

Appendix F: **Quality Assurance Project Plan**

Quality Assurance Project Plan

Lee's Lane Landfill

Lees Lane
Louisville (Jefferson County), Kentucky
40216

AI # 46333

KYD980557052

Approved By:

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Revision 2

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SECTION A: Project Planning Elements

A1. Title (Project Name):	Soil sampling of the Lee's Lane Landfill	
Project Location:	Lees Lane, Louisville, Jefferson County, Kentucky	
Originating Organization:	Kentucky Energy and Environment Cabinet (EEC), Department for Environmental Protection (KDWP), Division of Waste Management (KDWM), Superfund Branch, Federal Section	
Project Manager's Name, Position, and Organization:	Daniel Phelps, PG, Geologist Registered, KDWM Superfund Branch	
Project Manager's Signature:		Date:
EPA Project Manager's Name and Position:	Donna Seadler, Remedial Project Manager, Superfund Site Evaluation Section, Superfund Division, US EPA Region 4	
EPA Project Manager's Signature:		Date:
A2. Table of Contents	See above.	
A3. Distribution List	<p>Donna Seadler, Remedial Project Manager, Superfund Site Evaluation Section, Superfund Division, US EPA Region 4</p> <p>Sheri Adkins, PG, Federal Section Supervisor, KDWM, Superfund Branch</p> <p>Tim Hubbard, PG, Acting Branch Manager, KDWM, Superfund Branch</p>	
A4. Project Personnel	Organization	Responsibilities
Daniel Phelps, PG	KDWM	Project Manager, Site Safety Officer, Sampler
Brent Cary	KDWM	QA/Field Manager
Sheri Adkins, PG Cheryl Brown Harris Cody Mundy	KDWM	All aspects of on-site sampling activities
Organizational Chart	KDWM	See KY Generic Program QAPP, December 2011, Section A4. Attached as Figure 1.

A5. Background:

The property is located approximately 4.5 miles south of downtown Louisville, Kentucky. It consists of approximately 112 acres of wooded and open land that accepted waste from the late 1940s to April 1975. The surface is primarily covered with well-established vegetation ranging from brush to woodlands. Construction debris, tires, medical, and household waste have been observed on the landfill surface. The site is divided into a Northern Tract, Central Tract, and a Southern Tract. The site history has been provided in each of the 5-year reviews of the ROD (1993, 1998, 2003, and 2008) and is repeated here:

“In March 1975, homeowners in Riverside Gardens reported flash fires around their water heaters. A subsequent investigation detected explosive levels of methane gas and seven families were evacuated from their homes near the site. These homes were eventually purchased by the Jefferson County Housing Authority. In 1978, extensive monitoring was conducted to define the gas migration problem. A soil gas venting system was installed in October 1980.

In February 1980, the Kentucky Department of Hazardous Materials and Waste Management (HMWM) discovered approximately 400 drums on a terrace located about 100 feet from the Ohio River Bank. Over 50 chemicals were identified, including phenolic resins, benzene, and relatively high concentrations of copper, cadmium, nickel, lead, and chromium. In September and October 1981, the drums were removed by the Lees Lane Landfill owners under court order. The hazardous wastes were removed from the drums and transported to an approved hazardous waste disposal facility. The remaining non-hazardous materials and the empty drums were buried on-site.

In early 1981, the Kentucky Natural Resources and Environmental Protection Cabinet (KNREPC) [now the Energy and Environment Cabinet] installed shallow groundwater monitoring wells at the site. The results of analysis showed high concentrations of heavy metals and aluminum. However, the analytical report stated that many of the sample concentrations were probably elevated due to excessive sediment in the samples caused by poor well construction.

The Lees Lane Landfill was ranked on the National Priorities List (NPL) in December 1982. In April 1986 EPA completed its Remedial Investigation/Feasibility Study (RIFS) at the site. The RI report identified the following four contaminants of concern: arsenic, chromium, lead, and benzene. The study was conducted by NUS Corporation. In September 1986, EPA issued an EDD.

EPA conducted response actions at the Site in accordance with the EDD between March and December 1987 which included the installation of security gates and cautionary signs, capping “hot spots” with clay, the burial of empty drums and drums containing non-hazardous materials on site, the removal of drums containing hazardous materials for off-site disposal, the construction of a rip-rap slope along the Ohio River bank

	<p>In the central tract with survey monuments installed to detect slope movement, the repair of an existing drainage ditch, installation of ten gas monitoring wells and two groundwater monitoring wells, repair of the existing gas collection system, and installation of an alternate water supply for residents within 1500 feet of the site.</p> <p>Operational and Functional (O&F) activities were performed for one year by EPA following the completion of the response activities, including inspection of the gas monitoring wells, quarterly gas and groundwater sampling and analysis, and sampling the ambient air three times a year. Other activities included inspection and maintenance of the gas collection system, capped waste areas, and the rip-rap along the Ohio River bank.</p> <p>On July 16, 1991, the EPA entered into an Administrative Order on Consent with MSD, under which MSD agreed to perform certain O&M activities at the Site for twenty-nine (29) years. The Commonwealth of Kentucky entered into an Intergovernmental Response Agreement with EPA under which Kentucky provides oversight of MSD's O&M activities. This agreement was executed on April 7, 1994.</p> <p>During a December 1991 site visit, some leaking drums were observed on site. These drums were subsequently removed by KNREPC.</p> <p>In 1996, Lees Lane Landfill was delisted from the NPL. Three additional five year reviews evaluating MSDs O&M activities have been completed since then (1998, 2003, and 2008)."</p> <p>In 2011, US EPA conducted a limited surface soil investigation around the pond area of the southern tract. In 2011, MSD evaluated the gas collection system, abandoned three groundwater monitoring wells and installed three new gas monitoring wells.</p> <p>Review of historical landfill information indicates that fill material was placed at the site to an approximate elevation of 405' above mean sea level (AMSL), approximately up to 40 feet below ground level. This is within 10 feet of groundwater levels.</p>
<p>A6. Project Description:</p>	<p>This project will include soil sampling and laboratory analysis. Approximately 28 soil samples taken to a depth of 1 foot below ground surface will be taken using a hand auger. If conditions warrant, additional samples will be taken using a hand auger to a depth of two feet. Samples will be preserved in a portable cooler with ice. Samples will be delivered to Microbac Laboratories in Lexington, Kentucky for analysis. Microbac Laboratories will analyze all soil samples for VOCs, SVOCs, PCBs, Pesticides, and RCRA 8 Metals (Ag, As, Ba, Cd, Cr, Hg, Pb, Se), and present the results to KYDEP for review.</p>

Decision(s) to be made based on data:	If sample results are above Region 3 RSLs, the Project Manager, in conjunction with the US EPA Remedial Project Manager, will determine if the results require US EPA or Kentucky's State Superfund Section take remedial action.
Applicable regulatory information, actions levels, etc.	Sample results will be compared to the Region 3 RSLs. The RSLs can be found at: http://www.epa.gov/reg3hscd/risk/human/rb-concentration_table/ and http://www.epa.gov/reg3hscd/risk/human/rb-concentration_table/Generic_Tables/index.htm
Field Study Date:	Sampling at the site will be conducted the week of March 25-29, 2013
Projected Lab Completion Date:	Within 60 days after sampling.
Final Report Completion Date:	KDEP will Submit a report by June 10, 2013. Comments from EPA will be expected within 6 weeks after submittal of the initial report. KDEP expects to submit the revised version (if necessary) 6 weeks after receiving comments from EPA.
Decision Rule:	<p>Soil samples collected will be submitted to Microbac Laboratory for analysis of the following constituents and methods: VOC (SW846-8260B), SVOC (SW846-8270C), RCRA Metals (SW846-6010C), and PCB & Pesticide (SW846-8080a).</p> <p>The primary decision in the Data Quality Objectives (DQO) process for the site is:</p> <ol style="list-style-type: none"> 1) Do soil laboratory sample results indicate contamination within the study areas as compared to the associated RSLs?
Error Limits:	This sampling effort is designed to sample in areas of suspected contamination based on evidence gathered during previous investigations and former operations at the site. Random and systematic errors could be introduced during sample collection, sample handling and storage, sample analysis, and data reduction. The quality control (QC) measure set forth in this QAPP and the specific analytical methods will serve to minimize these errors. QC samples will be used to monitor the accuracy and precision of the sampling activity as well as the analytical process. Data validation will document and qualify results outside the laboratory control limits.

A7. Quality Objectives and Criteria

The Project Manager will develop site-specific Data Quality Objectives (DQOs) in accordance with the EPA document *Guidance on Systematic Planning Using the Data Quality Objectives Process*, EPA QA/G-4. The purpose of the data collection will be clarified and the performance requirements for the quality of the information will be specified. The type of data collection will also be specified. In addition to the DQOs, the project objectives will be delineated such as determining the presence/absence of potential contaminants, nature and extent of contamination, and determining whether human health is affected. A list of decisions and alternative actions (remediation, removal, further assessments, no further action, etc.) may be included.

Accuracy:

Accuracy of the field sample collection procedure ensures that samples are not affected by sources external to the sample, such as sample contamination by ambient conditions or inadequate equipment decontamination procedures. Field sampling accuracy will be assessed by the data from equipment blank samples with. Equipment blank samples will be analyzed to check procedural contamination and/or ambient conditions and/or sample container contamination at the site that may cause sample contamination.

Accuracy also will be ensured by adhering to all sample handling procedures, sample preservation requirements, and holding time periods.

Laboratory accuracy is assessed through the analysis of System Monitoring Compounds (SMC), Laboratory Control Samples (LCS), or Standard Reference Materials (SRM) and the determination of percent recoveries (%R). SOPs for laboratory analyses will contain the required accuracy, precision, and sensitivity of the analyses.

Precision:

Precision is defined as degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves. Laboratory and field precision will be assessed through the calculation of the relative percent difference (RPD) and relative standard deviation (RSD) for three or more replicate samples.

RPDs of 30 percent and 50 percent for water and soil sample field duplicates, respectively, will be used as advisory limits for analytes detected in both the investigative and field duplicate samples at concentrations greater than or equal to five times its quantitation limit. Precision control limits are included in the laboratory's SOPs.

Completeness:

Completeness is the amount of data collected as compared to the amount needed to ensure that the uncertainty or error is within acceptable limits. It is the ratio of the number of valid sample results to the total number of samples analyzed with a specific matrix and/or analysis.

The goal for data completeness is 99%.

<p>Representativeness:</p>	<p>Representativeness is the degree to which data accurately and precisely represent a characteristic of a population. This is a qualitative assessment and is addressed primarily in the sample design, through the selection of sampling sites and procedures that reflect the project goals and environment being sampled. It is ensured in the laboratory through (1) the proper handling, homogenizing, compositing, and storage of samples, and, 2) analysis within the specified holding times so that the material analyzed reflects the material collected as accurately as possible.</p>
<p>Sensitivity:</p>	<p>Sensitivity is the capability of a test method or instrument to discriminate between measurement responses representing different levels (e.g. concentrations) of a variable of interest.</p> <p>The laboratory selected for analyzing the samples collected during this field investigation will evaluate and monitor its method and instrument sensitivity through the development of the laboratory MDLs and RLs.</p> <p>All environmental data will be reported to the analytes' laboratory-specific method detection limit (MDL); i.e., positive results below the RL, but greater than the MDL will be reported by the laboratory and flagged as estimated (J). MDLs will be adjusted on a sample-by-sample basis, as necessary, based on dilutions, sample volume, and percent moisture.</p>
<p>Level of Quality Control Effort:</p>	<p>Several QC samples will be analyzed for the project to provide a means to assess field and laboratory performance. Field QC samples consist of filed duplicates and equipment rinsate blanks. Laboratory QC samples include LCS, and Performance Evaluation Samples.</p> <p>The level of QC effort provided by the laboratory will be equivalent to the level of QC effort specified under the contract laboratory program (CLP) for the Routine Analytical Service parameters to be tested. All data packages submitted to START will be Level IV. SW-846 methodologies will be utilized for the scope of work for this project.</p>
<p>A8. Special Training/Certifications Documented training is required for each individual performing activities supporting environmental data collection or analysis. KYDWM maintains an individual file for each employee which includes training records. As stated in Section A8 of the Generic QAPP, each member of the sampling team shall have 40 hour OSHA Safety and Health Training and will be current on their annual refresher (8 hour) requirements. QA training is not required.</p>	
<p>A9. Documents and Records The Contract Laboratory will be instructed to provide sample results within 30 days. Data will then be validated by KYDEP over the next 14-21 days. KYDEP expects to receive finalized sample data within 45 days of the last sample collected. All field data will be collected by the KYDEP. The report and data will be maintained electronically in KYDEP's TEMPO database in perpetuity.</p>	

SECTION B: Data Generation and Acquisition

B1. Sampling Design

An authoritative sampling design was chosen based on the data quality objectives of the study. The EPA, Region 4 Science and Ecosystem Support (SESD) Field Branches Quality System and Technical Procedures document serves as the basis for field protocols for this project.

Media	Number of Samples	Analyses
Soil	28	VOCs, SVOCs, PCBs, Pesticides, RCRA 8 Metals (Ag, As, Ba, Cd, Cr, Hg, Pb, Se)

Volume, Holding Time, and Preservation Requirements: Four (4) four (4) ounce sampling jars will be used for each sample. The laboratory must analyze the samples for VOCs, SVOCs, PCBs, Pesticides, RCRA 8 Metals (Ag, As, Ba, Cd, Cr, Hg, Pb, Se) within 14 days of sample collection. All samples will be preserved by the collection jars being placed in an iced cooler at 4°C.

Maps or Diagrams with sample locations: See attached Appendix A (maps).

Quality control samples: An additional 10% of total samples will be duplicate samples taken for quality control. KYDWM anticipates 28 samples (excluding quality control samples) be submitted to the laboratory. Soil samples collected will be submitted to Microbac Laboratory for analysis of the following constituents and methods: VOC (SW846-8260B), SVOC (SW846-8270C), RCRA Metals (SW846-6010C), and PCB & Pesticide (SW846-8080a).

Detection limits/regulatory standards: Targeted detection limits will be lower than Region 3 RSLs. The RSLs can be found at: http://www.epa.gov/reg3hscd/risk/human/rb-concentration_table/ and [http://www.epa.gov/reg3hscd/risk/human/rb-concentration_table/Generic Tables/index.htm](http://www.epa.gov/reg3hscd/risk/human/rb-concentration_table/Generic_Tables/index.htm)

B2. Sampling Methods, General Procedures

Soil samples will be collected in accordance with the document "Field Branches Quality System and Technical Procedures" prepared by U.S. EPA Region 4's SESD. Grab samples will be taken from material hand-augured to a depth of one foot. The auger and auger head will be either replaced with a clean unit or decontaminated between samples. The designated sample will wear fresh gloves for each location and use a clean spoon to fill the sampling jar. Data collection will be documented by field notebooks and photographs. Samples will be checked with a PID/FID. Exact locations will be recorded using GPS.

B3. Sampling Handling and Custody

All samples will be handled and custody maintained in accordance with the SESD *Operating Procedure for Sample Evidence Management*, SESDPROC-005-R1.

B4. Analytical Methods

Samples will be analyzed at a Microbac Laboratories for VOCs, SVOCs, PCBs, Pesticides, and RCRA Metals. SW846 methods used for each group of constituents are: VOC (8260B), SVOC (8270C), RCRA Metals (6010C), and PCB & Pesticides (8080a).

B5. Quality Control

Field:

See Appendix B (Sampling Location Table).
All equipment will be handled in accordance with the FBQSTP Equipment Inventory and Management procedure (SESDPROC-108-R2).

Field precision is assessed through the collection and measurement of field duplicates at a rate of one duplicate per 10 analytical samples or, at a minimum, one per site. These analyses measure both field and laboratory precision. The results, therefore, may have more variability than laboratory duplicates that measure only laboratory performance.

Duplicate Samples
Field duplicates will be collected and analyzed for chemical constituents to measure the cumulative uncertainty (i.e. precision) of the sample collection, splitting, handling, storage, preparation and analysis operations as well as natural sample heterogeneity that is not eliminated through simple mixing in the field. Field duplicates are two samples prepared by mixing a volume of sample and splitting it into two separate sample containers that are labeled as individual field samples. Co-located duplicate samples will be collected at 10% of the soil sample locations. Following collection of the initial sample, the duplicate sample will be re-collected from the same location using clean equipment. Field duplicates are labeled as individual environmental samples and are not identified to the laboratory as duplicate samples. The duplicate sample will be identified with a sequential sample number and identified on the regional copy of the chain of custody so that there is no indication to the laboratory that the sample is a duplicate. The sample will be submitted to the private laboratory for analysis along with the other soil samples collected during the investigation. KYDWM anticipates collecting three field duplicate samples.

Rinsate Blanks
Equipment blank samples will be collected at a frequency of one per 20 or fewer sampling equipment decontamination procedures. Equipment blank samples, collected by routing Ultra Pure Blank Water over decontaminated sampling equipment then into appropriate sampling jars. Samples will be analyzed to determine if residual contamination remains on equipment following decontamination. Two rinsate blanks will be collected during this investigation.

Laboratory:

Microbac Laboratories, Inc. will have a QC program to ensure the reliability and validity of the analyses performed at the laboratory. The laboratory's QC plan will describe the policies, organization, objectives, QC activities, and specific QA functions used by the laboratory. All analytical procedures are documented in writing as SOPs and each SOP will include a QC section that addresses the

	<p>minimum QC requirements for the procedure. The internal QC checks might differ slightly for each individual procedure, but in general the QC requirements include the following elements: Field/trip blanks, Method blanks, Reagent/preparation blanks, Instrument blanks, calibration verifications, Surrogate (or SMC) spikes, Analytical spikes, Field duplicates, Laboratory duplicates, Laboratory control standards, Internal standard areas for GC/control limits, Mass tuning for GC/MS analysis.</p> <p>Data obtained will be properly recorded. The data package will include a full deliverable package capable of allowing the recipient to reconstruct QC information and compare it to QC criteria. The laboratory will reanalyze any samples analyzed in nonconformance with the QC criteria, if sufficient volume is available. Sufficient volumes/weights of samples will be collected to allow for reanalysis when needed.</p>
<p>B6. Instrument/Equipment Testing, Inspection and Maintenance All equipment will be handled in accordance with the FBQSTP Equipment Inventory and Management procedure (SESDPROC-108-R2).</p>	
<p>B7. Instrument/Equipment Calibration and Frequency</p>	<p>Not applicable.</p>
<p>B8. Inspection/Acceptance for Supplies and Consumables</p>	<p>All critical supplies and consumables for this field investigation are inspected and maintained in accordance with the following procedures: SESDPROC-108-R2.</p> <p>All equipment will be handled in accordance with the FBQSTP Equipment Inventory and Management procedure (SESDPROC-108-R2).</p>
<p>B9. Non-direct Measurements:</p> <p>Not applicable.</p>	
<p>B10. Data Management</p> <p>The project manager will be responsible for ensuring that all requirements for data management are met. All data generated for this field investigation, whether hand-recorded or obtained using an electronic data logger will be recorded, stored and managed according to the following procedures:</p> <p><i>SESD Operating Procedure for Control of Records, SESDPROC-002-R3.</i> <i>SESD Operating Procedures for Logbooks, SESDPROC-010-R3.</i></p>	

SECTION C: Assessment/Oversight

C1. Assessments and Response Actions

Assessments will be conducted by the Project Manager or another designated person during the field investigation to ensure the QAPP is being implemented as approved.

C2. Reports to Management

The Project Manager or another designated person will be responsible for notifying the EPA Project Manager if any circumstances arise during the field investigation that may adversely impact the quality of the data collected.

SECTION D: Data Validation and Usability

D1. Data Review, Verification, and Validation

Not applicable. This information will reside in the analytical method specific SOPs used by the laboratory and the laboratory's QA manual.

D2. Verification and Validation Methods

Not applicable. This information will reside in the analytical method specific SOPs used by the laboratory and the laboratory's QA manual.

D3. Reconciliation with User Requirements

The usability of all data derived from field sampling and measurements collected during this field investigation will be evaluated in accordance with the SESD Operating Procedure for Report Preparation and Distribution, SESDPROC-003-R3, which Kentucky has adopted.

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

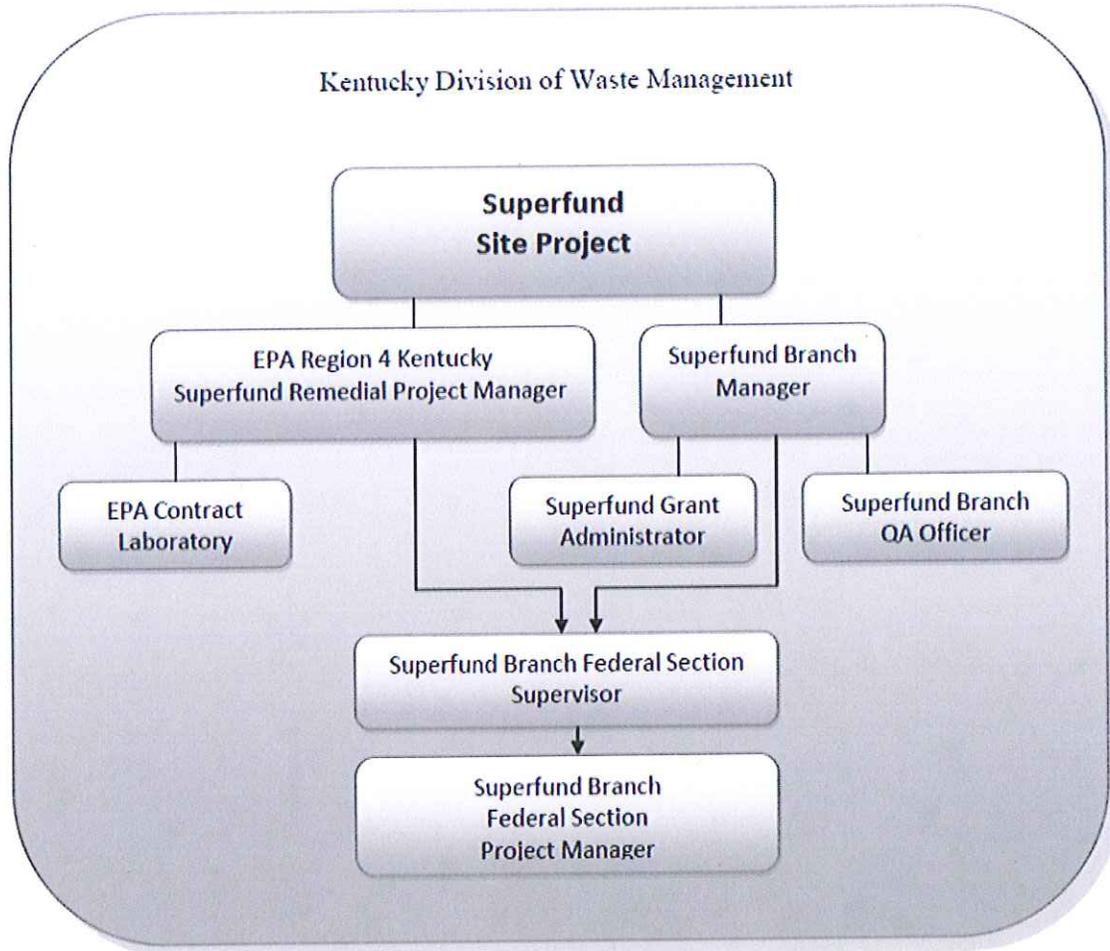
Table 1

Data Quality Objectives

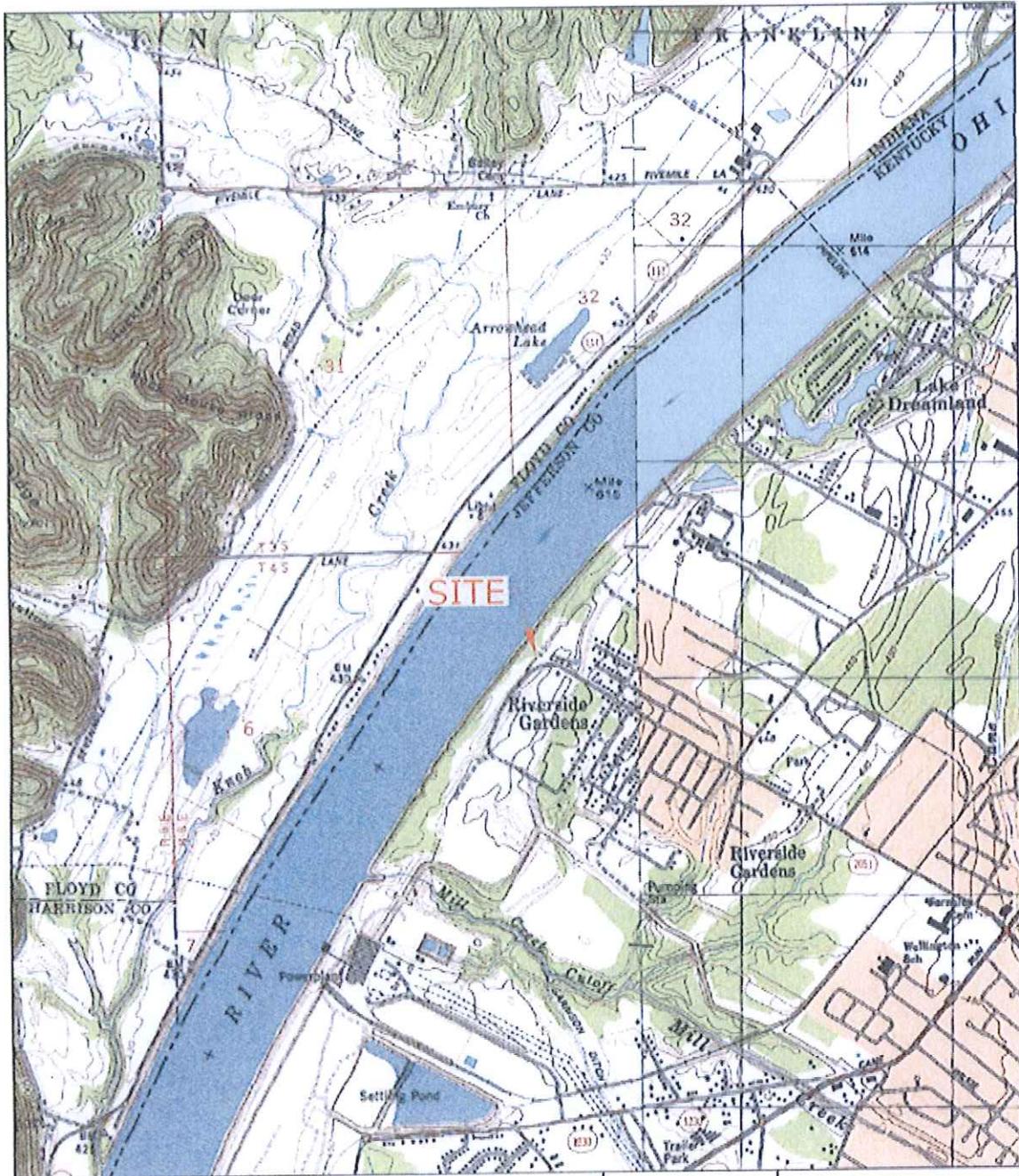
Lee's Lane Landfill, Louisville, Jefferson County, Kentucky

Data Quality Objectives	Action Item
State the Problem	Is there evidence of past releases at this site? If so, is contamination present from on-site activities?
Identify the Decision	Do any past activities or contamination at the site pose an unacceptable risk to human health and the environment? If so, does this site warrant further assessment, or an EPA Removal Action?
Identify the Inputs to the Decision	<ul style="list-style-type: none">• Collect surface and subsurface soil samples and analyze for VOCs, SVOCs, PCBs, Pesticides, and RCRA 8 metals.• Assure that laboratory detection limits are acceptable.• Compare soil data to federal and state regulatory action levels.
Define the Study Boundaries	The site assessment will focus on the following areas: <ul style="list-style-type: none">• The area in and around the former landfill locations on site.
Develop a Decision Rule	If site contamination is determined to be present above Region 3 RSLs, this site will be recommended for further evaluation.
Specify Tolerable Limits on Decision Errors	No statistical analysis will be used in the decision.
Optimize the Design for Obtaining Data	A statistical approach is not warranted for this investigation; an optimization effort is not required.

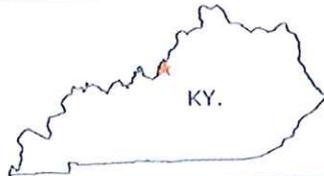
Figure 1. KYDEP organizational chart.



APPENDIX A: Maps



Smith Management Group
 1405 Mercer Road
 Lexington, KY 40511
 1600 B Williamson Court
 Louisville, KY 40223
 www.smithmanage.com



QUADRANGLE INFORMATION
 EASTERN QUAD: (SITE)
 LANSVILLE, IN., KY. - 1985
 PHOTOREVISED - 1997
 MINOR REVISION - 1993
 WESTERN QUAD
 LOUISVILLE WEST, KY., IN. - 1938

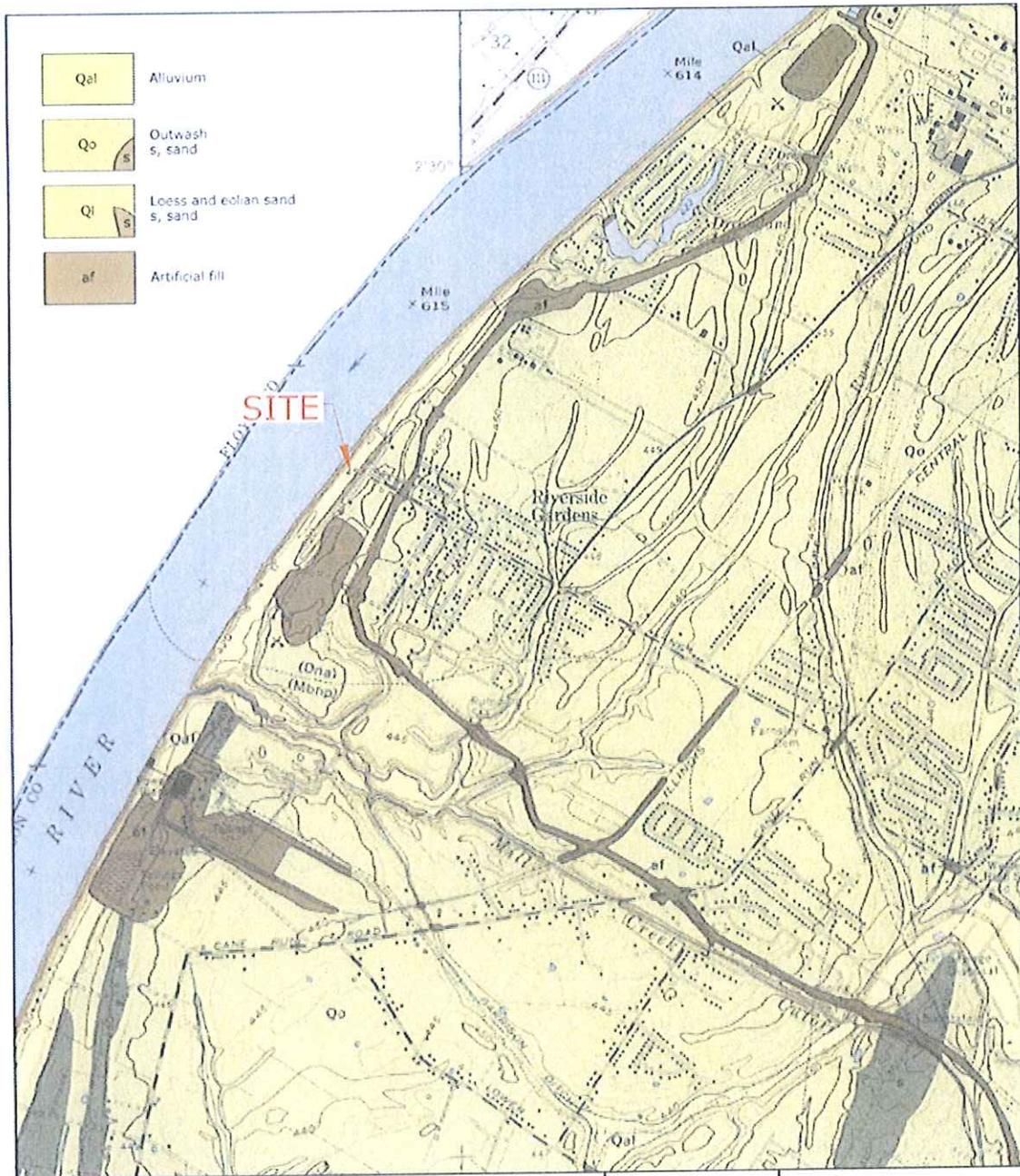
SITE LOCATION MAP	
LEES LANE LANDFILL LOUISVILLE, JEFFERSON CO., KENTUCKY	
SCALE	1"=2000'
DATE	11/2/12
PREPARED BY	KAI
CHECKED BY	KRH
JOB NO.	2012-5303
FIGURE	1



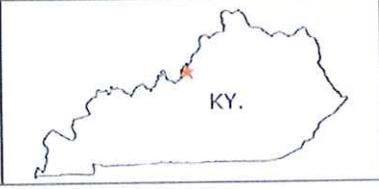
-  GAS COLLECTION SYSTEM AND BLOWER FACILITY
-  FLOODWALL
-  TRACT BOUNDARY
-  MONITORING WELL LOCATION
-  GAS MONITORING WELL LOCATION

SMG
Smith Management Group
1400 Mercer Road
Lexington, KY 40514
1800 B Williamson Court
Louisville, KY 40203
www.smithmanage.com

SITE PLAN		
LEES LANE LANDFILL LOUISVILLE, JEFFERSON CO., KENTUCKY		
SCALE	AS SHOWN	JOB NO. 2012-5348
DATE	11/5/12	
DESIGNED BY	KAT	
CHECKED BY	KSH	FIGURE 2



SMG
Smith Management Group
1405 Mercer Road
Lexington, KY 40511
1860 B Williamson Court
Louisville, KY 40223
www.smithmanage.com



N
↓

QUADRANGLE INFORMATION
PARTS OF THE
LOUISVILLE WEST AND
LANESVILLE QUADRANGLES
1974

GEOLOGY SITE MAP		
LEES LANE LANDELL LOUISVILLE, JEFFERSON CO., KENTUCKY		
SCALE	1"=2000'	JOB NO. 2012-5345
DATE	11/5/12	
PREPARED BY	KAF	
CHECKED BY	KRH	
		FIGURE 3



APPENDIX B: Sample Location Table

Soil Sampling Station ID	Latitude (decimal degrees N)	Longitude (decimal degrees W)	Description	Depth below ground surface (Ft.)
Northern Tract				
LL-N001	38.196054	-85.879624	Grab sample near walking path	0 – 0.5 Feet
LL-N002	38.196207	-85.88003	Grab sample near refuse area	0 – 0.5 Feet
LL-N003	38.196111	-85.880756	Grab sample near rip rap and river	0 – 0.5 Feet
LL-N005	38.196315	-85.877996	Grab sample near northeast property corner	0 – 0.5 Feet
Central Tract				
LL-C001	38.195268	-85.880288	Grab sample near main road high travel area	0 – 0.5 Feet
LL-C002	38.192122	-85.883829	Grab sample near rip rap and river, south portion of tract	0 – 0.5 Feet
LL-C003	38.194737	-85.879955	Grab sample – open area near trailhead	0 – 0.5 Feet
LL-C004	38.193218	-85.881574	Grab sample at low area off path	0 – 0.5 Feet
LL-C005	38.192418	-85.881513	Grab sample at trail split and heavy use area	0 – 0.5 Feet
LL-C006	38.191653	-85.882269	Grab sample at debris area and trail head	0 – 0.5 Feet
LL-C007	38.191157	-85.881910	Grab sample in depression with debris and partial barrel	0 – 0.5 Feet
LL-C008	38.193749	-85.880149	Grab sample in open area near two paths	0 – 0.5 Feet
LL-C009	38.191578	-85.880855	Grab sample at tree line near levee	0 – 0.5 Feet
LL-C010	38.192997	-85.87985	Grab sample at tree line near levee	0 – 0.5 Feet
Southern Tract				
LL-S001	38.190515	-85.885839	Grab sample near bank hobo camp	0 – 0.5 Feet
LL-S002	38.190598	-85.885241	Grab sample extruded plastic area	0 – 0.5 Feet
LL-S003	38.190683	-85.885005	Grab sample former flubber site and deer stand	0 – 0.5 Feet
LL-S004	38.191198	-85.884039	Grab sample near small clearing in trail loop	0 – 0.5 Feet
LL-S005	38.190579	-85.883175	Grab sample near stressed vegetation and tires	0 – 0.5 Feet
LL-S006	38.190383	-85.883553	Grab sample near metal drum off site	0 – 0.5 Feet
LL-S007	38.190010	-85.882839	Grab sample near trail with exposed protruding rebar	0 – 0.5 Feet
LL-S008	38.189760	-85.884196	Grab sample near area lacking much vegetation	0 – 0.5 Feet
LL-S009	38.188268	-85.884148	Grab sample near wet perched area lacking vegetation	0 – 0.5 Feet
LL-S010	38.188977	-85.882885	Grab sample at debris area with plastic layers	0 – 0.5 Feet
LL-S011	38.187289	-85.882284	Grab sample along trail wooded boundary	0 – 0.5 Feet
LL-S014	38.188816	-85.88505	Grab sample at trail widening and bend	0 – 0.5 Feet
LL-S015	38.187584	-85.887353	Grab sample near depression void of vegetation with plastic drum	0 – 0.5 Feet
LL-S016	38.190297	-85.881605	Grab sample near road edge	0 – 0.5 Feet