	Cheby	shev ((MV	UE) UC	L	438
Signature Sign				9!	5% (Cheby	yshev (MVUE	E) UCL	496.3				!	97.5%	Cheby	shev ((MV	UE) UC	L	577.1
Nonparametric Distribution Free UCL Statistics Data appear to follow a Discernible Distribution at 5% Significance Level Nonparametric Distribution Free UCLs Nonparametric Distribution at 5% Significance Level Nonparametric Distribution at 95% Locus Distribution of 2,42,2 Nonparametric Distribution at 95% Nonparametric Distribution at 95% Locus Distribution at 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.				99	9% (Cheby	yshev (MVUE	E) UCL	736									-		
Nonparametric Distribution Free UCL Statistics Data appear to follow a Discernible Distribution at 5% Significance Level Nonparametric Distribution at 5% Significance Level Nonparametric Distribution Free UCLs Nonparametric Distribution at 5% Significance Level Nonparametric Distribution free UCLs Nonparametric Distribution										1	1										
Data appear to follow a Discernible Distribution at 5% Significance Level Nonparametric Distribution Free UCLs Nonparametric Distribution Free UCLs Nonparametric Distribution Free UCLs Salo 95% CLT UCL 346.4 95% Jackknife UCL 347.2 Salo 95% Standard Bootstrap UCL 345.6 95% Bootstrap-t UCL 351.8 Salo 95% Hall's Bootstrap UCL 350.6 95% Percentile Bootstrap UCL 346.9 Salo 95% BCA Bootstrap UCL 349.8 Salo 90% Chebyshev(Mean, Sd) UCL 388.5 95% Chebyshev(Mean, Sd) UCL 430.7 Salo 97.5% Chebyshev(Mean, Sd) UCL 489.3 99% Chebyshev(Mean, Sd) UCL 604.3 Suggested UCL to Use Suggested UCL to Use Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.								Nonr	parame	etric Distribu	tion Free	UC	L Statistic	s							
Nonparametric Distribution Free UCLs 346.4 95% Jackknife UCL 347.2 348.4 95% Jackknife UCL 347.2 348.4 95% Jackknife UCL 347.2 348.4 95% Bootstrap-t UCL 351.8 382 95% Hall's Bootstrap UCL 349.8 384 95% BCA Bootstrap UCL 349.8 384 90% Chebyshev(Mean, Sd) UCL 388.5 95% Chebyshev(Mean, Sd) UCL 430.7 385 97.5% Chebyshev(Mean, Sd) UCL 489.3 99% Chebyshev(Mean, Sd) UCL 604.3 386 387 388 95% Approximate Gamma UCL 356 368 369 369 360 36)ata a	appear	r to fo	llow a	Discernible	Distributio	n a	at 5% Sign	ificanc	e Leve	ı					
Nonparametric Distribution Free UCLs Nonparametric Distribution Subcite In Singh, Singh, and laci (Nonparametric Distribution Studies Summarized in Singh, Singh, and laci (Nonparametric Distribution Studies Summarized in Singh, Singh, and laci (Nonparametric Distribution Studies Summarized in Singh, Singh, and laci (Nonparametric Distribution Studies Summarized in Singh, Singh, and laci (Nonparametric Distribution Studies Summarized in Singh, Singh, and laci (Nonparametric Distribution Studies Summarized in Singh, Singh, and laci (Nonparametric Distribution Studies Summarized in Singh, Singh, and laci (Nonparametric Distribution Studies Summarized in Singh, Singh, and laci (Nonparametric Distribution Studies Summarized in Singh, Singh, and laci (Nonparametric Distribution Studies Summarized in Singh, Singh, and laci (Nonparametric Distribution Studies Summarized in Singh, Singh, and laci (Nonparametric Distribution Studies Summarized in Singh, Singh, and laci (Nonparametric Distribution Studies Summarized in Singh, Singh, and laci (Nonparametric Distribution Studies Summarized in Singh, Singh, and laci (Nonparametric Distribution Studies Summarized in Singh, Singh, and laci (Nonparametric Distribution Studies Summarized in Singh, Singh, and laci (Nonparametric Distribution Studies Summarized in Singh Studies Summarized in Singh Studies Summarized In Singh Studies Summarized In																					
95% CLT UCL 346.4 95% Jackknife UCL 347.2 381 95% Standard Bootstrap UCL 345.6 95% Bootstrap-t UCL 351.8 382 95% Hall's Bootstrap UCL 350.6 95% Percentile Bootstrap UCL 346.9 383 95% BCA Bootstrap UCL 349.8 384 90% Chebyshev(Mean, Sd) UCL 388.5 95% Chebyshev(Mean, Sd) UCL 430.7 385 97.5% Chebyshev(Mean, Sd) UCL 489.3 99% Chebyshev(Mean, Sd) UCL 604.3 386 387 Suggested UCL to Use 388 95% Approximate Gamma UCL 356 389 Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) 392 and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.	379							ı	Nonpar	rametric Dis	tribution F	ree	e UCLs								
381 95% Standard Bootstrap UCL 345.6 95% Bootstrap-t UCL 351.8 382 95% Hall's Bootstrap UCL 350.6 95% Percentile Bootstrap UCL 346.9 383 95% BCA Bootstrap UCL 349.8 384 90% Chebyshev(Mean, Sd) UCL 388.5 95% Chebyshev(Mean, Sd) UCL 430.7 385 97.5% Chebyshev(Mean, Sd) UCL 489.3 99% Chebyshev(Mean, Sd) UCL 604.3 386 387 Suggested UCL to Use 388 95% Approximate Gamma UCL 356 389 Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. 390 These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) 391 and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.	380						95	5% CL	T UCL	346.4						9	5% Ja	ackk	nife UC	L	347.2
95% Hall's Bootstrap UCL 350.6 95% Percentile Bootstrap UCL 346.9 95% BCA Bootstrap UCL 349.8 384 90% Chebyshev(Mean, Sd) UCL 388.5 95% Chebyshev(Mean, Sd) UCL 430.7 385 97.5% Chebyshev(Mean, Sd) UCL 489.3 99% Chebyshev(Mean, Sd) UCL 604.3 386 Suggested UCL to Use 388 95% Approximate Gamma UCL 356 Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.	381			9	95%	Stand	dard Bo	otstra	p UCL	345.6						959	% Boo	otstra	ap-t UC	L	351.8
95% BCA Bootstrap UCL 349.8 90% Chebyshev(Mean, Sd) UCL 388.5 95% Chebyshev(Mean, Sd) UCL 430.7 97.5% Chebyshev(Mean, Sd) UCL 489.3 99% Chebyshev(Mean, Sd) UCL 604.3 886 888 95% Approximate Gamma UCL 356 889 Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.	382				9	5% Ha	all's Bo	otstra	p UCL	350.6					95% I	Percen	tile Bo	oots	rap UC	L	346.9
90% Chebyshev(Mean, Sd) UCL 388.5 95% Chebyshev(Mean, Sd) UCL 430.7 97.5% Chebyshev(Mean, Sd) UCL 489.3 99% Chebyshev(Mean, Sd) UCL 604.3 99%	383				ç	95% E	3CA Bo	otstra	p UCL	349.8											
97.5% Chebyshev(Mean, Sd) UCL 489.3 99% Chebyshev(Mean, Sd) UCL 604.3 Suggested UCL to Use 95% Approximate Gamma UCL 356 Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.	384			90%	6 Che	ebysh	nev(Me	an, So	d) UCL	388.5				g	5% Ch	ebysh	ev(Me	ean,	Sd) UC	L	430.7
Suggested UCL to Use Suggested UCL to Use Suggested UCL to Use Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.	385			97.5%	6 Che	ebysh	nev(Me	an, So	d) UCL	489.3				9	9% Ch	ebyshe	ev(Me	ean,	Sd) UC	L	604.3
Suggested UCL to Use 95% Approximate Gamma UCL 356 Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.										1	'										
95% Approximate Gamma UCL 356 Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.	387									Suggested	UCL to U	se									
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.	388			959	% Ap	proxi	imate (Gamm	ia UCL	356											
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.	389									1											
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.	390		Note: Sugge	stions reg	gardi	ing the	e selec	ction o	of a 95%	6 UCL are pr	ovided to h	help	p the user t	o selec	t the m	ost ap	propri	ate 9	95% UC	L.	
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.	391		These rec	commenda	ation	s are	based	upon	the res	sults of the si	mulation s	tud	lies summa	rized ii	n Singh	, Singl	n, and	lac	i (2002)		
For additional insight the user may want to consult a statistician.	392			and Sir	ngh a	and S	Singh (2	2003).	Howe	ver, simulatio	ns results	wil	I not cover	all Rea	al Worl	d data :	sets.				
	393						For ad	dition	al insig	ht the user n	nay want to	o cc	onsult a sta	tisticia	า.						
	394			-																	-

Domain PreREM I PostREM Pb ppm

n	Prektivi i	Postkeivi Pb ppm
2	5598.382	36
3	2743.651	1298.231611
3	8372.402	1031.592333
2	15806.87	1019.341119
3	15806.87	1019.341119
2	1600.857	1018.721661
2	907.0256	907.0256354
1	886.961	886.9610002
2	1250.009	879.9595269
5	1250.009	879.9595269
5	895.2938	855.5368364
1	837.5846	837.5846405
1	828.5112	828.5112457
2	828.5112	828.5112457
2	838.0674	824.0614179
2		
	2268.497	817.2025333
2	780.3124	780.312361
5	780.3124	780.312361
2	1314.9	777.5039991
5	1314.9	777.5039991
2	1066.288	777.2069414
3	1066.288	777.2069414
5	789.778	768.2405413
1	768.1142	768.1142239
5	767.5549	767.5548706
1	764.2806	764.2805566
1	744.0659	744.0658654
1	730.108	730.1079761
2	728.9728	728.9728105
5	728.9728	728.9728105
1	724.8035	724.8035024
2	724.8035	724.8035024
2	709.0382	709.0381944
5	626.9014	626.9014121
2	613.6736	613.6736382
5	610.5847	610.5846676
1	607.7955	607.7955051
5	607.7955	607.7955051
4	625.4043	607.3249343
1		
	590.8161	590.8160839
1	580.1298	580.1298027
5	579.4004	566.7401437
4	549.0468	549.0468343
5	536.7083	536.7082757
3	533.9651	533.9650769
1	533.7856	533.7855833
2	517.9564	517.9564427
5	517.9564	517.9564427
1	528.0552	507.8917236
3	496.85	496.8500025
1	481.4215	481.4214766
5	481.4215	481.4214766
2	474.3008	474.3007804
1	473.3834	473.3834297
2	472.4425	472.4424983
4	467.8999	467.89986
1	483.0269	466.607221
3	573.2623	462.7827225
1	459.4267	459.4267201
1	450.7076	440.4176401
3	437.7625	437.7624969
2	1017.186	433.9005296
3	1017.186	433.9005296
1	430.0845	430.0844811

2	432.3042	425.4929716
3	432.3042	425.4929716
5	622.2018	410.2271627
5	404.4763	404.4763228
2 5	398.3982 398.3982	398.3981951 398.3981951
2	398.3571	398.3570862
5	398.3571	398.3570862
5	396.6521	396.652139
4 1	394.698 391.2001	394.697998 391.2001228
5	388.9815	388.9814617
2	385.5564	385.5563626
3	378.2312	378.2312215
1	458.9276	365.3199162
3 1	363.4101 428.915	363.4101088 359.2907503
2	359.1985	359.1985039
3	357.835	357.8350021
2	10294.07	357.7733493
4	354.8276	354.8276108
2 1	339.0005 337.3479	339.0005309 337.347858
3	333.0404	333.0404343
4	333.0404	333.0404343
5	322.3147	322.3146602
2	399.9505 342.2524	321.9359717 317.6337528
1	316.255	316.2550049
2	316.255	316.2550049
2	315.8889	315.8889084
2	315.2532	315.2531942
2	1928.367 458.2766	311.8960296 311.8311941
5	458.2766	311.8311941
2	309.0627	309.0626511
5	309.0627	309.0626511
1 1	307.841 306.2782	307.8410295 306.2782491
3	303.6753	303.6753324
2	10017.79	300.3502231
2	462.5561	295.2255563
1	292.1654 290.8804	292.1653816 290.8803828
2	290.8804	290.8803828
1	287.2748	287.2748044
3	287.0081	287.0080584
1 1	286.4579 371.4844	286.4578595 284.6647483
3	282.2711	282.271112
5	281.0549	281.054926
1	274.0194	274.0193565
5 1	274.0194 271.7652	274.0193565 271.7652215
3	266.3446	266.3445574
2	265.2263	265.2262946
2	256.7926	256.7925871
3	256.7926 255.8979	256.7925871 255.897917
2	253.7069	253.7068718
5	253.7069	253.7068718
3	252.3794	252.3793622
2	2530.637 2530.637	252.194892 252.194892
ა 5	2530.637	248.1870839
9		2.55,0000

	040.0040	240.0010224
1 5	248.0618 248.0618	248.0618324 248.0618324
3	244.4985	244.4985046
3	244.1207	244.120722
1	242.4853	242.4852665
1	1463.439	241.6982583
5 3	238.5315 236.7323	238.5315282 236.7323331
3	234.6928	234.6927783
3	233.3517	233.3517223
4	233.3517	233.3517223
5	232.44	232.4400268
5 2	511.9705	231.3555806
4	229.7853 228.7337	229.785333 228.7336663
4	227.7062	227.7061672
4	220.7471	220.7471431
2	219.6274	219.627388
1	219.2523	219.2522789
1	219.0603 217.0132	219.0603096 217.0132087
4	217.0132	216.0730057
4	212.9604	212.9604179
3	206.6436	206.6435863
1	816.5085	206.4661378
1	203.5822	203.5821942
1 2	203.3687 202.0895	203.3687227 202.089538
5	202.0093	201.4228344
5	199.4174	199.4173756
2	198.9109	198.9109459
5	198.9109	198.9109459
3 4	249.1463 249.1463	197.7014728 197.7014728
1	214.4286	196.5474718
5	214.4286	196.5474718
1	194.8746	194.874599
2	194.8746	194.874599
4	194.6438	194.6438056
3 1	250.888 191.7654	192.2062247 191.7653558
2	1026.22	190.3866645
3	1026.22	190.3866645
1	349.8143	190.2516681
3	806.2736	189.6588868
3 4	189.1642 187.7029	189.1641663
5	185.8397	187.7029283 185.8397066
1	184.1697	184.1696682
3	177.6676	177.6675839
2	175.0556	175.0555593
1	172.6618	172.6618315
3	171.2139 1679.707	171.2138615 171.1564172
1	169.4877	169.4876948
2	165.3782	165.3782319
3	165.3782	165.3782319
5	165.3782	165.3782319
3 1	164.9957 164.8479	164.9956657 164.8479161
1	772.593	164.4201387
4	529.6682	162.3562766
1	209.4197	161.4717772
3	159.3892	158.9086381
3	168.2266	158.8944995

4	520.156	156.9640299
2	156.8922	156.8921937
4	165.6099	152.8709992
1	151.3071	151.307135
3 1	150.4924 375.2398	150.4924167 149.85375
1	149.5232	149.5231944
2	263.2905	148.7218331
1	148.2304	148.2303611
2	148.2304	148.2303611
2	147.8365	147.8364665
4 3	147.6641 146.8557	147.6640521 146.855742
ა 1	174.1064	145.3009436
4	143.51	143.5100276
4	143.1216	143.1215611
1	170.8546	141.4815284
2	170.8546	141.4815284
4	141.3762	141.3761538
3 1	230.908 140.5618	140.7566386 140.5618312
1	245.5495	139.9659439
2	139.572	139.5719521
2	139.4836	139.4835828
3	139.2039	139.203861
3	138.9023	138.9022503
4 3	138.9023 175.0648	138.9022503 138.2591675
ა 4	183.8324	138.0746117
3	137.9141	137.9140573
3	158.3887	136.3151402
3	1906.196	135.1196111
1	134.9451	134.9450919
2 5	134.9451	134.9450919
2	134.9451 221.0895	134.9450919 133.6723046
3	133.6177	133.6177045
5	133.6177	133.6177045
3	132.3678	132.36782
2	147.612	132.2500005
1 2	131.5132	131.5132499
1	131.5132 130.4587	131.5132499 130.4587498
3	181.1608	130.2518608
1	174.8237	128.7575272
2	174.8237	128.7575272
1	271.6361	126.6462218
3	172.3494	125.0769444
5 2	155.9298 124.4737	124.997117 124.4737192
2	176.4491	123.7027219
3	123.5013	123.5013047
2	128.1236	122.8084715
3	122.4795	122.4795452
2 5	119.9217 117.9436	119.9216654 117.9435827
3	137.1284	117.4240278
1	115.2457	115.2456773
5	114.3703	114.3703142
1	119.2062	112.1980823
3	123.9024	112.130028
1 4	207.2402 134.4137	110.2198332 110.1283614
1	109.8838	109.8838285
3	109.8373	109.8372969

5	108.3509	108.3509284
1	111.3916	106.7523611
3	146.7843	105.7033611
5	105.4133	105.4133164
2	105.124 104.3768	105.1239726 104.3768334
1	104.3708	104.1028748
1	103.6526	103.6526112
3	102.7342	102.73425
4	125.8981	102.3537582
3	184.8617	101.2209456
1 3	100.8122 100.8121	100.8121941 100.8121092
5	100.6121	97.84441715
5	97.22334	97.22333527
1	97.06928	97.06927798
5	96.99171	96.99171361
5	96.9594	96.95939941
1	95.75523	95.75522853
3 1	95.01355 92.941	95.01355457 92.9410003
5	91.74882	91.74881675
5	95.39458	91.4888329
4	122.5665	90.09638566
1	202.2467	88.80738894
3 5	100.9221 331.4551	88.01294491 86.29402815
3	85.49266	85.49265703
1	85.33919	85.33919419
5	85.12055	85.12054582
1	85.06833	85.0683314
1 1	171.3749	82.4809725 81.81136089
1 5	81.81136 112.2539	80.78959961
1	73.21917	73.21916623
1	194.276	72.84388929
3	72.70092	72.70091693
3	878.6367	72.25141716 69.31208605
5 4	128.3181 257.3732	64.68091431
1	64.21987	64.2198665
3	63.5267	63.52669687
4	185.2356	62.45138931
2	57.90864	57.90863869
1 1	56.47289 55.26667	56.47288921
3	55.1015	55.26666652 55.10150009
4	153.0842	54.83830516
3	55.09842	54.10063924
3	6359.744	52.6610277
3	51.083	51.08300018 50.65381761
5 3	141.3847 190.0212	50.65381761
4	190.0212	50.31922234
3	143.2929	49.98888821
4	143.2929	49.98888821
2	5539.9	49.23450046
2 5	1446.391 122.3757	48.86299981 48.66884375
1	238.6529	47.7469724
2	405.9763	44.50413873
3	43.56248	43.56248251
3	44.79372	43.26849977
1 3	260.3506 250.7923	42.4080001 41.72897212
J	200.7320	71.72037212

2	125.9161	39.92594443
1	63.69853	38.3563332
-		
2	628.4091	37.24152777
2	711.4465	36
2	1902.183	36
2	1042.04	36
2	832.9692	36
2	1537.67	36
2	6278.546	36
2	1500.126	36
2	3901.982	36
2	622.0649	36
2	181.6778	36
2	350.538	36
3	9766.968	36
3	8844.434	36
3	10952.17	36
3	1044.177	36
3	439.2357	36
3	824.5193	36
3	3739.668	36
3	2327.465	36
3		
	8965.517	36
3	6235.599	36
3	520.4791	36
3	800.5087	36
3	7627.648	36
3	6278.546	36
3	1500.126	36
3	3901.982	36
3	622.0649	36
3	181.6778	36
3	350.538	36
3	14729.39	36
4	171.0926	36
4	313.2659	36
4	247.251	36
4	176.8896	36
-		
4	408.7046	36
4	291.0939	36
5	175.4629	36
5	143.1811	36
5	139.888	36
5	142.6735	36
5	128.193	36
3	19.77027	
		19.77026903
3	14.28293	14.28293327



APPENDIX D

Preliminary Risk Evaluation

PRELIMINARY RISK EVALUATION FOR THE DAVIDSON-KENNEDY COMPANY SITE 1195 VICTORY DRIVE ATLANTA, FULTON COUNTY, GEORGIA HSI No. 10866

DOCUMENT PREPARED FOR:

DAVIDSON KENNEDY COMPANY 5273 REDFIELD ROAD DUNWOODY, GEORGIA 30338

DOCUMENT PRESENTED TO:

GEORGIA ENVIRONMENTAL PROTECTION DIVISION
HAZARDOUS WASTE MANAGEMENT BRANCH
2 MARTIN LUTHER KING, JR. DRIVE SE, SUITE 1054 EAST
ATLANTA, GEORGIA 30334-9000

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March 2015

PRELINIMARY RISK EVALUATION (PRE)

DAVIDSON-KENNEDY COMPANY SITE

The Davidson-Kennedy Site is located at 1195 Victory Drive in an urbanized area of Atlanta, Fulton County, Georgia. The approximate 9-acre Site is more fully described below under Step 1, but is generally a kudzu-dominated, successional shrubland formed from former industrial property with an intermittent headwater stream flowing toward the east in the northern portion of the Site. The stream enters an on-site culvert that conveys the surface water to an off-site, downstream discharge point. A few small stands of hardwood trees occur near the property boundaries. No on-site wetlands were identified on the U.S. Fish & Wildlife Service Wetlands Inventory Map. Sediment and surface water samples have been obtained from the stream, and soil and groundwater samples have been obtained elsewhere on the Site.

A Preliminary Risk Evaluation (PRE) has been initiated to evaluate whether ecological receptors may be adversely affected by exposure to lead in sediment and surface water (Peachtree Environmental, 2010). A PRE is the initial, screening-level component of an ecological risk assessment. The purpose of a PRE is to reach a conclusion as to whether or not contaminants from the Site pose a threat to ecological receptors (U.S. EPA, 1997). If there are sufficient data to determine that ecological threats are negligible, the ecological risk assessment is complete at this step with a finding of negligible ecological risk. If the data indicate that there is (or might be) a risk of adverse effects to ecological receptors, the ecological risk assessment process will continue.

SITE HISTORY

The Site consists of 9.17 acres of former industrial property located in an upland area of the Southern Outer Piedmont ecoregion of Georgia. The Site is situated on relatively flat land with topographic relief to the east-southeast. An intermittent headwater stream occupies a valley in the northern portion of the Site. After entering the property at the northern property boundary, the stream flows approximately 200 feet south into a subgrade pipe which eventually outfalls approximately 150 feet southeast of the property into an unnamed, southeast-flowing tributary to the South River. The unnamed tributary flows approximately 1.3 miles to its confluence with the South River. The South River is a 63.5-mile-long tributary of the Ocmulgee River, originating in the city of East Point and eventually flowing into Lake Jackson, where it joins the Yellow River and the Alcovy River to form the Ocmulgee River.

There are currently no active operations at the Site, and except for an unoccupied office building and some former building slabs, former structures have been demolished and removed from the property. The Site is now mostly covered with successional field overgrowth dominated by kudzu, with a few sparse stands of hardwood trees along the property boundaries.

The Site had been utilized for industrial purposes since at least 1925; Sanborn Fire Insurance maps and historical City Directories indicate metal fabricating businesses were present on

1

portions of the Site from 1925 to 1977. Since the late 1970s, the Site had been utilized as a rail car repair facility. Metals have been detected in soil, sediment, and surface water samples, volatile organic compounds (VOCs) have been detected in groundwater samples, and semi-volatile organic compounds (SVOCs) have been detected in soil and groundwater samples.

Topography of the surrounding area has been modified by urban development. The Site is bordered to the south by Victory Drive with industrial facilities beyond; Lanier Drive SW and residential properties to the east; industrial facilities to the north; and MARTA/Norfork Southern rail lines, Georgia Highway 29, and Fort MacPherson beyond to the west.

SITE VISIT

A site visit was conducted on February 19, 2014 and an ecological checklist was completed. The ecological checklist is included as **Attachment A**. Most of the Site is occupied by a kudzudominated, successional open shrubland formed on the former industrial property. Kudzu (*Pueraria montana*) is a vine native to China and introduced to Japan and, from Japan, into the United States. An invasive species, it has formed extensive populations in the Southeastern United States. Kudzu primarily invades disturbed landscapes ranging from road rights-of-way to old fields. Relatively undisturbed natural drainage areas can also be invaded by kudzu, and kudzu may interfere with normal plant succession in abandoned fields (Simberloff and others, 1997).

As indicated on the ecological checklist, the stream has a variable substrate, including silt, cobbles, muck, and debris. The stream is generally two to three feet wide, and up to 12 inches deep. No vertebrate or invertebrate fauna were observed in the stream; the only flora observed was filamentous algae, single-cell organisms that form long visible chains, threads, or filaments that intertwine, forming a mat that resembles wet wool. Filamentous algae starts growing along the bottom of shallow water bodies or attached to structures in the water such as rocks. Often filamentous algae float to the surface forming large mats, which are commonly referred to as "pond scums". There are many species of filamentous algae and often more than one species may be present at the same time. Although filamentous algae has no known direct food value to wildlife (Texas A&M AgriLife Extension Service, 2014), submerged portions of all aquatic plants may provide habitats for invertebrates (i.e. bugs, worms, etc.). These invertebrates in turn may be used as food by fish and other wildlife species (e.g., amphibians, reptiles, birds, etc.). However, no vertebrate or invertebrate fauna were observed in the stream.

The Site is located in an urban area of Atlanta. Residential and industrial areas associated with the City of Atlanta are located adjacent to the Site.

PROBLEM FORMULATION

Peachtree personnel performed sediment and surface water sampling within the on-site stream on December 1, 2014. The samples were collected in general accordance with the U.S. Environmental Protection Agency (EPA) Region 4 Science and Ecosystem Support Division (SESD) Operating Procedures for Surface Water Sampling, dated February 28, 2013, and Sediment Sampling, dated August 21, 2014. The sample locations are depicted on **Figure 1**.

The samples were collected and placed into clean laboratory-provided containers and immediately placed on ice and transported to Analytical Environmental Services, Inc. (AES) in Atlanta, Georgia under proper chain of custody. The sampling parameters for the surface water and sediment samples were determined based on previous sampling conducted at the Site. The samples were analyzed for semi-volatile organic compounds (SVOCs) by EPA Method 8270D and RCRA Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) by EPA Methods 7470C and 6010C. In addition, the surface water samples were also analyzed for copper and zinc by EPA Method 6010C.

Based on the laboratory analytical results for the surface water and sediment samples collected at the Site, select metals and/or SVOCs were detected at concentrations above the EPA Region 4 Screening Values. The analytical results for the surface water samples are summarized in **Table 1**, while the analytical results for the sediment samples are summarized in **Table 2**.

A Conceptual Site Model showing contaminant migration pathways is provided as Figure 1. Releases of metals likely occurred from aerial deposition and industrial operations from the surrounding area and from historical on-site metal-fabricating operations, impacting surface soil. From the surface soil, the metals may have percolated/infiltrated through subsurface soils to groundwater. The metals detected in sediment and surface water may have migrated to the stream via erosion and runoff of surface soil, aerial deposition, or migration groundwater flow and subsequent discharge to surface water.

However, although there are transport mechanisms and exposure routes, there are no aquatic receptors in the stream other than filamentous algae (pond scum); therefore, there is no complete pathway of exposure. Further, the corrective actions already completed and those being proposed for the Site, primarily excavation of impacted soil, will reduce or eliminate the metals being transported to the stream by erosion and runoff, as well as reduce the percolation and infiltration of metals to groundwater and subsequent discharge to surface water.

In addition, the company representative, Mr. Joe Rubin, and former Peachtree owner Chuck MacPherson, both familiar with this site for more than five years, have stated that the stream actually dries up at certain times time of the year and should be considered an intermittent stream. Even so, Peachtree has performed certain elements of a risk evaluation, as outlined above.

CONCLUSIONS

Peachtree has not observed any receptors (benthic macroinvertebrates, fish, birds, mammals, etc.) in the on-site intermittent stream, and the only aquatic vegetation observed in the stream has been filamentous algae. In addition, no threatened and/or endangered plant or animal species have been identified at the Site. Therefore, despite the screening value exceedances, based on the absence of observed receptors and the intermittent nature of the on-site stream, there is adequate information to conclude that ecological risks are negligible and therefore there is no need for remediation on the basis of ecological risk. Further, any remediation activities (e.g., sediment removal) would likely cause undue harm to the any potential habitats associated with the on-site stream.

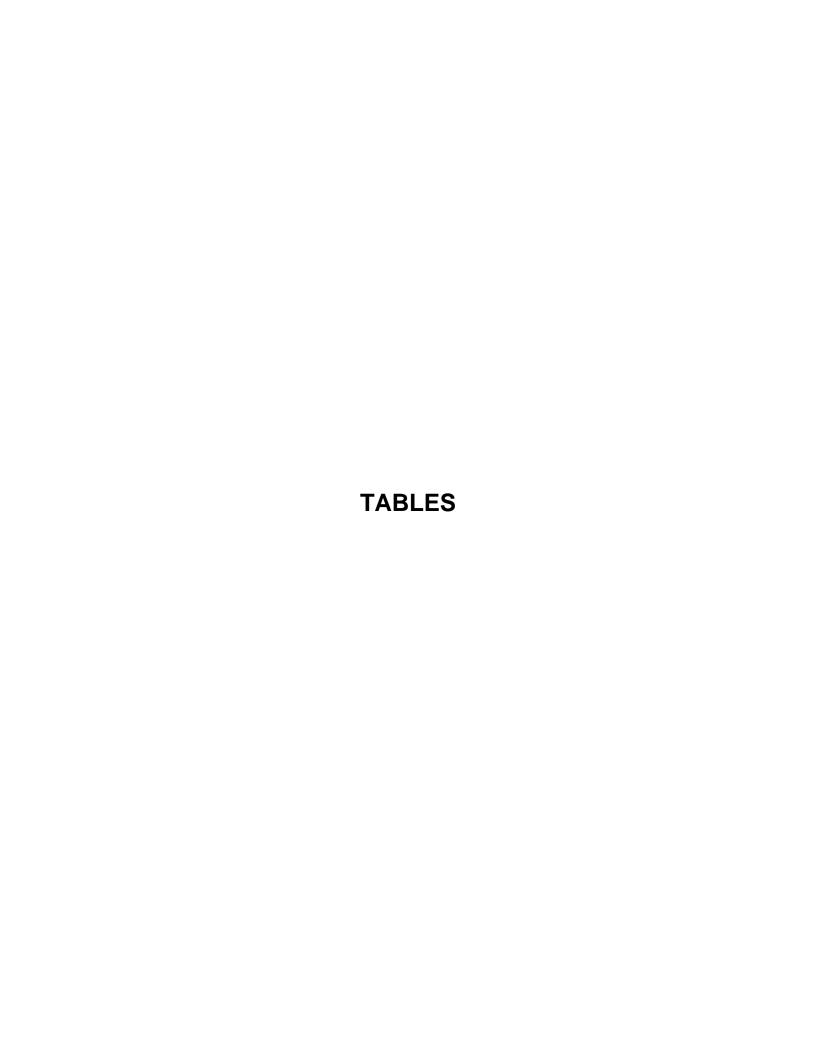
REFERENCES

Peachtree Environmental, 2010, Voluntary Remedial Program Application for the Davidson-Kennedy Company Facility, 1195 Victory Drive, Atlanta, Fulton County, Georgia, HSI # 10866; Peachtree Environmental, May 2010

Simberloff, Scmitz, and Brown, 1997, Strangers in Paradise, Impact and Management of Nonindigenous Species in Florida; Island Press, Washington, DC

Texas A&M AgriLife Extension Service, 2014, *AquaPlant, A Pond Manager Diagnostics Tool;* http://aquaplant.tamu.edu/plant-identification/alphabetical-index/filamentous-algae/; accessed February 21, 2014

U.S. EPA, 1997, *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments, Interim Final*; Solid Waste and Emergency Response, EPA-540-R-97-006, OSWER 9285.7-25



Davidson-Kennedy Company Facility 1195 Victory Drive, Atlanta, Fulton County, Georgia HSI No. 10866

TABLE 1 Summary of Surface Water Analytical Results

		EPA Region 4		Sample Locations	5
Compound	Sample Date	Screening Values	DK-3	DK-4	DK-5
			μς	ı/L	
Barium	12/01/14	N/A	100	77.7	73.3
Copper	Copper 12/01/14		BRL	11.7	BRL
Zinc 12/01/14		58.91	BRL	75.2	57.2

NOTES:

Bolded value indicates concentration is above EPA Region 4 Screening Value

μg/L - micrograms per liter

N/A - screening value not available

BRL - below laboratory reporting limit

For compounds that were BRL in all samples, the individual compounds are not shown.

Davidson-Kennedy Company Facility 1195 Victory Drive, Atlanta, Fulton County, Georgia HSI No. 10866

TABLE 2
Summary of Sediment Analytical Results

		EPA Region 4	Sample Locations			
Compound	Sample Date	Screening Values	DK-3	DK-4	DK-5	
			mg	/kg		
		Metals	3			
Barium	12/01/14	N/A	34.5	12.4	41.0	
Chromium	12/01/14	52.3	16.6	12.0	19.0	
Lead	12/01/14	30.2	16.3	10.3	36.2	
		SVOC	S			
Benz(a)anthracene	12/01/14	0.33	BRL	BRL	0.57	
Benzo(a)pyrene	12/01/14	0.33	BRL	BRL	0.49	
Benzo(b)fluoranthene	12/01/14	N/A	BRL	BRL	0.70	
Chrysene	12/01/14	0.33	BRL	BRL	0.67	
Fluoranthene	12/01/14	0.33	0.57	BRL	1.7	
Phenanthrene	12/01/14	0.33	BRL	BRL	0.82	
Pyrene	12/01/14	0.33	0.41	BRL	1.3	

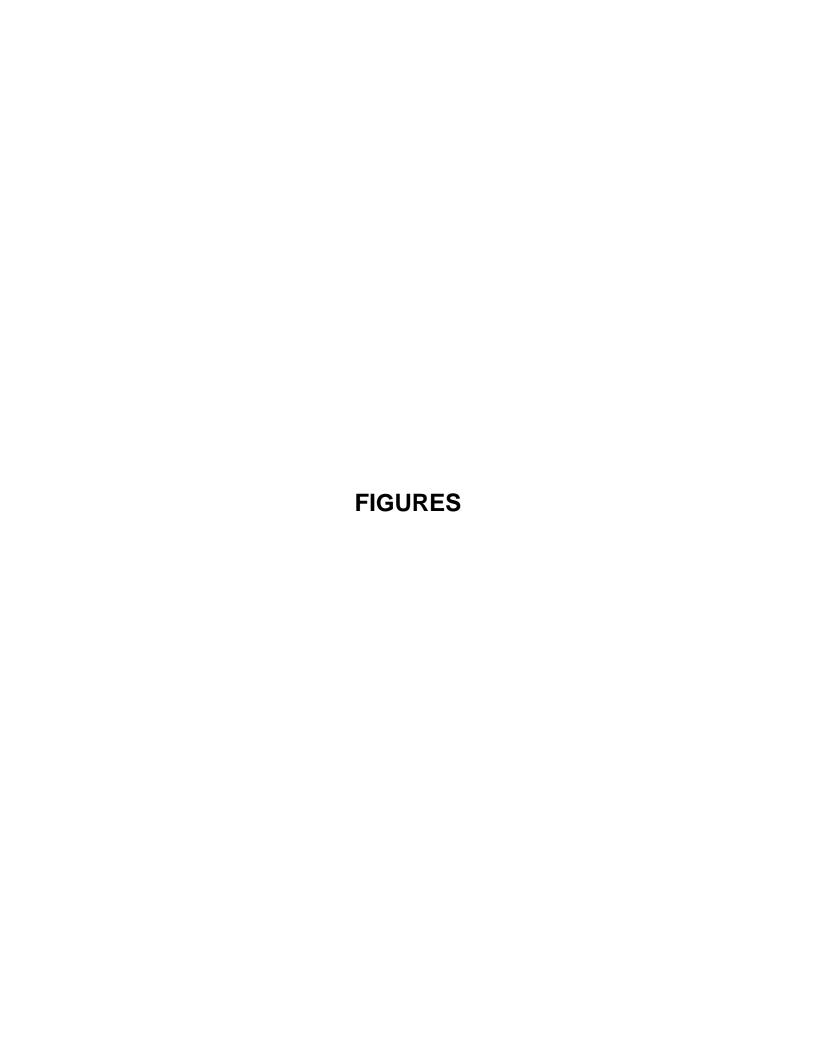
NOTES:

Bolded value indicates concentration is above EPA Region 4 Screening Value mg/kg - milligrams per kilogram

N/A - screening value not available

BRL - below laboratory reporting limit

For compounds that were BRL in all samples, the individual compounds are not shown.



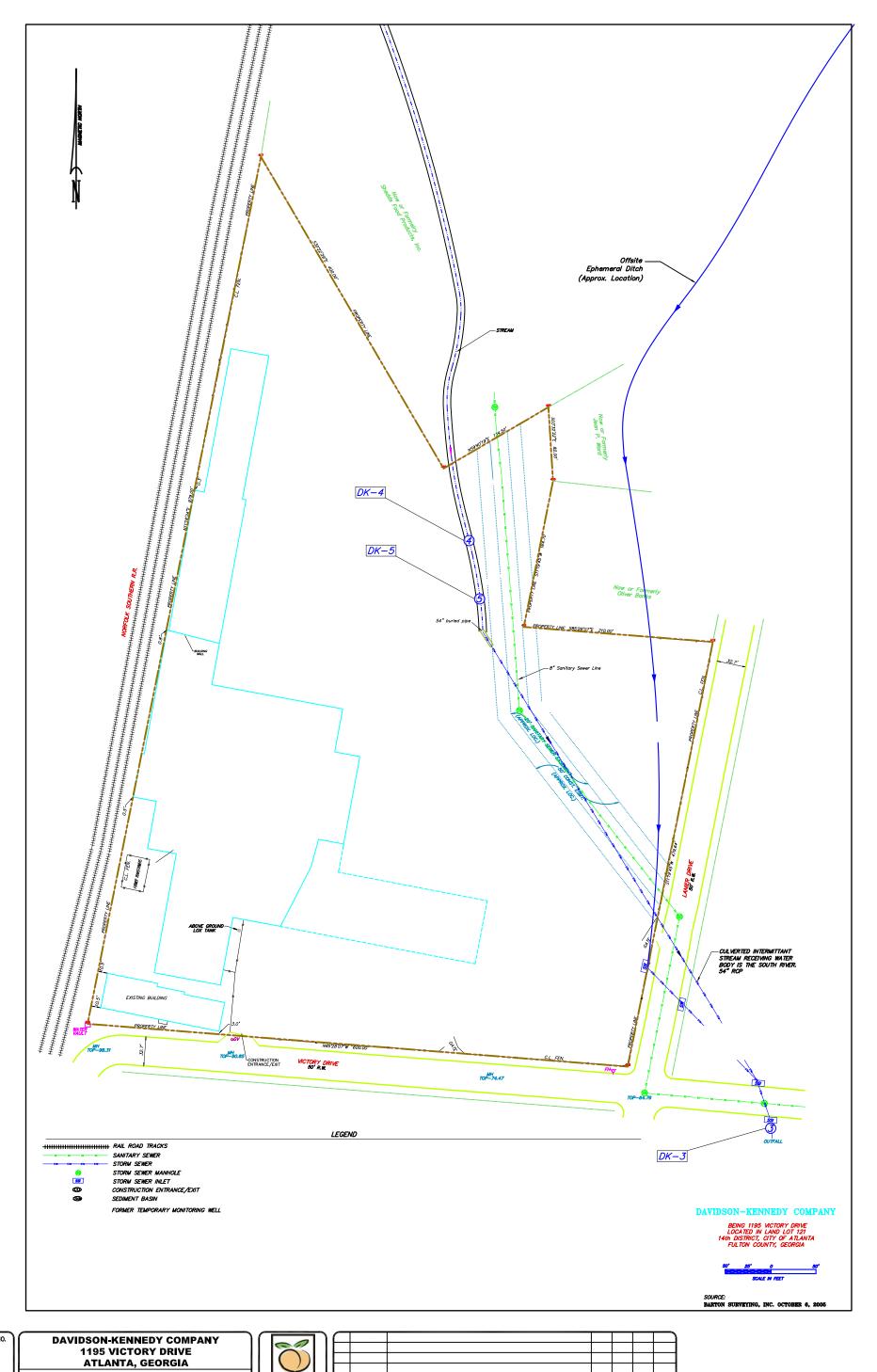


FIGURE NO. 1 3185

SURFACE WATER AND SEDIMENT SAMPLE LOCATION PLAN



١	\subset						
ı							
ı							
ı							
ı	REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
ı	DATE		DWN BY KEMRON CHK BY JPM DES RY BDW APP RY JPM				
,	<u> </u>	/23/14	DES BY BDW APP BY JPM				



Checklist for Ecological Assessment/Sampling

I. SITE DESCRIPTION

Ι.	Site Name: Davidson-Kennedy Company Facility Location: 1195 Victory Drive
	County: Fulton City: Atlanta State: Georgia
2.	Latitude: 33° 42' 27'.41" Longitude: 84° 25' 35.39"
3.	What is the approximate area of the site? 9.17 acres
1.	Is this the first site visit? yes □ no If no, attach trip report of previous site visit(s), if available. Date(s) of previous site visit(s):
5.	Please attach to the checklist USGS topographic map(s) of the site, if available. See VRP Application (Peachtree Environmental, 2010)
5 .	Are aerial or other site photographs available? yes no If yes, please attach any available photo(s) to the site map at the conclusion of this section.

7.	The land use on the site is:	The area surrounding the site is: 0.25 mile radius
	% Urban	% Urban
	% Rural	% Rural
	% Residential	<u>50</u> % Residential
	_100% Industrial (⊠ light □ heavy)	25 % Industrial (□ light □ heavy)
	% Agricultural	% Agricultural
	(Crops:)	(Crops:)
	% Recreational	% Recreational
	(Describe; note if it is a park, etc.)	(Describe; note if it is a park, etc.)
	% Undisturbed	% Undisturbed
	% Other	25 % Other Institutional (Ft. MacPherson)
8.	Has any movement of soil taken place at the site? disturbance:	$lacktriangle$ yes \Box no. If yes, please identify the most likely cause of this
	Agricultural Use Heavy Equ	uipment Mining
	Natural Events Erosion	XOther
	Please describe:	

Historical grading of the site has occurred to level the ground surface for former industrial buildings. In addition, a total of 28,106.62 tons of soil was excavated and shipped off-site for disposal.

9.	Do any potentially sensitive environmental areas exist adjacent to or in proximity to the site, e.g., Federal and State parks, National and State monuments, wetlands, prairie potholes? <i>Remember, flood plains and wetlands are not always obvious; do not answer "no" without confirming information.</i>
	No; the site is not listed on the National Wetland Inventory maps, and the site is outside of the 100- and 500-year flood zones shown in FEMA flood insurance map 13121C0358F.
	Please provide the source(s) of information used to identify these sensitive areas, and indicate their general location on the site map.
10.	What type of facility is located at the site?
	☐ Chemical ☐ Manufacturing ☐ Mixing ☐ Waste disposal
	Other (specify) Metal fabricating (inactive)
11.	What are the suspected contaminants of concern at the site? If known, what are the maximum concentration levels?
	Lead in soil - max. concentration 28,600 mg/kg
12.	Check any potential routes of off-site migration of contaminants observed at the site:
	☐ Swales ☐ Depressions ☐ Drainage ditches
	\square Runoff \square Windblown particulates \square Vehicular traffic
	☐ Other (specify)
13.	If known, what is the approximate depth to the water table? 20 feet
14.	Is the direction of surface runoff apparent from site observations? \mathbf{X} yes \square no If yes, to which of the following does the surface runoff discharge? Indicate all that apply.
	lacktriangleq Surface water $lacktriangleq$ Groundwater $lacktriangleq$ Sewer $lacktriangleq$ Collection impoundment
15.	Is there a navigable waterbody or tributary to a navigable waterbody? ☐ yes ☒ no

16.	Is there a waterbody anywhere on or in the vicinity of the site? If yes, also complete Section III: Aquatic Habitat Checklist Non-Flowing Systems and/or Section IV: Aquatic Habitat Checklist Flowing Systems.
	■ yes (approx. distance on-site no no no no no no no no no n
17.	Is there evidence of flooding? ☐ yes 🗷 no Wetlands and flood plains are not always obvious; do not answer "no' without confirming information. If yes, complete Section V: Wetland Habitat Checklist.
18.	If a field guide was used to aid any of the identifications, please provide a reference. Also, estimate the time spent identifying fauna. [Use a blank sheet if additional space is needed for text.]
19.	Are any threatened and/or endangered species (plant or animal) known to inhabit the area of the site? \square yes \square no <i>If yes, you are required to verify this information with the U.S. Fish and Wildlife Service.</i> If species' identities are known, please list them next.
20.	Record weather conditions at the time this checklist was prepared:
	DATE: 2/19/2014
	Temperature (°C/F)Normal daily high temperature
	Calm Wind (direction/speed) None Precipitation (rain, snow)
	Cloudy Cloud cover

IA. SUMMARY OF OBSERVATIONS AND SITE SETTING

Most of the Site is occupied by a kudzu-dominated, successional open shrubland formed on the former industrial property.

The on-site stream has a variable substrate, including silt, cobbles, muck, and debris, and is generally two to three feet wide, and up to 12 inches deep. No vertebrate or invertebrate fauna were observed in the creek; the only flora observed in the stream was filamentous algae. Neither micro and macro invertebrates nor fish and wildlife species were observed at the Site.

The Site is located in an urban area of Atlanta. Residential and industrial areas associated with the City of Atlanta are located adjacent to the Site. The on-site stream does not support aquatic wildlife from the upstream property boundary to the point where it enters a subgrade pipe.

Completed by_	Steven W. Hart	Affiliation_	Peachtree Environmental
Additional Pre	parers		
Site Manager_	Joseph R. Rubin, Manager, Davidson-Kennedy Company		
Date 2/19/2	2014		

II. TERRESTRIAL HABITAT CHECKLIST

IIA. WOODED

1.	Are there any wooded areas at the site? \boxtimes yes \square no If no, go to Section IIB: Shrub/Scrub.
2.	What percentage or area of the site is wooded? (<u>5</u> % <u>0.5</u> acres). Indicate the wooded area on the site map which is attached to a copy of this checklist. Please identify what information was used to determine the wooded area of the site.
3.	What is the dominant type of vegetation in the wooded area? (Circle one: Evergreen/Deciduous Mixed) Provide a photograph, if available.
	Dominant plant, if known:
4.	What is the predominant size of the trees at the site? Use diameter at breast height.
	\square 0-6 in. \square 6-12 in. \square > 12 in.
5.	Specify type of understory present, if known. Provide a photograph, if available.
m	CHIDLID/CCDLID
IIB	SHRUB/SCRUB
IIB	SHRUB/SCRUB Is shrub/scrub vegetation present at the site? ▼ yes □ no If no, go to Section IIC: Open Field.
1.	Is shrub/scrub vegetation present at the site? ■ yes □ no If no, go to Section IIC: Open Field. What percentage of the site is covered by scrub/shrub vegetation? (95%8.67 acres). Indicate the areas of
1.	Is shrub/scrub vegetation present at the site? ■ yes □ no If no, go to Section IIC: Open Field. What percentage of the site is covered by scrub/shrub vegetation? (95%8.67 acres). Indicate the areas of shrub/scrub on the site map. Please identify what information was used to determine this area.
1.	Is shrub/scrub vegetation present at the site? ■ yes □ no If no, go to Section IIC: Open Field. What percentage of the site is covered by scrub/shrub vegetation? (95%8.67 acres). Indicate the areas of shrub/scrub on the site map. Please identify what information was used to determine this area.
1.	Is shrub/scrub vegetation present at the site? ■ yes □ no If no, go to Section IIC: Open Field. What percentage of the site is covered by scrub/shrub vegetation? (95%8.67 acres). Indicate the areas of shrub/scrub on the site map. Please identify what information was used to determine this area. Nearly all of the Site is covered with kudzu and low shrub. What is the dominant type of scrub/shrub vegetation, if known? Provide a photograph, if available.

5.	Based on site observations, how dense is the scrub/shrub vegetation?					
	▼ Dense □ F	Patchy	□ Sparse			
IIC	C. OPEN FIELD					
1.	Are there open (bare, barre indicate the type below:	en) field areas _l	present at the site	e? □ yes 🛚	no If yes, please	
	☐ Prairie/plains ☐ S	Savannah	☐ Old field	\square Other	(specify)	
2.	What percentage of the site	e is open field?	"(%	_acres). In	dicate the open fie	elds on the site map.
3.	What is/are the dominant p	olant(s)? Provid	le a photograph,	if available		
4.	What is the approximate av	verage height o	of the dominant p	olant?		_
5.	Describe the vegetation cov	ver: Dense	e □ Spa	rse	☐ Patchy	
IID	D. MISCELLANEOUS	S				
1.	Are other types of terrestria If yes, identify and describe		ent at the site, of	her than wo	oods, scrub/shrub,	and open field? \square yes \mathbf{k} no
2.	Describe the terrestrial mis	scellaneous hat	oitat(s) and identi	fy these are	ea(s) on the site m	ap.

3.	What observations, if any, were made at the site regarding the presence and/or absence of insects, fish, birds, mammals, etc.?
4.	Review the questions in Section I to determine if any additional habitat checklists should be completed for this site.

III. AQUATIC HABITAT CHECKLIST -- NON-FLOWING SYSTEMS (Not Applicable)

Aquatic systems are often associated with wetland habitats. Please refer to Section V, Wetland Habitat Note: Checklist. 1. What type of open-water, non-flowing system is present at the site? ☐ Natural (pond, lake) ☐ Artificially created (lagoon, reservoir, canal, impoundment) 2. If known, what is the name(s) of the waterbody(ies) on or adjacent to the site? 3. If a waterbody is present, what are its known uses (e.g.: recreation, navigation, etc.)? What is the approximate size of the waterbody(ies)? _____ acre(s). 5. Is any aquatic vegetation present? \square yes \square no If yes, please identify the type of vegetation present if known. ☐ Emergent ☐ Submergent ☐ Floating 6. If known, what is the depth of the water? 7. What is the general composition of the substrate? Check all that apply. ☐ Sand (coarse) □ Bedrock ☐ Muck (fine/black) ☐ Silt (fine) \square Boulder (>10 in.) ☐ Debris □ Cobble (2.5-10 in.) \square Marl (shells) \square Detritus \square Gravel (0.1-2.5 in.) ☐ Clay (slick) ☐ Concrete ☐ Other (specify)______ 8. What is the source of water in the waterbody? ☐ Other (specify)_____ ☐ River/Stream/Creek ☐ Groundwater ☐ Industrial discharge ☐ Surface runoff

9.	Is there a discharge from t discharge and its path.	he site to the waterbo	ody? □ yes □ no	If yes, please describe this
10.	Is there a discharge from t below the environment int			d the information is available, identify from the list
	☐ River/Stream/Creek	\Box onsite	\Box offsite	Distance
	☐ Groundwater	\Box onsite	\Box offsite	
	☐ Wetland	\Box onsite	\Box offsite	Distance
	☐ Impoundment	\Box onsite	\Box offsite	
11.	□ Impoundment □ onsite □ offsite 1. Identify any field measurements and observations of water quality that were made. For those parameters for which data were collected provide the measurement and the units of measure below:			
12.	Describe observed color a	nd area of coloration	1.	
13.	Mark the open-water, non-	-flowing system on t	he site map attache	ed to this checklist.

14.	. What observations, if any, were made at the waterbody regarding the presence and/or absence of benthic macroinvertebrates, fish, birds, mammals, etc.?		

IV. AQUATIC HABITAT CHECKLIST -- FLOWING SYSTEMS

Note:

	Checklist.			
1.	What type(s) of flowing water system(s) is (are) present at the site?			
	☐ River ☐ Dry wash ☐ Artificially created (ditch, etc.)	▼ Intermittent Stream	☐ Creek ☐ Brook ☐ Channeling	
2.	If known, what is the name of	the waterbody? Unnamed	<u></u>	
3.	For natural systems, are there any indicators of physical alteration (e.g., channeling, debris, etc.)? yes no If yes, please describe indicators that were observed.			
	200 feet south of the upstream	am property boundary, the	stream enters an on-site culvert and is conveyed within the culvert to	
	beyond the downstream pro	perty boundary.		
4.	What is the general composition of the substrate? Check all that apply.			
	□ Bedrock	☐ Sand (coarse)	Muck (fine/black)	
	□ Boulder (>10 in.)	■ Silt (fine)	▼ Debris	
	▼ Cobble (2.5-10 in.)	☐ Marl (shells)	□ Detritus	
	☐ Gravel (0.1-2.5 in.)	☐ Clay (slick)	□ Concrete	
	☐ Other (specify)			
5.	What is the condition of the ba			
6.	Is the system influenced by tid Small stream many miles re	•	ormation was used to make this determination? y-influenced water body.	

and

Aquatic systems are often associated with wetland habitats. Please refer to Section V, Wetland Habitat

7. Is the flow intermittent? \blacksquare yes \square no If yes, please note the information the		f ? \mathbf{X} yes \Box no If yes, please note the information that was used in making this determination.	
	The stream has bee	n observed to be dry during the summer months.	
8.	Is there a discharge from Overland (sheet) flo	om the site to the waterbody? \square yes \square no If yes, please describe the discharge and its path.	
9.	Is there a discharge from the waterbody? \blacksquare yes \square no If yes, and the information is available, please identify the waterbody discharges to and whether the discharge is on site or off site.		
	After entering on-s	site culvert, the stream discharges to an unnamed tributary to the South River off site.	
10.	Identify any field measurements and observations of water quality that were made. For those parameters for which data were collected, provide the measurement and the units of measure in the appropriate space below:		
		Width (ft.)	
	_1	Depth (ft.)	
		Velocity (specify units):	
		Temperature (depth of the water at which the reading was taken)	
		pH	
		Dissolved oxygen	
		Salinity	
		Turbidity (clear, slightly turbid, turbid, opaque) (Secchi disk depth)	
		Other (specify)	

11.	Describe observed color and area of coloration.
	Water is creek appeared turbid and muddy along some stretches, clearer in others.
12.	Is any aquatic vegetation present? ■ yes □ no If yes, please identify the type of vegetation present, if known. Filamentous algae
	☐ Emergent ☐ Submergent ☐ Floating
13.	Mark the flowing water system on the attached site map. See VRP Application (Peachtree Environmental, 2010)
14.	What observations were made at the waterbody regarding the presence and/or absence of benthic macroinvertebrates, fish, birds, mammals, etc.?
	No benthic invertebrates or fish were observed in the stream. No birds or mammals were observed at or near the stream.

V. WETLAND HABITAT CHECKLIST

1.	Based on observations and/or av □ yes 🕱 no	vailable information, are	e designated or known wetlands definitely present at the site?
	Please note the sources of obser Inventory, Federal or State Ager		n used (e.g., USGS Topographic Maps, National Wetland etermination.
	National Wetland Inventory N	<i>l</i> laps	
2.	dark, wet soils; mud cracks; deb	oris line; water marks), a	y, in a floodplain) and site conditions (e.g., standing water; are wetland habitats suspected? wetland habitat identification checklist.
3.	What type(s) of vegetation are p	oresent in the wetland?	
	☐ Submergent☐ Scrub/Shrub	□ Emergent□ Wooded	
	☐ Other (specify)		
4.	Provide a general description of photograph of the known or sus		in and around the wetland (height, color, etc.). Provide a lable.
5.	What is the approximate area of	f the water (sq. ft.)?	ter: Fresh Brackish quatic Habitat Non-Flowing Systems.
6.	Is there evidence of flooding at	the site? What observat	ions were noted? No evidence of flooding was observed.
	☐ Buttressing	☐ Water marks	☐ Mud cracks
	☐ Debris line	☐ Other (describe bel	ow)

7.	If known, what is the source of the water in the wetland?							
	☐ Stream/River/Creek/Lake/Pond	☐ Groundwater						
	\Box Flooding	☐ Surface Runoff						
8.	Is there a discharge from the site to a known or su	spected wetland? □ yes ⊠ no If yes, please describe.						
0.	is there a discharge from the site to a known or su	spected wettaild: \(\to\) yes \(\text{N}\) no 11 yes, please describe.						
9.	Is there a discharge from the wetland? \square yes \square no	. If yes, to what waterbody is discharge released?						
	\square Surface Stream/River \square Groundwater	☐ Lake/Pond ☐ Marine						
10.	response.	ance of the soil in the wetland area. Circle or write in the best						
	Color (blue/gray, brown, black, mottled)							
	Water content (dry, wet, saturated/unsaturated) _							
11.	Mark the observed wetland area(s) on the attached	l site map.						



ANALYTICAL ENVIRONMENTAL SERVICES, INC.



January 07, 2015

John Martiniere
Peachtree Environmental
3000 Northwoods Parkway, Suite 105
Norcross GA 30071

TEL: (770) 449-6100 FAX: (770) 513-9848

RE: Davidson Kennedy

Dear John Martiniere: Order No: 1412037

Analytical Environmental Services, Inc. received 6 samples on December 1, 2014 4:35 pm for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.

AES' certifications are as follows:

-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/14-06/30/15.

-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Dorothy deBruyn Project Manager

Revision 1/7/2015

ANALYTICAL ENVIRONMENTAL SERVICES, INC

3080 Presidential Drive, Atlanta GA 30340-3704

AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY	
3	
J	Date

Work Order: 1412037
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COMPANY: Peachtree Environmental	ADDRESS:	Johnson	ods	Pku			Ž		A	NALY	SIS R	EQUE	STED			Vi	sit our website	
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1 DK-4		15:31	/		>E_	~		4	\perp		\bot							3
5 DK-5		14:43	~		≤W_	4	\checkmark	_	_	\bot	\bot		\sqcup			inde	ide Zn. Cu	3
6 DK-5	1	14:53	/		SE_			4	_		\perp	4_	\sqcup		\sqcup			3
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Client: Peachtree Environmental
Project: Davidson Kennedy

Project: Davidson Kennedy
Lab ID: 1412037

Case Narrative

Date:

7-Jan-15

Semi Volatile Organic Analysis by Method 8270D:

Sample 1412037-002A was extracted outside holding time of 14 days. Analysis was requested by client after holding time had expired.

Client: Peachtree Environmental Client Sample ID: DK-3

Project Name: Davidson Kennedy Collection Date: 12/1/2014 1:08:00 PM

Lab ID:1412037-001Matrix:Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL-SEMIVOLATILE ORGANICS	SW8270D			(SV	V3510C)			
1,1'-Biphenyl	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
2,4,5-Trichlorophenol	BRL	25		ug/L	199739	1	12/02/2014 13:51	YH
2,4,6-Trichlorophenol	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
2,4-Dichlorophenol	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
2,4-Dimethylphenol	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
2,4-Dinitrophenol	BRL	25		ug/L	199739	1	12/02/2014 13:51	YH
2,4-Dinitrotoluene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
2,6-Dinitrotoluene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
2-Chloronaphthalene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
2-Chlorophenol	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
2-Methylnaphthalene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
2-Methylphenol	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
2-Nitroaniline	BRL	25		ug/L	199739	1	12/02/2014 13:51	YH
2-Nitrophenol	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
3,3'-Dichlorobenzidine	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
3-Nitroaniline	BRL	25		ug/L	199739	1	12/02/2014 13:51	YH
4,6-Dinitro-2-methylphenol	BRL	25		ug/L	199739	1	12/02/2014 13:51	YH
4-Bromophenyl phenyl ether	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
4-Chloro-3-methylphenol	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
4-Chloroaniline	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
4-Chlorophenyl phenyl ether	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
4-Methylphenol	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
4-Nitroaniline	BRL	25		ug/L	199739	1	12/02/2014 13:51	YH
4-Nitrophenol	BRL	25		ug/L	199739	1	12/02/2014 13:51	YH
Acenaphthene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Acenaphthylene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Acetophenone	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Anthracene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Atrazine	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Benz(a)anthracene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Benzaldehyde	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Benzo(a)pyrene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Benzo(b)fluoranthene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Benzo(g,h,i)perylene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Benzo(k)fluoranthene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Bis(2-chloroethoxy)methane	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Bis(2-chloroethyl)ether	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Bis(2-chloroisopropyl)ether	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Bis(2-ethylhexyl)phthalate	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Butyl benzyl phthalate	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Caprolactam	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH

Qualifiers:

BRL Below reporting limit

Date:

7-Jan-15

Narr See case narrative

NC Not confirmed

Less than Result value

^{*} Value exceeds maximum contaminant level

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Estimated value detected below Reporting Limit

Client: Peachtree Environmental Client Sample ID: DK-3

Project Name:Davidson KennedyCollection Date:12/1/2014 1:08:00 PMLab ID:1412037-001Matrix:Surface Water

Date:

7-Jan-15

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL-SEMIVOLATILE ORGANICS	SW8270D			(SV	V3510C)			
Carbazole	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Chrysene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Di-n-butyl phthalate	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Di-n-octyl phthalate	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Dibenz(a,h)anthracene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Dibenzofuran	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Diethyl phthalate	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Dimethyl phthalate	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Fluoranthene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Fluorene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Hexachlorobenzene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Hexachlorobutadiene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Hexachlorocyclopentadiene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Hexachloroethane	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Indeno(1,2,3-cd)pyrene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Isophorone	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
N-Nitrosodi-n-propylamine	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
N-Nitrosodiphenylamine	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Naphthalene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Nitrobenzene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Pentachlorophenol	BRL	25		ug/L	199739	1	12/02/2014 13:51	YH
Phenanthrene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Phenol	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Pyrene	BRL	10		ug/L	199739	1	12/02/2014 13:51	YH
Surr: 2,4,6-Tribromophenol	110	52-133		%REC	199739	1	12/02/2014 13:51	YH
Surr: 2-Fluorobiphenyl	90.4	50-121		%REC	199739	1	12/02/2014 13:51	YH
Surr: 2-Fluorophenol	60.8	27.5-120		%REC	199739	1	12/02/2014 13:51	YH
Surr: 4-Terphenyl-d14	90	46.3-137		%REC	199739	1	12/02/2014 13:51	YH
Surr: Nitrobenzene-d5	83	41.2-121		%REC	199739	1	12/02/2014 13:51	YH
Surr: Phenol-d5	45	14.3-120		%REC	199739	1	12/02/2014 13:51	YH
Mercury, Total SW7470A				(SV	V7470A)			
Mercury	BRL	0.200		ug/L	199936	1	12/02/2014 14:36	JG
METALS, TOTAL SW6010C				(SV	V3010A)			
Arsenic	BRL	50.0		ug/L	199958	1	12/02/2014 18:55	JL
Barium	100	20.0		ug/L	199958	1	12/02/2014 18:55	JL
Cadmium	BRL	5.00		ug/L	199958	1	12/02/2014 18:55	JL
Chromium	BRL	10.0		ug/L	199958	1	12/02/2014 18:55	JL
Copper	BRL	10.0		ug/L	199958	1	12/02/2014 18:55	JL
Lead	BRL	10.0		ug/L	199958	1	12/02/2014 18:55	JL

Qualifiers:

BRL Below reporting limit

Narr See case narrative
NC Not confirmed

Less than Result value

^{*} Value exceeds maximum contaminant level

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Client: Peachtree Environmental Client Sample ID: DK-3

Project Name: Davidson Kennedy Collection Date: 12/1/2014 1:08:00 PM

Lab ID:1412037-001Matrix:Surface Water

Analyses	Result	Reporting Limit Qu	al Units	BatchID	Dilution Factor	Date Analyzed	Analyst					
METALS, TOTAL SW6010C		(SW3010A)										
Selenium	BRL	20.0	ug/L	199958	1	12/02/2014 18:55	JL					
Silver	BRL	10.0	ug/L	199958	1	12/02/2014 18:55	JL					
Zinc	BRL	20.0	ug/L	199958	1	12/02/2014 18:55	JL					

Date:

7-Jan-15

Qualifiers: * Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative
NC Not confirmed

< Less than Result value

Client: Peachtree Environmental Client Sample ID: DK-3

Project Name: Davidson Kennedy Collection Date: 12/1/2014 1:18:00 PM

Date:

7-Jan-15

Lab ID: 1412037-002 Matrix: Sediment

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analys
TOTAL MERCURY SW7471B				(SW	7471B)			
Mercury	BRL	0.118		mg/Kg-dry	199987	1	12/04/2014 09:34	JG
TCL-SEMIVOLATILE ORGANICS	SW8270D			(SW	3550C)			
1,1'-Biphenyl	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
2,4,5-Trichlorophenol	BRL	2.0	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
2,4,6-Trichlorophenol	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
2,4-Dichlorophenol	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
2,4-Dimethylphenol	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
2,4-Dinitrophenol	BRL	2.0	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
2,4-Dinitrotoluene	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
2,6-Dinitrotoluene	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
2-Chloronaphthalene	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
2-Chlorophenol	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
2-Methylnaphthalene	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
2-Methylphenol	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
2-Nitroaniline	BRL	2.0	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
2-Nitrophenol	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
3,3'-Dichlorobenzidine	BRL	0.79	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
3-Nitroaniline	BRL	2.0	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
4,6-Dinitro-2-methylphenol	BRL	2.0	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
4-Bromophenyl phenyl ether	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
4-Chloro-3-methylphenol	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
4-Chloroaniline	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
4-Chlorophenyl phenyl ether	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
4-Methylphenol	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
4-Nitroaniline	BRL	2.0	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
4-Nitrophenol	BRL	2.0	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Acenaphthene	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Acenaphthylene	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Acetophenone	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Anthracene	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Atrazine	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Benz(a)anthracene	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Benzaldehyde	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Benzo(a)pyrene	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Benzo(b)fluoranthene	BRL	0.39	Н	mg/Kg-dry		1	12/24/2014 19:00	EI
Benzo(g,h,i)perylene	BRL	0.39	Н	mg/Kg-dry		1	12/24/2014 19:00	EI
Benzo(k)fluoranthene	BRL	0.39	Н	mg/Kg-dry		1	12/24/2014 19:00	EI
Bis(2-chloroethoxy)methane	BRL	0.39	Н	mg/Kg-dry		1	12/24/2014 19:00	EI
Bis(2-chloroethyl)ether	BRL	0.39	Н	mg/Kg-dry		1	12/24/2014 19:00	EI
Bis(2-chloroisopropyl)ether	BRL	0.39	Н	mg/Kg-dry		1	12/24/2014 19:00	EI

Qualifiers:

Narr See case narrative

^{*} Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

NC Not confirmed

< Less than Result value

J Estimated value detected below Reporting Limit

Client: Peachtree Environmental Client Sample ID: DK-3

Project Name: Davidson Kennedy Collection Date: 12/1/2014 1:18:00 PM

Date:

7-Jan-15

Lab ID: 1412037-002 Matrix: Sediment

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analys
TCL-SEMIVOLATILE ORGANICS	SW8270D			(SW	3550C)			
Bis(2-ethylhexyl)phthalate	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Butyl benzyl phthalate	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Caprolactam	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Carbazole	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Chrysene	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Di-n-butyl phthalate	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Di-n-octyl phthalate	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Dibenz(a,h)anthracene	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Dibenzofuran	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Diethyl phthalate	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Dimethyl phthalate	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Fluoranthene	0.57	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Fluorene	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Hexachlorobenzene	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Hexachlorobutadiene	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Hexachlorocyclopentadiene	BRL	0.78	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Hexachloroethane	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Indeno(1,2,3-cd)pyrene	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Isophorone	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
N-Nitrosodi-n-propylamine	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
N-Nitrosodiphenylamine	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Naphthalene	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Nitrobenzene	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Pentachlorophenol	BRL	2.0	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Phenanthrene	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Phenol	BRL	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Pyrene	0.41	0.39	Н	mg/Kg-dry	200907	1	12/24/2014 19:00	EI
Surr: 2,4,6-Tribromophenol	111	41-128	Н	%REC	200907	1	12/24/2014 19:00	EI
Surr: 2-Fluorobiphenyl	93.1	47-120	Н	%REC	200907	1	12/24/2014 19:00	EI
Surr: 2-Fluorophenol	84.9	38.3-120	Н	%REC	200907	1	12/24/2014 19:00	EI
Surr: 4-Terphenyl-d14	91.1	51.4-125	Н	%REC	200907	1	12/24/2014 19:00	EI
Surr: Nitrobenzene-d5	82.7	40.1-120	Н	%REC	200907	1	12/24/2014 19:00	EI
Surr: Phenol-d5	91	40.3-120	Н	%REC	200907	1	12/24/2014 19:00	EI
METALS, TOTAL SW6010C				(SW	3050B)			
Arsenic	BRL	5.48		mg/Kg-dry	199959	1	12/03/2014 14:10	TA
Barium	34.5	5.48		mg/Kg-dry	199959	1	12/03/2014 14:10	TA
Cadmium	BRL	2.74		mg/Kg-dry	199959	1	12/03/2014 14:10	TA
Chromium	16.6	2.74		mg/Kg-dry	199959	1	12/03/2014 14:10	TA
Lead	16.3	5.48		mg/Kg-dry	199959	1	12/03/2014 14:10	TA
Selenium	BRL	5.48		mg/Kg-dry	199959	1	12/03/2014 14:10	TA

Qualifiers:

BRL Below reporting limit

Narr See case narrative
NC Not confirmed

^{*} Value exceeds maximum contaminant level

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

< Less than Result value

J Estimated value detected below Reporting Limit

Client: Peachtree Environmental Client Sample ID: DK-3

Project Name: Davidson Kennedy Collection Date: 12/1/2014 1:18:00 PM

Lab ID: 1412037-002 Matrix: Sediment

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW:	3050B)			
Silver	BRL	2.74		mg/Kg-dry	199959	1	12/03/2014 14:10	TA
PERCENT MOISTURE D2216								
Percent Moisture	15.3	0		wt%	R281219) 1	12/03/2014 12:00	SG

Date:

7-Jan-15

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative
NC Not confirmed

< Less than Result value

Client: Peachtree Environmental Client Sample ID: DK-4

Project Name:Davidson KennedyCollection Date:12/1/2014 3:21:00 PMLab ID:1412037-003Matrix:Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL-SEMIVOLATILE ORGANICS	SW8270D			(SV	V3510C)			
1,1'-Biphenyl	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
2,4,5-Trichlorophenol	BRL	25		ug/L	199739	1	12/02/2014 14:18	YH
2,4,6-Trichlorophenol	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
2,4-Dichlorophenol	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
2,4-Dimethylphenol	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
2,4-Dinitrophenol	BRL	25		ug/L	199739	1	12/02/2014 14:18	YH
2,4-Dinitrotoluene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
2,6-Dinitrotoluene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
2-Chloronaphthalene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
2-Chlorophenol	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
2-Methylnaphthalene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
2-Methylphenol	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
2-Nitroaniline	BRL	25		ug/L	199739	1	12/02/2014 14:18	YH
2-Nitrophenol	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
3,3'-Dichlorobenzidine	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
3-Nitroaniline	BRL	25		ug/L	199739	1	12/02/2014 14:18	YH
4,6-Dinitro-2-methylphenol	BRL	25		ug/L	199739	1	12/02/2014 14:18	YH
4-Bromophenyl phenyl ether	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
4-Chloro-3-methylphenol	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
4-Chloroaniline	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
4-Chlorophenyl phenyl ether	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
4-Methylphenol	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
4-Nitroaniline	BRL	25		ug/L	199739	1	12/02/2014 14:18	YH
4-Nitrophenol	BRL	25		ug/L	199739	1	12/02/2014 14:18	YH
Acenaphthene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Acenaphthylene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Acetophenone	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Anthracene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Atrazine	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Benz(a)anthracene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Benzaldehyde	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Benzo(a)pyrene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Benzo(b)fluoranthene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Benzo(g,h,i)perylene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Benzo(k)fluoranthene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Bis(2-chloroethoxy)methane	BRL	10		ug/L	199739		12/02/2014 14:18	YH
Bis(2-chloroethyl)ether	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Bis(2-chloroisopropyl)ether	BRL	10		ug/L	199739		12/02/2014 14:18	YH
Bis(2-ethylhexyl)phthalate	BRL	10		ug/L	199739		12/02/2014 14:18	YH
Butyl benzyl phthalate	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Caprolactam	BRL	10		ug/L	199739		12/02/2014 14:18	YH

Qualifiers:

BRL Below reporting limit

Date:

7-Jan-15

Narr See case narrative
NC Not confirmed

Less than Result value

^{*} Value exceeds maximum contaminant level

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Estimated value detected below Reporting Limit

Client: Peachtree Environmental Client Sample ID: DK-4

Project Name:Davidson KennedyCollection Date:12/1/2014 3:21:00 PMLab ID:1412037-003Matrix:Surface Water

Date:

7-Jan-15

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL-SEMIVOLATILE ORGANICS	SW8270D			(SV	V3510C)			
Carbazole	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Chrysene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Di-n-butyl phthalate	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Di-n-octyl phthalate	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Dibenz(a,h)anthracene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Dibenzofuran	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Diethyl phthalate	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Dimethyl phthalate	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Fluoranthene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Fluorene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Hexachlorobenzene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Hexachlorobutadiene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Hexachlorocyclopentadiene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Hexachloroethane	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Indeno(1,2,3-cd)pyrene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Isophorone	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
N-Nitrosodi-n-propylamine	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
N-Nitrosodiphenylamine	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Naphthalene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Nitrobenzene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Pentachlorophenol	BRL	25		ug/L	199739	1	12/02/2014 14:18	YH
Phenanthrene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Phenol	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Pyrene	BRL	10		ug/L	199739	1	12/02/2014 14:18	YH
Surr: 2,4,6-Tribromophenol	121	52-133		%REC	199739	1	12/02/2014 14:18	YH
Surr: 2-Fluorobiphenyl	94.7	50-121		%REC	199739	1	12/02/2014 14:18	YH
Surr: 2-Fluorophenol	71.6	27.5-120		%REC	199739	1	12/02/2014 14:18	YH
Surr: 4-Terphenyl-d14	95.2	46.3-137		%REC	199739	1	12/02/2014 14:18	YH
Surr: Nitrobenzene-d5	88	41.2-121		%REC	199739	1	12/02/2014 14:18	YH
Surr: Phenol-d5	54.4	14.3-120		%REC	199739	1	12/02/2014 14:18	YH
Mercury, Total SW7470A				(SV	V7470A)			
Mercury	BRL	0.200		ug/L	199936	1	12/02/2014 15:13	JG
METALS, TOTAL SW6010C				(SV	V3010A)			
Arsenic	BRL	50.0		ug/L	199958	1	12/02/2014 18:59	JL
Barium	77.7	20.0		ug/L	199958	1	12/02/2014 18:59	JL
Cadmium	BRL	5.00		ug/L	199958	1	12/02/2014 18:59	JL
Chromium	BRL	10.0		ug/L	199958	1	12/02/2014 18:59	JL
Copper	11.7	10.0		ug/L	199958	1	12/02/2014 18:59	JL
Lead	BRL	10.0		ug/L	199958	1	12/02/2014 18:59	JL

Qualifiers:

Narr See case narrative
NC Not confirmed

^{*} Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

< Less than Result value

J Estimated value detected below Reporting Limit

Client: Peachtree Environmental Client Sample ID: DK-4

Project Name: Davidson Kennedy Collection Date: 12/1/2014 3:21:00 PM

Lab ID: 1412037-003 Matrix: Surface Water

Analyses	Result	Reporting Limit Qua	al Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C			(SV	V3010A)			
Selenium	BRL	20.0	ug/L	199958	1	12/02/2014 18:59	JL
Silver	BRL	10.0	ug/L	199958	1	12/02/2014 18:59	JL
Zinc	75.2	20.0	ug/L	199958	1	12/02/2014 18:59	JL

Date:

7-Jan-15

Qualifiers: * Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative
NC Not confirmed

< Less than Result value

Client: Peachtree Environmental Client Sample ID: DK-4

Project Name: Davidson Kennedy Collection Date: 12/1/2014 3:31:00 PM

Lab ID: 1412037-004 Matrix: Sediment

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TOTAL MERCURY SW7471B				(SW	7471B)			
Mercury	BRL	0.128		mg/Kg-dry	199987	1	12/04/2014 09:36	JG
TCL-SEMIVOLATILE ORGANICS	SW8270D			(SW3	3550C)			
1,1'-Biphenyl	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
2,4,5-Trichlorophenol	BRL	2.2		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
2,4,6-Trichlorophenol	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
2,4-Dichlorophenol	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
2,4-Dimethylphenol	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
2,4-Dinitrophenol	BRL	2.2		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
2,4-Dinitrotoluene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
2,6-Dinitrotoluene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
2-Chloronaphthalene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
2-Chlorophenol	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
2-Methylnaphthalene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
2-Methylphenol	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
2-Nitroaniline	BRL	2.2		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
2-Nitrophenol	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
3,3'-Dichlorobenzidine	BRL	0.87		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
3-Nitroaniline	BRL	2.2		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
4,6-Dinitro-2-methylphenol	BRL	2.2		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
4-Bromophenyl phenyl ether	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
4-Chloro-3-methylphenol	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
4-Chloroaniline	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
4-Chlorophenyl phenyl ether	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
4-Methylphenol	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
4-Nitroaniline	BRL	2.2		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
4-Nitrophenol	BRL	2.2		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Acenaphthene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Acenaphthylene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Acetophenone	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Anthracene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Atrazine	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Benz(a)anthracene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Benzaldehyde	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Benzo(a)pyrene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Benzo(b)fluoranthene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Benzo(g,h,i)perylene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Benzo(k)fluoranthene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Bis(2-chloroethoxy)methane	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Bis(2-chloroethyl)ether	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Bis(2-chloroisopropyl)ether	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH

Qualifiers:

Date:

7-Jan-15

Narr See case narrative

^{*} Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

NC Not confirmed

< Less than Result value

J Estimated value detected below Reporting Limit

Client: Peachtree Environmental Client Sample ID: DK-4

Project Name: Davidson Kennedy **Collection Date:** 12/1/2014 3:31:00 PM

Date:

7-Jan-15

Lab ID: 1412037-004 Matrix: Sediment

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL-SEMIVOLATILE ORGANICS	SW8270D			(SW.	3550C)			
Bis(2-ethylhexyl)phthalate	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Butyl benzyl phthalate	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Caprolactam	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Carbazole	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Chrysene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Di-n-butyl phthalate	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Di-n-octyl phthalate	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Dibenz(a,h)anthracene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Dibenzofuran	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Diethyl phthalate	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Dimethyl phthalate	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Fluoranthene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Fluorene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Hexachlorobenzene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Hexachlorobutadiene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Hexachlorocyclopentadiene	BRL	0.85		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Hexachloroethane	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Indeno(1,2,3-cd)pyrene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Isophorone	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
N-Nitrosodi-n-propylamine	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
N-Nitrosodiphenylamine	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Naphthalene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Nitrobenzene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Pentachlorophenol	BRL	2.2		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Phenanthrene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Phenol	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Pyrene	BRL	0.43		mg/Kg-dry	199993	1	12/03/2014 13:00	YH
Surr: 2,4,6-Tribromophenol	108	41-128		%REC	199993	1	12/03/2014 13:00	YH
Surr: 2-Fluorobiphenyl	85.4	47-120		%REC	199993	1	12/03/2014 13:00	YH
Surr: 2-Fluorophenol	71.4	38.3-120		%REC	199993	1	12/03/2014 13:00	YH
Surr: 4-Terphenyl-d14	83.4	51.4-125		%REC	199993	1	12/03/2014 13:00	YH
Surr: Nitrobenzene-d5	77.9	40.1-120		%REC	199993	1	12/03/2014 13:00	YH
Surr: Phenol-d5	80.9	40.3-120		%REC	199993	1	12/03/2014 13:00	YH
METALS, TOTAL SW6010C				(SW:	3050B)			
Arsenic	BRL	6.07		mg/Kg-dry	199959	1	12/03/2014 14:13	TA
Barium	12.4	6.07		mg/Kg-dry	199959	1	12/03/2014 14:13	TA
Cadmium	BRL	3.03		mg/Kg-dry	199959	1	12/03/2014 14:13	TA
Chromium	12.0	3.03		mg/Kg-dry	199959	1	12/03/2014 14:13	TA
Lead	10.3	6.07		mg/Kg-dry	199959	1	12/03/2014 14:13	TA
Selenium	BRL	6.07		mg/Kg-dry	199959	1	12/03/2014 14:13	TA

Qualifiers:

BRL Below reporting limit

Narr See case narrative
NC Not confirmed

^{*} Value exceeds maximum contaminant level

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Less than Result value

J Estimated value detected below Reporting Limit

Client: Peachtree Environmental Client Sample ID: DK-4

Project Name: Davidson Kennedy Collection Date: 12/1/2014 3:31:00 PM

Lab ID: 1412037-004 Matrix: Sediment

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW.	3050B)			
Silver	BRL	3.03		mg/Kg-dry	199959	1	12/03/2014 14:13	TA
PERCENT MOISTURE D2216								
Percent Moisture	22.7	0		wt%	R281219) 1	12/03/2014 12:00	SG

Date:

7-Jan-15

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative NC Not confirmed

< Less than Result value

Client: Peachtree Environmental Client Sample ID: DK-5

Project Name:Davidson KennedyCollection Date:12/1/2014 2:43:00 PMLab ID:1412037-005Matrix:Surface Water

Date:

7-Jan-15

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analys
TCL-SEMIVOLATILE ORGANICS	SW8270D			(SV	V3510C)			
1,1'-Biphenyl	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
2,4,5-Trichlorophenol	BRL	25		ug/L	199739	1	12/02/2014 14:48	YH
2,4,6-Trichlorophenol	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
2,4-Dichlorophenol	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
2,4-Dimethylphenol	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
2,4-Dinitrophenol	BRL	25		ug/L	199739	1	12/02/2014 14:48	YH
2,4-Dinitrotoluene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
2,6-Dinitrotoluene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
2-Chloronaphthalene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
2-Chlorophenol	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
2-Methylnaphthalene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
2-Methylphenol	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
2-Nitroaniline	BRL	25		ug/L	199739	1	12/02/2014 14:48	YH
2-Nitrophenol	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
3,3'-Dichlorobenzidine	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
3-Nitroaniline	BRL	25		ug/L	199739	1	12/02/2014 14:48	YH
4,6-Dinitro-2-methylphenol	BRL	25		ug/L	199739	1	12/02/2014 14:48	YH
4-Bromophenyl phenyl ether	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
4-Chloro-3-methylphenol	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
4-Chloroaniline	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
4-Chlorophenyl phenyl ether	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
4-Methylphenol	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
4-Nitroaniline	BRL	25		ug/L	199739	1	12/02/2014 14:48	YH
4-Nitrophenol	BRL	25		ug/L	199739	1	12/02/2014 14:48	YH
Acenaphthene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Acenaphthylene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Acetophenone	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Anthracene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Atrazine	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Benz(a)anthracene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Benzaldehyde	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Benzo(a)pyrene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Benzo(b)fluoranthene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Benzo(g,h,i)perylene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Benzo(k)fluoranthene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Bis(2-chloroethoxy)methane	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Bis(2-chloroethyl)ether	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Bis(2-chloroisopropyl)ether	BRL	10		ug/L	199739		12/02/2014 14:48	YH
Bis(2-ethylhexyl)phthalate	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Butyl benzyl phthalate	BRL	10		ug/L	199739		12/02/2014 14:48	YH
Caprolactam	BRL	10		ug/L	199739		12/02/2014 14:48	YH

Qualifiers:

BRL Below reporting limit

Narr See case narrative
NC Not confirmed

Less than Result value

^{*} Value exceeds maximum contaminant level

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Client: Peachtree Environmental Client Sample ID: DK-5

Project Name:Davidson KennedyCollection Date:12/1/2014 2:43:00 PMLab ID:1412037-005Matrix:Surface Water

Date:

7-Jan-15

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analys
TCL-SEMIVOLATILE ORGANICS	SW8270D			(SV	/3510C)			
Carbazole	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Chrysene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Di-n-butyl phthalate	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Di-n-octyl phthalate	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Dibenz(a,h)anthracene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Dibenzofuran	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Diethyl phthalate	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Dimethyl phthalate	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Fluoranthene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Fluorene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Hexachlorobenzene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Hexachlorobutadiene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Hexachlorocyclopentadiene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Hexachloroethane	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Indeno(1,2,3-cd)pyrene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Isophorone	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
N-Nitrosodi-n-propylamine	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
N-Nitrosodiphenylamine	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Naphthalene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Nitrobenzene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Pentachlorophenol	BRL	25		ug/L	199739	1	12/02/2014 14:48	YH
Phenanthrene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Phenol	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Pyrene	BRL	10		ug/L	199739	1	12/02/2014 14:48	YH
Surr: 2,4,6-Tribromophenol	109	52-133		%REC	199739	1	12/02/2014 14:48	YH
Surr: 2-Fluorobiphenyl	84.7	50-121		%REC	199739	1	12/02/2014 14:48	YH
Surr: 2-Fluorophenol	52.4	27.5-120		%REC	199739	1	12/02/2014 14:48	YH
Surr: 4-Terphenyl-d14	84.3	46.3-137		%REC	199739	1	12/02/2014 14:48	YH
Surr: Nitrobenzene-d5	75.7	41.2-121		%REC	199739	1	12/02/2014 14:48	YH
Surr: Phenol-d5	39.4	14.3-120		%REC	199739	1	12/02/2014 14:48	YH
Mercury, Total SW7470A				(SV	77470A)			
Mercury	BRL	0.200		ug/L	199936	1	12/02/2014 15:15	JG
METALS, TOTAL SW6010C				(SV	/3010A)			
Arsenic	BRL	50.0		ug/L	199958	1	12/02/2014 19:03	JL
Barium	73.3	20.0		ug/L	199958	1	12/02/2014 19:03	JL
Cadmium	BRL	5.00		ug/L	199958	1	12/02/2014 19:03	JL
Chromium	BRL	10.0		ug/L	199958	1	12/02/2014 19:03	JL
Copper	BRL	10.0		ug/L	199958	1	12/02/2014 19:03	JL
Lead	BRL	10.0		ug/L	199958	1	12/02/2014 19:03	JL

Qualifiers:

BRL Below reporting limit

Narr See case narrative
NC Not confirmed

Less than Result value

Estimated value detected below Reporting Limit

^{*} Value exceeds maximum contaminant level

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Client: Peachtree Environmental Client Sample ID: DK-5

Project Name: Davidson Kennedy Collection Date: 12/1/2014 2:43:00 PM

Lab ID: 1412037-005 Matrix: Surface Water

Analyses		Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SV	W6010C				(SV	W3010A)			
Selenium		BRL	20.0		ug/L	199958	1	12/02/2014 19:03	JL
Silver		BRL	10.0		ug/L	199958	1	12/02/2014 19:03	JL
Zinc		57.2	20.0		ug/L	199958	1	12/02/2014 19:03	JL

Date:

7-Jan-15

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative
NC Not confirmed

< Less than Result value

Client: Peachtree Environmental Client Sample ID: DK-5

Project Name: Davidson Kennedy Collection Date: 12/1/2014 2:53:00 PM

Date:

7-Jan-15

Lab ID: 1412037-006 Matrix: Sediment

Analyses	Result	Reporting Limit Qu	ıal Uı	nits	BatchID	Dilution Factor	Date Analyzed	Analys
TOTAL MERCURY SW7471B				(SW	7471B)			
Mercury	BRL	0.148	m	ıg/Kg-dry	199987	1	12/04/2014 09:38	JG
TCL-SEMIVOLATILE ORGANICS	SW8270D			(SW	3550C)			
1,1'-Biphenyl	BRL	0.49	m	ıg/Kg-dry	199993	1	12/03/2014 13:26	YH
2,4,5-Trichlorophenol	BRL	2.5	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
2,4,6-Trichlorophenol	BRL	0.49	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
2,4-Dichlorophenol	BRL	0.49	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
2,4-Dimethylphenol	BRL	0.49	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
2,4-Dinitrophenol	BRL	2.5	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
2,4-Dinitrotoluene	BRL	0.49	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
2,6-Dinitrotoluene	BRL	0.49	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
2-Chloronaphthalene	BRL	0.49	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
2-Chlorophenol	BRL	0.49	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
2-Methylnaphthalene	BRL	0.49	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
2-Methylphenol	BRL	0.49	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
2-Nitroaniline	BRL	2.5	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
2-Nitrophenol	BRL	0.49	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
3,3'-Dichlorobenzidine	BRL	1.0	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
3-Nitroaniline	BRL	2.5	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
4,6-Dinitro-2-methylphenol	BRL	2.5	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
4-Bromophenyl phenyl ether	BRL	0.49	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
4-Chloro-3-methylphenol	BRL	0.49	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
4-Chloroaniline	BRL	0.49	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
4-Chlorophenyl phenyl ether	BRL	0.49	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
4-Methylphenol	BRL	0.49	m	g/Kg-dry	199993	1	12/03/2014 13:26	YH
4-Nitroaniline	BRL	2.5	m	ıg/Kg-dry		1	12/03/2014 13:26	YH
4-Nitrophenol	BRL	2.5	m	ıg/Kg-dry		1	12/03/2014 13:26	YH
Acenaphthene	BRL	0.49	m	ıg/Kg-dry		1	12/03/2014 13:26	YH
Acenaphthylene	BRL	0.49	m	ıg/Kg-dry		1	12/03/2014 13:26	YH
Acetophenone	BRL	0.49	m	ıg/Kg-dry		1	12/03/2014 13:26	YH
Anthracene	BRL	0.49	m	ıg/Kg-dry		1	12/03/2014 13:26	YH
Atrazine	BRL	0.49	m	ıg/Kg-dry		1	12/03/2014 13:26	YH
Benz(a)anthracene	0.57	0.49	m	ıg/Kg-dry		1	12/03/2014 13:26	YH
Benzaldehyde	BRL	0.49	m	ıg/Kg-dry	199993	1	12/03/2014 13:26	YH
Benzo(a)pyrene	0.49	0.49	m	ıg/Kg-dry		1	12/03/2014 13:26	YH
Benzo(b)fluoranthene	0.70	0.49		ıg/Kg-dry		1	12/03/2014 13:26	YH
Benzo(g,h,i)perylene	BRL	0.49		ıg/Kg-dry		1	12/03/2014 13:26	YH
Benzo(k)fluoranthene	BRL	0.49		ıg/Kg-dry		1	12/03/2014 13:26	YH
Bis(2-chloroethoxy)methane	BRL	0.49		ıg/Kg-dry		1	12/03/2014 13:26	YH
Bis(2-chloroethyl)ether	BRL	0.49		ıg/Kg-dry		1	12/03/2014 13:26	YH
Bis(2-chloroisopropyl)ether	BRL	0.49		g/Kg-dry		1	12/03/2014 13:26	YH

Qualifiers:

Narr See case narrative

^{*} Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

NC Not confirmed

< Less than Result value

J Estimated value detected below Reporting Limit

Client: Peachtree Environmental Client Sample ID: DK-5

Project Name: Davidson Kennedy Collection Date: 12/1/2014 2:53:00 PM

Lab ID: 1412037-006 Matrix: Sediment

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL-SEMIVOLATILE ORGANICS	SW8270D			(SW.	3550C)			
Bis(2-ethylhexyl)phthalate	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Butyl benzyl phthalate	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Caprolactam	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Carbazole	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Chrysene	0.67	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Di-n-butyl phthalate	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Di-n-octyl phthalate	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Dibenz(a,h)anthracene	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Dibenzofuran	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Diethyl phthalate	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Dimethyl phthalate	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Fluoranthene	1.7	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Fluorene	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Hexachlorobenzene	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Hexachlorobutadiene	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Hexachlorocyclopentadiene	BRL	0.99		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Hexachloroethane	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Indeno(1,2,3-cd)pyrene	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Isophorone	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
N-Nitrosodi-n-propylamine	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
N-Nitrosodiphenylamine	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Naphthalene	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Nitrobenzene	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Pentachlorophenol	BRL	2.5		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Phenanthrene	0.82	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Phenol	BRL	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Pyrene	1.3	0.49		mg/Kg-dry	199993	1	12/03/2014 13:26	YH
Surr: 2,4,6-Tribromophenol	111	41-128		%REC	199993	1	12/03/2014 13:26	YH
Surr: 2-Fluorobiphenyl	89	47-120		%REC	199993	1	12/03/2014 13:26	YH
Surr: 2-Fluorophenol	80.4	38.3-120		%REC	199993	1	12/03/2014 13:26	YH
Surr: 4-Terphenyl-d14	86.8	51.4-125		%REC	199993	1	12/03/2014 13:26	YH
Surr: Nitrobenzene-d5	83.4	40.1-120		%REC	199993	1	12/03/2014 13:26	YH
Surr: Phenol-d5	86.5	40.3-120		%REC	199993	1	12/03/2014 13:26	YH
METALS, TOTAL SW6010C				(SW:	3050B)			
Arsenic	BRL	7.05		mg/Kg-dry	199959	1	12/03/2014 14:23	TA
Barium	41.0	7.05		mg/Kg-dry	199959	1	12/03/2014 14:23	TA
Cadmium	BRL	3.52		mg/Kg-dry	199959	1	12/03/2014 14:23	TA
Chromium	19.0	3.52		mg/Kg-dry	199959	1	12/03/2014 14:23	TA
Lead	36.2	7.05		mg/Kg-dry	199959	1	12/03/2014 14:23	TA
Selenium	BRL	7.05		mg/Kg-dry	199959	1	12/03/2014 14:23	TA

Qualifiers:

BRL Below reporting limit

Date:

7-Jan-15

Narr See case narrative
NC Not confirmed

^{*} Value exceeds maximum contaminant level

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

< Less than Result value

J Estimated value detected below Reporting Limit

Client: Peachtree Environmental Client Sample ID: DK-5

Project Name: Davidson Kennedy Collection Date: 12/1/2014 2:53:00 PM

Lab ID: 1412037-006 Matrix: Sediment

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW3	3050B)			
Silver	BRL	3.52		mg/Kg-dry	199959	1	12/03/2014 14:23	TA
PERCENT MOISTURE D2216								
Percent Moisture	33.1	0		wt%	R281219	1	12/03/2014 12:00	SG

Date:

7-Jan-15

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative NC Not confirmed

< Less than Result value

Sample/Cooler Receipt Checklist

Client Plachtue Emission mental		Work Orde	r Number	1412037
Checklist completed by Foana Paeuvay Signature Date	12/1/14			
Carrier name: FedEx UPS Courier Client US	S Mail Other	r	_	
Shipping container/cooler in good condition?	Yes 🖊	No	Not Present _	_
Custody seals intact on shipping container/cooler?	Yes	No	Not Present	/
Custody seals intact on sample bottles?	Yes	No	Not Present	
Container/Temp Blank temperature in compliance? (0°≤6°C)	* Yes 🖊	No		
Cooler #1 31 C Cooler #2 Cooler #3	Cooler #4 _	Co	oler#5	Cooler #6
Chain of custody present?	Yes _	No		
Chain of custody signed when relinquished and received?	Yes	No _		
Chain of custody agrees with sample labels?	Yes _	No		
Samples in proper container/bottle?	Yes _	No _		
Sample containers intact?	Yes 🟒	No		
Sufficient sample volume for indicated test?	Yes _	No		
All samples received within holding time?	Yes _	No		
Was TAT marked on the COC?	Yes 🗸	No		
Proceed with Standard TAT as per project history?	Yes	No	Not Applicab	le <u></u>
Water - VOA vials have zero headspace? No VOA vials su	ıbmitted 🗸	Yes	No	
Water - pH acceptable upon receipt?	Yes _	No	Not Applicab	le
/ Adjusted?		cked by	IV	_
Sample Condition: Good Other(Explain)				_
(For diffusive samples or AIHA lead) Is a known blank include	ded? Yes		No 🗸	

See Case Narrative for resolution of the Non-Conformance.

\\Aes_server\l\Sample Receipt\My Documents\\COCs and pH Adjustment Sheet\\Sample_Cooler_Recipt_Checklist_Rev1.rtf

^{*} Samples do not have to comply with the given range for certain parameters.

Client: Peachtree Environmental

Project Name: Davidson Kennedy

Lab Order: 1412037

Dates Report

Date: 7-Jan-15

Lab Sample ID Client Sample ID Collection Date Matrix Test Name TCLP Date Prep Date 1412037-001A DK-3 12/1/2014 1:08:00PM Surface Water TCL-SEMIVOLATILE ORGANICS 12/2/2014 8:00:00AM 1412037-001B DK-3 12/1/2014 1:08:00PM Surface Water TOTAL METALS BY ICP 12/2/2014 11:40:00AM 1412037-001B DK-3 12/1/2014 1:08:00PM Surface Water TOTAL MERCURY 12/2/2014 9:40:00AM 1412037-002A DK-3 12/1/2014 1:18:00PM Sediment TCL-SEMIVOLATILE ORGANICS 12/2/2014 9:00:00AM 1412037-002B DK-3 12/1/2014 1:18:00PM Sediment TOTAL METALS BY ICP 12/2/2014 10:40:00AM 1412037-002B DK-3 12/1/2014 1:18:00PM Sediment MERCURY 12/3/2014 9:57:00AM 1412037-002C DK-3 12/1/2014 1:18:00PM Sediment PERCENT MOISTURE 1412037-003A DK-4 12/1/2014 3:21:00PM Surface Water TCL-SEMIVOLATILE ORGANICS 12/2/2014 8:00:000AM <th>Analysis Date</th>	Analysis Date
1412037-001B DK-3 12/1/2014 1:08:00PM Surface Water TOTAL MERCURY 12/2/2014 9:40:00AM 1412037-002A DK-3 12/1/2014 1:18:00PM Sediment TCL-SEMIVOLATILE ORGANICS 12/24/2014 9:00:00AM 1412037-002B DK-3 12/1/2014 1:18:00PM Sediment TOTAL METALS BY ICP 12/2/2014 10:40:00AM 1412037-002B DK-3 12/1/2014 1:18:00PM Sediment MERCURY 12/3/2014 9:57:00AM 1412037-002C DK-3 12/1/2014 1:18:00PM Sediment PERCENT MOISTURE	12/02/2014
1412037-002A DK-3 12/1/2014 1:18:00PM Sediment TCL-SEMIVOLATILE ORGANICS 12/24/2014 9:00:00AM 1412037-002B DK-3 12/1/2014 1:18:00PM Sediment TOTAL METALS BY ICP 12/2/2014 10:40:00AM 1412037-002B DK-3 12/1/2014 1:18:00PM Sediment MERCURY 12/3/2014 9:57:00AM 1412037-002C DK-3 12/1/2014 1:18:00PM Sediment PERCENT MOISTURE	12/02/2014
1412037-002B DK-3 12/1/2014 1:18:00PM Sediment TOTAL METALS BY ICP 12/2/2014 10:40:00AM 1412037-002B DK-3 12/1/2014 1:18:00PM Sediment MERCURY 12/3/2014 9:57:00AM 1412037-002C DK-3 12/1/2014 1:18:00PM Sediment PERCENT MOISTURE	12/02/2014
1412037-002B DK-3 12/1/2014 1:18:00PM Sediment MERCURY 12/3/2014 9:57:00AM 1412037-002C DK-3 12/1/2014 1:18:00PM Sediment PERCENT MOISTURE	12/24/2014
1412037-002C DK-3 12/1/2014 1:18:00PM Sediment PERCENT MOISTURE	12/03/2014
	12/04/2014
1412037-003A DK-4 12/1/2014 3:21:00PM Surface Water TCL-SEMIVOLATILE ORGANICS 12/2/2014 8:00:00AM	12/03/2014
12/12/01/4 OZITOTIM Oditado Water Fol Ozivir OZITOTIM	12/02/2014
1412037-003B DK-4 12/1/2014 3:21:00PM Surface Water TOTAL METALS BY ICP 12/2/2014 11:40:00AM	12/02/2014
1412037-003B DK-4 12/1/2014 3:21:00PM Surface Water TOTAL MERCURY 12/2/2014 9:40:00AM	12/02/2014
1412037-004A DK-4 12/1/2014 3:31:00PM Sediment TCL-SEMIVOLATILE ORGANICS 12/3/2014 10:00:00AM	12/03/2014
1412037-004B DK-4 12/1/2014 3:31:00PM Sediment TOTAL METALS BY ICP 12/2/2014 10:40:00AM	12/03/2014
1412037-004B DK-4 12/1/2014 3:31:00PM Sediment MERCURY 12/3/2014 9:57:00AM	12/04/2014
1412037-004C DK-4 12/1/2014 3:31:00PM Sediment PERCENT MOISTURE	12/03/2014
1412037-005A DK-5 12/1/2014 2:43:00PM Surface Water TCL-SEMIVOLATILE ORGANICS 12/2/2014 8:00:00AM	12/02/2014
1412037-005B DK-5 12/1/2014 2:43:00PM Surface Water TOTAL METALS BY ICP 12/2/2014 11:40:00AM	12/02/2014
1412037-005B DK-5 12/1/2014 2:43:00PM Surface Water TOTAL MERCURY 12/2/2014 9:40:00AM	12/02/2014
1412037-006A DK-5 12/1/2014 2:53:00PM Sediment TCL-SEMIVOLATILE ORGANICS 12/3/2014 10:00:00AM	12/03/2014
1412037-006B DK-5 12/1/2014 2:53:00PM Sediment TOTAL METALS BY ICP 12/2/2014 10:40:00AM	12/03/2014
1412037-006B DK-5 12/1/2014 2:53:00PM Sediment MERCURY 12/3/2014 9:57:00AM	12/04/2014
1412037-006C DK-5 12/1/2014 2:53:00PM Sediment PERCENT MOISTURE	12/03/2014

al Services, Inc Date: 7-Jan-15

Client: Peachtree Environmental
Project Name: Davidson Kennedy

Workorder:

1412037 BatchID: 199739

Sample ID: MB-199739	Client ID:				Uni	its: ug/L	Pr	ep Date:	12/01/2014	Run No: 281070
SampleType: MBLK	TestCode: TO	CL-SEMIVOLATILE	ORGANICS S	W8270D	Bat	chID: 199739	Aı	nalysis Date:	12/01/2014	Seq No: 5947323
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	Val %RPl	D RPD Limit Qual
1,1'-Biphenyl	BRL	10								
2,4,5-Trichlorophenol	BRL	25								
2,4,6-Trichlorophenol	BRL	10								
2,4-Dichlorophenol	BRL	10								
2,4-Dimethylphenol	BRL	10								
2,4-Dinitrophenol	BRL	25								
2,4-Dinitrotoluene	BRL	10								
2,6-Dinitrotoluene	BRL	10								
2-Chloronaphthalene	BRL	10								
2-Chlorophenol	BRL	10								
2-Methylnaphthalene	BRL	10								
2-Methylphenol	BRL	10								
2-Nitroaniline	BRL	25								
2-Nitrophenol	BRL	10								
3,3'-Dichlorobenzidine	BRL	10								
3-Nitroaniline	BRL	25								
4,6-Dinitro-2-methylphenol	BRL	25								
4-Bromophenyl phenyl ether	BRL	10								
4-Chloro-3-methylphenol	BRL	10								
4-Chloroaniline	BRL	10								
4-Chlorophenyl phenyl ether	BRL	10								
4-Methylphenol	BRL	10								
4-Nitroaniline	BRL	25								
4-Nitrophenol	BRL	25								
Acenaphthene	BRL	10								
Acenaphthylene	BRL	10								
Acetophenone	BRL	10								
0.10										
Qualifiers: > Greater than Result				than Result value	ation rance)		В	-	the associated metho	
BRL Below reporting lim J Estimated value de	nt etected below Reporting Lin	nit		nated (value above quantit yte not NELAC certified	auon range)		H R	RPD outside limits	oreparation or analysi	s exceeded
Rpt Lim Reporting Limit	Accepting Lin			Recovery outside limits of	due to matrix		K	13 D outside milit	, and to mattin	
reporting Dillit			э эрис							

ANALYTICAL QC SUMMARY REPORT

Client:

Workorder:

ANALYTICAL QC SUMMARY REPORT

Date:

7-Jan-15

Peachtree Environmental **Project Name:** Davidson Kennedy

1412037 BatchID: 199739

Sample ID: MB-199739	Client ID:				Un	_				Run No: 281070
SampleType: MBLK	TestCode: TCL	-SEMIVOLATILE (ORGANICS S'	W8270D	Bar	tchID: 199739	Aı	nalysis Date: 12	/01/2014	Seq No: 5947323
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Va	l %RPD	RPD Limit Qual
Anthracene	BRL	10								
Atrazine	BRL	10								
Benz(a)anthracene	BRL	10								
Benzaldehyde	BRL	10								
Benzo(a)pyrene	BRL	10								
Benzo(b)fluoranthene	BRL	10								
Benzo(g,h,i)perylene	BRL	10								
Benzo(k)fluoranthene	BRL	10								
Bis(2-chloroethoxy)methane	BRL	10								
Bis(2-chloroethyl)ether	BRL	10								
Bis(2-chloroisopropyl)ether	BRL	10								
Bis(2-ethylhexyl)phthalate	BRL	10								
Butyl benzyl phthalate	BRL	10								
Caprolactam	BRL	10								
Carbazole	BRL	10								
Chrysene	BRL	10								
Di-n-butyl phthalate	BRL	10								
Di-n-octyl phthalate	BRL	10								
Dibenz(a,h)anthracene	BRL	10								
Dibenzofuran	BRL	10								
Diethyl phthalate	BRL	10								
Dimethyl phthalate	BRL	10								
Fluoranthene	BRL	10								
Fluorene	BRL	10								
Hexachlorobenzene	BRL	10								
Hexachlorobutadiene	BRL	10								
Hexachlorocyclopentadiene	BRL	10								
Qualifiers: > Greater than Result va	lue		< Less	than Result value			В	Analyte detected in the	associated method b	lank
BRL Below reporting limit				ated (value above quantita	ation range)		Н	Holding times for prep	-	ceeded
	ted below Reporting Limit			te not NELAC certified			R	RPD outside limits du	e to matrix	
Rpt Lim Reporting Limit			S Spike	Recovery outside limits d	lue to matrix					

Date: 7-Jan-15

Client: Peachtree Environmental **Project Name:** Davidson Kennedy

Workorder:

ANALYTICAL QC SUMMARY REPORT 1412037

BatchID: 199739

Sample ID: MB-199739 SampleType: MBLK	Client ID: TestCode: TCI	-SEMIVOLATILE	ORGANICS S	W8270D	Uni Bat	its: ug/L chID: 199739		p Date: alysis Date:	12/01/2014 12/01/2014	Run No: 281070 Seq No: 5947323
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	Val %RPD	RPD Limit Q
Hexachloroethane	BRL	10								
Indeno(1,2,3-cd)pyrene	BRL	10								
Isophorone	BRL	10								
N-Nitrosodi-n-propylamine	BRL	10								
N-Nitrosodiphenylamine	BRL	10								
Naphthalene	BRL	10								
Nitrobenzene	BRL	10								
Pentachlorophenol	BRL	25								
Phenanthrene	BRL	10								
Phenol	BRL	10								
Pyrene	BRL	10								
Surr: 2,4,6-Tribromophenol	70.43	0	100.0		70.4	52	133			
Surr: 2-Fluorobiphenyl	35.54	0	50.00		71.1	50	121			
Surr: 2-Fluorophenol	45.95	0	100.0		46.0	27.5	120			
Surr: 4-Terphenyl-d14	35.34	0	50.00		70.7	46.3	137			
Surr: Nitrobenzene-d5	35.82	0	50.00		71.6	41.2	121			
Surr: Phenol-d5	30.75	0	100.0		30.8	14.3	120			
Sample ID: LCS-199739	Client ID:				Uni	_			12/01/2014	Run No: 281070
SampleType: LCS	TestCode: TCI	-SEMIVOLATILE	ORGANICS S'	W8270D	Bat	chID: 199739	An	alysis Date:	12/01/2014	Seq No: 5947324
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	Val %RPD	RPD Limit Q
2,4-Dinitrotoluene	83.41	10	100.0		83.4	69.9	127			
2-Chlorophenol	77.09	10	100.0		77.1	59.8	120			
4-Chloro-3-methylphenol	90.30	10	100.0		90.3	65.7	126			
4-Nitrophenol	35.36	25	100.0		35.4	21	120			
Acenaphthene	83.23	10	100.0		83.2	68.2	124			
N-Nitrosodi-n-propylamine	92.13	10	100.0		92.1	60.3	138			
Qualifiers: > Greater than Result	value		< Less	than Result value			В	Analyte detected is	n the associated method	blank
BRL Below reporting limit				ated (value above quantita	ation range)		Н	_	preparation or analysis e	exceeded
	tected below Reporting Limit			yte not NELAC certified			R	RPD outside limit	ts due to matrix	
Rpt Lim Reporting Limit			S Spike	Recovery outside limits of	due to matrix					

Peachtree Environmental **Project Name:** Davidson Kennedy

Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

Workorder: 1412037

Client:

ANALYTICAL QC SUMMARY REPORT

Date:

7-Jan-15

BatchID: 199739

Sample ID: LCS-199739 SampleType: LCS	Client ID: TestCode: TO	CL-SEMIVOLATILE	ORGANICS SV	W8270D	Uni Bat	its: ug/L chID: 199739		Date: lysis Date:	12/01/2014 12/01/2014	Run No: 281070 Seq No: 5947324
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	f Val %RPD	RPD Limit Qual
Pentachlorophenol	85.58	25	100.0		85.6	50.2	136			
Phenol	35.89	10	100.0		35.9	25.6	120			
Pyrene	81.52	10	100.0		81.5	70.1	124			
Surr: 2,4,6-Tribromophenol	86.02	0	100.0		86.0	52	133			
Surr: 2-Fluorobiphenyl	42.85	0	50.00		85.7	50	121			
Surr: 2-Fluorophenol	55.47	0	100.0		55.5	27.5	120			
Surr: 4-Terphenyl-d14	42.62	0	50.00		85.2	46.3	137			
Surr: Nitrobenzene-d5	44.20	0	50.00		88.4	41.2	121			
Surr: Phenol-d5	40.08	0	100.0		40.1	14.3	120			
Sample ID: 1411K51-001CMS SampleType: MS	Client ID: TestCode: TO	CL-SEMIVOLATILE	ORGANICS SV	W8270D	Uni Bat	its: ug/L chID: 199739		Date:	12/01/2014 12/01/2014	Run No: 281070 Seq No: 5947327
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	f Val %RPD	RPD Limit Qual
2,4-Dinitrotoluene	BRL	100	100.0		66.6	50.5	120			
2-Chlorophenol	BRL	100	100.0		79.9	51.4	120			
4-Chloro-3-methylphenol	BRL	100	100.0		82.0	50	121			
4-Nitrophenol	BRL	250	100.0		82.4	23.7	120			
Acenaphthene	BRL	100	100.0		88.0	53.9	120			
N-Nitrosodi-n-propylamine	BRL	100	100.0		92.2	52.6	122			
Pentachlorophenol	BRL	250	100.0		72.0	42.1	134			
Phenol	BRL	100	100.0		56.0	31	120			
Pyrene	BRL	100	100.0		81.6	53	112			
Surr: 2,4,6-Tribromophenol	79.20	0	100.0		79.2	52	133			
Surr: 2-Fluorobiphenyl	41.80	0	50.00		83.6	50	121			
Surr: 2-Fluorophenol	61.40	0	100.0		61.4	27.5	120			
Surr: 4-Terphenyl-d14	38.30	0	50.00		76.6	46.3	137			
Surr: Nitrobenzene-d5	40.50	0	50.00		81.0	41.2	121			
Qualifiers: > Greater than Result val	lue		< Less	than Result value			В	Analyte detected	in the associated method	l blank
BRL Below reporting limit			E Estim	ated (value above quantita	ation range)		Н	Holding times fo	r preparation or analysis	exceeded

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

Client: Peachtree Environmental
Project Name: Davidson Kennedy

Workorder:

ANALYTICAL QC SUMMARY REPORT

Date:

7-Jan-15

Davidson Kennedy 1412037

BatchID: 199739

Sample ID: 1411K51-001CMS	Client ID:	T CEMINOLATHE	ODCANICS S	3/9270D	Uni		•	Date: 12/01		tun No: 28107	
SampleType: MS	TestCode: TC	CL-SEMIVOLATILE (ORGANICS S	W 8270D	Bat	chID: 199739	Ana	lysis Date: 12/01	/2014 S	eq No: 59473	27
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Surr: Phenol-d5	56.70	0	100.0		56.7	14.3	120				
Sample ID: 1411K51-001CMSD	Client ID:				Uni	_	•	Date: 12/01		tun No: 28107	
SampleType: MSD	TestCode: TCL-SEMIVOLATILE ORGANICS SW8270D			Bat	chID: 199739	Ana	Analysis Date: 12/01/2014 Seq No: 59				
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
2,4-Dinitrotoluene	BRL	100	100.0		32.6	50.5	120	66.60	0	24.4	S
2-Chlorophenol	BRL	100	100.0		46.4	51.4	120	79.90	0	27.3	S
4-Chloro-3-methylphenol	BRL	100	100.0		49.3	50	121	82.00	0	26.5	S
4-Nitrophenol	BRL	250	100.0		55.8	23.7	120	82.40	0	45.1	
Acenaphthene	BRL	100	100.0		56.8	53.9	120	88.00	0	22.5	
N-Nitrosodi-n-propylamine	BRL	100	100.0		55.8	52.6	122	92.20	0	28.9	
Pentachlorophenol	BRL	250	100.0		28.1	42.1	134	72.00	0	28.3	S
Phenol	BRL	100	100.0		27.7	31	120	56.00	0	31.9	S
Pyrene	BRL	100	100.0		51.7	53	112	81.60	0	22.3	S
Surr: 2,4,6-Tribromophenol	46.10	0	100.0		46.1	52	133	79.20	0	0	S
Surr: 2-Fluorobiphenyl	27.80	0	50.00		55.6	50	121	41.80	0	0	
Surr: 2-Fluorophenol	34.80	0	100.0		34.8	27.5	120	61.40	0	0	
Surr: 4-Terphenyl-d14	23.50	0	50.00		47.0	46.3	137	38.30	0	0	
Surr: Nitrobenzene-d5	23.50	0	50.00		47.0	41.2	121	40.50	0	0	
Surr: Phenol-d5	31.10	0	100.0		31.1	14.3	120	56.70	0	0	

Qualifiers: > Greater than Result value

BRL Below reporting limit

J Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

< Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

Client: Peachtree Environmental ANALYTICAL QC SUMMARY REPORT

Davidson Kennedy **Project Name:**

BatchID: 199936

Date:

7-Jan-15

Workorder: 1412037

Sample ID: MB-199936	Client ID:				Uni	its: ug/L	Prep	Date: 12/0	2/2014	Run No:	281110
SampleType: MBLK	TestCode: M	Iercury, Total SW747	70A		Bat	chID: 199936	-	ysis Date: 12/0	2/2014	Seq No:	5949741
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD	Limit Qual
Mercury	BRL	0.200									
Sample ID: LCS-199936	Client ID:				Uni	its: ug/L	Prep	Date: 12/0	2/2014	Run No:	281110
SampleType: LCS	TestCode: M	Iercury, Total SW747	70A		Bat	chID: 199936	Anal	ysis Date: 12/0	2/2014	Seq No:	5949742
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD	Limit Qual
Mercury	4.788	0.200	0.0050		95.8	80	120				
Sample ID: 1411L76-001DMS	Client ID:				Uni	its: ug/L	Prep	Date: 12/0	2/2014	Run No:	281110
SampleType: MS	TestCode: M	Iercury, Total SW747	70A		Bat	chID: 199936	Anal	ysis Date: 12/0	2/2014	Seq No:	5949744
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD	Limit Qual
Mercury	4.826	0.200	0.0050		96.5	70	130				
Sample ID: 1411L76-001DMSD	Client ID:				Uni	its: ug/L	Prep	Date: 12/0	2/2014	Run No:	281110
SampleType: MSD	TestCode: N	Iercury, Total SW747	70A		Bat	chID: 199936	Anal	ysis Date: 12/0	2/2014	Seq No:	5949745
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD	Limit Qual
Mercury	5.048	0.200	0.0050		101	70	130	0.004826	4.50	2	0

Qualifiers: Greater than Result value

> BRL Below reporting limit

Rpt Lim Reporting Limit

Estimated value detected below Reporting Limit

S Spike Recovery outside limits due to matrix

Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

H Holding times for preparation or analysis exceeded

B Analyte detected in the associated method blank

7-Jan-15 Date:

Client: Peachtree Environmental

ANALYTICAL QC SUMMARY REPORT

Davidson Kennedy **Project Name:** Workorder: 1412037

BatchID: 199958

Sample ID: MB-199958	Client ID:				Uni	_	-	Date:	12/02/2014		281182
SampleType: MBLK	TestCode:	METALS, TOTAL S	W6010C		Bat	chID: 199958	Ana	lysis Date:	12/02/2014	Seq No:	5950644
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	f Val %RF	D RPE	Limit Qua
Arsenic	BRL	50.0									
Barium	BRL	20.0									
Cadmium	BRL	5.00									
Chromium	BRL	10.0									
Copper	BRL	10.0									
ead	BRL	10.0									
elenium	BRL	20.0									
ilver	BRL	10.0									
Zinc	BRL	20.0									
Sample ID: LCS-199958	Client ID:				Uni	ts: ug/L	Prep	Date:	12/02/2014	Run No:	281182
SampleType: LCS	TestCode:	METALS, TOTAL S	W6010C		Bat	chID: 199958	Ana	lysis Date:	12/02/2014	Seq No:	5950645
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	f Val %RF	D RPF	Limit Qua
							0	10 2 10		D KIL	
arsenic	1027	50.0	1.000		103	80	120	10.010		D KIL	2
	1027 1030									D RIL	2 2
arium		50.0	1.000		103	80	120			D MIL	2
arium 'admium	1030	50.0 20.0	1.000 1.000		103 103	80 80	120 120			D KIL	2
arium 'admium 'hromium	1030 1027	50.0 20.0 5.00	1.000 1.000 1.000		103 103 103	80 80 80	120 120 120	100101		D RIL	2
arium 'admium 'hromium 'opper	1030 1027 1024	50.0 20.0 5.00 10.0	1.000 1.000 1.000 1.000		103 103 103 102	80 80 80 80	120 120 120 120			D RIL	2
arium 'admium 'hromium 'opper ead	1030 1027 1024 1012	50.0 20.0 5.00 10.0 10.0	1.000 1.000 1.000 1.000 1.000		103 103 103 102 101	80 80 80 80 80	120 120 120 120 120			D III	
Barium Cadmium Chromium Copper Lead elenium	1030 1027 1024 1012 1035	50.0 20.0 5.00 10.0 10.0	1.000 1.000 1.000 1.000 1.000 1.000		103 103 103 102 101 104	80 80 80 80 80	120 120 120 120 120 120 120			D MI	2
sarium Cadmium Chromium Copper ead elenium ilver	1030 1027 1024 1012 1035 1026	50.0 20.0 5.00 10.0 10.0 10.0 20.0	1.000 1.000 1.000 1.000 1.000 1.000	0.007188	103 103 103 102 101 104 103	80 80 80 80 80 80	120 120 120 120 120 120 120 120			D MI	
Barium Cadmium Chromium Copper Lead Telenium	1030 1027 1024 1012 1035 1026 100.6 1043	50.0 20.0 5.00 10.0 10.0 20.0 10.0 20.0	1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.1000	0.007188	103 103 103 102 101 104 103 101	80 80 80 80 80 80 80 80	120 120 120 120 120 120 120 120 120	Date:	12/02/2014		281182
Arsenic Barium Cadmium Chromium Copper Lead Gelenium Gilver Cinc Sample ID: 1411L33-001GMS SampleType: MS	1030 1027 1024 1012 1035 1026 100.6 1043	50.0 20.0 5.00 10.0 10.0 20.0 10.0 20.0	1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.1000	0.007188	103 103 103 102 101 104 103 101 104 Uni	80 80 80 80 80 80 80 80	120 120 120 120 120 120 120 120 120	Date:		Run No:	-

Qualifiers:

Greater than Result value

BRL Below reporting limit

Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

7-Jan-15 Date:

Client: Peachtree Environmental Davidson Kennedy **Project Name:**

Workorder: 1412037 ANALYTICAL QC SUMMARY REPORT

BatchID: 199958

Sample ID: 1411L33-001GMS SampleType: MS	Client ID: TestCode:	METALS, TOTAL S	SW6010C		Uni Bat	its: ug/L chID: 199958		Date: 12/02 alysis Date: 12/02		Run No: 281182 Seq No: 5950647
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Arsenic	1022	50.0	1.000		102	75	125			
Barium	1052	20.0	1.000	0.03100	102	75	125			
Cadmium	1021	5.00	1.000		102	75	125			
Chromium	1020	10.0	1.000	0.001642	102	75	125			
Copper	1007	10.0	1.000	0.001845	101	75	125			
Lead	1022	10.0	1.000		102	75	125			
Selenium	1025	20.0	1.000	0.006481	102	75	125			
Silver	99.03	10.0	0.1000		99.0	75	125			
Zinc	1038	20.0	1.000	0.01034	103	75	125			
Sample ID: 1411L33-001GMSD SampleType: MSD	Client ID: TestCode:	METALS, TOTAL S	SW6010C		Uni Bat	its: ug/L chID: 199958		Date: 12/02 alysis Date: 12/02		Run No: 281182 Seq No: 5950648
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Arsenic	1018	50.0	1.000		102	75	125	1.022	0.376	20
Barium	1045	20.0	1.000	0.03100	101	75	125	1.052	0.624	20
Cadmium	1013	5.00	1.000		101	75	125	1.021	0.820	20
Chromium	1014	10.0	1.000	0.001642	101	75	125	1.020	0.637	20
Copper	996.9	10.0	1.000	0.001845	99.5	75	125	1.007	1.05	20
Lead	1018	10.0	1.000		102	75	125	1.022	0.406	20
Selenium	1029	20.0	1.000	0.006481	102	75	125	1.025	0.452	20
Silver	97.58	10.0	0.1000		97.6	75	125	0.09903	1.47	20
Zinc	1035	20.0	1.000	0.01034	102	75	125	1.038	0.310	20

Qualifiers: Greater than Result value

> BRL Below reporting limit

Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

Date: 7-Jan-15

Client: Peachtree Environmental **Project Name:**

Davidson Kennedy

Workorder: 1412037

ANALYTICAL QC SUMMARY REPORT

BatchID: 199959

Sample ID: MB-199959	Client ID:				Uni	its: mg/Kg		rep Date:	12/02/2014	Run No: 281200
SampleType: MBLK	TestCode:	METALS, TOTAL	SW6010C		Bat	chID: 199959	A	nalysis Date:	12/03/2014	Seq No: 5951148
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	t RPD Re	f Val %RPI	RPD Limit Qual
Arsenic	BRL	5.00								
Barium	BRL	5.00								
Cadmium	BRL	2.50								
Chromium	BRL	2.50								
Lead	BRL	5.00								
Selenium	BRL	5.00								
Silver	BRL	2.50								
Sample ID: LCS-199959 SampleType: LCS	Client ID: TestCode:	METALS, TOTAL	SW6010C		Uni Bat	ts: mg/Kg chID: 199959		rep Date: nalysis Date:	12/02/2014 12/03/2014	Run No: 281200 Seq No: 5951149
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	t RPD Re	f Val %RPI	RPD Limit Qual
Arsenic	44.88	5.00	50.00		89.8	80	120			
Barium	50.37	5.00	50.00		101	80	120			
Cadmium	46.97	2.50	50.00		93.9	80	120			
Chromium	53.88	2.50	50.00		108	80	120			
Lead	48.01	5.00	50.00		96.0	80	120			
Selenium	47.70	5.00	50.00		95.4	80	120			
Silver	5.064	2.50	5.000		101	80	120			
Sample ID: 1412006-001AMS	Client ID:				Uni	0 0	dry Pr	rep Date:	12/02/2014	Run No: 281200
SampleType: MS	TestCode:	METALS, TOTAL	SW6010C		Bat	chID: 199959	A	nalysis Date:	12/03/2014	Seq No: 5951151
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	t RPD Re	f Val %RPI	RPD Limit Qual
Arsenic	46.06	5.75	57.51		80.1	75	125			
Barium	288.8	5.75	57.51	405.6	-203	75	125			S
Cadmium	55.15	2.88	57.51	21.25	58.9	75	125			S
Chromium	74.95	2.88	57.51	31.93	74.8	75	125			S
Qualifiers: > Greater than Result v	value		< Less	than Result value			В	Analyte detected	I in the associated metho	i blank
BRL Below reporting limi			E Estim	nated (value above quantit	ation range)		Н	-	or preparation or analysis	
J Estimated value det	ected below Reporting	Limit	N Analy	yte not NELAC certified			R	RPD outside lin	nits due to matrix	
Rpt Lim Reporting Limit			S Spike	Recovery outside limits of	due to matrix					

Client: Peachtree Environmental

ANALYTICAL QC SUMMARY REPORT

Date:

7-Jan-15

Project Name: Davidson Kennedy

BatchID: 199959

Workorder: 1412037

Sample ID: 1412006-001AMS SampleType: MS	Client ID: TestCode:	METALS, TOTAL	SW6010C		Un Bat	its: mg/Kg -chID: 199959	•		2/02/2014 2/03/2014	Run No: 28120 Seq No: 59511	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref V	al %RPD	RPD Limit	Qual
Lead	263.3	5.75	57.51	665.9	-700	75	125				S
Selenium	48.66	5.75	57.51	0.6468	83.5	75	125				
Silver	5.138	2.88	5.751	0.1200	87.3	75	125				
Sample ID: 1412006-001AMSD SampleType: MSD	Client ID: TestCode:	METALS, TOTAL	SW6010C		Un Bat	its: mg/Kg -chID: 199959		ep Date: 12 alysis Date: 12	2/02/2014 2/03/2014	Run No: 28120 Seq No: 59511	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref V	al %RPD	RPD Limit	Qual
Arsenic	50.71	5.76	57.63		88.0	75	125	46.06	9.61	20	
Barium	490.2	5.76	57.63	405.6	147	75	125	288.8	51.7	20	SR
Cadmium	61.44	2.88	57.63	21.25	69.7	75	125	55.15	10.8	20	S
Chromium	95.68	2.88	57.63	31.93	111	75	125	74.95	24.3	20	R
Lead	595.7	5.76	57.63	665.9	-122	75	125	263.3	77.4	20	SR
Selenium	51.17	5.76	57.63	0.6468	87.7	75	125	48.66	5.04	20	
Silver	5.754	2.88	5.763	0.1200	97.8	75	125	5.138	11.3	20	

Qualifiers: > Greater than Result value

BRL Below reporting limit

J Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

< Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

Client: Peachtree Environmental Davidson Kennedy **Project Name:**

Workorder:

ANALYTICAL QC SUMMARY REPORT

Date:

7-Jan-15

1412037

BatchID: 199987

Sample ID: MB-199987	Client ID:				Uni	its: mg/Kg	Pre	p Date:	12/03/2014	Run No: 281183
SampleType: MBLK	TestCode:	TOTAL MERCURY S	SW7471B		Bat	chID: 199987	An	alysis Date:	12/03/2014	Seq No: 5950685
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	Val %RPD	RPD Limit Qual
Mercury	BRL	0.100								
Sample ID: LCS-199987	Client ID:				Uni	its: mg/Kg	Pre	p Date:	12/03/2014	Run No: 281183
SampleType: LCS	TestCode:	TOTAL MERCURY S	SW7471B		Bat	chID: 199987	An	alysis Date:	12/03/2014	Seq No: 5950686
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	Val %RPD	RPD Limit Qual
Mercury	0.3888	0.100	0.4000		97.2	80	120			
Sample ID: 1411N55-001BMS	Client ID:				Uni	its: mg/Kg-	dry Pro	p Date:	12/03/2014	Run No: 281183
SampleType: MS	TestCode:	TOTAL MERCURY S	SW7471B		Bat	chID: 199987	An	alysis Date:	12/03/2014	Seq No: 5950688
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	Val %RPD	RPD Limit Qual
Mercury	0.4759	0.120	0.4815	0.01453	95.8	70	130			
Sample ID: 1411N55-001BMSD	Client ID:				Uni	its: mg/Kg-e	dry Pre	p Date:	12/03/2014	Run No: 281183
SampleType: MSD	TestCode:	TOTAL MERCURY S	SW7471B		Bat	chID: 199987	An	alysis Date:	12/03/2014	Seq No: 5950689
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	Val %RPD	RPD Limit Qual
Mercury	0.4874	0.120	0.4815	0.01453	98.2	70	130	0.4759	2.39	30

Qualifiers: Greater than Result value

> BRL Below reporting limit

Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

7-Jan-15 Date:

Client: Peachtree Environmental

ANALYTICAL QC SUMMARY REPORT

Project Name: Davidson Kennedy Workorder: 1412037

BatchID: 199993

Sample ID: MB-199993 SampleType: MBLK	Client ID: TestCode: TC	L-SEMIVOLATILE	ORGANICS S	W8270D	Un Bat	its: mg/Kg-dry chID: 199993		p Date: alysis Date:	12/03/2014 12/03/2014	Run No: 281178 Seq No: 5950462
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit H	igh Limit	RPD Ref	f Val %RPI	RPD Limit Qual
1,1'-Biphenyl	BRL	0.33								
2,4,5-Trichlorophenol	BRL	1.7								
2,4,6-Trichlorophenol	BRL	0.33								
2,4-Dichlorophenol	BRL	0.33								
2,4-Dimethylphenol	BRL	0.33								
2,4-Dinitrophenol	BRL	1.7								
2,4-Dinitrotoluene	BRL	0.33								
2,6-Dinitrotoluene	BRL	0.33								
2-Chloronaphthalene	BRL	0.33								
2-Chlorophenol	BRL	0.33								
2-Methylnaphthalene	BRL	0.33								
2-Methylphenol	BRL	0.33								
2-Nitroaniline	BRL	1.7								
2-Nitrophenol	BRL	0.33								
3,3'-Dichlorobenzidine	BRL	0.67								
3-Nitroaniline	BRL	1.7								
4,6-Dinitro-2-methylphenol	BRL	1.7								
4-Bromophenyl phenyl ether	BRL	0.33								
4-Chloro-3-methylphenol	BRL	0.33								
4-Chloroaniline	BRL	0.33								
4-Chlorophenyl phenyl ether	BRL	0.33								
4-Methylphenol	BRL	0.33								
4-Nitroaniline	BRL	1.7								
4-Nitrophenol	BRL	1.7								
Acenaphthene	BRL	0.33								
Acenaphthylene	BRL	0.33								
Acetophenone	BRL	0.33								
Qualifiers: > Greater than Result	value		< Less	than Result value			В	Analyte detected	in the associated metho	d blank
BRL Below reporting limit				nated (value above quantit	ation range)			-	r preparation or analysis	exceeded
	tected below Reporting Limi	t		yte not NELAC certified			R	RPD outside lim	its due to matrix	
Rpt Lim Reporting Limit			S Spike	Recovery outside limits	due to matrix					

ANALYTICAL QC SUMMARY REPORT

Date:

7-Jan-15

BatchID: 199993

R RPD outside limits due to matrix

Client:	Peachtree Environmental
Project Name:	Davidson Kennedy

Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

Workorder: 1412037

Sample ID: MB-199993	Client ID:				Un	0 0		p Date:	12/03/2014	Run No: 281178
SampleType: MBLK	TestCode: To	CL-SEMIVOLATILE OI	RGANICS S	W8270D	Bat	tchID: 199993	Ana	alysis Date:	12/03/2014	Seq No: 5950462
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	Val %RPD	RPD Limit Qua
Anthracene	BRL	0.33								
Atrazine	BRL	0.33								
Benz(a)anthracene	BRL	0.33								
Benzaldehyde	BRL	0.33								
Benzo(a)pyrene	BRL	0.33								
Benzo(b)fluoranthene	BRL	0.33								
Benzo(g,h,i)perylene	BRL	0.33								
Benzo(k)fluoranthene	BRL	0.33								
Bis(2-chloroethoxy)methane	BRL	0.33								
Bis(2-chloroethyl)ether	BRL	0.33								
Bis(2-chloroisopropyl)ether	BRL	0.33								
Bis(2-ethylhexyl)phthalate	BRL	0.33								
Butyl benzyl phthalate	BRL	0.33								
Caprolactam	BRL	0.33								
Carbazole	BRL	0.33								
Chrysene	BRL	0.33								
Di-n-butyl phthalate	BRL	0.33								
Di-n-octyl phthalate	BRL	0.33								
Dibenz(a,h)anthracene	BRL	0.33								
Dibenzofuran	BRL	0.33								
Diethyl phthalate	BRL	0.33								
Dimethyl phthalate	BRL	0.33								
Fluoranthene	BRL	0.33								
Fluorene	BRL	0.33								
Hexachlorobenzene	BRL	0.33								
Hexachlorobutadiene	BRL	0.33								
Hexachlorocyclopentadiene	BRL	0.66								
Qualifiers: > Greater than Result	value		< Less	than Result value			В	Analyte detected i	n the associated method	i blank
BRL Below reporting lin	nit		E Estim	ated (value above quantita	ation range)		Н	Holding times for	preparation or analysis	exceeded
								nnn		

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

Peachtree Environmental

Project Name: Davidson Kennedy

Workorder: 1412037

Client:

ANALYTICAL QC SUMMARY REPORT

Date: 7-Jan-15

BatchID: 199993

Sample ID: MB-199993	Client ID:				Un	its: mg/Kg-	dry Pr	ep Date:	12/03/2014	4 R	un No: 2811	78
SampleType: MBLK	TestCode: TCl	L-SEMIVOLATILE	ORGANICS S	W8270D	Bat	chID: 199993	Aı	nalysis Date:	12/03/2014	4 S	eq No: 5950	162
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	f Val %	6RPD	RPD Limit	Qual
Hexachloroethane	BRL	0.33										
Indeno(1,2,3-cd)pyrene	BRL	0.33										
Isophorone	BRL	0.33										
N-Nitrosodi-n-propylamine	BRL	0.33										
N-Nitrosodiphenylamine	BRL	0.33										
Naphthalene	BRL	0.33										
Nitrobenzene	BRL	0.33										
Pentachlorophenol	BRL	1.7										
Phenanthrene	BRL	0.33										
Phenol	BRL	0.33										
Pyrene	BRL	0.33										
Surr: 2,4,6-Tribromophenol	3.433	0	3333		103	41	128					
Surr: 2-Fluorobiphenyl	1.349	0	1667		80.9	47	120					
Surr: 2-Fluorophenol	2.490	0	3333		74.7	38.3	120					
Surr: 4-Terphenyl-d14	1.429	0	1667		85.7	51.4	125					
Surr: Nitrobenzene-d5	1.247	0	1667		74.8	40.1	120					
Surr: Phenol-d5	2.606	0	3333		78.2	40.3	120					
Sample ID: LCS-199993	Client ID:				Un	0 0	-	ep Date:	12/03/2014		un No: 2811	
SampleType: LCS	TestCode: TCI	L-SEMIVOLATILE	ORGANICS S	W8270D	Bat	chID: 199993	Aı	nalysis Date:	12/03/2014	4 S	eq No: 5950	163
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	f Val %	6RPD	RPD Limit	Qual
2,4-Dinitrotoluene	3.147	0.33	3333		94.4	56.9	120					
2-Chlorophenol	2.794	0.33	3333		83.8	51	120					
4-Chloro-3-methylphenol	3.021	0.33	3333		90.6	54	120					
4-Nitrophenol	2.924	1.7	3333		87.7	40.7	120					
Acenaphthene	2.979	0.33	3333		89.4	57.9	120					
N-Nitrosodi-n-propylamine	3.081	0.33	3333		92.4	56.5	124					
Qualifiers: > Greater than Result	value		< Less	than Result value			В	Analyte detected	in the associated	method bla	nnk	
BRL Below reporting lim	it		E Estim	nated (value above quantit	ation range)		Н	Holding times fo		malysis exc	eeded	
J Estimated value de	tected below Reporting Limi	t	N Anal	yte not NELAC certified			R	RPD outside lim	its due to matrix			
Rpt Lim Reporting Limit			S Spike	Recovery outside limits of	lue to matrix							

7-Jan-15 Date:

Client: Peachtree Environmental **Project Name:**

Davidson Kennedy

Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

Workorder: 1412037

ANALYTICAL QC SUMMARY REPORT

BatchID: 199993

Sample ID: LCS-199993 SampleType: LCS	Client ID: TestCode: TC	L-SEMIVOLATILE	ORGANICS S	W8270D	Uni Bat	its: mg/Kg -chID: 199993		p Date: alysis Date:	12/03/2014 12/03/2014	Run No: 281178 Seq No: 5950463
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	Val %RPI	O RPD Limit Qual
Pentachlorophenol	2.964	1.7	3333		88.9	41.8	120			
Phenol	2.508	0.33	3333		75.2	50.1	120			
Pyrene	2.910	0.33	3333		87.3	59.4	120			
Surr: 2,4,6-Tribromophenol	3.813	0	3333		114	41	128			
Surr: 2-Fluorobiphenyl	1.544	0	1667		92.6	47	120			
Surr: 2-Fluorophenol	2.772	0	3333		83.2	38.3	120			
Surr: 4-Terphenyl-d14	1.540	0	1667		92.4	51.4	125			
Surr: Nitrobenzene-d5	1.443	0	1667		86.6	40.1	120			
Surr: Phenol-d5	2.975	0	3333		89.3	40.3	120			
Sample ID: 1412157-001BMS SampleType: MS	Client ID: TestCode: TC	L-SEMIVOLATILE	ORGANICS S	W8270D	Uni Bat	its: mg/Kg -chID: 199993		p Date: alysis Date:	12/03/2014 12/03/2014	Run No: 281178 Seq No: 5951407
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	Val %RPI	O RPD Limit Qual
2,4-Dinitrotoluene	2.283	0.41	4129		55.3	41.7	120			
2-Chlorophenol	3.019	0.41	4129		73.1	42.9	120			
4-Chloro-3-methylphenol	3.621	0.41	4129		87.7	41.1	120			
4-Nitrophenol	3.063	2.1	4129		74.2	32	120			
Acenaphthene	3.262	0.41	4129		79.0	51.5	120			
N-Nitrosodi-n-propylamine	3.335	0.41	4129		80.8	50.2	120			
Pentachlorophenol	3.898	2.1	4129		94.4	38.4	120			
Phenol	2.740	0.41	4129		66.4	41.5	120			
Pyrene	3.277	0.41	4129		79.4	45.2	120			
Surr: 2,4,6-Tribromophenol	4.444	0	4129		108	41	128			
Surr: 2-Fluorobiphenyl	1.651	0	2065		80.0	47	120			
Surr: 2-Fluorophenol	2.941	0	4129		71.2	38.3	120			
Surr: 4-Terphenyl-d14	1.732	0	2065		83.9	51.4	125			
Surr: Nitrobenzene-d5	1.565	0	2065		75.8	40.1	120			
Qualifiers: > Greater than Result va	lue		< Less	than Result value			В	Analyte detected	in the associated metho	d blank
BRL Below reporting limit			E Estim	ated (value above quantit	ation range)		Н	Holding times fo	r preparation or analysi	s exceeded

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

R RPD outside limits due to matrix

Client: Peachtree Environmental **Project Name:**

1412037

Workorder:

ANALYTICAL QC SUMMARY REPORT

Date:

7-Jan-15

Davidson Kennedy

BatchID: 199993

Sample ID: 1412157-001BMS SampleType: MS	Client ID: TestCode: TO	CL-SEMIVOLATILE	ORGANICS S	W8270D	Un Bat	its: mg/Kg chID: 199993		Date: 12/03 alysis Date: 12/03		Run No: 281178 Seq No: 5951407
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Surr: Phenol-d5	3.221	0	4129		78.0	40.3	120			
Sample ID: 1412157-001BMSD SampleType: MSD	Client ID: TestCode: TO	CL-SEMIVOLATILE	ORGANICS S	W8270D	Un: Bat	its: mg/Kg chID: 199993		Date: 12/03 alysis Date: 12/03		Run No: 281178 Seq No: 5951564
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
2,4-Dinitrotoluene	2.492	0.41	4129		60.4	41.7	120	2283	8.75	33.1
2-Chlorophenol	3.031	0.41	4129		73.4	42.9	120	3019	0.396	30.7
4-Chloro-3-methylphenol	3.471	0.41	4129		84.1	41.1	120	3621	4.24	40.5
4-Nitrophenol	3.119	2.1	4129		75.5	32	120	3063	1.80	37.9
Acenaphthene	3.303	0.41	4129		80.0	51.5	120	3262	1.25	26.3
N-Nitrosodi-n-propylamine	3.340	0.41	4129		80.9	50.2	120	3335	0.161	34.9
Pentachlorophenol	4.031	2.1	4129		97.6	38.4	120	3898	3.36	35.9
Phenol	2.763	0.41	4129		66.9	41.5	120	2740	0.826	37.4
Pyrene	3.365	0.41	4129		81.5	45.2	120	3277	2.67	35
Surr: 2,4,6-Tribromophenol	4.695	0	4129		114	41	128	4444	0	0
Surr: 2-Fluorobiphenyl	1.712	0	2065		82.9	47	120	1651	0	0
Surr: 2-Fluorophenol	3.053	0	4129		73.9	38.3	120	2941	0	0
Surr: 4-Terphenyl-d14	1.801	0	2065		87.2	51.4	125	1732	0	0
Surr: Nitrobenzene-d5	1.608	0	2065		77.9	40.1	120	1565	0	0
Surr: Phenol-d5	3.289	0	4129		79.6	40.3	120	3221	0	0

Qualifiers: Greater than Result value

> BRL Below reporting limit

Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

Date: 7-Jan-15

Client: Peachtree Environmental **Project Name:** Davidson Kennedy

Rpt Lim Reporting Limit

Workorder: 1412037

ANALYTICAL QC SUMMARY REPORT

BatchID: 200907

Sample ID: MB-200907 SampleType: MBLK	Client ID: TestCode: TC	L-SEMIVOLATILE O	RGANICS S	W8270D	Uni Bat	ts: mg/Kg-d chID: 200907		Date: 12/2		Run No: 282612 Seq No: 5987986
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
1,1'-Biphenyl	BRL	0.33								
2,4,5-Trichlorophenol	BRL	1.7								
2,4,6-Trichlorophenol	BRL	0.33								
2,4-Dichlorophenol	BRL	0.33								
2,4-Dimethylphenol	BRL	0.33								
2,4-Dinitrophenol	BRL	1.7								
2,4-Dinitrotoluene	BRL	0.33								
2,6-Dinitrotoluene	BRL	0.33								
2-Chloronaphthalene	BRL	0.33								
2-Chlorophenol	BRL	0.33								
2-Methylnaphthalene	BRL	0.33								
2-Methylphenol	BRL	0.33								
2-Nitroaniline	BRL	1.7								
2-Nitrophenol	BRL	0.33								
3,3'-Dichlorobenzidine	BRL	0.67								
3-Nitroaniline	BRL	1.7								
4,6-Dinitro-2-methylphenol	BRL	1.7								
4-Bromophenyl phenyl ether	BRL	0.33								
4-Chloro-3-methylphenol	BRL	0.33								
4-Chloroaniline	BRL	0.33								
4-Chlorophenyl phenyl ether	BRL	0.33								
4-Methylphenol	BRL	0.33								
4-Nitroaniline	BRL	1.7								
4-Nitrophenol	BRL	1.7								
Acenaphthene	BRL	0.33								
Acenaphthylene	BRL	0.33								
Acetophenone	BRL	0.33								
Qualifiers: > Greater than Result	value		< Less	than Result value			В	Analyte detected in the a	associated method	blank
BRL Below reporting lim	nit		E Estim	ated (value above quantita	ation range)			Holding times for prepa		
J Estimated value de	tected below Reporting Lim	it	N Analy	yte not NELAC certified			R	RPD outside limits due	to matrix	

S Spike Recovery outside limits due to matrix

Client: Peachtree Environmental

Rpt Lim Reporting Limit

Project Name:

Workorder:

Peachtree Environmental

ANALYTICAL QC SUMMARY REPORT

Davidson Kennedy
1412037

BatchID: 200907

Sample ID: MB-200907 SampleType: MBLK	Client ID: TestCode: TC	L-SEMIVOLATILE C	ORGANICS S	W8270D	Uni Bat	ts: mg/Kg-d chID: 200907		Date: 12/2	24/2014 24/2014	Run No: 282612 Seq No: 5987986
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Anthracene	BRL	0.33								
Atrazine	BRL	0.33								
Benz(a)anthracene	BRL	0.33								
Benzaldehyde	BRL	0.33								
Benzo(a)pyrene	BRL	0.33								
Benzo(b)fluoranthene	BRL	0.33								
Benzo(g,h,i)perylene	BRL	0.33								
Benzo(k)fluoranthene	BRL	0.33								
Bis(2-chloroethoxy)methane	BRL	0.33								
Bis(2-chloroethyl)ether	BRL	0.33								
Bis(2-chloroisopropyl)ether	BRL	0.33								
Bis(2-ethylhexyl)phthalate	BRL	0.33								
Butyl benzyl phthalate	BRL	0.33								
Caprolactam	BRL	0.33								
Carbazole	BRL	0.33								
Chrysene	BRL	0.33								
Di-n-butyl phthalate	BRL	0.33								
Di-n-octyl phthalate	BRL	0.33								
Dibenz(a,h)anthracene	BRL	0.33								
Dibenzofuran	BRL	0.33								
Diethyl phthalate	BRL	0.33								
Dimethyl phthalate	BRL	0.33								
Fluoranthene	BRL	0.33								
Fluorene	BRL	0.33								
Hexachlorobenzene	BRL	0.33								
Hexachlorobutadiene	BRL	0.33								
Hexachlorocyclopentadiene	BRL	0.66								
Qualifiers: > Greater than Result	value		< Less	than Result value			В	Analyte detected in the	associated method	blank
BRL Below reporting lin	nit		E Estim	ated (value above quantita	ation range)			Holding times for prepa	-	xceeded
J Estimated value de	etected below Reporting Lim	it	N Analy	te not NELAC certified			R I	RPD outside limits due	e to matrix	

S Spike Recovery outside limits due to matrix

7-Jan-15

Date:

Client: Peachtree Environmental
Project Name: Davidson Kennedy

Workorder: 1412037

ANALYTICAL QC SUMMARY REPORT

Date:

7-Jan-15

BatchID: 200907

Sample ID: MB-200907	Client ID:	CENTROL ATTILE	ODG LYHOG G	11/04 5 0D	Un	0 0	-	ep Date:	12/24/2014	Run No: 282612
SampleType: MBLK	TestCode: 1C	L-SEMIVOLATILE	ORGANICS S	W8270D	Bat	tchID: 200907	Aı	nalysis Date:	12/24/2014	Seq No: 5987986
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	Val %RP	D RPD Limit Qual
Hexachloroethane	BRL	0.33								
Indeno(1,2,3-cd)pyrene	BRL	0.33								
Isophorone	BRL	0.33								
N-Nitrosodi-n-propylamine	BRL	0.33								
N-Nitrosodiphenylamine	BRL	0.33								
Naphthalene	BRL	0.33								
Nitrobenzene	BRL	0.33								
Pentachlorophenol	BRL	1.7								
Phenanthrene	BRL	0.33								
Phenol	BRL	0.33								
Pyrene	BRL	0.33								
Surr: 2,4,6-Tribromophenol	3.362	0	3333		101	41	128			
Surr: 2-Fluorobiphenyl	1.436	0	1667		86.1	47	120			
Surr: 2-Fluorophenol	2.576	0	3333		77.3	38.3	120			
Surr: 4-Terphenyl-d14	1.458	0	1667		87.5	51.4	125			
Surr: Nitrobenzene-d5	1.271	0	1667		76.3	40.1	120			
Surr: Phenol-d5	2.744	0	3333		82.3	40.3	120			
Sample ID: LCS-200907	Client ID:				Un	0 0		ep Date:	12/24/2014	Run No: 282612
SampleType: LCS	TestCode: TC	L-SEMIVOLATILE	ORGANICS S	W8270D	Bat	tchID: 200907	Aı	nalysis Date:	12/24/2014	Seq No: 5987987
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	Val %RP	D RPD Limit Qual
2,4-Dinitrotoluene	2.736	0.33	3333		82.1	56.9	120			
2-Chlorophenol	2.489	0.33	3333		74.7	51	120			
4-Chloro-3-methylphenol	2.679	0.33	3333		80.4	54	120			
4-Nitrophenol	2.318	1.7	3333		69.5	40.7	120			
Acenaphthene	2.790	0.33	3333		83.7	57.9	120			
N-Nitrosodi-n-propylamine	2.625	0.33	3333		78.8	56.5	124			
Qualifiers: > Greater than Result	value		< Less	than Result value			В	Analyte detected	in the associated method	od blank
BRL Below reporting lim	it		E Estin	nated (value above quantit	ation range)		Н	Holding times for	r preparation or analysi	is exceeded
J Estimated value de	tected below Reporting Limi	t	N Anal	yte not NELAC certified			R	RPD outside lim	its due to matrix	
Rpt Lim Reporting Limit			S Spike	Recovery outside limits of	due to matrix					

Client: Peachtree Environmental

Peachtree Environmental

ANALYTICAL QC SUMMARY REPORT

Project Name: Davidson Kennedy

Workorder: 1412037 **BatchID:** 200907

Sample ID: LCS-200907	Client ID:				Uni	ts: mg/Kg-	dry Prep	Date:	12/24/2014	Run No: 282612
SampleType: LCS	TestCode:	TCL-SEMIVOLATILE O	RGANICS S	W8270D	Bat	chID: 200907	Ana	lysis Date:	12/24/2014	Seq No: 5987987
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	Val %RPI	O RPD Limit Qual
Pentachlorophenol	2.583	1.7	3333		77.5	41.8	120			
Phenol	2.239	0.33	3333		67.2	50.1	120			
Pyrene	2.796	0.33	3333		83.9	59.4	120			
Surr: 2,4,6-Tribromophenol	3.668	0	3333		110	41	128			
Surr: 2-Fluorobiphenyl	1.509	0	1667		90.5	47	120			
Surr: 2-Fluorophenol	2.543	0	3333		76.3	38.3	120			
Surr: 4-Terphenyl-d14	1.603	0	1667		96.2	51.4	125			
Surr: Nitrobenzene-d5	1.255	0	1667		75.3	40.1	120			
Surr: Phenol-d5	2.752	0	3333		82.6	40.3	120			
Sample ID: 1412K98-007BMS SampleType: MS	Client ID: TestCode:	TCL-SEMIVOLATILE O	RGANICS S	W8270D	Uni Bat	ts: mg/Kg -chID: 200907		Date:	12/24/2014 12/24/2014	Run No: 282612 Seq No: 5987989
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	Val %RPI	O RPD Limit Qual
2,4-Dinitrotoluene	3.106	0.46	4672		66.5	41.7	120			
2-Chlorophenol	3.084	0.46	4672		66.0	42.9	120			
4-Chloro-3-methylphenol	3.312	0.46	4672		70.9	41.1	120			
4-Nitrophenol	2.989	2.4	4672		64.0	32	120			
Acenaphthene	3.466	0.46	4672		74.2	51.5	120			
N-Nitrosodi-n-propylamine	3.210	0.46	4672		68.7	50.2	120			
Pentachlorophenol	3.286	2.4	4672		70.3	38.4	120			
Phenol	2.851	0.46	4672		61.0	41.5	120			
Pyrene	3.282	0.46	4672		70.2	45.2	120			
Surr: 2,4,6-Tribromophenol	4.338	0	4672		92.8	41	128			
Surr: 2-Fluorobiphenyl	1.858	0	2336		79.5	47	120			
Surr: 2-Fluorophenol	3.122	0	4672		66.8	38.3	120			
Surr: 4-Terphenyl-d14	1.835	0	2336		78.6	51.4	125			
Surr: Nitrobenzene-d5	1.577	0	2336		67.5	40.1	120			
Qualifiers: > Greater than Result val	ue		< Less	than Result value			В	Analyte detected i	n the associated metho	od blank
BRL Below reporting limit			E Estin	nated (value above quantita	ation range)		Н	Holding times for	preparation or analysi	s exceeded
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7-Jan-15

Date:

Client: Peachtree Environmental

1412037

ANALYTICAL QC SUMMARY REPORT

Date:

7-Jan-15

Project Name: Davidson Kennedy

Workorder:

BatchID: 200907

Sample ID: 1412K98-007BMS	Client ID:	Units:	mg/Kg-dry	Prep Date:	12/24/2014	Run No: 282612
SampleType: MS	TestCode: TCL-SEMIVOLATILE ORGANICS SW8270D	BatchID	: 200907	Analysis Date:	12/24/2014	Sea No: 5987989

Analyte Result RPT Limit SPK value SPK Ref Val %REC Low Limit High Limit RPD Ref Val %RPD RPD Limit Qual

Surr: Phenol-d5 3.476 0 4672 74.4 40.3 120

Sample ID: 1412K98-007BMSD SampleType: MSD	Client ID: TestCode: TO	CL-SEMIVOLATILE (ORGANICS SW	V8270D	Un Bat	its: mg/Kg- chID: 200907	-	Date: 12/24 lysis Date: 12/24		Run No: 282612 Seq No: 5987990
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
2,4-Dinitrotoluene	3.431	0.46	4672		73.4	41.7	120	3106	9.95	33.1
2-Chlorophenol	3.448	0.46	4672		73.8	42.9	120	3084	11.1	30.7
4-Chloro-3-methylphenol	3.609	0.46	4672		77.2	41.1	120	3312	8.57	40.5
4-Nitrophenol	3.362	2.4	4672		72.0	32	120	2989	11.7	37.9
Acenaphthene	3.726	0.46	4672		79.8	51.5	120	3466	7.25	26.3
N-Nitrosodi-n-propylamine	3.542	0.46	4672		75.8	50.2	120	3210	9.85	34.9
Pentachlorophenol	3.586	2.4	4672		76.8	38.4	120	3286	8.72	35.9
Phenol	3.140	0.46	4672		67.2	41.5	120	2851	9.62	37.4
Pyrene	3.510	0.46	4672		75.1	45.2	120	3282	6.71	35
Surr: 2,4,6-Tribromophenol	4.726	0	4672		101	41	128	4338	0	0
Surr: 2-Fluorobiphenyl	2.044	0	2336		87.5	47	120	1858	0	0
Surr: 2-Fluorophenol	3.550	0	4672		76.0	38.3	120	3122	0	0
Surr: 4-Terphenyl-d14	1.988	0	2336		85.1	51.4	125	1835	0	0
Surr: Nitrobenzene-d5	1.782	0	2336		76.3	40.1	120	1577	0	0
Surr: Phenol-d5	3.873	0	4672		82.9	40.3	120	3476	0	0

Qualifiers: > Greater than Result value

BRL Below reporting limit

J Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

< Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix



APPENDIX E

Field Activities Summary

MEMORANDUM

TO: John Martiniere

FROM: Jeff Bauman

DATE: September 8, 2015

SUBJECT: Site Work at Davidson – Kennedy Site

This memorandum presents a summary of the site work conducted by Peachtree Environmental (Peachtree) at the Davidson-Kennedy Site (DK) located at 1195 Victory Lane, Atlanta, Georgia.

Peachtree was authorized to proceed with site work by Mr. Joe Rubin on July 8, 2015, after obtaining an approved waste profile from Advanced Disposal via email.

Site work was conducted beginning Monday, July 13, 2015. Site work was completed Friday, July 17, 2015.

The objective of the site work was twofold: 1) Remove solid waste, including discarded car and truck tires, that had accumulated on site from other sources, and 2) Excavate and dispose offsite impacted soils from certain areas including hot spot and compliance areas on site and from one small area off site.

A total of approximately 155 cubic yards of solid waste and debris was removed from the site. A total of approximately 245 discarded tires was removed and recycled from the onsite property. The total quantity of impacted soils excavated and removed from onsite and offsite areas totaled 73.4 tons.

Following is a day by day account of the work conducted at the site compiled from the daily reports.

Site Work Day 1:

Field personnel and equipment were mobilized to the site to begin work began on Monday, July 13, 2105. A Project Superintendent and two (2) equipment operators were mobilized to the site. Equipment mobilized to the site included a small tracked excavator and a skid steer loader. The first solid waste debris containers were also dropped off at the site. A load of rock was delivered to the site for use in building a construction entrance.

After a tool box safety meeting was held by the personnel on site, solid waste consolidation work began. The solid waste was sorted into discreet piles and loaded into the roll off container on site. Discarded tires were segregated from the solid waste.

As progress was made cleaning up the solid waste and debris, vegetation clearing began to access the compliance and hot spot areas on site. A call was placed to GA811 for utility clearance for offsite property.

Site Work Day 2:

On Tuesday, July 14, 2015, solid waste and debris cleanup continued after the tool box safety meeting was conducted. The solid waste roll off filled on Monday, July 13, 2015 was picked up and two (2) more solid waste roll off containers were dropped off. These additional solid waste roll off containers were filled. Tire segregation and collection work continued.

The compliance and hot spot areas were made accessible by removal of vegetation. Vegetation was discreetly removed to include only the areas to be excavated and left in place surround the areas to be excavated to serve as erosion control. Initial X-ray fluorescence (XRF) sampling by Peachtree personnel in the compliance and hot spot areas was supported by field personnel using the tracked excavator. The initial limits of excavation were staked in the field and a truck was scheduled for the following day to receive excavated material for offsite disposal at the Advanced Disposal Eagle Point Landfill in Ball Ground, Georgia.

The entrance to the site was secured by placing large pieces of concrete debris across the entrance to the site at the end of Day 2.

Site Work Day 3:

Excavation began in compliance area after the tool box safety meeting was conducted on Wednesday, July 15, 2015. Two (2) dump trucks were loaded with impacted soils from the compliance area for disposal at Eagle Point Landfill. The quantity of impacted soils excavated and disposed offsite on Day 3 totaled 34.5 tons.

Improvements were made to the haul road to allow better access by equipment and trucks to the loading area by using excess gravel from the construction entrance. Solid waste and debris cleanup continued by loading solid waste and debris into two more roll off containers bringing the total volume of solid waste removed from the site to 110 cubic yards.

The entrance to the site was secured by placing large pieces of concrete debris across the entrance to the site at the end of Day 3. Field personnel refueled the support truck and picked up a trailer for use in the load out of tires for recycling.

Site Work Day 4:

After the toolbox safety meeting, excavation in the compliance area was completed on Thursday, July 16, 2015. Two loads totaling 33.37 tons were disposed from the compliance area at Eagle Point Landfill. Also, operations were moved to the offsite area on Day 4. Impacted material from the offsite area was excavated and loaded into 1 truck. A total 5.53 tons was disposed at Eagle Point Landfill from the offsite area.

Solid waste and debris cleanup continued by loading solid waste and debris into two more roll off containers bringing the total volume of solid waste removed from the site to 155 cubic yards.

Discarded tires that had been segregated from the solid waste over the first three days of site work were loaded onto a trailer. A total of two full trailer loads with approximately 245 discarded car and truck tires were recycled at Liberty Tire Recycling located at 1593 Huber St NW, Atlanta, Georgia.

The entrance to the site was secured by placing large pieces of concrete debris across the entrance to the site at the end of Day 4.

Site Work Day 5:

On Friday, July 17, 2015, backfill was delivered, placed and graded at the offsite area. Seed and straw were placed onto the backfilled soils at the offsite area.

The onsite excavation areas were rough graded to prevent ponding and to promote positive drainage. Equipment was demobilized from the site. The entrance to the site was secured by placing large pieces of concrete debris across the entrance to the site at the end of Day 5.

Site Work Day 6:

Additional work was performed by Peachtree as authorized by Mr. Joe Rubin on Tuesday, July 28, 2015. The objective of the additional work was to improve site security at the entrance to the site. Peachtree mobilized personnel and equipment to the site, including a superintendent and an operator, a tracked excavator and a grapple hook, and procured and set three (3) Jersey Barriers and additional pieces of scrap concrete from the site across the entrance to the site. Peachtree then demobilized the equipment and personnel from the site.



APPENDIX F

Off-Site Access

Michelle R. Hollister

From: Tracy Dummett <tracydummett@comcast.net>

Sent: Tuesday, November 18, 2014 10:52 AM

To: John P. Martiniere, Jr. **Subject:** Re: Lanier Drive Property

Sure, do what you need to do.

On Nov 18, 2014, at 10:00 AM, "John P. Martiniere, Jr." < jmartiniere@peachtreeenvironmental.com > wrote:

Good morning, Ms. Dummett.

On behalf of the Davidson-Kennedy company, which owns the property next to your Lanier Drive property, I am requesting permission to conduct a cleanup that is required by the Georgia Environmental Protection Division. You may recall that someone from Peachtree Environmental contacted you several years ago (May 2012) about taking some soil samples on your property to see if there were any environmental impacts, for which you granted your permission. We determined that there is a small area of soil on your property near the property line that could have an impact, possibly from airborne contaminants from Ft. MacPherson. Davidson-Kennedy has agreed to remove this soil on your property at no cost to you while it is taking care of similar areas on its own property.

Based on the sampling results, we expect that the entire field project will take less than a week and probably not more than parts of a day or two on your property. Any soil that is removed will be replaced with clean soil and the area will be re-seeded. To do this work, we need permission to come onto your property with a small backhoe and a truck, most likely from the Lanier Drive side. Mr. Carlton Gordon, your tenant on the property, has given his permission to do this work, but as the property owner, we need your permission as well.

We still have a few steps to take to obtain EPD approval of our plans and similar sign offs, so our schedule is still somewhat uncertain. However, we expect to do the work either by the end of this year or in the first quarter of 2015. We will let you know when a more definite schedule is set.

Please reply to this e-mail giving your permission to do the work described above. If you have any questions, please call me.

Thank you for your consideration and cooperation.

Best regards,

John P. Martiniere, Jr. P.E. Peachtree Environmental

3000 Northwoods Parkway, Suite 105 Norcross, GA 30071 Office 770.449.6100 ext. 225 Cell 404.234.3063



APPENDIX G

Non-Hazardous Waste Manifests

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<u> </u>	17b. Alternate Facility (or Generator)		Ma	nifest Reference I	Number:	U.S. EPA ID N	lumbor	<u> </u>		
ACILI	Facility's Phases					0.0. 21 7 15 14	umber			IT.
EDF	Facility's Phone: 17c. Signature of Alternate Facility (or Generator)							Month	Day	Year
DESIGNATED FACILITY	CONTRACTOR OF THE SECRETARY OF THE SECRE									roai
DES										
	100									
	18. Designated Facility Owner or Operator: Certification of receipt of materials con	vered by the ma	nifest except as Signature					Month	Day	Vanne
*	TITULLE			1110.	-66	5		Month	Day	Year



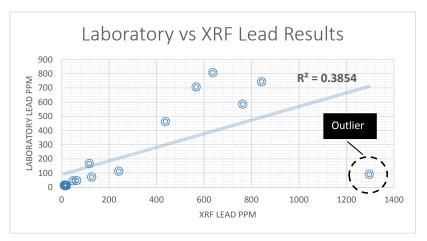
1	NON-HAZARDOUS WASTE MANIFEST	1. Generator I			21 (1	3. Emergency Res	oonse Phone	4. Wast	e Tracking N	lumber 1	3482
1	5. Generator's Name and Ma	ailing Address	BAVIDSON-KENN	EDY COMPAN	YY-	Generator's Site A	ddress (if diffa	ant then easili	n ndd '	T (0482
1			MARIETTA CA 20	PARK DRIVE		Davide		ent than mailing	g address)	1	
			MARIETTA, GA 30 770-395-6372	VOZ		Davids. 1195"\ uck# (on - Ke	nnedy	Prop	erry	
	Generator's Phone:					1195	lictor	. Nei	10 A	11- 1	/ /
	6. Transporter 1 Company Na	ame		r/Econ	TR	uck# 5 .	2	U.S. EPA	ID Number	TIONT	9,07
	7. Transporter 2 Company Na	emo			20.00	2.6	217		- Hamber		
	The Ecompany No	anc						U.S. EPA	ID Number		
	8. Designated Facility Name a	and Site Address	FAGIF POINT LAND	DEHI							
	****		8880 OLD FEDERAL	LRÓAD				U.S. EPA	D Number		
			BALL GROUND, GA								
-	Facility's Phone		770-781-2721					058-012D	(MSMI)		
1	9. Waste Shipping Nam	e and Description	1			10 Co	ntainers		T		
	1.					No.	Туре	11. Total Quantity	12. Unit Wt./Vol.		
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ŀ	2. NON-R	EGULATED N	AATERIAL								
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63	SERECT -						1				
1	13. Special Handling Instruction	s and Additional I	nformation					7			
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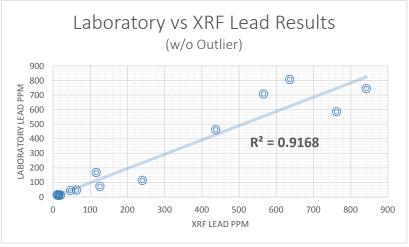


APPENDIX H

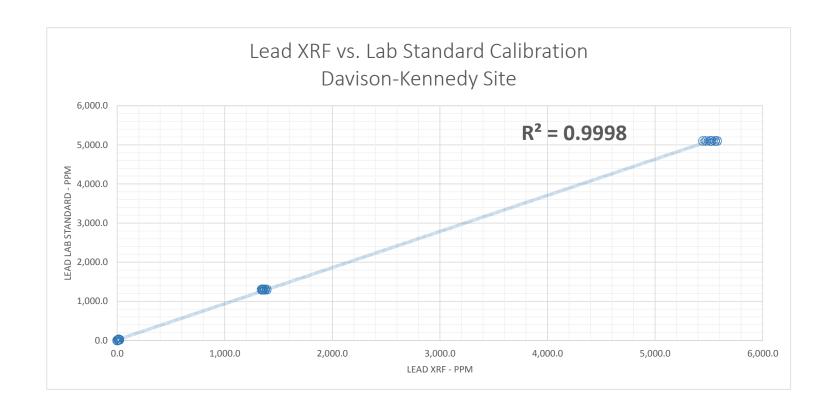
XRF Analyzer Calibration Curves

Sample ID	FPXRF Lead Result	AES Laboratory Lead Result
DKREM-11	566	708
DKREM-9	636	808
DKREM-12	842	744
DKREM-10	762	586
DKREM-18	1295	91.6 Outlier
DKREM-17	240	114
DKREM-19	437	463
DKREM-14	126	73.3
DKREM-13	47	45.3
DKREM-15	63	47.7
DKREM-16	116	168
DKREM-20	15	11.2
DKREM-21	11	14.5
DKREM-23	16	14.1
DKREM-22	20	13
DKREM-24	12	14.9
DKREM-8	243	FPXRF Only/Screening
DKREM-7	55	FPXRF Only/Screening
DKREM-6	60	FPXRF Only/Screening
DKREM-5	298	FPXRF Only/Screening
DKREM-4	1377	FPXRF Only/Screening
DKREM-3	156	FPXRF Only/Screening
DKREM-2	190	FPXRF Only/Screening
DKREM-1	217	FPXRF Only/Screening





	Sample ID	PbXRF	Pb +/-	PbLabStd
3	test 2709a	11	3	17.3
16	test 2709a	17	3	17.3
23	test 2709a	14	3	17.3
38	test 2709a	14	3	17.3
40	test 2709a	17	3	17.3
44	test 2709a	20	4	17.3
52	test 2709a	11	3	17.3
58	test 2709a	15	4	17.3
4	test 2710a	5524	76	5100
17	test 2710a	5577	78	5100
22	test 2710a	5477	77	5100
45	test 2710a	5514	87	5100
54	test 2710a	5445	76	5100
59	test 2710a	5559	90	5100
5	test 2711a	1350	23	1300
18	test 2711a	1342	23	1300
21	test 2711a	1389	24	1300
39	test 2711a	1356	22	1300
43	test 2711a	1375	23	1300
53	test 2711a	1351	29	1300
57	test 2711a	1371	27	1300
62	test 2711a	1353	24	1300
2	test sand	0	11	0
15	test sand	0	6	0
20	test sand	0	7	0
37	test sand	0	7	0
42	test sand	0	6	0
51	test sand	0	6	0
56	test sand	0	7	0
61	test sand	0	7	0





APPENDIX I

Laboratory Analytical Results for Confirmation Samples On-Site

ANALYTICAL ENVIRONMENTAL SERVICES, INC.



July 20, 2015

Jamie Henderson Peachtree Environmental 3000 Northwoods Parkway, Suite 105 Norcross GA 30071

TEL: (770) 449-6100 FAX: (770) 513-9848

RE: Davidson Kennedy Site

Dear Jamie Henderson: Order No: 1507C51

Analytical Environmental Services, Inc. received 11 samples on 7/15/2015 3:30:00 PM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.

AES' certifications are as follows:

- -NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/15-06/30/16.
- -AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Dorothy deBruyn

Project Manager

ANALYTICAL ENVIRONMENTAL SERVICES, INC

CHAIN OF CUSTODY

1507CS1 Work Order: 63277

I	3080 Presidential Drive, Atlanta GA 30340- ES TEL.: (770) 457-8177 / TOLL-FREE (800)		X: (770) 457	-8188									Date: 2	15/15 Page of	1
AP YE	EACHTREE ENV.	ADDRESS: 3000 # 105	Noema	D06	ers S	Proy	- - - - -	4	1	ANALY	SIS REQ	JESTED		Visit our website www.aesatlanta.com	-! 1
	E: 770 - 449 - 6100 LED BY: JRH	FAX.	,	Tere	, D	n		8-06-28						to check on the status o your results, place bottl orders, etc.	S
	SAMPLE ID	DATE	PLED TIME	Grab	Composite	Matrix (See codes)	H H	IX IX	<u> </u>	PRESER	VATION (See codes)		REMARKS	No
	DKREM-9	715/15	P :35	X		50	X	X						TOTAL LEAD	Ţ
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RELINQUISHED BY,	DATE/TIME	RECEIVED BY	DATE/TIME	PROJECT II	NFORMATION		RECEIPT	
Jans Herde	HI5/15 15:30	Latie Jour	7-15-15 M 15:30	PROJECT NAME: DAVIDSON -	KEMPEDY SITE	1	Total # of Containers	j
3		3:		PROJECT #: 2		00	Turnaround Time Request Standard 5 Business Days 2 Business Day Rush	
SPECIAL INSTRUCTIONS/COMMEN	TS:	SHIPMEN	T METHOD VIA:	SEND REPORT TO: JAMIE INVOICE TO: (IF DIFFERENT FROM ABOVE)	HENDERSON	X 000	Next Business Day Rush Same Day Rush (auth req. Other)
			VIA: JPS MAIL COURIER THER	QUOTE #:	PO#:	E-mail?	COGRAM (if any): Y / N; Fax? Y / N ACKAGE: I II III	 IV
SAMPLES RECEIVED AFTER 3PM SAMPLES ARE DISPOSED 30 DAYS		ONSIDERED RECEIVED THE	NEXT BUSINESS DAY, IF T	URNAROUND TIME IS NOT INDIC.	ATED, AES WILL PROCEED WITH S			

Client: Peachtree Environmental Client Sample ID: DKREM-9

Project Name: Davidson Kennedy Site Collection Date: 7/15/2015 9:35:00 AM

Date:

20-Jul-15

Lab ID: 1507C51-001 **Matrix:** Soil

Analyses	Result	Reporting Limit	ual Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL-SEMIVOLATILE ORGANICS	SW8270D		(SW.	3550C)			
Benzo(a)pyrene	1.9	0.40	mg/Kg-dry	210245	1	07/16/2015 20:35	YH
Surr: 2,4,6-Tribromophenol	88.7	41-128	%REC	210245	1	07/16/2015 20:35	YH
Surr: 2-Fluorobiphenyl	83.6	47-120	%REC	210245	1	07/16/2015 20:35	YH
Surr: 2-Fluorophenol	54.7	38.3-120	%REC	210245	1	07/16/2015 20:35	YH
Surr: 4-Terphenyl-d14	79.9	51.4-125	%REC	210245	1	07/16/2015 20:35	YH
Surr: Nitrobenzene-d5	74	40.1-120	%REC	210245	1	07/16/2015 20:35	YH
Surr: Phenol-d5	71.4	40.3-120	%REC	210245	1	07/16/2015 20:35	YH
METALS, TOTAL SW6010C			(SW:	3050B)			
Lead	808	5.90	mg/Kg-dry	210189	1	07/16/2015 16:21	TA
PERCENT MOISTURE D2216							
Percent Moisture	17.4	0	wt%	R296132	2 1	07/17/2015 11:00	PF

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative NC Not confirmed

< Less than Result value

Client: Peachtree Environmental Client Sample ID: DKREM-10

Project Name: Davidson Kennedy Site Collection Date: 7/15/2015 10:00:00 AM

Date:

20-Jul-15

Lab ID: 1507C51-002 Matrix: Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst	
TCL-SEMIVOLATILE ORGANICS	SW8270D			(SW.	3550C)				
Benzo(a)pyrene	3.4	0.40		mg/Kg-dry	210245	1	07/16/2015 23:01	YH	
Surr: 2,4,6-Tribromophenol	77	41-128		%REC	210245	1	07/16/2015 23:01	YH	
Surr: 2-Fluorobiphenyl	84.2	47-120		%REC	210245	1	07/16/2015 23:01	YH	
Surr: 2-Fluorophenol	72.4	38.3-120		%REC	210245	1	07/16/2015 23:01	YH	
Surr: 4-Terphenyl-d14	89.4	51.4-125		%REC	210245	1	07/16/2015 23:01	YH	
Surr: Nitrobenzene-d5	84.8	40.1-120		%REC	210245	1	07/16/2015 23:01	YH	
Surr: Phenol-d5	83.2	40.3-120		%REC	210245	1	07/16/2015 23:01	YH	
METALS, TOTAL SW6010C		(SW3050B)							
Lead	586	5.98		mg/Kg-dry	210189	1	07/16/2015 16:24	TA	
PERCENT MOISTURE D2216									
Percent Moisture	17.5	0		wt%	R296132	. 1	07/17/2015 11:00	PF	

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative
NC Not confirmed

< Less than Result value

Client: Peachtree Environmental Client Sample ID: DKREM-11

Project Name: Davidson Kennedy Site Collection Date: 7/15/2015 10:04:00 AM

Date:

20-Jul-15

Lab ID: 1507C51-003 **Matrix:** Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL-SEMIVOLATILE ORGANICS	SW8270D			(SW	3550C)			
Benzo(a)pyrene	1.8	0.39		mg/Kg-dry	210245	1	07/16/2015 23:28	YH
Surr: 2,4,6-Tribromophenol	72.5	41-128		%REC	210245	1	07/16/2015 23:28	YH
Surr: 2-Fluorobiphenyl	81.4	47-120		%REC	210245	1	07/16/2015 23:28	YH
Surr: 2-Fluorophenol	71	38.3-120		%REC	210245	1	07/16/2015 23:28	YH
Surr: 4-Terphenyl-d14	88	51.4-125		%REC	210245	1	07/16/2015 23:28	YH
Surr: Nitrobenzene-d5	85.9	40.1-120		%REC	210245	1	07/16/2015 23:28	YH
Surr: Phenol-d5	82.4	40.3-120		%REC	210245	1	07/16/2015 23:28	YH
METALS, TOTAL SW6010C				(SW	3050B)			
Lead	708	5.72		mg/Kg-dry	210189	1	07/16/2015 16:27	TA
PERCENT MOISTURE D2216								
Percent Moisture	15.3	0		wt%	R296132	2 1	07/17/2015 11:00	PF

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative NC Not confirmed

< Less than Result value

Client: Peachtree Environmental Client Sample ID: DKREM-12

Project Name: Davidson Kennedy Site Collection Date: 7/15/2015 10:06:00 AM

Date:

20-Jul-15

Lab ID: 1507C51-004 Matrix: Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst	
TCL-SEMIVOLATILE ORGANICS	SW8270D			(SW.	3550C)				
Benzo(a)pyrene	3.4	0.36		mg/Kg-dry	210245	1	07/16/2015 23:56	YH	
Surr: 2,4,6-Tribromophenol	72.3	41-128		%REC	210245	1	07/16/2015 23:56	YH	
Surr: 2-Fluorobiphenyl	81.9	47-120		%REC	210245	1	07/16/2015 23:56	YH	
Surr: 2-Fluorophenol	73.1	38.3-120		%REC	210245	1	07/16/2015 23:56	YH	
Surr: 4-Terphenyl-d14	86.7	51.4-125		%REC	210245	1	07/16/2015 23:56	YH	
Surr: Nitrobenzene-d5	90.9	40.1-120		%REC	210245	1	07/16/2015 23:56	YH	
Surr: Phenol-d5	84.2	40.3-120		%REC	210245	1	07/16/2015 23:56	YH	
METALS, TOTAL SW6010C		(SW3050B)							
Lead	744	5.08		mg/Kg-dry	210189	1	07/16/2015 16:30	TA	
PERCENT MOISTURE D2216									
Percent Moisture	7.11	0		wt%	R296132	2 1	07/17/2015 11:00	PF	

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative
NC Not confirmed

< Less than Result value

Client: Peachtree Environmental Client Sample ID: DKREM-13

Project Name: Davidson Kennedy Site Collection Date: 7/15/2015 10:24:00 AM

Lab ID:1507C51-005Matrix:Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW.	8050B)			
Lead	45.3	5.81		mg/Kg-dry	210189	1	07/16/2015 16:33	TA
PERCENT MOISTURE D2216								
Percent Moisture	18.8	0		wt%	R296132	. 1	07/17/2015 11:00	PF

Date:

20-Jul-15

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative

NC Not confirmed

< Less than Result value

J Estimated value detected below Reporting Limit

Page 7 of 15

Client: Peachtree Environmental Client Sample ID: DKREM-14

Project Name: Davidson Kennedy Site Collection Date: 7/15/2015 10:26:00 AM

Lab ID: 1507C51-006 Matrix: Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW.	3050B)			
Lead	73.3	5.97		mg/Kg-dry	210189	1	07/16/2015 16:42	TA
PERCENT MOISTURE D2216								
Percent Moisture	17.2	0		wt%	R296132	. 1	07/17/2015 11:00	PF

Date:

20-Jul-15

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative

NC Not confirmed

< Less than Result value

J Estimated value detected below Reporting Limit

Page 8 of 15

Client: Peachtree Environmental Client Sample ID: DKREM-15

Project Name: Davidson Kennedy Site Collection Date: 7/15/2015 10:28:00 AM

Lab ID: 1507C51-007 Matrix: Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW.	3050B)			
Lead	47.7	5.64		mg/Kg-dry	210189	1	07/16/2015 16:45	TA
PERCENT MOISTURE D2216								
Percent Moisture	14.6	0		wt%	R296132	. 1	07/17/2015 11:00	PF

Date:

20-Jul-15

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative

NC Not confirmed

< Less than Result value

Client: Peachtree Environmental Client Sample ID: DKREM-16

Project Name: Davidson Kennedy Site Collection Date: 7/15/2015 10:30:00 AM

Lab ID: 1507C51-008 Matrix: Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW.	3050B)			
Lead	168	6.13		mg/Kg-dry	210189	1	07/16/2015 16:48	TA
PERCENT MOISTURE D2216								
Percent Moisture	18.8	0		wt%	R296132	1	07/17/2015 11:00	PF

Date:

20-Jul-15

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative

NC Not confirmed

< Less than Result value

Estimated value detected below Reporting Limit

Page 10 of 15

Client: Peachtree Environmental Client Sample ID: DKREM-17

Project Name: Davidson Kennedy Site Collection Date: 7/15/2015 1:50:00 PM

Lab ID: 1507C51-009 Matrix: Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW3	8050B)			
Lead	114	5.24		mg/Kg-dry	210189	1	07/16/2015 16:51	TA
PERCENT MOISTURE D2216								
Percent Moisture	11.0	0		wt%	R296132	. 1	07/17/2015 11:00	PF

Date:

20-Jul-15

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative

NC Not confirmed

< Less than Result value

Estimated value detected below Reporting Limit

Page 11 of 15

Client: Peachtree Environmental Client Sample ID: DKREM-18

Project Name: Davidson Kennedy Site Collection Date: 7/15/2015 1:52:00 PM

Lab ID: 1507C51-010 Matrix: Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW.	8050B)			
Lead	91.6	5.80		mg/Kg-dry	210189	1	07/16/2015 16:54	TA
PERCENT MOISTURE D2216								
Percent Moisture	14.8	0		wt%	R296132	. 1	07/17/2015 11:00	PF

Date:

20-Jul-15

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative

NC Not confirmed

< Less than Result value

Estimated value detected below Reporting Limit

Page 12 of 15

Client: Peachtree Environmental Client Sample ID: DKREM-19

Project Name: Davidson Kennedy Site Collection Date: 7/15/2015 1:54:00 PM

Lab ID: 1507C51-011 Matrix: Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW.	3050B)			
Lead	463	5.64		mg/Kg-dry	210189	1	07/16/2015 16:57	TA
PERCENT MOISTURE D2216								
Percent Moisture	15.4	0		wt%	R296132	. 1	07/17/2015 11:00	PF

Date:

20-Jul-15

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative

NC Not confirmed

< Less than Result value

Estimated value detected below Reporting Limit

Page 13 of 15

Sample/Cooler Receipt Checklist

Client Reachtree Env		Work Order Number	1507C51
Checklist completed by January 5 7/15 Signature Date	5/15 e		
Carrier name: FedEx UPS Courier Client US	S Mail Other	·	
Shipping container/cooler in good condition?	Yes 🖊	No _ Not Present	
Custody seals intact on shipping container/cooler?	Yes /	No Not Present	
Custody seals intact on sample bottles?	Yes 🖊	No Not Present	_
Container/Temp Blank temperature in compliance? (0°≤6°C)	* Yes	No	
Cooler #1 Cooler #2 Cooler #3	Cooler #4 _	Cooler#5	Cooler #6
Chain of custody present?	Yes _	No	
Chain of custody signed when relinquished and received?	Yes 🖊	No	
Chain of custody agrees with sample labels?	Yes 🖊	No	
Samples in proper container/bottle?	Yes 🗸	No	
Sample containers intact?	Yes _	No	
Sufficient sample volume for indicated test?	Yes _	No	
All samples received within holding time?	Yes _	No	
Was TAT marked on the COC?	Yes /	No	
Proceed with Standard TAT as per project history?	Yes	No Not Applica	ble
Water - VOA vials have zero headspace? No VOA vials su	ubmitted <u></u>	Yes No	
Water - pH acceptable upon receipt?	Yes	No _ Not Applica	ble _
	Chec	cked by	_
(For diffusive samples or AIHA lead) Is a known blank include	ied? Yes	No /	

See Case Narrative for resolution of the Non-Conformance.

\\Aes_server\I\Sample Receipt\My Documents\COCs and pH Adjustment Sheet\Sample_Cooler_Recipt_Checklist_Rev1.rtf

^{*} Samples do not have to comply with the given range for certain parameters.

Client: Peachtree Environmental

ANALYTICAL QC SUMMARY REPORT

Date:

20-Jul-15

BatchID: 210189

Davidson Kennedy Site **Project Name:** Workorder: 1507C51

Sample ID: MB-210189 SampleType: MBLK	Client ID: TestCode:	METALS, TOTAL SW6010C		Units: n BatchID: 2	0 0	Prep Date: 07/15/2015 Analysis Date: 07/16/2015	Run No: 295950 Seq No: 6314969
Analyte	Result	RPT Limit SPK valu	e SPK Ref Val	%REC Low	Limit High Lim	it RPD Ref Val %R	RPD Limit Qual
Lead	BRL	5.00					
Sample ID: LCS-210189 SampleType: LCS	Client ID: TestCode:	METALS, TOTAL SW6010C		Units: n BatchID: 2	0 0	Prep Date: 07/15/2015 Analysis Date: 07/16/2015	Run No: 295950 Seq No: 6314970
Analyte	Result	RPT Limit SPK valu	ie SPK Ref Val	%REC Low	Limit High Lim	it RPD Ref Val %R	RPD RPD Limit Qual
Lead	48.70	5.00 50.00		97.4 80	120		
Sample ID: 1507B75-002BMS SampleType: MS	Client ID: TestCode:	METALS, TOTAL SW6010C		Units: n BatchID: 2	0 0 1	Prep Date: 07/15/2015 Analysis Date: 07/16/2015	Run No: 295950 Seq No: 6314972
Analyte	Result	RPT Limit SPK valu	ie SPK Ref Val	%REC Low	Limit High Lim	it RPD Ref Val %R	RPD RPD Limit Qual
Lead	754.7	5.41 54.09	717.2	69.3 75	125		S
Sample ID: 1507B75-002BMSD SampleType: MSD	Client ID: TestCode:	METALS, TOTAL SW6010C		Units: n BatchID: 2	0 0 1	Prep Date: 07/15/2015 Analysis Date: 07/16/2015	Run No: 295950 Seq No: 6314973
Analyte	Result	RPT Limit SPK valu	e SPK Ref Val	%REC Low	Limit High Lim	it RPD Ref Val %R	RPD RPD Limit Qual
Lead	900.3	5.41 54.08	717.2	339 75	125	754.7 1	7.6 20 S

Qualifiers: Greater than Result value

> BRL Below reporting limit

Rpt Lim Reporting Limit

Estimated value detected below Reporting Limit

Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

Page 15 of 15

ANALYTICAL ENVIRONMENTAL SERVICES, INC.



September 12, 2014

John Martiniere
Peachtree Environmental
3000 Northwoods Parkway, Suite 105
Norcross GA 30071

TEL: (770) 449-6100 FAX: (770) 513-9848

RE: Davidson Kennedy Site

Dear John Martiniere: Order No: 1409724

Analytical Environmental Services, Inc. received 4 samples on 9/9/2014 10:00:00 AM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.

AES' certifications are as follows:

- -NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/14-06/30/15.
- -AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Dorothy deBruyn

Project Manager

A A	ANALYTICAL EN
	3080 Presidential Drive,

NVIRONMENTAL SERVICES, INC

Atlanta GA 30340-3704

 \overline{AES} TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHA	AIN	OF	CUS	OT	DV
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PEACHTREL ENVIRONMENTAL	ADDRESS:	Noath	MOON	Pan	LEW MA	84		A	NALYS:	S REQ	JESTED			Visit our website	
PHONE. 770 449 6100	FAX:		SU	TB 10	<u> </u>	7								www.aesatlanta.com to check on the status of your results, place bottle	ers
SAMPLED BY:	SIGNATIONE	Vartir	1101		_	TOT METALS								orders, etc.	No#ofContainer
# SAMPLE ID	1 / 7	/PLED	-		(sep	B		PI	RESERV	ATION (See codes)				No # 0N
	DATE	TIME	Grab	Composite	Matrix (See codes)									REMARKS	
1 PT-1 0-2'	9/9/2014		V												
2 95-2 0-21	1		-				\perp	\perp							
3 87-3 0-21	1		1		_	\vdash	$\perp \perp$			$\sqcup \bot$	_		$\perp \perp$		
4 M-9 0-2'	1		+-			 	+	_	\bot	$\vdash \vdash$	\perp	_	+		
5	 		+	\vdash		\vdash	+		-	\vdash	+		+		
6			-				+	+	-	\vdash	-	_	+		
7			+	\vdash			+		+	\vdash	+		++		
8				\vdash			+	-	+	\vdash		-	+-		
9			_	\vdash			+		+	\vdash	+	-	+		
10			+	\vdash			+	+	+	\vdash	_	-	+	 	
11	-		+				+	+	+	\vdash	+	-	++	 	
12		:	1				+	-+	+	\vdash	+	+	+ +		
13						\vdash	+	+	+	\vdash		+	+		
14 DATE/TIME RELINQUISHED BY DATE/TIME	RECEIVED B	<u>l</u> Y		D	ATE/TIME			P	ROJECT	INFOR	MATION			RECEIPT	
Och P. Naturial 9/9/14	1: 10:00 K	m (a	toyr	Reeve	09/9/1	PROÆC	T NAME	050	N - 1	LEN	NED	/		Total # of Containers	
	2:	-	0	(0:00		T#: \$	183	5		/			Tumaround Time Request Standard 5 Business Days	
······································	3.							го: 身	lin	Mai	line	u		2 Business Day Rush Next Business Day Rush	
SPECIAL INSTRUCTIONS/COMMENTS:	OUT /	SHIPMEN	VIA:	OD		INVOIC (IF DIFF	ERENT		,		-			O Same Day Rush (auth req.) Other	
	IN CLIEN			IL COUR	IER			tu	16	nu	un	nent	ul	STATE PROGRAM (if any): E-mail? Y/N; Fax? Y/N	
SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE C	014		THER_	USINESS	— DAY, IF TI	QUOTE		ME IS N	OT IND	CATED	O#:	I PPOC	FFD WITH	DATA PACKAGE: I II III	IV
SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLI							OND III	TE IS N	_	CALED	AES WI	LLFROC	EED WITH	STANDARD IN OF SAMELES,	

Client: Peachtree Environmental Client Sample ID: PT-1 0-2"

Project Name: Davidson Kennedy Site Collection Date: 9/9/2014 8:22:00 AM

Lab ID: 1409724-001 **Matrix:** Soil

Analyses	Result	Reporting Limit Q	ual Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C			(SW	3050B)			
Lead	176	5.85	mg/Kg-dry	195974	1	09/10/2014 15:45	TA
PERCENT MOISTURE D2216							
Percent Moisture	14.8	0	wt%	R275617	1	09/12/2014 10:00	PF

Date:

12-Sep-14

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative
NC Not confirmed

< Less than Result value

Client: Peachtree Environmental Client Sample ID: PT-2 0-2"

Project Name: Davidson Kennedy Site Collection Date: 9/9/2014 8:30:00 AM

Lab ID: 1409724-002 **Matrix:** Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW3	8050B)			
Lead	1650	5.78		mg/Kg-dry	195974	1	09/10/2014 15:48	TA
PERCENT MOISTURE D2216								
Percent Moisture	13.5	0		wt%	R275617	1	09/12/2014 10:00	PF

Date:

12-Sep-14

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative
NC Not confirmed

< Less than Result value

Client Sample ID: PT-3 0-2" **Client:** Peachtree Environmental

Collection Date: 9/9/2014 8:36:00 AM Project Name: Davidson Kennedy Site Soil

Lab ID: 1409724-003 Matrix:

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW3	6050B)			
Lead	517	5.55		mg/Kg-dry	195974	1	09/10/2014 15:51	TA
PERCENT MOISTURE D2216								
Percent Moisture	11.2	0		wt%	R275617	1	09/12/2014 10:00	PF

Date:

12-Sep-14

Qualifiers:

Value exceeds maximum contaminant level

BRL Below reporting limit

Н Holding times for preparation or analysis exceeded

Analyte not NELAC certified

Analyte detected in the associated method blank

Greater than Result value

E Estimated (value above quantitation range)

Spike Recovery outside limits due to matrix

Narr See case narrative

Not confirmed Less than Result value

Client: Peachtree Environmental Client Sample ID: PT-4 0-2"

Project Name: Davidson Kennedy Site Collection Date: 9/9/2014 8:42:00 AM

Lab ID: 1409724-004 **Matrix:** Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW3	8050B)			
Lead	308	5.21		mg/Kg-dry	195974	1	09/10/2014 13:49	TA
PERCENT MOISTURE D2216								
Percent Moisture	5.27	0		wt%	R275617	1	09/12/2014 10:00	PF

Date:

12-Sep-14

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative
NC Not confirmed

< Less than Result value

Sample/Cooler Receipt Checklist

Client PEACHTREE ENVIRONMEN	TAL	Work Order	Number 1409724
Checklist completed by Signature Date	9/9/1/	£	
Carrier name: FedEx UPS Courier Client US	S Mail Other	r	_
Shipping container/cooler in good condition?	Yes 🖊	No	Not Present
Custody seals intact on shipping container/cooler?			Not Present
Custody seals intact on sample bottles?	Yes _	No	Not Present
Container/Temp Blank temperature in compliance? (0°≤6°C)	* Yes	No _	
Cooler #1 <u>3.9</u> Cooler #2 Cooler #3	Cooler #4 _	Coo	oler#5 Cooler #6
Chain of custody present?	Yes	No	
Chain of custody signed when relinquished and received?	Yes /	No	
Chain of custody agrees with sample labels?	Yes _	No _	
Samples in proper container/bottle?	Yes /	No	
Sample containers intact?	Yes	No	
Sufficient sample volume for indicated test?	Yes _	No	
All samples received within holding time?	Yes _	No	
Was TAT marked on the COC?	Yes _	No	
Proceed with Standard TAT as per project history?	Yes	No	Not Applicable
Water - VOA vials have zero headspace? No VOA vials su	ubmitted 🗸	Yes	No
Water - pH acceptable upon receipt?	Yes	No	Not Applicable
Adjusted?			
Sample Condition: Good Other(Explain)			
(For diffusive complex or AIHA lead) Is a known blank included	ded? Vec	λ	Jo . /

See Case Narrative for resolution of the Non-Conformance.

\\Aes_server\I\Sample Receipt\My Documents\COCs and pH Adjustment Sheet\Sample_Cooler_Recipt_Checklist_Rev1.rtf

^{*} Samples do not have to comply with the given range for certain parameters.

Client: Peachtree Environmental Project Name: Davidson Kennedy Site

1409724

Workorder:

ANALYTICAL QC SUMMARY REPORT

Date:

12-Sep-14

BatchID: 195974

Sample ID: MB-195974	Client ID:				Uni	ts: mg/Kg	Prep Date:	09/09/2014	Run No: 275	5402
SampleType: MBLK	TestCode:	METALS, TOTAL	SW6010C		Bato	chID: 195974	Analysis Date:	09/10/2014	Seq No: 581	3441
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit RPD Re	ef Val %RPD	RPD Lin	nit Qual
Lead	BRL	5.00								
Sample ID: LCS-195974	Client ID:				Uni	ts: mg/Kg	Prep Date:	09/09/2014	Run No: 275	5402
SampleType: LCS	TestCode:	METALS, TOTAL	SW6010C		Bato	chID: 195974	Analysis Date:	09/10/2014	Seq No: 581	3438
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit RPD Re	ef Val %RPD	RPD Lin	nit Qual
Lead	47.70	5.00	50.00		95.4	80	120			
Sample ID: 1409724-004AMS	Client ID:	PT-4 0-2"			Uni	ts: mg/Kg-	dry Prep Date:	09/09/2014	Run No: 275	5402
SampleType: MS	TestCode:	METALS, TOTAL	SW6010C		Bato	chID: 195974	Analysis Date:	09/10/2014	Seq No: 581	3445
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit RPD Re	ef Val %RPD	RPD Lin	nit Qual
Lead	298.7	5.23	52.33	307.6	-17.0	75	125			S
Sample ID: 1409724-004AMSD	Client ID:	PT-4 0-2"			Uni	ts: mg/Kg-	dry Prep Date:	09/09/2014	Run No: 275	3402
SampleType: MSD	TestCode:	METALS, TOTAL	SW6010C		Bato	chID: 195974	Analysis Date:	09/10/2014	Seq No: 581	3446
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit RPD Re	ef Val %RPD	RPD Lin	nit Qual
Lead	336.9	5.21	52.14	307.6	56.1	75	125 298.	7 12.0	20	S

Qualifiers: > Greater than Result value

BRL Below reporting limit

J Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

< Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix



APPENDIX J

Laboratory Analytical Results for Confirmation Samples Off-Site

ANALYTICAL ENVIRONMENTAL SERVICES, INC.



July 20, 2015

Jamie Henderson Peachtree Environmental 3000 Northwoods Parkway, Suite 105 Norcross GA 30071

TEL: (770) 449-6100 FAX: (770) 513-9848

RE: Davidson - Kennedy

Dear Jamie Henderson: Order No: 1507D78

Analytical Environmental Services, Inc. received 5 samples on 7/16/2015 2:16:00 PM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.

AES' certifications are as follows:

- -NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/15-06/30/16.
- -AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Dorothy deBruyn

Project Manager

ANALYTICAL ENVIRONMENTAL SERVICES, INC

3080 Presidential Drive, Atlanta GA 30340-3704

\$0.4€_5.7∪\$€_5.05€_5.7∪\$€_5.05€\

TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

AES

Work Order: 1507078

Date: 7/16/15/Page of of

CHAIN OF CUSTODY

COMPANY		A DINREKE:		***************************************			
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MATRIX	$\Delta = \Delta =$		m				

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water PRESERVATIVE CODES: H+1 = Hydrochlorio acid + ice 1 = Ice only N = Nitric acid + ice SM+1 = Sodium Bisultiate/Methanol + ice O = Other (specify) NA = None O = Other (specify)

NA = None White Copy - Original; Yellow Copy - Client

Client: Peachtree Environmental Client Sample ID: DK REM-20

Project Name: Davidson - Kennedy Collection Date: 7/16/2015 12:50:00 PM

Date:

20-Jul-15

Lab ID: 1507D78-001 Matrix: Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW3	8050B)			
Lead	11.2	5.73		mg/Kg-dry	210258	1	07/17/2015 11:27	IO
PERCENT MOISTURE D2216								
Percent Moisture	15.2	0		wt%	R296132	. 1	07/17/2015 11:00	PF

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative

NC Not confirmed

< Less than Result value

Client: Peachtree Environmental Client Sample ID: DK REM-21

Project Name: Davidson - Kennedy Collection Date: 7/16/2015 12:52:00 PM

Lab ID: 1507D78-002 Matrix: Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW.	8050B)			
Lead	14.5	6.01		mg/Kg-dry	210258	1	07/17/2015 11:52	IO
PERCENT MOISTURE D2216								
Percent Moisture	17.9	0		wt%	R296132	. 1	07/17/2015 11:00	PF

Date:

20-Jul-15

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative

NC Not confirmed

< Less than Result value

Client: Peachtree Environmental Client Sample ID: DK REM-22

Project Name: Davidson - Kennedy Collection Date: 7/16/2015 12:54:00 PM

Lab ID: 1507D78-003 Matrix: Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW3	8050B)			
Lead	13.0	6.01		mg/Kg-dry	210258	1	07/17/2015 11:56	IO
PERCENT MOISTURE D2216								
Percent Moisture	17.8	0		wt%	R296132	1	07/17/2015 11:00	PF

Date:

20-Jul-15

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative

NC Not confirmed

< Less than Result value

Client: Peachtree Environmental Client Sample ID: DK REM-23

Project Name: Davidson - Kennedy Collection Date: 7/16/2015 12:56:00 PM

Lab ID:1507D78-004Matrix:Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW.	3050B)			
Lead	14.1	5.84		mg/Kg-dry	210258	1	07/17/2015 12:00	IO
PERCENT MOISTURE D2216								
Percent Moisture	16.0	0		wt%	R296132	2 1	07/17/2015 11:00	PF

Date:

20-Jul-15

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative

NC Not confirmed

< Less than Result value

Client: Peachtree Environmental Client Sample ID: DK REM-24

Project Name: Davidson - Kennedy Collection Date: 7/16/2015 1:10:00 PM

Lab ID: 1507D78-005 Matrix: Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW.	8050B)			
Lead	14.9	5.79		mg/Kg-dry	210258	1	07/17/2015 12:03	IO
PERCENT MOISTURE D2216								
Percent Moisture	16.4	0		wt%	R296132	. 1	07/17/2015 11:00	PF

Date:

20-Jul-15

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative

NC Not confirmed

< Less than Result value

J Estimated value detected below Reporting Limit

Page 7 of 9

Sample/Cooler Receipt Checklist

Client Peachtree Env		Work Order Number/507078
Checklist completed by Signature Date	116115	
Carrier name: FedEx UPS Courier Client _/ US	S Mail Other	r
Shipping container/cooler in good condition?	Yes 🖊	No Not Present
Custody seals intact on shipping container/cooler?	Yes	No Not Present
Custody seals intact on sample bottles?	Yes	No Not Present
Container/Temp Blank temperature in compliance? (0°≤6°C)		No
Cooler #1 3-7 Cooler #2 Cooler #3	_ Cooler #4 _	Cooler#5 Cooler #6
Chain of custody present?	Yes 🖊	
Chain of custody signed when relinquished and received?	Yes _	No
Chain of custody agrees with sample labels?	Yes _	No 🚉
Samples in proper container/bottle?	Yes _	No
Sample containers intact?	Yes _	No
Sufficient sample volume for indicated test?	Yes _	No
All samples received within holding time?	Yes _	No
Was TAT marked on the COC?	Yes _	No
Proceed with Standard TAT as per project history?	Yes	No Not Applicable
Water - VOA vials have zero headspace? No VOA vials su	bmitted <u></u>	Yes No
Water - pH acceptable upon receipt?	Yes	No Not Applicable
Adjusted?	Chec	cked by
Sample Condition: Good/ Other(Explain)		
(For diffusive samples or AIHA lead) Is a known blank includ	ed? Yes	No

See Case Narrative for resolution of the Non-Conformance.

\\Aes_server\\\Sample Receipt\\My Documents\\COCs and pH Adjustment Sheet\\Sample_Cooler_Recipt_Checklist_Rev1.rtf

^{*} Samples do not have to comply with the given range for certain parameters.

Peachtree Environmental **Client:**

ANALYTICAL QC SUMMARY REPORT

Date:

20-Jul-15

BatchID: 210258

Davidson - Kennedy **Project Name:**

Workorder: 1507D78

Sample ID: MB-210258	Client ID:	METALS TOTAL SWIGHTS		Units:	mg/Kg	Prep I			Run No: 29613	
SampleType: MBLK	TestCode:	METALS, TOTAL SW6010C		Batchl	D: 210258	Analy	sis Date: 07/17/	2015	Seq No: 63153	668
Analyte	Result	RPT Limit SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Lead	BRL	5.00								
Sample ID: LCS-210258	Client ID:			Units:	mg/Kg	Prep I	Date: 07/16/	2015 I	Run No: 29613	60
SampleType: LCS	TestCode:	METALS, TOTAL SW6010C		BatchI	D: 210258	Analy	sis Date: 07/17/	2015	Seq No: 63153	669
Analyte	Result	RPT Limit SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Lead	47.99	5.00 50.00		96.0	80	120				
Sample ID: 1507D78-001AMS	Client ID:	DK REM-20		Units:	mg/Kg-	dry Prep I	Date: 07/16/	/2015 I	Run No: 29613	60
SampleType: MS	TestCode:	METALS, TOTAL SW6010C		BatchI	D: 210258	Analy	sis Date: 07/17 /	2015	Seq No: 63153	71
Analyte	Result	RPT Limit SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Lead	64.41	5.73 57.31	11.23	92.8	75	125				
Sample ID: 1507D78-001AMSD	Client ID:	DK REM-20		Units:	mg/Kg-	dry Prep I	Date: 07/16/	/2015 I	Run No: 29613	50
SampleType: MSD	TestCode:	METALS, TOTAL SW6010C		BatchI	D: 210258	-	sis Date: 07/17/	2015	Seq No: 63153	372
Analyte	Result	RPT Limit SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Lead	62.31	5.73 57.26	11.23	89.2	75	125	64.41	3.31	20	

Qualifiers: Greater than Result value

> BRL Below reporting limit

Rpt Lim Reporting Limit

Estimated value detected below Reporting Limit

Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

Page 9 of 9



APPENDIX K

Laboratory Analytical Results for Confirmation Samples Backfill

ANALYTICAL ENVIRONMENTAL SERVICES, INC.



July 22, 2015

Jamie Henderson Peachtree Environmental 3000 Northwoods Parkway, Suite 105 Norcross GA 30071

TEL: (770) 449-6100 FAX: (770) 513-9848

RE: Davidson Kennedy

Dear Jamie Henderson: Order No: 1507F26

Analytical Environmental Services, Inc. received 1 samples on 7/17/2015 3:30:00 PM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.

AES' certifications are as follows:

- -NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/15-06/30/16.
- -AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Dorothy deBruyn

Project Manager

ANALYTICAL ENVIRONMENTAL SERVICES, INC

3080 Presidential Drive, Atlanta GA 30340-3704

TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1507F26

Date: 7/17/15 Page of 1

COMPANY: DESCRIPTIONS ENV.	ADDRESS:				ANALYSIS	Visit our website			
PEACHTREE ENV. 3000 NORTHWOODS PLUY PHONE: 770 - 449 - 6100 SAMPLED BY: J. HENDERSON	NORCROSS	5,6A	-DP					www.aesatlanta.com to check on the status of	ıs
SAMPLED BY: J. HENDERSON	SIGNATURE SIGNATURE	de	200					your results, place bottle orders, etc.	# of Containers
# SAMPLE ID	AMPLED	posite (x	<u>\$</u>		PRESERVAT	TION (See code:	s)		% oN
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<u></u>	3:	_	SITE AL	DRESS:				Standard 5 Business Days	
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Client: Peachtree Environmental

Project: Davidson Kennedy
Lab ID: 1507F26

Case Narrative

Date:

22-Jul-15

Per Jamie Henderson, svoc and rcra metals analysis added on a standard tat.

Client: Peachtree Environmental Client Sample ID: DKBF-1C

Project Name: Davidson Kennedy Collection Date: 7/17/2015 10:50:00 AM

Date:

22-Jul-15

Lab ID: 1507F26-001 Matrix: Soil

Analyses	Result	Reporting Limit	Qual	Units BatchID		Dilution Factor	Date Analyzed	Analyst
TOTAL MERCURY SW7471B				(SW7	7471B)			
Mercury	BRL	0.105		mg/Kg-dry	210339	1	07/21/2015 10:51	TA
TCL-SEMIVOLATILE ORGANICS	SW8270D			(SW3	8550C)			
1,1'-Biphenyl	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
2,4,5-Trichlorophenol	BRL	1.9		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
2,4,6-Trichlorophenol	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
2,4-Dichlorophenol	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
2,4-Dimethylphenol	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
2,4-Dinitrophenol	BRL	1.9		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
2,4-Dinitrotoluene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
2,6-Dinitrotoluene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
2-Chloronaphthalene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
2-Chlorophenol	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
2-Methylnaphthalene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
2-Methylphenol	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
2-Nitroaniline	BRL	1.9		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
2-Nitrophenol	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
3,3'-Dichlorobenzidine	BRL	0.73		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
3-Nitroaniline	BRL	1.9		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
4,6-Dinitro-2-methylphenol	BRL	1.9		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
4-Bromophenyl phenyl ether	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
4-Chloro-3-methylphenol	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
4-Chloroaniline	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
4-Chlorophenyl phenyl ether	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
4-Methylphenol	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
4-Nitroaniline	BRL	1.9		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
4-Nitrophenol	BRL	1.9		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Acenaphthene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Acenaphthylene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Acetophenone	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Anthracene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Atrazine	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Benz(a)anthracene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Benzaldehyde	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Benzo(a)pyrene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Benzo(b)fluoranthene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Benzo(g,h,i)perylene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Benzo(k)fluoranthene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Bis(2-chloroethoxy)methane	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Bis(2-chloroethyl)ether	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Bis(2-chloroisopropyl)ether	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH

Qualifiers:

Narr See case narrative

^{*} Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

NC Not confirmed

< Less than Result value

Client: Peachtree Environmental Client Sample ID: DKBF-1C

Project Name: Davidson Kennedy Collection Date: 7/17/2015 10:50:00 AM

Date:

22-Jul-15

Lab ID:1507F26-001Matrix:Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analys
TCL-SEMIVOLATILE ORGANICS	SW8270D			(SW	3550C)			
Bis(2-ethylhexyl)phthalate	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Butyl benzyl phthalate	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Caprolactam	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Carbazole	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Chrysene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Di-n-butyl phthalate	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Di-n-octyl phthalate	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Dibenz(a,h)anthracene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Dibenzofuran	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Diethyl phthalate	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Dimethyl phthalate	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Fluoranthene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Fluorene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Hexachlorobenzene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Hexachlorobutadiene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Hexachlorocyclopentadiene	BRL	0.72		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Hexachloroethane	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Indeno(1,2,3-cd)pyrene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Isophorone	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
N-Nitrosodi-n-propylamine	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
N-Nitrosodiphenylamine	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Naphthalene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Nitrobenzene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Pentachlorophenol	BRL	1.9		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Phenanthrene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Phenol	BRL	0.36		mg/Kg-dry		1	07/21/2015 18:34	YH
Pyrene	BRL	0.36		mg/Kg-dry	210372	1	07/21/2015 18:34	YH
Surr: 2,4,6-Tribromophenol	96.3	41-128		%REC	210372	1	07/21/2015 18:34	YH
Surr: 2-Fluorobiphenyl	82.7	47-120		%REC	210372	1	07/21/2015 18:34	YH
Surr: 2-Fluorophenol	65.6	38.3-120		%REC	210372	1	07/21/2015 18:34	YH
Surr: 4-Terphenyl-d14	74.8	51.4-125		%REC	210372	1	07/21/2015 18:34	YH
Surr: Nitrobenzene-d5	74.4	40.1-120		%REC	210372	1	07/21/2015 18:34	YH
Surr: Phenol-d5	78.9	40.3-120		%REC	210372	1	07/21/2015 18:34	YH
METALS, TOTAL SW6010C				(SW	3050B)			
Arsenic	BRL	5.06		mg/Kg-dry	210258	1	07/21/2015 17:56	Ю
Barium	129	5.06		mg/Kg-dry	210258	1	07/21/2015 17:56	Ю
Cadmium	BRL	2.02		mg/Kg-dry	210258	1	07/21/2015 17:56	Ю
Chromium	21.7	2.53		mg/Kg-dry	210258	1	07/21/2015 17:56	Ю
Lead	8.67	5.06		mg/Kg-dry	210258	1	07/21/2015 17:56	Ю
Selenium	BRL	2.02		mg/Kg-dry	210258	1	07/21/2015 17:56	Ю

Qualifiers:

Narr See case narrative

^{*} Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

NC Not confirmed

< Less than Result value

Estimated value detected below Reporting Limit

Client: Peachtree Environmental Client Sample ID: DKBF-1C

Project Name: Davidson Kennedy Collection Date: 7/17/2015 10:50:00 AM

Lab ID: 1507F26-001 Matrix: Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
METALS, TOTAL SW6010C				(SW.	3050B)			
Silver	BRL	2.02		mg/Kg-dry	210258	1	07/21/2015 17:56	IO
PERCENT MOISTURE D2216								
Percent Moisture	8.12	0		wt%	R296334	1	07/21/2015 10:00	PF

Date:

22-Jul-15

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative

NC Not confirmed

Less than Result value

Sample/Cooler Receipt Checklist

Client Peachtree Env		Work Order Number 1507F26
Checklist completed by Aan 3 711 Signature Date	715	
Carrier name: FedEx UPS Courier Client _/ US	S Mail Other	·
Shipping container/cooler in good condition?	Yes 🖊	No Not Present
Custody seals intact on shipping container/cooler?	Yes _	No Not Present
Custody seals intact on sample bottles?	Yes	No Not Present
Container/Temp Blank temperature in compliance? (0°≤6°C)	*Yes <u></u>	No
Cooler #1 Cooler #2 Cooler #3	_ Cooler #4 _	Cooler#5 Cooler #6
Chain of custody present?	Yes _	No
Chain of custody signed when relinquished and received?	Yes 🖊	No
Chain of custody agrees with sample labels?	Yes /	No
Samples in proper container/bottle?	Yes 🖊	No
Sample containers intact?	Yes _	No
Sufficient sample volume for indicated test?	Yes <u></u>	No
All samples received within holding time?	Yes _	No
Was TAT marked on the COC?	Yes _	No
Proceed with Standard TAT as per project history?	Yes	No Not Applicable
Water - VOA vials have zero headspace? No VOA vials su	ıbmitted	Yes No
Water - pH acceptable upon receipt?	Yes _	No Not Applicable
		cked by
Sample Condition: GoodOther(Explain)		
(For diffusive samples or AIHA lead) Is a known blank include	led? Yes	No

See Case Narrative for resolution of the Non-Conformance.

 $\verb|\Aes_server|| Sample Receipt | My Documents | COCs and pH Adjustment Sheet | Sample Cooler_Receipt | Checklist_Rev1.rtf| | Cooler_Receipt | Cooler_Receipt | Checklist_Rev1.rtf| | Cooler_Receipt | Cooler_Receipt$

^{*} Samples do not have to comply with the given range for certain parameters.

Client: Peachtree Environmental

1507F26

ANALYTICAL QC SUMMARY REPORT

Date:

22-Jul-15

Project Name: Davidson Kennedy

Rpt Lim Reporting Limit

Workorder:

BatchID: 210258

Sample ID: MB-210258 Client ID: Units: mg/Kg Prep Date: 07/16/2015 Run No: 296130 TestCode: METALS, TOTAL SW6010C SampleType: MBLK BatchID: 210258 Analysis Date: 07/17/2015 Seq No: 6315368 Low Limit High Limit Analyte Result **RPT Limit** SPK value SPK Ref Val %REC RPD Ref Val %RPD RPD Limit Qual Arsenic BRL 5.00 Barium BRL 5.00 BRL Cadmium 2.50 Chromium **BRL** 2.50 Lead BRL 5.00 Selenium BRL 5.00 Silver BRL 2.50 Sample ID: LCS-210258 Client ID: Units: mg/Kg Prep Date: 07/16/2015 Run No: 296130 TestCode: METALS, TOTAL SW6010C SampleType: LCS BatchID: 210258 Analysis Date: 07/17/2015 Seq No: 6315369 SPK value SPK Ref Val %REC %RPD Result **RPT Limit** Low Limit High Limit RPD Ref Val RPD Limit Qual Analyte Arsenic 48.37 5.00 50.00 96.7 80 120 80 Barium 49.22 50.00 98.4 120 5.00 Cadmium 48.09 2.50 50.00 96.2 80 120 Chromium 49.47 2.50 50.00 0.07613 98.8 80 120 80 Lead 47.99 5.00 50.00 96.0 120 Selenium 5.00 98.1 80 120 49.06 50.00 80 Silver 4.817 2.50 5.000 963 120 Sample ID: 1507D78-001AMS Client ID: Prep Date: 07/16/2015 Run No: 296130 Units: mg/Kg-dry TestCode: METALS, TOTAL BatchID: 210258 SampleType: MS Analysis Date: 07/17/2015 Seq No: 6315371 Analyte Result **RPT Limit** SPK value SPK Ref Val %REC Low Limit High Limit RPD Ref Val %RPD RPD Limit Qual 5.73 57.31 85.3 75 125 Arsenic 51.12 2.220 90.83 75 Barium 5.73 57.31 29.68 107 125 Cadmium 54.62 2.87 95.3 75 125 57.31 S Chromium 160.6 2.87 57.31 49.08 195 75 125 Qualifiers: > Greater than Result value Less than Result value B Analyte detected in the associated method blank BRL Estimated (value above quantitation range) Below reporting limit Holding times for preparation or analysis exceeded Estimated value detected below Reporting Limit Analyte not NELAC certified R RPD outside limits due to matrix Page 8 of 15

Spike Recovery outside limits due to matrix

Client: Peachtree Environmental ANALYTICAL QC SUMMARY REPORT

Date:

22-Jul-15

BatchID: 210258

Davidson Kennedy **Project Name:**

Workorder: 1507F26

Sample ID: 1507D78-001AMS	Client ID:				Uni	its: mg/Kg-	dry Prej	Date: 07/16	6/2015	Run No: 29613	30
SampleType: MS	TestCode:	METALS, TOTAL S	SW6010C		Bat	chID: 210258	Ana	alysis Date: 07/17	7/2015	Seq No: 63153	371
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Lead	64.41	5.73	57.31	11.23	92.8	75	125				
Selenium	44.83	5.73	57.31		78.2	75	125				
Silver	5.466	2.87	5.731	0.04382	94.6	75	125				
Sample ID: 1507D78-001AMSD SampleType: MSD	Client ID: TestCode:	METALS, TOTAL S	SW6010C		Uni Bat	its: mg/Kg- chID: 210258		Date: 07/16 alysis Date: 07/17	5/2015 7/2015	Run No: 29613 Seq No: 63153	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	49.75	5.73	57.26	2.220	83.0	75	125	51.12	2.71	20	
Barium	86.76	5.73	57.26	29.68	99.7	75	125	90.83	4.57	20	
Cadmium	53.44	2.86	57.26		93.3	75	125	54.62	2.17	20	
Chromium	97.16	2.86	57.26	49.08	84.0	75	125	160.6	49.2	20	R
Lead	62.31	5.73	57.26	11.23	89.2	75	125	64.41	3.31	20	
Selenium	43.74	5.73	57.26		76.4	75	125	44.83	2.47	20	
Silver	5.344	2.86	5.726	0.04382	92.6	75	125	5.466	2.25	20	

Qualifiers: Greater than Result value

> BRL Below reporting limit

Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

Page 9 of 15

Client: Peachtree Environmental

1507F26

ANALYTICAL QC SUMMARY REPORT

Date:

22-Jul-15

Project Name: Davidson Kennedy

Workorder:

BatchID: 210339

Sample ID: MB-210339 Client ID: Run No: 296212 Units: mg/Kg Prep Date: 07/20/2015 SampleType: MBLK TestCode: TOTAL MERCURY SW7471B BatchID: 210339 Analysis Date: 07/20/2015 Seq No: 6317376 Analyte Result **RPT Limit** SPK value SPK Ref Val %REC Low Limit High Limit RPD Ref Val %RPD RPD Limit Qual BRL 0.100 Mercury Sample ID: LCS-210339 Client ID: Units: mg/Kg Prep Date: 07/20/2015 Run No: 296212 TestCode: TOTAL MERCURY SW7471B BatchID: 210339 Seq No: 6317377 SampleType: LCS Analysis Date: 07/20/2015 Result **RPT Limit** SPK value SPK Ref Val %REC Low Limit High Limit RPD Ref Val %RPD RPD Limit Qual Analyte 80 Mercury 0.4146 0.100 0.4000 104 120 Sample ID: 1507F27-001BMS mg/Kg-dry Prep Date: 07/20/2015 Run No: 296212 Client ID: Units: TestCode: TOTAL MERCURY SW7471B BatchID: 210339 Analysis Date: 07/20/2015 SampleType: MS Seq No: 6317379 SPK Ref Val %REC Analyte Result **RPT Limit** SPK value Low Limit High Limit RPD Ref Val %RPD RPD Limit Qual 0.5849 0.118 0.4705 0.1021 103 70 130 Mercury Sample ID: 1507F27-001BMSD Client ID: Prep Date: Run No: 296212 Units: mg/Kg-dry 07/20/2015 TestCode: TOTAL MERCURY SW7471B BatchID: 210339 SampleType: MSD Analysis Date: 07/20/2015 Seq No: 6317380 Analyte Result **RPT** Limit SPK value SPK Ref Val %REC Low Limit High Limit RPD Ref Val %RPD RPD Limit Qual 0.118 0.1021 95.4 70 130 0.5849 30 Mercury 0.5512 0.4705 5.93

Qualifiers: > Greater than Result value

BRL Below reporting limit

Rpt Lim Reporting Limit

J Estimated value detected below Reporting Limit

< Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

Page 10 of 15

Client: Peachtree Environmental

ANALYTICAL QC SUMMARY REPORT

Date:

22-Jul-15

Project Name: Davidson Kennedy

BatchID: 210372

Workorder: 1507F26

Sample ID: MB-210372 SampleType: MBLK	Client ID: TestCode: TC	L-SEMIVOLATILE ORGANICS	SW8270D	Un Bat	its: ug/Kg tchID: 210372		Date:	07/21/2015 07/21/2015	Run No: 296320 Seq No: 6319818
Analyte	Result	RPT Limit SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	Val %RPD	RPD Limit Qual
1,1'-Biphenyl	BRL	330							
2,4,5-Trichlorophenol	BRL	1700							
2,4,6-Trichlorophenol	BRL	330							
2,4-Dichlorophenol	BRL	330							
2,4-Dimethylphenol	BRL	330							
2,4-Dinitrophenol	BRL	1700							
2,4-Dinitrotoluene	BRL	330							
2,6-Dinitrotoluene	BRL	330							
2-Chloronaphthalene	BRL	330							
2-Chlorophenol	BRL	330							
2-Methylnaphthalene	BRL	330							
2-Methylphenol	BRL	330							
2-Nitroaniline	BRL	1700							
2-Nitrophenol	BRL	330							
3,3'-Dichlorobenzidine	BRL	670							
3-Nitroaniline	BRL	1700							
4,6-Dinitro-2-methylphenol	BRL	1700							
4-Bromophenyl phenyl ether	BRL	330							
4-Chloro-3-methylphenol	BRL	330							
4-Chloroaniline	BRL	330							
4-Chlorophenyl phenyl ether	BRL	330							
4-Methylphenol	BRL	330							
4-Nitroaniline	BRL	1700							
4-Nitrophenol	BRL	1700							
Acenaphthene	BRL	330							
Acenaphthylene	BRL	330							
Acetophenone	BRL	330							
Oualifiers: > Greater than Result		- I	s than Result value			D.	A 1 . 1 1 .	the associated method	11 1

Qualifiers:

> Greater than Result value

BRL Below reporting limit

J Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

< Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

Page 11 of 15

Client: Peachtree Environmental

ANALYTICAL QC SUMMARY REPORT

Date:

22-Jul-15

Project Name: Davidson Kennedy

BatchID: 210372

Holding times for preparation or analysis exceeded

Page 12 of 15

R RPD outside limits due to matrix

Workorder: 1507F26

BRL

Below reporting limit

Rpt Lim Reporting Limit

Estimated value detected below Reporting Limit

Sample ID: MB-210372 SampleType: MBLK	Client ID: TestCode:	TCL-SEMIVOLATILE ORGANICS	SW8270D	Un Bat	its: ug/Kg tchID: 210372	-	Date: 07 /		Run No: 296320 Seq No: 6319818	3
Analyte	Result	RPT Limit SPK valu		%REC		High Limit	RPD Ref Val		RPD Limit (
Anthracene	BRL	330								
Atrazine	BRL	330								
Benz(a)anthracene	BRL	330								
Benzaldehyde	BRL	330								
Benzo(a)pyrene	BRL	330								
Benzo(b)fluoranthene	BRL	330								
Benzo(g,h,i)perylene	BRL	330								
Benzo(k)fluoranthene	BRL	330								
Bis(2-chloroethoxy)methane	BRL	330								
Bis(2-chloroethyl)ether	BRL	330								
Bis(2-chloroisopropyl)ether	BRL	330								
Bis(2-ethylhexyl)phthalate	BRL	330								
Butyl benzyl phthalate	BRL	330								
Caprolactam	BRL	330								
Carbazole	BRL	330								
Chrysene	BRL	330								
Di-n-butyl phthalate	BRL	330								
Di-n-octyl phthalate	BRL	330								
Dibenz(a,h)anthracene	BRL	330								
Dibenzofuran	BRL	330								
Diethyl phthalate	BRL	330								
Dimethyl phthalate	BRL	330								
Fluoranthene	BRL	330								
Fluorene	BRL	330								
Hexachlorobenzene	BRL	330								
Hexachlorobutadiene	BRL	330								
Hexachlorocyclopentadiene	BRL	660								
Qualifiers: > Greater than Result	value	< I	ess than Result value			В	Analyte detected in the	associated method l	olank	

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

N Analyte not NELAC certified

Client: Peachtree Environmental

Davidson Kennedy

Workorder: 1507F26

Project Name:

ANALYTICAL QC SUMMARY REPORT

Date:

22-Jul-15

BatchID: 210372

Sample ID: MB-210372 SampleType: MBLK	Client ID: TestCode: TC	L-SEMIVOLATILE (ORGANICS SV	W8270D	Uni Bat	ts: ug/Kg chID: 210372		p Date: alysis Date:		Run No: 296320 Seq No: 6319818
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	Val %RPD	RPD Limit Qual
Hexachloroethane	BRL	330								
Indeno(1,2,3-cd)pyrene	BRL	330								
Isophorone	BRL	330								
N-Nitrosodi-n-propylamine	BRL	330								
N-Nitrosodiphenylamine	BRL	330								
Naphthalene	BRL	330								
Nitrobenzene	BRL	330								
Pentachlorophenol	BRL	1700								
Phenanthrene	BRL	330								
Phenol	BRL	330								
Pyrene	BRL	330								
Surr: 2,4,6-Tribromophenol	3129	0	3333		93.9	41	128			
Surr: 2-Fluorobiphenyl	1370	0	1667		82.2	47	120			
Surr: 2-Fluorophenol	2344	0	3333		70.3	38.3	120			
Surr: 4-Terphenyl-d14	1481	0	1667		88.8	51.4	125			
Surr: Nitrobenzene-d5	1261	0	1667		75.6	40.1	120			
Surr: Phenol-d5	2631	0	3333		78.9	40.3	120			
Sample ID: LCS-210372	Client ID:				Uni	0 0	Pre	p Date:	07/21/2015	Run No: 296320
SampleType: LCS	TestCode: TC	L-SEMIVOLATILE (ORGANICS SV	W8270D	Bat	chID: 210372	An	alysis Date:	07/21/2015	Seq No: 6319819
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref	Val %RPD	RPD Limit Qual
2,4-Dinitrotoluene	2759	330	3333		82.8	56.9	120			
2-Chlorophenol	2613	330	3333		78.4	51	120			
4-Chloro-3-methylphenol	2766	330	3333		83.0	54	120			
4-Nitrophenol	2677	1700	3333		80.3	40.7	120			
Acenaphthene	2917	330	3333		87.5	57.9	120			
N-Nitrosodi-n-propylamine	2926	330	3333		87.8	56.5	124			
Qualifiers: > Greater than Result	value		< Less	than Result value			В	Analyte detected i	n the associated method l	blank
BRL Below reporting limit				ated (value above quantita	ation range)		Н	-	preparation or analysis e	xceeded
J Estimated value det Rpt Lim Reporting Limit	tected below Reporting Limi	t	•	rte not NELAC certified Recovery outside limits of	lue to matrix		R	RPD outside limi	ts due to matrix	Page 13 of 15

Client. Peachtree Environmental

ANALYTICAL QC SUMMARY REPORT

Date:

22-Jul-15

BatchID: 210372

Chefft.	reachtree Environmenta
Project Name:	Davidson Kennedy
Workorder:	1507F26

Sample ID: LCS-210372 Client ID: ug/Kg Run No: 296320 Units: Prep Date: 07/21/2015 TestCode: TCL-SEMIVOLATILE ORGANICS SW8270D SampleType: LCS BatchID: 210372 Analysis Date: 07/21/2015 Seq No: 6319819 Analyte Result **RPT Limit** SPK value SPK Ref Val %REC Low Limit High Limit RPD Ref Val %RPD RPD Limit Qual Pentachlorophenol 2395 1700 3333 71.9 41.8 120 Phenol 2428 330 3333 72.8 50.1 120 Pyrene 3142 330 3333 94.3 59 4 120 0 41 128 Surr: 2,4,6-Tribromophenol 3500 3333 105 Surr: 2-Fluorobiphenyl 1519 0 1667 91.2 47 120 0 Surr: 2-Fluorophenol 2379 3333 71.4 38.3 120 Surr: 4-Terphenyl-d14 0 94.0 51.4 125 1567 1667 Surr: Nitrobenzene-d5 1327 0 1667 79.6 40.1 120 Surr: Phenol-d5 2516 0 3333 75.5 40.3 120 Sample ID: 1507G15-003AMS Client ID: mg/Kg-dry Prep Date: 07/21/2015 Run No: 296320 Units: TestCode: TCL-SEMIVOLATILE ORGANICS SampleType: MS BatchID: 210372 Analysis Date: 07/21/2015 Seq No: 6320188 Analyte Result **RPT Limit** SPK value SPK Ref Val %REC Low Limit High Limit RPD Ref Val %RPD RPD Limit Qual 2.4-Dinitrotoluene 2.545 0.34 3477 73.2 41.7 120 2.493 42.9 2-Chlorophenol 0.34 3477 71.7 120 4-Chloro-3-methylphenol 2.661 0.34 3477 76.5 41.1 120 32. 4-Nitrophenol 2.473 1.8 3477 71.1 120 Acenaphthene 2.726 0.34 3477 78.4 51.5 120 N-Nitrosodi-n-propylamine 2.726 0.34 3477 78.4 50.2 120 Pentachlorophenol 2.252 1.8 3477 64.8 38.4 120 Phenol 2.350 0.34 3477 67.6 41.5 120 2.852 0.34 82.0 45.2 Pyrene 3477 120 Surr: 2,4,6-Tribromophenol 3.270 0 94.0 41 128 3477 Surr: 2-Fluorobiphenyl 1.424 0 1739 81.9 47 120 0 Surr: 2-Fluorophenol 2.265 3477 65.1 38.3 120 Surr: 4-Terphenyl-d14 1.413 0 1739 81.3 51.4 125 Surr: Nitrobenzene-d5 0 1.266 1739 72.8 40.1 120

Qualifiers:

Greater than Result value

BRL Below reporting limit

Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

Less than Result value

Estimated (value above quantitation range)

Analyte not NELAC certified

Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

Holding times for preparation or analysis exceeded

RPD outside limits due to matrix

Page 14 of 15

Client: Peachtree Environmental

1507F26

ANALYTICAL QC SUMMARY REPORT

Date:

22-Jul-15

Davidson Kennedy **Project Name:**

Workorder:

BatchID: 210372

Sample ID: 1507G15-003AMS SampleType: MS	Client ID: TestCode:	TCL-SEMIVOLATILE (DRGANICS SV	W8270D	Uni Bat	ts: mg/Kg chID: 210372		Date: 07/21 o Date: 07/21 olysis Date: 07/21		Run No: 296320 Seq No: 6320188
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Surr: Phenol-d5	2.362	0	3477		67.9	40.3	120			
Sample ID: 1507G15-003AMSD SampleType: MSD	Client ID: TestCode:	TCL-SEMIVOLATILE (DRGANICS SV	W8270D	Uni Bat	its: mg/Kg chID: 210372		Date: 07/21 O Date: 07/21		Run No: 296320 Seq No: 6320202
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
2,4-Dinitrotoluene	2.725	0.34	3477		78.4	41.7	120	2545	6.83	33.1
2-Chlorophenol	2.355	0.34	3477		67.7	42.9	120	2493	5.71	30.7
4-Chloro-3-methylphenol	2.878	0.34	3477		82.8	41.1	120	2661	7.85	40.5
4-Nitrophenol	2.770	1.8	3477		79.6	32	120	2473	11.3	37.9
Acenaphthene	2.829	0.34	3477		81.4	51.5	120	2726	3.71	26.3
N-Nitrosodi-n-propylamine	2.750	0.34	3477		79.1	50.2	120	2726	0.889	34.9
Pentachlorophenol	2.562	1.8	3477		73.7	38.4	120	2252	12.9	35.9
Phenol	2.300	0.34	3477		66.2	41.5	120	2350	2.12	37.4
Pyrene	3.162	0.34	3477		90.9	45.2	120	2852	10.3	35
Surr: 2,4,6-Tribromophenol	3.490	0	3477		100	41	128	3270	0	0
Surr: 2-Fluorobiphenyl	1.430	0	1739		82.3	47	120	1424	0	0
Surr: 2-Fluorophenol	2.098	0	3477		60.4	38.3	120	2265	0	0
Surr: 4-Terphenyl-d14	1.583	0	1739		91.1	51.4	125	1413	0	0
Surr: Nitrobenzene-d5	1.267	0	1739		72.9	40.1	120	1266	0	0
Surr: Phenol-d5	2.308	0	3477		66.4	40.3	120	2362	0	0

Qualifiers: Greater than Result value

> BRL Below reporting limit

Rpt Lim Reporting Limit

Estimated value detected below Reporting Limit

Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

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ANALYTICAL ENVIRONMENTAL SERVICES, INC.



July 28, 2015

Jamie Henderson Peachtree Environmental 3000 Northwoods Parkway, Suite 105 Norcross GA 30071

TEL: (770) 449-6100 FAX: (770) 513-9848

RE: Davidson Kennedy Site

Dear Jamie Henderson: Order No: 1507I43

Analytical Environmental Services, Inc. received 2 samples on 7/22/2015 12:25:00 PM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.

AES' certifications are as follows:

- -NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/15-06/30/16.
- -AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Dorothy deBruyn

Project Manager

CHAIN OF CUSTODY

3080 Presidential Drive, Atlanta GA 30340-3704

TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

Work Order: /507143

Date: 7/22/15 Page _____ of _____

Peach Trre Environmontal	STE 165					ANALYSIS REQUESTED									Visit our website			
PHONE	FAX:	choes c	54	30	ラ フ	¥											www.aesatlanta.com to check on the status of	92
SAMPLED BY: Carter	SIGNATURE:	1149-	611	9		3			İ								your results, place bottle orders, etc.	No # of Containers
Larry Conten	de	Cat	<u> </u>] >											374575, 646.	of Co
# SAMPLE ID	SAN	MPLED		site	(sape	_				PRESE	RVATI	ON (Se	codes)					No #
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3:	3:					SITE	ADDR	ŒSS:	_ a	1 N 1	er Ian	Ta)	いして				Standard 5 Business Days 2 Business Day Rush	
						SENI	D REPO	ORT T	o: J	3h n	ma	×71	nier	~			Next Business Day Rush	
SPECIAL INSTRUCTIONS/COMMENTS:	SHIPMENT METHOD OUT / / VIA:					SITE ADDRESS: Lanler Drive ATlanta SEND REPORT TO: John Martiniere INVOICE TO: Jamie Hendenson (IF DIFFERENT FROM ABOVE)								Same Day Rush (auth req.) Other				
	IN	VIA: CLIENT BedEX UPS MAIL COURIER													STATE PROGRAM (if any):			
	CLIE			il cou	RIER	QUOTE #: PO#:								E-mail? Y/N; Fax? Y/N				
SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE C	ONSIDERED R	SREYHOUND OTHER NSIDERED RECEIVED THE NEXT BUSINESS DAY, IF TU						D TIM	1E IS	NOT I	NDICA'			PROCI	EED WI		DATA PACKAGE: I II III I' TANDARD TAT OF SAMPLES.	<u>v</u>
SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPL	ETION UNLESS	ON UNLESS OTHER ARRANGEMENTS ARE MADE.																

Client: Peachtree Environmental
Project: Davidson Kennedy Site

Project: Davidson Kennedy Site
Lab ID: 1507I43

Case Narrative

Date:

28-Jul-15

Sample Receiving Nonconformance:

A Trip Blank was provided but not listed on the Chain of Custody. Trip blank analyzed at no cost to the client.

Volatile Organic Compounds Analysis by Method 8260B:

Percent recovery for the internal standard compound 1,4-Dichlorobenzene-d4 on sample 1507I43-001 A was outside control limits biased low due to suspected matrix interference. All other internal standard recoveries were within control limits.

Client: Peachtree Environmental Client Sample ID: FILL-A

Project Name: Davidson Kennedy Site Collection Date: 7/22/2015 11:40:00 AM

Date:

28-Jul-15

Lab ID: 1507I43-001 **Matrix:** Soil

Analyses		Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SV	V8260B				(SW	5035)			
1,1,1-Trichloroethane		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
1,1,2,2-Tetrachloroethane		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
1,1,2-Trichloroethane		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
1,1-Dichloroethane		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
1,1-Dichloroethene		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
1,2,4-Trichlorobenzene		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
1,2-Dibromo-3-chloropropane		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
1,2-Dibromoethane		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
1,2-Dichlorobenzene		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
1,2-Dichloroethane		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
1,2-Dichloropropane		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
1,3-Dichlorobenzene		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
1,4-Dichlorobenzene		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
2-Butanone		BRL	0.039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
2-Hexanone		BRL	0.0077		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
4-Methyl-2-pentanone		BRL	0.0077		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Acetone		BRL	0.077		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Benzene		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Bromodichloromethane		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Bromoform		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Bromomethane		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Carbon disulfide		BRL	0.0077		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Carbon tetrachloride		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Chlorobenzene		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Chloroethane		BRL	0.0077		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Chloroform		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Chloromethane		BRL	0.0077		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
cis-1,2-Dichloroethene		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
cis-1,3-Dichloropropene		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Cyclohexane		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Dibromochloromethane		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Dichlorodifluoromethane		BRL	0.0077		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Ethylbenzene		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Freon-113		BRL	0.0077		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Isopropylbenzene		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
m,p-Xylene		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Methyl acetate		BRL	0.0039		mg/Kg-dry		1	07/24/2015 16:15	CG
Methyl tert-butyl ether		BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Methylcyclohexane		BRL	0.0039		mg/Kg-dry		1	07/24/2015 16:15	CG
Methylene chloride		BRL	0.015		mg/Kg-dry		1	07/24/2015 16:15	CG
o-Xylene		BRL	0.0039		mg/Kg-dry		1	07/24/2015 16:15	CG

Qualifiers:

Narr See case narrative

^{*} Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

NC Not confirmed

< Less than Result value

Estimated value detected below Reporting Limit

Client: Peachtree Environmental Client Sample ID: FILL-A

Project Name: Davidson Kennedy Site Collection Date: 7/22/2015 11:40:00 AM

Date:

28-Jul-15

Lab ID: 1507I43-001 **Matrix:** Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW82	60B			(SW	5035)			
Styrene	BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Tetrachloroethene	BRL	0.0039		mg/Kg-dry 210638		1	07/24/2015 16:15	CG
Toluene	BRL	0.0039		mg/Kg-dry 21063		1	07/24/2015 16:15	CG
trans-1,2-Dichloroethene	BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
trans-1,3-Dichloropropene	BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Trichloroethene	BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Trichlorofluoromethane	BRL	0.0039		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Vinyl chloride	BRL	0.0077		mg/Kg-dry	210638	1	07/24/2015 16:15	CG
Surr: 4-Bromofluorobenzene	96.1	70-128		%REC	210638	1	07/24/2015 16:15	CG
Surr: Dibromofluoromethane	126	78.2-128		%REC	210638	1	07/24/2015 16:15	CG
Surr: Toluene-d8	88	76.5-116		%REC	210638	1	07/24/2015 16:15	CG
PERCENT MOISTURE D2216								
Percent Moisture	9.67	0		wt%	R296702	. 1	07/27/2015 10:00	PF

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

Narr See case narrative NC Not confirmed

< Less than Result value

Estimated value detected below Reporting Limit

Client:Peachtree EnvironmentalClient Sample ID:TRIP BLANKProject Name:Davidson Kennedy SiteCollection Date:7/22/2015Lab ID:1507I43-002Matrix:Aqueous

Reporting Dilution Result Qual Units BatchID Analyses Date Analyzed Analyst Limit Factor TCL VOLATILE ORGANICS SW8260B (SW5030B) BRL ug/L 5.0 210640 07/25/2015 13:52 MD 1,1,1-Trichloroethane BRL 5.0 ug/L 210640 07/25/2015 13:52 MD 1,1,2,2-Tetrachloroethane ug/L 1,1,2-Trichloroethane BRL 5.0 210640 07/25/2015 13:52 MD BRL 5.0 ug/L 210640 1 07/25/2015 13:52 MD 1,1-Dichloroethane 1,1-Dichloroethene **BRL** 5.0 ug/L 210640 07/25/2015 13:52 MD BRL 5.0 ug/L 210640 07/25/2015 13:52 MD 1,2,4-Trichlorobenzene BRL ug/L 210640 07/25/2015 13:52 MD 1,2-Dibromo-3-chloropropane 5.0 ug/L 210640 1,2-Dibromoethane BRL 5.0 07/25/2015 13:52 MD 1,2-Dichlorobenzene **BRL** 5.0 ug/L 210640 07/25/2015 13:52 MD ug/L **BRL** 5.0 210640 07/25/2015 13:52 1,2-Dichloroethane MD BRL 5.0 ug/L 210640 07/25/2015 13:52 MD 1,2-Dichloropropane ug/L 210640 1,3-Dichlorobenzene BRL 5.0 1 07/25/2015 13:52 MD BRL 5.0 ug/L 210640 07/25/2015 13:52 MD 1,4-Dichlorobenzene 1 2-Butanone BRL 50 ug/L 210640 07/25/2015 13:52 MD BRL 10 ug/L 210640 07/25/2015 13:52 MD 2-Hexanone 4-Methyl-2-pentanone **BRL** 10 ug/L 210640 07/25/2015 13:52 MD BRL 50 ug/L 210640 07/25/2015 13:52 MD Acetone BRL ug/L 210640 07/25/2015 13:52 Benzene 5.0 MD ug/L BRL 5.0 210640 1 07/25/2015 13:52 MD Bromodichloromethane ug/L 210640 07/25/2015 13:52 Bromoform **BRL** 5.0 MD ug/L **BRL** 5.0 210640 07/25/2015 13:52 MD Bromomethane ug/L Carbon disulfide BRL 5.0 210640 07/25/2015 13:52 MD ug/L 210640 Carbon tetrachloride BRL 5.0 07/25/2015 13:52 MD Chlorobenzene BRL 5.0 ug/L 210640 07/25/2015 13:52 MD ug/L Chloroethane BRL 10 210640 07/25/2015 13:52 MD BRL ug/L 210640 07/25/2015 13:52 Chloroform 5.0 1 MD Chloromethane **BRL** 10 ug/L 210640 07/25/2015 13:52 MD BRL 5.0 ug/L 210640 07/25/2015 13:52 MD cis-1,2-Dichloroethene cis-1,3-Dichloropropene BRL 5.0 ug/L 210640 07/25/2015 13:52 MD ug/L 210640 BRL 5.0 07/25/2015 13:52 MD Cyclohexane ug/L 210640 07/25/2015 13:52 Dibromochloromethane **BRL** 5.0 MD ug/L **BRL** 10 210640 07/25/2015 13:52 Dichlorodifluoromethane MD Ethylbenzene BRL 5.0 ug/L 210640 07/25/2015 13:52 MD Freon-113 BRL 10 ug/L 210640 1 07/25/2015 13:52 MD BRL 5.0 ug/L 210640 07/25/2015 13:52 MD Isopropylbenzene 1 ug/L m,p-Xvlene BRL 5.0 210640 07/25/2015 13:52 MD BRL ug/L 210640 07/25/2015 13:52 5.0 MD Methyl acetate ug/L Methyl tert-butyl ether **BRL** 5.0 210640 07/25/2015 13:52 MD Methylcyclohexane BRL 5.0 ug/L 210640 07/25/2015 13:52 MD BRL ug/L 210640 07/25/2015 13:52 Methylene chloride 5.0 MD ug/L BRL 210640 o-Xylene 5.0 07/25/2015 13:52 MD

Qualifiers:

Date:

28-Jul-15

Narr See case narrative

^{*} Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

NC Not confirmed

< Less than Result value

Estimated value detected below Reporting Limit

Client:Peachtree EnvironmentalClient Sample ID:TRIP BLANKProject Name:Davidson Kennedy SiteCollection Date:7/22/2015Lab ID:1507I43-002Matrix:Aqueous

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260E	;			(SW	V5030B)			
Styrene	BRL	5.0		ug/L	210640	1	07/25/2015 13:52	MD
Tetrachloroethene	BRL	5.0		ug/L	210640	1	07/25/2015 13:52	MD
Toluene	BRL	5.0		ug/L	210640	1	07/25/2015 13:52	MD
trans-1,2-Dichloroethene	BRL	5.0		ug/L	210640	1	07/25/2015 13:52	MD
trans-1,3-Dichloropropene	BRL	5.0		ug/L	210640	1	07/25/2015 13:52	MD
Trichloroethene	BRL	5.0		ug/L	210640	1	07/25/2015 13:52	MD
Trichlorofluoromethane	BRL	5.0		ug/L	210640	1	07/25/2015 13:52	MD
Vinyl chloride	BRL	2.0		ug/L	210640	1	07/25/2015 13:52	MD
Surr: 4-Bromofluorobenzene	87.2	70.6-123		%REC	210640	1	07/25/2015 13:52	MD
Surr: Dibromofluoromethane	103	78.7-124		%REC	210640	1	07/25/2015 13:52	MD
Surr: Toluene-d8	96.1	81.3-120		%REC	210640	1	07/25/2015 13:52	MD

Qualifiers:

* Value exceeds maximum contaminant level

BRL Below reporting limit

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

> Greater than Result value

E Estimated (value above quantitation range)

Date:

28-Jul-15

S Spike Recovery outside limits due to matrix

Narr See case narrative

NC Not confirmed

< Less than Result value

Estimated value detected below Reporting Limit

Sample/Cooler Receipt Checklist

Client Peachtree Env		Work Order Number 1507 F43
Signature Dat		
Carrier name: FedEx UPS Courier Client U	S Mail Othe	er
Shipping container/cooler in good condition?		No Not Present
Custody seals intact on shipping container/cooler?		No Not Present
Custody seals intact on sample bottles?	Yes	No Not Present
Container/Temp Blank temperature in compliance? (0°≤6°C)		No
Cooler #1 <u>Z-2</u> Cooler #2' Cooler #3	Cooler #4 _	Cooler#5 Cooler #6
Chain of custody present?	Yes _	
Chain of custody signed when relinquished and received?	Yes 🖌	No
Chain of custody agrees with sample labels?	Yes _	No
Samples in proper container/bottle?	Yes _	No
Sample containers intact?	Yes 🖊	No
Sufficient sample volume for indicated test?	Yes _	No
All samples received within holding time?	Yes 🖊	No
Was TAT marked on the COC?	Yes <u></u>	No
Proceed with Standard TAT as per project history?	Yes	No Not Applicable
Water - VOA vials have zero headspace? No VOA vials s	ubmitted	Yes No
Water - pH acceptable upon receipt?	Yes _	No Not Applicable
		ecked by
Sample Condition: Good Other(Explain)		
(For diffusive samples or AIHA lead) Is a known blank inclu	ded? Yes	s No

See Case Narrative for resolution of the Non-Conformance.

^{*} Samples do not have to comply with the given range for certain parameters.

Peachtree Environmental **Client:**

ANALYTICAL QC SUMMARY REPORT

Date:

28-Jul-15

BatchID: 210638

Davidson Kennedy Site **Project Name:**

Workorder: 1507I43

Sample ID: MB-210638 SampleType: MBLK	Client ID: TestCode: TCI	. VOLATILE ORGA	NICS SW82601	3	Un Bat	its: ug/Kg cchID: 210638	-	Date: (07/24/2015 07/24/2015	Run No: 296677 Seq No: 6328986
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref V	Val %RPD	RPD Limit Qual
1,1,1-Trichloroethane	BRL	5.0								
1,1,2,2-Tetrachloroethane	BRL	5.0								
1,1,2-Trichloroethane	BRL	5.0								
1,1-Dichloroethane	BRL	5.0								
1,1-Dichloroethene	BRL	5.0								
1,2,4-Trichlorobenzene	BRL	5.0								
1,2-Dibromo-3-chloropropane	BRL	5.0								
1,2-Dibromoethane	BRL	5.0								
1,2-Dichlorobenzene	BRL	5.0								
1,2-Dichloroethane	BRL	5.0								
1,2-Dichloropropane	BRL	5.0								
1,3-Dichlorobenzene	BRL	5.0								
1,4-Dichlorobenzene	BRL	5.0								
2-Butanone	BRL	50								
2-Hexanone	BRL	10								
4-Methyl-2-pentanone	BRL	10								
Acetone	BRL	100								
Benzene	BRL	5.0								
Bromodichloromethane	BRL	5.0								
Bromoform	BRL	5.0								
Bromomethane	BRL	5.0								
Carbon disulfide	BRL	10								
Carbon tetrachloride	BRL	5.0								
Chlorobenzene	BRL	5.0								
Chloroethane	BRL	10								
Chloroform	BRL	5.0								
Chloromethane	BRL	10								
Qualifiers: > Greater than Result v	volue		Lace	than Result value			D	A nalvta dataatad in	the associated method	blonk

Qualifiers:

Greater than Result value

BRL Below reporting limit

Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

Less than Result value

Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

Page 9 of 16

Client: Peachtree Environmental

ANALYTICAL QC SUMMARY REPORT

Date:

28-Jul-15

BatchID: 210638

Davidson Kennedy Site **Project Name:**

Workorder: 1507I43

Sample ID: MB-210638 SampleType: MBLK	Client ID: TestCode: TCL VOLATILE ORGANICS SW8260B			Uni	ts: ug/Kg chID: 210638	-	Date: 07/2 lysis Date: 07/2	4/2015	Run No: 296677 Seq No: 6328986		
SampleType. WIBLK	resicode.				Dai	CIIID. 210036	Alla	lysis Date. 07/2	4/2013	Seq No. 0328380	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Q	ual
cis-1,2-Dichloroethene	BRL	5.0									
cis-1,3-Dichloropropene	BRL	5.0									
Cyclohexane	BRL	5.0									
Dibromochloromethane	BRL	5.0									
Dichlorodifluoromethane	BRL	10									
Ethylbenzene	BRL	5.0									
Freon-113	BRL	10									
Isopropylbenzene	BRL	5.0									
m,p-Xylene	BRL	5.0									
Methyl acetate	BRL	5.0									
Methyl tert-butyl ether	BRL	5.0									
Methylcyclohexane	BRL	5.0									
Methylene chloride	BRL	20									
o-Xylene	BRL	5.0									
Styrene	BRL	5.0									
Tetrachloroethene	BRL	5.0									
Toluene	BRL	5.0									
trans-1,2-Dichloroethene	BRL	5.0									
trans-1,3-Dichloropropene	BRL	5.0									
Trichloroethene	BRL	5.0									
Trichlorofluoromethane	BRL	5.0									
Vinyl chloride	BRL	10									
Surr: 4-Bromofluorobenzene	52.36	0	50.00		105	70	128				
Surr: Dibromofluoromethane	57.01	0	50.00		114	78.2	128				
Surr: Toluene-d8	45.92	0	50.00		91.8	76.5	116				

Qualifiers:

Greater than Result value

Below reporting limit

BRL

Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

Page 10 of 16

Client: Peachtree Environmental
Project Name: Davidson Kennedy Site

1507I43

Workorder:

ANALYTICAL QC SUMMARY REPORT

Date:

28-Jul-15

BatchID: 210638

Sample ID: LCS-210638 Run No: 296677 Client ID: Units: ug/Kg Prep Date: 07/24/2015 TestCode: TCL VOLATILE ORGANICS SW8260B SampleType: LCS BatchID: 210638 Analysis Date: 07/24/2015 Seq No: 6328989 Analyte Result **RPT Limit** SPK value SPK Ref Val %REC Low Limit High Limit RPD Ref Val %RPD RPD Limit Qual 1,1-Dichloroethene 5.0 50.00 87.0 69 9 145 43.50 5.0 50.00 81.1 72.3 130 Benzene 40.54 Chlorobenzene 46.92 5.0 50.00 93.8 69 130 Toluene 42.31 5.0 50.00 84.6 71.1 130 Trichloroethene 54.07 5.0 50.00 108 71.7 136 0 70 Surr: 4-Bromofluorobenzene 53.82 50.00 108 128 Surr: Dibromofluoromethane 57.71 0 50.00 78.2 128 115 Surr: Toluene-d8 45.98 0 50.00 92.0 76.5 116 Sample ID: 1507I57-001AMS Client ID: Units: ug/Kg Prep Date: 07/24/2015 Run No: 296677 TestCode: TCL VOLATILE ORGANICS SW8260B SampleType: MS BatchID: 210638 Analysis Date: 07/24/2015 Seq No: 6328990 **RPT Limit** SPK value SPK Ref Val %REC %RPD Analyte Result Low Limit High Limit RPD Ref Val RPD Limit Oual 1,1-Dichloroethene 46.65 5.0 50.00 93.3 56.6 151 5.0 70.4 Benzene 39.19 50.00 78.4 130 Chlorobenzene 48.18 5.0 50.00 96.4 67.5 132 Toluene 42.97 5.0 50.00 85.9 70.4 130 Trichloroethene 52.05 5.0 50.00 104 70.1 137 Surr: 4-Bromofluorobenzene 0 103 70 128 51.49 50.00 0 Surr: Dibromofluoromethane 55.39 50.00 111 78.2 128 Surr: Toluene-d8 45.19 0 90.4 76.5 50.00 116 Sample ID: 1507I57-001AMSD Client ID: 07/24/2015 Run No: 296677 Units: ug/Kg Prep Date: SampleType: MSD TestCode: TCL VOLATILE ORGANICS SW8260B BatchID: 210638 Analysis Date: 07/24/2015 Seq No: 6328991 SPK Ref Val Low Limit High Limit RPD Ref Val %RPD RPD Limit Qual Analyte Result RPT Limit SPK value %REC

Qualifiers:

Benzene

1.1-Dichloroethene

> Greater than Result value

BRL Below reporting limit

Rpt Lim Reporting Limit

J Estimated value detected below Reporting Limit

43.81

37.98

5.0

5.0

< Less than Result value

50.00

50.00

E Estimated (value above quantitation range)

87.6

76.0

56.6

70.4

151

130

N Analyte not NELAC certified

Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

6.28

3.14

R RPD outside limits due to matrix

46.65

39.19

Page 11 of 16

20.4

16.9

Client: Peachtree Environmental

Workorder:

ANALYTICAL QC SUMMARY REPORT

Date:

28-Jul-15

Davidson Kennedy Site **Project Name:** 1507I43

BatchID: 210638

Sample ID: 1507I57-001AMSD	Client ID:				Uni	ts: ug/Kg	Prep	Date: 07/24	/2015	Run No: 296677
SampleType: MSD	TestCode: TCL VOLATILE ORGANICS SW8260B			BatchID: 210638			Analysis Date: 07/24/2015		Seq No: 6328991	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Chlorobenzene	47.12	5.0	50.00		94.2	67.5	132	48.18	2.22	14.6
Toluene	41.08	5.0	50.00		82.2	70.4	130	42.97	4.50	16.6
Trichloroethene	51.35	5.0	50.00		103	70.1	137	52.05	1.35	17
Surr: 4-Bromofluorobenzene	52.39	0	50.00		105	70	128	51.49	0	0
Surr: Dibromofluoromethane	59.53	0	50.00		119	78.2	128	55.39	0	0
Surr: Toluene-d8	45.57	0	50.00		91.1	76.5	116	45.19	0	0

Qualifiers:

BRL

Greater than Result value

Below reporting limit

Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

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Client: Peachtree Environmental

1507I43

ANALYTICAL QC SUMMARY REPORT

Date:

28-Jul-15

BatchID: 210640

Davidson Kennedy Site **Project Name:**

Workorder:

Sample ID: MB-210640 Client ID: Units: ug/L Prep Date: 07/25/2015 Run No: 296672 TostCodo: TCLVOLATILE ORGANICS SW8260B

SampleType: MBLK	TestCode: TCL VOLATILE ORGANICS SW8260B				BatchID: 210640		Ana	lysis Date: 07/25	/2015	Seq No: 6328903		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual		
1,1,1-Trichloroethane	BRL	5.0										
1,1,2,2-Tetrachloroethane	BRL	5.0										
1,1,2-Trichloroethane	BRL	5.0										
1,1-Dichloroethane	BRL	5.0										
1,1-Dichloroethene	BRL	5.0										
1,2,4-Trichlorobenzene	BRL	5.0										
1,2-Dibromo-3-chloropropane	BRL	5.0										
1,2-Dibromoethane	BRL	5.0										
1,2-Dichlorobenzene	BRL	5.0										
1,2-Dichloroethane	BRL	5.0										
1,2-Dichloropropane	BRL	5.0										
1,3-Dichlorobenzene	BRL	5.0										
1,4-Dichlorobenzene	BRL	5.0										
2-Butanone	BRL	50										
2-Hexanone	BRL	10										
4-Methyl-2-pentanone	BRL	10										
Acetone	BRL	50										
Benzene	BRL	5.0										
Bromodichloromethane	BRL	5.0										
Bromoform	BRL	5.0										
Bromomethane	BRL	5.0										
Carbon disulfide	BRL	5.0										
Carbon tetrachloride	BRL	5.0										
Chlorobenzene	BRL	5.0										
Chloroethane	BRL	10										
Chloroform	BRL	5.0										
Chloromethane	BRL	10										

Qualifiers:

Greater than Result value

BRL Below reporting limit

Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

Less than Result value

Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

Page 13 of 16

Client: Peachtree Environmental

1507I43

ANALYTICAL QC SUMMARY REPORT

Date:

28-Jul-15

BatchID: 210640

Project Name: Davidson Kennedy Site

Workorder:

Sample ID: MB-210640 Client ID: Prep Date: 07/25/2015 Run No: 296672 Units: ug/L TestCode: TCL VOLATILE ORGANICS SW8260B SampleType: MBLK BatchID: 210640 Analysis Date: 07/25/2015 Seq No: 6328903 %RPD Analyte Result **RPT Limit** SPK value SPK Ref Val %REC Low Limit High Limit RPD Ref Val RPD Limit Qual cis-1,2-Dichloroethene **BRL** 5.0 5.0 cis-1,3-Dichloropropene BRL Cyclohexane BRL 5.0 Dibromochloromethane BRL 5.0 Dichlorodifluoromethane BRL 10 Ethylbenzene BRL 5.0 Freon-113 BRL 10 Isopropylbenzene BRL 5.0 m,p-Xylene 5.0 BRL Methyl acetate BRL 5.0 Methyl tert-butyl ether 5.0 BRL Methylcyclohexane BRL 5.0 Methylene chloride **BRL** 5.0 o-Xylene BRL 5.0 BRL 5.0 Styrene Tetrachloroethene BRL 5.0 Toluene BRL 5.0 trans-1,2-Dichloroethene **BRL** 5.0 trans-1,3-Dichloropropene 5.0 BRL Trichloroethene BRL 5.0 Trichlorofluoromethane BRL 5.0 Vinyl chloride BRL 2.0 0 Surr: 4-Bromofluorobenzene 42.72 50.00 85.4 70.6 123 Surr: Dibromofluoromethane 47.82 0 50.00 95.6 78.7 124

Qualifiers: > Greater than Result value

Surr: Toluene-d8

BRL Below reporting limit

Estimated value detected below Reporting Limit

44.23

0

Rpt Lim Reporting Limit

Less than Result value

50.00

Estimated (value above quantitation range)

88.5

81.3

120

Analyte not NELAC certified

Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

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Client: Peachtree Environmental
Project Name: Davidson Kennedy Site

Rpt Lim Reporting Limit

ANALYTICAL QC SUMMARY REPORT

Date:

28-Jul-15

Workorder: 1507I43

BatchID: 210640

Sample ID: LCS-210640 SampleType: LCS	Client ID: TestCode:	TCL VOLATILE ORGA	NICS SW8260I	3	Un: Bat	its: ug/L tchID: 210640		ep Date: 07 nalysis Date: 07		Run No: 29 Seq No: 66	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Va	al %RPD	RPD L	imit Qual
1,1-Dichloroethene	47.01	5.0	50.00		94.0	64.2	137				
Benzene	48.51	5.0	50.00		97.0	72.8	128				
Chlorobenzene	49.74	5.0	50.00		99.5	72.3	126				
Toluene	48.04	5.0	50.00		96.1	74.9	127				
Trichloroethene	44.87	5.0	50.00		89.7	70.5	134				
Surr: 4-Bromofluorobenzene	47.42	0	50.00		94.8	70.6	123				
Surr: Dibromofluoromethane	47.35	0	50.00		94.7	78.7	124				
Surr: Toluene-d8	46.32	0	50.00		92.6	81.3	120				
Sample ID: 1507H42-001AMS SampleType: MS	Client ID: TestCode:	TCL VOLATILE ORGA	NICS SW8260I	3	Un: Bat	its: ug/L tchID: 210640		ep Date: 07		Run No: 29 Seq No: 63	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Va	al %RPD	RPD L	imit Qual
,1-Dichloroethene	24930	2500	25000		99.7	60.5	156				
Benzene	23240	2500	25000		93.0	70	135				
Chlorobenzene	23250	2500	25000		93.0	70.5	132				
oluene	23810	2500	25000		95.2	70.5	137				
richloroethene	21100	2500	25000		84.4	71.8	139				
Surr: 4-Bromofluorobenzene	24240	0	25000		96.9	70.6	123				
Surr: Dibromofluoromethane	23660	0	25000		94.6	78.7	124				
Surr: Toluene-d8	23760	0	25000		95.0	81.3	120				
Sample ID: 1507H42-001AMSD SampleType: MSD	Client ID: TestCode:	TCL VOLATILE ORGA	NICS SW82601	3	Un: Bat	its: ug/L tchID: 210640		ep Date: 07		Run No: 29 Seq No: 63	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Va	al %RPD	RPD L	imit Qual
,1-Dichloroethene	22450	2500	25000		89.8	60.5	156	24930	10.5	20	
Benzene	24100	2500	25000		96.4	70	135	23240	3.63	20	
Qualifiers: > Greater than Result valu	e		< Less	than Result value			В	Analyte detected in th	he associated method b	olank	
BRL Below reporting limit			E Estim	ated (value above quantit	ation range)		Н	Holding times for pre	eparation or analysis e	xceeded	
J Estimated value detecte	d below Reporting	g Limit	N Analy	rte not NELAC certified			R	RPD outside limits d	lue to matrix	Page 15 of	f 16

S Spike Recovery outside limits due to matrix

Client: Peachtree Environmental ANALYTICAL QC SUMMARY REPORT

Date:

28-Jul-15

BatchID: 210640

Davidson Kennedy Site **Project Name:**

1507I43

Workorder:

Sample ID: 1507H42-001AMSD Client ID: Units: ug/L Prep Date: 07/25/2015 Run No: 296672

SampleType: MSD	TestCode:	TCL VOLATILE ORGA	NICS SW82601	В	Bat	chID: 210640		lysis Date: 07/25 /		Seq No: 6328907
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Chlorobenzene	23890	2500	25000		95.5	70.5	132	23250	2.69	20
Toluene	23970	2500	25000		95.9	70.5	137	23810	0.670	20
Trichloroethene	21950	2500	25000		87.8	71.8	139	21100	3.95	20
Surr: 4-Bromofluorobenzene	24040	0	25000		96.2	70.6	123	24240	0	0
Surr: Dibromofluoromethane	26270	0	25000		105	78.7	124	23660	0	0
Surr: Toluene-d8	24530	0	25000		98.1	81.3	120	23760	0	0

Qualifiers:

BRL

Greater than Result value

Below reporting limit

Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

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APPENDIX L

Soil Backfill Material Letter



June 1, 2015

To whom it may concerns,

RE: Soil Backfill Material

Stephens Industries, LP, whose corporate office is located at 5173 Pelican Drive, College Park, GA 30349, is licensed by the State of Georgia, Department of Natural Resources, Environmental Protection Division as a Construction/Demolition Solid Waste Disposal Facility and Solid Waste Processing Facility, under Permit No. 031-039D(C&D). We accept Construction & Demolition (C&D) waste, as well as good, compactible, contaminate-free soil. The material provided for the above-referenced project was taken from this stockpile of soil. To the best of our knowledge, this material is free of any hazardous materials. In addition, we currently are supplying GDOT and City of Atlanta contracts from these stock piles. We would welcome the opportunity to provide a sample for your testing purposes for verification.

Please let me know how we can be of further assistance in this matter.

Respectfully,

Christopher Clark

Stephens Industries, LP



APPENDIX M

Uniform Environmental Covenant

After Recording Return to:

Arnall Golden Gregory LLP 171 17th St. N.W, Suite 2100 Atlanta, Georgia 30363-1031 Attn: John C. Spinrad, Esq.

Environmental Covenant

This instrument is an Environmental Covenant executed pursuant to the Georgia Uniform Environmental Covenants Act, OCGA § 44-16-1, *et seq.* This Environmental Covenant subjects the Property identified below to the activity and/or use limitations specified in this document. The effective date of this Environmental Covenant shall be the date upon which the fully executed Environmental Covenant has been recorded in accordance with OCGA § 44-16-8(a).

Fee Owner of Property/Grantor: Davidson-Kennedy Company

5723 Redfield Road

Dunwoody, Georgia 30338

Grantee/Holder: Davidson-Kennedy Company

Grantee/Entity with State of Georgia

express power to enforce: Department of Natural Resources

Environmental Protection Division 2 Martin Luther King Jr. Drive, SE

Suite 1456 East Tower Atlanta, GA 30334

Parties with interest in the Property: City of Atlanta

Department of Law 55 Trinity Avenue

Suite 5000

Atlanta, GA 30303

Georgia Power Company

241 Ralph McGill Boulevard NE

Atlanta, GA 30308 Attn: Legal Department

MARTA

2424 Piedmont Road NE Atlanta, GA 30324-3311 Attn: Legal Department Thoroughbred Technology and Communications, LLC 1200 Peachtree Street NE Atlanta, GA 30309
Attn: Legal Department

Level 3 Communications, LLC (successor to WilTel Communications, LLC) 1025 Eldorado Boulevard Broomfield, CO 80021 Attn: Legal Department

Sprint Communications Company, LLC 13221 Woodland Park Road Herndon, VA 20171 Attn: Legal Department

CenturyLink Communications, LLC (successor to Qwest Communications Company, LLC) 1801 California Street Denver, CO 80202 Attn: Legal Department

Property:

The property subject to this Environmental Covenant is the Davidson Kennedy Company property (hereinafter "Property"), located on 1195 Victory Drive in Atlanta, Fulton County, Georgia. This tract of land was conveyed on July 6, 1979 from Florida Steel Corporation to Davidson-Kennedy Company recorded in Deed Book 7292, Page 138 of the Fulton County Records. The area is located in Land Lot 121 of the 14th District of Fulton County, Georgia. The property is approximately 9.17 acres. A complete legal description of the area is attached as Exhibit A and a map of the area is attached as Exhibit B.

Tax Parcel Number(s):

14-0121-0007-002-4 Fulton County, Georgia

Name and Location of Administrative Records:

The corrective action at the Property that is the subject of this Environmental Covenant is described in the following documents:

- VRP Application, dated May 24, 2010
- Letter dated June 30, 2011 from Georgia Environmental Protection Division to Davidson-Kennedy Company, accepting site into Voluntary Remediation Program
- Letter dated June 30, 2011 from Georgia Environmental Protection Division to Davidson-Kennedy Company, commenting on Voluntary Remediation Program Application
- December 2013 Fifth Semi-Annual Progress Report for the Davidson-Kennedy Company Facility
- Letter dated April 3, 2014, 2011 from Georgia Environmental Protection Division to Davidson-Kennedy Company, commenting on Fourth and Fifth Semi-Annual Reports

- Seventh Semiannual VRP Progress Report for the Davidson-Kennedy Company Facility, dated December 2014, including Corrective Action Plan
- Revised Corrective Action Plan and Final Preliminary Risk Evaluation dated March 2015.
- Revised Corrective Action Plan and Final Preliminary Risk Evaluation dated May 2015.
- Compliance Status Report for the Davidson-Kennedy Company Facility dated December ___, 2015.

These and other pertinent documents are available at the following locations:

Georgia Environmental Protection Division Response and Remediation Program 2 MLK Jr. Drive, SE, Suite 1054 East Tower Atlanta, GA 30334 M-F 8:00 AM to 4:30 PM, excluding state holidays

Description of Contamination and Corrective Action:

This Property has been listed on the state's hazardous site inventory and has been designated as needing corrective action due to the presence of hazardous wastes, hazardous constituents, or hazardous substances regulated under state law. Contact the property owner or the Georgia Environmental Protection Division for further information concerning this Property. This notice is provided in compliance with the Georgia Hazardous Site Response Act.

This Declaration of Covenant is made pursuant to the Georgia Uniform Environmental Covenants Act, O.C.G.A. § 44-16-1 et seq. by Davidson-Kennedy Company, its successors and assigns, and the State of Georgia, Department of Natural Resources, Environmental Protection Division (hereinafter "EPD"), and its successors and assigns. This Environmental Covenant is required because lead, arsenic, barium, cadmium, chromium, mercury, benzene, xylene, flouranthene, pyrene, acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, naphthalene, 4-methylphenol, phenanthrene, benzo(b)flouranthene, benzo(k)flouranthene, benzo(g,h,i)perlyene, indeno(1,2,3-de)pyrene, toluene, ethylbenzene, 1,2-dicloroethane, and tetrachloroethene, was released, was deposited on, or migrated to the Property. These substances are "regulated substances" as defined under the Georgia Hazardous Site Response Act, O.C.G.A. § 12-8-90 et seq., and the rules promulgated thereunder (hereinafter "HSRA" and "Rules", respectively). The Corrective Action consists of the excavation of contaminated soils and activity and use limitations designed to protect human health and the environment.

Grantor hereby binds Grantor, its successors and assigns to the activity and use restriction(s) for the Property identified herein and grants such other rights under this Environmental Covenant in favor of EPD. EPD shall have full right of enforcement of the rights conveyed under this Environmental Covenant pursuant to HSRA, O.C.G.A. § 12-8-90 *et seq.*, and the rules promulgated thereunder. Failure to timely enforce compliance with this Environmental Covenant or the use or activity limitations contained herein by any person shall not bar subsequent enforcement by such person and shall not be deemed a waiver of the person's right to take action to enforce any non-compliance. Nothing in this Environmental Covenant shall restrict EPD from excising any authority under applicable law.

Grantor makes the following declaration as to limitations, restrictions, and uses to which the Property may be put and specifies that such declarations shall constitute covenants to run with the land, pursuant to O.C.G.A. § 44-16-5(a); is perpetual, unless modified or terminated pursuant to the terms of

this Covenant pursuant to O.C.G.A. § 44-16-9; and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Property (hereinafter "Owner"). Should a transfer or sale of the Property occur before such time as this Environmental Covenant has been amended or revoked then said Environmental Covenant shall be binding on the transferee(s) or purchaser(s).

The Environmental Covenant shall inure to the benefit of EPD, Davidson-Kennedy Company and their respective successors and assigns, and shall be enforceable by the Director or his agents or assigns, Davidson-Kennedy Company or its successors and assigns, and other party(ies) as provided for in O.C.G.A. § 44-16-11 in a court of competent jurisdiction.

Activity and/or Use Limitation(s)

- 1. <u>Registry.</u> Pursuant to O.C.G.A. § 44-16-12, this Environmental Covenant and any amendment or termination thereof, may be contained in EPD's registry for environmental covenants.
- 2. <u>Notice.</u> The Owner of the Property must give thirty (30) day advance written notice to EPD of the Owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation, and maintenance of the Corrective Action.
- 3. <u>Notice of Limitation in Future Conveyances.</u> Each instrument hereafter conveying an interest in the Property subject to this Environmental Covenant shall contain a notice of the activity and use limitations set forth in this Environmental Covenant and shall provide the recorded location of the Environmental Covenant.

4. Monitoring and Maintenance.

- (a) Annually, no later than June 1st of each year following the effective date of this Environmental Covenant, the then current Owner shall inspect the banks of the intermittent stream that runs through the Property. The monitoring and maintenance shall be performed in accordance with the attached inspection checklist.
- (b) In order to maintain compliance with applicable State and federal water quality standards, stream bank maintenance and restoration shall be conducted.
- (c) If Owner covers or buries the intermittent stream in accordance with applicable state and federal regulations, then Owner shall have no further obligations under this Section 4.

5. Activity and Use Limitation(s).

- (a) The Property shall be used only for non-residential uses, as defined in Section 391-3-19.02 of the Rules and defined in and allowed under the Fulton County's zoning regulations as of the date of this Environmental Covenant. Any residential use on the Property shall be prohibited.
- (b) In establishing compliance with non-residential cleanup standards on the Property, representative exposure concentrations of constituents of concern in soil were calculated across soil exposure domains, as set forth in O.C.G.A. § 12-8-108(3). A figure showing the soil exposure domains is attached as Exhibit C. Although the Property is, on average, in compliance with non-residential risk reduction standards as defined in Section 391-3-19-.07 of the Rules, there may be individual points on the Property where hazardous substances are present at levels above non-residential risk reduction standards. Accordingly, any work on the property where sub-surface soils are to be disturbed, including excavation, construction, utility installation or maintenance, shall be performed by informed and properly trained personnel using appropriate personal protection

equipment in accordance with rules established by the federal Occupational Safety and Health Administration. Any soil generated for off-site disposal shall be properly characterized and managed in accordance with applicable local, state and federal rules and regulations governing the disposal of such material. If future use of the Property changes such that it is inconsistent with the exposure domains set forth on Exhibit C, EPD may require that the Owner re-calculate the representative exposure domains to determine whether each domain remains in compliance with applicable risk reduction standards.

- 6. <u>Periodic Reporting.</u> Annually, by no later than December 1, 2016, and each year thereafter, the then current Owner shall submit to EPD an Annual Report stating whether or not the activity and use limitations in this Environmental Covenant are being abided by, and reporting the results of the annual inspection required in paragraph 4, using the inspection checklist attached as Exhibit D.
- 7. <u>Groundwater Limitation.</u> The use or extraction of groundwater beneath the Property for drinking water or for any other non-remedial purposes shall be prohibited, unless specifically approved by EPD.
- 8. <u>Right of Access.</u> In addition to any rights already possessed by EPD, the Owner shall allow authorized representatives of EPD the right to enter the Property at reasonable times for the purpose of evaluating the Corrective Action; to take samples, to inspect the Corrective Action conducted at the Property, to determine compliance with this Environmental Covenant, and to inspect records that are related to the Corrective Action.
- 9. Recording of Environmental Covenant and Proof of Notification. Within thirty (30) days after the date of the Director's signature, the Owner shall file this Environmental Covenant with the Recorders of Deeds for each County in which the Property is located, and send a file stamped copy of this Environmental Covenant to EPD within thirty (30) days of recording. Within that time period, the Owner shall also send a file-stamped copy to each of the following: (1) each person holding a recorded interest in the Property subject to the covenant; (2) each person in possession of the real property subject to the covenant; (3) each municipality, county, consolidated government, or other unit of local government in which real property subject to the covenant is located; and (4) each owner in fee simple whose property abuts the property subject to the Environmental Covenant.
- 10. <u>Termination or Modification</u>. The Environmental Covenant shall remain in full force and effect in accordance with O.C.G.A. § 44-5-60, unless and until the Director determines that the Property is in compliance with the Type 1 and 2 Risk Reduction Standards, as defined in Georgia Rules of Hazardous Site Response (Rules) Section 391-3-19-.07 whereupon the Environmental Covenant may be amended or revoked in accordance with Section 391-3-19-08(7) of the Rules and O.C.G.A. § 44-16-1 *et seq*.
- 11. <u>Severability</u>. If any provision of this Environmental Covenant is found to be unenforceable in any respect, the validity, legality, and enforceability of the remaining provisions shall not in any way be affected or impaired.
- 12. <u>No Property Interest Created in EPD</u>. This Environmental Covenant does not in any way create any interest by EPD in the Property that is subject to the Environmental Covenant. Furthermore, the act of approving this Environmental Covenant does not in any way create any interest by EPD in the Property in accordance with O.C.G.A. § 44-16-3(b).

Representations and Warranties.

Grantor hereby represents and warrants to the other signatories hereto:

- a) That the Grantor has the power and authority to enter into this Environmental Covenant, to grant the rights and interests herein provided and to carry out all obligations hereunder;
- b) That the Grantor is the sole owner of the Property and holds fee simple title which is free, clear and unencumbered;
- c) That the Grantor has identified all other parties that hold any interest (e.g., encumbrance) in the Property and notified such parties of the Grantor's intention to enter into this Environmental Covenant;
- d) That this Environmental Covenant will not materially violate, contravene, or constitute a material default under any other agreement, document or instrument to which Grantor is a party, by which Grantor may be bound or affected;
- e) That the Grantor has served each of the people or entities referenced in Activity 9 above with an identical copy of this Environmental Covenant in accordance with O.C.G.A. § 44-16-4(d).
- f) That this Environmental Covenant will not materially violate or contravene any zoning law or other law regulating use of the Property; and
- g) That this Environmental Covenant does not authorize a use of the Property that is otherwise prohibited by a recorded instrument that has priority over the Environmental Covenant.

Notices.

Any document or communication required to be sent pursuant to the terms of this Environmental Covenant shall be sent to the following persons:

Georgia Environmental Protection Division Branch Chief Land Protection Branch 2 Martin Luther King Jr. Drive SE Suite 1054 East Tower Atlanta, GA 30334

Grantor has caused this Environmental Cove Environmental Covenants Act, on the da	enant to be executed pursuant to The Georgia Unay of, 20	iform
Signed, sealed, and delivered in the presence of:	For the Grantor:	
Unofficial Witness (Signature)	Name of Grantor (Print)	<u></u>
Unofficial Witness Name (Print)	Grantor's Authorized Representative (Signature)	(Seal)
	Authorized Representative Name (Print)	
Unofficial Witness Address (Print)	Title of Authorized Representative (Print)	
Notary Public (Signature)	Dated:	
My Commission Expires:	(NOTARY SEAL)	
Signed, sealed, and delivered in the presence of:	For the State of Georgia Environmental Protection Division:	
Unofficial Witness (Signature)	(Signature)	(Seal)
	Judson H. Turner	
Unofficial Witness Name (Print)	Director	
	Dated:	
Unofficial Witness Address (Print)	(NOTARY SEAL)	
Notary Public (Signature)		
My Commission Expires:		

Exhibit A Legal Description

Exhibit B Area Map

Exhibit C Exposure Domain Figure

Exhibit D Land Use Certification and Inspection Checklist

Land Use

Lanu	<u>USC</u>	
1) 02(2)?	Does t	the Property meet the definition of non-residential use as defined in HSRA Rule 391-3-
	Yes	No
If the a	answer	to #1 is no, attach a written explanation to this form explaining how the use has changed.
Expos	<u>ure</u>	
2) land di	Has ex isturbin	acavation, subsurface construction, utility installation or subsurface maintenance, or similar g activities been conducted at the Property within the past year?
	Yes	No
2(a)	If yes,	to #2, was work performed using appropriate personal protective equipment?
	Yes	No
2(b) risk red	Are siduction	te workers exposed directly to soils at this HSRA site that do not meet the non-residential standards in excess of 250 days per year?
	Yes	No
2(c) throug	If yes hout th	to #2(b), are these same workers exposed to soils at this HSRA site in excess of 25 years eir career?
	Yes	No
3) forth o	Has th n Exhil	e use of the Property changed such that it is inconsistent with the exposure domains set oit C?
	Yes	No
3(a)	If yes	to #3, attach a written explanation to this form, explaining how the use has changed.
Institu	ıtional	Controls
4) Proper forth in	Does of ty subject this E	each instrument that has been executed in the past year that conveyed an interest in the ect to this Environmental Covenant contain a notice of the activity and use limitations set nvironmental Covenant and the recorded location of the Environmental Covenant?
	Yes	No
4(a)	If no t	o #4, attach a written explanation to this form.
Stream	n Bank	<u>Inspection</u>
5)	Date of	of inspection and name of inspector
5(a) since t	Have the prior	the banks of the intermittent stream that runs through the Property significantly eroded r year's inspection?
	Yes	No
5(b) addres	If yes s the er	to #5(a), attach a written explanation to this form documenting what steps were taken to osion.

Certification:

I certify under penalty of law that this document and all attach or supervision in accordance with a system designed to assure and evaluate the information submitted. Based on my inquiry system, or those persons directly responsible for gathering the to the best of my knowledge and belief, true, accurate and comsignificant penalties for submitting false information, including for knowing violations	ments were prepared under my direction that qualified personnel properly gather of the person or persons who manage the information, the information submitted is, plete. I am aware that there are g the possibility of fine and imprisonment
NAME (Please type or print)	TITLE
SIGNATURE	DATE



APPENDIX N

Summary of Professional Hours

THE DAVIDSON-KENNEDY COMPANY PROPERTY ATLANTA, FULTON COUNTY, GEORGIA HSI #10866

APPENDIX N MONTHLY SUMMARY AND DESCRIPTION OF PROFESSIONAL ENGINEER HOURS

Overstites	I I i t	Time Deste d. Description of Asticlei.	Hours
Quantity	Units	Time Period + Description of Activities	Subtotal
		January 1 to January 31, 2015	
		Project Management	
10.50	Hours	Project Director (John P. Martiniere, P.E.)	10.50
		February 1 to February 28, 2015	
		Project Management	
20.00	Hours	Project Director (John P. Martiniere, P.E.)	20.00
		March 1 to March 31, 2015	
		Project Management	
12.00	Hours	Project Director (John P. Martiniere, P.E.)	12.00
		April 1 to April 30, 2015	
		Project Management	
13.00	Hours	Project Director (John P. Martiniere, P.E.)	13.00
		May 1 to May 31, 2015	
		Project Management	
29.50	Hours	Project Director (John P. Martiniere, P.E.)	29.50
		June 1 to June 30, 2015	
		Project Management	
16.50	Hours	Project Director (John P. Martiniere, P.E.)	16.50
		July 1 to July 31, 2015	
		Project Management	
30.00	Hours	Project Director (John P. Martiniere, P.E.)	30.00
		August 1 to August 31, 2015	
		Project Management	
6.00	Hours	Project Director (John P. Martiniere, P.E.)	6.00
		September 1 to September 30, 2015	
		Project Management	
9.50	Hours	Project Director (John P. Martiniere, P.E.)	9.50
		October 1 to October 31, 2015	
		Project Management	
0.00	Hours	Project Director (John P. Martiniere, P.E.)	0.00
		November 1 to November 30, 2015	
		Project Management	
20.30	Hours	Project Director (John P. Martiniere, P.E.)	20.50
		December 1 to December 31, 2015	
		Project Management	
21.00	Hours	Project Director (John P. Martiniere, P.E.)	21.00
21.00	110015	r roject Director (dorin F. Waltillere, F.L.)	21.

PE MONTHLY HOURS TOTAL => 188.50