E ORDER #

5-RF-08514

DIST.	LTR	ENC
SUSSEN, S.		
L, T.		
D, R. G.		
NI, V.		
RTINEZ, L.		
KAY, B.		
RIEN, G.		
R, N.		
ORHEIS, G.		
LLER, C.		
DAHL, T. G.	X	X
L, J. A.		
ELTON, D. C.		
ALEY, D. L.		
YD, R. H.		
TAMORE, J. A.		
RR, K. A.		
HN, S. J.		
NNEDY, C. E.		
HOUD, R. G.		
TTER, G. L.		
EBEN, A. K.	X	X
EINAUER, A. T.		
EMELT, K. L.		
ORRES. CTRL.	X	X
RAFFIC		
OMIN. REC.		
ATS		
CLASSIFICATION:		
CNI		
NCLASSIFIED	X	X
ONFIDENTIAL		
ECRET		

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Class. Rev. Waiver
Class. Office

Date: 11-6-95

N REPLY TO RF CC NO:

None

CTION ITEM STATUS

__ PARTIAL/OPEN
X CLOSED

TR APPROVALS:

TGH

ORIG & TYPIST INITIALS

AKS:kam

RF-46469 (REV. 7/95)

KAISER•HILL COMPANY

November 6, 1995

95-RF-08514

Jessie M. Roberson, Assistant Manager
Environmental Restoration
DOE, RFFO

Attn: Ravi Batra

TRANSMITTAL OF THE TOP 20 ENVIRONMENTAL RESTORATION FACT SHEETS - TGH-339-95

Action: Request transmittal of the Top 20 Environmental Restoration Fact Sheets

Enclosed are the fact sheets developed for the top 20 Environmental Restoration (ER) sites identified during the ER Prioritization effort. Also enclosed is a cover letter to transmit these fact sheets to the Environmental Protection Agency and the Colorado Department of Public Health and Environment. These fact sheets were designed to be a quick reference for each of the top 20 sites' environmental risk, probable remediation method, and any problems which may be associated with remediation.

Please contact Ann Sieben at extension 9886 if you have any questions.

T. G. Hedahl, Director
ER/WM&I Operations

AKS:kam

Orig. and 1 cc - J. M. Roberson

Enclosures:
As Stated (2)

cc:
S. Slaten - DOE, RFFO
F. W. Chromac - RMRS - T893B
C. S. Evans - " - T893B
J. E. Law - " - T893A
A. L. Primrose - " - T893A
R. R. Roberts - " - T893B
A. Tyson - " - T893B

DOCUMENT CLASSIFICATION REVIEW WAIVER PER CLASSIFICATION OFFICE

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Courier Address: Rocky Flats Environmental Technology Site, State Hwy. 93 and Cactus, Rocky Flats, CO 80007 • 303.966.7000
Mailing Address: P.O. Box 464, Golden, Colorado 80402-0464

A-OU02-001244

DRAFT **DRAFT** **DRAFT**

Mr. Martin Hestmark
U. S. Environmental Protection Agency, Region VIII
ATTN: Rocky Flats Project Manager, 8HWM-RI
999 18th Street, Suite 500, 8WM-C
Denver, Colorado 80202-2405

Mr. Joe Schieffelin, Unit Leader
Hazardous Waste Control Program
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80222-1530

Gentlemen:

Enclosed are the fact sheets developed for the top 20 Environmental Restoration (ER) sites identified during the ER Prioritization effort. These fact sheets were designed to be a quick reference for each of the top 20 sites' environmental risk, and any problems which may be associated with remediation.

Should you have any questions, please feel free to call Ravi Batra at 966-9664.

NOTICE:

INCOMPLETE DOCUMENT

The following document is missing _1_ page. This document was distributed in an incomplete state, and the microform copy is representative of the paper copy. If replacement pages are distributed, they will be microfilmed and included in the Administrative Record file.

The Administrative Record Staff

FACT SHEET FOR TOP 20 ENVIRONMENTAL SITES
IHSS 101, SOLAR PONDS

Location: The Solar Ponds are located in the northeast quadrant of the protected area, upslope of the Walnut Creek drainage, near Buildings 778, 964, and 910.

Description: There are five ponds: 207A, 207B North, 207B Center, 207B South, and 207C. The ponds were used to evaporate liquids from acidic process wastes, treated sanitary effluent, treated process waste water from Building 374, brine from the reverse osmosis plant, and groundwater and precipitation runoff collected by the Interceptor Trench System (ITS). The resulting sludge was converted to pondcrete for shipment to the Nevada Test Site; untreated sludge is stored on Site. The ponds all have liners of asphalt and concrete.

Risk: Risk is primarily derived from contaminated soil and groundwater. One cadmium hot spot has been identified. The ITS routinely collects groundwater that is contaminated with nitrates. Chromium, cyanide, PCB's, and radionuclide contaminants have also been identified. The risk is driven by surficial soil contamination.

Further Characterization: No further characterization of source or soils is planned.

Probable Remedial Action: At this time, the remedial action is considered to be liner removal, then stabilization and disposal of stored waste. The estimated cost is $31M over three years, but will change, depending upon the final remedial option selected.

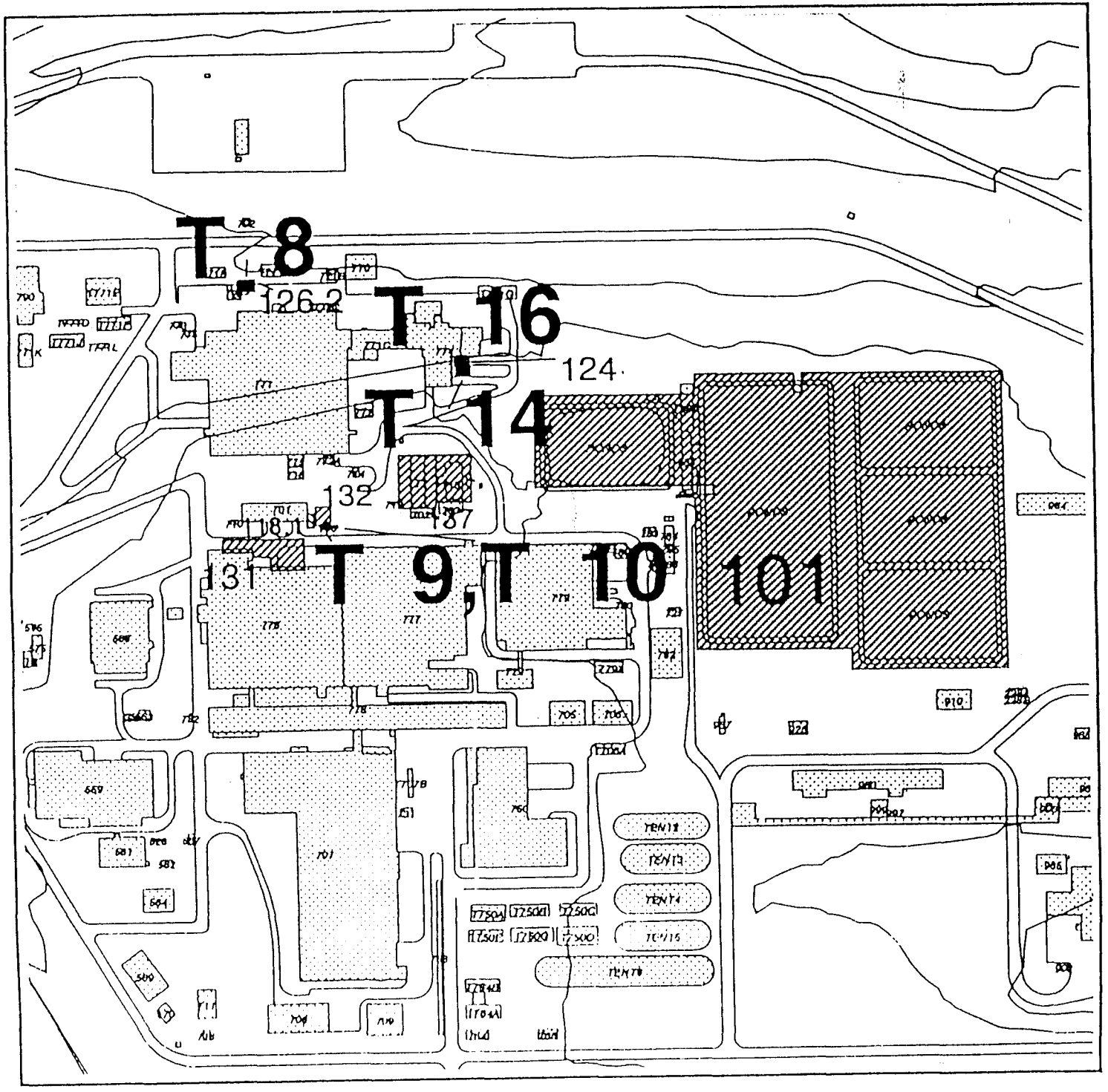
Worker Safety: Excavating and moving a large volume of soil presents a moderate risk to workers.

Waste Issues: A major issue is that on-site disposal of wastes produced during remediation is assumed, but no on-site disposal capability currently exists.

Risk Reduction: Removal of the source of contamination will reduce risk of contaminant release. The ITS is already in place to intercept some contaminated groundwater before it can enter the drainage.

Environmental Risk from Remediation: Excavation near the Walnut Creek drainage poses a risk of releasing contaminants into the stream. However, procedures currently in-place will reduce or eliminate the risk of spreading contaminants.

Principal Reference: Historical Release Report



Solar Pond Area

T 8 Tank Locations and Labels

118.1 IHSS Locations and Labels

Buildings

ER IHSS Ranking

1 - 121/124 Tank T-14
2 - 118.1, 132 and 121 Tanks 9&10
3 - 121/124.1/124.2/ 125 PW Tank T-16N
13- 131 Rad Site 11
15- 137 Bldg 712/713 Cooling T Blowdown
17- 101 Solar Ponds
19- 121, 126.1, 126.2, Tank T-8

FACT SHEET FOR TOP 20 ENVIRONMENTAL SITES
IHSS 121, 126.1, 126.2, TANK T-8

Location: Tank T-8 is located in the 700 Area within Building 728, which is referred to as the building 771 Process Waste Pit. The tank is located approximately 30 feet north of Building 771. Tank T-8 is part of IHSS 121 and is also referred to as IHSS 126.1 and 126.2.

Description: Tank T-8 consists of two 25,000 gallon underground concrete tanks. Both tanks were installed in 1952 and were reportedly taken out of service in 1984. The tanks received wastes from building 771 including radionuclides, acids, bases, volatile organic compounds, metals, fuel oil, lubricating oils, PCBs and photo lab residues. Currently the tank is being used as an emergency plenum deluge tank for building 771.

Risk: The tanks leak and periodically fill with groundwater, as well as collect surface water runoff. The tanks are being used as part of a vital safety system that, if used, would dump highly contaminated waters into the tanks which are known to leak. Relatively low levels of radionuclides and metals are present in the tanks and the soils surrounding the tanks.

Further Characterization: The tank unit and residual contents have been sampled and two soil borings have been completed around the east and west borders of the tanks. Geoprobe investigation may be used to determine further extent of contamination closer to the tank area. Estimated cost is $65,000 and 2 months.

Probable Remedial Action: Disconnect plumbing and remove tank unit from active plenum systems, and remove residue/inventory from tank. Tank unit will be rinsed, rinse water sampled, and tank unit closed under RCRA if the rinsate samples are clean. Contaminated soils from around the tank will be removed. Rough cost estimate is $700,000 and 9 months based on previous RCRA closures conducted for tank units in the Industrial Area.

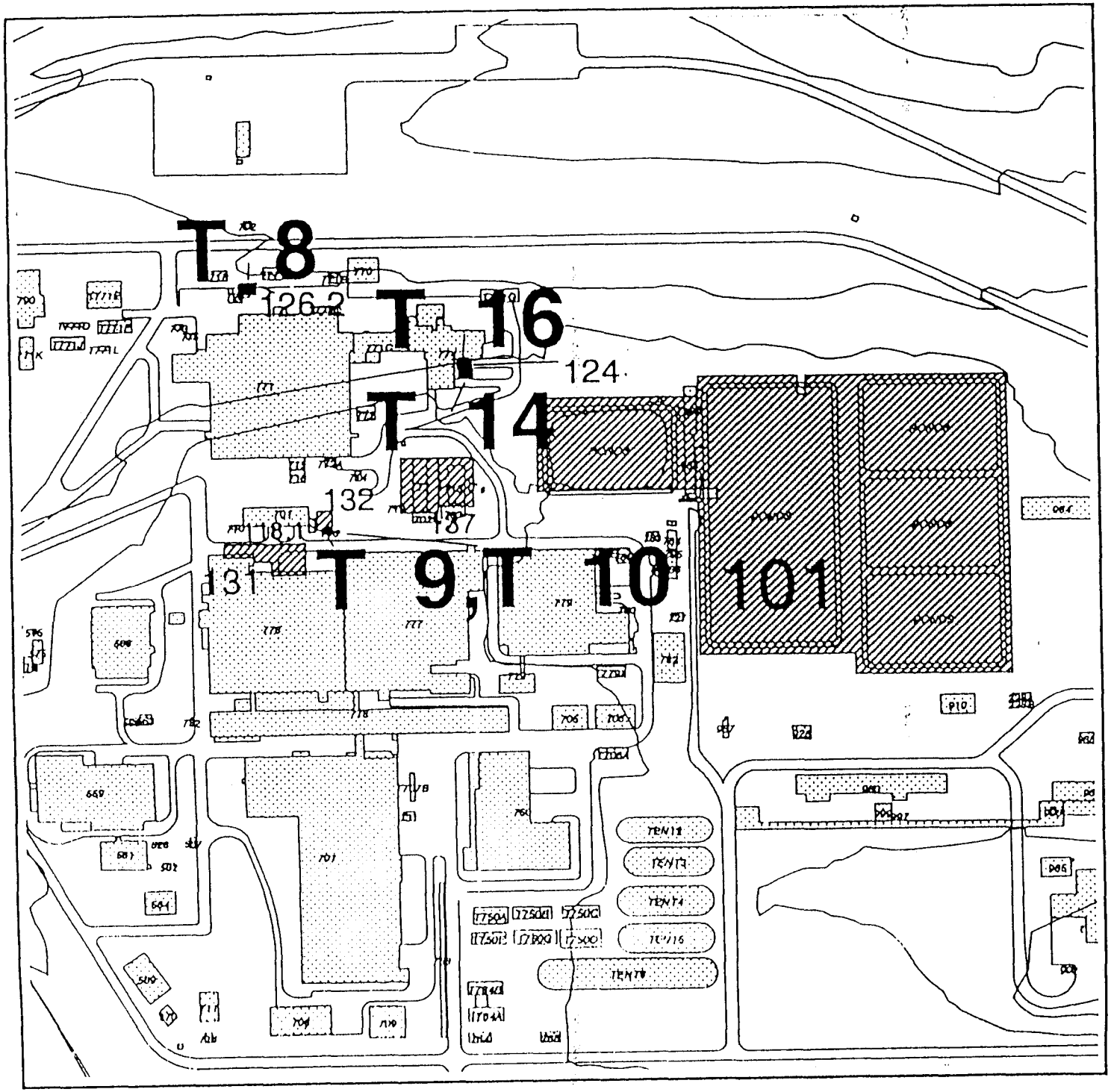
Worker Safety: The need for confined space entry are significant worker safety issues, but can be readily addressed. Contaminant levels in the tanks themselves are very low.

Waste Issues: Residues/inventory will be removed from the tank unit. Solids will be separated from the liquid and will be disposed of accordingly. Issues may be anticipated in dealing with waste acceptance criteria and additional samples may be required prior to treatment and disposal.

Risk Reduction: The risk associated with this tank unit will be eliminated when the potential for a contamination is removed, i.e. disconnected from the plenum deluge system, and removal of residuals.

Environmental Risk from Remediation: There is a very low possibility that a spill will occur when the residues are removed. Procedures currently in-place reduce this risk to a very low possibility.

Principal Reference: OU 9 Data Summary



Solar Pond Area

T 8 ■ Tank Locations and Labels

118.1 ▨ IHSS Locations and Labels

▫ Buildings

ER IHSS Ranking

1 - 121/124 Tank T-14
2 - 118.1, 132 and 121 Tanks 9&10
3 - 121/124.1/124.2/ 125 PW Tank T-16N
13- 131 Rad Site #1
15- 137 Bldg 712/713 Cooling T Blowdown
17- 101 Solar Ponds
19- 121, 126.1, 126.2, Tank T-8

FACT SHEET FOR TOP 20 ENVIRONMENTAL SITES
IHSS 131, RAD SITE #1 - 700 AREA

Location: IHSS 131 is located on the north side of Building 776.

Description: IHSS 131 consists of radioactive releases due to an explosion in Building 776 in 1964 and the associated fire fighting activities. Plutonium was released to the environment in an approximate 2,000 square feet area around the dock of Building 776. After the explosion, soil was removed and the area has been covered with asphalt. Volatile organic contamination may be present adjacent to IHSS 118.1, the carbon tetrachloride tank spill.

Risk: Radionuclides, metals, and semi-volatile compounds are present above PPRGs and present a minor risk to workers due to the proximity of this site to buildings.

Further Characterization: Further characterization of the subsurface needs to occur, but will be combined with the investigation of IHSS 118.1, 144(N), and Tanks T-9 and T-10.

Probable Remedial Action: No remedial action will probably be needed, due to current cap. If significant subsurface contamination is discovered, hotspots would be removed. If contamination in the subsurface is not discovered then a no further action request will be submitted. No cost or schedule estimates will be developed until further characterization is complete.

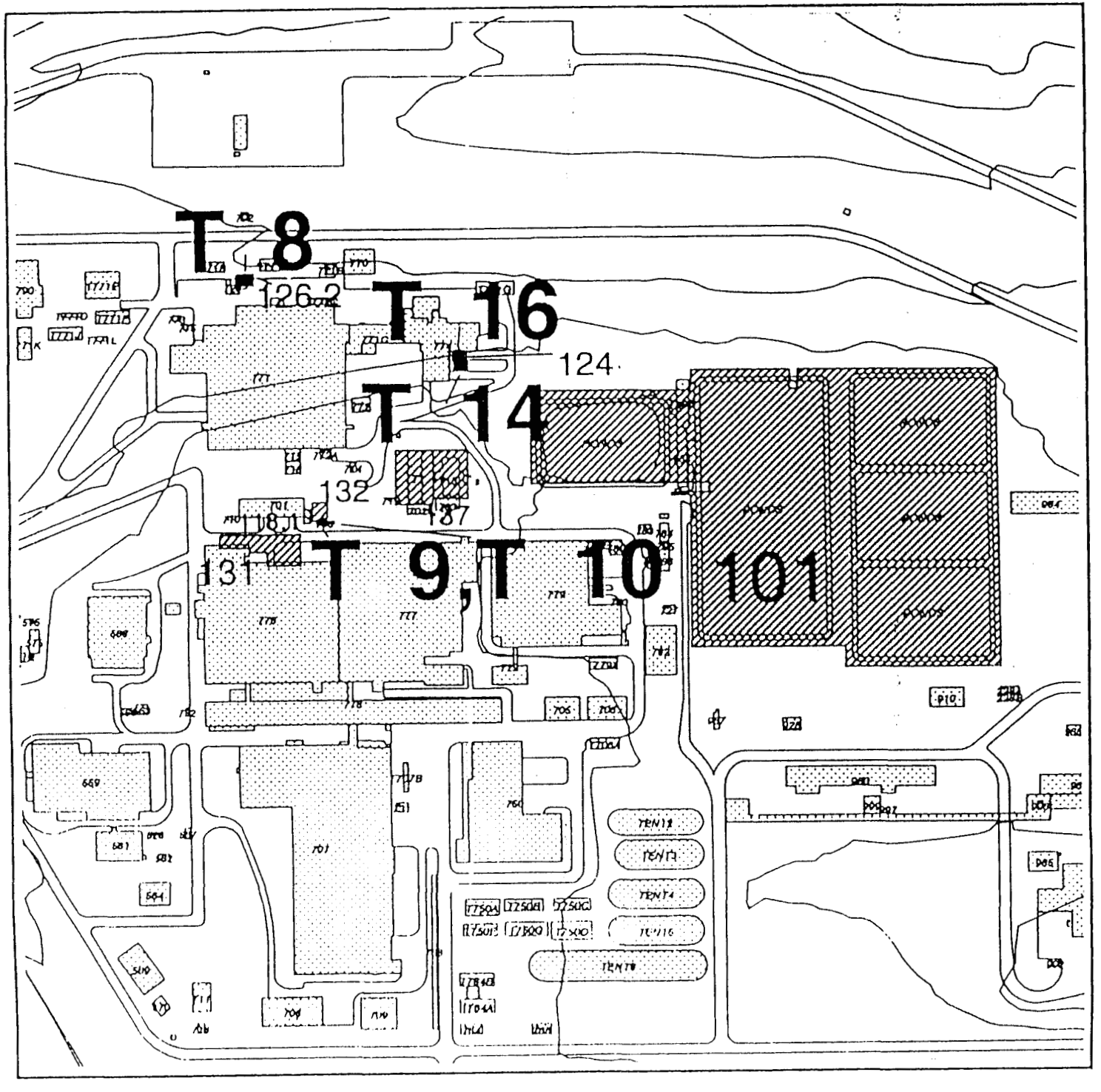
Worker Safety: No worker safety issues are expected.

Waste Issues: No issues are anticipated.

Risk Reduction: The risk associated with this site is relatively low. However, until subsurface conditions are known, a full evaluation is not possible.

Environmental Risk from Remediation: No environmental risk is anticipated.

Principal Reference: OU 9 Data Summary



Solar Pond Area

T 8 Tank Locations and Labels

118.1 IHSS Locations and Labels

Buildings

ER IHSS Ranking

1 - 121/124 Tank T-14
2 - 118.1, 132 and 121 Tanks 9&10
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13- 131 Rad Site 11
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FACT SHEET FOR TOP 20 ENVIRONMENTAL SITES
IHSS 118.1, 132, AND TANK UNITS 9 AND 10

Location: Overlapping IHSSs in an approximately 1000 square foot area on the north and west side of building 730:

- IHSS 118.1-Solvent Spills west of Building 730,
- Tank units 9 and 10 of IHSS 121 - Original Process Waste Lines (same as IHSS 132-radioactive site, 700 area # 4, abandoned tanks in laundry waste pit)
- IHSS 144(N)-Sewer line breaks near Bldg. 730

Description: Tank units 9 and 10 were installed in 1955 and are located in the 700 area within building 730. Both tank units are two-chambered concrete underground tanks that were part of the Original Process Waste Lines. Tank unit 9 was converted to a plenum deluge catch tank in 1984 and is still in service, tank unit 10 was abandoned in 1982 and is no longer in service. IHSS 118.1 was an underground storage tank which contained carbon tetrachloride. This tank was located in an 30 by 13 foot area approximately 10 feet west of building 730. Numerous releases were documented throughout its operational history. In 1981 the tank failed and several hundred of gallons were spilled. Subsequently the tank was removed. During field investigations for tanks T-9 and T-10, several inches of free product carbon tetrachloride were discovered in the subsurface soil around the tanks. IHSS 144(N) relates to overfills of tanks T-9 and T-10 onto the ground surface.

Risk: The risk is related to the presence of free product carbon tetrachloride discovered in the groundwater and the soils. Also, this area is the likely source of a groundwater plume, which was discovered during sampling of monitoring wells in the area. There exists a high potential for these very mobile constituents to continue to spread in the groundwater to other areas, and the possibility of further releases from the tanks.

Further Characterization: The extent of free product, and the contamination plume should be better defined. The free product was found in only one soil boring. Further investigation with a Geoprobe rig will delineate the extent of contamination and will be used to direct the remediation efforts. Investigation and installation of a free product recovery system is scheduled for 1996, is expected to take 8 months and cost $915,000.

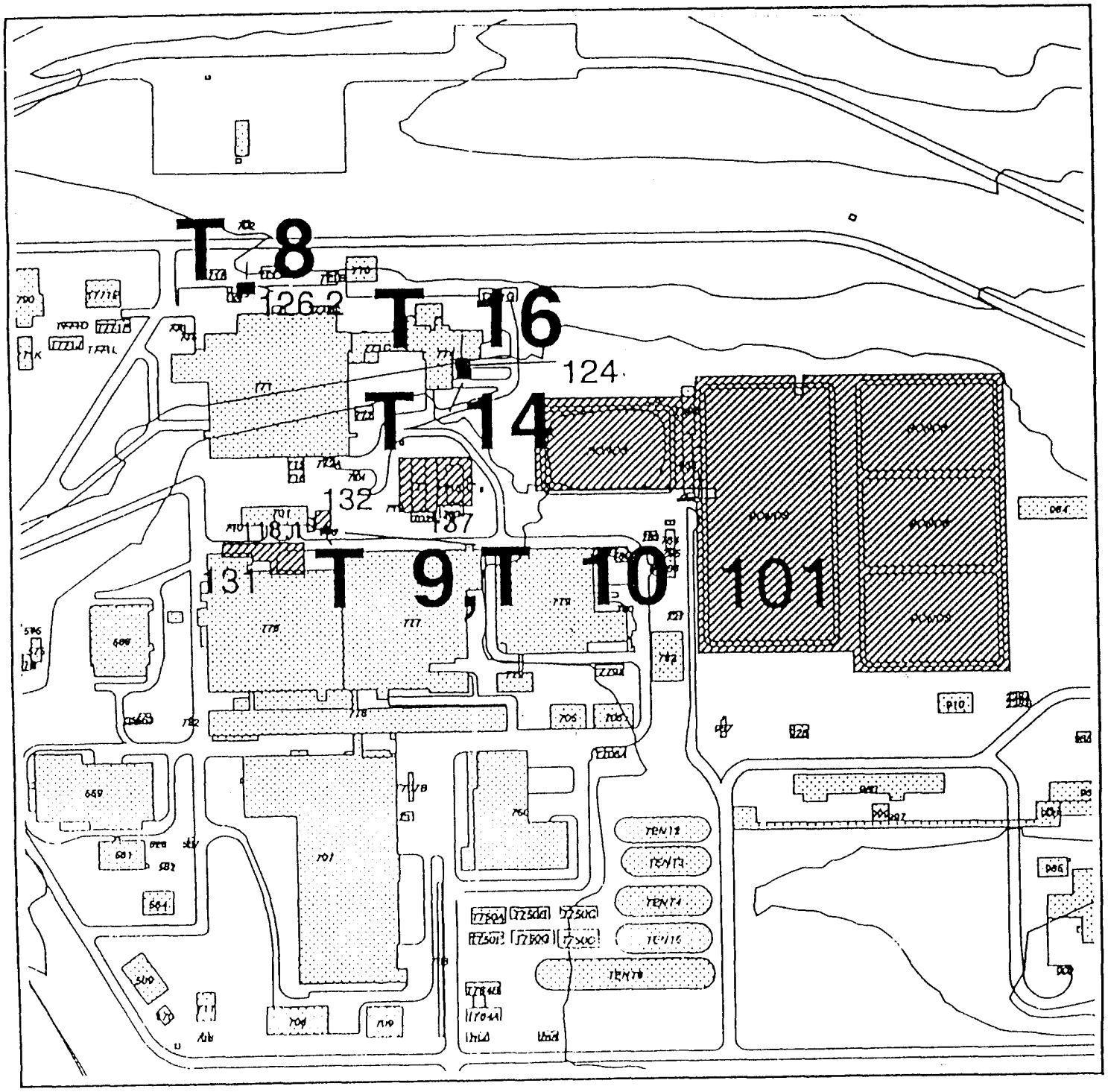
Probable Remedial Action: Plans are in progress to first recover some of the free product by installing recovery wells, potentially followed by limited excavation to remove the majority of the contaminated soils, source and the tanks. Product recovery, removal, excavation and soil disposal is expected to cost $2 million and take up to 1.5 years.

Waste Issues: At this time, there is no on-site disposal capability for any liquid carbon tetrachloride recovered. This issue must be resolved prior to the beginning of remediation.

Risk Reduction: Immediate removal of the free product will remove/reduce the source of contamination to the groundwater plume.

Environmental Risk from Remediation: There is very little possibility that additional damage could be caused by remediation activities in this highly contaminated site. However, procedures currently in-place will reduce or eliminate this risk.

Principal References: OU 8 and OU 9 Data Summaries



Solar Pond Area

T 8 Tank Locations and Labels

118.1 IHSS Locations and Labels

Buildings

ER IHSS Ranking

1 - 121/124 Tank T-14
2 - 118.1, 132 and 121 Tanks 9&10
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13- 131 Rad Site 11
15- 137 Bldg 712/713 Cooling T Blowdown
17- 101 Solar Ponds
19- 121, 126.1, 126.2, Tank T-8

FACT SHEET FOR TOP 20 ENVIRONMENTAL SITES
IHSS 137, BLDG. 712/713 COOLING TOWER BLOWDOWN

Location: IHSS 137 is associated with cooling towers and Buildings 712 and 713, in the 700 Area. The cooling towers serve Buildings 776 and 777 and are adjacent to each other in the area south of Building 774 and north of Building 777.

Description: IHSS 137 is associated with many leaks that have occurred in the past during the operation of the cooling towers. Contamination has occurred primarily from the chemicals that were added to water in the cooling towers to prevent biological growth, corrosion, scaling and other effects which can foul heat-transfer surfaces and limit performance. The primary contaminant from the operations of the cooling towers was chromate. The IHSS area extends approximately 10 feet beyond the foundation of the cooling towers.

Risk: The risk is related to the presence of contaminants exceeding background and PPRGs for semi-volatiles, metals, and radionuclides within the cooling towers and the surrounding surface soils. This contamination is close to buildings presenting some risk to workers. There exists a potential for these constituents to leach from the soils and spread in the groundwater to other areas. Building 779 is believed to have contributed to the contamination found here.

Further Characterization: Limited subsurface characterization will be needed prior to a final remedy selection for this IHSS. Previous work has indicated that potential connections to building footing drains exist near the cooling towers. Confirmation of subsurface contamination is proposed and can be accomplished for approximately $25,000 and 1 month.

Probable Remedial Action: The likely remedial action in this area would be hotspot removals. The area should be remediated when the cooling towers are deactivated and torn down. Costs for soil remediation alone are $150,000 and 5 months.

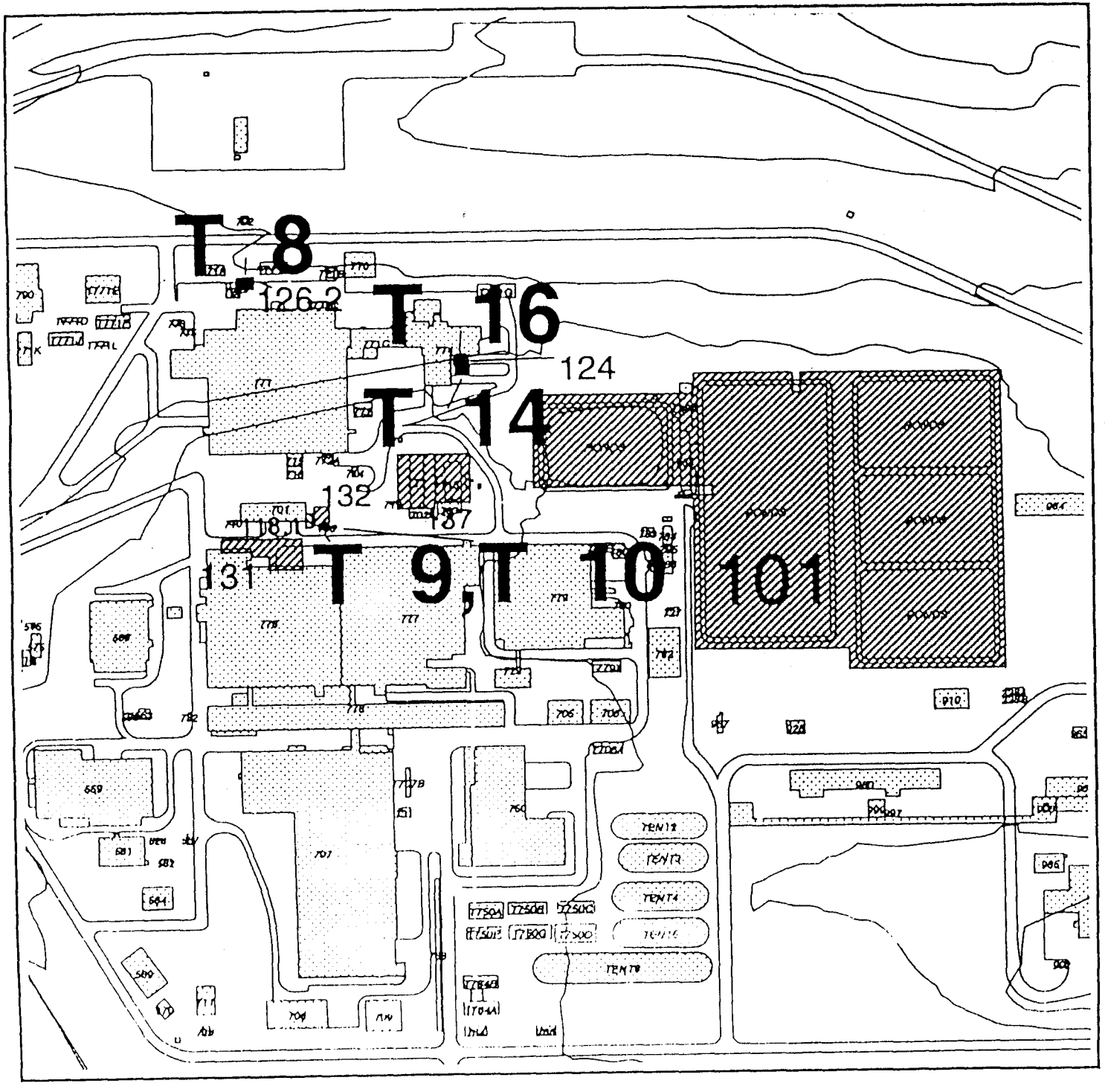
Worker Safety: No worker safety issues are anticipated.

Waste Issues: No waste issues are anticipated

Risk Reduction: The proposed remedial action will eliminate risk from this site.

Environmental Risk from Remediation: There is a low possibility that spills could occur during the decommissioning of the cooling towers. Procedures currently in-place reduce this risk to a very low possibility.

Principal Reference: OU 8 Data Summary



Solar Pond Area

T 8 Tank Locations and Labels

118.1 IHSS Locations and Labels

Buildings

ER IHSS Ranking

1 - 121/124 Tank T-14
2 - 118.1, 132 and 121 Tanks 9&10
3 - 121/124.1/124.2/ 125 PW Tank T-16N
13- 131 Rad Site #1
15- 137 Bldg 712/713 Cooling T Blowdown
17- 101 Solar Ponds
19- 121, 126.1, 126.2, Tank T-8

FACT SHEET FOR TOP 20 ENVIRONMENTAL SITES
IHSS 174.1 (174a), DRUM STORAGE AREA

Location: IHSS 174a is located within, and is a subset of, IHSS 170, Property Utilization and Disposal (PU&D)Yard. It is located northwest of the Protected Area in the Buffer Zone adjacent to the existing sanitary landfill.

Description: IHSS 174a is a subset of IHSS 170, PU&D storage yard, and is approximately 60 feet by 60 feet in area in the northeast portion of IHSS 170. Historically, this area was used to store drums containing waste oils, paints, and paint thinners. It is estimated that as many as 460 drums have been stored at this location. Leaks and spills occurred from these stored drums until 1985, when all of the waste oils and drums were removed for disposal.

Risk: Very minimal risk is associated with this IHSS. Contaminants of concern include volatile and semi-volatile organic compounds present in the soil and possibly the groundwater.

Further Characterization: Additional characterization for this IHSS includes Geoprobe soil and groundwater samples to bedrock to determine the nature and extent of possible organic contamination at depth. Based on the results of these samples, several borings and groundwater monitoring well installations may be needed to further characterize the nature and extent of any groundwater contaminant plumes that may exist.

Probable Remedial Action: The probable remedial alternative for this IHSS would include a combination of hotspot removal and disposal or capping, with low temperature thermal desorption for the more contaminated soils. These actions, could be achieved as part of a larger IHSS 170 remedial action project. Initial estimates place the overall cost of removal and treatment at approximately $500,000 and 6 months.

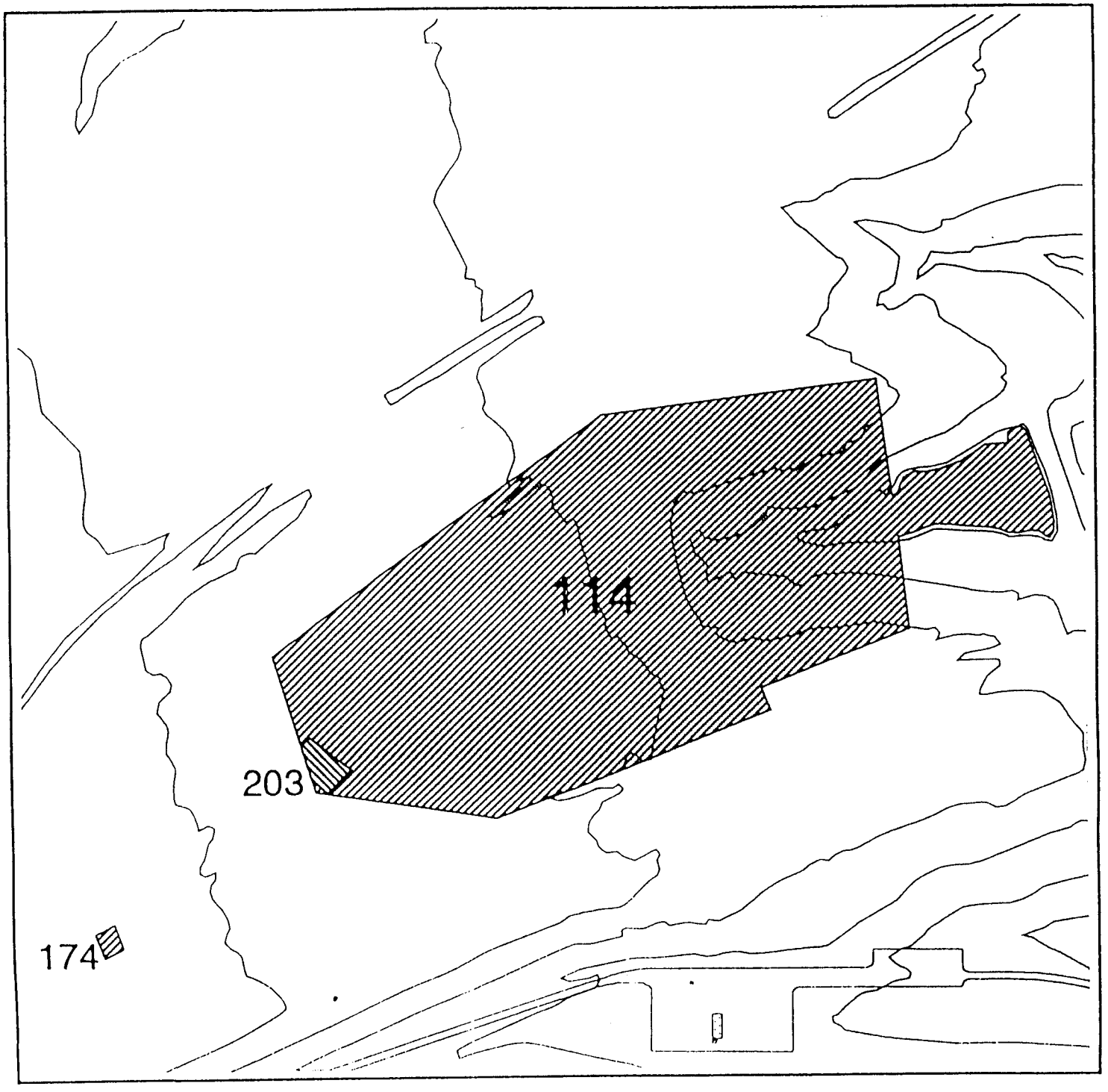
Worker Safety: The only worker safety issues that would be a concern in this IHSS would be possible exposure to VOCs during soils removal, and hazards associated with heavy equipment.

Waste Issues: No waste issues are anticipated.

Risk reduction: Minor risk reduction achieved by remediating this site would be accomplished by removal of possible sources in the soils that could possibly contaminate groundwater and surface water downgradient. Risk reduction at this site is small, due to the low levels of VOC contaminants.

Environmental Risk from Remediation: Environmental risk from remediating this site is extremely low.

Principal Reference: OU 12 Preliminary Draft Technical Memorandum No. 2



Landfill Area

203 IHSS Locations and Labels

Buildings

ER IHSS Ranking

16- 174.1 (174a) PU&D Storage Areas
18- 114-Present Landfill (includes IHSS 203)

FACT SHEET FOR TOP 20 ENVIRONMENTAL SITES
IHSS 114, PRESENT LANDFILL (INCLUDES IHSS 203)

Location: The Present Landfill is located at the head of the No Name Creek Drainage, in the northwestern quadrant of the Site.

Description: The landfill currently receives only non-hazardous wastes. However, some hazardous wastes and materials and some radioactive wastes were deposited in the landfill prior to 1986. The landfill is currently considered an inactive hazardous waste site undergoing RCRA closure. Actual closure of the landfill will begin in June 1997. The landfill is approximately 44 acres, stores wastes at a depth of from 1 foot to 40 feet deep, and contains approximately 5 million gallons of groundwater.

Risk: The landfill contains volatile and semi-volatile organic compounds, and some metals such as arsenic and lead. Risk assessments have indicated that no single contaminant presents a risk greater than 10^{-6} to persons offsite, or greater than 10^{-4} to workers onsite at the landfill.

Further Characterization: The IM/IRA decision document has been completed, and no further characterization is planned.

Probable Remedial Action: The standard remedial action that EPA approved for landfills is called the Presumptive Remedy. The Presumptive Remedy is being implemented and includes a cap, walls, and leachate collection. The walls are formed by pouring a slurry of clay-forming materials into a trench that extends from the ground surface to bedrock. These slurry walls will be 18-24 inches wide, and 10-40 feet deep. The walls will enclose the north, west, and south sides of the landfill. The leachate collection system will collect drainage from the landfill by passive gravity drainage out the downslope east side. The drainage may be treated by granulated activated charcoal (GAC) filtration, and will then be discharged to the landfill pond for evaporation. Any excess liquids will be transferred to the A-series ponds.

Construction of the leachate collection system will begin in December 1995. Construction of the cap and walls will be performed during FY97 and FY98. The total cost of construction activities will be approximately $32M. This does not include management and monitoring activities for the 30-year period after closure.

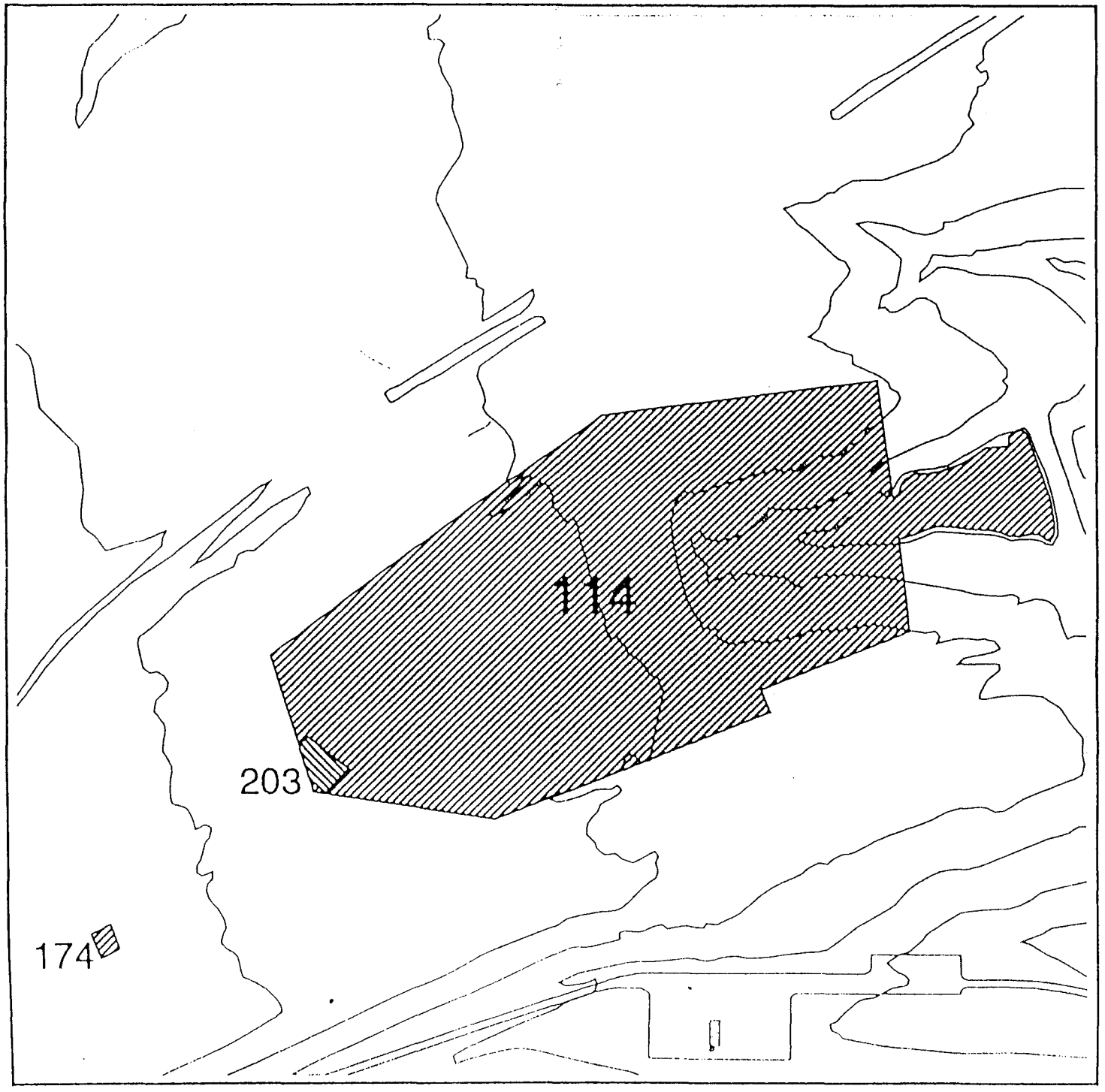
Worker Safety: Excavating and moving a large volume of soil presents a moderate risk to workers. Procedures in place will reduce or eliminate this risk.

Waste Issues: None. Liquid wastes will be treated by GAC filtration and discharged onsite.

Risk Reduction: All contaminant pathways will be controlled by the cap, walls, and leachate collection system. Risk to downstream communities will be reduced to less than 10^{-6} for each contaminant identified.

Environmental Risk from Remediation: No risk to the environment has been identified for the proposed remediation activity.

Principal Reference: Draft IM/IRA Decision Document, currently in review at regulatory agencies



Landfill Area

203 IHSS Locations and Labels

Buildings

ER IHSS Ranking

16- 174.1 (174a) PU&D Storage Areas
18- 114-Present Landfill (includes IHSS 203)

FACT SHEET FOR TOP 20 ENVIRONMENTAL SITES
IHSS 119.1, FORMER DRUM STORAGE AREA

Location: IHSS 119.1 is a former drum storage area located within Operable Unit 1, on the hillside southeast of Building 881, north of Woman Creek.

Description: Drums were primarily stored in the southern portion of the IHSS, and scrap metal was stored in the northern portion. The drums contained unknown types and quantities of volatile organic compounds and wastes; the scrap metal may have been coated with residual cutting oils. Investigations indicate that there is a small area of trichloroethene, 1,1,1-TCA and carbon tetrachloride occurring as Dense Non-Aqueous Phase Liquids (DNAPLs) in a zone directly beneath the IHSS with a groundwater plume extending down gradient along a preferential pathway that is intercepted by the French Drain.

Radionuclides were also detected in IHSS 119.1 during detailed radiological surveys. Five discrete areas of localized contamination were found clustered in the IHSS and a sixth area was located near IHSS 119.2. The contamination consisted of uranium, or plutonium and americium and was confined to areas approximately ten inches in diameter and twelve inches deep. An Accelerated Response Action was initiated in 1994 to remove the contaminated soils because the presence of the hot spots posed unacceptable health risks. Twenty-one 55 gallon drums were filled with the excavated soils and sent to Envirocare in Utah for disposal as a mixed low-level waste.

Risk: The risk is derived from the postulated occurrence of free product that continues to release to ground water.

Further Characterization: Additional characterization is needed to pinpoint the extent of DNAPL contamination. Characterization should take approximately six months, including the preparation of a sampling plan, and interpretation.

Probable Remedial Action: The contaminated soils will be excavated and treated by thermal desorption at a rough order of magnitude cost estimate of $9 million and 6 months.

Waste Issues: A thermal desorption unit has not yet been identified to treat remediation wastes.

Worker Safety Issues: Instability of the slope in this area and known slumping on the hillside will be a concern.

Risk Reduction: This action will remove the source of groundwater contamination in this area.

Environmental Risk from Remediation: There is a moderate environmental risk of the spread of contamination during excavation, however procedures currently in-place reduce the risk to an acceptable level.

Principle Reference: OU 1 Final Corrective Measures Study/Feasibility Study
881 Hillside Area, February 1995

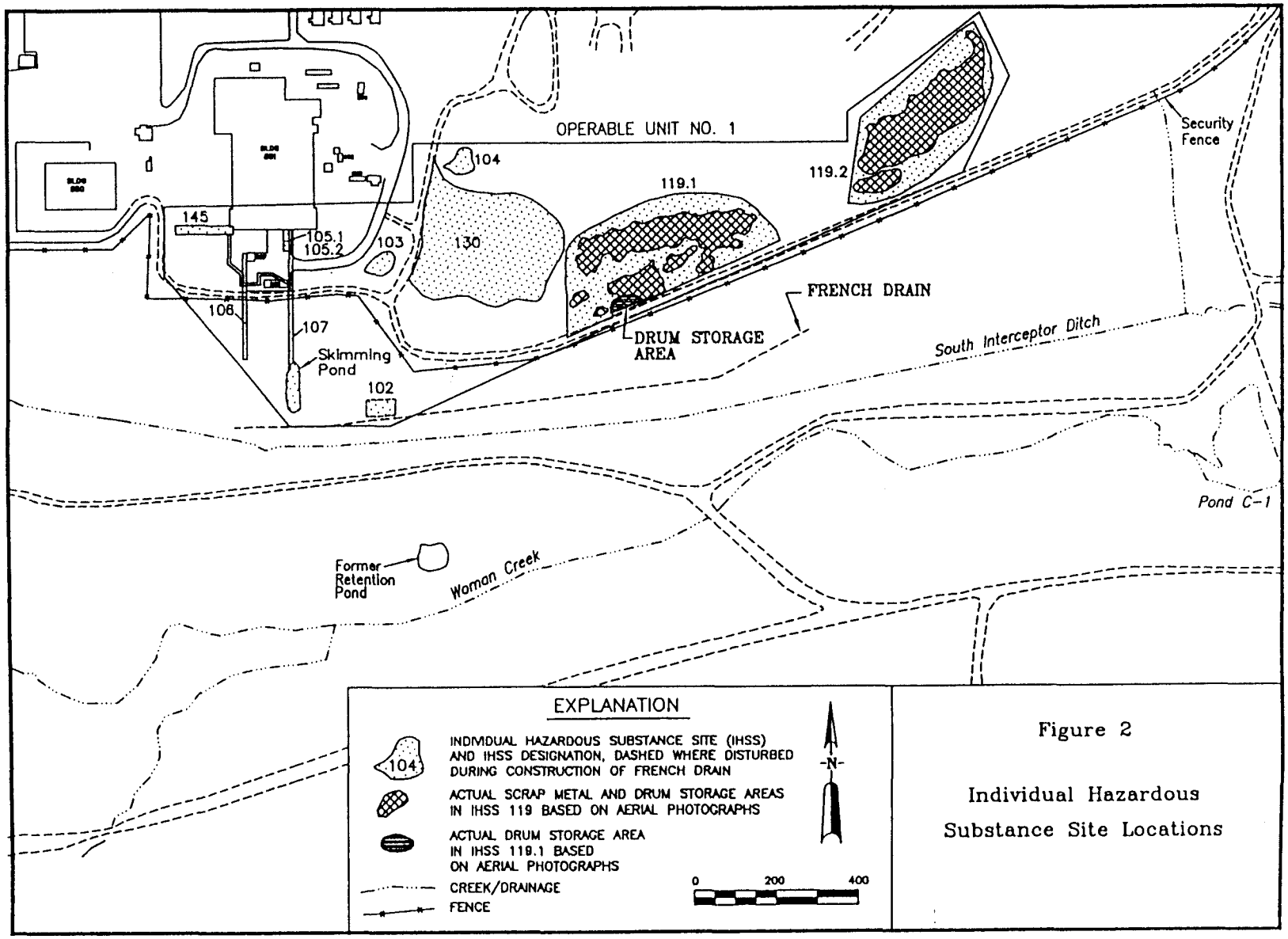


Figure 2

Individual Hazardous Substance Site Locations

FACT SHEET FOR TOP 20 ENVIRONMENTAL SITES
IHSS 109, RYAN'S PIT

Location: IHSS 109 is a former waste disposal area located within Operable Unit 2 south of the 903 Pad. The IHSS is approximately 23 feet in length, 11 feet in width, and 6 feet in depth and contains approximately 57 cubic yards of contaminated soils and debris.

Description: The disposal trench was opened between 1967-1969 to receive volatile organic compounds, which included perchloroethylene and trichloroethene, typical compounds used at the time. The trench was first visible on a vertical aerial photograph taken in 1967. Another vertical photograph taken in 1970 indicated that the trench may have been backfilled at that time. A close up photograph taken in 1971 shows the trench backfilled and graded.

Groundwater maps in the 1993 Well Evaluation Report indicate that contaminants from Ryan's Pit contribute to groundwater plumes that are elevated in volatile organic compounds (VOCs). The assumption is that groundwater movement is occurring downgradient from the trench along the colluvium-bedrock contact.

Risk: The risk is derived from the VOCs and free product (NAPL) which are a source of groundwater contamination. Radionuclide isotopes detected in the subsurface soils appear to be stationary.

Further Characterization: No further characterization is necessary.

Probable Remedial Action: The contaminated subsurface soils have been excavated and will be treated by thermal desorption. Total rough order of magnitude cost estimate is $1.4M over the next six months.

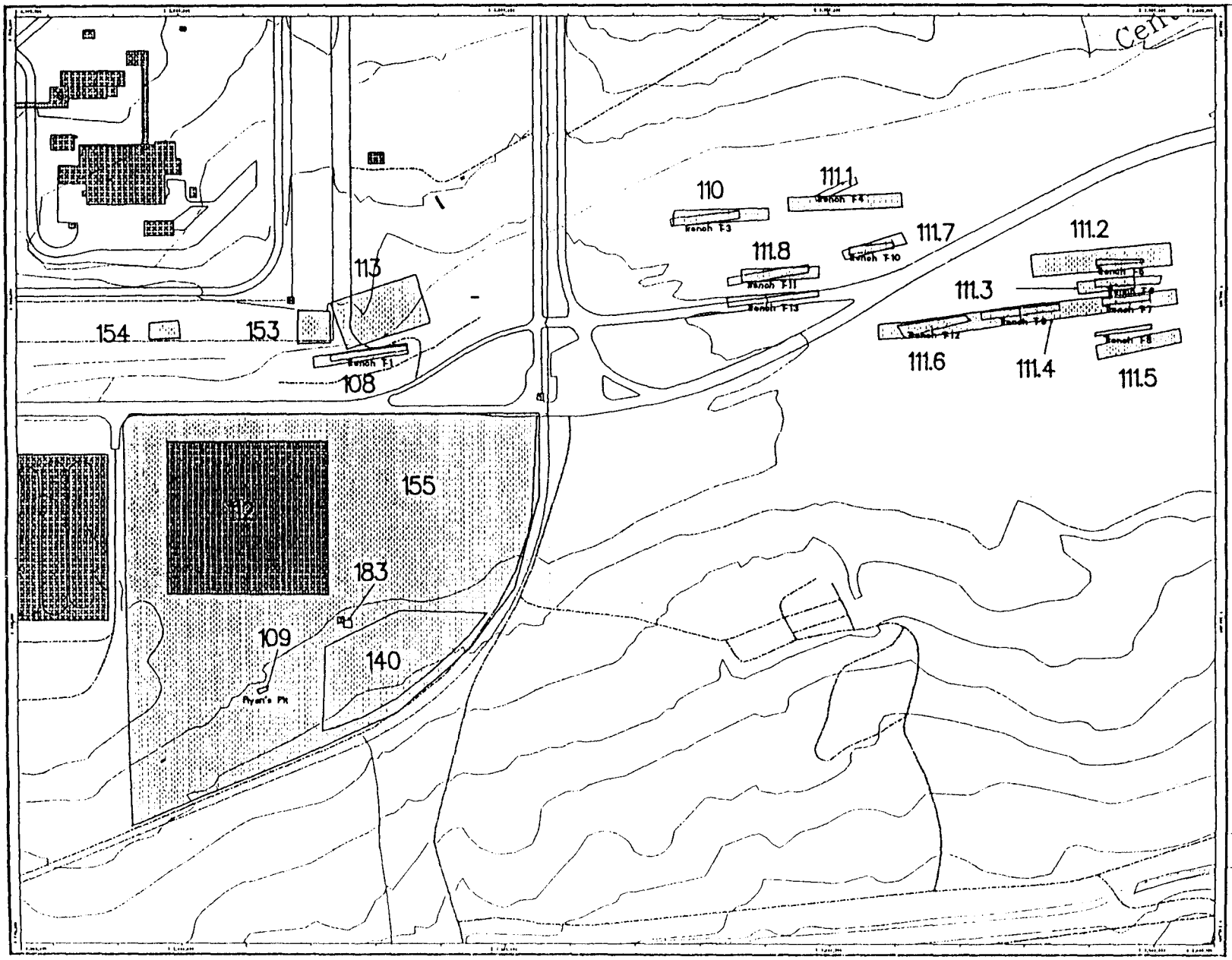
Waste Issues: A thermal desorption unit is currently being permitted to treat the contaminated subsurface soils currently stored in roll off boxes.

Worker Safety Issues: There was a moderate concern due to the high levels of VOCs which mandated substantial PPE requirements. Workers were required to wear supplied air breathing apparatus when excavating subsurface material.

Risk Reduction: Removal of the volatile organic compound contaminated soil eliminated the source of the groundwater and subsurface soil contamination.

Environmental Risk from Remediation: There was a moderate environmental risk of spreading contamination during excavation due to the proximity to the Woman Creek drainage. However, contamination was not spread during remediation efforts due to the safeguards taken and the procedures in place.

Principle Reference: Proposed Action Memorandum for IHSS 129, Ryan's Pit


Operable Unit 2
EXPLANATION
New Trench Boundaries
OU 2 IHSS
Standard Map Features
Buildings or other structures
Lakes and ponds
Streams, ditches, or other drainage features
Fences
Contours (20' Intervals)
Paved roads
Dirt roads
110
Trench T-3
111.1
Trench T-4
111.7
Trench T-10
111.2
Trench T-5
Trench T-6
Trench T-7
111.8
Trench T-11
Trench T-13
111.3
Trench T-9
Trench T-12
111.6
111.4
Trench T-8
111.5
113
154
153
Trench T-1
108
155
112
183
109
140
Ryan's Pit
U.S. Department of Energy
Rocky Flats Environmental Technology Site
RMRS
Rocky Mountain Remediation Services, L.L.C.

FACT SHEET FOR TOP 20 ENVIRONMENTAL SITES
IHSS 110, TRENCH T-3

Location: Trench T-3 is located in the east buffer zone, north of the East Access Road. It is approximately 180 feet in length, averages about 18 feet in width, and is approximately 10 feet deep.

Description: Trench T-3 was used from around 1964 to 1969 to dispose of sludge from the wastewater treatment plant which was potentially contaminated with uranium and plutonium. Recent drilling has confirmed the presence of some flattened drums along with water, petroleum products and volatile organic compounds.

Risk: Investigations have detected areas of subsurface soil and groundwater contamination at Trench T-3. However, the risk from Trench T-3 is driven by high concentrations of volatile organic compounds which are suspected contributors to the groundwater plume.

Further Characterization: None required prior to remediation.

Probable Remedial Action: The trench will be excavated and the waste will be treated. Estimated cost and schedule for the excavation and treatment of waste from T-3 is $2.5 million and 6 months.

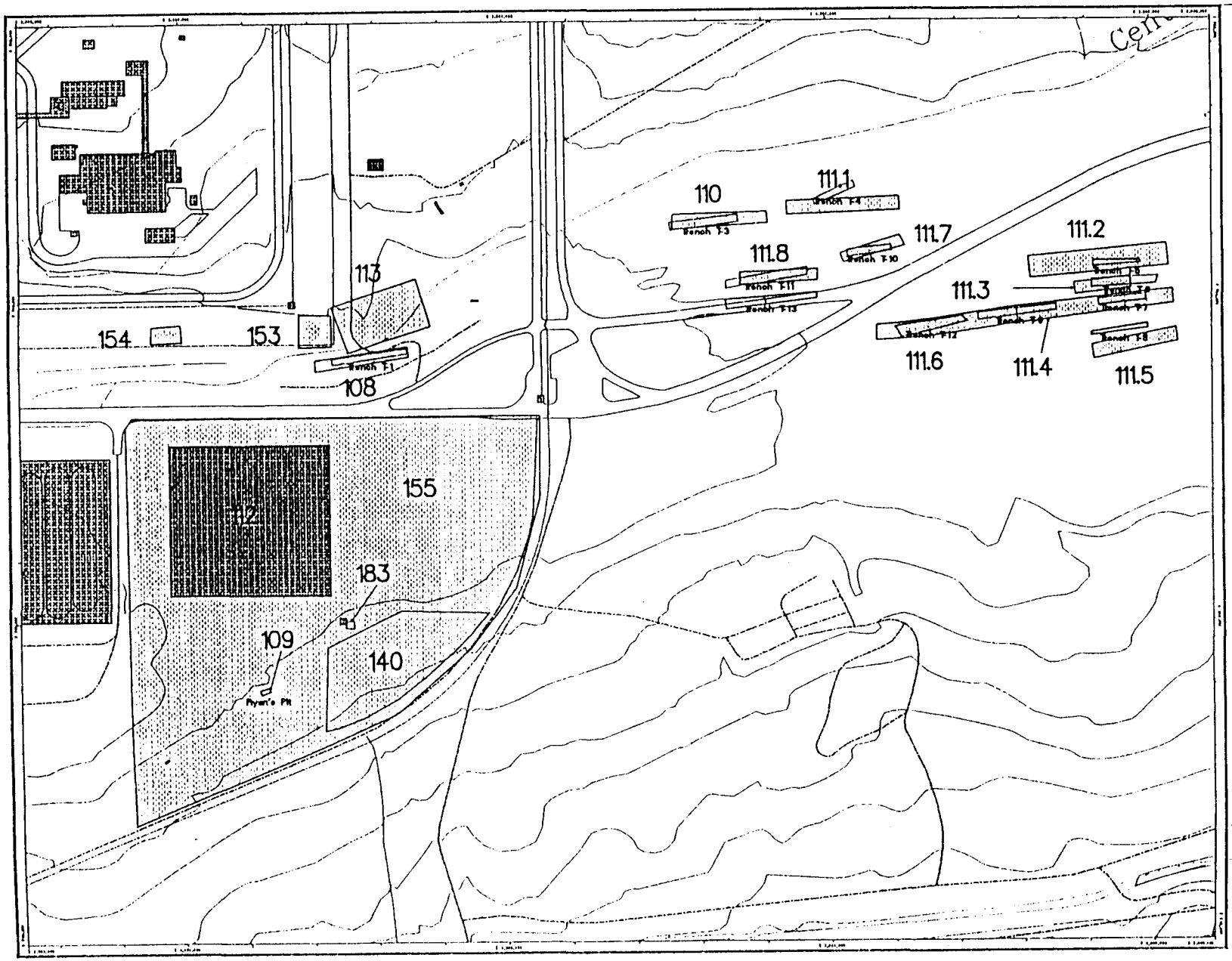
Worker Safety: There are worker safety concerns due to the high levels of volatile organic compounds known to be present. The amount of PPE required during remediation may also present a safety issue as it will restrict vision, hearing and mobility and add to heat stress.

Waste Issues: A thermal desorption unit is currently being permitted to treat the contaminated subsurface soils currently stored in roll off boxes.

Risk Reduction: A high level of risk reduction will occur as one of the major sources will be removed from the groundwater plume. This plume may eventually contribute to surface water contamination, and become a risk to open space use.

Environmental Risk from Remediation: There is a potential to spread contamination during excavation activities due to the high concentrations of volatile organic compounds. Contaminated soil could be spilled onto the ground, resulting in surficial soil contamination. While T-3 is at the edge of South Walnut Creek Drainage, it is unlikely that spilled material could impact surface water. Procedures in place will reduce or eliminate the risk of spreading contaminants. Air quality issues are of the most concern during excavation. Water sprayed during excavation will reduce or eliminate this risk. During waste treatment, emission controls will be in place to eliminate the spread of contamination, and to meet the substantive requirements of RCRA and the Clean Air Act.

Principal Reference: Final OU 2 Phase II RFI/RI Report, October 23, 1995


Operable Unit 2
EXPLANATION
New Trench Boundaries
OU 2 IHSS
Standard Map Features
Buildings or other structures
Lakes and ponds
Streams, ditches, or other drainage features
Fences
Contours (20' intervals)
Paved roads
Dirt roads
110
Trench F-3
111.1
Trench F-4
111.7
Trench F-10
111.2
111.8
Trench F-11
Trench F-13
111.3
Trench F-12
Trench F-9
Trench F-7
Trench F-8
111.6
111.4
111.5
113
154
153
Trench F-1
108
155
112
183
109
140
Ryan's Pit
U.S. Department of Energy
Rocky Flats Environmental Technology Site
RMRS
Rocky Mountain Remediation Services, L.L.C.

FACT SHEET FOR TOP 20 ENVIRONMENTAL SITES
IHSS 111.1, TRENCH T-4

Location: Trench T-4 is located in the east buffer zone, north of the East Access Road. It is approximately 110 feet in length, averages about 16 feet in width, and is approximately 10 feet deep.

Description: This trench was used from approximately 1964 through 1966 to dispose of sanitary wastewater treatment plant sludge which was potentially contaminated with uranium and plutonium. Flattened empty drums also were disposed in the trenches. In addition, asphalt planking from Solar Pond 207A is reported to have been disposed of in Trench T-4.

Risk: Investigations have detected areas of subsurface soil and groundwater contamination at Trench T-4. However, the risk from Trench T-4 is driven by the presence of high levels of volatile organic compounds in the trench which most likely contribute to the groundwater plume.

Further Characterization: None required prior to remediation.

Probable Remedial Action: The trench will be excavated and the waste will be treated. Estimated cost and schedule for the excavation and treatment of waste from T-4 is $2.5 million and 6 months.

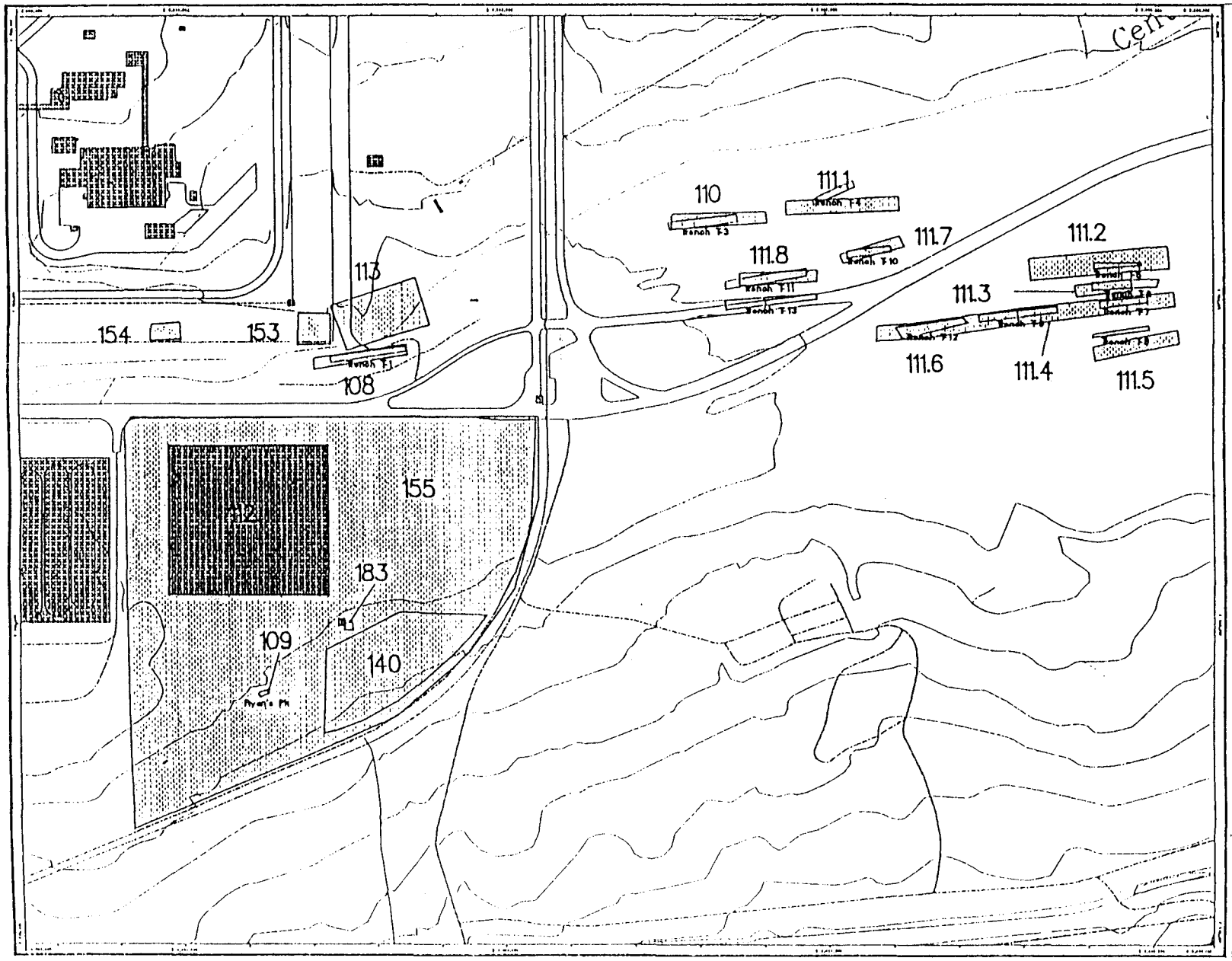
Worker Safety: There are worker safety concerns due to the high levels of volatile organic compounds known to be present. The amount of PPE required during remediation may also present a safety issue as it will restrict vision, hearing and mobility and add to heat stress.

Waste Issues: A thermal desorption unit is currently being permitted to treat the contaminated subsurface soils.

Risk Reduction: A high level of risk reduction will occur as one of the major sources will be removed from the groundwater plume. This plume may eventually contribute to surface water contamination, which would be a risk to open space use.

Environmental Risk from Remediation: There is a moderate potential to spread contamination during excavation activities due to the high concentrations of volatile organic compounds. Contaminated soil could be spilled onto the ground, resulting in surficial soil contamination. While T-4 is near the South Walnut Creek Drainage, it is unlikely that spilled contaminated soil could impact surface water. Procedures in place will reduce or eliminate the risk of spreading contaminants. Air quality issues are of the most concern during excavation, but water sprayed during excavation will reduce or eliminate this risk. During waste treatment, emission controls will be in place to eliminate the spread of contamination, and to meet the substantive requirements of RCRA and the Clean Air Act.

Principal Reference: Final OU 2 Phase II RFI/RI Report, October 23, 1995



Operable Unit 2

EXPLANATION

New Trench Boundaries

OU 2 HIGH

Standard Map Features

Buildings or other structures

Lakes and ponds

Streams, ditches, or other drainage features

Fences

Contours (20' intervals)

Paved roads

Dirt roads

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FACT SHEET FOR TOP 20 ENVIRONMENTAL SITES
IHSS 112, 155, 183, 140 - 903 PAD AND ASSOCIATED AREA

Location: Eastern edge of the Industrial Area, south of the East Access road.

Description: Drums containing plutonium and uranium contaminated volatile organic compounds were stored on the 903 Pad from 1958 to 1967. Leaking drums resulted in volatile organic compounds and radiological contamination of the 903 Pad and Lip Area. Wind, rain and clean-up activities dispersed the radiological contamination, which, with the windblown contamination from the historical fires at RFETS, comprises the 2,000 acre area known as the Americium Zone. The 903 Pad area includes:

- IHSS 112 - 903 Pad, Drum Storage Site,
- IHSS 155 - 903 Pad Lip Area,
- IHSS 140 - Reactive Metal Destruction Site, and
- IHSS 183 - Gas Detoxification Site.

Several removal actions took place in the 1960s and 1970s to remove hot spots, and to cap the 903 Pad with asphalt. The Lip Area was also graded and covered with 7 inches of clean fill.

Risk: Elevated concentrations of plutonium and americium are present in surficial soil in the 903 Pad and Lip Area. A small, volatile organic compound groundwater plume exists under the 903 Pad. High concentrations of radionuclides at the surface near the Woman Creek Drainage present the potential for these contaminants to impact surface water. While the interceptor ditch collects any mobilized contaminants before these enter the creek, best practices are to remediate this risk.

Further Characterization: A few areas with high plutonium and americium levels will be further characterized to define the extent of the contaminated area, potentially to remediate as hot spot removals. The extent of volatile organic compounds under the 903 Pad should be better defined.

Probable Remedial Action: Areas with high radiological levels will be excavated, and capped. Volatile organic compounds will be evaluated prior to determining a remediation method. Run-on and run-off control for the Lip Area will be installed. A rough cost estimate of $3.5 million was calculated for excavation, capping and additional characterization. The decision document for the 903 Pad Area will be completed in fiscal year 1996. Remediation will begin in 1997 and take approximately 9 months.

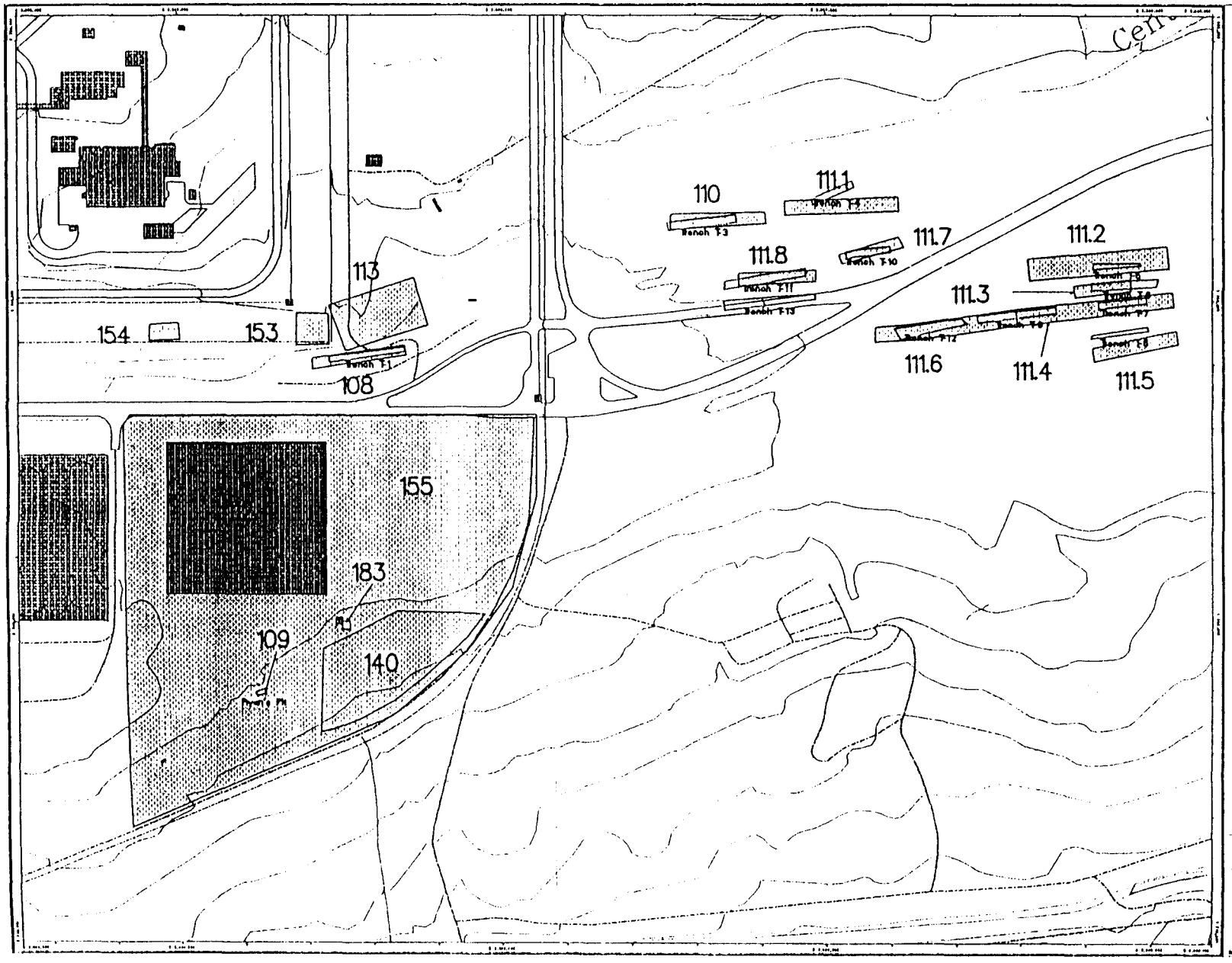
Worker Safety: The high levels of radionuclides combined with volatile organic compounds will result in numerous worker safety issues. The amount of PPE required during remediation may also present a safety issue as it will restrict vision, hearing and mobility.

Waste Issues: The proposed on-site disposal cell is the most likely option to dispose of the large volumes of radionuclide contaminated soil, potentially mixed with volatile organic compounds.

Risk Reduction: A high level of risk reduction will occur as the source will be removed which contributes to groundwater plumes, potentially contributes to surface water contamination, and is a risk to open space use.

Environmental Risk from Remediation: There is a high potential to spread contamination during remediation activities by wind, or by contaminating surface water. However, current in-place procedures will reduce or eliminate this risk.

Principal Reference: Final OU 2 Phase II RFI/RI Report, October 23, 1995



Operable Unit 2

EXPLANATION

New Trench Boundaries

OU 2 IHSS

Standard Map Features

Buildings or other structures

Lakes and ponds

Streams, ditches, or other drainage features

Fences

Contours (20' intervals)

Paved roads

Dirt roads

U.S. Department of Energy

Rocky Flats Environmental Technology Site

RMRS Rocky Mountain Remediation Services, L.L.C.

FACT SHEET FOR TOP ENVIRONMENTAL SITES
IHSS 113, MOUND AREA

Location: The Mound is located immediately east and outside of the Protected Area Fence, north of the East Access road.

Description: From 1954 to 1958, drums of combustible waste were lined up inside a shallow trench, and then buried. Later in 1958 and early 1959, drums were stored on the surface until the 903 Pad drum storage area was available. In 1970, the drums were excavated, and the area was graded resulting in an area 217 feet long by 124 feet wide. During construction of the PA perimeter fence in 1981, several uranium contaminated hot spots were located and removed.

Risk: Uranium and plutonium contaminated volatile organic compounds were stored at the Mound, and there are areas of with high levels of subsurface and groundwater contamination. The high concentrations of volatile organic compounds will continue to contaminate groundwater, and as the Mound is near the South Walnut Creek Drainage, it is possible that groundwater contamination from the Mound could impact surface water in this drainage.

Further Characterization: Recent investigation discovered areas of volatile contamination in the Mound Area. Limited field investigation is needed to define the extent of contamination.

Probable Remedial Action: The contaminated area will be excavated, and the waste treated using thermal desorption. The estimated cost is $1.1 million with the remediation to be completed in four months.

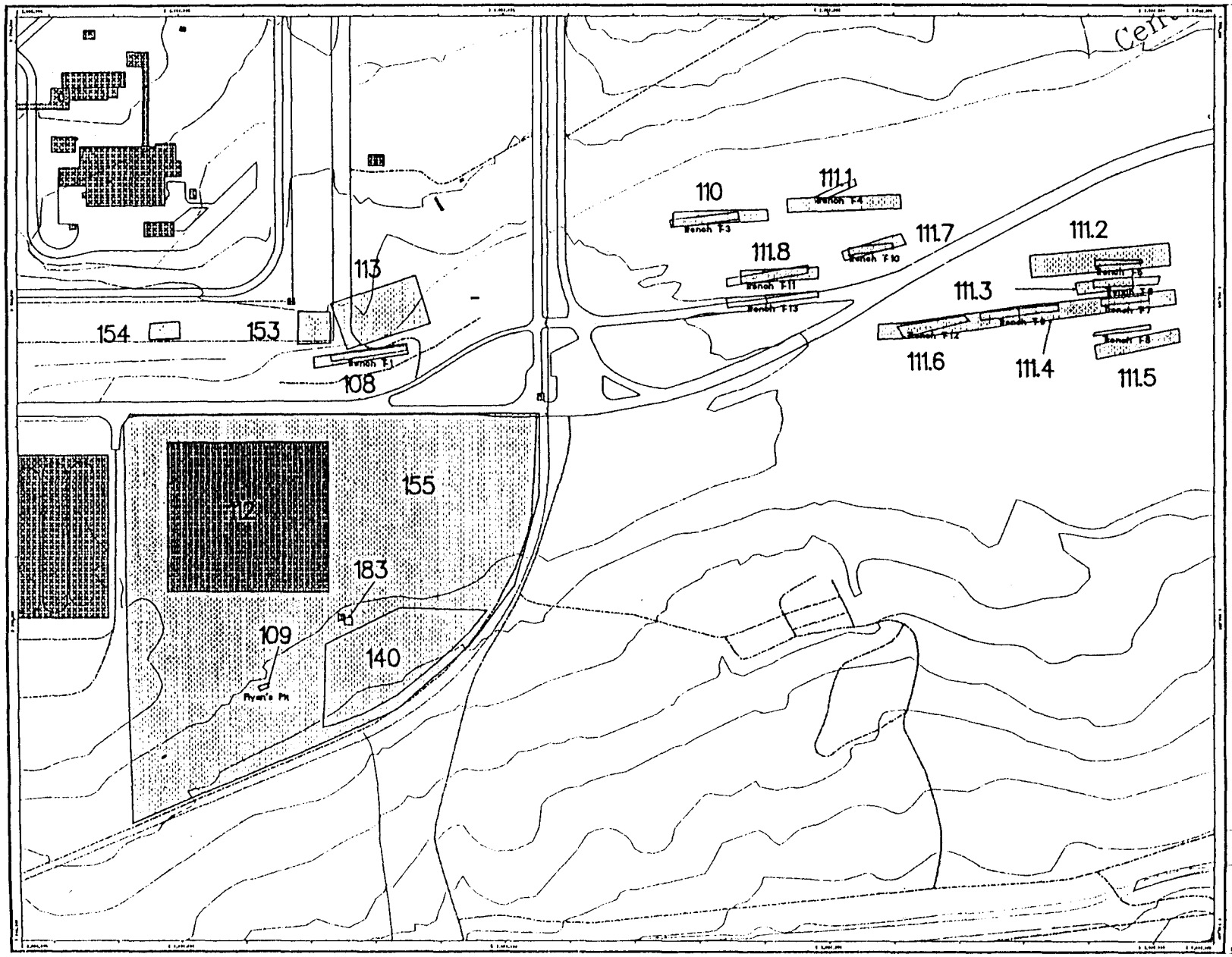
Worker Safety: The high levels of volatile organic compounds and possibly radionuclides will probably result in significant worker safety issues. The amount of PPE required during remediation may also present a safety issue as it will restrict vision, hearing and mobility.

Waste Issues: No capability currently exists on-site to treat or dispose of this waste.

Risk Reduction: Significant risk reduction will occur as the source will be removed which contributed to groundwater contamination.

Environmental Risk from Remediation: During excavation, a slight possibility exists to spread contamination into adjacent drainages where it could potentially contaminate surface water. However, procedures currently in-place will reduce or eliminate the risk of spreading contaminants.

Principal Reference: Final OU 2 Phase II RFI/RI Report



Operable Unit 2

EXPLANATION

New Trench Boundaries

OU 2 IHSS

Standard Map Features

Buildings or other structures

Lakes and ponds

Streams, ditches, or other drainage features

Fences

Contours (20' intervals)

Paved roads

Dirt roads

U.S. Department of Energy

Rocky Flats Environmental Technology Site

RMRS

FACT SHEET FOR TOP 20 ENVIRONMENTAL SITES
IHSS 108, TRENCH T-1

Location: IHSS 108 is a former drum and waste disposal area located within Operable Unit 2, directly south of the Mound Area. The trench is approximately 200 feet in length, 20 feet in width, and 10 feet in depth and contains approximately 1,490 cubic yards of contaminated soils and debris.

Description: Records indicate that 125 drums containing depleted uranium chips, cemented cyanide waste, and copper alloy material were buried in Trench T-1. Some of the uranium is suspected to be pyrophoric. Another 38 drums containing metal turnings, still bottoms (residue from a distillation process), and cemented cyanide waste were also reportedly disposed of in the trench.

Organic, inorganic, and radionuclide contaminants were detected in elevated concentrations and include, acetone, and toluene; bis (2-ethyhexyl) phthalate and di-n-butyl phthalate; arsenic, and cadmium.

Risk: The risk is derived from the occurrence of the VOCs, primarily TCE and PCE, and to the presence of a large radioactive source in the subsurface.

Further Characterization: Additional characterization is needed to define the trench contents and determine whether pyrophoric material is contained in the trench. Sampling should take approximately six months, including the preparation of a sampling and analysis plan, field work, laboratory analysis and data interpretation.

Probable Remedial Action: The trench will probably be excavated and decomposed drums shredded and treated by thermal desorption. Unoxidized uranium, if found, may be treated with chlorine bleach in a pug mill to achieve oxidation. Treated soils may be transported to an on-site disposal cell.

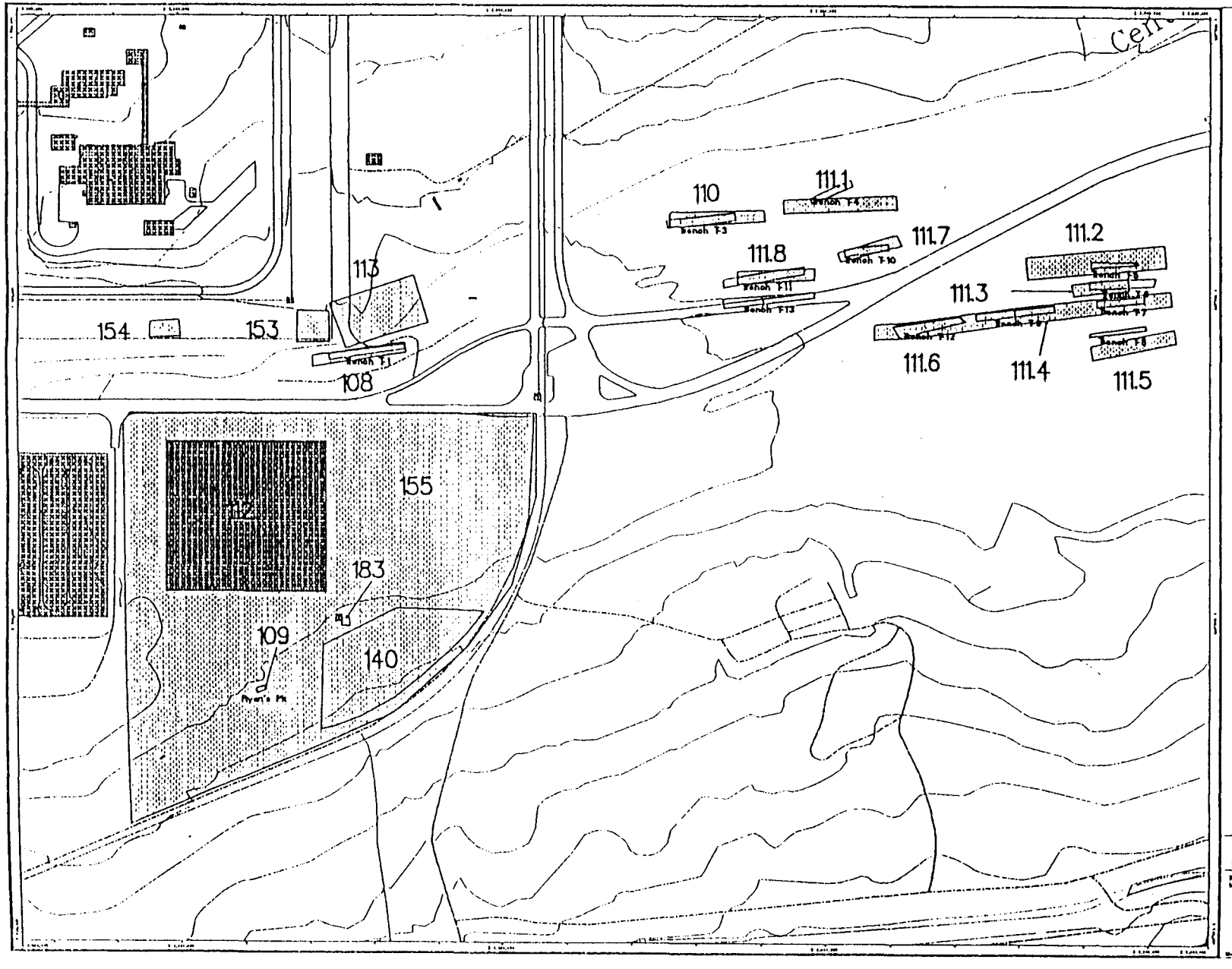
Waste Issues: A thermal desorption unit is currently being permitted to treat remediation wastes. An on-site disposal cell has not yet been constructed to handle residual waste after thermal desorption treatment.

Worker Safety Issues: There is a high concern due to the potential pyrophoric nature of the uranium wastes and the high concentration of VOC contamination. Workers may be required to work in level "B" PPE.

Risk Reduction: Source removal will reduce the volume of contaminated soils and eliminate the potential for groundwater contamination by VOCs. Removal of the drums will also eliminate the possibility of further contamination of subsurface soils by radionuclides.

Environmental Risk from Remediation: There is moderate environmental risk of the spread of radioactive and VOC contamination during excavation, especially due to the possible pyrophoric nature of the uranium. However, procedures currently in-place will reduce or eliminate the risk of spreading contaminants.

Principle Reference: OU 2 Remedial Investigation Report, October 23, 1995



Operable Unit 2

EXPLANATION

New Trench Boundaries

OU 2 Bldg

Standard Map Features

Buildings or other structures

Lakes and ponds

Streams, ditches, or other drainage features

Fences

Contours (20' intervals)

Paved roads

Dirt roads

U.S. Department of Energy

Rocky Flats Environmental Technology Site

RMRS Rocky Mountain Remediation Services, L.L.C.

FACT SHEET FOR TOP 20 ENVIRONMENTAL SITES
IHSS 121 TANKS T-2/T-3, IHSS 122, UNDERGROUND CONCRETE TANKS

Location: Tank units T-2 and T-3 within IHSS 121 are located in the 400 area, along the south wall of Building 441. These tanks are also referred to as IHSS 122 - Underground Concrete Tanks.

Description: Tank units T-2 and T-3 are interconnected tanks, one above ground and the other below ground. Tank T-2 is an underground concrete tank that has three concrete access chambers and partially underlies building 441. Tank T-3 refers to a 3,200 gallon carbon steel above ground storage tank and an underlying 3,000 gallon concrete storage tank. Both tanks were installed in 1952 and were abandoned in 1982.

Risk: The risk is related to the presence of residues in the tanks, various semi-volatiles and metals in the surface soils surrounding the tanks and the discovery of radionuclides, metals and semi-volatiles, both in the subsurface soils and the ground water. There exists a high potential for these constituents to continue to spread in the groundwater to other areas, and the possibility of further releases from the tanks.

Further Characterization: Additional tank sampling of T-2 would be performed as the actual tank was not initially sampled, only the access chambers were sampled. The majority of the characterization would utilize geoprobe/hydropunch sampling for subsurface soil and groundwater samples.

Probable Remedial Action: Removal of the above ground tank along with removal of the residual from the below ground tank along with contaminated soils. The estimate for characterization, removal of the tanks, soil, and disposal is $600,000 for 9 months.

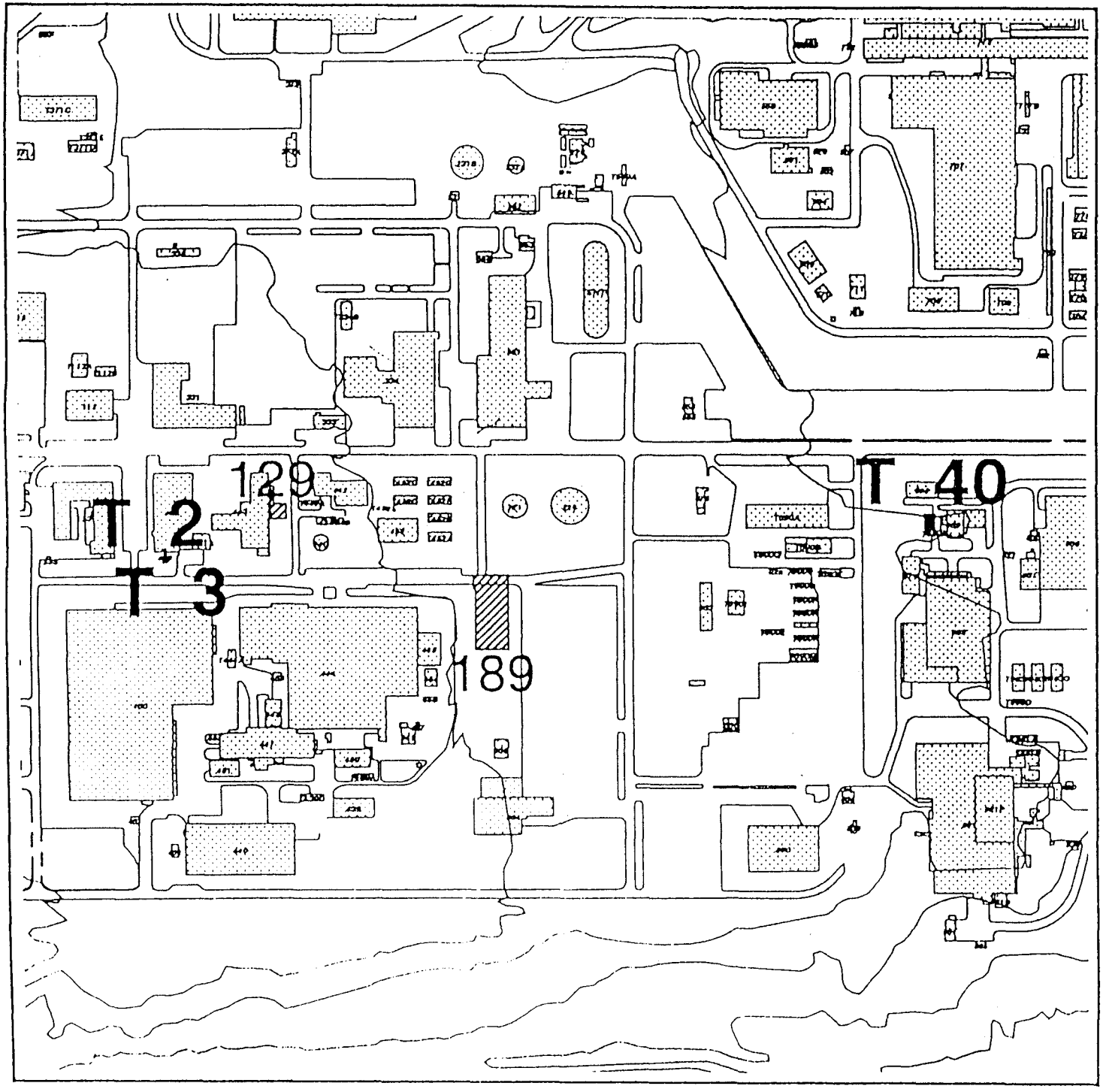
Worker Safety: The high levels of radionuclides in the tanks and soils, and the need for confined space entry, will result in significant worker safety issues.

Waste Issues: Disposal of the liquids removed from the underground tank will probably be an issue.

Risk Reduction: The risk associated with this tank unit will be eliminated when the source is removed. There will no longer be a threat to subsurface soils and groundwater associated with this tank unit.

Environmental Risk from Remediation: There is a very low possibility that a spill will occur when the residues are removed. Procedures currently in-place reduce this risk to a very low possibility.

Principal Reference: OU 9 Data Summary



400 Area

T 2 Tank Locations and Labels

189 IHSS Locations and Labels

Buildings

ER IHSS Ranking

5 - 121 Tanks T-2/T-3
11- 129, 2 tanks outside steam plant
14- 189 Nitric Acid Tanks
20- Tank T-40

FACT SHEET FOR TOP 20 ENVIRONMENTAL SITES
IHSS 121 TANK T-40

Location: Tank unit T-40 is located in the 800 Area west of building 889.

Description: Tank unit T-40 consists of two 400 gallon underground concrete tanks underlying a concrete vault approximately 7 feet deep. However, the volume of these tanks may be inaccurate as access to the tanks was limited. The tanks were installed sometime in the mid-1950s and were abandoned in 1981 or 1982. The tanks received wastes from building 889, including acids, volatile organic compounds, radionuclides, metals, detergents, and grease from cleaning equipment.

Risk: The risk is derived from the current residual tank contents and the apparent leakage of ground water into the tank vaults.

Further Characterization: The tank unit and residual contents have been sampled and four soil borings have been completed around the tank area. Geoprobe investigation may be used to determine further extent of contamination closer to the tank area. Further evaluation of the tank sizes and contents are necessary prior to removal. Estimated cost is $65,000 and 2 months.

Probable Remedial Action: The tanks will be removed and the contaminated soil will be treated. Rough cost estimate is $800,000 and 10 months.

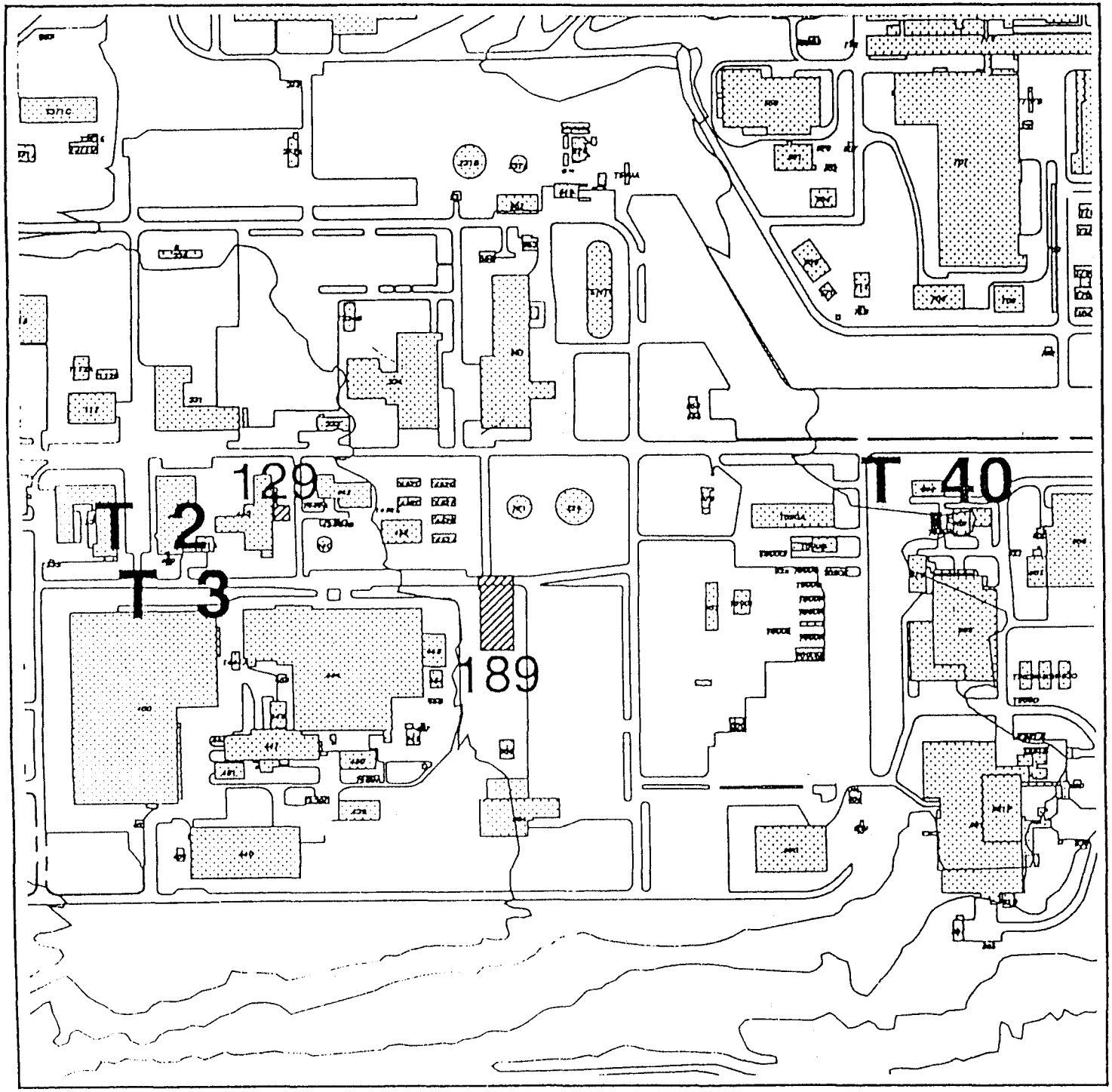
Worker Safety: The need for confined space entry are significant worker safety issues, but can be readily addressed. Contaminant levels in the tanks themselves are very low.

Waste Issues: All waste issues will be resolved in advance of this remedial effort.

Risk Reduction: The risk associated with this tank unit will be eliminated when the tank and surrounding soils are removed. Remove the tanks so that there will no longer be a threat to subsurface soils and groundwater associated with this tank unit.

Environmental Risk from Remediation: There is a very low possibility that a spill will occur when the residues are removed. Procedures currently in-place reduce this risk to very low possibility.

Principal Reference: OU 9 Data Summary



400 Area

T 2 Tank Locations and Labels

189 IHSS Locations and Labels

Buildings

ER IHSS Ranking

5 - 121 Tanks T-2/T-3
11- 129, 2 tanks outside steam plant
14- 189 Nitric Acid Tanks
20- Tank T-40

FACT SHEET FOR TOP 20 ENVIRONMENTAL SITES
IHSS 189, NITRIC ACID TANKS

Location: IHSS 189 Nitric Acid tanks are located to the northeast of Building 444. This area is also referred to as the acid receiving area.

Description: The acid tanks found in IHSS 189 consist of two, approximately 10,000-gallon storage tanks, adjacent to the railroad tracks east of Building 444, south of Cottonwood Avenue. The tanks have been used to store nitric acid since 1952, supplying acid to Buildings 771 and 883. The tanks are installed within concrete secondary containment structures. Over the years, numerous spills of unknown volumes occurred during filling and transfer of acid from these tanks.

Risk: It is suspected that most of the inorganic and radionuclide contamination found in IHSS 189 are associated with IHSS 157.2. Surficial soil samples analyzed for pH, indicates that the pH in the soils to be slightly basic.

Further Characterization: Based on the results of the Phase I non-intrusive characterization, additional subsurface soil samples should be collected at the west and east side of the tank emplacement. Chromium and mercury were the only metals to have been statistically significant. Additionally, subsurface soils should be analyzed for radionuclides, to determine the extent at which these contaminants might be found at depth. Although the surface soil samples indicated a slightly basic pH condition, subsurface soil pH samples should be collected to determine the presence of acidic conditions at depth.

Probable Remedial Action: No remedial action has been developed as this IHSS is probably not the source of the contamination found in this area and additional characterization will have to be completed before deciding on a final remedy. Possible remedies include soil removal or capping.

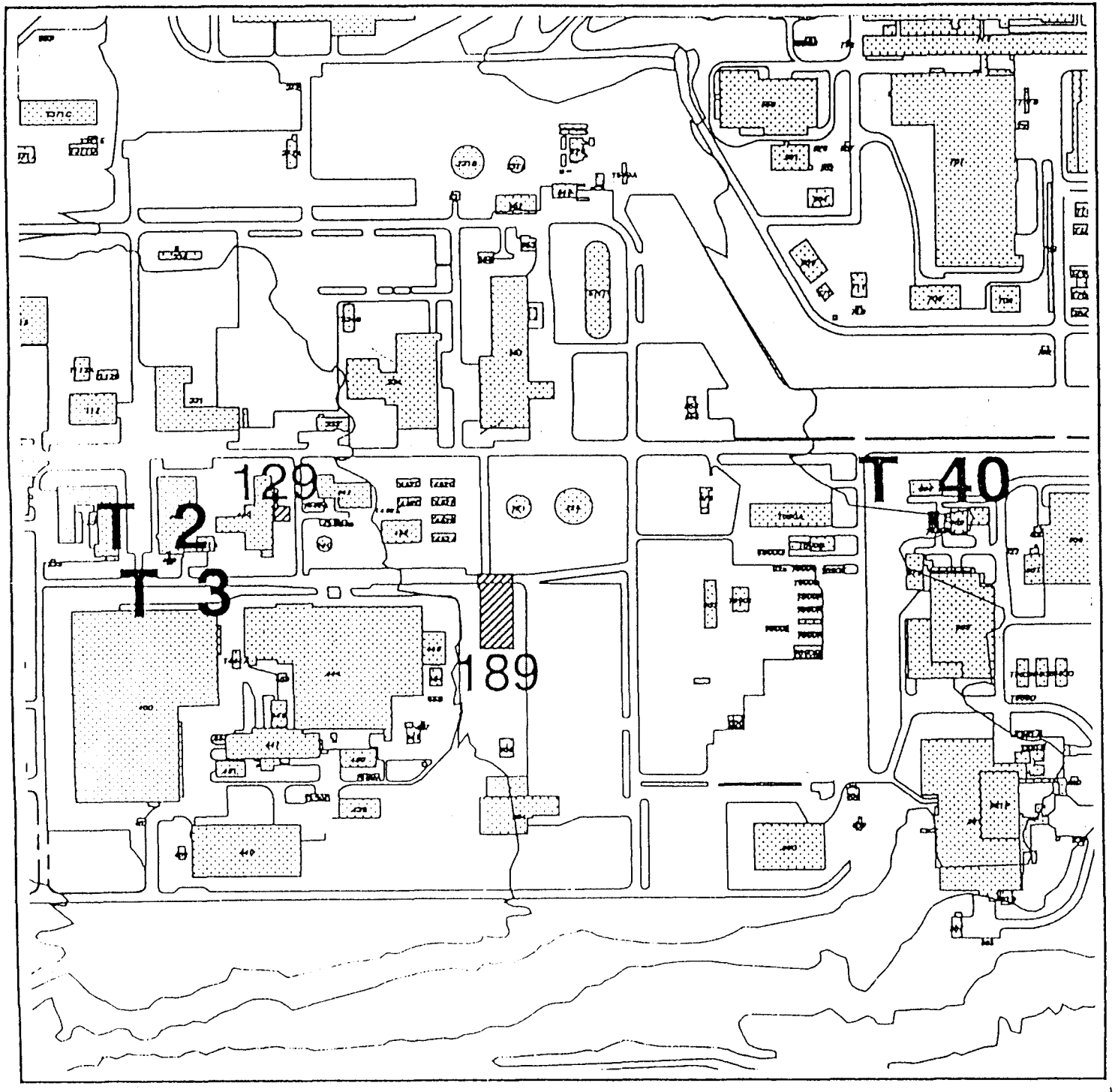
Worker Safety: Threats to worker safety at this site are minimal.

Waste Issues: Currently, no specific waste issues have been identified. Developing a final remedy for this site will provide more detailed information regarding waste issues associated with this IHSS.

Risk Reduction: Risk reduction at this site is minor. Risk reduction could be realized if this IHSS is remediated in conjunction with IHSS 157.2.

Environmental Risk from Remediation: No specific environmental risk from remediation exists at this site.

Principal Reference: Operable Unit 12, Preliminary Draft, Technical Memorandum No. 2



400 Area

T 2 Tank Locations and Labels

189 IHSS Locations and Labels

Buildings

ER IHSS Ranking

5 - 121 Tanks T-2/T-3
11- 129, 2 tanks outside steam plant
14- 189 Nitric Acid Tanks
20- Tank T-40

FACT SHEET FOR TOP 20 ENVIRONMENTAL SITES
IHSS 129 - OIL LEAK

Location: This IHSS is located on the east side of Building 443, Steam Plant.

Description: While there are four distinct #6 fuel oil tanks located on the east side of Building 443, only tank No. 4 is considered to comprise IHSS 129, according to the IAG. Tank No. 4, which is the southernmost of the four tanks, is 11 feet in diameter by 27 feet in length with a total storage capacity of 19,000 gallons. Five underground lines consisting of one steam line, one return condensation line, a pump line to move fuel oil, a return line, and one line feeding supply tanks are connected to tank No. 4. Historically, the tank was used to store #2 diesel and #6 fuel oil. In addition, spent solvents were disposed of in the tank. Tank No. 4 was taken out of service in 1986 after evidence of leaking was discovered.

Risk: Risk associated with this IHSS include the presence of hydrocarbon and volatile and semi-volatile contaminants in the soils and ground water around the tank, as well as down gradient from the source. There exists a high potential for these constituents to continue to spread in the groundwater to other areas. In addition, while it is known that tank No. 4 does leak, there is the possibility that the three other #6 fuel oil tanks in the area could also be leaking, although this has not yet been determined.

Further characterization: The initial tank investigation in IHSS 129 consisted of the collection of 11 surface soil samples around tank No. 4. Additional characterization should be performed to further characterize the nature and extent of contaminants in the area. This sampling information would provide the basis for making removal and treatment decisions for each tank.

Probable Remedial Action: Remedial actions planned for IHSS 129 entails removal of the tank(s) and treatment of contaminated soils. The preferred preliminary treatment option would be low temperature thermal desorption for the soils. Contaminated ground water could be collected and transferred to the Building 891 treatment system. Preliminary costs associated with the removal of tanks and treatment of the associated contaminated soils is approximately $5.1M, over approximately 1.5 years. These costs assume exclusive and one time use of removal and treatment system equipment. Costs savings could be realized by including the removal of the additional three tanks and utilizing treatment equipment that has already been procured for other environmental remediation activities.

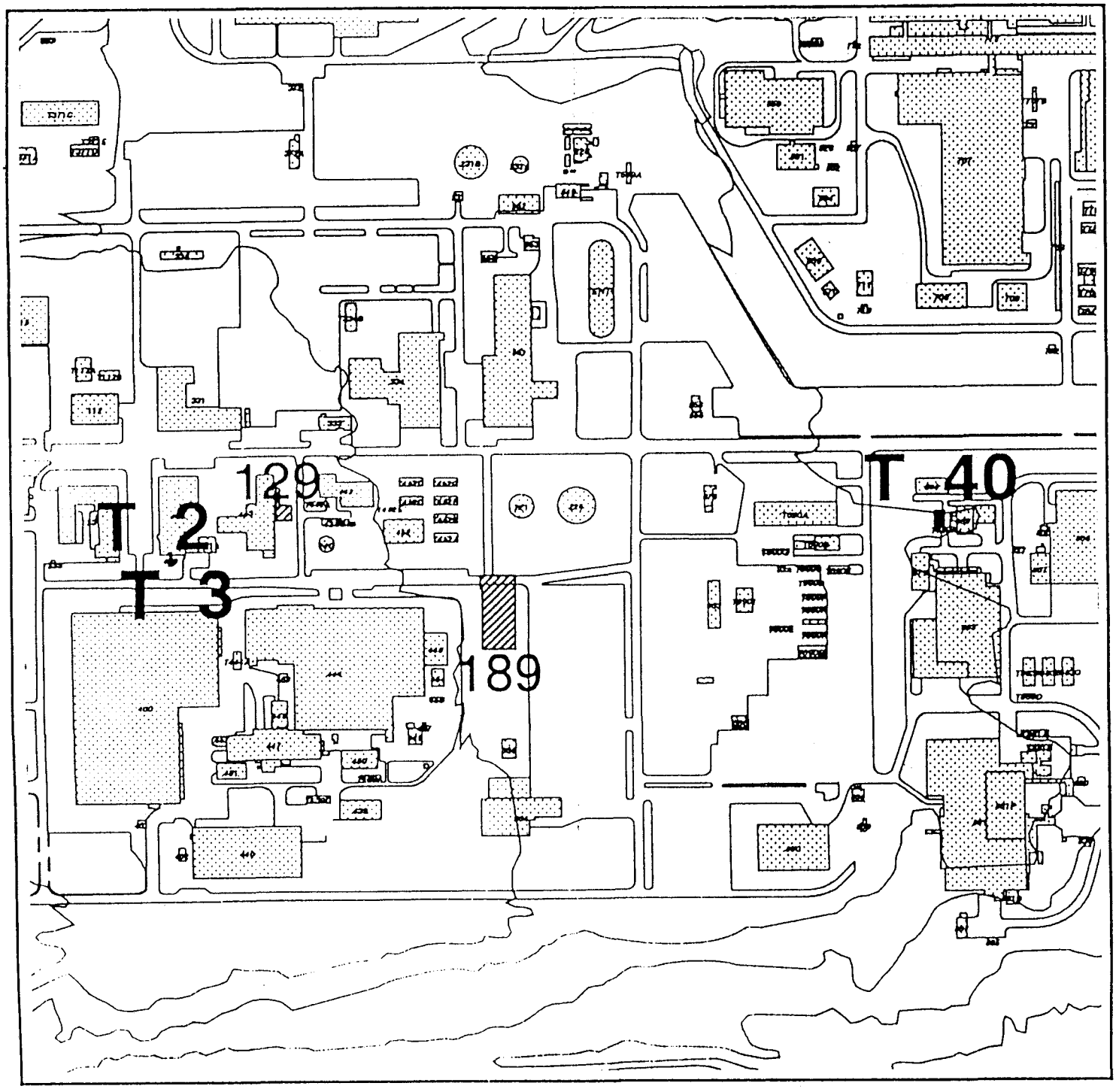
Worker Safety: Worker safety issues associated with remediation of this IHSS include possible volatile organics present in the subsurface soils. In addition, hazards related to the excavation and removal of the underground storage tank removal will exist.

Waste Issues: The primary wastes will be petroleum contaminated soil. No issues are expected to be encountered.

Risk reduction: The risk will be eliminated when the source and associated contaminated soils, are removed. There will no longer be a threat to subsurface soils and groundwater associated with this tank.

Environmental Risk from Remediation: There is a very low possibility that a spill will occur when the residues are removed. Procedures currently in-place reduce this risk to very low possibility.

Principal Reference: Operable Unit 10, Draft Technical Memorandum #1.
Principal Point-of-Contact: Gregg Anderson



400 Area

T 2 Tank Locations and Labels

189 IHSS Locations and Labels

Buildings

ER IHSS Ranking

5 - 121 Tanks T-2/T-3
11- 129, 2 tanks outside steam plant
14- 189 Nitric Acid Tanks
20- Tank T-40

FACT SHEET FOR TOP 20 ENVIRONMENTAL SITES
IHSS 121, 124.1, 125, PROCESS WASTE TANK T-16 N

Location: Tank T-16 is in the 700 Area on the east side of Building 774 and underlies a chemical storage tank. It is physically connected to tank T-14 which should be remediated and closed at the same time.

Description: Process Waste Tank number tank T-16 (IHSS 124.1, 124,2 and 125), is a 30,000 gallon concrete underground tank. The tank was installed in 1952 concurrently with T-14, which is also designated as IHSS 124.3 tank 68. Both are part of IHSS 121, Original Process Waste Lines. Both tanks were abandoned in 1989, apparently in accordance with RCRA. These tanks received process waste from Building 774 including acids, bases, radionuclides and metals. Releases were documented, specifically overflows in 1980 and 1981.

Risk: The risk is derived from the current, residual tank contents, which have radionuclide levels exceeding 150,000 pCi/gm. There is a high potential for release of the residual contents into soils and groundwater because of the age of the tank and also the tank is below ground and presents the potential for leaking. If the contents did or are leaking, the contamination could spread into the surrounding soils and groundwater.

Further Characterization: The tank unit and residual contents have been sampled and five borings have been completed around the east and south borders of the tanks. Geoprobe investigation may be used to determine if the tank unit has leaked and to further assess the extent of contamination closer to the tank area. Estimated cost is $100,000 and 2 months.

Probable Remedial Action: Remediation should consist of disconnecting the plumbing, removing the tank unit from active plumbing systems, and removing residue/inventory from the tank. The tank unit will be rinsed, rinse water sampled, and tank unit closed under RCRA if the rinsate samples are clean. The rough cost estimate is $500,000 and 6 months based on previous RCRA closures conducted for tank units in the Industrial Area.

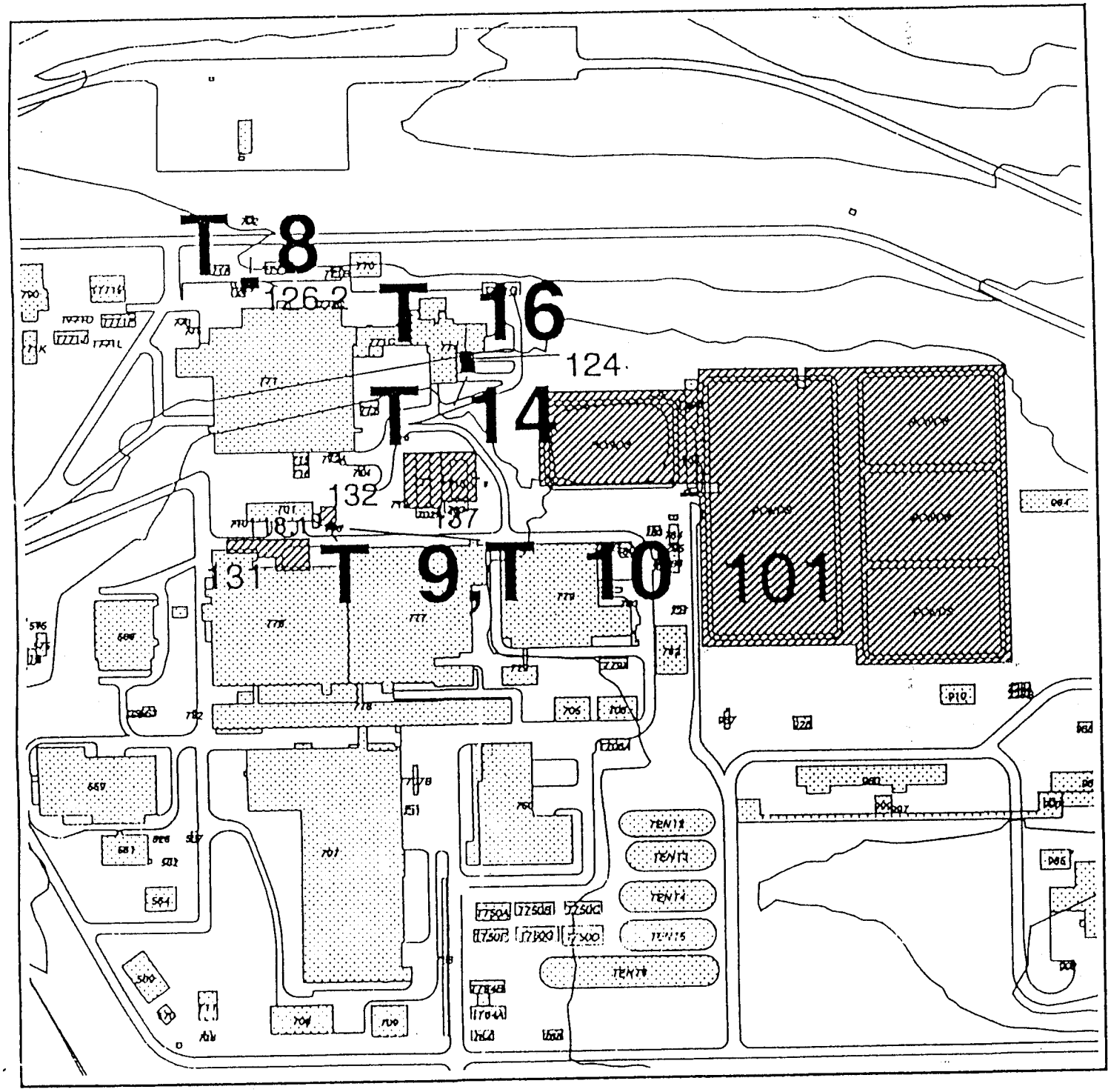
Worker Safety: The high levels of radionuclides and the need for confined space entry are significant worker safety issues, but can be readily addressed.

Waste Issues: Residues/inventory will be removed from the tank unit. Solids will be separated from the liquid and will be disposed of as low level waste. Issues may be anticipated in dealing with waste acceptance criteria and additional samples may be required prior to treatment and disposal.

Risk Reduction: The risk associated with this tank unit will be eliminated when the source is removed. There will no longer be a threat to subsurface soils and groundwater associated with this tank unit.

Environmental Risk from Remediation: There is a very low possibility that a spill will occur when the residues are removed. Procedures currently in-place reduce this risk to very low possibility.

Principal Reference: OU 9 Data Summary



Solar Pond Area

T 8 Tank Locations and Labels

118.1 IHSS Locations and Labels

Buildings

ER IHSS Ranking

1 - 121/124 Tank T-14
2 - 118.1, 132 and 121 Tanks 9&10
3 - 121/124.1/124.2/125 PW Tank T-16N
13- 131 Rad Site #1
15- 137 Bldg 712/713 Cooling T Blowdown
17- 101 Solar Ponds
19- 121, 126.1, 126.2, Tank T-8

FACT SHEET FOR TOP 20 ENVIRONMENTAL SITES
IHSS 121, 124.3, PROCESS WASTE TANK T-14

Location: Tank T-14 is in the 700 Area on the east side of Building 774 and underlies a chemical storage tank. It is physically connected to tank T-16 which should be remediated and closed at the same time.

Description: Process Waste Tank number T-14, which is also designated as IHSS 124.3 tank 68, is a 30,000 gallon concrete underground tank. The tank was installed in 1952 concurrently with tank T-16 (IHSS 124.1, 124,2 and 125) and both are part of IHSS 121, Original Process Waste Lines. Both tanks were abandoned in 1989, apparently in accordance with RCRA. These tanks received process waste from Building 774 including acids, bases, radionuclides and metals. Releases were documented, specifically overflows in 1980 and 1981.

Risk: The risk is derived from the current, residual tank contents, which have radionuclide levels exceeding 150,000 pCi/gm. There is a high potential for release of the residual contents into soils and groundwater because of the age of the tank and also the tank is below ground and presents the potential for leaking. If the contents did or are leaking, the contamination could spread into the surrounding soils and groundwater.

Further Characterization: The tank unit and residual contents have been sampled and five borings have been completed around the east and south borders of the tanks. Geoprobe investigation may be used to determine if the tank unit has leaked and to further assess the extent of contamination closer to the tank area. Estimated cost is $100,000 and 2 months.

Probable Remedial Action: Disconnect plumbing and remove tank unit from active plumbing systems, and remove residue/inventory from tank. Tank unit will be rinsed, rinse water sampled, and tank unit closed under RCRA if the rinsate samples are clean. Rough cost estimate is $500,000 and 6 months based on previous RCRA closures conducted for tank units in the Industrial Area.

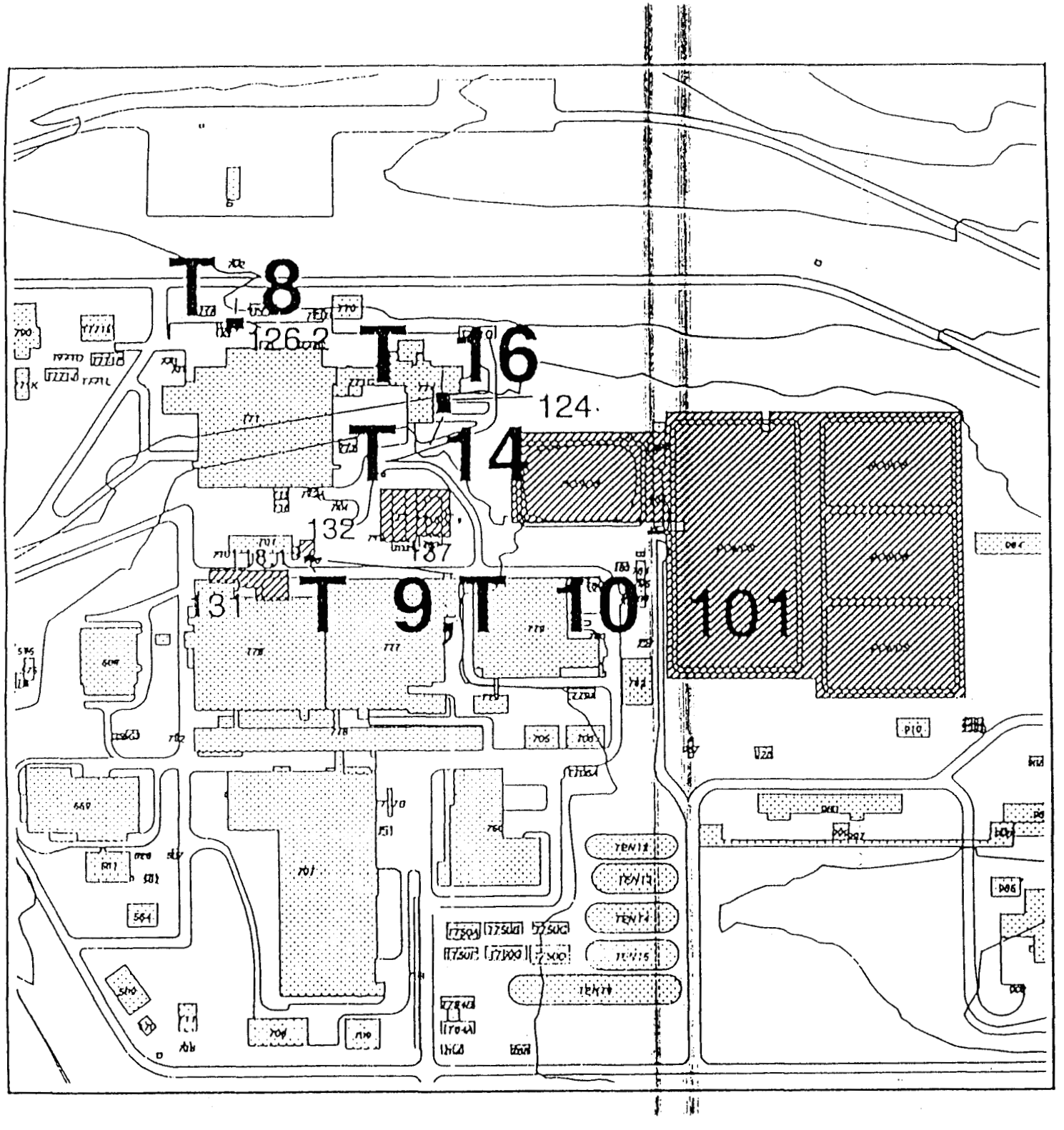
Worker Safety: The high levels of radionuclides and the need for confined space entry are significant worker safety issues, but can be readily addressed.

Waste Issues: Residues/inventory will be removed from the tank unit. Solids will be separated from the liquid and will be disposed of as low level waste. Issues may be anticipated in dealing with waste acceptance criteria and additional samples may be required prior to treatment and disposal.

Risk Reduction: The risk associated with this tank unit will be eliminated when the source is removed. There will no longer be a threat to subsurface soils and groundwater associated with this tank unit.

Environmental Risk from Remediation: There is a very low possibility that a spill will occur when the residues are removed. Procedures currently in-place reduce this risk to a very low possibility.

Principal Reference: *OU 9 Data Summary*



Solar Pond Area

T 8 Tank Locations and Labels

118.1 IHSS Locations and Labels

Buildings

ER IHSS Ranking

1 - 121/124 Tank T-14
2 - 118.1, 132 and 121 Tanks 9&10
3 - 121/124.1/124.2/ 125 PW Tank T-16N
13- 131 Rad Site 11
15- 137 Bldg 712/713 Cooling T Blowdown
17- 101 Solar Ponds
19- 121, 126.1, 126.2, Tank T-8