INEEL/EXT-2002-00779
Revision 1

In Situ Bioremediation Remedial Action Groundwater Monitoring Plan for Test Area North, Operable Unit 1-07B

January 2003

Idaho National Engineering and Environmental Laboratory
Bechtel BWXT Idaho, LLC

INEEL/EXT-2002-00779

In Situ Bioremediation Remedial Action Groundwater Monitoring Plan for Test Area North, Operable Unit 1-07B

January 2003

Idaho National Engineering and Environmental Laboratory
Environmental Restoration Program
Idaho Falls, Idaho 83415

Prepared for the
U.S. Department of Energy
Assistant Secretary for Environmental Management
Under DOE Idaho Operations Office
Contract DE-AC07-99ID13727

ABSTRACT

This groundwater monitoring plan (GWMP) supports the Operable Unit (OU) 1-07B In Situ Bioremediation Remedial Action Work Plan for implementing the final remedy for the OU 1-07B hotspot. The final hotspot remedy includes installing and operating an electron donor injection facility (consisting of a new injection well, injection equipment, onsite laboratory capabilities, and ancillary equipment), constructing two new groundwater monitoring wells, and monitoring groundwater at 14 existing locations and the two new monitoring wells. The hotspot remedy will be implemented in four phases: 1) interim operations, 2) initial operations, 3) optimization operations, and 4) long-term operations. These phases begin and end based upon conditions observed in the groundwater. As a result, remedy performance and compliance with remedial action objectives will be monitored under this plan throughout all implementation phases. This plan documents the procedures and rationale for groundwater monitoring to be conducted during each of the four phases. Data collected under this GWMP will be used to assess progress of the remedy, determine the need for operational changes, and support agency periodic performance reviews.

CONTENTS

FIGURES

TABLES

ACRONYMS

COC	chain of custody
DQO	data quality objective
EPA	Environmental Protection Agency
FFA/CO	Federal Facility Agreement and Consent Order
FLL	Field Lab Lead
FTL	field team leader
GWMP	Groundwater Monitoring Plan
HASP	Health and Safety Plan
ID	identification
INEEL	Idaho National Engineering and Environmental Laboratory
IRC	INEEL Research Center
ISB	in situ bioremediation
MCL	maximum contaminant level
O&M	operations and maintenance
OU	operable unit
PCE	tetrachloroethene
PE	performance evaluation
QA	quality assurance
QAPjP	Quality Assurance Project Plan
RA	remedial action
RAO	remedial action objective
RAWP	Remedial Action Work Plan
SAP	Sampling and Analysis Plan
SMO	Sample Management Office
TAN	Test Area North

TBD	to be determined
TCE	trichloroethene
TOS	Task Order Statement
TPR	technical procedure
TSF	Technical Support Facility
VOC	volatile organic compound

In Situ Bioremediation Remedial Action Groundwater Monitoring Plan for Test Area North, Operable Unit 1-07B

1. INTRODUCTION

This groundwater monitoring plan (GWMP) supports the Operable Unit (OU) 1-07B In Situ Bioremediation (ISB) Remedial Action Work Plan (RAWP) for implementing the final remedy, as identified in the *Record of Decision Amendment for the Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites Final Remedial Action* (DOE-ID 2001). The remedy entails installation and operation of an ISB lactate injection facility and two new monitoring wells. The injection facility consists of a new injection well, injection equipment, and onsite laboratory capabilities. The two new monitoring wells, PMW-1 and PMW-2, shall be located to provide crossgradient monitoring capabilities in the vicinity of Test Area North (TAN)-28 and TAN-30A. Data collected in accordance with this GWMP will be used to assess progress of the remedy, determine the need for operational changes, and support agency periodic performance reviews.

This document has been reviewed in accordance with governing Federal Facility Agreement and Consent Order (FFA/CO) requirements for primary documents. Appendix A contains agency comments and the comment resolutions from the agency review of the ISB GWMP (Draft) version of the document. Appendix B contains comments and comment resolutions from the agency review of the ISB GWMP (Draft Final) version.

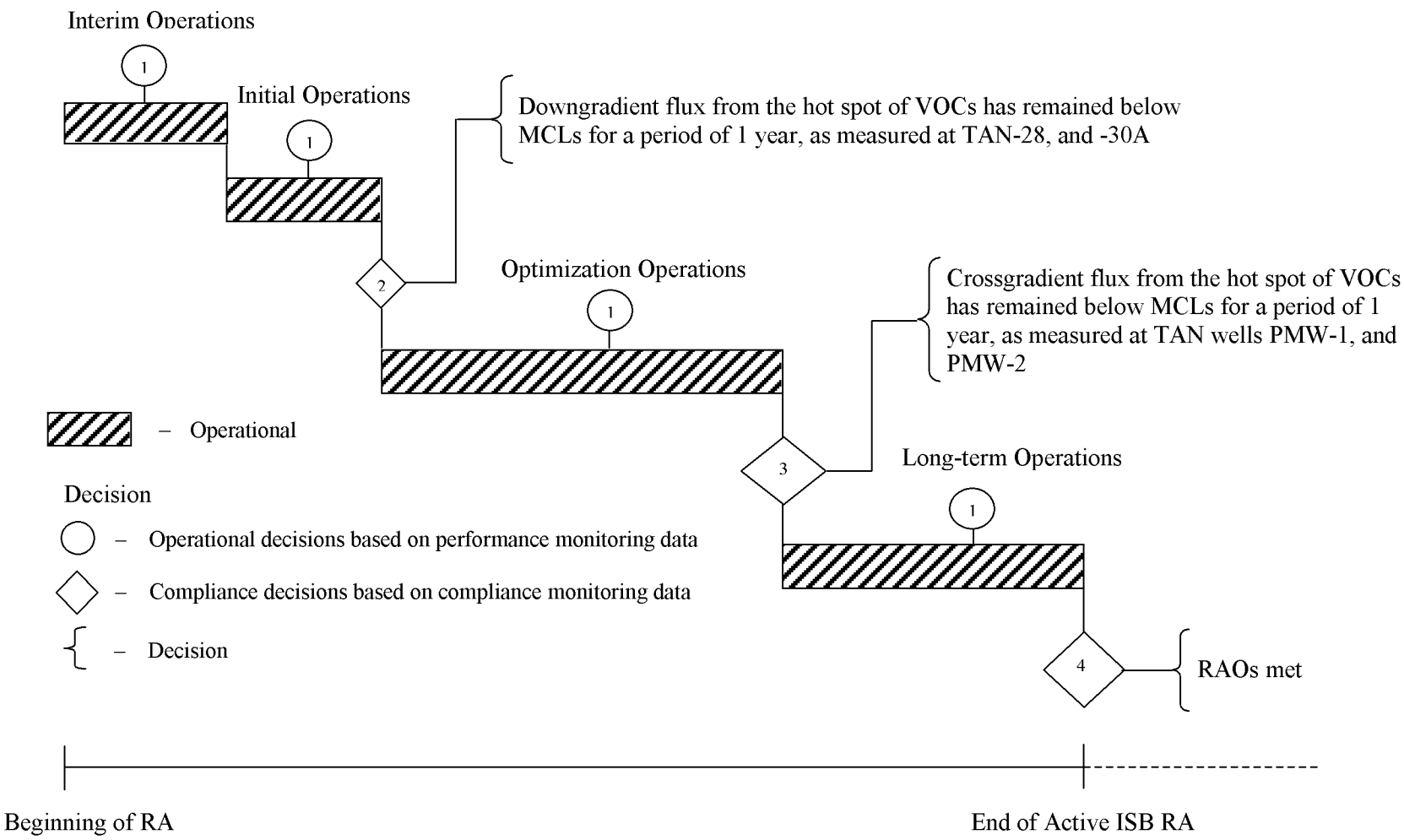
Implementation of the OU 1-07B final remedy is defined in the *In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B(Draft)* (DOE-ID 2002a). The ISB component of the remedy will be implemented in four phases (see Figure 1-1), as follows:

- **Interim operations**: This phase is a continuation of pre-design operational activities, including lactate injection and performance monitoring. It will also implement activities to evaluate alternate electron donors, develop injection monitoring strategies that will support initial operations, and refine the ISB simulation model. Interim operations will end when construction of the remedy is complete.

- **Initial operations**: This phase of remedy implementation will begin when construction is complete, and will focus on distributing electron donor adequately throughout the residual source area and cutting off downgradient contaminant flux of volatile organic compounds (VOCs) from the hotspot. Initial operations will be complete when VOC concentrations at TAN-28 and –30A (shown in the map of monitoring well locations in Figure 1-2) are below maximum contaminant levels (MCLs).

- **Optimization operations**: This phase will focus on maintaining adequate electron donor distribution to remediate the aquifer in the vicinity of the hotspot to risk-based levels, and cutting off crossgradient flux of VOCs from the hotspot. This phase of operations will be complete when VOC concentrations at PMW-1 and PMW-2 are below MCLs.

- **Long-term operations**: This phase will begin when electron donor is distributed throughout the residual source area. Continued ethene production will also be observed throughout this phase. This phase of operations will be complete when ethene production has ceased and VOC concentrations are below risk-based levels throughout the hotspot area.



MCL = maximum contaminant level
RA = remedial action
RAO = remedial action objective
TAN = Test Area North
VOC = volatile organic compound

Figure 1-1. Remedial action implementation sequence.

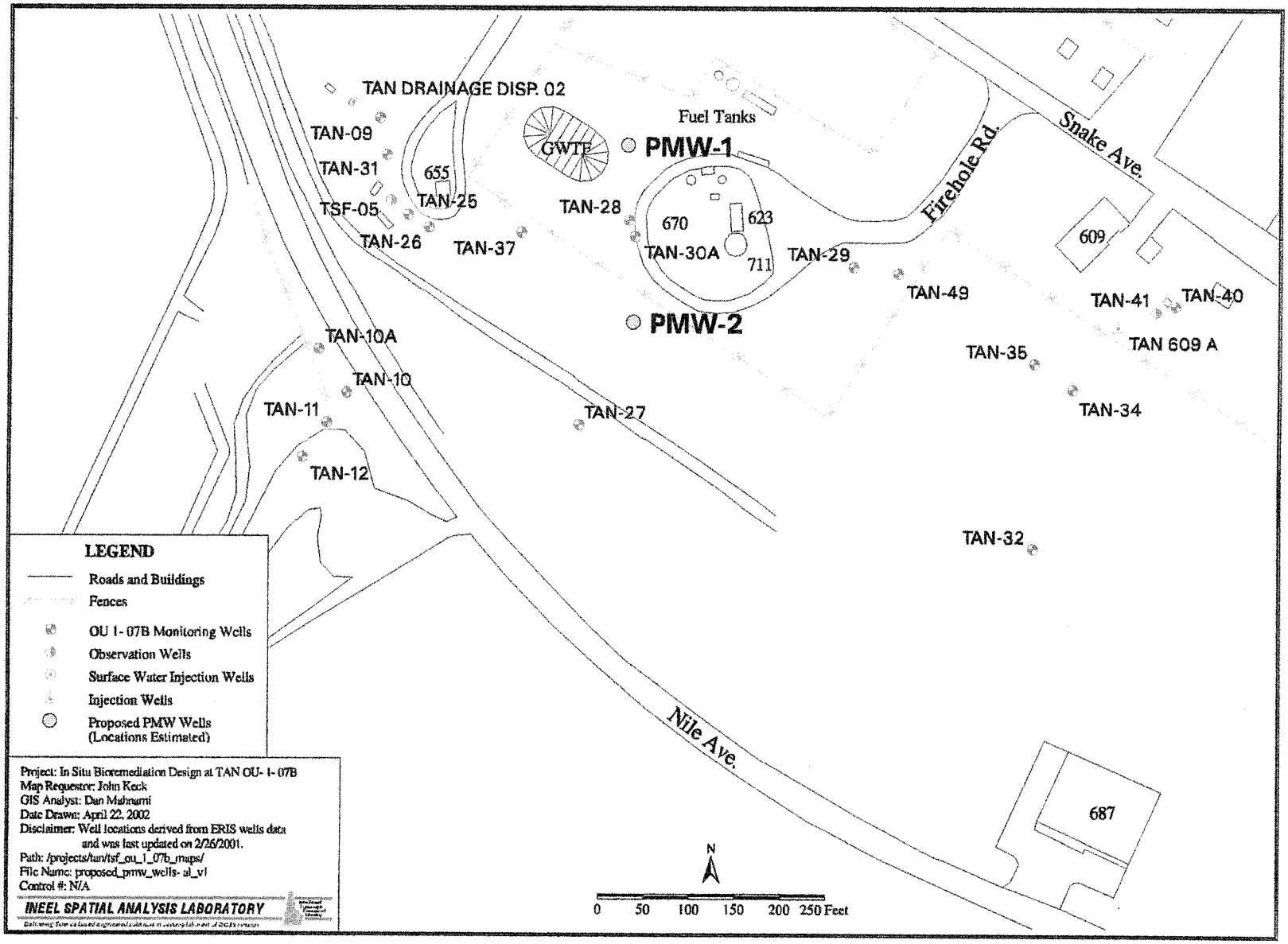


Figure 1-2. Source area monitoring well locations.

Figure 1-1 also shows the decisions to be made during remedy implementation including operational performance decisions and compliance decisions. Specific decisions corresponding to the numbers shown in Figure 1-1 include:

Decision 1 Determine, in each of the four phases, whether operational changes are required by routinely monitoring the performance of the ISB system with respect to indicator parameters including VOCs, tritium, Sr-90, Cs-137, gross alpha, ethene/ethane/methane, redox parameters, electron donor, bioactivity, and nutrients

Decision 2 Determine whether downgradient flux of contaminants from the hotspot has been cut off, as evidenced by VOC concentrations below MCLs at TAN-28 and -30A

Decision 3 Determine whether crossgradient flux of contaminants from the hotspot has been cut off, as evidenced by VOC concentrations below MCLs at PMW-1 and PMW-2

Decision 4 Determine whether long-term operations are complete (the compliance criteria for long-term operations will be specified in the ISB Remedial Action Report).

Groundwater monitoring data are required during each phase of remedy implementation to support the decisions listed above. This GWMP implements the Environmental Protection Agency (EPA) data quality objectives (DQOs) process, which was used to design and implement a data collection plan to acquire the required data at quality levels appropriate for data uses for each phase. Data quality objective development is discussed in detail in the ISB RAWP (DOE-ID 2002a) and summarized in Section 2 of this GWMP. Following discussion of the DQOs, this GWMP presents the monitoring strategy for ISB, and defines the protocols to be used for groundwater sample management (i.e., collection, handling, and analysis), data management, and quality assurance (QA) activities associated with the ISB remedial action. This GWMP does not specifically address data collection for other OU 1-07B remedy components, which include pump-and-treat of the medial zone and monitored natural attenuation of the distal zone. However, data collected as part of ISB remedy implementation may be used by other remedy components to fulfill their respective data needs.

Supporting information for this GWMP is contained in Appendices C and D. Appendix C contains examples of the Sampling and Analysis Plan (SAP) tables that will be created for each sampling event to implement the sampling strategy. Actual SAP tables for each reporting period will be compiled in the ISB Periodic Report. Appendix D contains construction details for the monitoring wells that will be sampled.

1.1 Site Background and Hydrogeology

The TSF-05 injection well was used from 1953 to 1972 to dispose of liquid waste streams generated by operations at Test Area North (TAN). These waste streams included low-level radioactive wastewater, industrial wastewater including dissolved (and possibly pure) organic liquids, and sanitary sewage. The practice of waste injection into the Snake River Plain Aquifer (SRPA) resulted in a nearly 3-km (2-mi) long plume of contamination. Detailed descriptions of the historical background can be found in the Remedial Investigation Report (Kaminski et al. 1994) and in the Record of Decision (ROD) (DOE-ID 1995). The contaminants of concern in groundwater at the site include the VOCs trichloroethene (TCE), tetrachloroethene (PCE), trans-1,2-dichloroethene (trans-1,2-DCE), and cis-1,2-dichloroethene (cis-1,2-DCE), as well as the radionuclides tritium (H-3), strontium-90 (Sr-90), cesium-137 (Cs-137), and potentially uranium-234 (U-234). Figure 1-3 shows the contaminant plume and its location with respect to the Technical Support Facility (TSF).

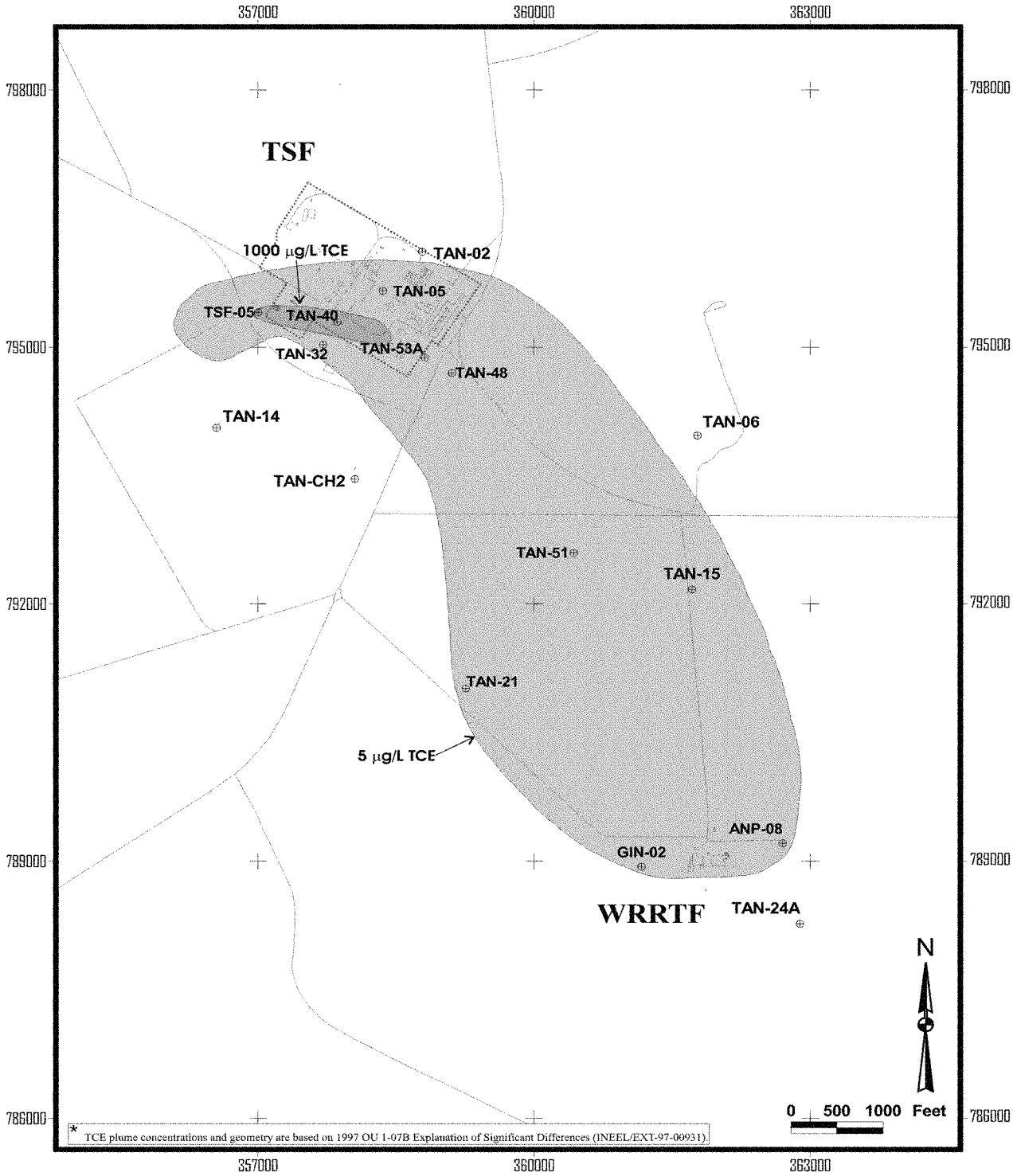


Figure 1-3. Contaminant plume at TAN.

The SRPA underlying TAN is composed of a complex layering of fractured basalt flows and sedimentary interbeds deposited during prolonged periods of volcanic quiescence. Depth to water in the vicinity of TAN is approximately 64 m (210 ft). The most significant recharge feature with respect to the groundwater contamination at TAN is a disposal pond west of Well TSF-05. Constructed in 1971 for disposal of the liquid waste streams previously discharged to the TSF-05 injection well, this pond receives on average about 104,300 L (27,550 gal) per day and 3.17 million L (838,000 gal) per month of wastewater based on 2001 operating records. Recharge from this pond is believed to play a significant role in the eastward migration of TCE from Well TSF-05 (Sorenson et al. 1996).

The aquifer at TAN appears to be unconfined, although locally confined conditions may exist due to the presence of sedimentary interbeds or dense, relatively impermeable basalt flows. The most significant sedimentary interbed at TAN occurs at about 125 m (410 ft) below land surface (bls) at Well TSF-05. This interbed ranges in thickness from about 2.4 m (8 ft) to more than 6 m (20 ft) and is laterally continuous and extensive. All evidence gathered to date suggests that this interbed effectively isolates the aquifer below it from the water above it. It is important to note that the interbed slopes at about one degree in a southerly direction, thus the thickness of the aquifer above the interbed at TAN increases from about 61 m (200 ft) near Well TSF-05 to more than 91 m (300 ft) at the leading edge of the TCE plume.

The TCE plume within the aquifer is stratified near the source area, with the highest concentrations in the upper portions of the aquifer. Several conceptual model reports published since extensive characterization work has been conducted detail the understanding of stratigraphy, aquifer behavior, and TCE plume dynamics (Bukowski and Sorenson 1998; Bukowski et al. 1998; Wymore et al. 2000).

1.2 Description of Remedial Action

In situ bioremediation was identified in the OU 1-07B ROD Amendment (DOE-ID 2001) as the remedy for the hotspot, which was defined in 1998 as that portion of the contaminant plume with TCE concentrations greater than 20,000 ug/L (DOE-ID 1995). In situ bioremediation takes advantage of naturally occurring bacteria that break down contaminants during metabolism of a food source. The particular application of ISB at TAN requires injection of an electron donor (i.e., sodium lactate, whey, or molasses) into the secondary source area. This amendment increases the number of bacteria, thereby increasing the rate at which the VOCs break down into nonhazardous compounds. This technology destroys the organic compounds in the hot spot without bringing them aboveground, preventing risk to workers and the environment. Based on actual field evaluations, ISB also degrades the secondary source. Degradation products generated by the bioremediation process (e.g., DCE and vinyl chloride) are degraded by the same process to ethene, chloride, water, and carbon dioxide.

Application of the ISB remedy at TAN will occur in the four phases described above, which are shown graphically in Figure 1-1 and described in detail in the ISB RAWP (DOE-ID 2002a). These phases begin and end based upon conditions observed in the groundwater. For this reason, groundwater monitoring is a necessary component of the remedial action. This plan documents the procedures and rationale for groundwater monitoring to be conducted during each of the four phases. In situ bioremediation operations and maintenance (O&M) for implementation of these four phases are addressed separately in the *ISB Operations and Maintenance Plan for Test Area North, Operable Unit 1-07B* (DOE-ID 2002b).

2. DATA QUALITY OBJECTIVES

Development of DQOs for the ISB component of the remedy is presented in detail in the ISB RAWP, and is summarized in this section. The DQOs have been prepared based on decisions requiring groundwater monitoring data, as well as on EPA DQO guidance (EPA 1994), method detection limits, and experience with the sampling and analysis methods to date. Requirements for data quality for all Idaho National Engineering and Environmental Laboratory (INEEL) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) investigations and remedial responses are defined in the *Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7 and 10* (DOE-ID 2000).

Decisions requiring groundwater monitoring data (see Figure 1-1) are listed in Section 1. The compliance decisions are based on the remedial action objectives (RAOs) and performance criteria for the ISB component of the remedy, as discussed in the RAWP. The operational decisions are based on performance indicators developed during 4 years of field evaluation at OU 1-07B, as described in the OU 1-07B ISB O&M Plan (DOE-ID 2002b). Application of the DQO process to these decisions has resulted in the data collection program described in Section 3.

3. DATA COLLECTION PROGRAM

This section describes the program designed to collect data at the appropriate locations, frequencies, and quality levels required to support decisions 1 through 4 listed in Section 1. It also contains details of the data collection program including sampling strategy, equipment, and procedures that support implementation of the ISB remedy component.

3.1 Sampling Strategy

The ISB sampling strategy for monitoring the status of the ISB remedy is based on the results of the DQO process and the experience gained from over 4 years of ISB field evaluation and pre-design operations. Two types of monitoring (i.e., performance and compliance) are defined and a detailed discussion of the specific indicator parameters for both types of monitoring is provided in the OU 1-07B ISB O&M Plan (DOE-ID 2002b).

Tables 3-1 and 3-2 portray the performance and compliance monitoring strategies, respectively, for the four operational phases. Monitoring strategy information includes monitoring locations, analytes, sampling frequencies, and data quality levels. Data quality levels are fully defined and their application is discussed in the Quality Assurance Project Plan (QAPjP) (DOE-ID 2000), as well as in the DQO development discussion in the RAWP. Definitive data have been required to date for assessing completion of remedial actions at the INEEL, and this data quality level is cited for ISB compliance monitoring for initial optimization and long-term operations. In general, definitive level data are generated using rigorous analytical methods such as approved EPA or American Society of Testing and Materials [ASTM] methods. Either analytical or total measurement error must be determined. Definitive data quality assurance/quality control (QA/QC) elements include (DOE-ID-2000):

- Sample documentation (e.g., location, date, time)
- Chain of custody
- Sampling design approach
- Initial and continuing calibration
- Determination and documentation of detection limits
- Analyte or property identification
- QC blanks (field and method)
- Matrix spike recoveries
- Analytical error determination. One sample will be analyzed in replicate and the mean and standard deviation determined and reported.
- Total measurement error determination. Replicate samples will be collected at one sampling location in each sampling round, analyzed, and the mean and standard deviation determined and reported.

Table 3-1. ISB remedial action groundwater performance monitoring strategy summary.

Monitoring Type/strategy element	Operational Phase			
	Interim	Initial	Optimization	Long-term
Decision number	1			
Monitoring locations	TSF-05A, TSF-05B, TAN-10A, TAN-25, TAN-26, TAN-27, TAN-28, TAN-29, TAN-30A, TAN-31, TAN-37A, TAN-37B, TAN-37C, and TAN-D2.	TSF-05A, TSF-05B, TAN-10A, TAN-25, TAN-26, TAN-27, TAN-28, TAN-29, TAN-30A, TAN-31, TAN-37A, TAN-37B, TAN-37C, and TAN-D2, PMW-1, PMW-2		
Monitoring frequency/ Analytes	Monthly: VOCs (PCE, TCE, cis- and trans-DCE, vinyl chloride), electron donors (COD, lactate, acetate, propionate, butyrate), redox parameters (ferrous iron, sulfate), bioactivity parameters (alkalinity), dissolved gases (ethene, ethane, methane), and tritium. Quarterly: Sr-90 and gamma spectrometry (Cs-137) for TAN-29 only; definitive confirmation (offsite splits) for VOCs and ethane/ethane/methane Semiannual: Nutrients (ammonia-nitrogen, phosphate) Annual: Gross alpha			Quarterly: VOCs (PCE, TCE, cis- and trans-DCE, vinyl chloride), electron donors (COD, lactate, acetate, propionate, butyrate), redox parameters (ferrous iron, sulfate), bioactivity parameters (alkalinity), dissolved gases (ethene, ethane, methane), and tritium; Sr-90, Cs-137 (TAN-29 only) Semiannual: Nutrients (ammonia-nitrogen, phosphate) Annual: Gross alpha; definitive confirmation for VOCs and ethane/ethane/methane
Data quality required[a]	Screening w/definitive confirmation for VOCs and ethane/ethane/methane Definitive for radionuclides and definitive confirmation for VOCs and ethane/ethane/methane Screening for all other analytes			
Data validation level required[b]	Level A for VOC and ethane/ethane/methane definitive confirmation and radionuclide analyses No data validation for onsite and IRC laboratory data			

a: Data quality levels are defined in the QAPjP.

b: Data validation levels are defined in the QAPjP.

Table 3-2. ISB remedial action groundwater compliance monitoring strategy summary.

Monitoring Type/Strategy Element	Operational Phase			
	Interim	Initial	Optimization	Long-term[c]
Decision number	N/A	2	3	4
Monitoring duration	N/A	1 year		TBD
Monitoring frequency	N/A	Quarterly		TBD
Monitoring locations	N/A	TAN-28 TAN-30A	PMW-1 PMW-2	TBD
Analytes	N/A	VOCs (PCE, TCE, cis- and trans-DCE, vinyl chloride)		TBD
Data quality required[a]	N/A	Definitive		TBD
Data validation level required[b]	N/A	Level A		TBD

a: Data quality levels are defined in the QAPjP.
b: Data validation levels are defined in the QAPjP.
c: The Long-Term Compliance monitoring strategy will be submitted in the RA Report
N/A: Not applicable
TBD: To be determined

Screening level data (generated using rapid, less precise analytical methods with less rigorous sample preparation) are cited for all performance monitoring indicators except VOCs, for which screening with definitive confirmation is specified. Screening with definitive confirmation is defined in the QAPjP as "...at least 10% of the screening data are confirmed using analytical methods and quality assurance/quality control (QA/QC) procedures and criteria associated with definitive data." Definitive confirmation will not be used for performance indicators that do not have action levels.

The overall OU 1-07B ISB remedial action performance and compliance monitoring sampling strategies are as follows:

- **Interim operations performance monitoring** (Decision 1): Includes monthly sampling for performance indicator parameters at 14 ISB locations listed in Table 3-1 for the duration of the phase. Monthly monitoring at the 14 existing locations during the ISB field evaluation and pre-design operations was found to effectively identify trends in parameters that indicate ISB system performance (INEEL 2000). Shorter-interval sampling for subsets of the performance indicators may be implemented, as directed by the ISB Operations Technical Lead, to observe transient conditions, for example, when testing electron donor injection strategies. This performance monitoring strategy also includes deploying and maintaining in situ multiparameter monitoring probes, as directed by the ISB Operations Technical Lead.

- **Initial operations performance monitoring** (Decision 1): Includes monthly sampling for performance indicator parameters at 16 ISB locations (14 existing locations and planned monitoring wells PMW-1 and PMW-2) for the duration of the phase. This strategy incorporates monthly monitoring for VOCs at TAN-28 and -30A to determine downgradient contaminant flux trends. Similar to the interim operations performance monitoring strategy described above, shorter-interval sampling for subsets of the performance indicators may be implemented as directed by the

ISB Operations Technical Lead. This performance monitoring strategy also includes use of in situ multiparameter monitoring probes in specific wells, as directed by the ISB Operations Technical Lead.

- **Initial operations compliance monitoring** (Decision 2): The strategy for determining when downgradient flux is cut off includes quarterly monitoring for 1 year at TAN-28 and TAN-30A for VOCs. This sampling will begin when performance monitoring indicates that VOC concentrations are below MCLs at TAN-28 and -30A. These sampling events will be coordinated with regular monthly performance sampling; the samples will be analyzed using definitive methods.

- **Optimization operations performance monitoring** (Decision 1): Includes monthly sampling for performance indicator parameters at 16 ISB locations (14 existing locations and planned monitoring wells PMW-1 and PMW-2) for the duration of the phase. The monthly sampling frequency will be continued in order to identify any trends requiring operational modifications. This strategy incorporates monthly monitoring for VOCs at PMW-1 and PMW-2 to determine crossgradient contaminant flux trends. Shorter-interval sampling for subsets of the performance indicators may be implemented as directed by the ISB Operations Technical Lead. This performance monitoring strategy also includes use of in situ multiparameter monitoring probes in specific wells, as directed by the ISB Operations Technical Lead.

- **Optimization operations compliance monitoring** (Decision 3): The strategy for determining when crossgradient flux of contaminants from the hotspot is cut off includes quarterly monitoring for VOCs for 1 year at PMW-1 and PMW-2. This sampling will begin when performance monitoring indicates that VOC concentrations are below MCLs at PMW-1 and PMW-2. These sampling events will be coordinated with regular monthly performance sampling; the samples will be analyzed using definitive methods.

- **Long-term operations performance monitoring** (Decision 1): Includes quarterly sampling for performance indicator parameters at 16 ISB locations (14 existing locations and planned monitoring wells PMW-1 and PMW-2) for the duration of the phase. The ISB system will be functional and operational during this phase, with a defined operating strategy thereby reducing performance-sampling requirements. The number of monitoring locations and analytes may be reduced during this phase, as directed by the ISB Operations Technical Lead. Shorter-interval sampling for subsets of the performance indicators may be implemented as needed to observe transient conditions. This performance monitoring strategy also includes use of in situ multiparameter monitoring probes in specific wells, as directed by the ISB Operations Technical Lead.

- **Long-Term Operations compliance monitoring** (Decision 4): The Remedial Action Report will establish the sampling strategy to define when the remedy is complete.

Table 3-3 defines analytical methods, action levels, method detection limits, and data quality levels for each analyte and each monitoring phase. All other sampling and analysis details, including container types, sample preservation, holding time, analytical methods, and chain of custody (COC) requirements, are addressed in Section 4.

Samples may occasionally be collected for various research projects. Sampling and analysis tables will be prepared for these non-routine samples as required. Non-routine sampling will be coordinated with routine sampling to the extent feasible.

Table 3-3. ISB remedial action analytical method summary.

Analyte	Action level[a]	Analytical method	Method Detection limit[b,c]	Monitoring phase or other data collection activity
VOCs				
TCE	5 ug/L	EPA 524.2 wide-bore capillary column	0.19 µg/L	Compliance
	N/A	SW-846 8260B	5 µg/L	Definitive confirmation
	N/A	SPME-GC-ECD	2 µg/L	Performance
PCE	5 ug/L	EPA 524.2 wide-bore capillary column	0.14 µg/L	Compliance
	N/A	SW-846 8260B	5 µg/L	Definitive confirmation
	N/A	SPME-GC-ECD	6 µg/L	Performance
cis-DCE	70 ug/L	EPA 524.2 wide-bore capillary column	0.12 µg/L	Compliance
	N/A	SW-846 8260B	5 µg/L	Definitive confirmation
	N/A	SPME-GC-ECD	2 µg/L	Performance
trans-DCE	100 ug/L	EPA 524.2 wide-bore capillary column	0.06 µg/L	Compliance
	N/A	SW-846 8260B	5 µg/L	Definitive confirmation
	N/A	SPME-GC-ECD	2 µg/L	Performance
vinyl chloride	2 ug/L	EPA 524.2 wide-bore capillary column	0.17 µg/L	Compliance
	N/A	SW-846 8260B	5 µg/L	Definitive confirmation
	N/A	SPME-GC-ECD	2 µg/L	Performance
Radionuclides				
Tritium	N/A	Liquid scintillation counting	400 pCi/L	Performance
Sr-90	N/A	Gas flow proportional	1 pCi/L	Performance
Cs-137	N/A	Gamma spectrometry	30 pCi/L	Performance
Gross alpha	N/A	Gas flow proportional	4 pCi/L	Performance
Electron donor				
Lactate	N/A	Ion chromatography	5 mg/L	Performance
Acetate	N/A	GC/FID	5 mg/L	Performance
Propionate	N/A	GC/FID	5 mg/L	Performance
Butyrate	N/A	GC/FID	5 mg/L	Performance
COD	N/A	Hach Method 10067	14 mg/L	Performance

Table 3-3. (continued).

Analyte	Action level[a]	Analytical method	Method Detection limit[b,c]	Monitoring phase or other data collection activity
Redox indicators				
Sulfate	N/A	Hach Method 8051	4.9 mg/L	Performance
Iron	N/A	Hach Method 8146	0.03 mg/L	Performance
pH	N/A	Multiparameter water quality probe	0-14 units	Performance
ORP	N/A	Multiparameter water quality probe	-999-+999 mV	Performance
Bioactivity indicators				
Alkalinity	N/A	Hach Method 8203	10 mg/L	Performance
Specific conductivity	N/A	Multiparameter water quality probe	0-100 mS/cm	Performance
Dissolved gases				
Ethene	N/A	GC-FID	1 ug/L	Performance
Ethane	N/A	GC-FID	1 ug/L	Performance
Methane	N/A	GC-FID	1 ug/L	Performance
Nutrients				
Ammonia nitrogen	N/A	Hach Method 10023 (for low range)	0.02 mg/L	Performance
		Hach Method 10031 (for high range)		
Orthophosphate	N/A	Hach Method 8048	0.05 mg/L	Performance

a: Action levels apply only to compliance monitoring, for which chloroethene levels are compared to MCLs to determine end of phase.

b: Method detection limits for: EPA method organics and radionuclides from DOE (2000), *QAPjP for waste area groups (WAGs) 1, 2, 3, 4, 5, 6, 7, 10 and Inactive Sites*; Hach methods from the Hach Manual; multiparameter water quality probe parameters ranges reported are from the Minisonde 4a manual; electron donor and SPME organics from IRC organics analyst Cathy Rae, personal communication.

c: For purposes of this groundwater monitoring plan, "Detection limits must not exceed one tenth the risk-based or decision-based concentrations for the contaminants of concern (DOE 2000)." This applies to compliance monitoring only. Chloroethene action levels were divided by ten and compared to the MDL to determine appropriate analytical methods for compliance monitoring.

DCE = dichloroethene
FID = flame ionization detector
ORP = Oxidation Reduction Potential
PCE = Tetrachloroethene
SPME-GC-ECD = Solid Phase Micro Extraction – Gas Chromatography – Electron Capture Detector
VOC = Volatile Organic Compound

3.2 Sampling Equipment and Procedures

Samples will be collected to implement the strategies summarized in Tables 3-1 and 3-2, per the SAP tables prepared prior to each sampling event by the Sample Management Office (SMO) under the direction of the ISB field team leader (FTL). Example SAP tables for each phase of operations and type of monitoring (performance or compliance) are presented in Appendix C. Sample collection activities will be performed by the FTL, Field Engineer, and sampling technicians. The general roles of each are defined in the *Test Area North Operable Unit 1-07B Final Groundwater Remedial Action Health and Safety Plan* (INEEL 2002a), while the specific responsibilities for each position are specified in the procedures referenced below. Sampling will be conducted using the equipment and techniques specified in TPR-165, "Low-Flow Groundwater Sampling Procedure." This procedure addresses training, equipment, instrument standardizations, purging, sampling, purge water management, decontamination and cleaning of equipment, and record keeping in support of this monitoring plan and will be updated as required for the duration of monitoring.

In situ multiparameter monitoring probes will be used for collecting purge parameter data during sampling, and for in situ deployment in wells specified by the ISB Operations Technical Lead for the duration of the remedy implementation. In situ multiparameter monitoring probes will be deployed, operated, and maintained as specified in the technical procedure (TPR) to be determined (TBD) for "In Situ Multiparameter Monitoring Probe Operations." This procedure addresses instrument standardization, programming and downloading, maintenance and repair, deployment and retrieval, and record keeping. It will be updated as required for the duration of monitoring.

Construction information for the OU 1-07B ISB monitoring wells is shown in Appendix D and is maintained in the OU 1-07B project files and the INEEL Hydrogeologic Data Repository. The information includes name, location, material type, depth, screened or open interval, top of casing elevation, pump type, discharge hose or pipe dimension, sampling depth, and estimated purge volume for each well (current as of the date of publication).

3.3 Waste Management

The sampling activities described above will generate potentially contaminated wipes, sample bottles, personal protective equipment (PPE), sample rinsates, and purge water. All wastes generated as a result of ISB groundwater monitoring activities will be managed in compliance with the requirements of the *Waste Management Plan for TAN Final Groundwater Remediation OU 1-07B* (INEEL 1999).

3.4 Health and Safety

Health and safety program requirements are addressed in the TAN OU 1-07B Health and Safety Plan (HASP) (INEEL 2002a). This HASP has been prepared to meet the Occupational Safety and Health Act (OSHA) standard for Hazardous Waste Operations and Emergency Response and governs all work performed as a part of ISB O&M.

4. SAMPLE MANAGEMENT AND ANALYSIS

The ISB final remedial action groundwater monitoring program includes three analytical components. These components include 1) onsite field analyses and measurements, 2) analyses performed at the INEEL Research Center (IRC), and 3) analyses performed at offsite laboratories. This section describes the protocols to be followed during all sample management (those activities immediately following sample collection) and analysis activities. The FTL is responsible for implementing all sample management protocols and the Field Lab Lead (FLL) is responsible for implementing all sample analysis protocols.

4.1 Sample Management

4.1.1 Sample Designation and SAP Tables

A character-based sample identification (ID) system determined by the SMO will be used to identify each sample with a unique ID code, which is provided by the SMO at the time the SAP tables are prepared. SAP tables will be used to record all pertinent information including monitoring locations, sample designations, media, dates, analysis types, and comments associated with each sample ID code. Example SAP tables for each monitoring phase are provided in Appendix C. In an effort to minimize SAP discrepancies, SAP tables will be prepared immediately prior to each sampling event and the completed SAP tables will be included in the ISB Periodic Report for the reporting period. The FTL is responsible for SAP table accuracy.

4.1.2 Sample Preservation and Preparation

Table 4-1 defines the analyses to be performed by the onsite field laboratory, IRC laboratory, and offsite laboratories. For each analyte listed, the container size and type, preservative, analytical method, and holding time is provided. Samples requiring 4°C preservation will be chilled in coolers containing frozen reusable ice immediately upon collection and maintained at a temperature ≤ 4°C prior to shipment to ensure adequate preservation.

Sample bottles will be preserved prior to sample collection for those samples requiring zero headspace (i.e., ethene/ethane/methane and VOCs analyzed offsite). Appropriate acid will be added (and the pH checked after sample collection) to obtain a pH between 1.6 and 2 for those samples requiring preservation at pH < 2 that do not require zero headspace. Samples analyzed offsite will be handled and preserved per the governing SMO Task Order Statement (TOS).

The priority indicated in Table 4-1 for field laboratory analyses is related to the holding times for those particular analyses. All of the field analyses will be performed per TPR-166, "ISB Analyses Procedure" within the stated holding time. Those with a priority of 1 or 2 will be analyzed as soon as possible after collection.

Table 4-1. Sample collection and analysis requirements.

Analytes	Sample container size and type	Preservative	Analytical Method	Holding time	Comments
IRC laboratory analyses					
VOCs	Two glass 40-mL VOA vials	4°C	SPME-GC-ECD	7 days	No headspace
Ethene/ethane/methane	Two glass 40-mL VOA vials	4°C and pH < 2 w/H_2SO_4	SW-846-8015M w/GC-FID	14 days	No headspace
Lactate	One glass 40-mL VOA vial	4°C	Ion chromatography	7 days	
Acetate/Propionate/Butyrate	One glass 40-mL VOA vial	4°C	GC/FID	7 days	
Field laboratory analyses (priority)					
Iron (1)	250-ml HDPE	none	Hach Method 8146	30 minutes	Must be analyzed immediately; collected in same container as sulfate: no headspace
Phosphate (2)	250-mL HDPE	4°C	Hach Method 8048	24 hrs	Collected in same container as iron
Nitrogen, ammonia, low range (3)	250-mL HDPE	4°C	Hach Method 10023	24 hrs	Collected in same container as iron
Nitrogen, ammonia, high range (4)	250-mL HDPE	4°C	Hach Method 10031	24 hrs	Collected in same container as iron
Alkalinity (5)	125-mL HDPE	4°C	Hach Method 8203	24 hrs	

Table 4-1. (continued).

Analytes	Sample container size and type	Preservative	Analytical Method	Holding time	Comments
Sulfate (6)	250-mL HDPE	4°C	Hach Method 8051	24 hrs	Collected in same container as iron
Chemical oxygen demand (7)	One glass 40-mL VOA vial	4°C	Hach Method 10067	28 days	Initial sample preparation within 1 hour of arrival at field laboratory
Offsite laboratory analyses					
VOCs	Three glass 40-mL VOA vials	4°C and pH<2 w/H_2SO_4 (8260B) or HCl (524.2)	SW-846 8260B or EPA 524.2 (see Table 3-2)	14 days	No headspace
Gamma screen	1-540 mL HDPE	None	Gamma spectrometry	N/A	Required for samples from TSF-05, TAN-25, -26, -31 prior to shipment offsite
Cs-137	1-2 L HDPE	HNO_3 to pH<2	Gamma Spectrometry	6 months	Collected at TAN-29 only
Sr-90	1-500 mL HDPE	HNO_3 to pH<2	Gas flow proportional	6 months	Collected at TAN-29 only
Gross alpha	1-500 mL HDPE	HNO_3 to pH<2	Gas flow proportional	6 months	

GC/FID = gas chromatography/flame ionization detection
HDPE = high-density polyethylene
VOA = volatile-organic analysis

4.1.3 Chain of Custody

To maintain and document possession of samples shipped to a laboratory for analysis, COC procedures will be followed per MCP-3480, "Environmental Instructions for Facilities, Processes, Materials and Equipment" and the QAPjP (DOE-ID 2000). The purpose of the COC is to document the identity of the sample and its handling from the point of collection until laboratory analysis is complete. The COC record is a multiple copy form that serves as a written record of the sample handling. When a sample changes custody, those personnel relinquishing and receiving the sample shall sign a COC record. Each change of possession will be documented. The COC procedures will begin immediately after sample collection. The sample ID number, date, and time will be entered on the COC form the day of sample collection. Sample bottles will be stored in a secured area accessible only to the field team members. A COC will not be initiated for those samples that are analyzed onsite in the field laboratory unless specified by the FTL or FLL, since these samples will not leave the custody of the field team members.

4.1.4 Transportation of Samples

Samples will be transported in accordance with the regulations issued by the Department of Transportation (49 *Code of Federal* Regulations [CFR]Parts 171 through 178) and EPA sample handling, packaging, and shipping methods (40 CFR 261.4[d] and [e]). All samples will be packaged in accordance with the requirements set forth in MCP-3480 and the governing TOS.

4.1.5 Radiological Screening

Samples collected from wells TAN-25, -26, -31, and TSF-05 must be surveyed using gamma spectrometry prior to analysis or shipment offsite. Radioactivity in all other wells to be sampled has historically been below levels of concern. Samples collected from other wells may be surveyed using gamma spectrometry under the direction of the Technical Lead, FTL, or Operations Supervisor.

4.2 Sample Analysis

Sample analysis will be conducted using three analytical components (i.e., the onsite field laboratory, the IRC laboratory, and SMO-appointed offsite laboratories) dependent upon holding time restrictions, analytical capabilities, and quality level requirements. Analytes and the analytical methods to be used for each of the three components are defined in Table 4-1. Quality assurance requirements associated with the activities taking place within each of the three components are described separately in Section 6. The onsite field laboratory, in addition to providing analytical resources, is also used for sample preparation activities in support of analyses to be conducted at both the IRC and offsite laboratories. A summary description of the laboratory activities is provided below.

4.2.1 Onsite Field Laboratory Activities

The field laboratory supports ISB project team activities for all three analytical components of the monitoring program. The field laboratory is the center for all onsite data collection activities including field test kits, in situ multiparameter monitoring probe data, and purge data. These activities provide near real-time data for evaluating the performance of the ISB remedy. In addition, the field laboratory is used for coordinating sample delivery to the IRC and for sample shipment to offsite laboratories, as described in Sections 4.1.1 through 4.1.5. Specific activities that the field laboratory supports include colorimeter operation, digital titrator operation, gross alpha-beta counts, and sample packing and shipping; in situ multiparameter monitoring probe deployment, maintenance, standardization, and downloading; and sample bottle preparation and administrative activities.

Field laboratory operations will be conducted by the FTL, FLL, Field Lab Technician, and In Situ Multiparameter Monitoring Probe Technician. The general roles of each are defined in the ISB HASP, while specific responsibilities are specified in the relevant procedure(s). Field laboratory operations and associated equipment are described in TPR-166, "ISB Analyses Procedures." In situ multiparameter monitoring probe deployment, maintenance, standardization, and downloading will be conducted using the equipment and techniques described in a TPR (TBD). These procedures will be updated as required for the duration of monitoring.

4.2.2 IRC Laboratory Activities

Analysts at the INEEL Research Center (IRC) laboratory analyze samples for chloroethene, ethene/ethane/methane, dissolved gases, lactate, and organic acids using the methods listed in Table 4-1. INEEL Research Center laboratory operations utilize one to two analysts in support of ISB groundwater monitoring operations. The IRC analyst roles are generally defined in the ISB HASP, while specific responsibilities, methods, equipment, and requirements are defined in TPR-166 as well as in Section 6.

4.2.3 Offsite Laboratory Activities

Offsite laboratories analyze samples for chloroethenes, ethane/ethane/methane, Cs-137, Sr-90, gross alpha and tritium using definitive methods. Specific requirements are defined in the TOS prepared by the INEEL's SMO for each analytical services subcontract.

5. DATA MANAGEMENT AND REPORTING

This section provides an overview of the process used for entering, compiling, and storing data collected in support of the ISB remedy activities. The detailed steps of the data management process are documented in a TPR (TBD) for ISB Data Management; the process is shown graphically in Figure 5-1.

Data are obtained from the following sources: the field laboratory (logbooks), in situ multiparameter monitoring probes (electronic files and purge log sheets), the IRC Laboratory (electronic data files), and offsite laboratories (offsite data packages from the SMO). Upon receipt of data from these sources, data are compiled and entered into electronic spreadsheets. Spreadsheets are organized according to the data types presented above, updated with new data consistent with respective sampling frequencies, and posted to the OU 1-07B server. Once posted to the server, the completed spreadsheets are used to evaluate data in the context of progress toward the objectives of the remedy, as described in detail in the ISB O&M Plan (DOE-ID 2002b).

Reporting requirements for ISB groundwater monitoring results are defined in the RAWP. All ISB groundwater monitoring information will be compiled in the ISB Periodic Report and will be provided to the agencies. Information reported will include analytical results, SAP tables, trend charts, QA results, interpretations, and operational changes. The Periodic Report will document progress of the ISB remedy toward meeting the performance criteria and RAOs and shall support agency 5-year reviews.

Additionally, quality assured sampling results will be submitted to the agencies as they become available, but no later than 120 days after sample collection. Non-quality assured data that support decision-making will be submitted as they become available. The formats for these submittals will be identified in the ISB Data Management TPR (TBD). Data will be submitted to the agencies in both electronic and hardcopy formats, as appropriate.

Data management and reporting activities will be conducted by the FTL, FLL, Data Entry Technician, In Situ Multiparameter Monitoring Probe Technician, SMO contact, Data Evaluation Lead, and Project Manager. The general roles of each are defined in the ISB HASP (INEEL 2002a), while specific responsibilities are defined in the ISB Data Management Procedure (TBD).

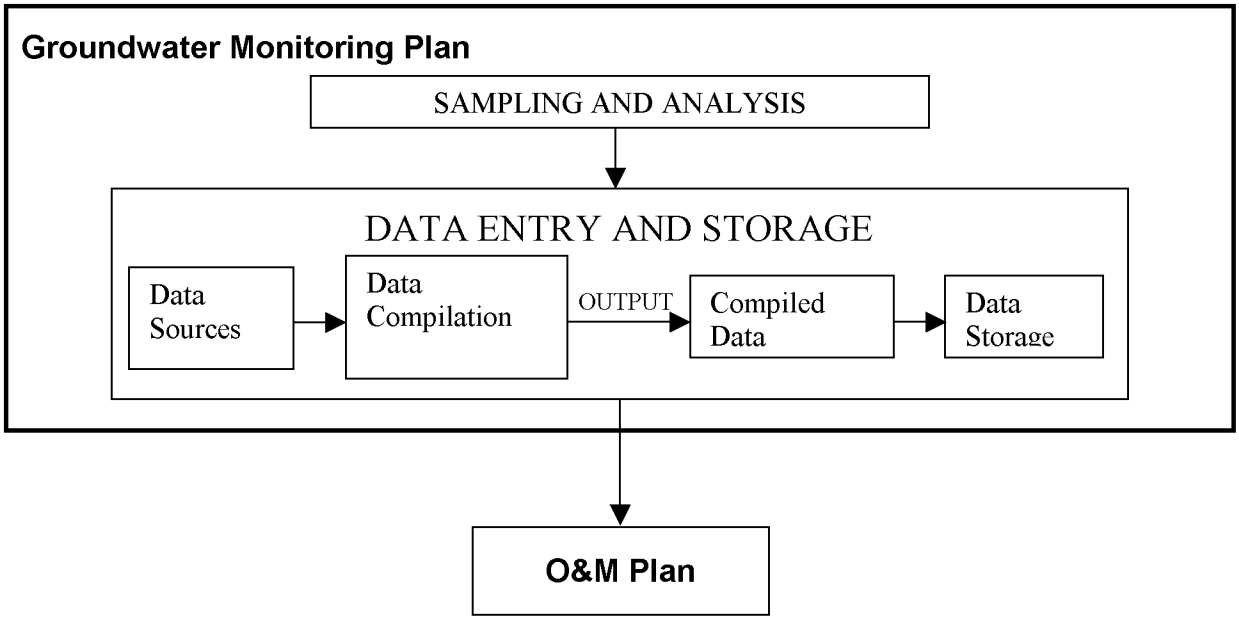


Figure 5-1. Data management process.

6. QUALITY ASSURANCE

This section presents or references requirements for QA, including field and laboratory QA types and frequencies; precision and accuracy; corrective actions; and reporting, for analyses performed in support of OU 1-07B ISB remedial action at the onsite field laboratory, the IRC laboratory, and offsite laboratories. Quality assurance will be implemented as specified in this plan, the QAPjP (DOE-ID 2000), PLN-694, "Environmental Restoration Program Management Plan," and TPR-166, "ISB Analyses Procedures."

For purposes of this groundwater monitoring plan, laboratory QA measures are those checks that an analyst routinely runs to determine precision and accuracy of the analytical methods and equipment (method error) and typically include blanks, standards, duplicates, standard reference materials (SRMs) and standard additions (matrix spikes). Field QA measures are sample types collected or prepared in the field during sampling and submitted to the laboratory to assess overall data quality of the sampling and analysis program (total measurement error). Field QA sample types include field blanks, trip blanks, and field duplicates. Compliance monitoring at TAN-28 and -30A, and at PMW-1 and -2 will be considered separate sampling events; for which one field blank, one field duplicate and one trip blank will be collected and analyzed for each respective well pair per sampling event.

Performance evaluation (PE) samples may be added to the OU 1-07B ISB Remedial Action QA program at the discretion of the ISB Technical Lead or Project Manager. If implemented, the PE program will be administered by the SMO with direction from the ISB Technical Lead regarding sample type, concentration ranges, frequency, and analytes for each performance period.

Data validation levels, as defined in the QAPjP, are identified in Section 6.3 for definitive offsite analyses only. Data from field laboratory or IRC analyses are not validated.

6.1 Field Laboratory

6.1.1 Laboratory and Field Quality Assurance

Laboratory QA for the onsite field laboratory includes analysis of blanks, duplicates, standards, and standard additions (matrix spikes). Procedures for preparing standards and standard additions, precision and accuracy requirements, and corrective actions for field laboratory internal QA checks are described in TPR-166.

Field QA includes the analysis of field blanks and field duplicates. Frequencies for field QA analyses are specified in Table 6-1.

6.1.2 Reporting

Control charts will be prepared and maintained for each QA parameter and analyte. The QA results will be evaluated and compiled as described in the ISB Data Management Procedure (TBD). Laboratory QA results and corrective actions will be summarized and reported in the ISB Periodic Report.

Table 6-1. Field QA frequency for ISB RA groundwater monitoring.

Sample Type	Frequency	Comments
Field Duplicate	1 per 20 samples[a,b]	All samples
Field blank	1 per 20 samples[a,b]	All samples
Trip blank	1 per sample cooler	For IRC VOCs and ethane/ethane methane and offsite samples only.
Definitive confirmation	Quarterly/annual performance sampling round	VOCs only

a: 1 sample for all analytes per day if number of monitoring locations is <20.

b: 1 sample per round for compliance monitoring at TAN-28 and -30A; and at PMW-1 and -2.

6.2 IRC Laboratory

6.2.1 Internal and Field Quality Assurance

Laboratory QA for the IRC laboratory includes analysis of blanks, duplicates, standards, and standard additions (matrix spikes). Procedures for preparing standards and standard additions; precision and accuracy requirements; and corrective actions for OU 1-07B ISB remedial action IRC laboratory analyses are described in the "OU 1-07B ISB Remedial Action IRC Analyses Procedures," (TBD).

Field QA includes the analysis of field blanks and field duplicates. Frequencies for field QA analyses are specified in Table 6-1.

6.2.2 Reporting

IRC QA results will be evaluated and compiled as described in the ISB Data Management Procedure (TBD). Control charts will be prepared and maintained for each QA parameter and analyte. Internal QA results and corrective actions will be summarized and reported in the ISB Periodic Report.

6.3 Offsite Laboratories

6.3.1 Laboratory and Field Quality Assurance

Laboratory QA for the offsite laboratories includes blanks, duplicates, standards, and standard additions (matrix spikes). Offsite laboratory QA requirements established in the QAPjP are based on definitive data requirements (Table 6-2).

Field QA includes field blanks, trip blanks and field duplicates. Frequencies for field QA analyses are specified in Table 6-1.

Table 6-2. Laboratory QA requirements for definitive data[a].

QA Parameter	VOCs	Parameter calculated
Precision		
Duplicates	TCE: ±14%	Relative percent difference (RPD)
Accuracy		
Standards	71-120%	% recovery
Matrix spikes	71-120%	% recovery
Completeness		
Definitive confirmation	90%	% complete
Compliance monitoring	100%	% complete

a: as defined by the QAPjP

6.3.2 Corrective Actions

Corrective action requirements are established by the SMO in the TOS for the performing laboratory.

6.3.3 Reporting

Laboratory reporting requirements for offsite laboratory QA are established by the SMO in the TOS for the performing laboratory. Offsite laboratory QA results will be evaluated and compiled as described in the ISB Data Management Procedure (TBD) and will be summarized and reported in the ISB Periodic Report.

6.3.4 Data Validation

Definitive data from offsite analyses will be validated to Level A, as specified in the QAPjP.

7. REFERENCES

Bukowski, J. M., and K. S. Sorenson, 1998, "Site Conceptual Model: 1996 Activities, Data Analysis, and Interpretation for Test Area North Operable Unit 1-07B," INEL-97-0056, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho.

Bukowski, J. M., H. Bullock, and E. R. Neher, 1998, "Site Conceptual Model: 1997 Activities, Data Analysis, and Interpretation for Test Area North Operable Unit 1-07B," INEEL/EXT-98-00575, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho.

DOE-ID, 1995, *Record of Decision: Declaration for the Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites Final Remedial Action, Operable Unit 1-07B, Waste Area Group 1*, U. S. Department of Energy Idaho Operations Office, Idaho Falls, Idaho.

DOE-ID, 2000, *Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10 and Inactive Sites*, DOE/ID-10587, Revision 6, U. S. Department of Energy Idaho Operations Office, Idaho Falls, Idaho, September 2000.

DOE-ID, 2001, *Record of Decision Amendment for the Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites Final Remedial Action*, DOE/ID-10139, Revision 0, U.S. Department of Energy Idaho Operations Office, Idaho Falls, Idaho.

DOE-ID, 2002a, *In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B* (Draft), DOE/ID-11015, Revision B, U. S. Department of Energy Idaho Operations Office, Idaho Falls, Idaho, October 2002.

DOE-ID, 2002b, *ISB Operations and Maintenance Plan for Test Area North, Operable Unit 1-07B*, DOE/ID-11012, Revision 0, U. S. Department of Energy Idaho Operations Office, Idaho Falls, Idaho.

40 CFR 261.4 (d)(e), 2002, Title 40, "Protection of the Environment," Part 261, "Identification and Listing of Hazardous Waste," *Code of Federal Regulations*, Office of the Federal Register.

49 CFR 171, 2001, Title 49, "Transportation," Part 171, "General Information, Regulations, and Definitions," *Code of Federal Regulations*, Office of the Federal Register, October 2001.

49 CFR 172, 2001, Title 49, "Transportation," Part, 172, "Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements," *Code of Federal Regulations*, Office of the Federal Register, October 2001.

49 CFR 173, 2001, Title 49, "Transportation," Part 173, "Shippers—General Requirements for Shipments and Packagings," *Code of Federal Regulations*, Office of the Federal Register, October 2001.

49 CFR 174, 2001, Title 49, "Transportation," Part 174, "Carriage by Rail," *Code of Federal Regulations*, Office of the Federal Register, October 2001.

49 CFR 175, 2001, Title 49, "Transportation," Part 175, "Carriage by Aircraft," *Code of Federal Regulations*, Office of the Federal Register, October 2001.

49 CFR 176, 2001, Title 49, "Transportation," Part 176, "Carriage by Vessel," *Code of Federal Regulations*, Office of the Federal Register, October 2001.

49 CFR 177, 2001, Title 49, "Transportation," Part 177, "Carriage by Public Highway," *Code of Federal Regulations,* Office of the Federal Register, October 2001.

49 CFR 178, 2001, Title 49, "Transportation," Part 178, "Specifications for Packagings," *Code of Federal Regulations*, Office of the Federal Register, October 2001.

EPA, 1994, "Guidance for the Data Quality Objectives Process," EPA QA/G-4, EPA/600/R-96/055, U.S. Environmental Protection Agency, September 1994.

INEEL, 1999, *Waste Management Plan for Test Area North Final Groundwater Remediation, OU 1-07B*, INEEL/EXT-98-00267, Revision 1, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho, April 1999.

INEEL, 2000, *Field Evaluation Report of Enhanced In Situ Bioremediation, Test Area North, Operable Unit 1-07B*, INEEL/EXT-2000-00258, Revision 0, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho, July 2000.

INEEL, 2002a, *Test Area North Operable Unit 1-07B Final Groundwater Remedial Action Health and Safety Plan*, INEEL/EXT-99-00020, Revision 2, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho, November 2002.

Kaminski, J. F., K. N. Keck, A. L. Schafer-Perini, C. F. Hersley, R. P. Smith, G. J. Stormberg, and A. H. Wylie, 1994, "Remedial Investigation Final Report with Addenda for the Test Area North Groundwater Operable Unit 1-07B at the Idaho National Engineering Laboratory," EGG-ER-10643, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho.

MCP-3480, 2001, "Environmental Instructions for Facilities, Processes, Materials and Equipment," Rev. 6, June 1, 2001.

PLN-694, "Environmental Restoration Project Management Plan, for Environmental Restoration (ER) and Decontamination and Decommissioning (D&D) Projects," Rev. 0, November 30, 2000.

Sorenson, K. S., Jr., A. H. Wylie, and T. R. Wood, 1996, *Test Area North Site Conceptual Model and Proposed Hydrogeologic Studies Operable Unit 1-07B*, INEL-96/0105, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho.

TPR-165, "Low-Flow Groundwater Sampling," Revision 5, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho, January 2002.

TPR-166, "ISB Analyses Procedures," Revision 4, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho, June 2001.

TPR-4907, "Installation and Removal of Equipment in TAN Wells," Revision 0, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho, April 2002.

Wymore, R. A., J. M. Bukowski, and K. S. Sorenson, Jr., 2000, *Site Conceptual Model:1998 and 1999 Activities, Data Analysis, and Interpretation for Test Area North Operable Unit 1-07B*,

INEEL/EXT-2000-00188, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho, December 2000.

7.1 Documents to be Prepared

INEEL, "Statement of Work for IRC Analyses in Support of OU 1-07B ISB," Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho, TBD.

INEEL, "ISB Data Management Procedure for TAN Final Groundwater Remediation, OU 1-07B," Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho, TBD.

INEEL, "OU 1-07B ISB Remedial Action IRC Analyses Procedures," Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho, TBD.

TPR-TBD, "In Situ Multiparameter Monitoring Probe Operations," Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho.

Appendix A

Agency Comments and Resolutions for the In Situ Bioremediation Groundwater Monitoring Plan

Table A-1. EPA Region 10 comments on the In Situ Bioremediation Groundwater Monitoring Plan.

Comment No.	Page No.	Doc/Sect.	Comment	Resolution
EPA-1.	2	INEEL/EXT- 2002-00779 Fig 1	The "End of Remedial Action" requires definition, as "Institutional Controls" are a component of the remedial action	Comment incorporated. The wording will be revised to "End of Active ISB RA," and Institutional Controls will be deleted from Figure 1-1. The criterion "RAOs met" will be added for Decision #4.
EPA-2.		INEEL/EXT- 2002-00779 General	Given the nature of the hot spot, a geological cross section of the area within 250 ft downgradient and crossgradient of TSF-05 would be helpful	Comment noted. The Site Conceptual Model Reports are referenced in Section 1.1, last paragraph, as sources for this type of information.
EPA-3.	21	INEEL/EXT- 2002-00779 Tbl 5	For this project, the field blank should be 1/d minimum and 1/20 if a large number of samples are collected in a day	Comment incorporated.
EPA-4.	21	INEEL/EXT- 2002-00779 Tbl 5	Are any equipment rinsate blanks planned?	Comment noted. No equipment rinsates are planned since all wells will have dedicated pumps and no decon between wells is required.
EPA-5.	21	INEEL/EXT- 2002-00779 ' 6.2.2	What about reporting to Agencies (e.g., submittal of sampling data in accordance with FFA/CO ' 19.1)?	Comment incorporated. The GWMP Section 5 will be revised to state that quality assured data will be submitted as they become available, but no later than 120 days after sample collection; and that non-quality assured data supporting decision-making will be submitted as it becomes available; as per FFA/CO Sections 19.1 and 19.2.
EPA-6.	22	INEEL/EXT- 2002-00779 Tbl 6	It would be helpful to further refine the definition of "definitive," for example, are any data considered "critical" which requires 100% completeness?	Comment incorporated. Compliance data will be stated to require 100% completeness.
EPA-7.	22	INEEL/EXT- 2002-00779 ' 6.3.3	What about reporting to Agencies (e.g., submittal of sampling data in accordance with FFA/CO ' 19.1)?	Comment incorporated; please see the response to EPA Comment #5.

Table A-2. IDEQ comments on the In Situ Bioremediation Groundwater Monitoring Plan.

Comment No.	Page No.	Section	Location	Comment	Resolution
IDEQ-1.	1	Section 1	4th Bullet, Last Sentence	To be consistent with the remainder of the document, this sentence should state that this phase of the operations would be complete when VOC concentrations are below MCLs.	Comment noted. As stated on p. 4 for Decision 4, the compliance criteria for long-term operations, which will define when the active ISB RA is completed, will be specified in the ISB Remedial Action Report.
IDEQ-2.	4	Section 1	Decisions 1-4	None of these decision points include evaluation of radionuclides, especially Sr-90 or Cs-137. Although the current thought is that these radionuclides will adhere to the natural substrate, this assumption must be verified through this monitoring plan.	These COCs will be added as a monitoring requirement for MNA covered under the ISB sampling regime. As noted in EPA-1 the requirements, goals and objectives for radionuclides will be defined in the MNA work plan.
IDEQ-3.	4	Section 1	2nd Paragraph	We should identify in this document what types of data and how this data will fulfill other remedies' respective data needs.	Comment incorporated. The ISB RAWP will include a crosswalk showing how PM/CM monitoring for each remedy component support the overall remedy monitoring requirements, and thereby other remedy component requirements.
IDEQ-4.	9	Section 3	Tables 3-1 and 3-2	Applicable radionuclides need to be added to these tables.	Comment incorporated.
IDEQ-5.	11	Section 3.3		As this paragraph currently reads, the purge water will be package and handled as hazardous waste. Either delete purge from the list of waste or state that purge water and developments may be treated through the NPTF and reinjected.	Comment incorporated. The text will be revised to read "...all wastes...will be managed in compliance with the Waste Management Plan..."
IDEQ-6.	12	Section 3.1	Table 3-3	A Method Detection Limit (MDL) is presented for all constituents and analytical methods except for cis-DCE. Please provide a MDL to complete this table. If the annual definitive confirmation data is the final decision mechanism to determine compliance with MCLs or to be used as a risk base decision-making tool, the MDLs are too high. This is especially important considering a ±14% definitive data criteria	a) Comment incorporated. b) Comment noted. The annual definitive confirmation data are not used for determining compliance with MCLs nor for risk assessment, but are used to upgrade the quality of the VOC SPME-GC-ECD data to "screening with definitive confirmation" as per the QAPjP definition. Therefore MCLs need not

Table A-2. (continued).

Comment No.	Page No.	Section	Location	Comment	Resolution
				for TCE, as per Table 6-2. A MDL of 3 or even 4 µg/L will eliminate a lot of future questions. The MCL for vinyl chloride is 2 µg/L; therefore, the MDL for Method 8260B must also be 2 µg/L or less. Add Sr-90 and Cs-137 to the radionuclide list.	definition. Therefore MCLs need not match MDLs. c) Comment incorporated, Sr-90 and Cs-137 will be added to the analyte list.
IDEQ-7.	13	Ibid.		Please correct PH to pH, the standard designation. Specific conductivity is usually reported as microS/cm (µS/cm) and not as milliS/cm (mS/com). Please verify the units intended for this parameter and correct as needed.	a) Comment incorporated. b) millisiemens (mS) per cm are the correct units for the in situ water quality probes used.
IDEQ-8.	17	Section 4.1.5		It may be worth noting potential wells that the FTL may identify for gamma spectrometry prior to shipment. One well that would be considered is TAN-37. Obviously, there are reasons to not make this identification but it is worth discussion between the agencies.	Comment noted.
IDEQ-9.	21	Section 6.1.1	Table 6-1	This table only calls for 5% duplicate sampling for the field laboratory. Justification is needed to use less than the 10% duplicate sampling called for in the site-wide QAPjP. Please provide this justification or increase the number of duplicate samples.	Comment noted. The duplicate frequency of 1 per 20 samples (5%) is the minimum specified in Table 1-5 of the QAPjP. Additionally, a minimum duplicate frequency of 1/day will be added.
IDEQ-10.	21	Section 6.3.1		It is not clear from this description if the QAPjP will be followed for the number of duplicate samples that will be collected and analyzed. It appears from Appendix A that the percentage is less than 10%, but greater than 20%. Please clarify the level of QA samples that will be collected and analyzed.	Comment noted. Please see response to IDHW Comment #9.

Table A-2. (continued).

Comment No.	Page No.	Section	Location	Comment	Resolution
IDEQ-11.	B-1	Appendix B		The values presented for "Sampling Depth" are not consistent with the depths presented for "Length of discharge line" and "Screened interval(s)." For instance, the sampling depth for TSF-05A is stated as 235 ft but the discharge line is 275 ft. TAN-25 is shown with a sampling depth of 257 ft but the discharge line is only 218 ft. Please verify the entries in this table and correct as needed. If there is a reason the numbers do not match, please provide a footnote to explain how the numbers work.	Comment incorporated.

Appendix B

Agency Comments and Resolutions for the In Situ Bioremediation Groundwater Monitoring Plan

Table B-1. EPA Region 10 Comments for the In Situ Bioremediation Groundwater Monitoring Plan.

Comment No.	Page No.	Doc/Section	Comment	Resolution
EPA-1.	10	INEEL/EXT–2002-00779 Table 3-2	There should be a footnote identifying that the long-term compliance monitoring sampling strategy will be submitted in the Remedial Action Report, a primary document.	Agree; footnote added.
EPA-2.	20	INEEL/EXT–2002-00779 Sect 5	Please include that the Agencies will be provided with sampling results in both written and electronic format (e.g., Excel spreadsheet)	Agree.

Table B-2. IDEQ Comments for the In Situ Bioremediation Groundwater Monitoring Plan.

Comment No.	Page No.	Doc/Section	Comment	Resolution
IDEQ-1.	9	INEEL/EXT-2002-00779 Section 3 Tables 3-1 & 3-2	Applicable radionuclides need to be added to these tables. Sr-90 and Cs-137 were added to Table 3-1, however, only for monitoring well TAN-29 on a quarterly basis. It appears to DEQ that sampling a number of monitoring wells along the suspected axis of the plume will provide trend data, which will be much more useful than the proposed sampling routine.	A crosswalk table has been added to Section 2 of the RAWP (Table 2-2), which maps the different monitoring requirements to the remedial component for which it is applicable. TAN-29 monitoring has been added as a placeholder until the NPTF contingent/upgradient monitoring strategy is in place.
IDEQ-2.		INEEL/EXT-2002-00779 Section 3 Table 3-1	TAN-27's location near the outer edge of the plume makes it a valuable monitoring well. Whether inadvertently left out of Table 3-1 or not, it should be added.	Agree; comment incorporated.
IDEQ-3.		INEEL/EXT-2002-00779 Appendix D Table D-1	Some values presented for "Sampling Depth" are not consistent with the depths presented for "Length of discharge line" and "Screened interval(s)." Please verify the entries in this table and correct as needed. If there is a reason the numbers do not match, please provide a footnote to explain how the numbers work, as was done for TSF-05.1 Monitoring wells TSF-05A and TAN-25 were corrected; however, there are still several wells in the table where the sampling depth and discharge line length do not match, such as TAN-10A.	Agree; comment incorporated.

Appendix C

Example Sampling and Analysis Plan Tables

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INTERIM_MONTHLY

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 10/17/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - INTERIM MONTHLY (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Cell Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	MB	1N	R8	VA	VE									
INM000	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	1			1		1	1	1										
INM001	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	1			1		1	1	1										
INM002	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	1		1	1		1	1	1										
INM003	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	1			1		1	1	1										
INM004	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	1					1	1	1										
INM005	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	1	1	1	1					1	1		1									
INM006	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	1					1	1	1										
INM007	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	1					1	1	1										
INM008	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-31 (1219)	255	2	2	2	2			1		2	2	2										
INM009	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1183)	240	1	1	1	1					1	1	1										
INM010	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1183)	272	1	1	1		1				1	1	1										
INM011	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1183)	375	1	1	1	1				1	1	1	1										
INM012	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (346)	233	1	1	1	1					1	1	1										
INM013	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-02 (339)	241	1	1	1	1					1	1	1										
INM014	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	1					1	1	1										
INM015	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				2							2										

The sampling activity displayed on this table represents the first six characters of the sample identification number

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Microbiological Analysis

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Tritium

AT11: VOCs (TAL)

AT12: VOCs (TAL) - MS/MSD

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, and COD

Samples will be sent to IRC except tritium which will be shipped to an off-site lab

Field Standard Addition will only be collected in months when a lactate injection has not been done.

TAN-37C microbiological sample is for an LDRD project at IRC

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INTERIM_MONTHLY

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 10/17/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - INTERIM MONTHLY (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description					Planned Date	Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method		Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	MB	1N	R6	VA	VE								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Microbiological Analysis

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Tritium

AT11: VOCs (TAL)

AT12: VOCs (TAL) - MS/MSD

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, and COD

Samples will be sent to IRC except tritium which will be shipped to an off-site lab

Field Standard Addition will only be collected in months when a lactate injection has not been done -

TAN-37C microbiological sample is for an LDRD project at IRC

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INTERIM_QUARTER

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 10/17/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - INTERIM QUARTERLY (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	MB	1N	RB	R8	VA	VE							
INS000	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1			1		1	2								
INS001	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1			1		1	2								
INS002	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2			1			1		1	2								
INS003	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	2			1			1		1	2								
INS004	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2						1		1	2								
INS005	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4						2		2	4								
INS006	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1		1	1	1	2								
INS007	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2						1		1		2							
INS008	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2			1			1		1	2								
INS009	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1183)	240	1	1	1		2					1		1	2								
INS010	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1183)	272	1	1	1	2						1		1	2								
INS011	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1183)	375	1	1	1	2					1	1		1	2								
INS012	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2		1				1		1	2								
INS013	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2						1		1	2								
INS014	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	2				1		1	1	1	2								
INS015	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				3									3								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Microbiological Analysis

AT10: Propionate/Butyrate/Acetate/Lactate

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, and COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Analysis Suites:

Analysis Suite #1: Sulfate, iron (inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INTERIM_QUARTER

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 10/17/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - INTERIM QUARTERLY (PM) Project Manager: NELSON, L. D.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F8	R5	R4	MB	IN	RB	R8	VA	VE						

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Microbiological Analysis

AT10: Propionate/Butyrate/Acetate/Lactate

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, and COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INTERIM_SEMI

SAP Number: INEEL/EXT-2002-00776

DRAFT

Date: 10/17/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - INTERIM SEMIANNUAL (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMC Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C8	EG	E3	F8	R5	R4	MB	1N	R8	R6	VA	VE						
INS016	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1			1		1	2							
INS017	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1			1		1	2							
INS018	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2			1			1		1	2							
INS019	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	388	1	1	1	2			1			1		1	2							
INS020	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2		1				1		1	2							
INS021	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1006)	240	2	2	2	4						2		2	4							
INS022	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1		1	1	1	2							
INS023	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2						1		1		2						
INS024	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2			1			1		1	2							
INS025	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1		2					1		1	2							
INS026	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	2						1		1	2							
INS027	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2					1	1		1	2							
INS028	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2						1		1	2							
INS029	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2						1		1	2							
INS030	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	2				1		1	1	1	2							
INS031	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				3									3							

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Microbiological Analysis

AT10: Propionate/Butyrate/Acetate/Lactate

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, and COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INTERIM_SEMI

SAP Number: INEEL/EXT-2002-00779

Date: 10/17/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - INTERIM SEMIANNUAL (PM) Project Manager: NELSON, L. O.

DRAFT

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	MH	1N	RB	R8	VA	VE						

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Microbiological Analysis

AT10: Propionate/Butyrate/Acetate/Lactate

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT11: Sr 90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, and COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INTERIM_ANNUAL

SAP Number: INEEL/EXT-2002-00778

DRAFT

Date: 11/04/2002 Plan Table Revision: 1.0 Project: OU 1-07B IBR REMEDIAL ACTION GW/M - INTERIM ANNUAL (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																						
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	GA	1N	RB	R8	VA	VE						
IAN000	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1		1	1		1	2							
IAN001	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1		1	1		1	2							
IAN002	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-25 (1117)	215	1	1	1	2			1		1	1		1	2							
IAN003	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-26 (1118)	369	1	1	1	2			1		1	1		1	2							
IAN004	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2						1		1	2							
IAN005	REG/QC	GROUND WATER	DUP		11/04/2002	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4					2	2		2	4							
IAN006	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	1	2							
IAN007	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2		1				1		1	2							
IAN008	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2			1		1	1		1		2						
IAN009	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2						1		1	2							
IAN010	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1		2					1		1	2							
IAN011	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2						1		1	2							
IAN012	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2						1		1	2							
IAN013	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2						1		1	2							
IAN014	QC	WATER	FBLK		11/04/2002	TAN	FIELD BLANK	QC	NA	1	1	1	2				1	1	1	1	1	2							
IAN015	QC	WATER	TBLK		11/04/2002	TAN	TRIP BLANK	QC	NA				3									3							

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Gross Alpha

AT10: Propionate/Butyrate/Acetate/Lactate

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INTERIM_ANNUAL

SAP Number: INEEL/EX1-2002-00779

DRAFT

Date: 11/04/2002 Plan Table Revision: 1.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - INTERIM ANNUAL (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	GA	IN	RB	R6	VA	VE						

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Gross Alpha

AT10: Propionate/Butyrate/Acetate/Lactate

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, COD

Soil samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INITIAL_MONTHLY

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 10/29/2002 Plan Table Revision: 0.0 Project: OU 1-07B IBB REMEDIAL ACTION GW - INITIAL MONTHLY (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	1N	R5	VA	VE										
IOM000	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	1			1	1	1	1											
IOM001	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	1			1	1	1	1											
IOM002	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	1			1	1	1	1											
IOM003	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	369	1	1	1	1		1	1	1	1	1											
IOM004	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	1				1	1	1											
IOM005	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	2				2	2	2											
IOM006	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	1				1	1	1											
IOM007	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	1				1	1		1										
IOM008	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	1			1	1	1	1											
IOM009	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1		1			1	1	1											
IOM010	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	1				1	1	1											
IOM011	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	1				1	1	1											
IOM012	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	1				1	1	1											
IOM013	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-02 (339)	241	1	1	1	1				1	1	1											
IOM014	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-1	TBD	1	1	1	1				1	1	1											
IOM015	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-2	TBD	1	1	1	1				1	1	1											
IOM016	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	1				1	1	1											

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Propionate/Butyrate/Acetate/Lactate

AT9: Tritium

AT10: VOCs (TAL)

AT11: VOCs (TAL) - MS/MSD

AT12:

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INITIAL_MONTHLY

SAP Number: INEEL/EXT-2002-00779

Date: 10/29/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - INITIAL MONTHLY (PM) Project Manager: NELSON, L. O.

DRAFT

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	ES	F6	R5	1N	R8	VA	VE									
IOM017	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				2						2										

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Propionate/Butyrate/Acetate/Lactate

AT9: Tritium

AT10: VOCs (TAL)

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT11: VOCs (TAL) - MS/MSD

AT12:

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INITIAL_QRTLY

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 11/04/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - INITIAL QUARTERLY (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																							
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20				
										A1	3A	C5	EG	E3	F6	R5	R4	1N	R8	R8	VA	VE											
IQT000	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1		1		1	2												
IQT001	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1		1		1	2												
IQT002	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2			1		1		1	2												
IQT003	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	2		1	1		1		1	2												
IQT004	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1008)	235	1	1	1		2				1		1	2												
IQT005	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4					2		2	4												
IQT006	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	2												
IQT007	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2					1		1	2												
IQT008	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2			1		1		1	2												
IQT009	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2					1		1	2												
IQT010	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	2					1		1	2												
IQT011	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2					1		1	2												
IQT012	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2					1		1		2											
IQT013	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-02 (339)	241	1	1	1	2					1		1	2												
IQT014	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-1	NA	1	1	1	2					1		1	2												
IQT015	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-2	NA	1	1	1	2					1		1	2												
IQT016	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	2				1	1	1	1	2												

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MS/MSD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL) and Ethane/Ethene/Methane analyses will be collected. One set will go to IRC and the other to the off-site laboratory.

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INITIAL_QRTLY

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 11/04/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - INITIAL QUARTERLY (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	CS	EG	E3	F6	R5	R4	1N	RB	R8	VA	VE							
IQT017	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				3								3								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MS/MSD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL) and Ethane/Ethene/Methane analyses will be collected. One set will go to IRC and the other to the off-site laboratory.

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INITIAL_SEMI

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 11/04/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - INITIAL SEMIANNUAL (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	OS	EG	E3	F6	R5	R4	1N	RB	R8	VA	VE							
IQS000	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2		1	1		1		1	2								
IQS001	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1		1		1	2								
IQS002	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1117)	215	1	1	1	2			1		1		1	2								
IQS003	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	2			1		1		1	2								
IQS004	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1006)	235	1	1	1	2					1		1	2								
IQS005	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4					2		2	4								
IQS006	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	2								
IQS007	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2					1		1		2							
IQS008	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	256	1	1	1	2			1		1		1	2								
IQS009	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2					1		1	2								
IQS010	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	2					1		1	2								
IQS011	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1		2				1		1	2								
IQS012	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2					1		1	2								
IQS013	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2					1		1	2								
IQS014	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-1	NA	1	1	1	2					1		1	2								
IQS015	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-2	NA	1	1	1	2					1		1	2								
IQS016	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	2				1	1	1	1	2								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MS/MSD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL) and Ethane/Ethene/Methane analyses will be collected. One set will go to IRC and the other to the off-site laboratory.

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INITIAL_SEMI

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 11/04/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - INITIAL SEMIANNUAL (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	1N	R3	R2	VA	VE							
IQS017	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				3								3								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MS/MSD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL) and Ethane/Ethene/Methane analyses will be collected. One set will go to IRC and the other to the off-site laboratory.

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INITIAL_ANNUAL

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 11/04/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - INITIAL ANNUAL (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coil Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	GA	1N	RB	R6	VA	VE						
IAN016	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1		1	1		1	2							
IAN017	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1		1	1		1	2							
IAN018	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2			1		1	1		1		2						
IAN019	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	369	1	1	1	2			1		1	1		1	2							
IAN020	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	255	1	1	1	2						1		1	2							
IAN021	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4					2	2		2	4							
IAN022	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	1	2							
IAN023	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2						1		1	2							
IAN024	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1		2		1		1	1		1	2							
IAN025	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2						1		1	2							
IAN026	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	2						1		1	2							
IAN027	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2						1		1	2							
IAN028	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2						1		1	2							
IAN029	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2		1				1		1	2							
IAN030	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-1	NA	1	1	1	2						1		1	2							
IAN031	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-2	NA	1	1	1	2						1		1	2							
IAN032	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	2				1	1	1	1	1	2							

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Gross Alpha

AT10: Propionate/Butyrate/Acetate/Lactate

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL) and Ethane/Ethene/Methane analyses will be collected. One set will go to IRC and the other to the off-site laboratory.

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INITIAL_ANNUAL

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 11/04/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - INITIAL ANNUAL (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E5	F6	R5	R4	GA	IN	RB	R6	VA	VE						
IAN033	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				3									3							

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Gross Alpha

AT10: Propionate/Butyrate/Acetate/Lactate

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL) and Ethane/Ethene/Methane analyses will be collected. One set will go to IRC and the other to the off-site laboratory.

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: INIT_COMPLIANCE

SAP Number: INEEL/EXT-2002-00779

Date: 11/04/2002 Plan Table Revision: 0.0 Project: OU 1-07B IBB REMEDIAL ACTION GW - INITIAL COMPLIANCE - QUART Project Manager: NELSON, L. O.

DRAFT

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										VA	VE																		
IOC000	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1006)	242	2																			
IOC001	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	313		1																		
IOC002	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1																			
IOC003	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA	1																			

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: VOCs (TAL)

AT2: VOCs (TAL) - MS/MSD

AT3:

AT4:

AT5:

AT6:

AT7:

AT8:

AT9:

AT10:

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT11:

AT12:

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Analysis Suites:

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: OPTIMIZ_MONTHLY

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 11/04/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - OPTIMIZATION MONTHLY (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	1N	R8	VA	VE									
OPT000	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	1			1	1	1	1										
OPT001	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	1			1	1	1	1										
OPT002	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1118A)	218	1	1	1	1			1	1	1	1										
OPT003	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	1		1	1	1	1	1										
OPT004	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	1				1	1	1										
OPT005	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	2				2	2	2										
OPT006	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	1				1	1	1										
OPT007	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	1				1	1		1									
OPT008	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	1			1	1	1	1										
OPT009	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	1				1	1	1										
OPT010	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	1				1	1	1										
OPT011	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1		1			1	1	1										
OPT012	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	1				1	1	1										
OPT013	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-02 (339)	241	1	1	1	1				1	1	1										
OPT014	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-1	TBD	1	1	1	1				1	1	1										
OPT015	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-2	TBD	1	1	1	1				1	1	1										
OPT016	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	1				1	1	1										

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Propionate/Butyrate/Acetate/Lactate

AT9: Tritium

AT10: VOCs (TAL)

AT11: VOCs (TAL) - MS/MSD

AT12:

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: OPTIMIZ_MONTHLY

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 11/04/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - OPTIMIZATION MONTHLY (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																			
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F8	R5	1N	R6	VA	VE									
OPT017	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				2						2										

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Propionate/Butyrate/Acetate/Lactate

AT9: Tritium

AT10: VOCs (TAL)

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT11: VOCs (TAL) - MS/MSD

AT12:

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: OPTIMIZ_QUARTER

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 11/11/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - OPTIMIZATION QURTRLY (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMC Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	1N	RB	R6	VA	VE							
MTZ000	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1		1		1	2								
MTZ001	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1		1		1	2								
MTZ002	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2			1		1		1	2								
MTZ003	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	2			1		1		1	2								
MTZ004	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-27 (1008)	235	1	1	1	2					1		1	2								
MTZ005	REG/QC	GROUND WATER	DUP			TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4					2		2	4								
MTZ006	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	2								
MTZ007	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2					1		1		2							
MTZ008	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2			1		1		1	2								
MTZ009	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-37A (1183)	240	1	1	1		2				1		1	2								
MTZ010	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-37B (1183)	272	1	1	1	2					1		1	2								
MTZ011	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-37C (1183)	375	1	1	1	2					1		1	2								
MTZ012	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2		1			1		1	2								
MTZ013	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-02 (339)	241	1	1	1	2					1		1	2								
MTZ014	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-1	TBD	1	1	1	2					1		1	2								
MTZ015	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-2	TBD	1	1	1	2					1		1	2								
MTZ034	QC	GROUND WATER	FBLK			TAN	FIELD BLANK	QC	NA	1	1	1	2				1	1	1	1	2								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MS/MSD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, and COD

Soil samples will be collected at all locations for VOCs (TAL) and Ethene/Ethane/Methane analyses

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: OPTIMIZ_QUARTER

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 11/11/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - OPTIMIZATION QURTRLY (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C6	EG	E3	F5	R5	R4	1N	RB	R6	VA	VE							
MT2035	QC	GROUND WATER	TBLK			TAN	TRIP BLANK	QC	NA				3								2								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MS/MSD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, and COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Analysis Suites:

Analysis Suite #1: Sulfate, iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: OPTIMIZ_SEMI

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 07/19/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - OPTIMIZATION SEMI (PM) Project Manager: NELSON, L. O.

Sampler: Carrel, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	1N	RB	R8	VA	VE							
OSM000	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1		1		1	2								
OSM001	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1		1		1	2								
OSM002	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2			1		1		1	2								
OSM003	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	369	1	1	1	2			1		1		1	2								
OSM004	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2					1		1	2								
OSM005	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4					2		2	4								
OSM006	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	2								
OSM007	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2					1		1		2							
OSM008	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2			1		1		1	2								
OSM009	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2		1			1		1	2								
OSM010	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	2					1		1	2								
OSM011	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1		2				1		1	2								
OSM012	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2					1		1	2								
OSM013	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-02 (339)	241	1	1	1	2					1		1	2								
OSM014	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-1	TBD	1	1	1	2					1		1	2								
OSM015	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-2	TBD	1	1	1	2					1		1	2								
OSM016	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	2				1	1	1	1	2								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MS/MSD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL will be collected. One set will go to IRC and the other to the off-site laboratory.

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: OPTIMIZ_SEMI

SAP Number: INEEL/EXT-2002-00779

Date: 07/19/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - OPTIMIZATION SEMI (PM) Project Manager: NELSON, L. O.

DRAFT

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	1N	RB	RB	VA	VE							
OSM017	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				3								3								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MS/MSD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL will be collected. One set will go to IRC and the other to the off-site laboratory.

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: OPTIMIZ_ANNUAL

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 11/11/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - OPTIMIZATION ANNUAL (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																							
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F5	R5	R4	GA	1N	RB	R6	VA	VE						
MTZ016	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1		1	1		1	2							
MTZ017	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1		1	1		1	2							
MTZ018	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2			1		1	1		1	2							
MTZ019	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	2			1		1	1		1	2							
MTZ020	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2						1		1	2							
MTZ021	REG/QC	GROUND WATER	DUP			TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4					2	2		2	4							
MTZ022	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	1	2							
MTZ023	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2		1				1		1	2							
MTZ024	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2			1		1	1		1		2						
MTZ025	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-37A (1183)	240	1	1	1	2						1		1	2							
MTZ026	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-37B (1183)	272	1	1	1		2					1		1	2							
MTZ027	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-37C (1183)	375	1	1	1	2						1		1	2							
MTZ028	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2						1		1	2							
MTZ029	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2						1		1	2							
MTZ030	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-1	TBD	1	1	1	2						1		1	2							
MTZ031	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-2	TBD	1	1	1	2						1		1	2							
MTZ032	QC	WATER	FBLK			TAN	FIELD BLANK	QC	NA	1	1	1	2				1	1	1	1	1	2							

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Gross Alpha

AT10: Propionate/Butyrate/Acetate/Lactate

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: OPTIMIZ_ANNUAL

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 11/11/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISS REMEDIAL ACTION GWM - OPTIMIZATION ANNUAL (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	GA	1N	RB	R8	VA	VE						
MTZ033	QC	WATER	TBLX			TAN	TRIP BLANK	QC	NA				3									3							

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Gross Alpha

AT10: Propionate/Butyrate/Acetate/Lactate

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: OPT_COMPLIANCE

SAP Number:

Date: 07/18/2002 Plan Table Revision: 0.0 Project: OPTIMIZATION - COMPLIANCE MONITORING - QUARTERLY Project Manager: NELSON, L. O.

DRAFT

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										VA	VE																		
OCM000	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-1			1																		
OCM001	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	PMW-2		2																			
OCM002	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1																			
OCM003	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA	1																			

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: VOCs (TAL)

AT2: VOCs (TAL) - MS/MSD

AT3:

AT4:

AT5:

AT6:

AT7:

AT8:

AT9:

AT10:

AT11:

AT12:

AT13:

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Analysis Suites:

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: LTERM_QUARTER

DRAFT

SAP Number: INEEL/EXT-2002-00779

Sampler: Carroll, R. E.

Date: 11/11/2002 Plan Table Revision: 0.0 Project: OU I-07B ISB REMEDIAL ACTION GWM - LONG TERM QUARTERLY (PM) Project Manager: NELSON, L. O. SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	FB	R5	R4	1N	RB	RB	VA	VE								
LTQ016	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1		1		1	2									
LTQ017	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1		1		1	2									
LTQ018	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1137)	218	1	1	1	2			1		1		1	2									
LTQ019	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1138)	389	1	1	1	2			1		1		1	2									
LTQ020	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2					1		1	2									
LTQ021	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4					2		2	4									
LTQ022	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	2									
LTQ023	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2					1		1		2								
LTQ024	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2			1		1		1	2									
LTQ025	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1		2				1		1	2									
LTQ026	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	2					1		1	2									
LTQ027	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2					1		1	2									
LTQ028	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2		1			1		1	2									
LTQ029	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2					1		1	2									
LTQ030	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	P&W-1	TBD	1	1	1	2					1		1	2									
LTQ031	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	P&W-2	TBD	1	1	1	2					1		1	2									
LTQ032	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	2				1	1	1	1	2									

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity
AT2: Analysis Suite #1
AT3: Chemical Oxygen Demand
AT4: Ethane/Ethene/Methane
AT5: Ethane/Ethene/Methane - MS/MSD
AT6: Field Standard Addition - QC
AT7: Gamma Screen
AT8: Gamma Spec
AT9: Propionate/Butyrate/Acetate/Lactate
AT10: Sr-90
AT11: Tritium
AT12: VOCs (TAL)
AT13: VOCs (TAL) - MS/MSD
AT14:
AT15:
AT16:
AT17:
AT18:
AT19:
AT20:

Comments:
VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, and COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Analysis Suites:
Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: LTERM_QUARTER

SAP Number: INEEL/EXT-2002-00779

Date: 11/11/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - LONG TERM QUARTERLY (PM) Project Manager: NELSON, L. O.

DRAFT

Sampler: Carroll, R. E.

SMC Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	1N	R6	R8	VA	VE							
LTQ033	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				3								3								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MS/MSD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, and COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Analysis Suites:

Analysis Suite #1: Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: LTERM_SEMI

SAP Number: INEEL/EXT-2002-00770

DRAFT

Date: 11/11/2002 Plan Table Revision: 0.0 Project: OU 1-07B-ISB REMEDIAL ACTION GW - LONG TERM SEMI (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Cell Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C6	EG	E3	F4	R5	R4	1N	RB	R8	VA	VE							
LTS033	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1		1		1	2								
LTS034	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1		1		1	2								
LTS035	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1117)	215	1	1	1	2			1		1		1	2								
LTS036	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	2			1		1		1	2								
LTS037	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2					1		1	2								
LTS038	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4					2		2	4								
LTS039	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	2								
LTS040	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2					1		1		2							
LTS041	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1210)	256	1	1	1	2			1		1		1	2								
LTS042	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1153)	240	1	1	1	2		1			1		1	2								
LTS043	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1153)	272	1	1	1	2					1		1	2								
LTS044	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1153)	375	1	1	1		2				1		1	2								
LTS045	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (346)	233	1	1	1	2					1		1	2								
LTS046	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-02 (339)	241	1	1	1	2					1		1	2								
LTS047	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-1	TBD	1	1	1	2					1		1	2								
LTS048	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	PMW-2	TBD	1	1	1	2							1	2								
LTS049	QC	GROUND WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	2				1	1	1	1	2								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MS/MSD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL will be collected. One set will go to IRC and the other to the off-site laboratory.

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: LTERM_SEMI

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 11/11/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - LONG TERM SEMI (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	EG	E3	F6	R5	R4	1N	R8	R6	VA	VE							
LTS050	QC	GROUND WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				3								3								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Propionate/Butyrate/Acetate/Lactate

AT10: Sr-90

AT11: Tritium

AT12: VOCs (TAL)

AT13: VOCs (TAL) - MS/MSD

AT14:

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Split samples for VOCs (TAL) will be collected. One set will go to IRC and the other to the off-site laboratory.

Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Sampling and Analysis Plan Table for Chemical and Radiological Analysis

Plan Table Number: LTERM_ANNUAL

SAP Number: INEEL/EXT-2002-00779

DRAFT

Date: 11/11/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - LONG TERM ANNUAL (PM) Project Manager: NELSON, L. O.

Sampler: Carroll, R. E.

SMO Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																					
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	C5	E0	E3	F6	R5	R4	QA	1N	RB	R6	VA	VE						
LTA016	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1		1	1		1	2							
LTA017	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2			1		1	1		1	2							
LTA018	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-25 (1117)	216	1	1	1	2			1		1	1		1	2							
LTA019	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-26 (1115)	389	1	1	1	2			1		1	1		1	2							
LTA020	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2						1		1	2							
LTA021	REG/QC	GROUND WATER	DUP		/ /	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4					2	2		2	4							
LTA022	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2				1	1	1	1	1	2							
LTA023	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2		1				1		1	2							
LTA024	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2			1		1	1		1		2						
LTA025	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2						1		1	2							
LTA026	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1		2					1		1	2							
LTA027	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2						1		1	2							
LTA028	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-10A (548)	233	1	1	1	2						1		1	2							
LTA029	REG	GROUND WATER	GRAB		/ /	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2						1		1	2							
LTA030	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-1	TBD	1	1	1	2						1		1	2							
LTA031	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-2	TBD	1	1	1	2						1		1	2							
LTA032	QC	WATER	FBLK		/ /	TAN	FIELD BLANK	QC	NA	1	1	1	2					1	1		1	2							

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Gross Alpha

AT10: Propionate/Butyrate/Acetate/Lactate

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethane, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, COC

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Plan Table Number: LTERM_ANNUAL

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll R. E.

Date: 11/11/2002 Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GWM - LONG TERM ANNUAL (PM) Project Manager: NELSON, L. O. S&O Contact: KIRCHNER, D. R.

Sample Description						Sample Location				Enter Analysis Types (AT) and Quantity Requested																				
Sampling Activity	Sample Type	Sample Matrix	Cont Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8	AT9	AT10	AT11	AT12	AT13	AT14	AT15	AT16	AT17	AT18	AT19	AT20
										A1	3A	CS	EG	E3	F8	R5	R4	GA	1N	RB	R8	VA	VE							
LTA033	QC	WATER	TBLK		/ /	TAN	TRIP BLANK	QC	NA				3									3								

The sampling activity displayed on this table represents the first six characters of the sample identification number.

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.

AT1: Alkalinity

AT2: Analysis Suite #1

AT3: Chemical Oxygen Demand

AT4: Ethane/Ethene/Methane

AT5: Ethane/Ethene/Methane - MS/MSD

AT6: Field Standard Addition - QC

AT7: Gamma Screen

AT8: Gamma Spec

AT9: Gross Alpha

AT10: Propionate/Butyrate/Acetate/Lactate

AT11: Sr-90

AT12: Tritium

AT13: VOCs (TAL)

AT14: VOCs (TAL) - MS/MSD

AT15:

AT16:

AT17:

AT18:

AT19:

AT20:

Comments:

VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene

Field Tests - Analysis Suite #1, alkalinity, COD

Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses

Analysis Suites:

Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)

Contingencies:

Appendix D

OU 1-07B ISB Monitoring Well Information

Information for Appendix D will be supplied at a later date.