WASTE PITS REMEDIAL ACTION PROJECT (WPRAP)

March 13, 2001

000001

3552

Graphics # 6892.0 3/01

WASTE PIT REMEDIAL ACTION PROJECT

200002

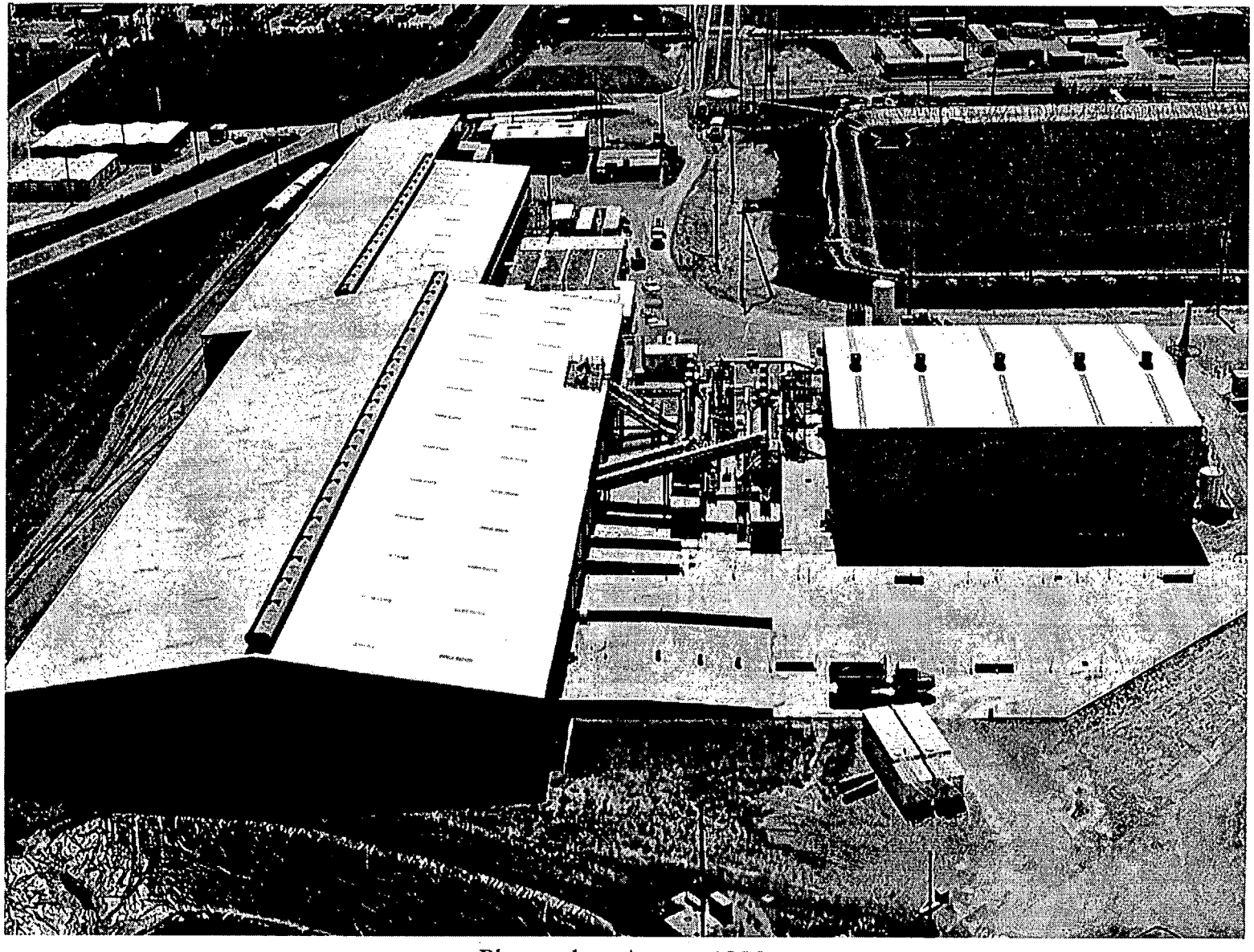


Photo taken August 1999

Graphics # 6892.1 3/01 Photo # 7213-69

DOE/FLUOR FERNALD/IT MISSION STATEMENT

- The WPRAP team is committed to the safe, successful and cost-effective remediation of the waste pit area in partnership with the DOE, stakeholders and regulators.

000003

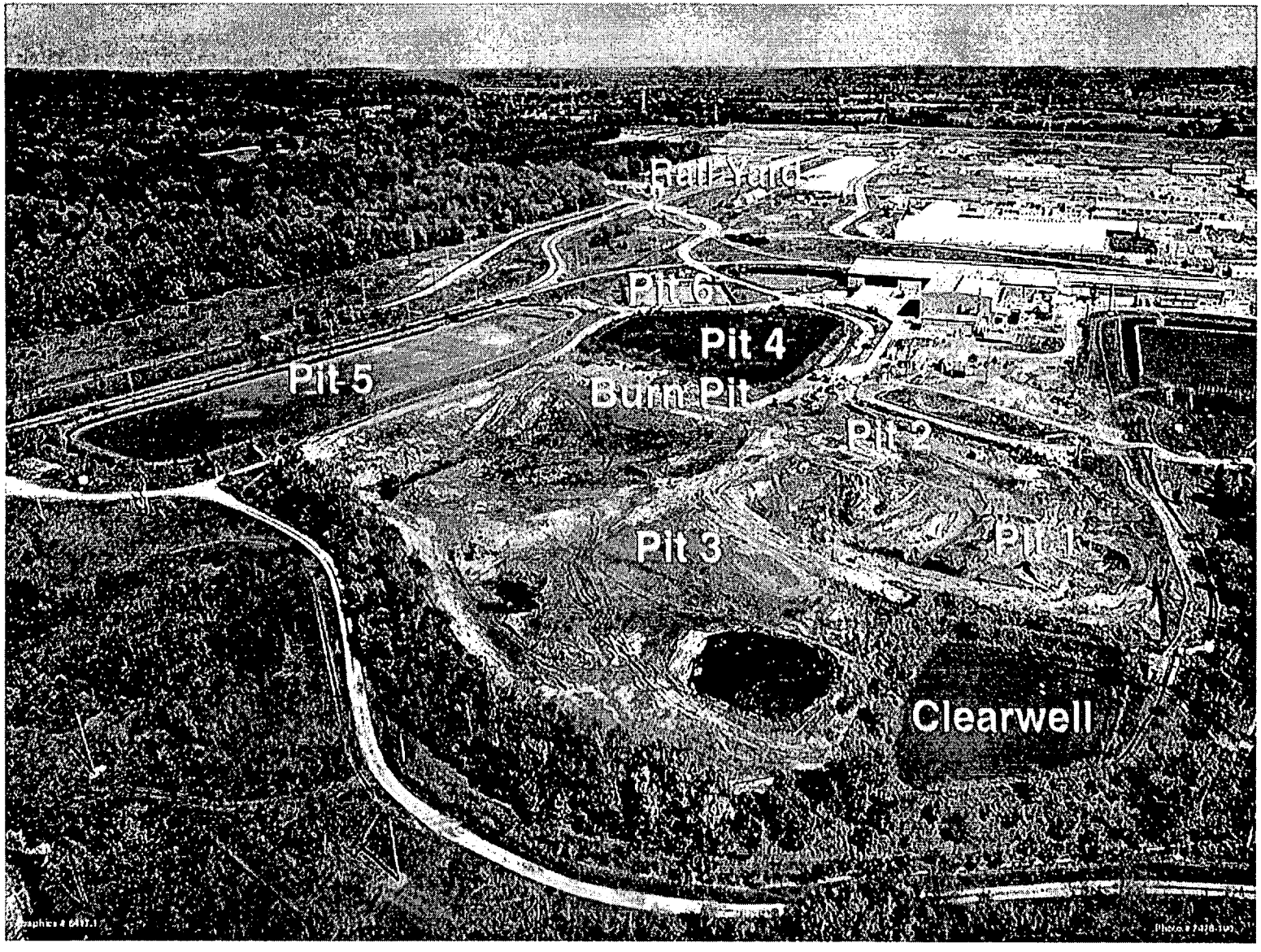
35552

PROJECT OVERVIEW

000004

- OU1 ROD: Pits to be excavated, with material pretreated (i.e. sorted/crushed/shredded), treated by thermal drying (as necessary), and shipped off site for disposal at Envirocare
- WPRAP include Pits 1 - 6, the Burn Pit and the Clearwell
- Pits are up to 42 feet deep and cover over 15 acres
- Contaminants
  - Radionuclides (e.g., Uranium and Thorium)
  - Trace Metals
  - Trace Organics

WASTE PIT AREA



Graphics # 6892.4 3/01 Graphic #6417.1

000005

3552

PROJECT OVERVIEW

000006

- Excavate approximately 1,000,000 tons in-situ low-level radioactive waste and contaminated subsoils
- Remove approximately 300,000 tons in-situ moisture/water from the waste
- Transport approximately 626,499 tons of materials to Envirocare
  - 456,500 tons of pit material
  - 79,500 tons of subsoils
  - 90,500 tons of materials from other Fernald projects
- Remainder of subsoils to OSDF

EXCAVATION COMPOSITION

- Sump sludges and raffinate
- Magnesium fluoride slag
- Graphite and ceramics
- Thorium wastes
- Coal ash
- Wood and metal debris
- Cover and liner soils

000007

Graphics # 6892.6 3/01

3552

WASTE PIT REMEDIAL ACTION PROJECT

800000

Photo taken October 1999

Graphics # 6892.7 3/01 Photo # 6944-D923

WASTE PIT REMEDIAL ACTION PROJECT

Photo taken July 2000

Graphics # 6892.8 3/01 Photo # 6944-D1193

3552

WASTE PIT REMEDIAL ACTION PROJECT

0000040

Photo taken July 2000

Graphics # 6892.9 3/01 Photo # 6944-D1152

WASTE PIT REMEDIAL ACTION PROJECT

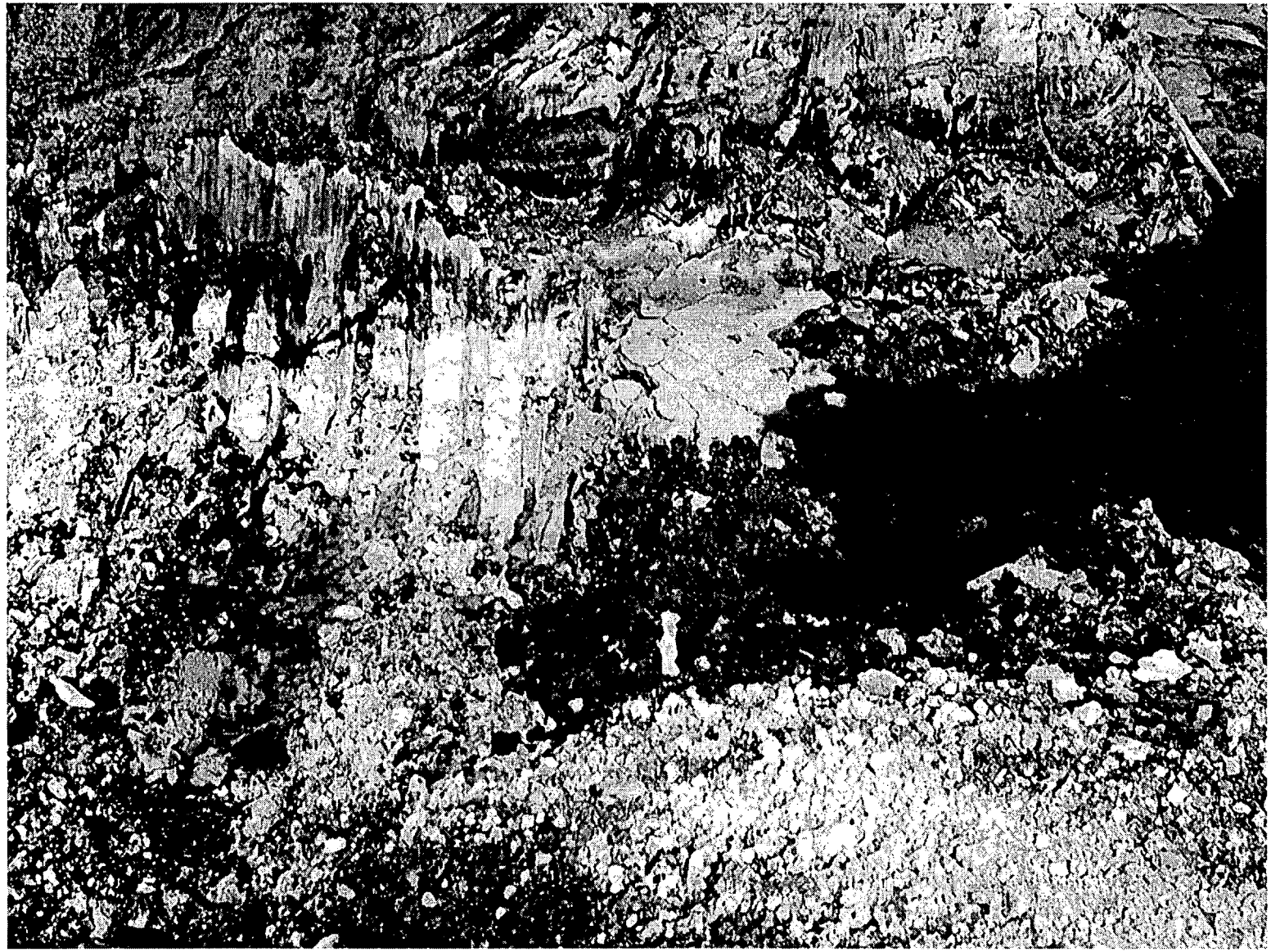


Photo taken July 2000

Graphics # 6892.10 3/01 Photo # 6944-D1199

000011

3552

WASTE PIT REMEDIAL ACTION PROJECT

000012

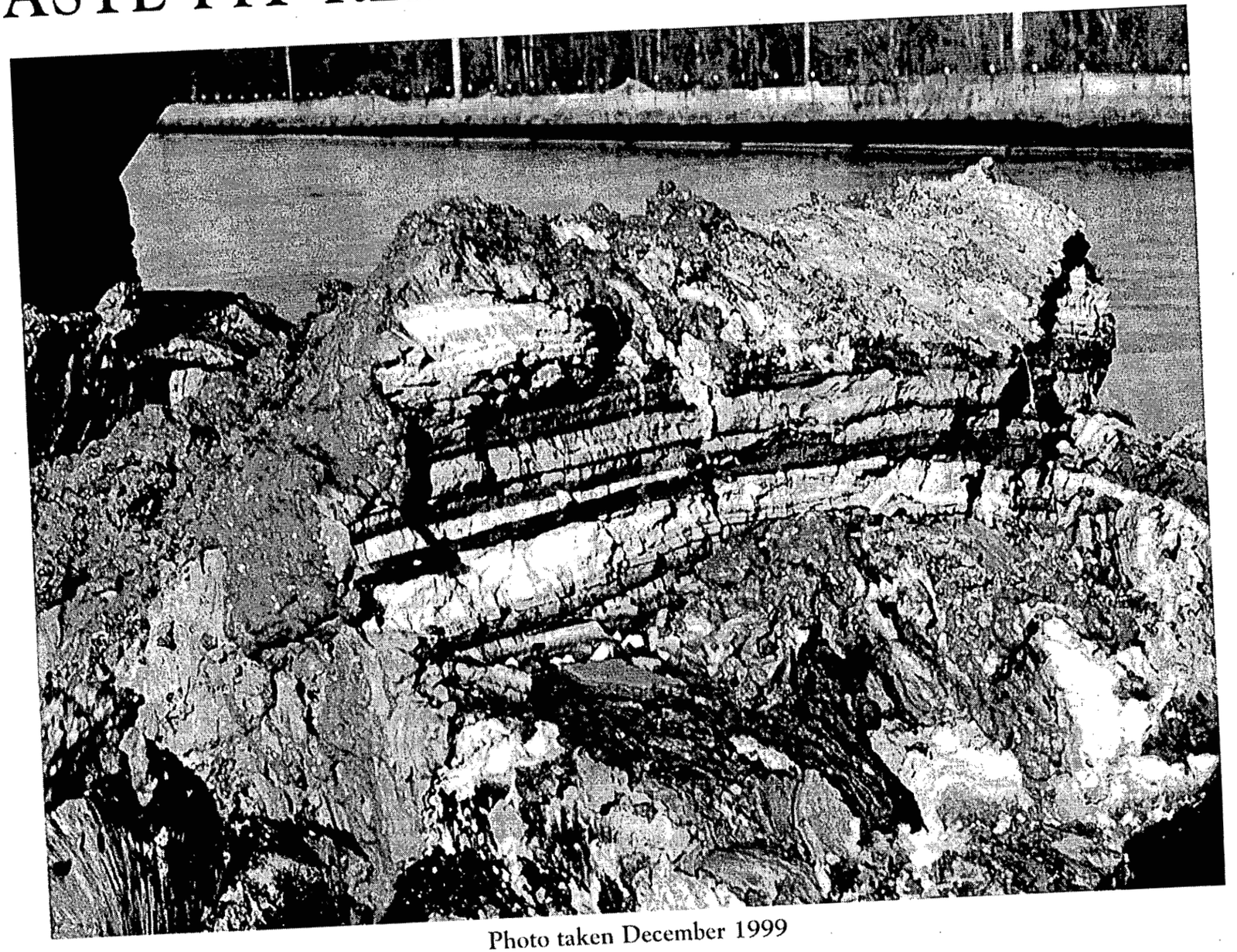


Photo taken December 1999

Graphics # 6892.11 3/01 Photo # 6944-D994

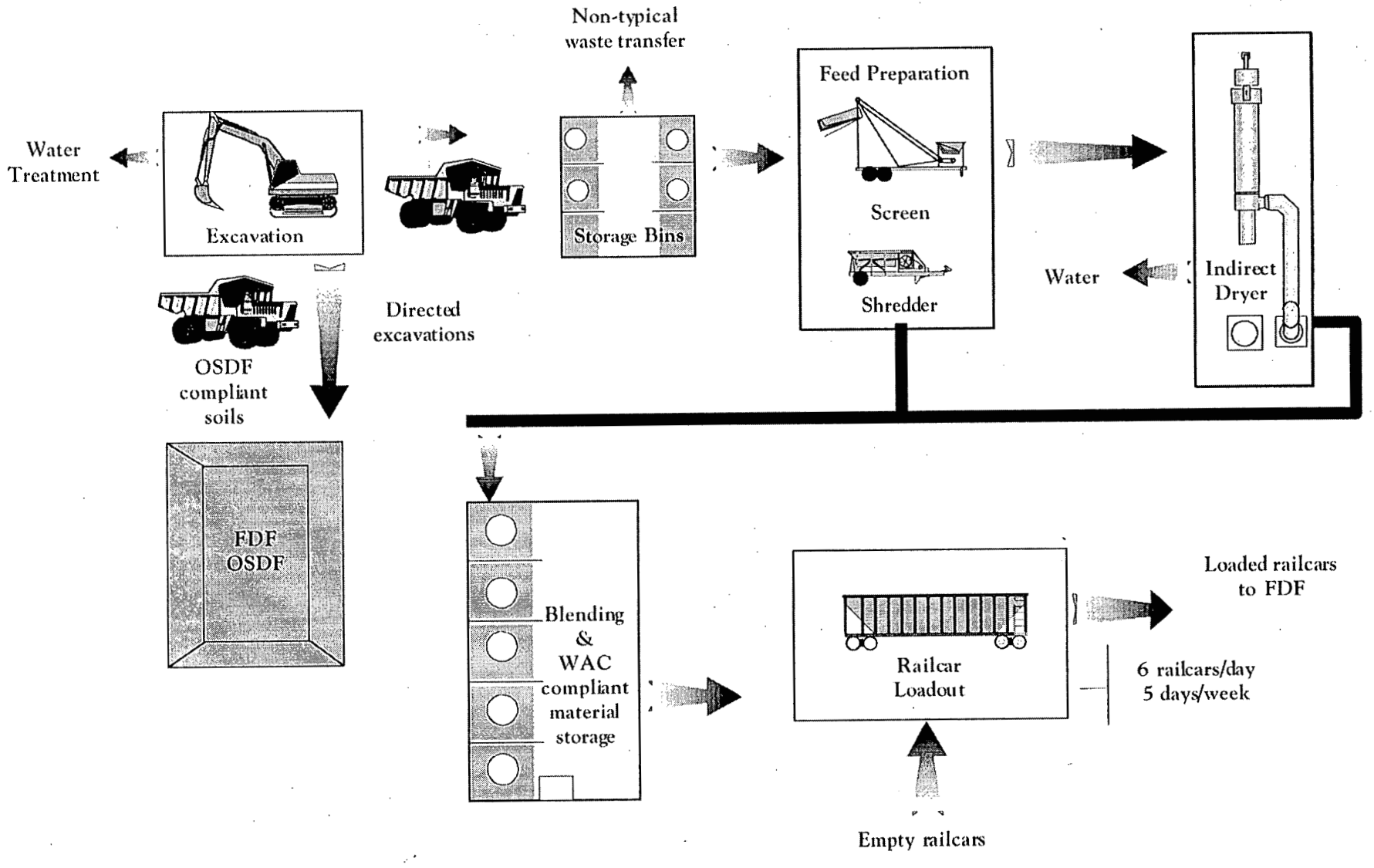
KEY REMEDIATION DATES

• Record of Decision Signed	March 1, 1995*
• Initiation of On-Site Remediation	April 1, 1996 *
• Submittal of Remedial Design Package	March 5, 1998*
• Submittal of Transportation & Disposal Plan	April 30, 1998*
• Submittal of Remedial Action Package	September 23, 1998*
• Initiation of Loadout (Loading of Waste)	March 1, 1999*
• Start up of Pit Excavation	September 1999
• Start up of Dryers	December 1999
• Completion of Waste Processing	September 30, 2004
• Completion of Project (including facility D&D)	May 31, 2005

* denotes USEPA Enforceable Milestones

Graphics # 6892.12 3/01

MATERIAL FLOW



000014

Graphics # 6892.13 3/01

SUCCESSES & ACHIEVEMENTS

- Process and loaded approximately 216,000 tons of waste
  - 100 percent of contract quantity for Operational Year 1 (March 1999 - November 1999)
  - 90 percent of the contract quantity for Operational Year 2 (November 1999 - November 2000)
- Loaded 2,010 railcars
- Shipped 34 unit trains to Envirocare
- Met all USEPA enforceable milestone dates

000015

35552

SUCCESSES & ACHIEVEMENTS (CONT')

- Transportation and Disposal
  - Excellent turnaround times by railroads and Envirocare
  - Disposal cost management
    - Winter delivery surcharge waived
    - Contract Year 3 and option year cost reductions
  - 99.8 percent railcar loadout efficiency
  - Transported 34 unit trains of waste without incident
  - Recognized by Envirocare for 100 percent regulatory compliance

000016

SAFETY SUCCESS

- IT and their subcontractors have worked over 1,228 days (since October 1997) without a lost-time accident

- The project operated from August 1999 to November 2000, i.e., over 1 year, without an OSHA recordable

000017

3552

RECENT PERFORMANCE

- Two OSHA recordable injuries sustained in January
- No injuries in February

000048

EXCAVATION KEY FEATURES

- Excavation of the pits is sequenced for enhance material blending & the project safety and for meeting disposal facility Waste Acceptance Criteria (WAC)
- Utilizing conventional earth moving equipment during excavation, transport and processing
- Controlling dust emissions during excavation and transport
- Treating water from excavation area prior to discharge

000019

8552

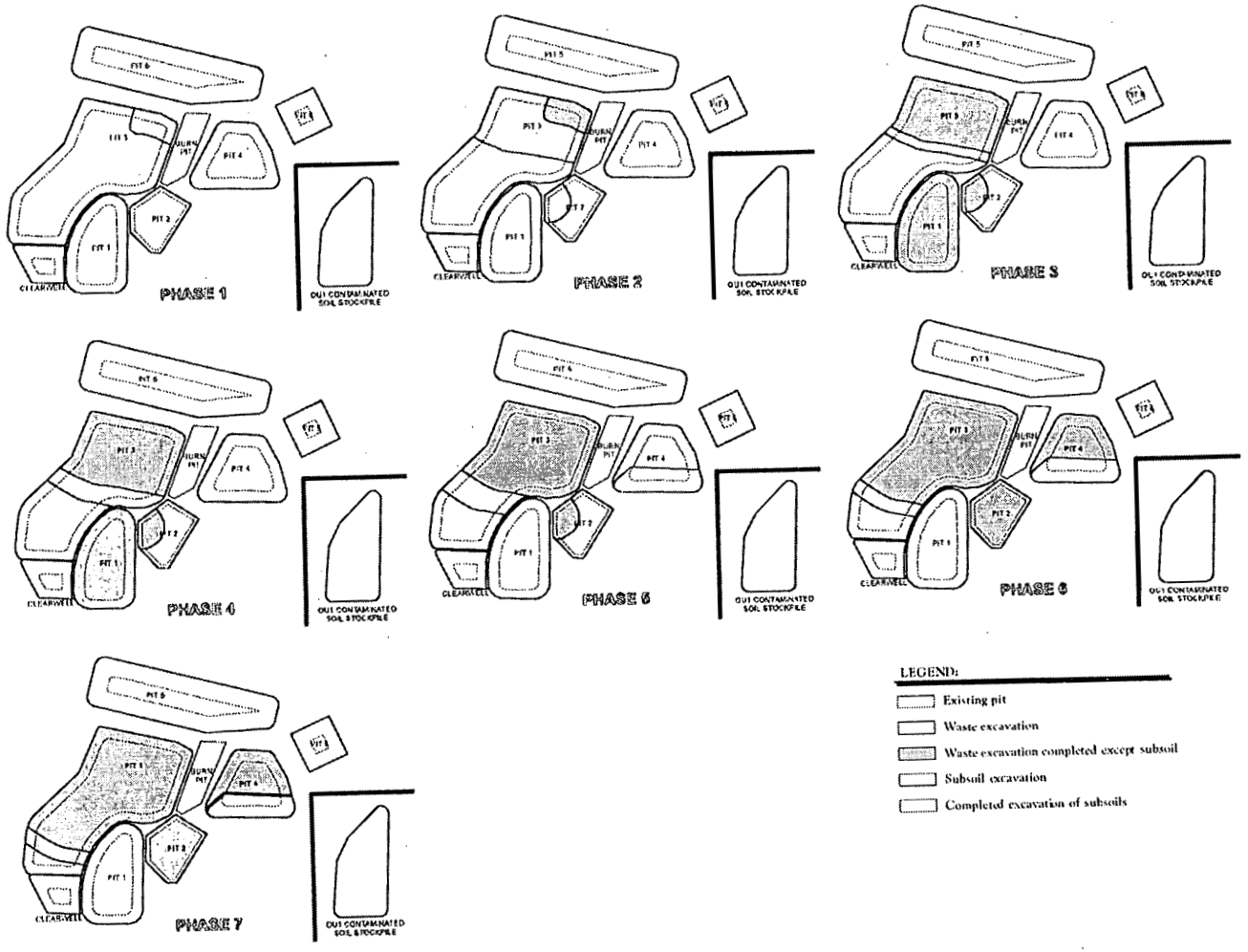
CURRENT EXCAVATION STATUS

- Pit 1- Processed and shipped approximately 50,000 tons of material (about 60 percent)
- Pit 2 - Processed and shipped approximately 5,000 tons of material (about 15 percent)
- Pit 3 - Processed and shipped approximately 115,000 tons of material (about 50 percent)
- Pit 4 - Planned start in fall 2001
- Pit 5 - Planned start summer 2001
- Materials from other Fernald projects
  - Processed and shipped approximately 50,000 from the OU1 contaminated soil stockpile
  - Other materials are also received from Waste Generator Services and Soils & Disposal Facility Project

000020

EXCAVATION SUMMARY FOR PHASES 1- 7

Drawing Number 773481-B11



0000021

8552

Graphics # 6892.20 3/01

WASTE PIT REMEDIAL ACTION PROJECT

000022

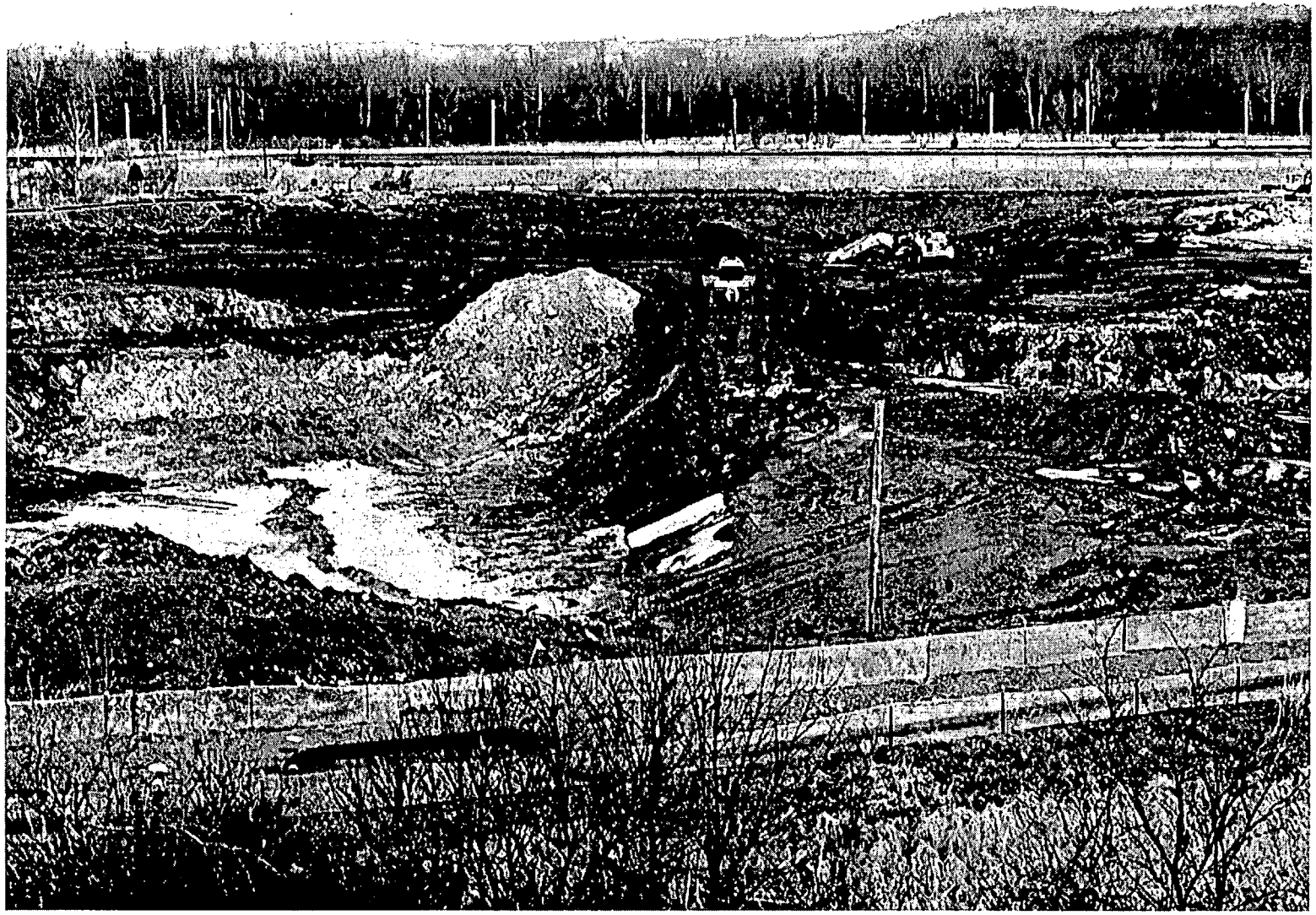


Photo taken February 2001

Graphics # 6892.21 3/01 Photo #6944-D1482

WPRAP ISSUES

- Forecast increase in waste tonnage due to higher moisture content and density of waste material
  - Extent of below pit soils contamination
- Funding limitation of plant and dryer capacity
- Elevated radiological airborne levels

000023

Graphics # 6892.22 3/01

35552

WASTE PIT REMEDIAL ACTION PROJECT

0000024

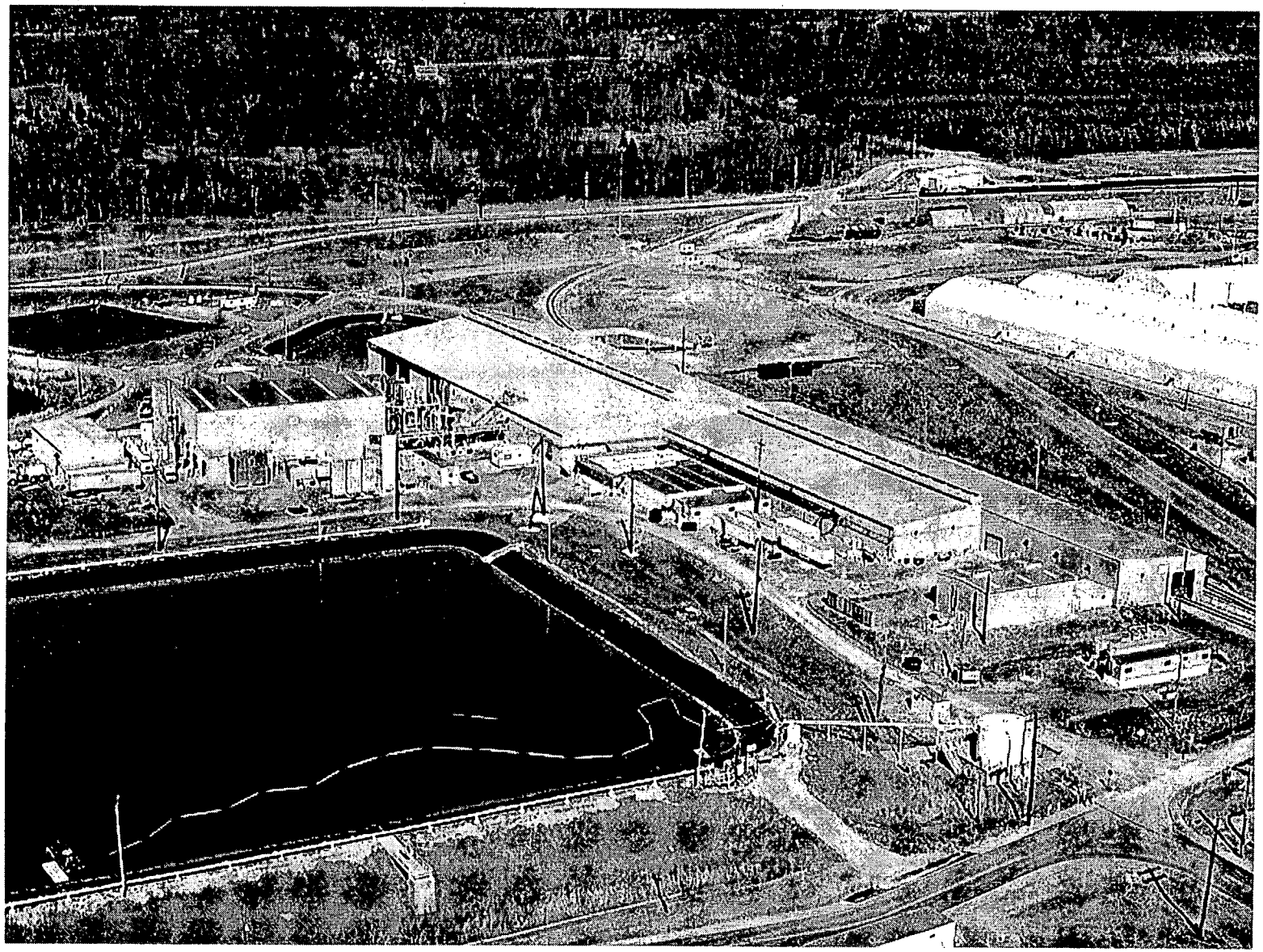


Photo taken February 2000

Graphics # 6892.23 3/01 Photo # 7317-277

RADIOLOGICAL AIRBORNE ISSUE

- Issue relates to occupational airborne levels
- Use occupational air monitoring data to make project specific decisions on worker personal protection equipment, stay times, etc.
- Identified elevated radiological airborne levels in an occupied support facility (T-321) located adjacent to the primary waste processing facilities
- Made changes to facilities and work practices to address elevated airborne levels
- Initiated a Sequential Operations Monitoring Program

000025

35552

RADIOLOGICAL AIRBORNE ASSESSEMENT

- Sequential Operations Monitoring Program:

  Phase I - Railcar loadout

  Phase II - Excavation, material movement and filling of railcar loadout bins

  Phase III - Single dryer operation

  Phase IV - Dual dryer operations

  Phase V - Operations with higher specific activity material

920026

RADIOLOGICAL AIRBORNE ASSESSEMENT

- Goals:
  - Determine sources and contributors to airborne situation at T-321 control point
  - Determine potential sources and contributors to the general area airborne levels and environmental impact
  - Evaluate effectiveness of current engineering and administrative controls
  - Determine if additional administrative and/or engineering controls are warranted to ensure exposures are as low as reasonably achievable

000027

35552

CONCLUSIONS

- The Sequential Operations Monitoring Program provided an effective method for evaluating the primary sources of radiological emissions and emissions pathways
- A positive change was detected when the specific activity of waste materials was increased
- The excavation and loadout activities do not produce significant spike or episodic increases in airborne activity levels
- The pug mill is the major producer of dispersion energy in the facility
- The cleanliness of the facility as related to general dispersability of material has a significant impact on the production of airborne radioactivity

820000

RECOMMENDED ACTION

- Engineering
  - Pug mill capture system
  - Move break room and supervisor trailer
  - HEPA Ventilation of operational support facilities (change room, laundry facilities)
  - Engineering controls for T-321 and annex remain in place

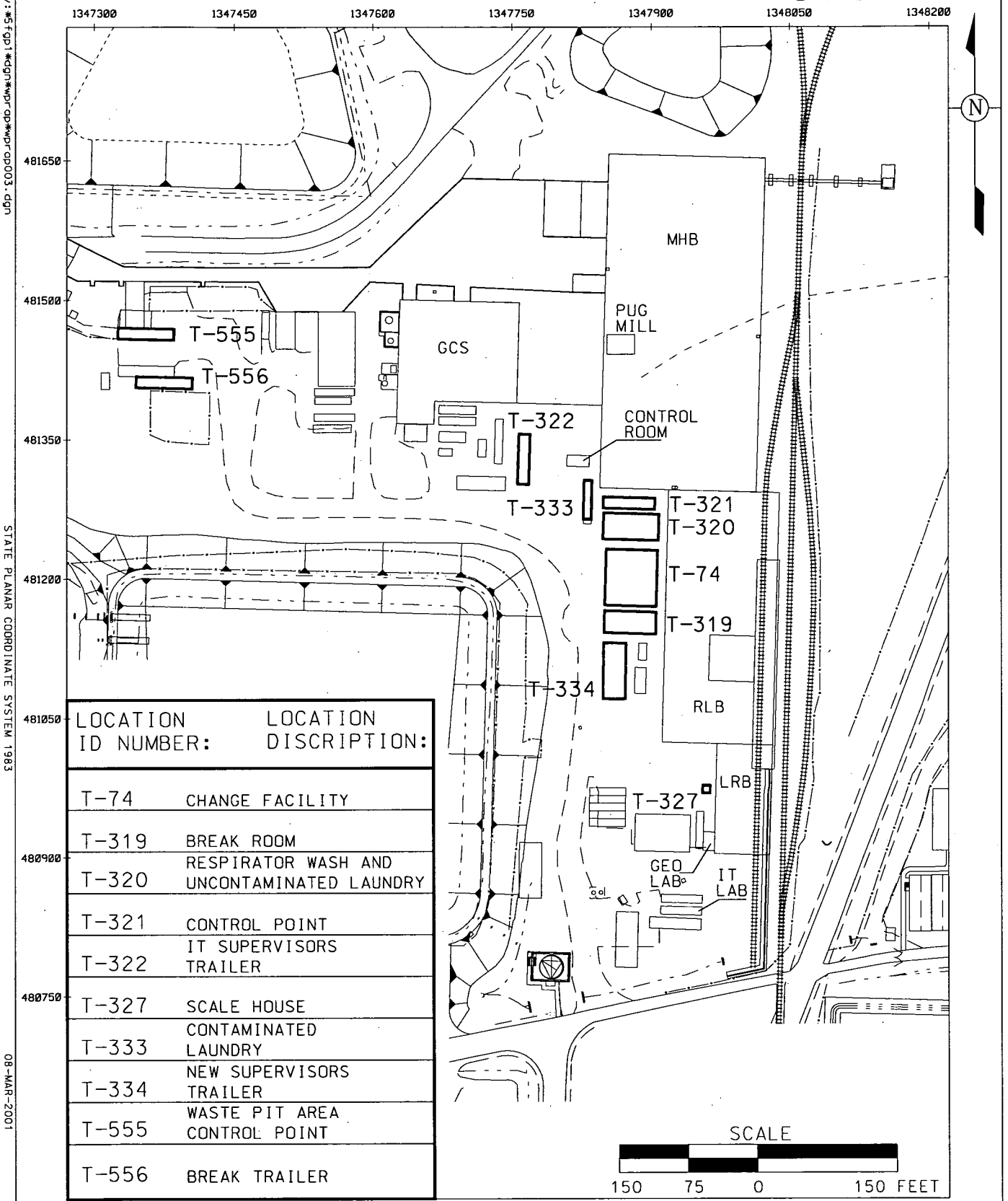
000029

3552

RECOMMENDED ACTION

- Administrative
  - Revise WPRAP Radiological Controls Plan - Complete
  - Develop Data Management Plan - Complete
  - Develop Operational Methods to Manage Change - Under Final Review
  - Continue Facility Cleaning Plan

000030



LOCATION ID NUMBER:	LOCATION DISCRIPTION:
T-74	CHANGE FACILITY
T-319	BREAK ROOM
T-320	RESPIRATOR WASH AND UNCONTAMINATED LAUNDRY
T-321	CONTROL POINT
T-322	IT SUPERVISORS TRAILER
T-327	SCALE HOUSE
T-333	CONTAMINATED LAUNDRY
T-334	NEW SUPERVISORS TRAILER
T-555	WASTE PIT AREA CONTROL POINT
T-556	BREAK TRAILER

LEGEND:

——— TRAILER LOCATION

v:*5fgp*dgn*wprap*wprap003.dgn

STATE PLANAR COORDINATE SYSTEM 1983

08-MAR-2001

FIGURE 1-1. WPRAP FACILITY LAYOUT

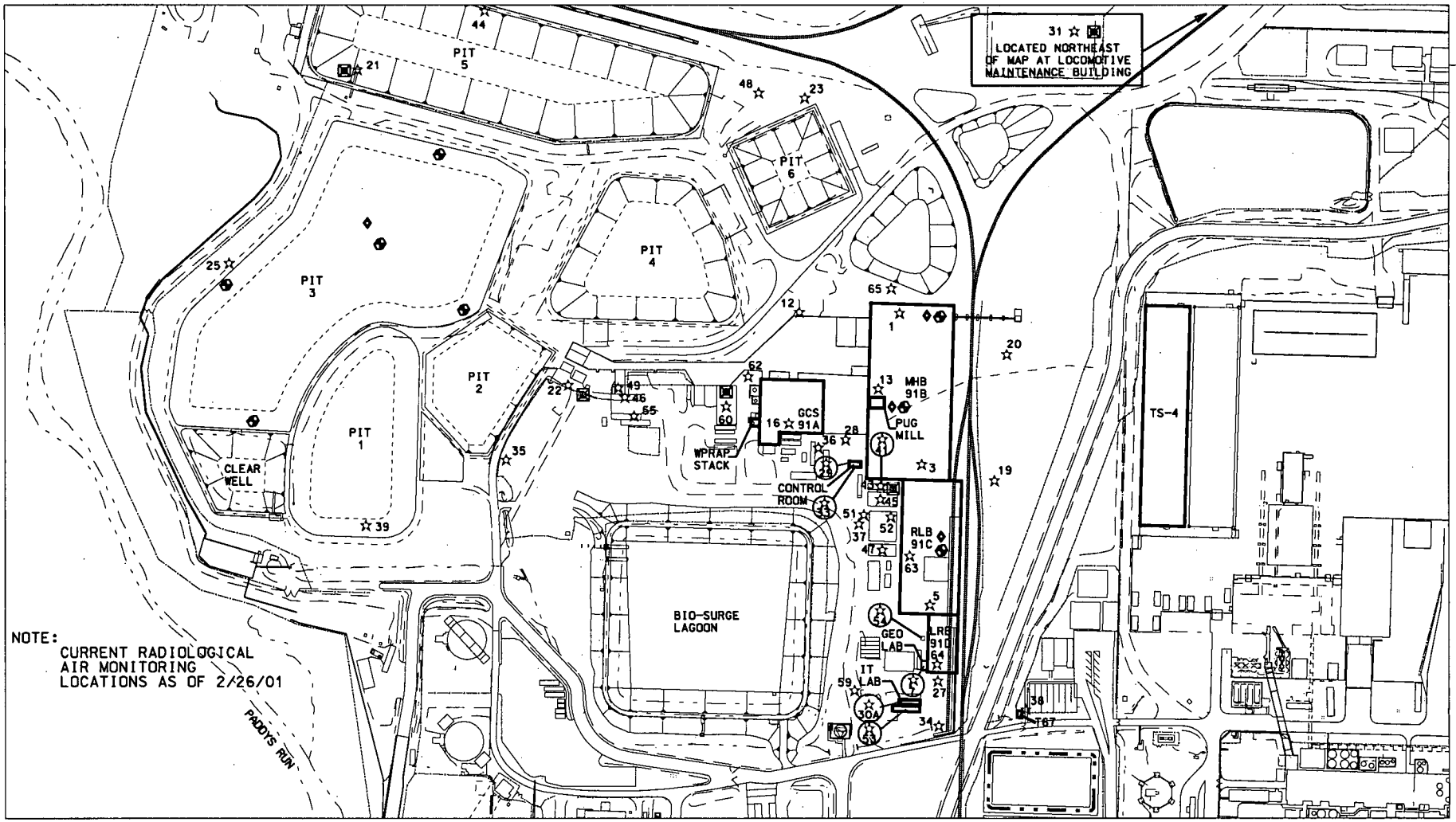


FIGURE 2. WPRAP EXISTING OCCUPATIONAL MONITORS

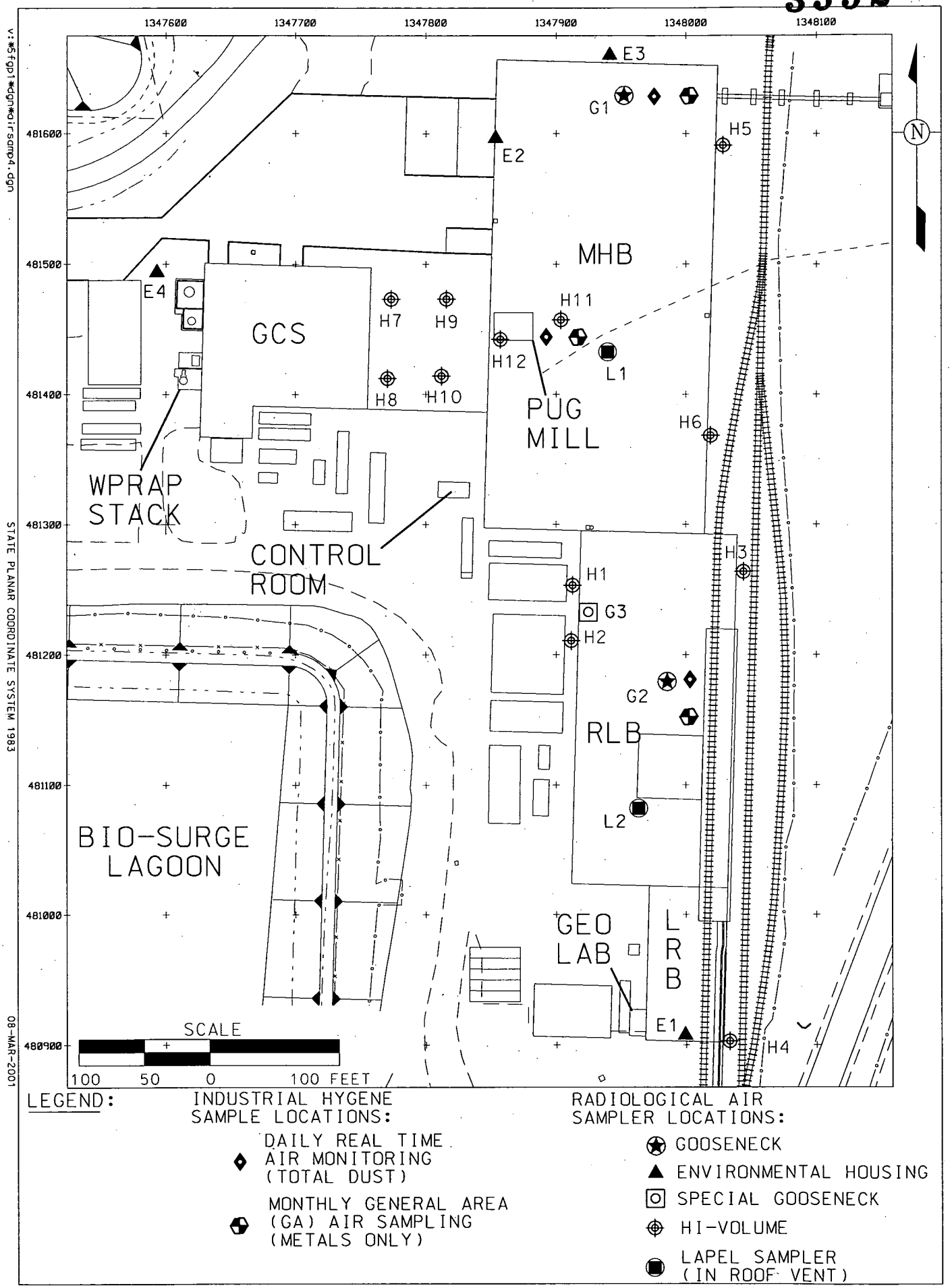
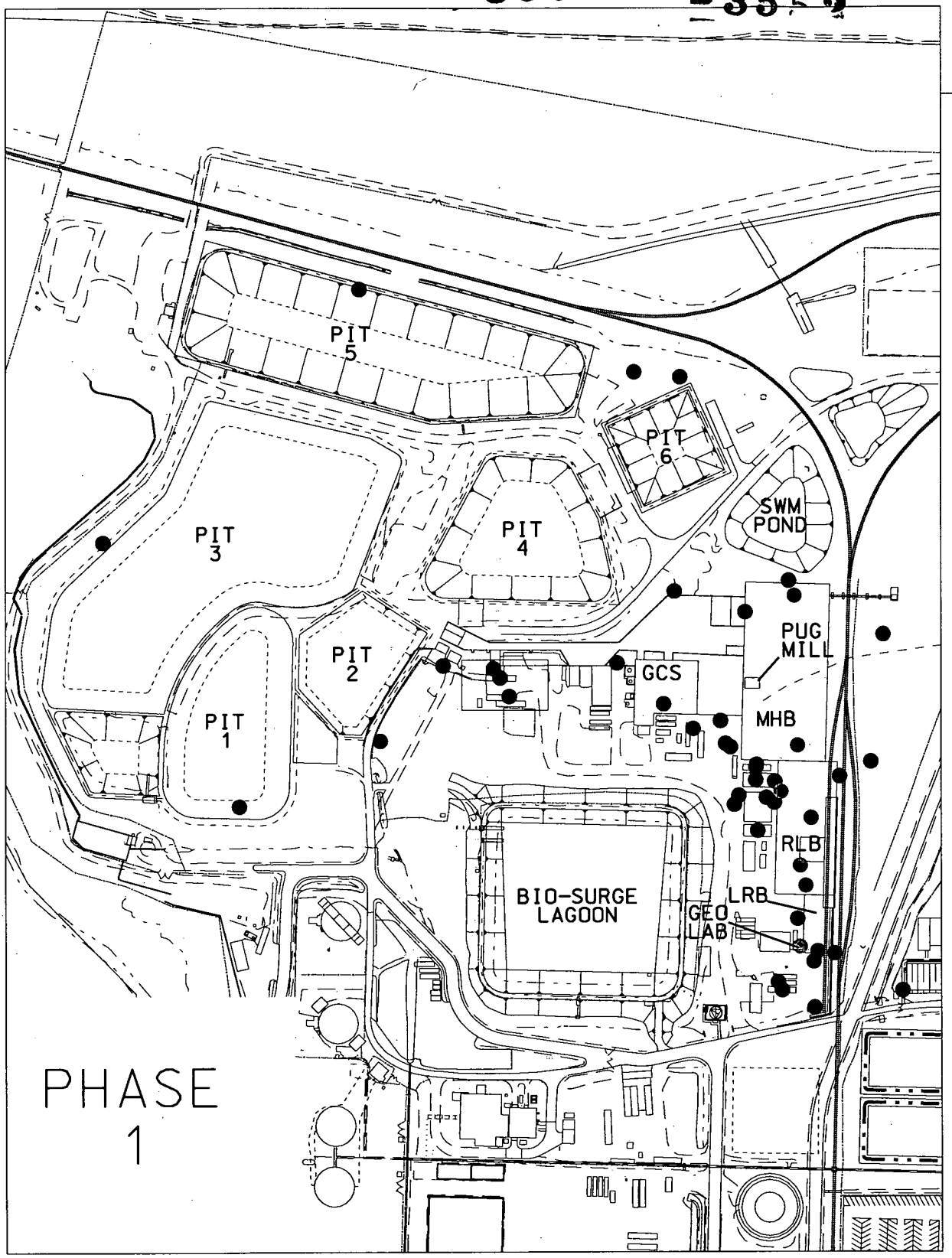


FIGURE 2-2. AIR SAMPLING LOCATIONS FOR SEQUENTIAL PHASE OPERATIONS

3552 3552



LEGEND: AVERAGE % DAC (Th-230) OCTOBER 19 THROUGH OCTOBER 23, 2000

- 0 TO <2
- 2 TO <4
- 4 TO <10
- 10 TO <100

DRAFT

000034

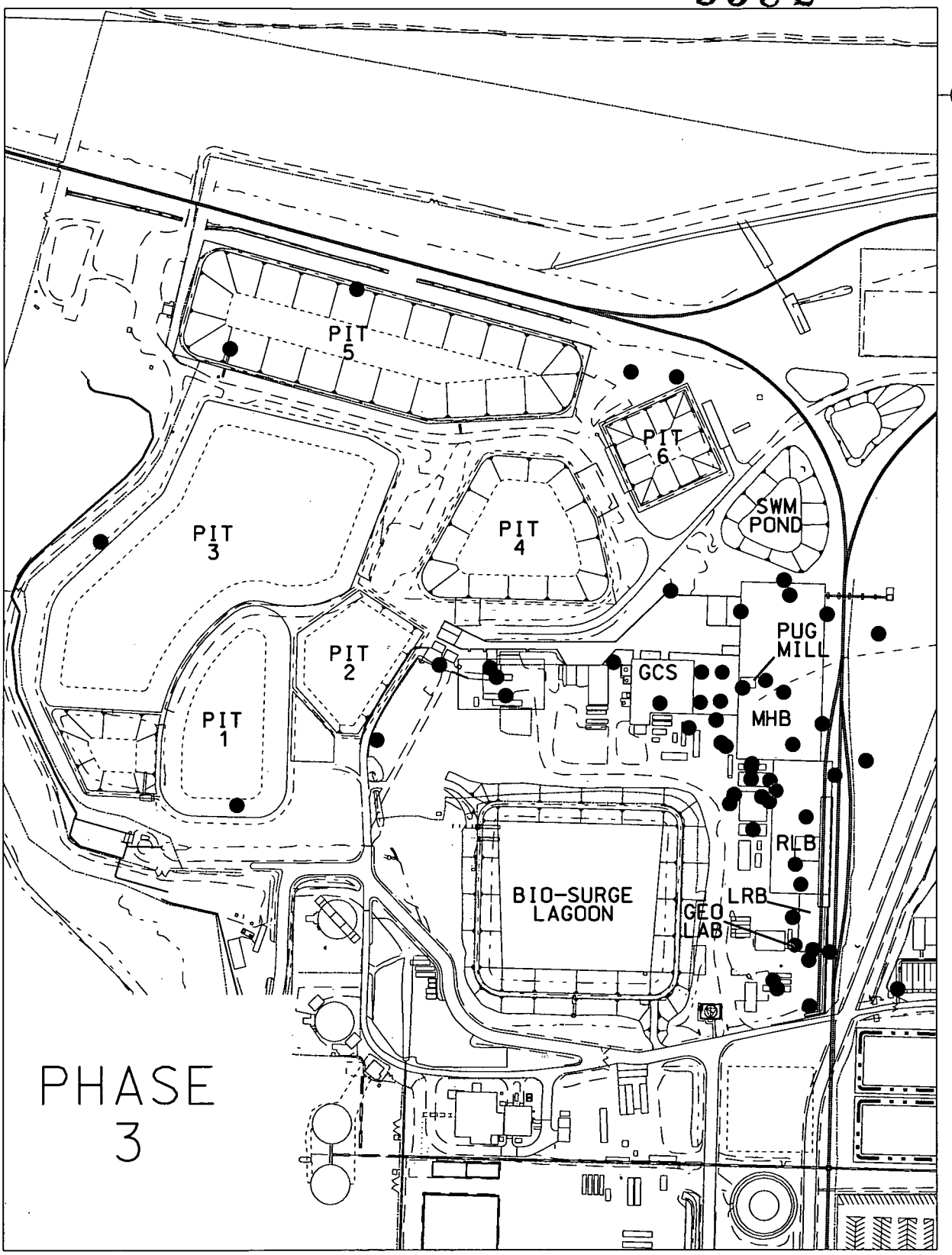
WPRAP AVERAGE RADIOLOGICAL AIR MONITOR RESULTS - PHASE 1

v:*5fgp1*dgn*wprap*wprap014.dgn

STATE PLANAR COORDINATE SYSTEM 1983

12-MAR-2001

3552



LEGEND: AVERAGE % DAC (Th-230) NOVEMBER 13 THROUGH NOVEMBER 22, 2000

- ● 0 TO <2
- ● 2 TO <4
- ● 4 TO <10
- ● 10 TO <100
- ● 100 TO <1600

DRAFT

000035

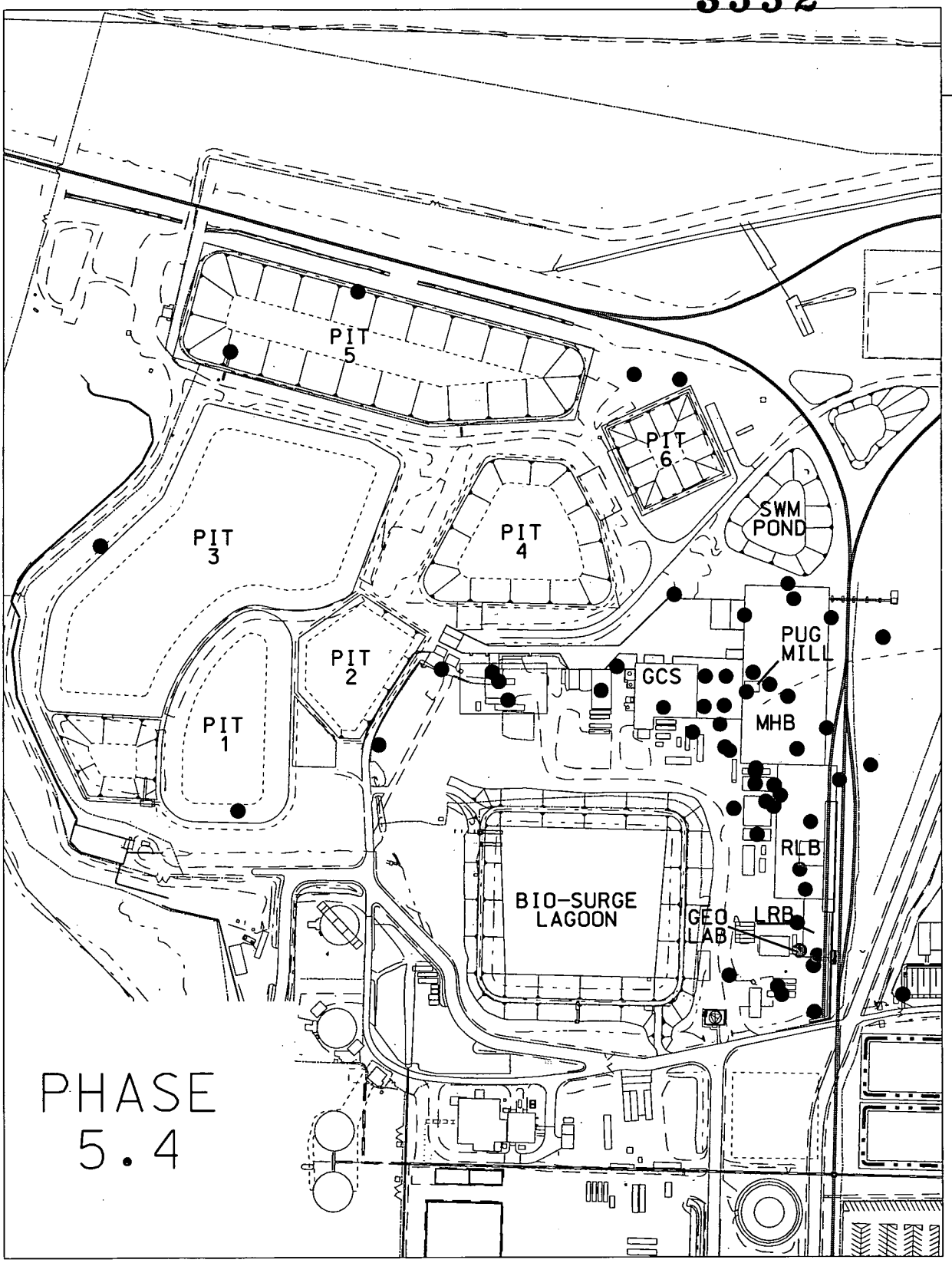
WPRAP AVERAGE RADIOLOGICAL AIR MONITOR RESULTS - PHASE 3

v:\5fgp1\dgn\wprap\wprap008.dgn

STATE PLANAR COORDINATE SYSTEM 1983

12-MAR-2001

3552



LEGEND: AVERAGE % DAC (Th-230) FEBRUARY 5 THROUGH FEBRUARY 9, 2001

- 0 TO <2
- 2 TO <4
- 4 TO <10
- 10 TO <100
- 100 TO <1600

DRAFT

000036

WPRAP AVERAGE RADIOLOGICAL AIR MONITOR RESULTS - PHASE 5.4

v:*5fgp1*dgn*wprap*wprap002.dgn

STATE PLANAR COORDINATE SYSTEM 1983

12-MAR-2001