

# **NOTICE**

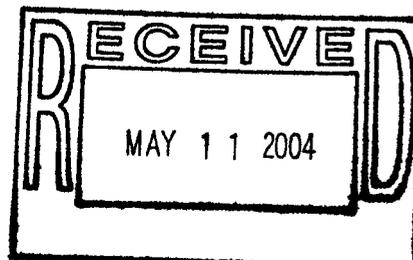
**All drawings located at the end of the document.**



**POTENTIAL INCIDENTS  
OF CONCERN**

**4, 6, 9, 11, 14, 15, 17, 18,  
41, 42, 44, 47, AND 57**

**ACTION/NO ACTION  
RECOMMENDATIONS**



**May 6, 2004**

35

**POTENTIAL INCIDENTS  
OF CONCERN**

**4, 6, 9, 11, 14, 15, 17, 18,  
41, 42, 44, 47, AND 57**

**ACTION/NO ACTION  
RECOMMENDATIONS**

**May 6, 2004**

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OF CONCERN**

**4, 6, 9, 11, 14, 15, 17, 18,  
41, 42, 44, 47, AND 57**

**ACTION/NO ACTION  
RECOMMENDATIONS**

Approval received from the Colorado Department of Public Health and Environment

April 30, 2004

Approval letter contained in the Administrative Record

**May 6, 2004**

## ACRONYMS

AL	Action Level
CDH	Colorado Department of Health
CDPHE	Colorado Department of Public Health and Environment
dpm/l	disintegrations per minute per liter
dpm/pCi	disintegrations per minute per picocurie
GI	Government Issue
HQ	Hazard Quotient
HRR	Historical Release Report
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
IRIS	Integrated Risk Information System
mg/kg	milligram per kilogram
mg/kg/day	milligram per kilogram per day
mg/l	milligram per liter
MSDS	Material Safety Data Sheet
NH <sub>3</sub>	Ammonia
NH <sub>4</sub>	Ammonium
NFAA	No Further Accelerated Action
PAC	Potential Area of Concern
PCB	polychlorinated biphenyl
PIC	Potential Incident of Concern
pCi/g	Picocuries per gram
pCi/l	Picocuries per liter
pCi/ml	Picocuries per milliliter
ppm	part per million
Pu	Plutonium
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFP	Rocky Flats Plant
SOE	Stationary Operating Engineer
TSCA	Toxic Substances Control Act
UBC	Under Building Contamination
VOC	Volatile Organic Compound
WRW	Wildlife Refuge Worker
WSRIC	Waste Stream and Residue Identification and Characterization

**PIC REFERENCE NUMBER: 4**

IHSS Reference Number Not Applicable

Unit Name Process Cooling Water Spill Buildings 776/777

Approximate Location N750,500, E2,084,000

Date(s) of Operation or Occurrence

February 6, 1989

Description of Operation or Occurrence

On February 6, 1989, an alarm indicated a high liquid level in an unused production pit outside Buildings 776 and 777. A pipe froze and broke, spilling 1,200 gallons of process cooling water into the pit<sup>1</sup>. The exact location of this occurrence could not be determined from documentation reviewed.

Physical/Chemical Description of Constituents Released

Process cooling water measuring 51 pCi/L of an unknown material was released to the environment<sup>1</sup>.

Responses to Operation or Occurrence

Supply and return valves to the production pit were closed, thereby isolating the pit from the system. The water in the production pit was analyzed and a determination was made to pump the liquid to the process waste drains<sup>1</sup>. No documentation was found that further details response to this occurrence.

Fate of Constituents Released to Environment

No documentation was found that details the fate of the constituents released to the environment.

Action/No Action Recommendation

No action warranted-

- When the original HRR was prepared, the exact location of this occurrence could not be determined from documentation reviewed. However, two Stationary Operating Engineers (SOEs) from Building 776/777, who were in the building at the time of the release, recently reported that the process cooling water spilled into the Building 781 pit<sup>2</sup>. B781 is a small, below-grade concrete building/pit located just southeast of Building 777 that contained a helium compressor system for Building 777 (see attached figure). It was out of service in 1989. There was a liquid level alarm in Building 781 that sounded in Building 777. The SOEs stated that the water filled the pit but did not release to the environment, and the water was pumped out of the pit into a process waste drain in Building 777.
- The concentration of radionuclides in the process cooling water that was released into the pit was very low relative to the WRW ALs. The water had a radionuclide concentration of 51 pCi/L or 0.051 pCi/ml (0.051 pCi/g). WRW ALs are orders of magnitude higher than this concentration.

Comments

Although Buildings 776/777 subsurface soil was sampled in accordance with IASAP Addendum IA-03-04 (IHSS Group 700-3), a sample was not collected below or near Building 781 (see attached map). However, considering the recent information gathered on the spill, sampling of the soil would not have been necessary.

References

<sup>1</sup> 1501267

<sup>2</sup> Email from Carolyn Hicks to Michael Anderson dated January 29, 2004

NOTE THE NUMERIC REFERENCES CITED HERE AND ELSEWHERE IN THIS PACKAGE CORRESPOND TO A UNIQUE NUMERIC IDENTIFICATION CODE ASSIGNED TO EACH DOCUMENT REFERENCED IN THE 1992 HRR THE CODE PERMITS READY ACCESS AND THE ABILITY TO MANIPULATE THE LARGE BODY OF INFORMATION OBTAINED FOR THE HRR

**Anderson, Michael**

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**From:** Hicks, Carolyn  
**Sent:** Thursday, January 29, 2004 3 42 PM  
**To:** Anderson, Michael  
**Subject:** RE PIC 4

I talked to two Stationary Operating Engineers (SOEs) from B776/777 who remembered this incident. Bob Larson and Dennis Quinnell said this process cooling water spilled into the Building 781 pit. B781 is a small, below-grade concrete building located just east of B777 that contained a helium compressor system for B777, and it was out of service in 1989. There was a liquid level alarm in B781 that alarmed in B777. The SOEs said the water filled the pit, but did not release to the environment. They pumped the water back into B777 and discharged it to a process waste drain.

-----Original Message-----

**From:** Anderson, Michael  
**Sent:** Wednesday, January 28, 2004 9 40 AM  
**To:** Hicks, Carolyn  
**Subject:** PIC 4

Hi Carolyn Let me know what you think this is Mike  
<< File PIC 4 doc >>

**Michael Anderson**  
**SUMMIT Technical Resources, Inc.**  
**Office - 303-966-3263**  
**Cell Phone - 720-838-5533**  
**E-mail - manderson@summitusa.net**

PIC REFERENCE NUMBER 6

IHSS Reference Number Not Applicable

Unit Name Fuel Oil Spill - Building 707

Approximate Location N750,000, E2,084,000

Date(s) of Operation or Occurrence

April 6, 1987

Description of Operation or Occurrence

A construction contractor was drilling a fence post hole when a fuel oil line was struck. The line ruptured and spilled approximately 28 gallons of diesel fuel<sup>1</sup>. The exact location of this occurrence could not be determined from documentation reviewed.

Physical/Chemical Description of Constituents Released

Number 2 diesel fuel was released to the environment<sup>1</sup>

Responses to Operation or Occurrence

CDH and the Colorado Oil Inspector were notified of the fuel oil spill<sup>1</sup>. No documentation was found that detailed further response to this occurrence.

Fate of Constituents Released to Environment

No documentation was found that detailed the fate of the constituents released to the environment.

Action/No Action Recommendation

No action warranted-

- Pictures associated with the spill do not indicate Building 707 in the background. A recent site reconnaissance visit indicates that the spill took place on the northern side of Building 776 (see attached map and a photo looking south at Building 776, showing stairs to the east and a shed to the west, which are two prominent features in the photos of the spill [also attached]). The photos of the spill indicate the diesel flowed a short distance north and then west. Although not clear in the spill photos, the entire area was paved because asphalt was placed over this area (adjacent to the building and the road behind the building) as a radiation control measure in response to the Building 776 fire (see attached map)<sup>2</sup>. It is unlikely that a release of 28 gallons of oil migrated to an unpaved area. It is likely that the spill was cleaned up for practical/safety purposes, given that this area appears well used.

References

<sup>1</sup> 1600547

<sup>2</sup> Owens, 1974

- Building 703 (pump house for B713, 1,080 ft<sup>2</sup>),
- Building 710 (steam reducing station, 352 ft<sup>2</sup>),
- Building 712 (cooling tower, 2,425 ft<sup>2</sup>),
- Building 712A (propane valve house, 90 ft<sup>2</sup>),
- Building 713 (cooling tower, 2,475 ft<sup>2</sup>)
- Building 713A (valve pit, 250 ft<sup>2</sup>),
- Building 730 (plenum deluge tank pit, 698 ft<sup>2</sup>), and
- Building 781 (helium compressor pit, 440 ft<sup>2</sup>)

Figure 3 shows the location of the buildings that comprise the Building 776/777 Cluster.

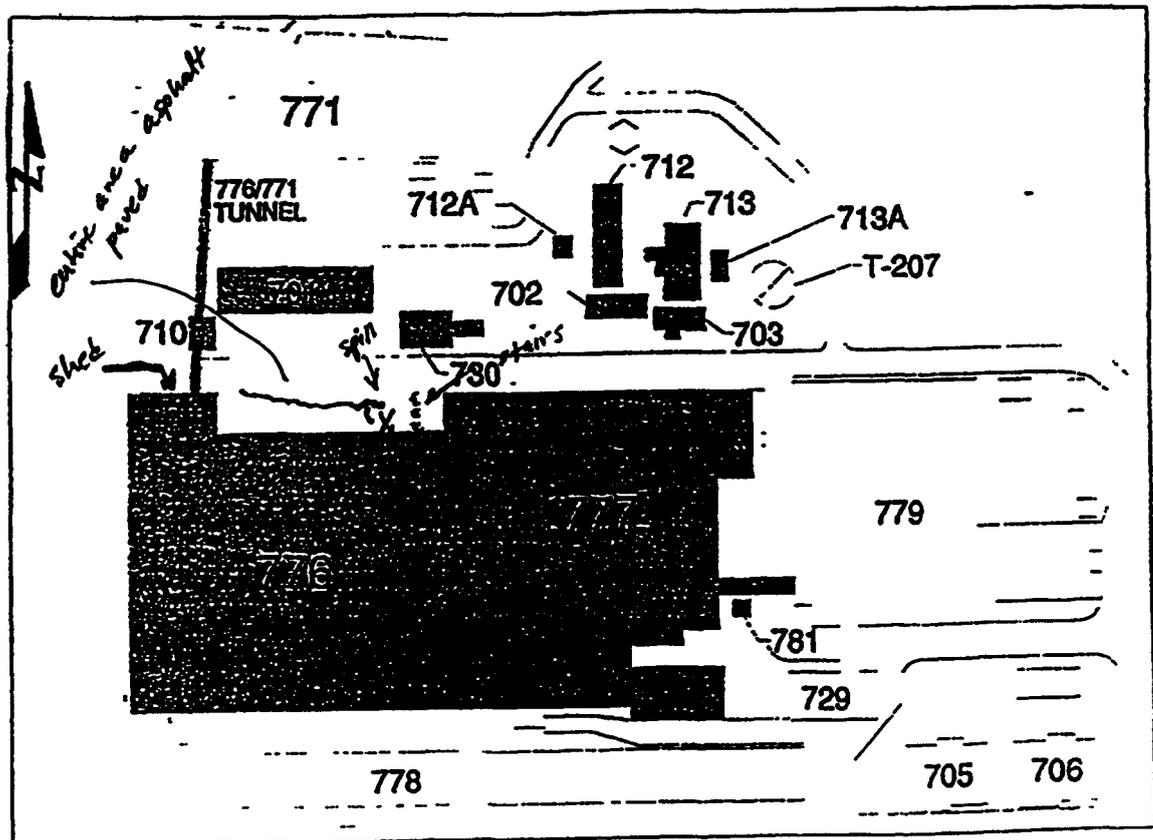
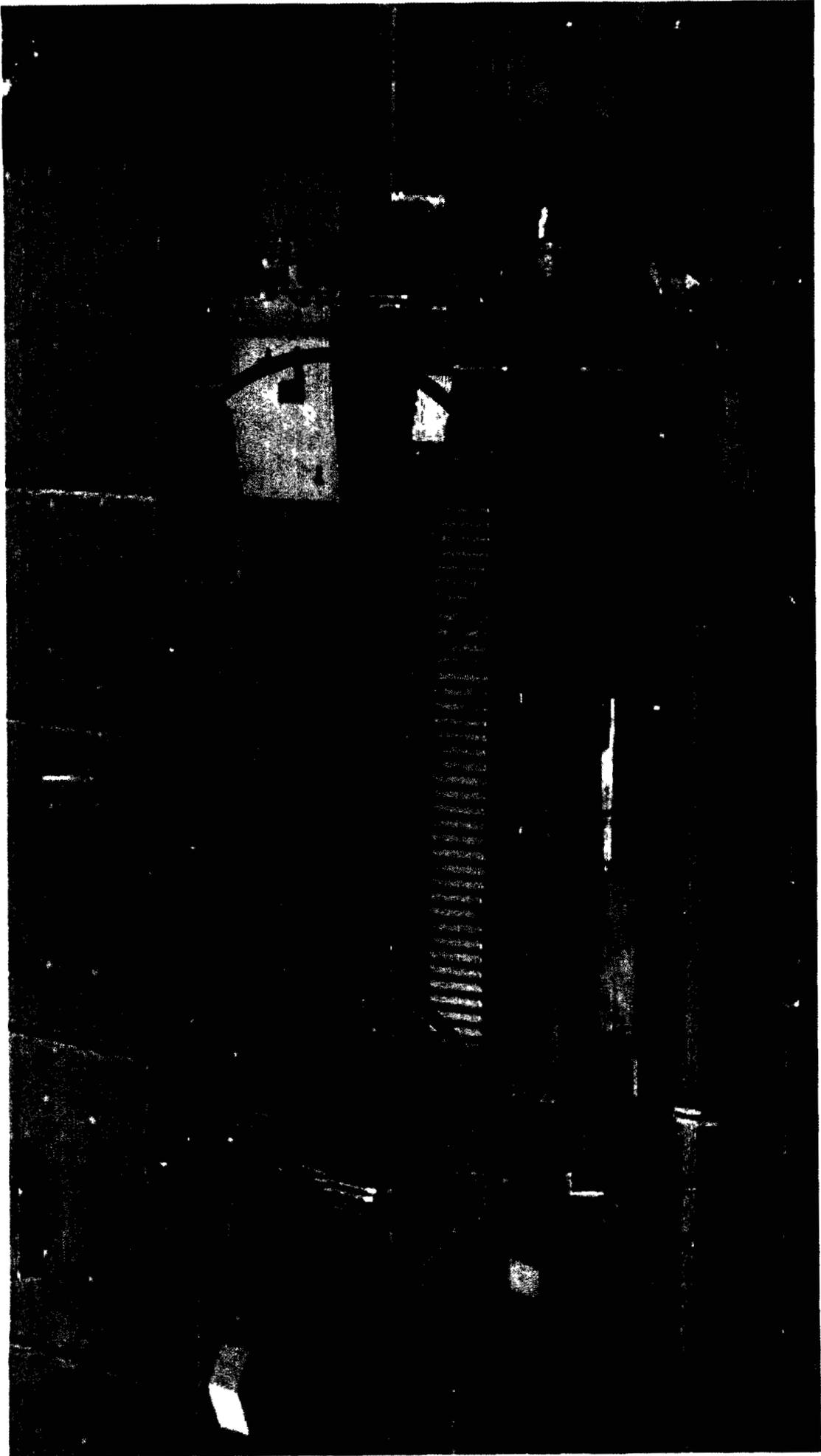


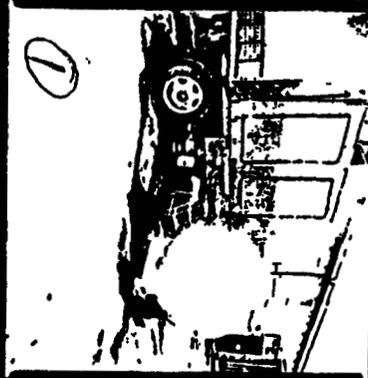
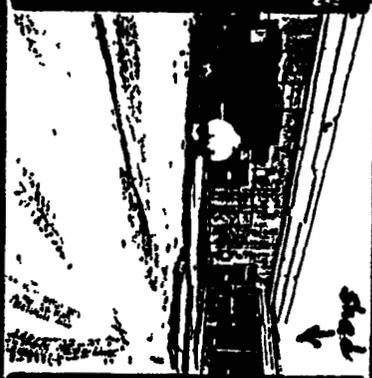
Figure 3. Building 776/777 Cluster Facilities



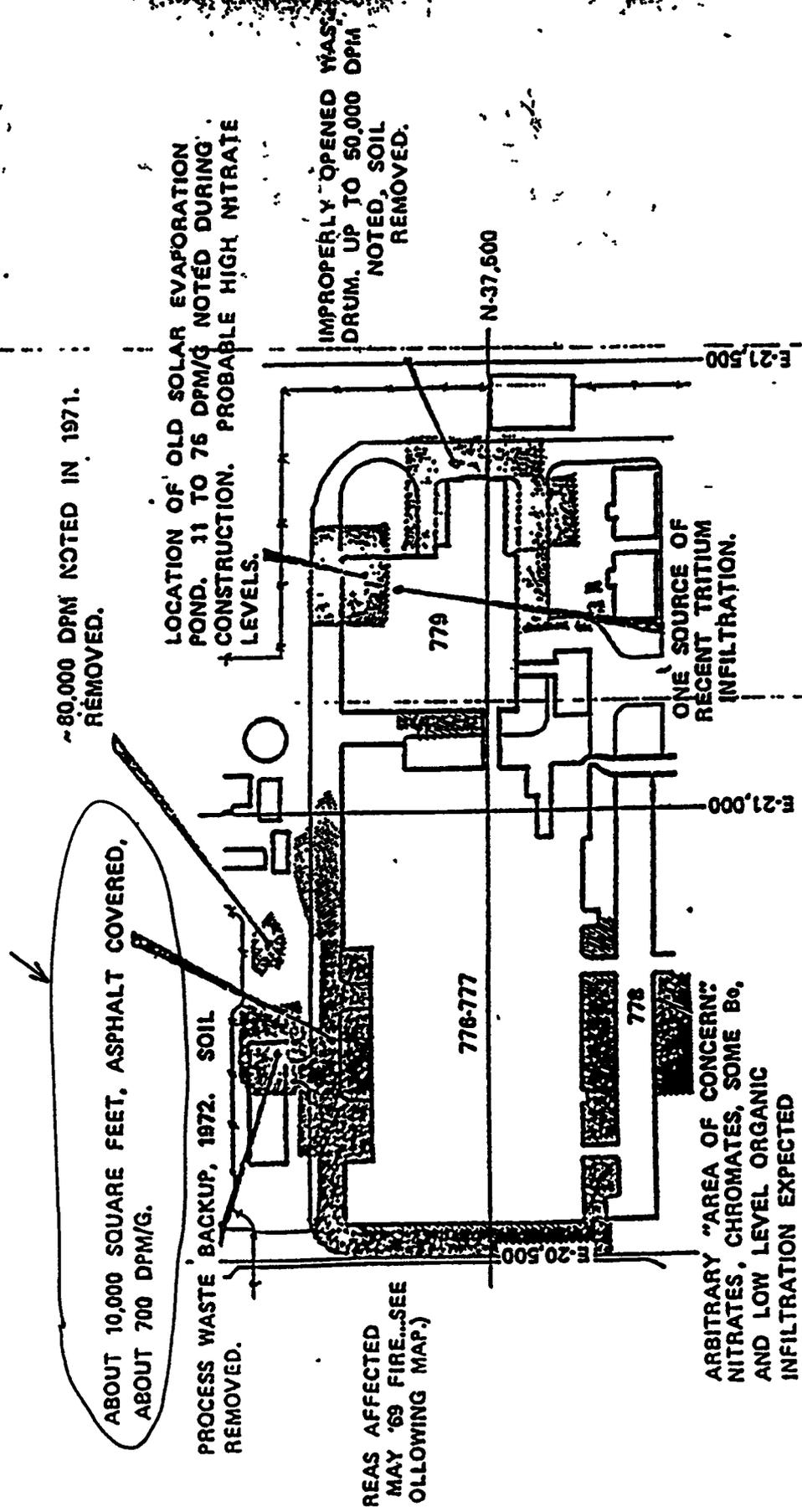
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91HR23



*Owens 1974*



13

**PIC REFERENCE NUMBER 9**

IHSS Reference Number Not Applicable

Unit Name Building 551 Chemical Leaks

Approximate Location N750,000, E2,0830,000

Date(s) of Operation or Occurrence

April 1, 1965<sup>1</sup> and May 1974<sup>2</sup>

Description of Operation or Occurrence

On April 1, 1965, aqueous ammonia in a railroad container car leaked from drums onto the ground at Building 551<sup>1</sup>. A leaking drum of carbon tetrachloride was found outside Building 551 during an inspection in May 1974<sup>2</sup>.

Physical/Chemical Description of Constituents Released

Ammonia and carbon tetrachloride were released to the environment<sup>1 2</sup>

Responses to Operation or Occurrence

The leaking drum of carbon tetrachloride found outside of Building 551 was disposed of in an undescribed location<sup>2</sup>. No documentation was found that detailed further response to the occurrences at this site.

Fate of Constituents Released to Environment

No documentation was found that detailed the fate of the constituents released to the environment.

Action/No Action Recommendation

No action warranted-

- In accordance with the MSDS, aqueous ammonia is extremely alkaline (pH=11.6). At this pH, greater than 99 percent of the total ammonia (dissolved NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup>[ammonium]) exists as dissolved NH<sub>3</sub>. The dissolved NH<sub>3</sub> is quickly released as NH<sub>3</sub> gas, which has an intense, pungent, and suffocating odor. Recognizing this potential danger, the worker unloading the ammonia from the railroad car wore a full face-respirator<sup>1</sup>. It can be concluded, therefore, that most of the ammonia released from the drum entered the atmosphere at the time of the release and the release is no longer a threat to human health or the environment.
- The exact location of the leaking drum of carbon tetrachloride is not known. It is only known that it was outside of Building 551. The IASAP Addendum for IHSS Group 500-2 (PAC 500-158) (#IA-03-07) proposes many sampling locations surrounding Building 551 (see attached map), and samples are to be analyzed for VOCs. These locations are based on a statistical grid sampling design and represent a reasonable approach to site characterization that should serve to identify potential soil contamination arising from this leaking drum of carbon tetrachloride. As noted in the IASAP Addendum, the sampling locations are a starting point for characterization, and additional samples may be collected pending the initial results to more fully characterize the soil. Hence, PIC 9 is addressed under IHSS Group 500-2 and no action is warranted.

References

<sup>1</sup> 1600237

<sup>2</sup> 1500514

**PIC REFERENCE NUMBER 11**

IHSS Reference Number Not Applicable

Unit Name Ethylene Glycol Spill - Building 443

Approximate Location N749,000, E2,082,000

Date(s) of Operation or Occurrence

June 25, 1989

Description of Operation or Occurrence

Approximately 15 gallons of ethylene glycol was released from Building 443's #1 emergency cooling system generator. Some of the liquid was contained on the concrete pad, however, there was evidence that some drained into the rocks surrounding the pad<sup>1</sup>. The exact location of this occurrence could not be determined from the documentation reviewed. Review of site utility drawings, building floor plans, and interviews with past and present RFP employees were conducted but provided no additional location information.

Physical/Chemical Description of Constituents Released

The release consisted of ethylene glycol (antifreeze).

Responses to Operation or Occurrence

The antifreeze that was contained on the pad was cleaned up. The RCRA and Environmental Management Groups were to be notified and asked to respond and evaluate<sup>1</sup>.

Fate of Constituents Released to Environment

No documentation was found that details the fate of constituents released to the environment.

Action/No Action Recommendation

No action warranted-

- The release to soil appears to be minor (that is, most of the ethylene glycol was contained on the concrete pad)
- Ethylene glycol is not a RCRA Appendix VIII hazardous constituent, nor is it a U- or P- chemical product, that, if spilled, would make the contaminated soil a hazardous waste. The MSDS for ethylene glycol also indicates that if the product is discarded, it does not meet the definition of a characteristic hazardous waste.
- Using the IRIS reference dose of 2 mg/kg/day, and an HQ of 1.0, the calculated WRW AL for ethylene glycol in soil would be 2 million ppm, a concentration that cannot be achieved. This indicates that chronic exposure by a Wildlife Refuge Worker to soil saturated in ethylene glycol would not result in adverse health effects. The MSDS further states that ethylene glycol is practically nontoxic to aquatic life, has a moderate biodegradation rate, and has a low potential to bioconcentrate.

References

<sup>1</sup> 1501756

**PIC REFERENCE NUMBER: 14**

IHSS Reference Number Not Applicable

Unit Name Cooling Tower Water Discharge - Building 447

Approximate Location N748,500, E2,082,000 - Surface ditch adjacent to Building 447 to the ditch along the roadway south of Building 991

Date(s) of Operation or Occurrence

December 2, 1958

Description of Operation or Occurrence

Cooling tower water from the Building 447 cooling tower was pumped into a surface ditch and allowed to flow across Plant site. Liquid was noticed in a ditch along the roadway south of Building 991<sup>1</sup>

No documentation was found that further details the location of this occurrence (see Comments)

Physical/Chemical Description of Constituents Released

The constituents released consisted of Building 447 cooling tower water containing sodium chromate. The liquid, as sampled opposite Building 991, contained 29 ppm hexavalent chromium or 81 ppm sodium chromate<sup>1</sup>

Responses to Operation or Occurrence

A temporary dam was placed across the ditch (in an unknown location) (see Comments) to contain the chromate water and allow it to seep into the ditch bottom. A liquid sample was collected opposite Building 991 and analyzed<sup>1</sup>

The exact location of this occurrence could not be determined from documentation reviewed. Although aerial photographs were reviewed and a site visit conducted, no definitive information was obtained. It is surmised that the cooling tower water was discharged into the ditch that currently exists south of Building 447. It then flowed east to the railroad tracks, north to Cottonwood Avenue, and then east under Sixth Street to the western edge of Parking Lot Number 444. From this point, it is believed to have flowed north under Cottonwood Avenue and then east along the northern side of Cottonwood Avenue to Seventh Street. The flow is believed to have gone north along the western side of Seventh Street to a point adjacent to Tank 224, where it crossed under Seventh Street and flowed northeast into the Central Avenue Ditch at a point northwest of Building 675. The flow is then believed to have traveled east in the Central Avenue Ditch to a point south of Building 991. It is unknown how far beyond this point the flow may have traveled.

Fate of Constituents Released to Environment

Although documentation was not found that details the fate of the constituents released in this incident, the reference states that sodium chromate, used as a corrosion inhibitor at RFP, is not adsorbed by soil and is readily leached out of soil<sup>1</sup>

Action/No Action Recommendation

No action warranted-

- The measurement of 29 ppm of hexavalent chromium at Building 991 is likely representative of the concentration of this compound that was released at Building 447. Because the release took place in December, a traditionally dry and cold month, there would have been little to no water flowing in the ditches to dilute the cooling tower water. The fact that "liquid was noticed in a ditch along the

roadway south of Building 991" implies that there was no other flow except the released cooling tower water. A typical concentration of zinc chromate used in cooling towers as a corrosion inhibitor is 20 mg/L,<sup>2</sup> which further indicates the measured concentration of hexavalent chromium at Building 991 is representative of the hexavalent chromium in the cooling tower water.

- Even if the hexavalent chromium leached to the groundwater table, there is no hexavalent chromium contamination in groundwater near the cooling tower water flow pathway exceeding the RFCA Tier 1 AL (10 mg/L). As shown on the attached map, which identifies locations where metals have exceeded the Tier I ALs for groundwater, chromium only exceeded its Tier I AL near the Solar Evaporation Ponds. As can be seen, the Solar Evaporation Ponds are not near the flow path of the released cooling tower water.
- Chromate is an anion and is weakly sorbed to soil (that is, it would not tend to concentrate). If the cooling tower water saturated the soil (filled the void space), the concentration of chromate per unit weight of soil would be less than the concentration in water because the water only occupies a fraction of the total volume of saturated soil. The concentration in the water (29 mg/L or 29 mg/kg) is one-tenth of the WRW AL for hexavalent chromium (268 mg/kg). Therefore, the concentration of chromate in the soil would be expected to be less than one-tenth of the WRW AL.

#### References

<sup>1</sup> 16003920

<sup>2</sup> Fact Sheet Eliminating Hexavalent Chromium from Cooling Towers, City of Los Angeles, Board of Public Works, Hazardous and Toxic Materials Office

**PIC REFERENCE NUMBER. 15**

IHSS Reference Number Not Applicable

Unit Name Process Waste Leak Between Buildings 881 and 559

Approximate Location N749,5000, E2,083,500

Date(s) of Operation or Occurrence

January 1981

Description of Operation or Occurrence

Liquid was observed in a valve pit that services a process waste pipeline located between Buildings 881 and 559 After pumping out the pit, flow was observed between the inner pipeline and the outer containment pipeline <sup>1</sup> A leak was found in the inner process waste pipeline near Eighth Street and Central Avenue west of Building 881 Albeit the leak was said to be in the inner pipeline, airborne radioactivity was detected during the excavation One total long-lived alpha activity concentration from a portable air sampler was above shut-down level <sup>2</sup> The exact location of this incident could not be determined from the documentation reviewed It is known that the valve pit in question is located somewhere between Buildings 881 and 559

Physical/Chemical Description of Constituents Released

An unknown quantity of liquid process waste was released in a valve pit <sup>1</sup> Although No documentation was found that further describes the constituents released in this incident, a general process waste description can be obtained from PAC 000-121

Responses to Operation or Occurrence

The responses to this incident included pumping the liquid out of the valve pit, excavating and locating the inner pipeline leak, and repairing the pipeline <sup>1 2</sup>

Fate of Constituents Released to Environment

No documentation was found that details the fate of the constituents released to the environment

Action/No Action Recommendation

No action warranted-

- This PIC is described under IHSS 000-162 PIC 15 is also specifically cross-referenced in the IHSS 000-162 description PIC 15 will be addressed under IHSS 000-162 IHSS 000-162 will be investigated per the IASAP Addendum for IHSS Group 000-2 (#IA-03-11) Accordingly, no action is warranted for this PIC

References

<sup>1</sup> 1501188

<sup>2</sup> 1501187

**PIC REFERENCE NUMBER: 17**

IHSS Reference Number Not Applicable

Unit Name Sewer Line Break - Building 771

Location N751,000, E2,084,000

Date(s) of Operation or Occurrence

Approximately November 1977

Description of Operation or Occurrence

A water sample was collected from Gate 20 of Building 771 to determine the total long-lived alpha activity and gross beta activity of water released from a sewer line break <sup>1</sup> The exact location of this occurrence could not be determined from documentation reviewed

Physical/Chemical Description of Constituents Released

The water sample results indicated 27 pCi/L total long-lived alpha activity and 68 pCi/L gross beta activity <sup>1</sup>

Responses to Operation or Occurrence

A water sample was collected and analyzed <sup>1</sup>

Fate of Constituents Released to Environment

No documentation was found that details the fate of the constituents released to the environment

Action/No Action Recommendation

No action warranted-

- PIC 17, a sewer line break, is part of IHSS 000-500 (Sanitary Sewer System) IHSS 000-500 will be investigated in accordance with an Addendum to the IASAP for IHSS Group 000-3 Accordingly, no action is warranted for this PIC

References

<sup>1</sup> 1500810

**PIC REFERENCE NUMBER 18**

IHSS Reference Number Not Applicable

Unit Name Carbon Tetrachloride Spill - Building 776

Location N750,000, E2,084,000

Date(s) of Operation or Occurrence

July 21, 1964

Description of Operation or Occurrence

Radioactively contaminated carbon tetrachloride spilled from a 5-gallon can in the storage area during sampling. Two square feet of ground were contaminated in the Building 776 solvent storage area.<sup>1</sup> The exact location of this occurrence could not be determined from the documentation reviewed.

Physical/Chemical Description of Constituents Released

Radioactively contaminated carbon tetrachloride was released to the environment.<sup>1</sup>

Responses to Operation or Occurrence

The 5-gallon can of solvent in the storage area was double-bagged and sent to Building 771. The contaminated ground was covered with gravel.<sup>1</sup> No documentation was found that further details responses to this occurrence.

Fate of Constituents Released to the Environment

No documentation was found that details the fate of constituents released to the environment.

Action/No Action Recommendation

No action warranted-

- The 5-gallon can was used to sample solvent in the Building 776 solvent storage area. The solvent storage area is PAC 700-118 1, underground carbon tetrachloride tanks on the western side of Building 730, north of Building 776. There have been numerous releases of carbon tetrachloride to the subsurface and ground surface at this location. PAC 700-118 1 is part of IHSS Group 700-3, and the area will be characterized through implementation of the IASAP Addendum for IHSS Group 700-3 (#IA-03-04) (see attached map). Because PIC 18 is within PAC 700-118 1, which is addressed under IHSS Group 700-3, no action is warranted for this PIC.

References

<sup>1</sup> 1501873

**PIC REFERENCE NUMBER: 41**

IHSS Reference Number Not Applicable

Unit Name Leaking Transformer - 777-1

Approximate Location N751,000, E2,084,000

Date(s) of Operation or Occurrence

1980 to August 1989

Description of Operation or Occurrence

In 1980 it was reported that transformer 771-1 was leaking at the drain valve <sup>1</sup> In November 1985 and again in June and September 1986, transformer 771-1 was reported as leaking <sup>2,3,4</sup> (Note Appendix I contains detailed information on all RFP transformers that have leaked dielectric fluid containing PCBs )

Physical/Chemical Description of Constituents Released

The dielectric fluid of transformer 777-1 contains 56 ppm PCBs <sup>5,6,7</sup>

Responses to Operation or Occurrence

In October 1986, the drain valve and case near the valve of transformer 771-1 was scheduled for recleaning <sup>8</sup> Transformer 777-1 was scheduled for cleanup to take place on August 14, 1989 <sup>9</sup>

Fate of Constituents Released to Environment

No documentation was found that details the fate of the constituents

Action/No Action Recommendation

No action warranted-

- Based on review of the references, the transformer in question is 777-1, as identified above in the Unit Name It is incorrectly identified as 771-1 in the Description of Operation or Occurrence
- Transformer 777-1 contained mineral oil with just enough PCBs (56 ppm) to be classified as PCB-contaminated under TSCA (50 – 500 ppm) <sup>2,5</sup> In 1986, leaks were repaired and cleaned up, and PCB-contaminated transformers were drained and refilled with clean mineral oil <sup>2</sup> The replacement oil in transformer 777-1 had a PCB concentration of 2.9 ppm <sup>9</sup>
- Although transformer 777-1 was scheduled for cleanup to take place on August 14, 1989, <sup>9</sup> the transformer was not removed until November 2003 Analysis of the transformer oil indicated a PCB concentration of only 2 ppm Inspection of the area on March 4, 2004 indicated no visible signs of significant contamination on the pad or the surrounding soil <sup>10</sup>
- The low concentration of PCBs in the original oil, combined with the reported cleanup operation in 1986 that was confirmed by the noted absence of staining on the pad in January 2004, indicates an NFAA is justified

References

<sup>1</sup> 1700025

<sup>2</sup> 1700110

<sup>3</sup> 1700074

<sup>4</sup> 1700068

<sup>5</sup> 1700062

<sup>6</sup> 1700027

<sup>7</sup> 1700001

<sup>8</sup> 1700077

<sup>9</sup> 1700129

<sup>10</sup> E-mail from Matt Francis to Michael Anderson dated March 4, 2004

**Anderson, Michael**

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**From:** Francis, Matt  
**Sent:** Thursday, March 04, 2004 9 41 AM  
**To:** Anderson, Michael  
**Subject:** RE Transformer 777-1

Mike,  
I didn't remove the transformer, so I don't have an exact date of removal I do know that I drained it on 11/24/03, and that it had been removed in the prior week The best date I can give for removal is sometime between November 17 -21, 2003 The PCB concentration of the oil was determined to be 2ppm, and the volume removed was 390gal Because the area was partially covered in snow on my previous inspection, I revisited the site today (03/04/04) There are no visible signs of significant contamination on the pad or on the surrounding soil  
MF

-----Original Message-----

**From:** Anderson, Michael  
**Sent:** Thursday, March 04, 2004 7 56 AM  
**To:** Francis, Matt  
**Subject:** Transformer 777-1

Hi Matt.

For the record, could you send me an email documenting 1) when the transformer was removed, 2) the PCB concentration in the oil, and 3) the findings of the pad and soil inspection you conducted, and the date of the inspection Thanks, Mike

**Michael Anderson**  
**SUMMIT Technical Resources, Inc.**  
**Office - 303-966-3263**  
**Cell Phone - 720-838-5533**  
**E-mail - manderson@summitusa.net**

**PIC REFERENCE NUMBER. 42**

IHSS Reference Number Not Applicable

Unit Name Diesel Fuel Leak - Building 460

Approximate Location No documentation was found that indicates the exact location of this site

Date(s) of Operation or Occurrence

August 3, 1986

Description of Operation or Occurrence

A report was made of a diesel fuel leak from a tanker truck by Plant Protection. The leak occurred south of Building 460 along the drainage excavation site<sup>1</sup>. The exact location of this occurrence could not be determined from the documentation reviewed.

Physical/Chemical Description of Constituents Released

An estimated 100 to 150 gallons of diesel fuel leaked from the truck<sup>1</sup>.

Responses to Operation or Occurrence

Fire department personnel constructed a dike to prevent the spread of the spill. Dirt was used to absorb the standing fuel. The report mentions that cleanup operations were necessary, however, it is unknown whether removal of the contaminated soil took place<sup>1</sup>.

Fate of Constituents Released to Environment

No documentation was found that details the fate of constituents released to the environment.

Action/No Action Recommendation

No action warranted-

- Under Responses to Operation or Occurrence, the Original HRR notes that cleanup operations were necessary. However, the reference specifically states that cleanup will be conducted during the day shift, which is considerably stronger language.
- In a recent conversation between Michael Crossett and Don Hughes (Mr. Hughes works in the RFETS garage), Mr. Hughes recalled the specific event in question. He noted that the spill was cleaned up, the rock and soil were loaded into a dump truck, and the material was hauled off. He does not know for certain where the material was disposed<sup>2</sup>.

References

<sup>1</sup> 1600552

<sup>2</sup> E-mail from Michael Crossett to Michael Anderson dated March 2, 2004

## **Anderson, Michael**

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**From:** Crossett, Mike  
**Sent:** Tuesday, March 02, 2004 6 05 PM  
**To:** Anderson, Michael  
**Subject:** RE Diesel Spill at Building 460

Mike,

I spoke with Don Hughes, Garage, who recalled the specific event in question. The spill was cleaned up, the rock and soils loaded into a dump truck and hauled off but he does not know for certain where the material was taken.

Hope this helps

Mike

-----Original Message-----

**From:** Anderson, Michael  
**Sent:** Tuesday, March 02, 2004 8 56 AM  
**To:** Crossett, Mike  
**Subject:** Diesel Spill at Building 460

Here is what we got.

**PIC REFERENCE NUMBER: 42**

**IHSS Reference Number: Not Applicable**

**Unit Name: Diesel Fuel Leak - Building 460**

**Approximate Location:** No documentation was found that indicated the exact location of this site.

**Date(s) of Operation or Occurrence**

August 3, 1986

**Description of Operation or Occurrence**

A report was made of a diesel fuel leak from a tanker truck by Plant Protection. The leak occurred south of Building 460 along the drainage excavation site<sup>1</sup>. The exact location of this occurrence could not be determined from the documentation reviewed.

**Physical/Chemical Description of Constituents Released**

An estimated 100 to 150 gallons of diesel fuel leaked from the truck<sup>1</sup>.

**Responses to Operation or Occurrence**

Fire department personnel constructed a dike to prevent the spread of the spill. Dirt was used to absorb the standing fuel. The report mentions that cleanup operations were necessary but it is unknown if removal of the contaminated soil took place<sup>1</sup>.

**Fate of Constituents Released to Environment**

No documentation was found that details the fate of constituents released to the environment.

**Action/No Further Accelerated Action Recommendation**

Recommend NFAA-

- Under Response to Operation or Occurrence, the text states that cleanup operations were necessary. However, the reference actually states that cleanup will be conducted during the day shift, which is considerably stronger language.

**Michael Anderson**  
**SUMMIT Technical Resources, Inc.**  
**Office - 303-966-3263**  
**Cell Phone - 720-838-5533**  
**E-mail - manderson@summitusa.net**

**PIC REFERENCE NUMBER. 44**

IHSS Reference Number Not Applicable

Unit Name Distillate Release - Building 374

Approximate Location No documentation was found that indicates the exact location of this site

Date(s) of Operation or Occurrence

September 30, 1977

Description of Operation or Occurrence

While transferring distillate from Building 374 to Building 774 a contractor broke a flange connected to the sump pump. Liquid was pumped to the ground south of Building 374. No personnel were contaminated.<sup>1</sup> The exact location of this occurrence could not be determined from the documentation reviewed.

Physical/Chemical Description of Constituents Released

The liquid consisted of distillate that had been transferred to Building 774 on September 29. It was returned to Building 374 on September 30 because it was contaminated to 6,700 dpm/L.<sup>1</sup>

Responses to Operation or Occurrence

Soil samples were taken for analysis. No cleanup was mentioned.

Fate of Constituents Released to Environment

No documentation was found that details the fate of constituents released to the environment.

Action/No Action Recommendation

No action warranted-

- The area south of Building 374 is IHSS 188, the site of a leaking drum of acid, thought to be a metal leaching solution. Five surface soil samples were collected in this area and the metal concentrations were found to be well below WRW ALs (see attached map [Figure 2]). The IHSS was approved for NFAA in 1999.
- The distillate, if containing radionuclides, probably also contained metals. As discussed above, metal contamination is not a concern in this area.
- The concentration of radionuclides in the distillate that was released is very low relative to the WRW ALs. This activity was 2.2 dpm/pCi, therefore, the solution had a radionuclide concentration of 3,000 pCi/L or 3 pCi/mL (3 pCi/g). WRW ALs are significantly higher than this concentration.
- A surface soil sample collected in this area indicated americium, uranium-235, and uranium-238 were present at concentrations of 0.058 pCi/g, 0.23 pCi/g, and 3.3 pCi/g, respectively (see attached map [Figure 3]). These concentrations are well below the respective WRW ALs.

References

<sup>1</sup> 1600191

**PIC REFERENCE NUMBER 47**

IHSS Reference Number Not Applicable

Unit Name Nickel Carbonyl Container Burial

Approximate Location N750,500, E2,085,500

Date(s) of Operation or Occurrence

June 17 and 18, 1963<sup>1</sup>

Description of Operation or Occurrence

Four 55-gallon drums, one GI can with two cylinders, and six loose cylinders of nickel carbonyl were removed from the burial pit west of Building 771 (PAC 700-1110) to a pit east of the Solar Evaporation Ponds Explosive charges were used to vent the containers <sup>1</sup>

Physical/Chemical Description of Constituents Released

Nickel carbonyl was released to the environment <sup>1</sup>

Responses to Operation or Occurrence

Air samples were collected during the venting of the containers <sup>1</sup> No documentation was found that further details response to this occurrence

Fate of Constituents Released to Environment

Nickel carbonyl was released to the air during venting of the cylinders No documentation was found that further details the fate of the constituents

Action/No Action Recommendation

No action warranted-

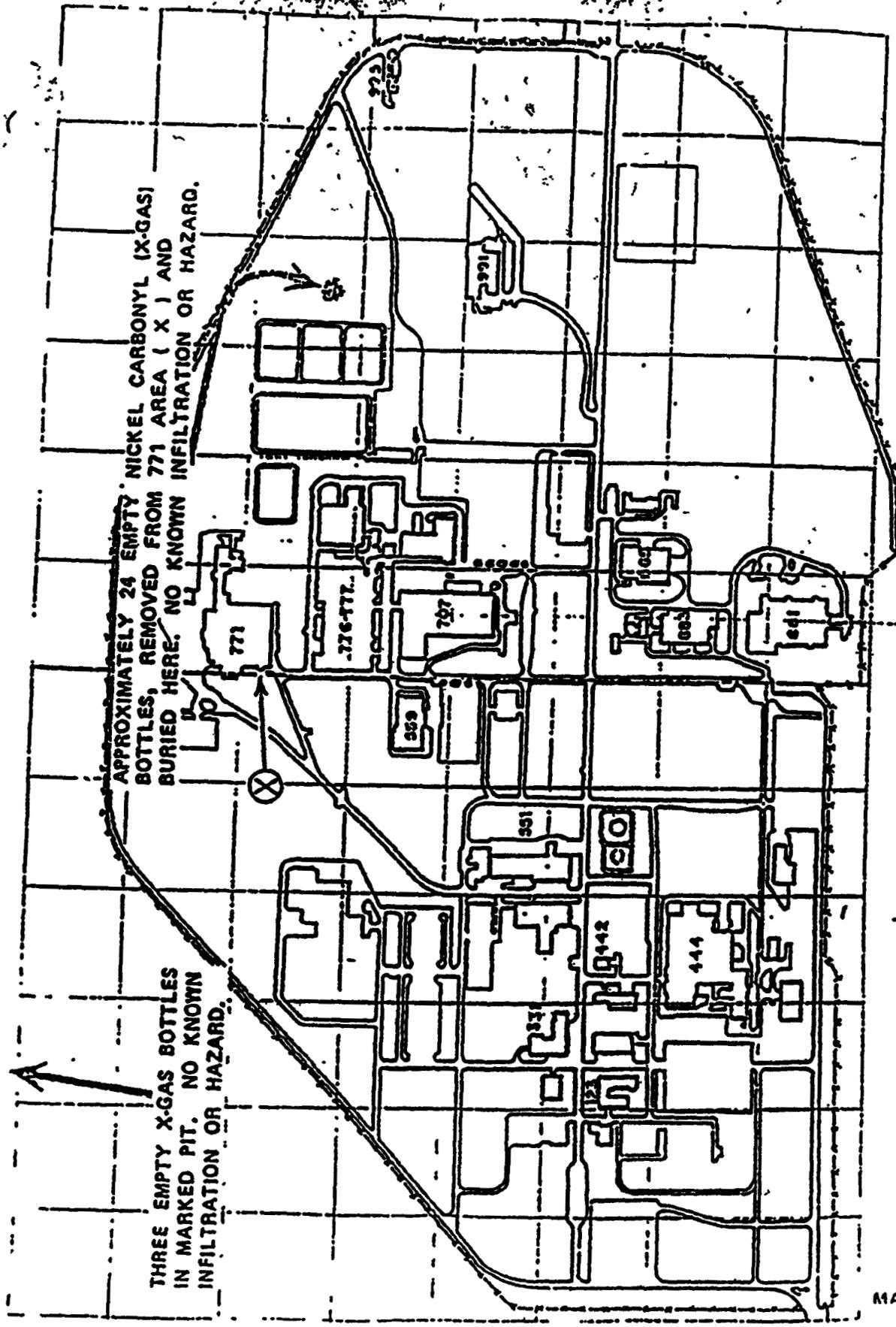
- Nickel carbonyl is extremely volatile and, therefore, would not remain in the soil if indeed it was released to the soil Burning of the nickel carbonyl creates an aerosol of nickel oxide that would have dispersed in the atmosphere Therefore, there should not be a source of nickel contamination in the disposal area
- The approximate location of the burial pit (PIC 47) is shown on the attached figure <sup>2</sup> This location is within IHSS 900-176, the S&W Contractor Storage Yard This IHSS was characterized along with other neighboring IHSSs within IHSS Group 000-1 in accordance with IASAP Addendum #IA-03-02 A Data Summary Report was prepared that indicates nickel concentrations in soil at IHSS 900-176 ranged from 20 to 50 mg/kg The WRW AL is 20,000 mg/kg The Data Summary Report was approved by CDPHE on July 29, 2003 No action is warranted for this PIC

References

<sup>1</sup> 1600236

<sup>2</sup> Owens, 1974

*Onens Report, 1974*



MAP 15A

**PIC REFERENCE NUMBER · 57**

IHSS Reference Number Not Applicable

Unit Name Oil from Spill in Co-60 Pit

Approximate Location Unknown

Date(s) of Operation or Occurrence

September 7, 1979<sup>1</sup>

Description of Operation or Occurrence

Oil was spilled in the Co-60 pit Analytical results indicated 238 pCi/L gross beta Oil was "OK to dispose thru waste oil - 774"<sup>1</sup>

Physical/Chemical Description of Constituents Released

Oil contaminated with radionuclides was released to the environment<sup>1</sup>

Responses to Operation or Occurrence

The oil was characterized for gross beta and was determined to be acceptable for treatment in Building 774

Fate of Constituents Released to Environment

No documentation was found that further details the fate of the constituent

Action/No Action Recommendation

No action warranted-

- The analytical results for the oil were sent to B P Schneider in Building 444,<sup>1</sup> most likely to solicit approval for disposal of the oil that was spilled in the building Building 444 manufacturing activities included welding and the use of radiography to detect flaws in depleted uranium and beryllium parts Radiography took place in Rooms 139 and 143 Parts were X-rayed in the X-ray cell, which appears to be Room 139<sup>2</sup> (see attached map) Co-60 is the radioisotope source for the X-rays used in radiography It is likely the floor of the X-ray cell was referred to as the Co-60 pit, a depression in the floor where the Co-60 source was stored until needed Such a depression would catch oil or other liquids that might be spilled
- The oil was only analyzed for gross beta contamination, which further indicates the radionuclide of interest was depleted uranium Gross beta is typically the only analysis conducted for screening-level surveys to detect uranium-238 contamination, because the daughter products are strong beta emitters
- The gross beta activity represents an upper bound on the activity of uranium-238 in the oil (that is, 268 pCi/L or 0.268 pCi/g) The activity is very low relative to the WRW AL for uranium-238 (350 pCi/g)
- Because the oil release was a spill in a room, it is not likely the oil was ever released to subsurface soil beneath the building Also, the reference implies that the spill was cleaned up (that is, it was "OK to dispose of the oil at Building 774") Lastly, the Data Summary Report for IHSS Group 400-3, which includes UBC 444, indicates the IHSS Group is an NFAA Site The Data Summary Report was approved by CDPHE on December 18, 2003

<sup>1</sup> 1500813

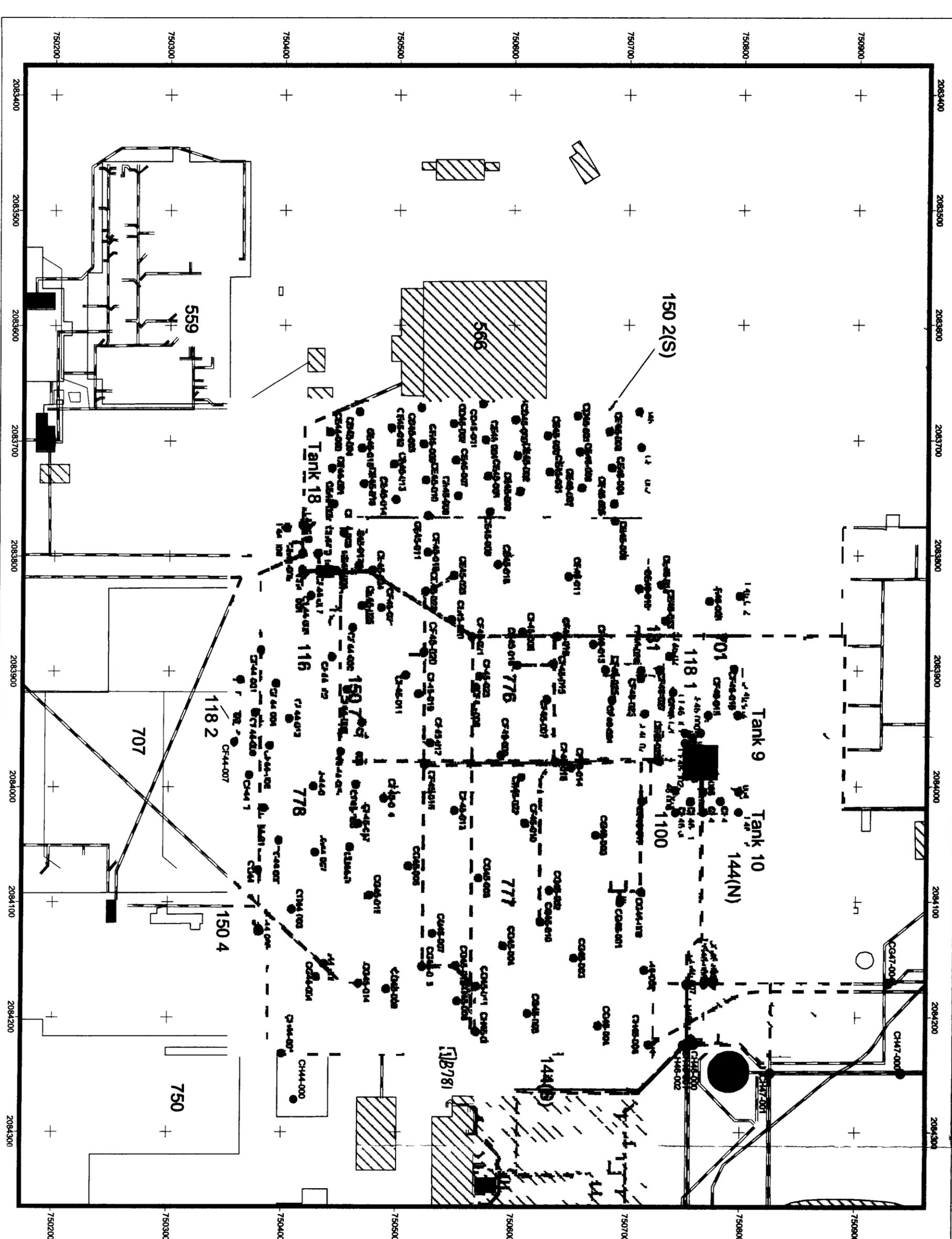
<sup>2</sup> Building 444 WSRIC Book Rooms 139, 143C, and 143D are mentioned regarding radiography activities (X-raying in the X-ray cell and development of film) It is stated that Room 143 is where film was developed It is concluded that Room 139 is the X-ray cell

# **NOTICE:**

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**PORTIONS OF THE FOLLOWING  
DOCUMENT ARE ILLEGIBLE**

**The Administrative Record Staff**

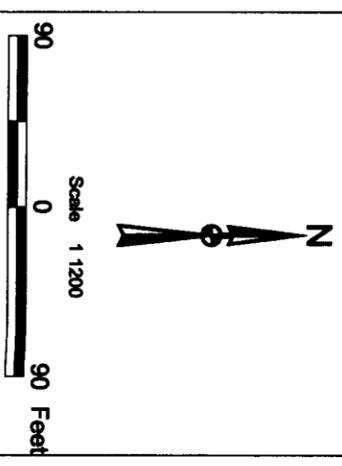


**Figure 5**  
**Proposed Sampling Locations**  
**for IHSS Group 700-3**

**Key**

- Biased Sampling Location
- Statistical Grid Sampling Location
- Known OPWL Leak
- OPWL
- NPWL
- Tank
- 700-3 IHSS
- 700-3 UBC
- Building
- Demolished
- Standing
- Sewer

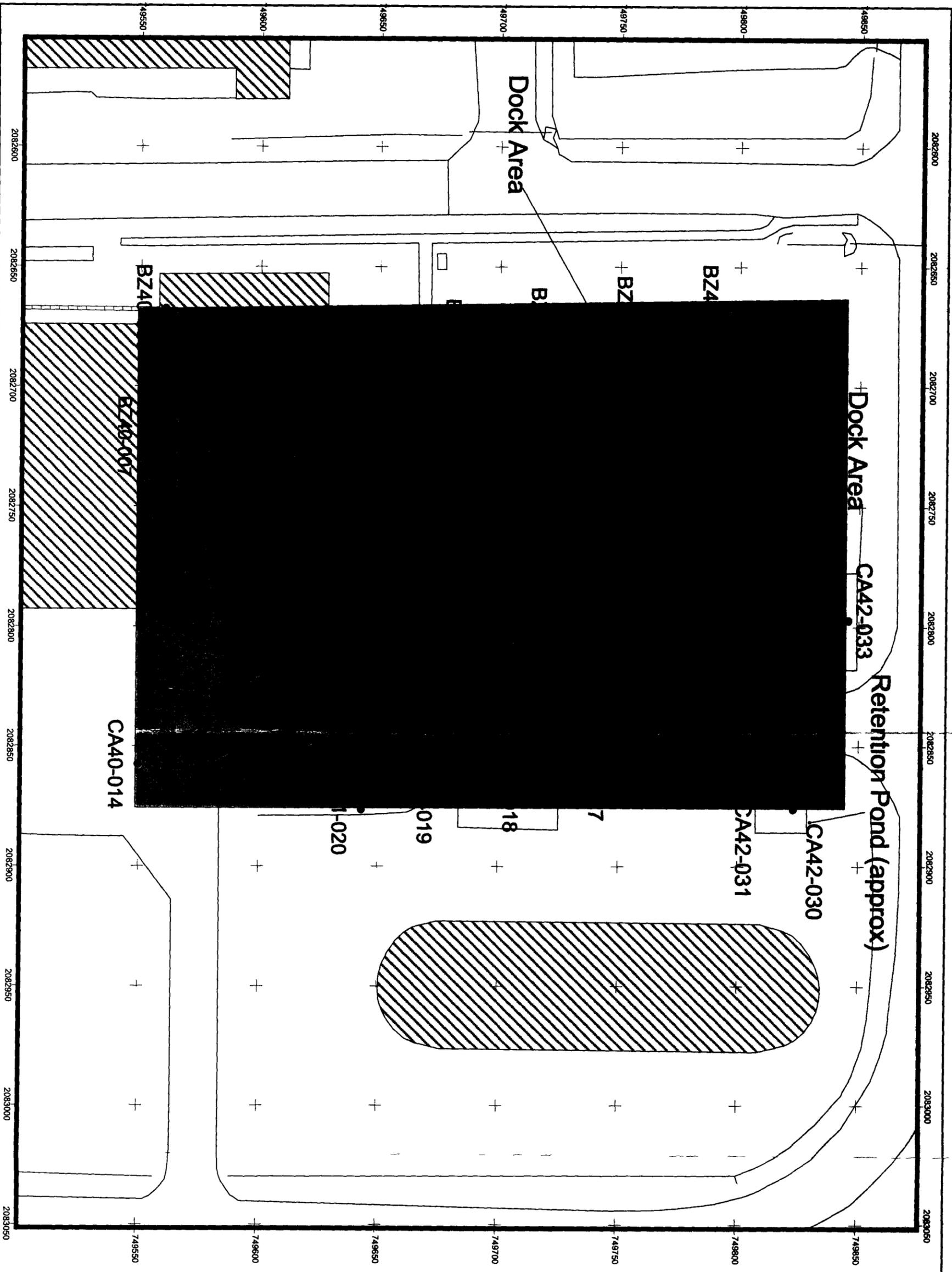
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 February 2003



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**Figure 3**  
Proposed Sample Locations  
for IHSS Group 500 2

**KEY**

-  IHSS 158
-  Building
-  Demolished
-  Standing
-  Paved Road
-  Dirt Road
-  Streams
-  Rail Line
-  Statistical Sampling Location
-  Biased Sampling Location

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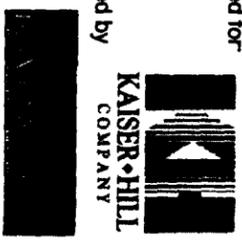


State Plane Coordinate Projection  
Colorado Central Zone  
Datum: NAD 27

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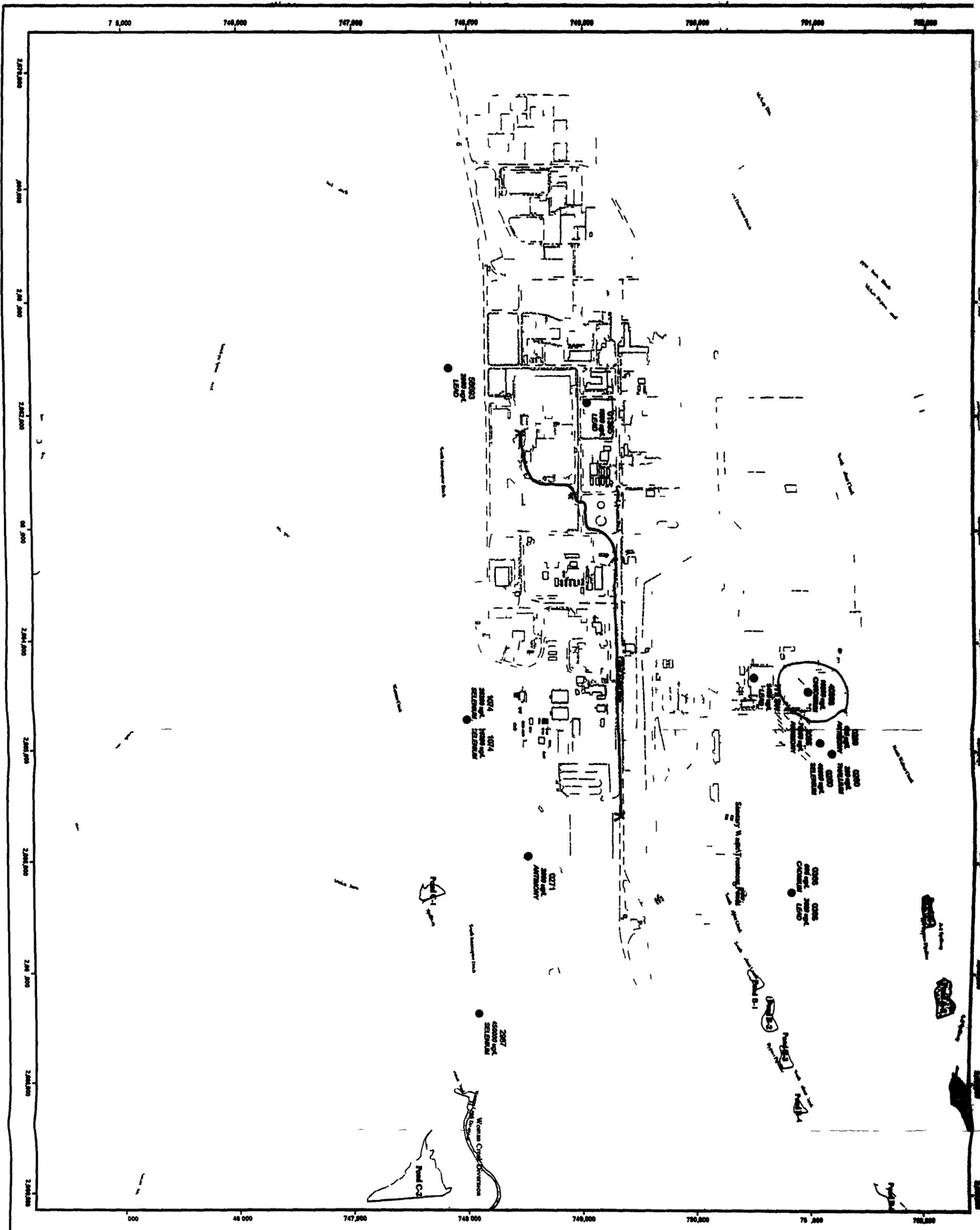
Prepared for:

Prepared by:



project/ty/2003/500-2/characterizations/500-2.spr  
October 2003

121

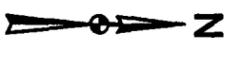


Metals greater than Tier I and Background

**Legend**

- UHSU Metals greater than Tier I
- ◻ Solar Evaporation Ponds (SEPs)
- ◻ Lakes and ponds
- ▬ Streams ditches or other drainage features
- ▬ Paved roads
- ▬ Dirt Roads

X-X Spill Flow Path



**Figure 5**  
**Proposed Sampling Locations**  
**for IHSS Group 700-3**

**Key**

- Biased Sampling Location
- Statistical Grid Sampling Location
- Known OPWL Leak
- OPWL
- NPWL
- Tank
- 700-3 IHSS
- 700-3 UBC

- Building
- Demolished
- Standing
- Sewer

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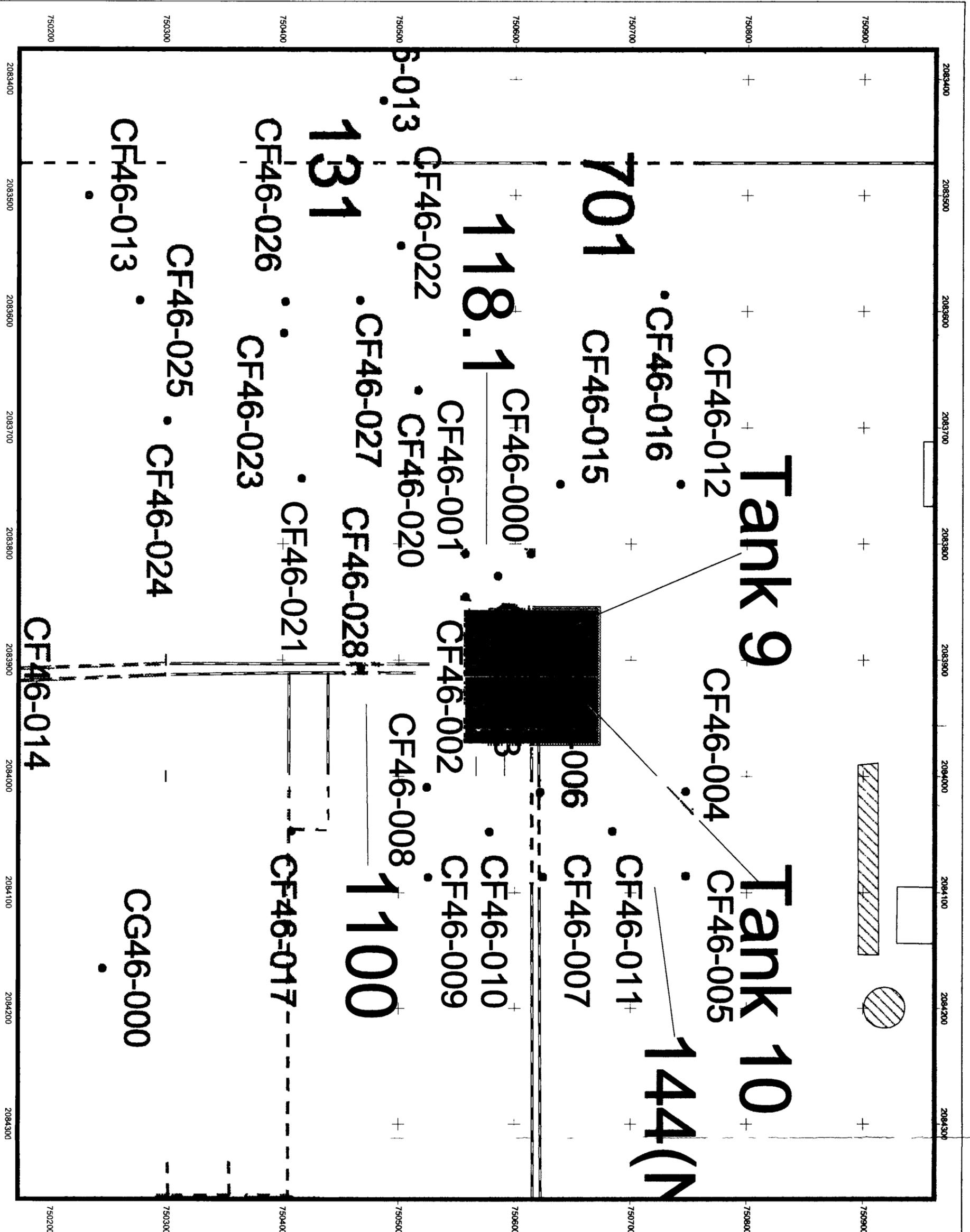


Scale 1:1200  
 20 0 20 Feet

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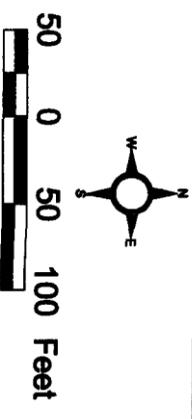


**Figure 2**  
**Existing Surface Soil Sampling Results Greater Than Background Mean Plus Two Standard Deviations or MDLs for IHSS Groups 300-3 and 300-4**

**KEY**

- Surface Soil Sampling Locations
- UBC
- ▾ Stream ditch or other drainage
- ▾ Paved area
- ▾ Dirt road
- ▾ Standing building
- ▾ Demolished building
- ▾ Fence

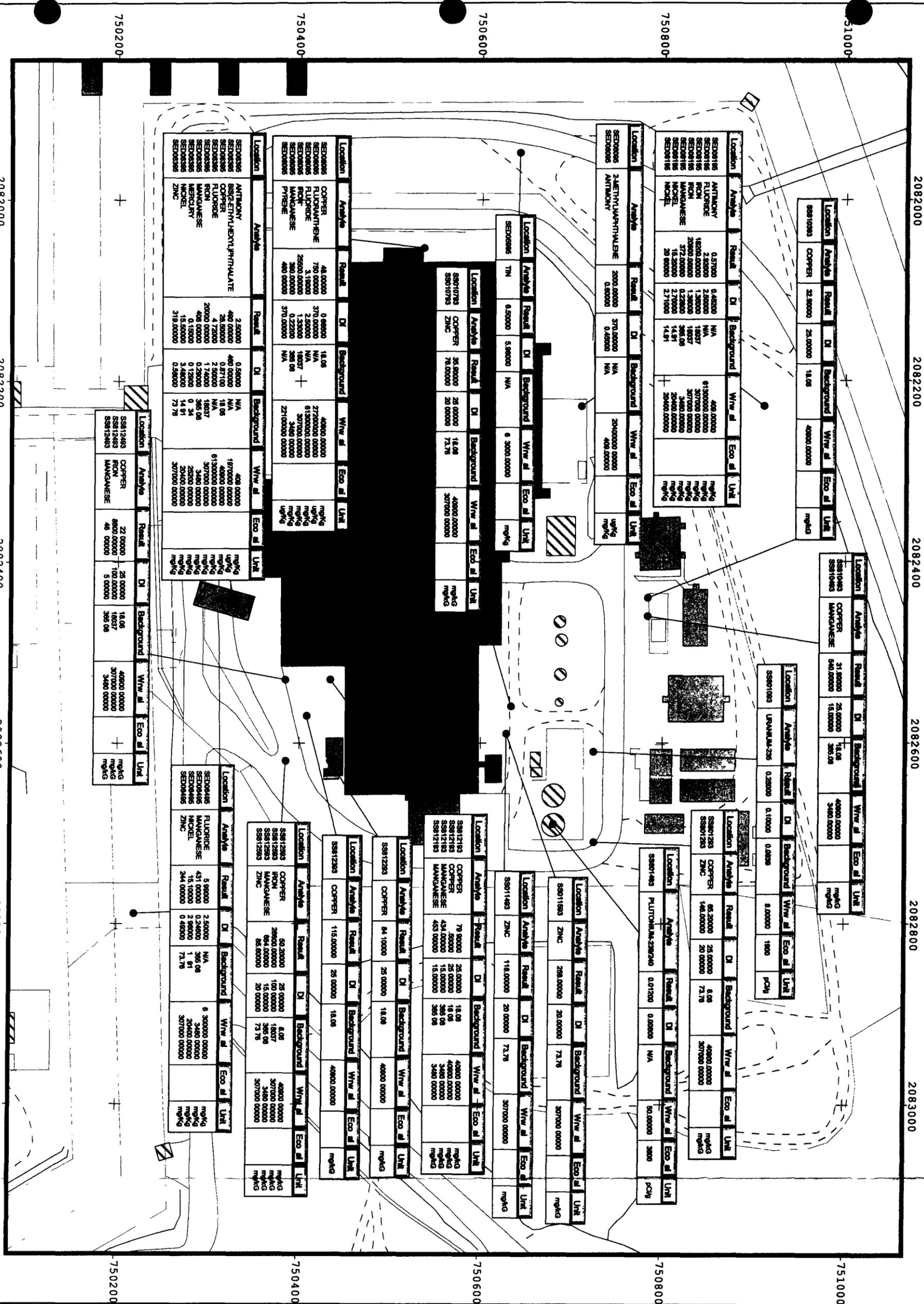
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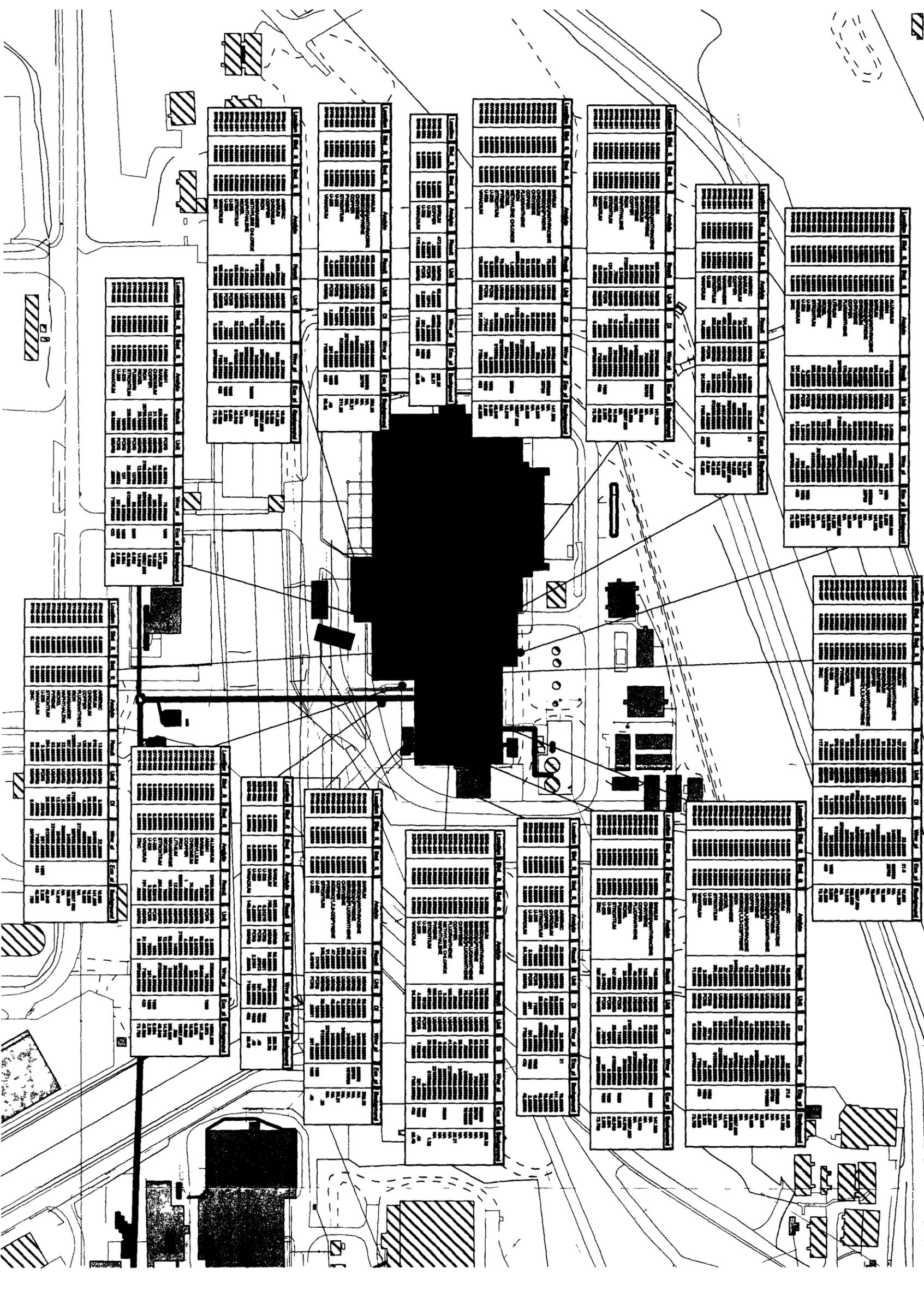
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**Figure 3**  
**Soil Sampling Results Greater Than**  
**Background or Detection Limits**  
**at IHSS Groups 300-3 and 300-4,**  
**East Side**



**KEY**

- Sampling location with concentration greater than W/RW AL
- Sampling location with concentrations less than ALs

- New Process Waste Line
- UBC 371 and UBC 374
- Storm Drain
- Sewer
- Paved area
- Dirt road
- Stream or ditch
- Fence
- Demolished Building
- Standing Building

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Scale = 1:2,000  
 100 0 100 Feet

State Plane Coordinate Projection  
 Colorado Central Zone  
 Datum NAD 27

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# Building 444 - Process Sinks, Sumps, and Ancillary Equipment Location

