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Rev. 0

River Corridor
Closure Contract

100 Area D4 Project Building Completion Report May 2006 – June 2007

July 2007

Washington Closure Hanford

Prepared for the U.S. Department of Energy, Richland Operations Office
Office of Assistant Manager for River Corridor

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METRIC CONVERSION CHART

Into Metric Units			Out of Metric Units		
If You Know	*Multiply By*	*To Get*	*If You Know*	*Multiply By*	*To Get*
Length			**Length**		
inches	25.4	millimeters	millimeters	0.039	inches
inches	2.54	centimeters	centimeters	0.394	inches
feet	0.305	meters	meters	3.281	feet
yards	0.914	meters	meters	1.094	yards
miles	1.609	kilometers	kilometers	0.621	miles
Area			**Area**		
Sq. inches	6.452	sq. centimeters	sq. centimeters	0.155	sq. inches
sq. feet	0.093	sq. meters	sq. meters	10.76	sq. feet
sq. yards	0.836	sq. meters	sq. meters	1.196	sq. yards
sq. miles	2.6	sq. kilometers	sq. kilometers	0.4	sq. miles
acres	0.405	hectares	hectares	2.47	acres
Mass (weight)			**Mass (weight)**		
ounces	28.35	grams	grams	0.035	ounces
pounds	0.454	kilograms	kilograms	2.205	pounds
Ton	0.907	metric ton	metric ton	1.102	ton
Volume			**Volume**		
teaspoons	5	milliliters	milliliters	0.033	fluid ounces
tablespoons	15	milliliters	liters	2.1	pints
fluid ounces	30	milliliters	liters	1.057	quarts
cups	0.24	liters	liters	0.264	gallons
pints	0.47	liters	cubic meters	35.315	cubic feet
quarts	0.95	liters	cubic meters	1.308	cubic yards
gallons	3.8	liters			
cubic feet	0.028	cubic meters			
cubic yards	0.765	cubic meters			
Temperature			**Temperature**		
Fahrenheit	subtract 32, then multiply by 5/9	Celsius	Celsius	multiply by 9/5, then add 32	Fahrenheit
Radioactivity			**Radioactivity**		
picocuries	37	millibecquerel	millibecquerels	0.027	picocuries

1.0 SCOPE

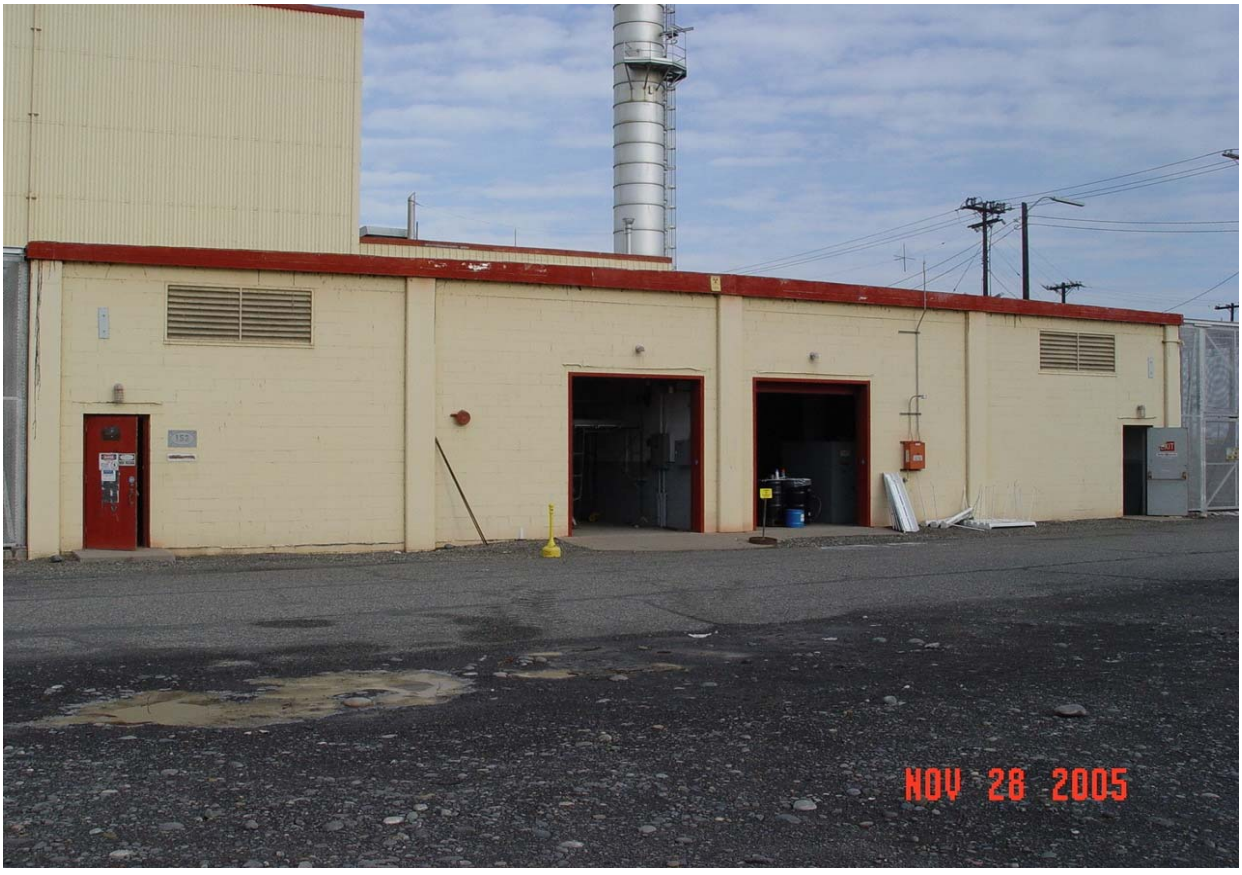
This report documents the decontamination and decommissioning (D&D) and the demolition of the 153-N, 1515-N, 1516-N, 1517-N, 1518-N, 1519-N, 1331-N, 1332-N, and 181-NC facilities in the 100 Area of the Hanford Site. The D&D and demolition of these facilities included characterization, engineering, removal of hazardous and radiologically contaminated materials, equipment removal, utility disconnection, deactivation, decontamination, demolition of the structure, and removal of the remaining slabs.

2.0 FACILITY DESCRIPTION AND CONDITIONS

2.1 153-N ELECTRICAL SUBSTATION

The 153-N Electrical Substation (153-N) converted 13.8 kV input to 4.16 kV output, provided power from off of the grid until the 105-N Reactor could provide its own electrical power, and supplied electric power during shutdown operations (Figure 1). This structure consisted of concrete block walls and a concrete roof on a concrete foundation.

Figure 1. 153-N Electrical Substation.



2.2 166-N FUEL OIL PUMP HOUSE/UNLOADING STATION

This facility was used to unload fuel oil and diesel from rail cars, and to supply it to 105-N and 184-N (Figure 2). This structure consisted of reinforced concrete frame with masonry in-fill. This structure had a basement and trench that extended to the railroad track for fuel unloading.

Figure 2. 166-N Fuel Oil Pump House/Unloading Station.

2.3 1715-N FUEL OIL STORAGE TANK FOUNDATIONS 1-5

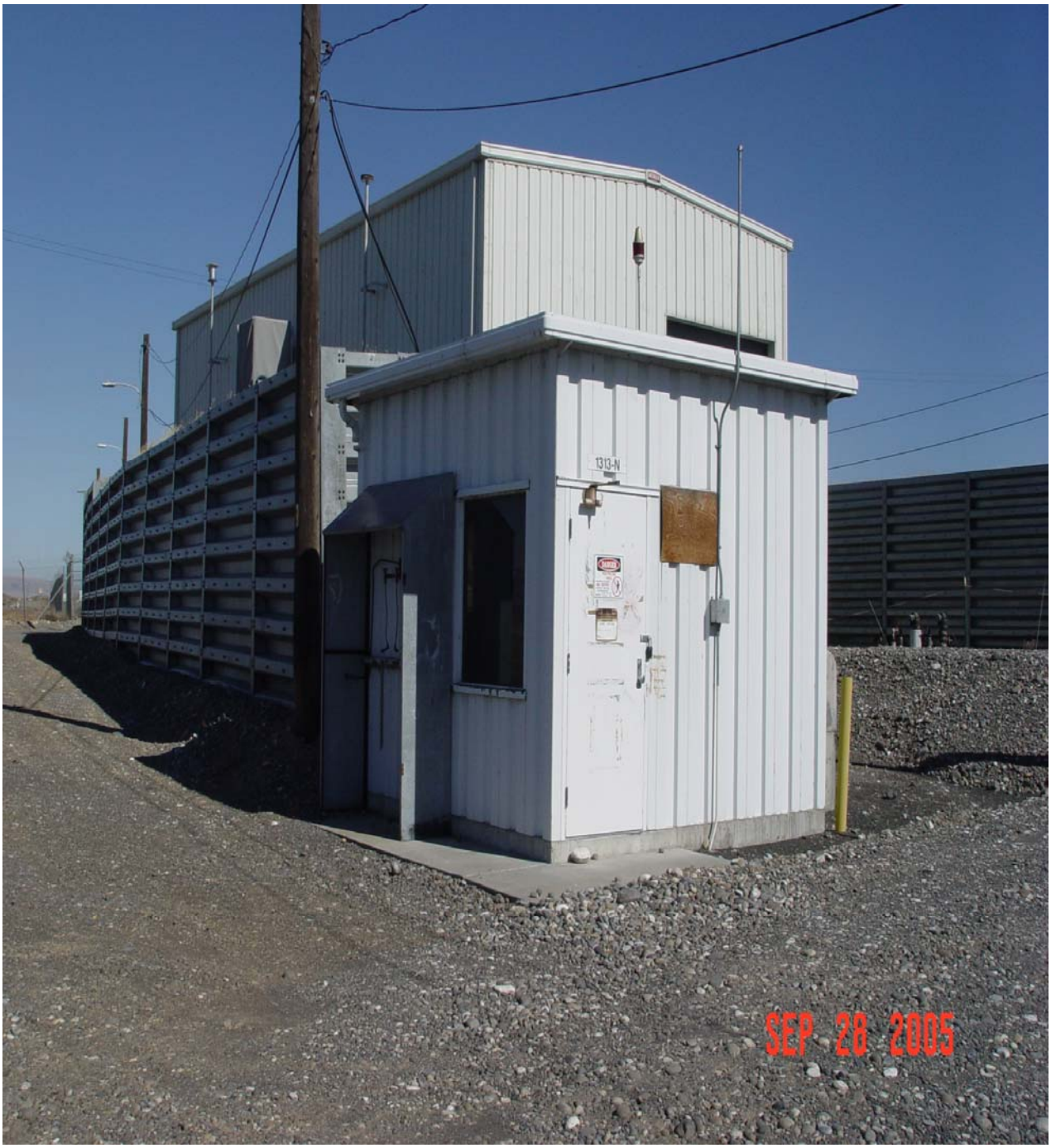
This facility consisted of one tank foundation that supported a 1.4 million gal fuel oil tank and four tank foundations that supported diesel storage tanks (Figure 3). The foundations consisted of concrete tank rings filled with “oil sands” used to support/cushion the tanks.

Figure 3. 1715 Fuel Oil Storage Tank Foundations 1-5.

2.4 1313-N CHANGE CONTROL ROOM

This facility was used to control the transfer of liquid waste from 107-N to 1310-N (Figure 4). This facility was a 3.7- by 3.7-m (12- by 12-ft) pre-engineered metal framed structure on a concrete slab.

Figure 4. 1313-N Change Control Room.



2.5 1314-N LIQUID WASTE LOADOUT STATION

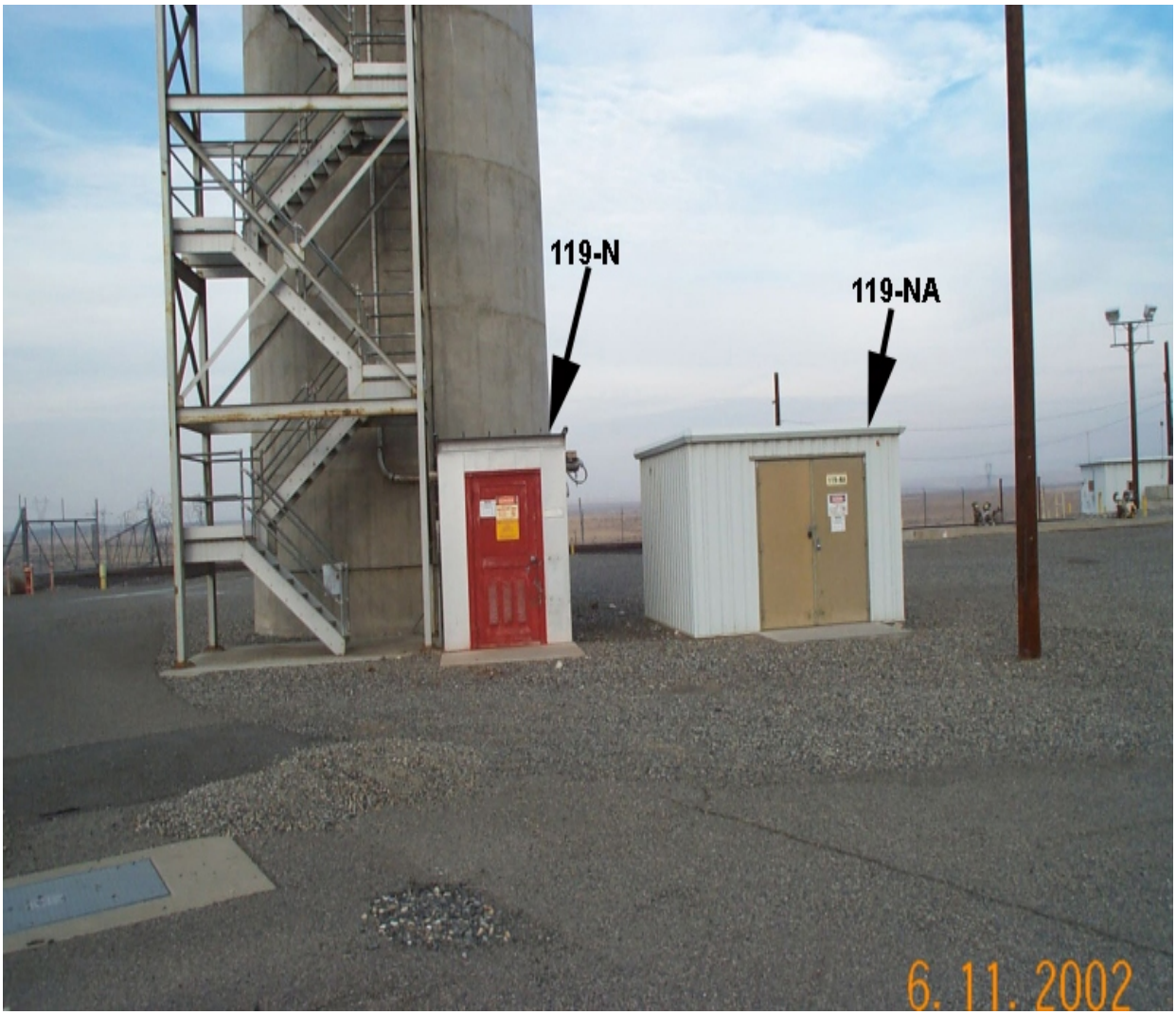
This facility was used to load out liquid waste to railway tank cars for shipment to the 200 Area (Figure 5). This structure was a 9- by 18.3-m (30- by 60-ft) metal framed pre-engineered structure on a concrete slab.

Figure 5. 1314-N liquid Waste Loadout Station.

2.6 119-N/NA AIR SAMPLING AND MONITORING FACILITIES

These facilities were used to sample and monitor radioactive particle exhausted from the 116-N stack (Figure 6). These facilities were two 3.7- by 3.7-m (12- or smaller pre-engineered structures on concrete slabs.

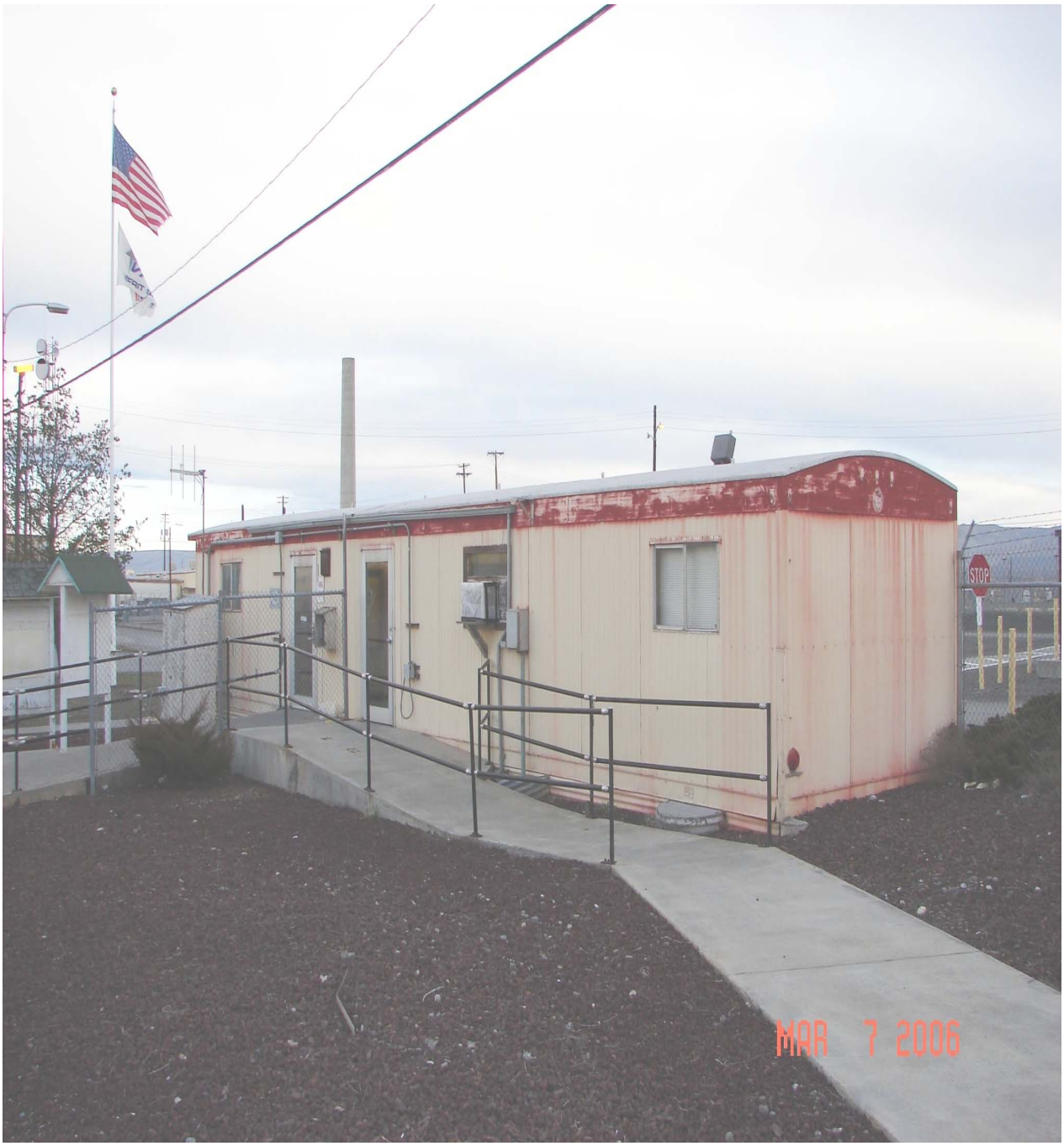
Figure 6. 119-N/NA Air Sampling and Monitoring Facilities.



2.7 1701-N LIMITED ACCESS AREA BADGE HOUSE

This facility was a mobile trailer 3.7 by 18.3 m (12 by 60 ft) (Figure 7).

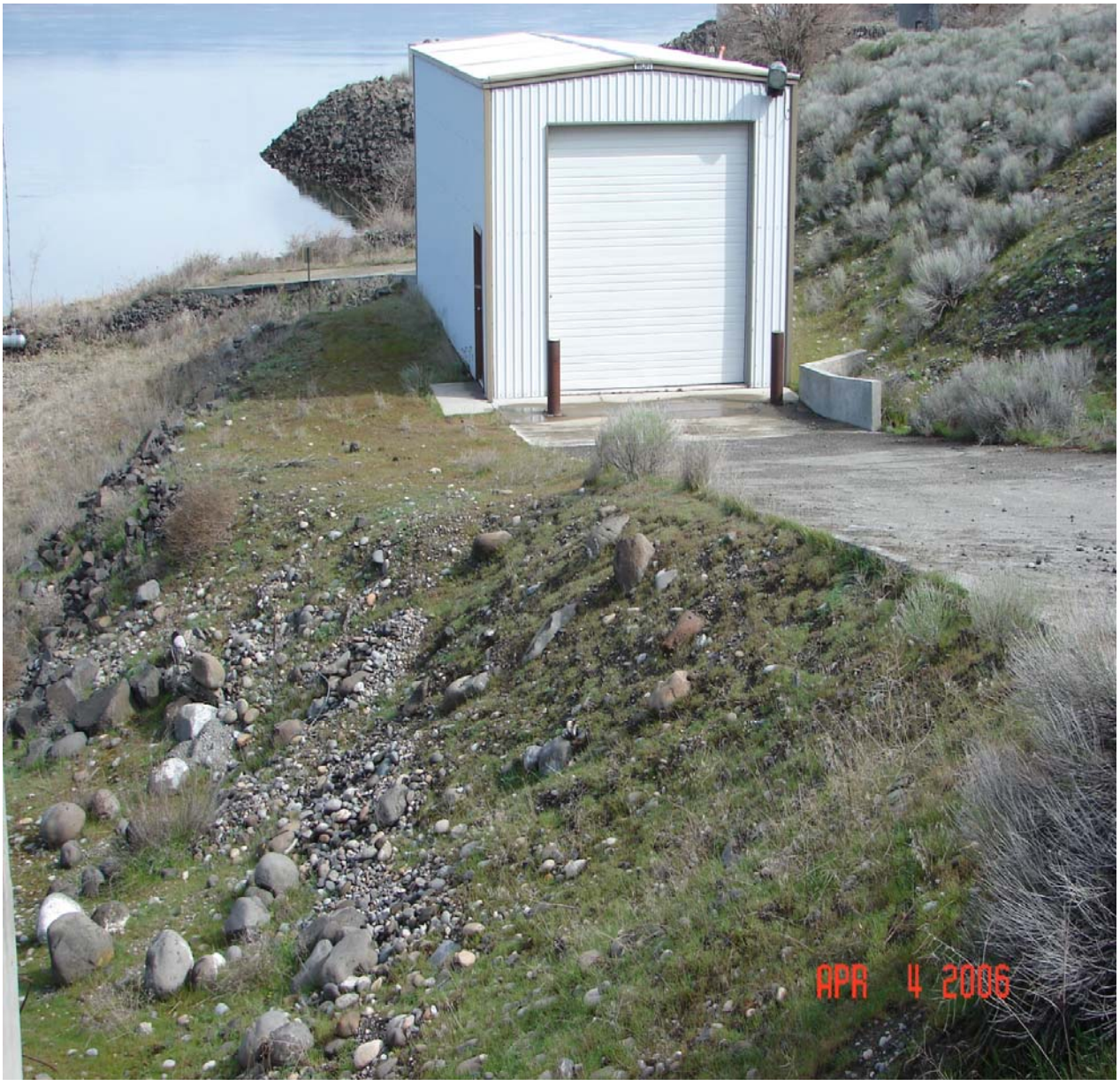
Figure 7. 1701-N Limited Access Area Badge House.



2.8 1707-N RIVER PATROL BOAT HOUSE

This facility was used to store the patrol boat (Figure 8). The structure was 46.5 m^2 (500 ft^2).

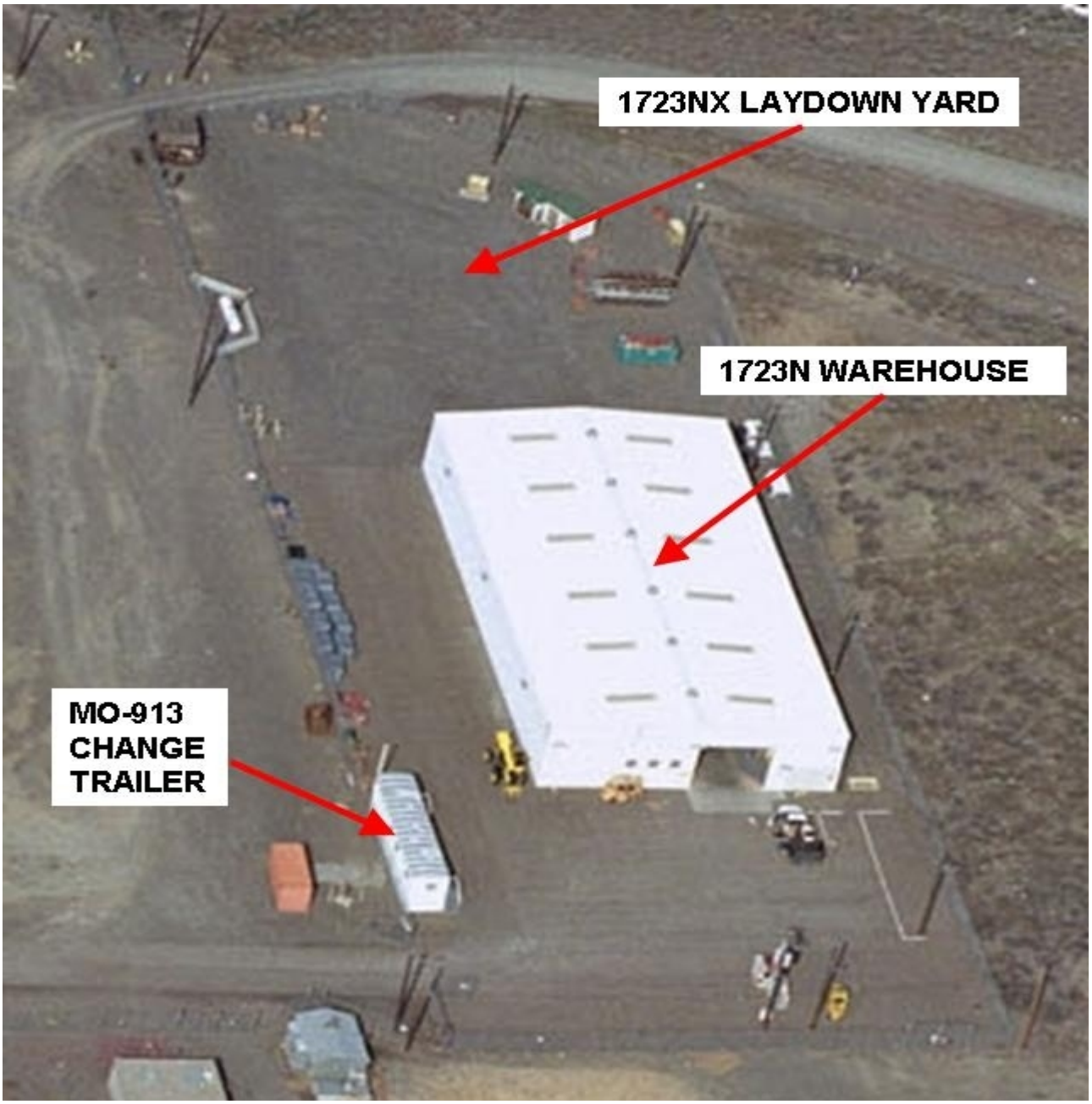
Figure 8. 1707-N River Patrol Boat House.



2.9 1723-N WAREHOUSE AND 1723-NX LAYDOWN YARD

This facility was used as a warehouse and storage area (Figure 9). This structure consisted of structural steel framing, sheet metal roof and walls on a concrete slab and foundation.

Figure 9. 1723-N Warehouse, 1723-NX Laydown Yard, and MO-913 Change Trailer.



2.10 MO-913 CHANGE TRAILER

The facility was used as a change trailer and consisted of change rooms, showers, restrooms, and an area for janitorial storage. This facility was a mobile trailer 3 by 12 m (10 by 40 ft) (Figure 9).

2.11 MO-200 AND MO-561 MOBILE OFFICE TRAILERS

These mobile office trailers were placed at the 100-D Area in the late 1990s to support field remediation and demolition activities by the previous contractor. These trailers were approximately 6 m (20 ft) or less in width and 15 m (50 ft) or less in length.

These two trailers were demolished by the Washington Closure Hanford (WCH) Reactor Interim Safe Storage (RISS) group. Recently this group was merged with the Deactivation, Decontamination, Decommissioning, and Demolition (D4) Closure Project, which is why these trailers are being added to this report.

3.0 PROJECT ACTIVITIES

3.1 ENGINEERING AND PERMITS

The Removal Action Work Plan for 100-N Area Ancillary Facilities (DOE-RL 2006) was prepared to satisfy the requirements of the action memorandum (Ecology et al. 1999), outlining how compliance with and enforcement of applicable regulations will be achieved for cleanup of 100 Area facilities. Additionally, the removal action work plan (DOE-RL 2006) and the *Environmental Control Plan for 100-N D4/ISS Activities* (WCH 2006) serve as the decommissioning plan and project management plan for the 100 Area project. The removal action work plan was prepared in accordance with Section 7.2.4 of the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology et al. 1989) and was approved by the U.S. Department of Energy, Richland Operations Office and the regulators.

The plant forces work review for demolition of the 153-N Building (8850-008-06) was completed in October 2005; the review for the 166-N and 1715-N Buildings (8850-001-06) was completed in November 2005; the review for the 1313-N and 1314-N Buildings (8850-002-06) was completed in October 2005; the review for the 119-N/NA Buildings (8850-015-06) was completed in November 2005; the review for the 1701-N Building (8850-028-06) was completed in March 2006; the review for the 1707-N Building (8850-032-06) was completed in April 2006; and the review for the 1723-N/NA and MO-913 Buildings (8850-027-06) was completed in March 2006. The deactivation and D&D work on all 12 buildings was determined not to be applicable to the *Davis-Bacon Act of 1931* pay scale.

MO-200 and MO-561 were demolished under the *Removal Action Work Plan for Interim Closure of the 105-D and 105-H Building Interim Safe Storage Projects and Ancillary Buildings* (DOE-RL 2000).

3.2 HAZARDOUS MATERIAL REMOVAL

The scope of the demolition project included removing and properly disposing of hazardous materials (e.g., oils, grease, asbestos-containing material, mercury, lead, and polychlorinated biphenyls). All known hazardous materials were removed from inside and outside of the building prior to demolition.

3.3 UTILITY AND DRAIN ISOLATION

Once hazardous material removal was completed in the buildings and the utilities were no longer needed, all electrical, water, and telecommunications services were disconnected from the buildings (if they had not already been done so previously). Floors drains were inspected for mercury and then sealed to provide isolation. Sanitary sewers to the building were disconnected during early deactivation activities, and all drains were grouted.

3.4 DEMOLITION OF STRUCTURES

After the hazardous materials and equipment removal were performed and utilities isolated, the above-grade structures were ready for demolition. The building structures were demolished using excavator-mounted hydraulic shears and a bucket-and-thumb. The foundations for these facilities were likewise removed. The debris was segregated for loading and disposal. Standard Environmental Restoration Disposal Facility (ERDF) roll-on/roll-off containers with 6-mil liners were used to package and ship debris.

3.5 SITE RESTORATION

Upon completion of demolition activities, excavations were backfilled with clean fill.

4.0 COST AND COMPLETION

4.1 COST AND COMPLETION OF 153-N, 166-N, 1715-N, 1313-N, 1314-N, 119-N/NA, 1701-N, 1707-N, 1723-N/NX, MO-913, MO-200, AND MO-561

The total project cost for the demolition of the 14 buildings was approximately $2,161,993.

The cost breakdown and completion dates for these 14 buildings are listed in Table 1.

Table 1. 100-N Cost and Completion Breakdown.

Building	Total Cost	Transition Date
153-N	$373,362	October,2006
166-N	$369,165	April, 2006
1715-N	$142,092	January, 2006
1313-N	$203,000	May, 2006
1314-N	$804,174	December, 2006
119-N/NA	$69,000	September, 2006
1701-N	$47,900	July, 2006
1707-N	$42,900	July, 2006
1723-N/NX	$103,300	May, 2006
MO-913	$7,100	May, 2006
MO-200	---	July, 2006
MO-561	---	July, 2006

5.0 RECYCLED MATERIAL AND WASTE DISPOSAL

One of the objectives of the 100 Area demolition project was to support recycling and waste minimization. However, radiological contamination primarily due to mud daubers wasps is prevalent throughout the site. This prevented most of the material and equipment from the buildings to be salvaged and/or transferred off site. Therefore, all of the building debris was shipped to ERDF for disposal.

5.1 WASTE DISPOSAL

Waste transferred to ERDF from the 100-N Building demolition project is listed in Table 2.

Table 2. 100-N Demolition Project Waste Transferred to ERDF.

Building	Number of ERDF Containers	Waste Volume (m^3)
153-N	312	2,285
166-N	171	1,362
1715-N	190	1,424
1313-N	30	239
1314-N	35	279
119-N/NA	5	30
1701-N	22	131
1707-N	14	84
1723-N/NX	138	951
MO-913	5	30
MO-200	10	60
MO-561	13	74

6.0 OCCUPATIONAL EXPOSURES

6.1 PERSONNEL INJURIES

WCH personnel worked a total of approximately 44,893 hours (manual and nonmanual, not including subcontractors) on the D4 100 Area project, with two Occupational Safety and Health Administration recordable injuries resulting in one lost workday case (classified as a strain/sprain).

6.2 PERSONNEL RADIOLOGICAL EXPOSURES

No clothing or skin contamination incidents occurred during demolition of the fourteen 100 Area buildings. 102 person-mrem was received by workers in support of D&D of the above buildings: 98 person-mrem for 1314-N and 4 person-mrem for the others. All boundary air sample results were below procedural action levels for the duration of the project.

7.0 LESSONS LEARNED

7.1 CONTROLLING EMPLOYEE ACCESS IN WORK ZONES

In an effort to minimize employee injuries, WCH continued to implement a procedure requiring a temporary fence around demolition areas. This helped to control employee access in and around work zones. It is also effective in establishing the minimum distance people can be from demolition. The superintendent and the field safety representative now control the area and limit access inside the fence line. This greatly reduced the risk of injury in and around the work zone.

8.0 REFERENCES

Davis-Bacon Act of 1931, 40 U.S.C. 276a, et seq.

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