Tetra Tech EM Inc.

200 E. Randolph Drive, Suite 4700 ◆ Chicago, IL 60601 ◆ (312) 856-8700 ◆ FAX (312) 938-0118

June 17, 2004

Mr. Thomas Alcamo
Work Assignment Manager (SR-6J)
Remedial Response Unit No. 1
U.S. Environmental Protection Agency Region 5
77 West Jackson Boulevard
Chicago, IL 60604

Subject: **Final Field Sampling Plan (FSP)**
Neal's Landfill Site
Bloomington, Monroe County, Indiana
Contract No. 68-W6-0037, Work Assignment No. 944-ANLA-05ZZ

Dear Mr. Alcamo:

Tetra Tech EM Inc. (Tetra Tech) has prepared the enclosed final FSP for fish sampling activities to be performed at the Neal's Landfill site in Bloomington, Monroe County, Indiana. At your request, the FSP has been revised to incorporate comments received from Viacom, Inc. (Viacom). This final FSP replaces the draft FSP submitted to you by electronic mail on June 16, 2004.

Tetra Tech is performing this field sampling event with technical and field support being provided by the U.S. Fish and Wildlife Service (USFWS) and the Indiana Department of Environmental Management (IDEM). Fish sampling activities will occur at the IDEM historical fish sampling location at the State Road 43 bridge and Richland Creek, which is about 3 miles downstream of the Neal's Landfill site. Fish sampling activities are tentatively scheduled to occur on June 18, 2004. The enclosed final FSP describes Tetra Tech's plans for these fish sampling activities.

If you have any questions regarding Tetra Tech's final FSP, please call me at (312) 946-6491.

Sincerely,

Jeffrey Lifka
Site Manager

Enclosure

cc: Henry Thompson, EPA Project Officer (letter only)
Cora Stanley, EPA Contracting Officer (letter only)
Lou Barinka, Tetra Tech Program Manager (letter only)
Dan Sparks, USFWS
Jim Smith, IDEM
Dorothy Alke, Viacom
Russ Cepko, Viacom
File

RESPONSE ACTION CONTRACT FOR
REMEDIAL, ENFORCEMENT OVERSIGHT, AND
NON-TIME-CRITICAL REMOVAL ACTIVITIES
IN REGION 6

FINAL FIELD SAMPLING PLAN
NEAL'S LANDFILL SITE
BLOOMINGTON, MONROE COUNTY, INDIANA

Prepared for
U.S. Environmental Protection Agency
Region 5
Chicago, Illinois

Work Assignment No.	:	944-ANLA-05ZZ
Contract No.	:	68-W6-0037
EPA Work Assignment Manager	:	Thomas Alcamo
Telephone No.	:	(312) 886-7278
Date Prepared	:	June 17, 2004
Prepared by	:	Tetra Tech EM Inc.
Tetra Tech Site Manager	:	Jeffrey Lifka
Telephone No.	:	(312) 946-6491

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1.0 INTRODUCTION

Tetra Tech EM Inc. (Tetra Tech) has prepared this field sampling plan (FSP) for the Neal's Landfill site in Bloomington, Monroe County, Indiana, under the U.S. Environmental Protection Agency (EPA) Response Action Contract (RAC) for Region 6, Contract No. 68-W6-0037, Work Assignment (WA) No. 944-ANLA-05ZZ. This FSP describes activities to be conducted by Tetra Tech personnel performing a sampling and analysis investigation of Richland Creek near the site. At the request of EPA, Tetra Tech, the U.S. Fish and Wildlife Service (USFWS), and the Indiana Department of Environmental Management (IDEM) will collaborate to perform fish sampling activities on June 18, 2004. All sampling activities will be performed at IDEM's historical fish sampling location in Richland Creek near the State Road 43 bridge, which is about 3 miles downstream from the Neal's Landfill site.

All Tetra Tech quality assurance (QA) and quality control (QC) protocols associated with the sampling and analysis activities are presented in the mini-QA project plan (mini-QAPP) (Tetra Tech 1999b), which is Appendix A of the Viacom, Inc. (formerly CBS Corporation), multisite sampling and analysis plan (SAP) prepared by Tetra Tech under EPA Region 5 WA No. 040-ANLA-05ZZ and submitted to EPA on December 13, 1999. The SAP consists of the mini-QAPP (Appendix A), an FSP (Appendix B), and a data management plan (Appendix C), and is among the plans prepared in accordance with Subtask 1.2 of the statement of work (SOW) for this EPA Region 5 WA. This current FSP has been prepared in accordance with Subtask 1.2 of the SOW for the EPA Region 6 WA.

This FSP consists of eight sections besides this introduction. Section 2.0 presents a brief site background and history, Section 3.0 describes project objectives, Section 4.0 describes proposed field sampling activities, Section 5.0 describes equipment decontamination procedures, Section 6.0 describes sample handling and analysis, Section 7.0 presents a tentative schedule for field activities and data reporting, Section 8.0 describes health and safety procedures, and Section 9.0 describes QA requirements. References used to prepare this FSP are provided at the end of the text.

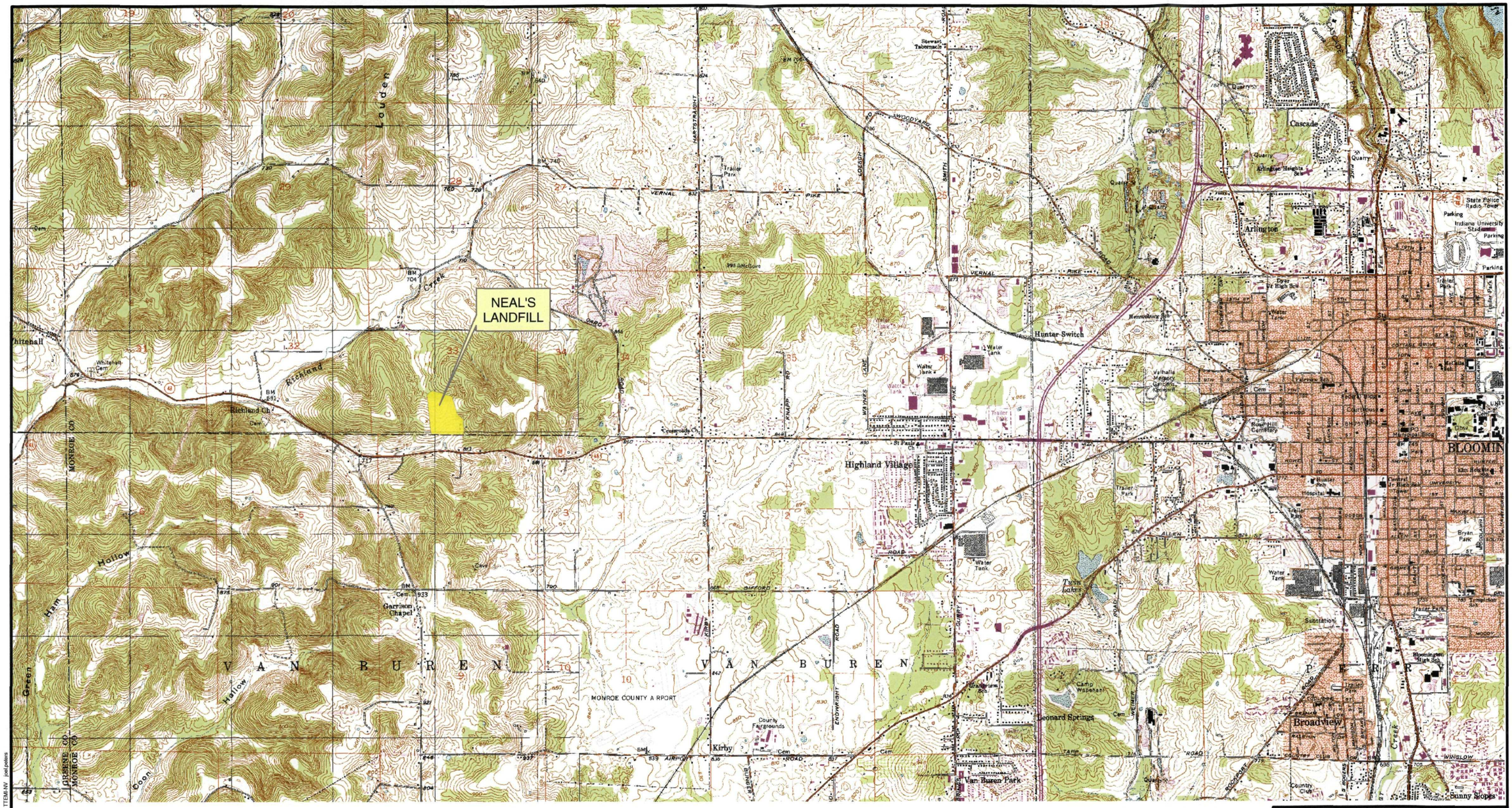
2.0 SITE BACKGROUND AND HISTORY

This section briefly summarizes the site's background and history. Much of the site background information presented in this section was developed from Tetra Tech's revised current status report for the Neal's Landfill site (Tetra Tech 2002).

The Neal's Landfill site is an inactive waste disposal site located about 4.5 miles west of Bloomington in Monroe County, Indiana. The site lies near Indiana State Road 48 in a rural area (see Figure 1). The site occupies about 18 acres and was used as an industrial and municipal waste landfill from 1950 to 1972. Disposal practices at the site included open burning of discarded materials. In 1966 and 1967, numerous capacitors filled with oil containing polychlorinated biphenyls (PCB) generated by Westinghouse Electric Corporation (Westinghouse, later known as CBS Corporation and now known as Viacom) and PCB-contaminated rags, sawdust, and filter clay were disposed of at the landfill (EPA 1998).

The site was placed on the National Priorities List in October 1981. In 1985, EPA, the State of Indiana, Monroe County, the City of Bloomington, and Westinghouse (now Viacom) signed a consent decree. Under the terms of the consent decree, Viacom is to remediate six sites in the Bloomington area containing PCBs. Neal's Landfill is one of the six sites covered by the consent decree. In 1987, a number of interim measures were completed at the site, including removal of capacitors from the ground surface; removal of a total of 4,500 linear feet of contaminated sediment from Conard's Branch (4,267 linear feet) and Richland Creek (233 linear feet); and installation of a soil cap over primary landfill areas. The interim measures also included construction of a spring treatment facility (STF) that began operating in 1990. The purpose of the STF is to collect and treat spring flow of up to 1 cubic foot per second (cfs). This flow is collected in a lined basin and travels by gravity to the STF, which consists of a clarifier, filters, and an activated carbon water treatment system that remove PCBs. The STF is designed to achieve an effluent PCB concentration of 1 part per billion (ppb). Spring flows exceeding 1 cfs overflow the lined basin and discharge directly to Conard's Branch. Under the consent decree, Viacom was scheduled to excavate soil overlying the site and incinerate the soil in a municipal waste facility that Viacom was to build; however, remedial actions (RA) other than soil incineration had to be considered when the Indiana State Legislature passed a law in 1993 intended to block implementation of the incineration remedy.

In March and April 1998, EPA and Viacom conducted field investigations at the site. The objectives of these investigations were to characterize the landfill waste and identify PCB hot spots for removal. A total of 104 borings were drilled through landfill materials at approximately 100-foot spacings. Data from the investigations, which revealed the presence of hot spots throughout the landfill containing PCBs at concentrations exceeding 500 parts per million (ppm), were used by Viacom and government parties to evaluate RA alternatives. The selected alternative included excavation of materials containing PCBs at concentrations exceeding 500 ppm and disposal of the materials at an off-site Toxic Substances Control



LEGEND

NEAL'S LANDFILL

SOURCE: MODIFIED FROM USGS, WHITEHALL, INDIANA QUADRANGLE, 1980, AND BLOOMINGTON, INDIANA QUADRANGLE, 1990.

NEAL'S LANDFILL
BLOOMINGTON, INDIANA

FIGURE 1
SITE LOCATION MAP

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Act-permitted landfill. Materials containing PCBs at concentrations less than 500 ppm were to be consolidated on site and covered with a Resource Conservation and Recovery Act (RCRA) Subtitle C cap.

In April 1999, Viacom and its contractors began implementing the selected source removal RA under the oversight of EPA, the State of Indiana, and Monroe County. By November 1999, Viacom had completed material excavation, off-site disposal of the material, waste consolidation, and construction of the RCRA Subtitle C cap.

3.0 PROJECT OBJECTIVES

Sampling and analysis activities will consist of a 1-day event on June 18, 2004. The overall project objective for this field sampling event is the collection of nine fish samples from Richland Creek to evaluate potential PCB impacts to fish that may be attributable to the Neal's Landfill site. Tetra Tech, USFWS, and IDEM will perform sampling activities at the IDEM historical fish sampling location at the State Road 43 bridge and Richland Creek, which is about 3 miles downstream of the Neal's Landfill site (see Figure 2). Fish sample analytical results will be used to support EPA's human health risk assessment for the site.

4.0 FIELD SAMPLING ACTIVITIES

During the sampling event, Tetra Tech, USFWS, and IDEM will perform electroshocking fish sampling activities in Richland Creek about 3 miles downstream of the Neal's Landfill site at the State Road 43 bridge (see Figure 2). A total of nine fillet (and whole-body samples, if applicable) fish samples plus three associated QC samples (one field duplicate sample and matrix spike/matrix spike duplicate [MS/MSD] samples) will be collected. USFWS will perform the electroshocking activities in Richland Creek and will assist with identification of the target fish species. Tetra Tech will transport all fish samples collected to the USFWS laboratory at the Bloomington, Indiana, office for processing. IDEM will fillet all fish samples, and Tetra Tech will document all sampling and processing activities and log each fish sample. The fillet fish samples (skin on and scaleless [and any whole-body fish samples, if applicable]) will be processed, packaged, and shipped to the analytical laboratories for analysis the same day of collection. Fish tissue samples collected from Richland Creek will be analyzed for either (1) PCB congeners using EPA modified Method 1668A or (2) PCB Aroclors using SW-846 EPA Method 8082.

FISH SAMPLING LOCATION

NEAL'S LANDFILL

Whitehall Cem

Richland

Richland Ch

Cem

BM 681

MONROE CO

SOURCE: MODIFIED FROM USGS, WHITEHALL, INDIANA QUADRANGLE, 1980.

LEGEND

- FISH SAMPLING LOCATION
- NEAL'S LANDFILL

N W E S

0 1,000 Feet

NEAL'S LANDFILL
BLOOMINGTON, INDIANA

FIGURE 2
FISH SAMPLING LOCATION AT STATE ROAD 43 BRIDGE AND RICHLAND CREEK

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No fish samples will be analyzed for both analytical parameters. Also, percent lipids will be determined for all samples.

Table 1 specifies the target fish species to be collected (which represent fish species belonging to each of the three general feeding guilds), the number and type of samples, and the target sample weights required for analysis. Tetra Tech, USFWS, and IDEM will collect three fish samples per feeding guild. Each feeding guild sample will be analyzed for either PCB Aroclors or PCB congeners. If necessary (and based on previous experience during fish sampling events at the site), to obtain all target fish species, the sampling reach will be extended 100 meters upstream and downstream of the bridge at State Road 43 and Richland Creek.

Three fish tissue samples collected from Richland Creek will be submitted for PCB congener analysis (by EPA modified Method 1668A) to Axys Analytical Services (Axys) of Sidney, British Columbia, Canada. Six fish tissue samples (plus three QC samples, including field duplicate and MS/MSD samples) collected from Richland Creek will be submitted for PCB Aroclor analysis (by EPA Method 8082) to Severn-Trent Laboratories (STL) of Sacramento, California. The type of fish species submitted to each respective laboratory for either PCB Aroclor or PCB congener analysis will be determined arbitrarily in the field by the sampling team. The QC samples will be subsamples of the sample extract of the homogenate obtained from either (1) a large fish producing fillets meeting the 80-gram sample weight minimum requirement, (2) several fish producing fillets that will be composited to meet the sample weight minimum requirement, or (3) three whole-body fish that will be composited to meet the sample weight minimum requirement. Lastly, all fish samples will be analyzed for percent lipids, which is determined from the same sample extract as the PCB analyses; therefore, additional sample mass is not required for this analysis.

Tetra Tech will perform all field activities in accordance with the EPA-approved, multisite mini-QAPP (Tetra Tech 1999b) and the Tetra Tech-approved field standard operating procedures (SOP) provided in the multisite FSP submitted under the EPA Region 5 WA (Tetra Tech 1999a). When the multisite FSP differs from the SOPs, the multisite FSP procedures will be followed. Tables 2 and 3 in the multisite FSP present medium-specific project-required quantitation limits (PRQL). Table 2 below summarizes the fish sampling and analysis program, which includes the sample matrix, field parameters, laboratory parameters, and the number of samples to be collected for each laboratory parameter.

TABLE 1

TARGET FISH SPECIES, FEEDING GUILD, NUMBER AND TYPE OF SAMPLES, AND TARGET WEIGHT

Sampling Site	Target Fish Species	Feeding Guild	Number and Type of Samples	Target Weight
State Road 43 Bridge and Richland Creek	Creek chub or central stoneroller	Omnivorous	Three fillet samples (skin on and scaleless) or three composite samples consisting of three whole body creek chub or central stoneroller per composite [a]	Largest available; minimum weight of 30 grams[b]
	White sucker, redhorse, bullheads or catfish	Benthic	Three fillet samples (skin on and scaleless)	Largest available; minimum weight of 30 grams[b]
	Green sunfish, longear sunfish, other sunfish or bass	Pelagic	Three fillet samples (skin on and scaleless) or three composite samples consisting of three whole body sunfish or bass[a]	Largest available; minimum weight of 30 grams[b]

Notes:

[a] If the omnivorous or pelagic feeding guild fish samples are not large enough to provide fillets of the minimum weight of 30 grams, three whole body omnivorous or pelagic feeding guild fish samples will be collected and composited to meet the minimum target weight per sample.

[b] One fish sample will be submitted to STL for QC analyses (field duplicate and MS/MSD), which requires a minimum sample weight of 80 grams. This sample mass may be attained by (1) collecting fillets from one large fish, (2) compositing fillets from several small fish, or (3) compositing three whole-body fish. The field sampling team will make this determination based on the availability of each feeding guild species.

TABLE 2

SUMMARY OF FISH SAMPLING AND ANALYSIS PROGRAM

Sample Matrix	Field Parameters	Laboratory Parameters[a]	Number of Samples
Fish tissue	None	PCB Aroclors	9[b]
		PCB congeners	3[c]
		Percent lipids	12

Notes:

PCB = Polychlorinated biphenyl

[a] PCB Aroclors and PCB congeners are analytes listed in EPA Methods 8082 (EPA 1996) and 1668A (EPA 1999), respectively.

[b] The number of samples includes nine fillet (and whole-body, if applicable) fish and three QC samples (one matrix spike, one matrix spike duplicate, and one field duplicate).

[c] The number of samples includes three fillet (and whole-body, if applicable) fish samples.

Detection limits for the analytical methods will be less than or equal to the PRQLs. Project-specific objectives for accuracy and precision will be achieved in accordance with Tables 2 and 3 of the multisite FSP and the special analytical service (SAS) request forms in the multisite mini-QAPP (Tetra Tech 1999b). The data completeness objective will be 95 percent.

Pertinent data collected during field sampling activities will be recorded in site logbooks in accordance with Tetra Tech SOP No. 024 (Tetra Tech 1999a). The data will include the coordinates of the sampling location determined using a hand-held global positioning system (GPS) device.

Tetra Tech's multisite FSP (Tetra Tech 1999a) describes all sample handling, preservation, custody, and shipment procedures to be followed. The type of fish species samples to be collected will be determined in the field by the Tetra Tech representative after discussion of the species availability with the EPA work assignment manager, USFWS, and IDEM as well as after taking into consideration the fish species listed in Table 1.

5.0 EQUIPMENT DECONTAMINATION PROCEDURES

Tetra Tech will follow the equipment decontamination procedures presented in the multisite FSP (Tetra Tech 1999a).

6.0 SAMPLE HANDLING AND ANALYSIS

Tetra Tech will collect all fish samples, complete all necessary paperwork, and prepare the fish samples for shipment with assistance from USFWS and IDEM. Sample containers, preservation, identification and documentation, chain of custody, and packaging and shipping are discussed below.

6.1 SAMPLE CONTAINERS

Contaminant-free sample containers will be prepared in accordance with the procedures specified in EPA's "Specifications and Guidance for Obtaining Contaminant-Free Sample Containers" (EPA 1992). Tetra Tech will verify the container specifications by checking the supplier's certified statement and analytical results for each container lot. These activities will be documented on a continuing basis, and the documentation will be maintained in the site project file. Table 3 below summarizes sample containers, preservation methods, and holding times, which are described in detail in Tetra Tech SOP No. 017 (Tetra Tech 1999a).

TABLE 3

SAMPLE CONTAINERS, PRESERVATION METHODS, AND HOLDING TIMES

Analytical Parameter	No. of Containers Per Sample	Preservation Method	Holding Time
PCB Aroclors	One	Store at 4 °C (± 2 °C) until analysis	Extract within 14 days, and analyze within 40 days after extraction
PCB Congeners	One	Store at 4 °C (± 2 °C) until analysis	Extract within 14 days, and analyze within 40 days after extraction
Percent Lipids	One	Store at 4 °C (± 2 °C) until analysis	None

Note:

PCB = Polychlorinated biphenyl

6.2 SAMPLE PRESERVATION

All samples will be preserved on ice and shipped accordingly by overnight courier to Axys in Sidney, British Columbia, Canada, and STL in Sacramento, California. Sample preservation methods and holding times are summarized in Table 3 above and in Table 4-1 of the mini-QAPP prepared under the EPA Region 5 WA (Tetra Tech 1999b), and are described in detail in Tetra Tech SOP No. 016 (Tetra Tech 1999a).

6.3 SAMPLE IDENTIFICATION AND DOCUMENTATION

Each sample will be identified using an alphanumeric system that identifies the project, general sampling location, and sample type. Tetra Tech will designate each sample identification number beginning with its company initials, site abbreviation and historical sampling location number, and sample number. Field duplicate samples will not be identified to the laboratory (submitted as blind samples) to avoid any sample analytical bias and will be noted in Tetra Tech's site logbook. MS/MSD samples will be clearly designated on the chain-of-custody forms in the comments sections (rather than by the sample identification numbers) and also documented in Tetra Tech's site logbook.

An example sample designation is provided below.

- TT-NL3-01: Tetra Tech fish sample collected at Neal's Landfill historical sampling location number 3, fish sample number 1

Sampling activities will be documented in a bound logbook using a ballpoint pen in accordance with Tetra Tech SOP No. 024 (Tetra Tech 1999a). The date and time of collection, identification number, sampling location, field observations, sampler's name, and analyses will be recorded for each sample. Each page of the logbook will be dated, numbered, and signed by a Tetra Tech staff member.

Field data records will be maintained in accordance with National Enforcement Investigation Center policies and procedures (EPA 1985).

6.4 SAMPLE CHAIN OF CUSTODY

All samples will be collected and handled using proper chain-of-custody procedures outlined in Tetra Tech SOP No. 018 (Tetra Tech 1999a). While collecting fish samples for laboratory analysis, Tetra Tech field personnel will complete the standard EPA Region 5 laboratory paperwork used for tracking samples, including the following items:

- Traffic reports
- Chain-of-custody forms
- Sample tags
- Custody seals

Tetra Tech will follow the procedures in the EPA Region 5 "SARA/Superfund Sample Handling Manual" (EPA 1989) to complete the documentation listed above.

Upon completion of all required documents, Tetra Tech will sign and date the documents and list the times of sample collection. Completed chain-of-custody forms will be included with each shipping container. One custody seal will be placed across the latch of the shipping container, and another seal will be placed on one side of the container lid. The lid will be securely taped shut for shipment. Tetra Tech will keep the pink copies of all chain-of-custody forms for the project file.

6.5 SAMPLE PACKAGING AND SHIPPING

All fish samples collected for PCB congener and PCB Aroclor analyses will be shipped by overnight courier to Axys and STL, respectively. The sample containers will then be placed in coolers filled with a cushioning packing material such as bubble wrap. Double-bagged ice will then be placed in the coolers to maintain the temperature of the samples at 4° C during transport. Laboratory paperwork for the samples will be placed in a sealed, plastic bag that will be taped to the inside of each cooler lid. The cooler lid will then be taped closed, and custody seals will be placed on the cooler latch and lid. All samples will be packaged and shipped as low-concentration samples. All shipping containers will be labeled as required by the U.S. Department of Transportation. Sample packaging and shipping procedures are discussed in detail in Tetra Tech SOP No. 019 (Tetra Tech 1999a).

7.0 TENTATIVE SCHEDULE FOR FIELD ACTIVITIES AND DATA REPORTING

The field sampling activities discussed in this FSP are expected to occur on June 18, 2004. The sampling event is expected to last approximately 1 day, including sample preparation time. Any last-minute changes to the schedule will not affect the FSP. After the sampling event, Tetra Tech will submit sample analytical data to EPA in trip and data validation reports within 30 days after Tetra Tech's receipt of full data packages from the laboratory.

8.0 HEALTH AND SAFETY PROCEDURES

All field activities will be conducted in accordance with Tetra Tech's health and safety plan, which is included in the multisite FSP prepared for the EPA Region 5 WA (Tetra Tech 1999a). Prior to initiation of field activities, all field personnel will read and sign the health and safety plan, indicating that they understand the plan and agree to operate in accordance with its requirements. Complete copies of this FSP, including the health and safety plan, will be kept at the field sampling station.

9.0 QUALITY ASSURANCE REQUIREMENTS

All field sampling activities will be conducted in accordance with the mini-QAPP (Tetra Tech 1999b), which is Appendix A of the SAP prepared for the EPA Region 5 WA. Copies of the mini-QAPP will be kept at the field sampling station for immediate use in resolving any QA issues that arise during field activities.

REFERENCES

Tetra Tech EM Inc. (Tetra Tech). 1999a. "Field Sampling Plan for CBS Corporation Multisite Sampling and Analysis Support." December 13.

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