

TA-18 1/1/96

# **Expedited Cleanup Completion Report for**

**Potential Release Site  
18-001(b)  
Former TA-18 Sanitary Sewer Line**

**Field Unit 2**

**Environmental  
Restoration  
Project**

**January 1996  
Revision 1**

**A Department of Energy  
Environmental Cleanup Program**

**Los Alamos**  
NATIONAL LABORATORY

LA-UR-96-375



1486

## Expedited Cleanup Plan Completion Report Potential Release Site PRS 18-001(b) Former TA-18 Sanitary Sewer Line

### 1.0 SUMMARY OF EXPEDITED CLEANUP

#### 1.1 Overview

Potential Release Site (PRS) 18-001(b) is the site of a former sanitary sewer line. This sewer line served the central sanitary sewer system for TA-18. The sewer line was decommissioned when the sanitary sewage waste from TA-18 was redirected to the new TA-46 Waste Treatment Facility. This PRS is included in the Hazardous and Solid Waste Amendments module to the Los Alamos National Laboratory, Resource Conservation and Recovery Act, EPA ID NM0890010515.

PRS 18-001(b) consisted of an estimated 5,000 ft of 4-in.-diameter vitrified clay pipe interconnected by 11 concrete manholes. The manholes were numbered TA-18-160, -161, and -169 through -177. The sewer line continued on to discharge effluent into two sewage lagoons [PRS 18-001(a)]. The sanitary sewer line was placed in service before 1969 and remained in service until October of 1992. Liquid waste discharged into this PRS consisted of sanitary sewage, wash water from industrial drains and sinks in laboratories, and photochemical wastes.

During September and October 1993, multimedia samples were collected from the sewer line to ascertain the potential effect of the inactive sewer system on public health and the environment. The results of the investigation were presented in the RFI Report for Operable Unit 1093 (1995). An expedited cleanup (EC) plan for this PRS was submitted as part of a Class III permit modification in March 1995. As presented in the EC Plan and in the response to an associated notice of deficiency (NOD), the data indicate that no RCRA regulated COPCs are present in the sewer line at concentrations above cleanup levels.

#### 1.2 Expedited Cleanup

The cleanup for PRS 18-001(b) began on September 8, 1995 and was completed by September 15, 1995. The cleanup followed the EC Plan for PRS 18-001(b) with the addition of a monitoring well and the sampling of water in Manhole TA-18-170 (Figure 1).

As proposed in the EC Plan, approximately 1 cubic yard of concrete was poured into each manhole as a means of plugging the inlet and outlet portions of the sewer line at each manhole. The top portion of each manhole was lifted off, removed, and after being checked for radionuclides, was disposed of properly.

### 2.0 SITE RESTORATION

The open excavations at each manhole were backfilled with soil and graded to blend the backfill with the surrounding natural terrain. Finally, the areas at the manholes were seeded with natural grasses as a soil conservation measure.

### 3.0 MODIFICATIONS TO THE EC PLAN

A Notice of Deficiency (NOD) was issued by EPA after submission of the EC Plan. The NOD raised concern that stabilization of the sediment in the manhole with concrete was not appropriate if the sediments presented an unacceptable risk. As noted in the EC Plan, the measured concentrations of some chemicals of potential concern (COPCs) were above the SAL. In LANL's response to the NOD, cleanup goals (based on an industrial exposure scenario) for the five COPCs that were greater than SAL were calculated (Table 1). The maximum measured values of the COPCs in the sediment were substantially less than these cleanup goals. Therefore no removal or stabilization of the sediments was necessary. The concrete placed in the bottom of the manhole serves only to prevent gradual subsurface erosion of the fill material by water flowing in the sewer line.

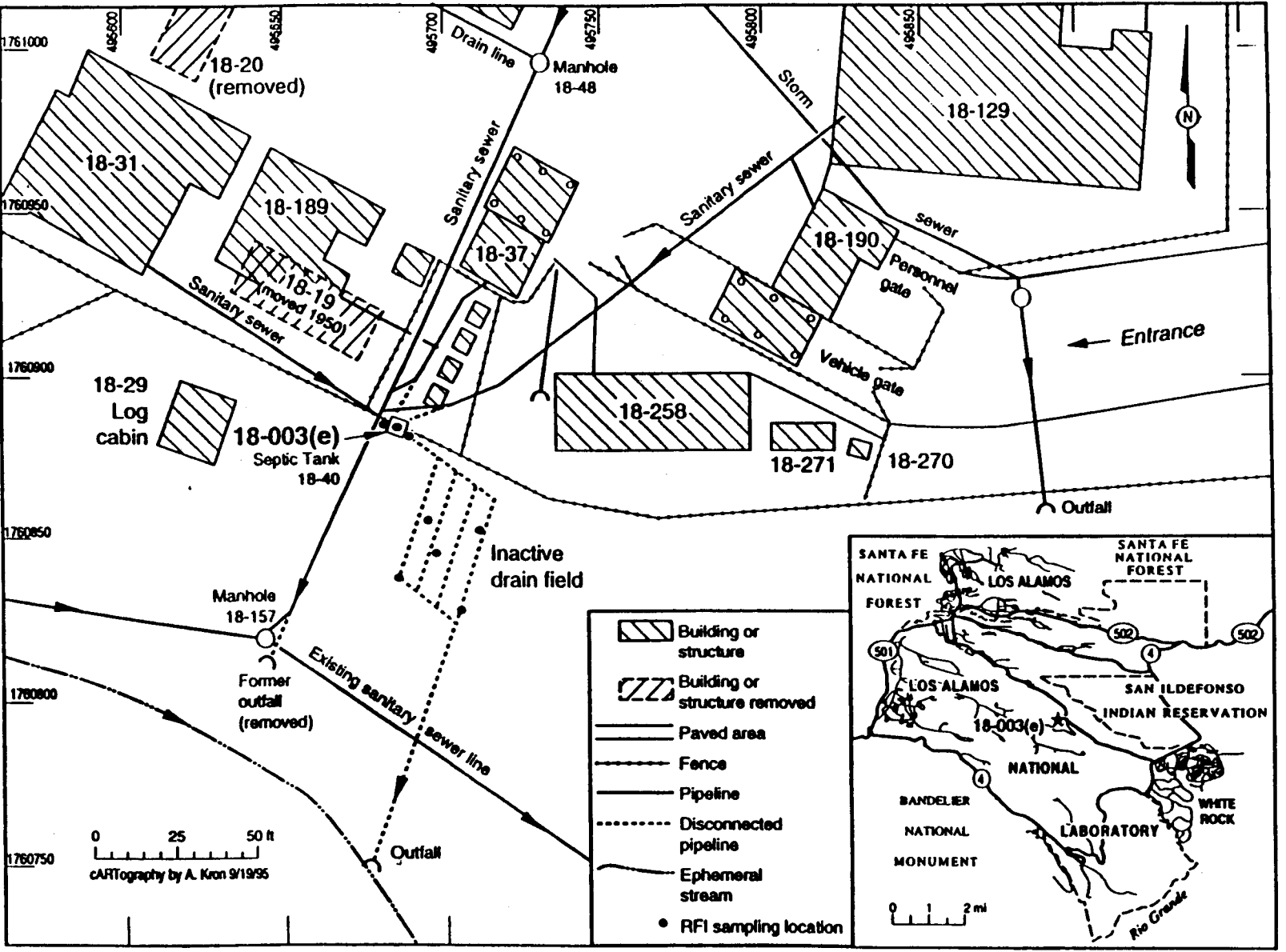


Figure 1. Location of PRS 18-003(e) Septic System

TABLE 1  
CLEANUP GOALS FOR PRS 18-001(b)

Chemical of Concern	Cleanup Goals (mg/kg) based on Hazard Index of 1 or Cancer Risk of			Maximum Concentration of Chemical of Concern (mg/kg)			
	1 x 10-4	1 x 10-5	1 x 10-6	MH-176	MH-170	MH-169	MH-160
Barium	32,300	32,300	32,300	NA	NA	9,400	NA
Lead	3,000	3,000	3,000	480	NA	NA	NA
Benzo(a)pyrene	500	50	5	0.43	NA	NA	0.35
Benzo(b)fluoranthene	5,000	500	50	0.75	NA	NA	NA
bis(2-Ethylhexyl)phthalate	10,300	10,300	2,580	NA	34	NA	NA

In the NOD, EPA also expressed concern regarding groundwater quality in the vicinity of the sewer line. To address this uncertainty, a monitoring well was constructed and sampled adjacent to Manhole 170 (Figure 1) and a water sample was collected from within Manhole 170. Water in the manhole is derived from infiltration of groundwater into the line west of the manhole. During the RFI, water was observed flowing from cracks in the sides of the manholes upgradient from Manhole 170, and no sewage effluent was entering the inactive portion of the sewer line. Two nonfiltered samples (ECXX-95-0301 and ECXX-95-0308) were collected from the temporary well and one from the manhole (ECXX-95-0300). Subsequently, a filtered sample (ECXX-95-0309) was collected from the temporary well. A nonfiltered sample (0218-95-0251) was also collected from a background well located approximately one mile west of the temporary well. The background well provides data on the groundwater quality upgradient from all activities at TA-18.

Water samples were analyzed for VOCs, SVOCs, target analyte list metals, isotopic uranium, plutonium, nitrites/nitrates, chlorides, and total suspended solids.

All detected constituents for the five samples are listed in Appendix A. Note that most of the results for the background well are listed as U (nondetect) and for those analytes the value in the table is the detection limit. Appendix A also lists the screening action level (SAL) for each analyte when one has been established. For most analytes, the SAL is equal to the New Mexico State groundwater quality standard; when a standard has not been promulgated, the value for the SAL is derived from a health-based exposure model based on residential use of groundwater.

The data indicate that the measured concentrations of arsenic, beryllium, lead, manganese, and vanadium in one or both **nonfiltered** water samples from the temporary well exceed the SAL value. However, as also noted in the table, the total suspended solids in both samples from the temporary well were relatively high in total suspended solids. Subsequently, a filtered water sample (ECXX-95-0309) was collected from the temporary well. Measured concentrations of all five of these inorganic analytes in the filtered sample were substantially lower than in the nonfiltered sample and at or below the SAL. All five of these analytes are naturally occurring in native soils, and the higher concentrations in the nonfiltered samples are attributed to the high suspended solids in those samples. Measured concentrations of lead and manganese in the nonfiltered sample collected from the manhole were also elevated above the SAL; lead was elevated only slightly; but manganese was elevated substantially.

The high manganese concentration may be the result of suspended material in the water or due to water chemistry in the manhole that results in a high solubility for manganese.

In summary, the data indicate that concentrations of analytes in groundwater collected adjacent to the manholes does not exceed the SALs, except in nonfiltered samples. New Mexico groundwater regulations require the collection of filtered samples, reflecting dissolved constituents, for comparison with the promulgated standards. The concentration of manganese in the sample from the manhole was

substantially above SALs, but this elevated value was not reflected in the filtered groundwater sample collected adjacent to the manhole. It is concluded that the groundwater quality has not been significantly impacted by the presence of the sewer line and that no further action (NFA) is required.

#### **4.0 QUANTITIES AND TYPES OF WASTE GENERATED**

Approximately 6 cubic yards of concrete debris was generated by removal of the manholes. This debris was screened for radionuclides, determined to be noncontaminated, and disposed of at the Los Alamos County landfill. After being screened for radionuclides, the steel manhole covers were delivered for recycling. Based on the analytical data, the cuttings and purge water from the wells were determined to be noncontaminated, based on the analytical data and were disposed of onsite as part of the decommissioning activities.

#### **5.0 OUTSTANDING ITEMS FROM THE ACCEPTANCE INSPECTION**

The acceptance inspection checklist, Appendix B, was completed by an independent party. There were no outstanding items identified. Based on this inspection, this action is certified by an independent party (Appendix D).

#### **6.0 PROBLEMS ENCOUNTERED AND LESSONS LEARNED**

No problems were encountered in completing the EC, and the work was completed on schedule.

#### **7.0 CONCLUSIONS AND RECOMMENDATIONS**

Concentrations of COPCs in sediments that remain in the sewer line do not present a risk to human health. Similarly, concentrations of COPCs in groundwater beneath the sewer line are below the respective maximum concentration limit or SAL. This PRS requires no additional action. This report serves as the formal request for regulator concurrence to remove PRS 18-001(b) from the HSWA module.

**APPENDIX A**  
**ANALYTICAL DATA**

TABLE 1

ANALYTICAL DATA - PRS 18-001(b)

Analyte	Location ID	Sample ID	Matrix	Sample Value	SAL Level	Units	Analysis Qualifier	Suite
Aluminum	18-01060	0218-95-0251	Groundwater-NF	5720		μG/L		Inorganic
	18-01018	ECXX-95-0300	Groundwater-NF	5600		μG/L		Inorganic
	18-01684	ECXX-95-0301	Groundwater-NF	80100		μG/L		Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	396000		μG/L		Inorganic
	18-01684	ECXX-95-0309	Groundwater-F	0.1		μG/L	U	Inorganic
Arsenic	18-01684	ECXX-95-0301	Groundwater-NF	27.1	50	μG/L	V	Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	84.3	50	μG/L	V	Inorganic
	18-01684	ECXX-95-0309	Groundwater-F	10	50	μG/L	U	Inorganic
Barium	18-01060	0218-95-0251	Groundwater-NF	116	2000	μG/L	V	Inorganic
	18-01018	ECXX-95-0300	Groundwater-NF	679	2000	μG/L		Inorganic
	18-01684	ECXX-95-0301	Groundwater-NF	2460	2000	μG/L	V	Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	3290	2000	μG/L	V	Inorganic
	18-01684	ECXX-95-0309	Groundwater-F	80	2000	μG/L		Inorganic
Beryllium	18-01684	ECXX-95-0301	Groundwater-NF	14.7	4	μG/L	V	Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	28.8	4	μG/L	V	Inorganic
	18-01684	ECXX-95-0309	Groundwater-F	5	4	μG/L	U	Inorganic
Calcium	18-01060	0218-95-0251	Groundwater-NF	10300		μG/L	V	Inorganic
	18-01018	ECXX-95-0300	Groundwater-NF	25100		μG/L		Inorganic

U Analytical result less than detection limit  
 V Compound also detected in laboratory blank  
 NF Nonfiltered sample  
 F Filtered sample  
 0218-95-0251 Background Well, BG-1, NF  
 ECXX-95-0300 MH-170  
 ECXX-95-0301 Temporary Well 18-01684  
 ECXX-95-0308 Temporary Well 18-01684, NF  
 ECXX-95-0309 Temporary Well, 18-01684, Filtered

TABLE 1

ANALYTICAL DATA - PRS 18-001(b)  
(continued)

Analyte	Location ID	Sample ID	Matrix	Sample Value	SAL Level	Units	Analysis Qualifier	Suite
	18-01684	ECXX-95-0301	Groundwater-NF	61900		µG/L	V	Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	68500		µG/L	V	Inorganic
	18-01684	ECXX-95-0309	Groundwater-F	17		µG/L		Inorganic
Chlorides	18-01018	ECXX-95-0300	Groundwater-NF	19.2		µG/L		Inorganic
	18-01684	ECXX-95-0301	Groundwater-NF	21.9		µG/L		Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	21.9		µG/L		Inorganic
Chromium	18-01018	ECXX-95-0300	Groundwater-NF	14.9		µG/L		Inorganic
	18-01684	ECXX-95-0301	Groundwater-NF	39.3		µG/L		Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	192		µG/L		Inorganic
	18-01684	ECXX-95-0309	Groundwater-F	0.01		µG/L	U	Inorganic
Cobalt	18-01018	ECXX-95-0300	Groundwater-NF	21.4		µG/L	V	Inorganic
	18-01684	ECXX-95-0301	Groundwater-NF	32.5		µG/L		Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	98		µG/L		Inorganic
	18-01684	ECXX-95-0309	Groundwater-F	0.02		µG/L	U	Inorganic
Copper	18-01018	ECXX-95-0300	Groundwater-NF	133	1300	µG/L		Inorganic
	18-01684	ECXX-95-0301	Groundwater-NF	64.4	1300	µG/L		Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	206	1300	µG/L		Inorganic
	18-01684	ECXX-95-0309	Groundwater-F	20	1300	µG/L	U	Inorganic

U Analytical result less than detection limit  
 V Compound also detected in laboratory blank  
 NF Nonfiltered sample  
 F Filtered sample  
 0218-95-0251 Background Well, BG-1, NF  
 ECXX-95-0300 MH-170  
 ECXX-95-0301 Temporary Well 18-01684  
 ECXX-95-0308 Temporary Well 18-01684, NF  
 ECXX-95-0309 Temporary Well, 18-01684, Filtered



**TABLE 1**  
**ANALYTICAL DATA - PRS 18-001(b)**  
**(continued)**

Analyte	Location ID	Sample ID	Matrix	Sample Value	SAL Level	Units	Analysis Qualifier	Suite
Iron	18-01060	0218-95-0251	Groundwater-NF	4680		μG/L		Inorganic
	18-01018	ECXX-95-0300	Groundwater-NF	13400		μG/L		Inorganic
	18-01684	ECXX-95-0301	Groundwater-NF	59700		μG/L		Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	310000		μG/L		Inorganic
	18-01684	ECXX-95-0309	Groundwater-F	0.3		μG/L	U	Inorganic
Lead	18-01018	ECXX-95-0300	Groundwater-NF	52.5	50	μG/L		Inorganic
	18-01684	ECXX-95-0301	Groundwater-NF	111	50	μG/L		Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	278	50	μG/L		Inorganic
	18-01684	ECXX-95-0309	Groundwater-F	5	50	μG/L	U	Inorganic
Magnesium	18-01060	0218-95-0251	Groundwater-NF	3660		μG/L		Inorganic
	18-01018	ECXX-95-0300	Groundwater-NF	5550		μG/L		Inorganic
	18-01684	ECXX-95-0301	Groundwater-NF	24000		μG/L		Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	54400		μG/L		Inorganic
	18-01684	ECXX-95-0309	Groundwater-F	5.3		μG/L		Inorganic
Manganese	18-01060	0218-95-0251	Groundwater-NF	117	180	μG/L		Inorganic
	18-01018	ECXX-95-0300	Groundwater-NF	11600	180	μG/L		Inorganic
	18-01684	ECXX-95-0301	Groundwater-NF	2830	180	μG/L		Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	8050	180	μG/L		Inorganic

**U** Analytical result less than detection limit  
**V** Compound also detected in laboratory blank  
**NF** Nonfiltered sample  
**F** Filtered sample  
**0218-95-0251** Background Well, BG-1, NF  
**ECXX-95-0300** MH-170  
**ECXX-95-0301** Temporary Well 18-01684  
**ECXX-95-0308** Temporary Well 18-01684, NF  
**ECXX-95-0309** Temporary Well, 18-01684, Filtered

TABLE 1

ANALYTICAL DATA - PRS 18-001(b)  
(continued)

Analyte	Location ID	Sample ID	Matrix	Sample Value	SAL Level	Units	Analysis Qualifier	Suite
	18-01684	ECXX-95-0309	Groundwater-F	50	180	µG/L	U	Inorganic
Nickel	18-01018	ECXX-95-0300	Groundwater-NF	19.5	100	µG/L		Inorganic
	18-01684	ECXX-95-0301	Groundwater-NF	39.3	100	µG/L		Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	175	100	µG/L		Inorganic
	18-01684	ECXX-95-0309	Groundwater-F	40	100	µG/L	U	Inorganic
Nitrogen, Nitrate/Nitrite	18-01018	ECXX-95-0300	Groundwater-NF	0.13		µG/L		Inorganic
	18-01684	ECXX-95-0301	Groundwater-NF	0.27		µG/L		Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	0.13		µG/L		Inorganic
Potassium	18-01060	0218-95-0251	Groundwater-NF	3310		µG/L		Inorganic
	18-01018	ECXX-95-0300	Groundwater-NF	4620		µG/L		Inorganic
	18-01684	ECXX-95-0301	Groundwater-NF	15300		µG/L		Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	38800		µG/L		Inorganic
	18-01684	ECXX-95-0309	Groundwater-F	3.8		µG/L		Inorganic
Sodium	18-01060	0218-95-0251	Groundwater-NF	13100		µG/L		Inorganic
	18-01018	ECXX-95-0300	Groundwater-NF	22000		µG/L		Inorganic
	18-01684	ECXX-95-0301	Groundwater-NF	22500		µG/L		Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	24900		µG/L		Inorganic
	18-01684	ECXX-95-0309	Groundwater-F	21		µG/L		Inorganic

U Analytical result less than detection limit  
V Compound also detected in laboratory blank  
NF Nonfiltered sample  
F Filtered sample  
0218-95-0251 Background Well, BG-1, NF  
ECXX-95-0300 MH-170  
ECXX-95-0301 Temporary Well 18-01684  
ECXX-95-0308 Temporary Well 18-01684, NF  
ECXX-95-0309 Temporary Well, 18-01684, Filtered

**TABLE 1**  
**ANALYTICAL DATA - PRS 18-001(b)**  
**(continued)**

Analyte	Location ID	Sample ID	Matrix	Sample Value	SAL Level	Units	Analysis Qualifier	Suite
Solids, Total Suspended	18-01018	ECXX-95-0300	Groundwater-NF	48		µG/L		Inorganic
	18-01684	ECXX-95-0301	Groundwater-NF	17100		µG/L		Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	10700		µG/L		Inorganic
Vanadium	18-01018	ECXX-95-0300	Groundwater-NF	14.4	240	µG/L		Inorganic
	18-01684	ECXX-95-0301	Groundwater-NF	106	240	µG/L		Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	375	240	µG/L		Inorganic
	18-01684	ECXX-95-0309	Groundwater-F	20	240	µG/L	U	Inorganic
Zinc	18-01018	ECXX-95-0300	Groundwater-NF	513	10000	µG/L		Inorganic
	18-01684	ECXX-95-0301	Groundwater-NF	270	10000	µG/L		Inorganic
	18-01684	ECXX-95-0308	Groundwater-NF	928	10000	µG/L		Inorganic
	18-01684	ECXX-95-0309	Groundwater-F	20	10000	µG/L	U	Inorganic
Acetone	18-01018	ECXX-95-0300	Groundwater-NF	17.2	3500	µG/L		Organic
	18-01684	ECXX-95-0301	Groundwater-NF	10.7	3500	µG/L		Organic
	18-01684	ECXX-95-0308	Groundwater-NF	21.9	3500	µG/L		Organic
HMX	18-01060	0218-95-0251	Groundwater-NF	1.48		µG/L		Organic
Total Uranium	18-01060	0218-95-0251	Groundwater-NF	0.238		µG/L		Rad
Uranium, total recoverable	18-01684	ECXX-95-0309	Groundwater-F	0.57		µG/L	U	Rad

U Analytical result less than detection limit  
 V Compound also detected in laboratory blank  
 NF Nonfiltered sample  
 F Filtered sample  
 0218-95-0251 Background Well, BG-1, NF  
 ECXX-95-0300 MH-170  
 ECXX-95-0301 Temporary Well 18-01684  
 ECXX-95-0308 Temporary Well 18-01684, NF  
 ECXX-95-0309 Temporary Well, 18-01684, Filtered

**TABLE 1**

**ANALYTICAL DATA - PRS 18-001(b)  
(concluded)**

Analyte	Location ID	Sample ID	Matrix	Sample Value	SAL Level	Units	Analysis Qualifier	Suite
Uranium-233/234	18-01018	ECXX-95-0300	Groundwater-NF	0.497		µG/L		Rad
	18-01684	ECXX-95-0301	Groundwater-NF	0.0627		µG/L		Rad
	18-01684	ECXX-95-0308	Groundwater-NF	3.07		µG/L		Rad
Uranium-235	18-01684	ECXX-95-0308	Groundwater-NF	0.0854		µG/L		Rad
Uranium-238	18-01018	ECXX-95-0300	Groundwater-NF	0.0797		µG/L		Rad
	18-01684	ECXX-95-0301	Groundwater-NF	0.0844		µG/L		Rad
	18-01684	ECXX-95-0308	Groundwater-NF	2.44		µG/L		Rad

U Analytical result less than detection limit  
 V Compound also detected in laboratory blank  
 NF Nonfiltered sample  
 F Filtered sample  
 0218-95-0251 Background Well, BG-1, NF  
 ECXX-95-0300 MH-170  
 ECXX-95-0301 Temporary Well 18-01684  
 ECXX-95-0308 Temporary Well 18-01684, NF  
 ECXX-95-0309 Temporary Well, 18-01684, Filtered

**APPENDIX B**  
**ACCEPTANCE INSPECTION CHECKLIST**

**APPENDIX B**  
**ACCEPTANCE INSPECTION CHECKLIST**

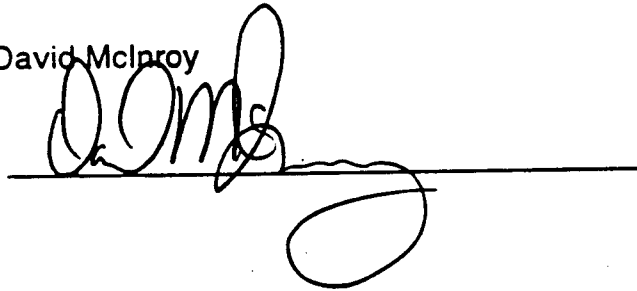
**Unit Number and Description**

**18-001(b). Sanitary Sewer Line**

- EPA and DOE notified at least 10 days in advance of field work.
- Add monitoring well to establish ground water quality.
- Ground water samples indicate no significant release from unit.
- Manhole inlet and outlets plugged.
- All waste generated is managed appropriately.
- Manholes backfilled.
- Site restored.

Reviewer David McInroy

Signature



**APPENDIX C**  
**PHOTOGRAPH**



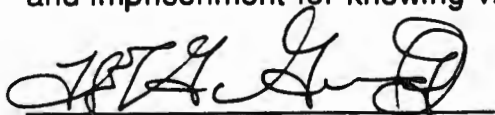
PRS 18-001 (a) and (b) - Removal of manhole covers from sanitary waste line and re-grading backfilled lagoons



**APPENDIX D**  
**CERTIFICATION OF COMPLETION**

## Certification of Completion

I certify that all the work pertaining to the expedited cleanup (EC) 18-001(b) has been completed in accordance with the actions proposed in the **Expedited Cleanup Plan for Solid Waste Management Unit 18-001(b)**. Based on my personal involvement or inquiry of the person or persons who managed this clean up, a review of all data gathered and a visit to the site, to the best of my knowledge and belief, all criteria of the plan have been met or exceeded. I believe that the completion of this EC is both protective to human health and the environment. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.



Gene Gould  
Field Unit Two Project Leader  
Environmental Restoration Project  
Los Alamos National Laboratory

9/28/95  
Date Signed



David McInroy  
Compliance Manager, Independent Review  
Environmental Restoration Project  
Los Alamos National Laboratory

9/28/95  
Date Signed