

TA 18

PRS 18-006

URANIUM SOLUTION PIPE

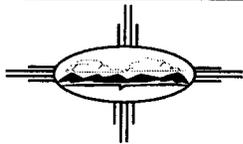
TA-18

No SRS Ranking

Non-HSWA



1552



*Los Alamos National Laboratory
Environmental Restoration Project*

2110199



VG-97-058 (1)

Unit Type: Underground Solution Pipe
SRS: None
PRS 18-006 not on Watercourse List

**Los Alamos National Laboratory
Environmental Restoration Project
Proposed VCA Fact Sheet
PRS 18-006 - Underground Solution Pipe**

Description:

This potential release site (PRS) is an underground stainless steel pipe formerly used for storage of uranium solution. The storage pipe, measuring 6 in. in diameter and 100 ft long, is buried approximately 4 ft below grade near an experimental reactor facility at TA-18. The solution—uranyl sulfate—was periodically pumped from the storage pipe to an above-ground reactor vessel for nuclear criticality experiments. The reactor vessel was decommissioned, and the solution was removed from the storage pipe in 1974. This PRS is not listed in the HSWA module of the Laboratory's RCRA operating permit and did not receive a site ranking score.

Contaminants:

Some residual radioactive contamination is present in the storage pipe. The pipe was rinsed after the fuel was removed. Sampling of the residual rinsate revealed uranium isotopes, fission products, metals, and volatile organic compounds. The rinsate had a pH of 12.8.

Rationale:

The pipe overlies a shallow aquifer; depth to water is 8 to 10 ft. Existing groundwater monitoring data do not suggest that any release has occurred, but the potential remains. The facilities at TA-18 are active, and no date has been set for decommissioning those facilities; except for removal by the ER Project, the solution pipe will remain in place for the foreseeable future.

Voluntary Corrective Action:

A trench will be excavated to expose the pipe. The pipe will be severed into two or three pieces, and the segments removed from the trench. Field radiological screening will be used to identify any contaminated soil, which will be removed from the trench. Verification samples of soil from adjacent to the pipe will be collected to verify that no residual contamination remains. All aspects of health and safety will be addressed by a site-specific health and safety plan.

Expected Waste Types and Volumes:

All contaminated waste generated by this cleanup is expected to be low-level radioactive waste. If any residual rinsate solution remains in the pipe, it will be neutralized before disposal to eliminate toxic characteristics. The rinsate will be sampled to characterize it for disposal. If sampling indicates the presence of RCRA waste, the pipe will be decontaminated and decontamination wastes will be disposed of appropriately. Decontamination wastes are expected to be less than 30 cubic feet. The volume of the storage pipe is approximately 20 cubic feet. No contaminated soil is expected, but, if present, should not exceed 10 cubic feet. An additional 10 to 15 cubic feet of contaminated personal protective equipment (PPE) may be generated.

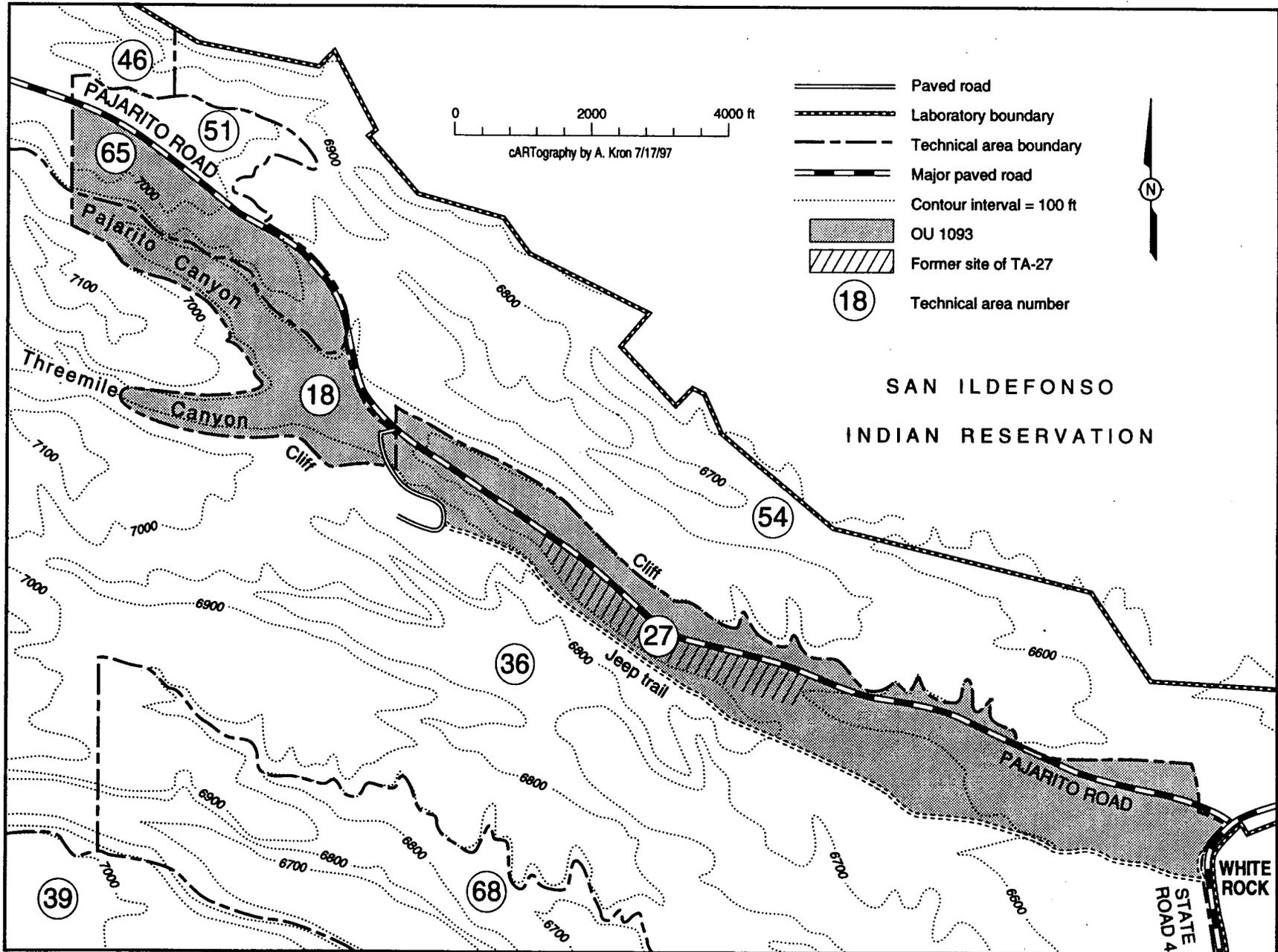
Cost:

It is anticipated that the cleanup will cost approximately \$200,000.

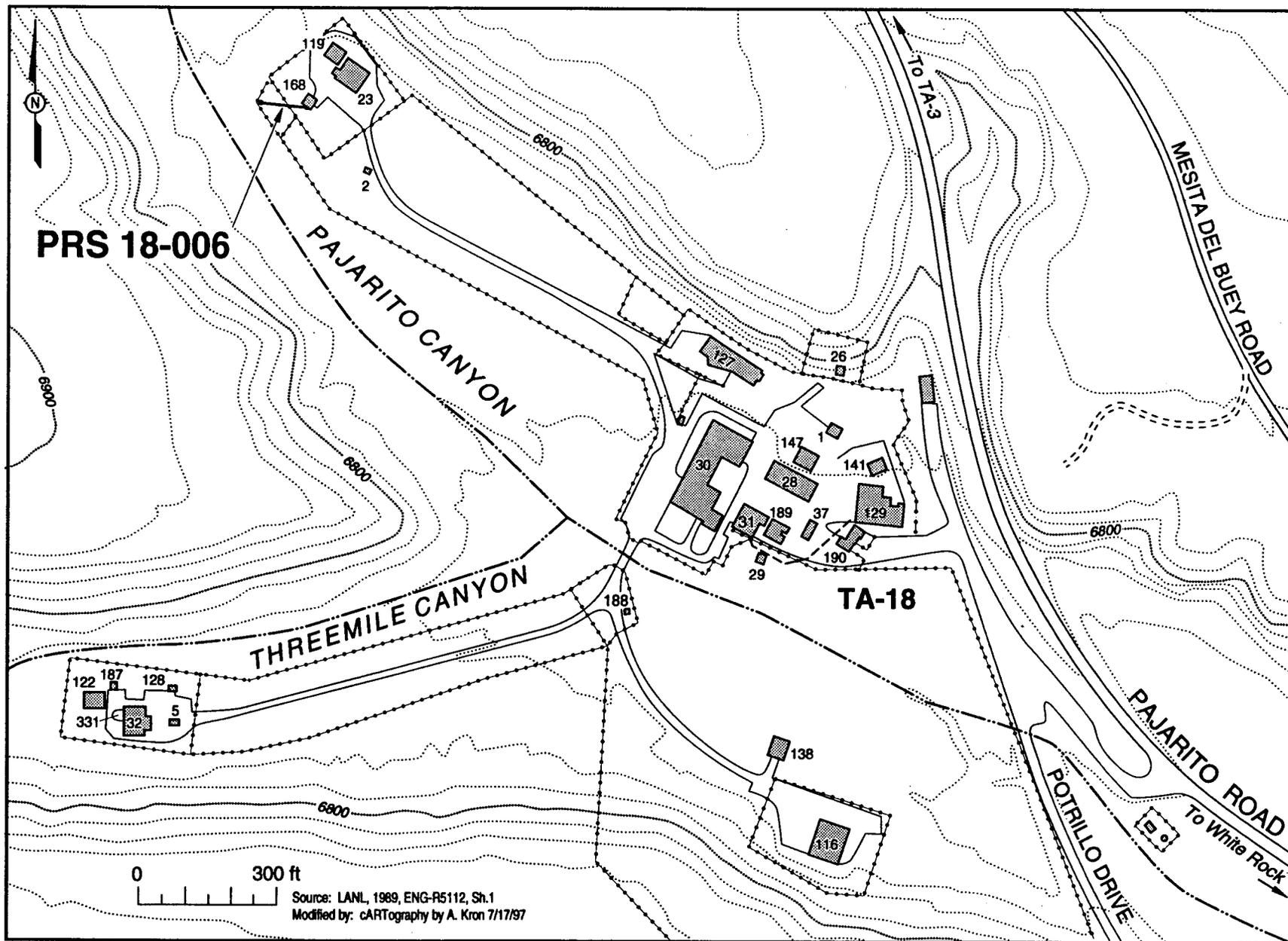
Schedule:

The VCA is scheduled to occur in August 1997. The completion report will be submitted by September 30, 1997.

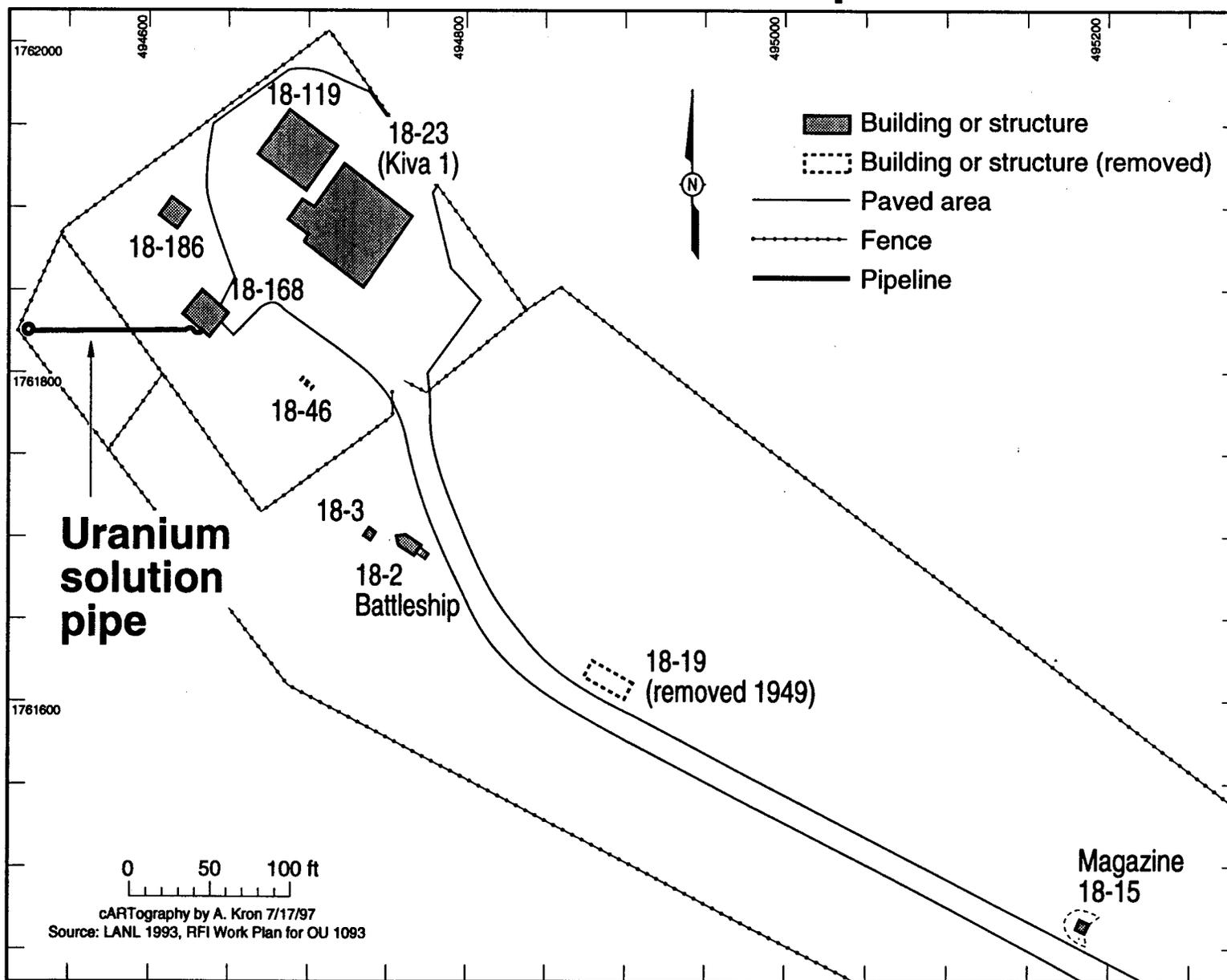
Location of Operable Unit 1093



Location of PRS 18-006 at TA-18

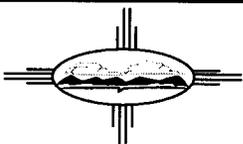


Uranium Solution Pipe

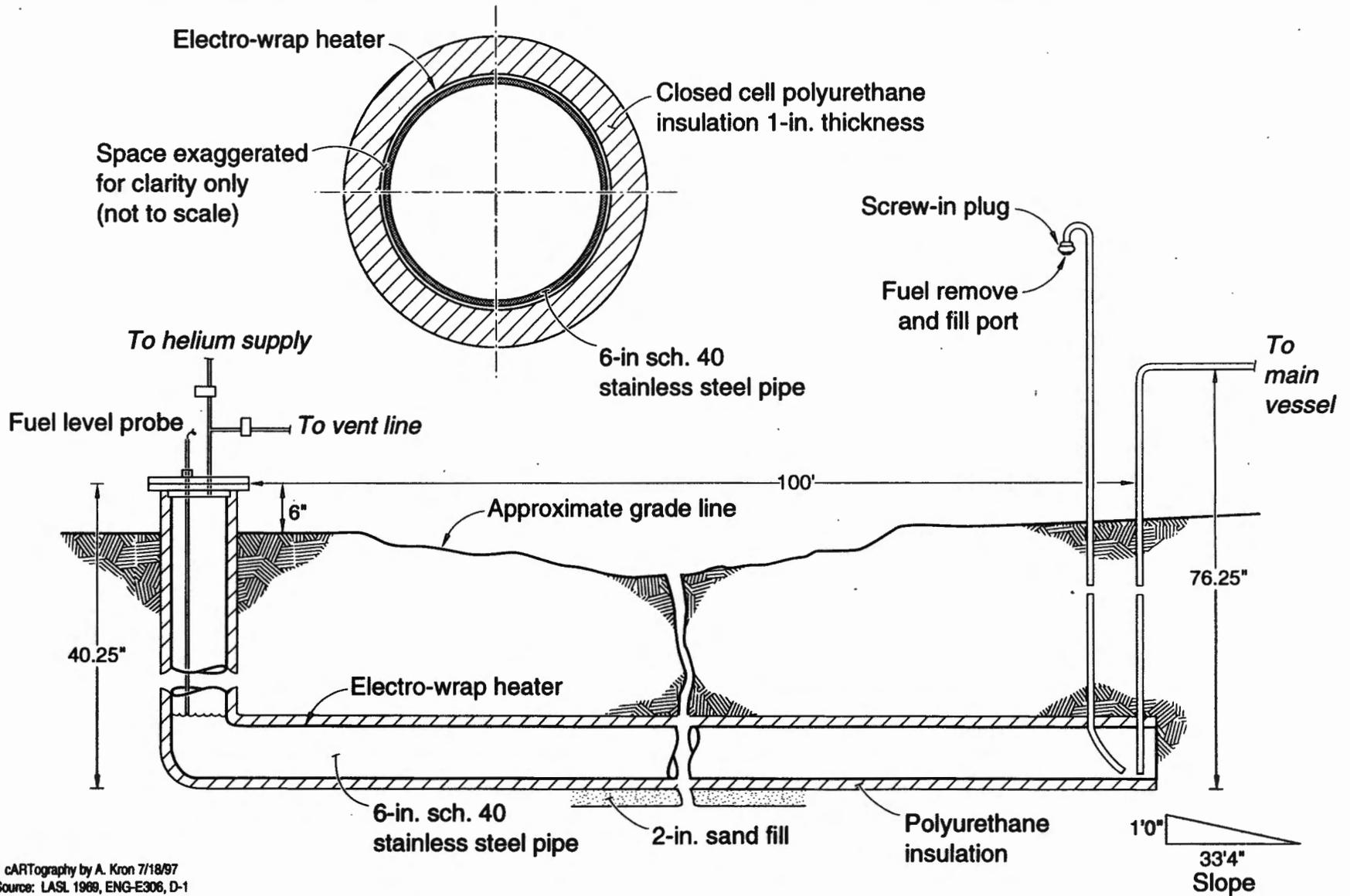


PRS Description

- **PRS 18-006 is an abandoned stainless steel pipe**
 - ◆ **stored liquid fuel (uranyl sulphate) for Kinglet reactor**
 - ◆ **pipe dimension: 6 in. diameter by 100 ft length**
 - ◆ **wrapped with 1-in. thick polyurethane**
 - ◆ **capacity 560 liters**
 - ◆ **stainless steel, Schedule 40 (1/4 in. thick)**
 - ◆ **extends west from Building TA-18-168**
 - ◆ **buried 3 ft deep at west end, 5 ft deep at east end**



Cross sections along length and diameter of pipe

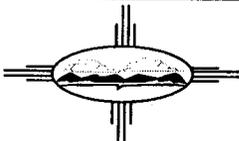


cARTography by A. Kron 7/18/97
 Source: LASL 1969, ENG-E306, D-1



PRS Description (continued)

- **Location - within secured boundaries of TA-18 (three tanks located within high security area)**
- **Land slope - nearly flat**
- **Nearest water course approximately 1/4 mile (Pajarito Canyon)**
- **Not on list of 684 PRSs in or near watercourses**
- **Land use scenario - industrial**



PRS Description (concluded)

- **Constructed in 1970**

- ◆ **fuel removed from pipe and reactor disassembled in 1974**

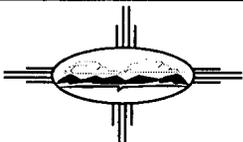
- ◆ **pipe rinsed with alkaline solution; rinsate removed**

- **Residual rinsate sampled in 1997**

- ◆ **all rinsate (approximately 2 liters) removed by sampling**

- ◆ **pH = 12.8; metals < TCLP criteria; uranium < 100 pCi/L**

- ◆ **Acetone and 2-Butanone reported in samples - data not validated**



Analytical Results

Sample ID	U-234	U-235	U-238	pH
	pCi/L	pCi/L	pCi/L	
0218-97-0056	88	2.7	0.6	12.8

Toxic Metals, mg/L

Sample ID	Arsenic	Barium	Cadmium	Chromium
0218-97-0056	0.03	0.05	<.002	2.84

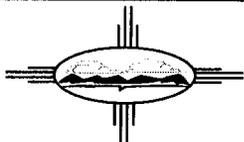
Toxicity

Criteria (mg/L)	5	100	1.0	5.0
------------------------	---	-----	-----	-----

Sample ID	Lead	Mercury	Selenium	Silver
0218-97-0056	<.012	0.0005	0.8	<0.007

Toxicity

Criteria (mg/L)	5.0	0.2	1.0	5.0
------------------------	-----	-----	-----	-----



Analytical Results (concluded)

Sample ID

Acetone

2-Butanone

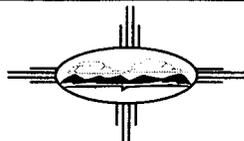
μg/L

μg/L

0218-97-0057

340/620 B

13/15 J

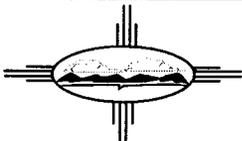


*Los Alamos National Laboratory
Environmental Restoration Project*



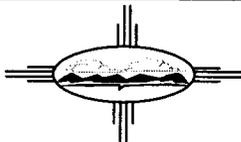
Removal Rationale

- Pipe abandoned, no potential for future use
- Integrity expected to be high, but could degrade in time
- Overlies shallow alluvial aquifer (depth to water approximately 10 ft)



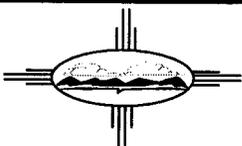
Proposed Cleanup

- **Install runoff/runoff controls**
- **Expose pipe by trenching**
- **Cut pipe inside inner security fence, using portable glove box and spill control**
- **Remove pipe from trench**
- **Remove polyurethane and screen/sample for rad**
- **Sample/screen bottom of trench beneath pipe for rad, metals, VOCs**
- **Remove any contaminated soil (none expected)**
- **Backfill trench (at least beneath security fence)**



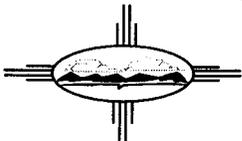
Proposed Cleanup (concluded)

- **Cut pipe into 5-ft sections, using portable glove box**
- **Dispose of pipe as rad waste or if sampling indicates RCRA waste, decontaminate pipe at TA-50 facility**
- **Sample decon wastes for rad, metals, VOCs, pH and dispose appropriately**
- **Complete trench backfill - no vegetation at site for security reasons**
- **Write completion report**
- **Propose NFA to DOE/HRMB**



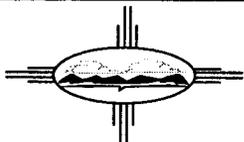
Waste Volume Generated

- **PPE and sampling wastes - one to two 55-gallon drums**
- **Decontaminated pipe - 20 cubic feet**
- **Decon wastes (sand and residuals from pipe) - approximately three 55-gallon drums**
- **Contaminated soil (not expected), < one 55-gal drum**



Schedule/Cost Estimate

- **Timeframe - August 1997**
- **Duration (field operations) - less than 2 weeks exclusive of laboratory analysis turn-around time**
- **Cost estimate - \$200,000**



*Los Alamos National Laboratory
Environmental Restoration Project*

