1226656

[0084913]

176523

WCH Washington Closure Hanford

Interoffice Memorandum

TO: J.N. Winters, L4-45

DATE: July 16, 2014

COPIES: See Below
Document Control H4-11

FROM: Chris Strand
Environmental Project Lead
554-2720
L4-45

SUBJECT: **POST-DEMOLITION SUMMARY REPORT, REVISION 1, FOR THE 320 and 320BA BUILDINGS**

Attached is a revised Post-Demolition Summary Report for the 320 and 320BA Buildings. This report documents the final status of the facilities at the completion of D4 activities that includes removal of remaining portions of both facilities. Information in the report includes references to radiological and industrial hygiene scoping surveys, waste profiles used to ship debris to the Environmental Restoration Disposal Facility, and a status on the waste information data system sites associated with the buildings.

Please contact me at 554-2720 if you have any questions on this report.

CPS:cps

Attachment: Post-Demolition Summary Report for the 320 and 320BA Buildings.

Copies
C. S. Cearlock H4-22
B. J. Cowin H4-22
T. R. Edmundson L7-10
D. B. Encke L710
C. P. Strand L7-10

RECEIVED
AUG 07 2014
EDMC

300-FF-2

17pgs

This post-demolition summary report (PDSR) documents the characterization, above- and below-grade demolition, and final status of the 320 Physical Sciences Laboratory and 320BA Boiler Annex at the completion of deactivation, decontamination, decommissioning, and demolition (D4) activities.

An aerial location map is shown as Figure 1.

Final Building Status

All D4 activities were performed in accordance with applicable environmental documentation, including the *Removal Action Work Plan for 300 Area Facilities,* (DOE/RL-2004-77, Rev. 2).

Above-grade demolition of the 320 and 320BA facilities was completed in August and September of 2011. The 320 building basement walls were demolished to 3-feet below grade in March of 2012 (Figures 2-4). The building debris was disposed of at the Environmental Restoration Disposal Facility (ERDF). 320 building basement walls more than 3-feet below grade and floor slab were left in place following approval from the EPA (D4-300-059). Process sewer piping below the basement slab, the process sewer sump and the sanitary sewer sump were removed. Process sewer (WIDS 300-15) and sanitary sewer (300 SSS) piping was removed to the limits of the layback excavation.

Excavated soil was sampled; sample test results were below Remedial Action Goals, and the test results were approved by EPA. Excavated soil was then used as backfill for the basement. Additional backfill was obtained from borrow pit #6.

Removal of the 320BA slab and a portion of the southeast corner of the 320 Building foundation were originally deferred because of interference by an active 13.8 kV underground electrical line. In 2014, this line was permanently de-energized, which eliminated the interference and allowed removal of the deferred portions of both facilities. The 320BA slab and southeast corner of the 320 foundation were demolished, loaded out, and backfilled in May 2014 (D4-300-059-1).

The following rejected WIDS sites were Underground Injection Control (UIC) wells and were decommissioned in accordance with WAC 173-218:
300-241, 320 Building Irrigation Line Effluent, Misc. Stream #79 – removed and backfilled.
300-88, 320 Building Irrigation Line Effluent, Misc. Stream #626 – removed and backfilled.
300-89, 320 Building Irrigation Line Effluent, Misc. Stream #627 – removed and backfilled.
300-90, 320 Building Irrigation Line Effluent, Misc. Stream #628 – removed and backfilled.

Rejected WIDS site 300-90, 320 Building, Misc. Stream #350 – was not found.

No further remediation activities are planned for the site.

The 320 and 320BA sites have no Industrial Health or Radiological Survey postings.

A post-demolition aerial photograph is attached as Figure 4.

Historical Site Information

The 320 Building, constructed in 1966, was known as the Physical Sciences Laboratory. A large addition was constructed in the 1980's increasing the building to 144' x 84' (25,000 square feet). The building was constructed of concrete and steel framing and contained 22 laboratories, offices, restrooms and supply rooms.

The 320 Building was located at the intersection of Cypress Street and Nebraska Avenue in the southern portion of the 300 Area. Throughout its history, the 320 building produced small amounts of low level wastes and was not connected to the radioactive liquid waste sewer (RLWS). The original work performed in the 320 building included gamma ray spectrographic analysis, physical measurements with instruments and various types of radiochemical separations involving low level radionuclides. Radiometric techniques, new mass spectrometric techniques, combined atomic absorption/mass spectrometric analysis, laser-based spectrometric techniques and many classified programs were developed in the 320 Building (CCN 156403).

The 320BA Boiler Annex was located adjacent to the southeast corner of the 320 Building. Constructed in 1997, the 320BA boiler annex was a pre-engineered metal building on a concrete slab that measured approximately 24' x 30'. 320BA housed a gas fired package boiler system to provide heat for 320. The boiler annex was electrically heated and had natural gas, water and sewer connections. Inside floor drains and intermittent blow down separators drained to a sump that was tied to the process sewer.

Site Surveys

Pre-demolition and post-demolition characterization surveys are summarized in Table 1.

Table 1. Summary of Characterization Surveys at 320 and 320BA.

Type	Date	Documented In	Results Summary
Pre-Demolition			
Asbestos	June 13, 2011 September 13, 2011	CNN # 159189 (320 Bldg) CCN# 161252 (320BA)	ACM was identified in 320 Bldg in floor tiles/sheeting, mastic, counter tops, fire doors, piping gaskets, hard pipe elbows and plaster.
IH Surveys and Beryllium Characterization	May 10, 2011 February 24, 2011	CNN (Be, Cd, Cr, Pb) # 158884. CNN # 154535.	No contamination above action levels. Identified potential hazards with asbestos, Hg, Pb and PCB ballasts.
Radiological Surveys	June 14, 2011 June 23, 2011 March 7, 2012	RSR-300PS-11-2730 (320BA) RSR-300PS-11-2907 (320BA) ERS-300PS-12-0005	One area of the 320 Bldg floor was discovered with fixed contamination. No other radiological contamination was identified.

Note : No additional characterization surveys were conducted prior to removal of the remaining portions of both buildings.

Post-demolition civil surveys of the 320 building basement and ends of pipe that were removed to the extent of excavation lay-back are shown in Figure 5.

A post-demolition Global Positioning Environmental Radiological Survey (GPERS) of the 320 building basement is shown in Figure 6. No GPERS were performed following removal of the remaining portions of either building.

Characterization Samples

Characterization sampling of the 320 and 320BA Buildings was primarily focused on waste characterization. The results of this sampling were incorporated into the waste profile. Soil excavated and stock piled during demolition was sampled, and sample results used to verify soil was below the Remedial Action Goals. Sampling details can be found in the 320 & 320BA sample table, Table 2. No additional samples were collected prior to removal of the 320BA slab and remaining portion of the 320 foundation.

Table 2. 320 & 320BA Samples

Sample ID	Date Collected	SDG	Sample Matrix
J1FKX4	17-Mar-11	K3271	other solid
J1FKX5	17-Mar-11	K3271	other solid
J1FKX6	17-Mar-11	K3271	other solid
J1FKX7	17-Mar-11	K3271	other solid
J1FKX8	17-Mar-11	K3271	other solid
J1FKX9	17-Mar-11	K3271	other solid
J1FL00	17-Mar-11	K3271	other solid
J1FL01	17-Mar-11	K3271	other solid
J1FL02	17-Mar-11	K3271	other solid
J1FL03	17-Mar-11	K3271	other solid
J1JVR7	15-Jun-11	K3414	other solid
J1JVR8	15-Jun-11	K3414	other solid
J1FK69	17-Mar-11	K3270	other solid
J1FK70	17-Mar-11	K3270	other solid
J1FK71	17-Mar-11	K3270	other solid
J1FK72	17-Mar-11	K3270	other solid
J1FK73	17-Mar-11	K3270	other solid
J1FK74	17-Mar-11	K3270	other solid
J1FK75	17-Mar-11	K3270	other solid
J1FK76	17-Mar-11	K3270	other solid
J1FK77	17-Mar-11	K3270	other solid
J1FK78	17-Mar-11	K3270	other solid
J1FK79	17-Mar-11	K3270	other solid
J1FK80	17-Mar-11	K3270	other solid
J1JVR4	15-Jun-11	K3415	water
J1JVR5	15-Jun-11	K3415	water
J1JVR6	15-Jun-11	K3415	water
J1JW99	22-Jun-11	K3425	water

J1JWH2	7-Jul-11	K3461	other solid
J1JWH3	7-Jul-11	K3461	other solid
J1JWH4	7-Jul-11	K3461	other solid
J1JWH5	7-Jul-11	K3461	other solid
J1JWH6	7-Jul-11	K3461	other solid
J1K420	5-Jul-11	K3453	water
J1K4R7	12-Jul-11	K3487	water
J1K4R8	12-Jul-11	K3488	other solid
J1KND5	9-Aug-11	K3547	water
J1KND6	9-Aug-11	K3548	other liquid
J1KND7	9-Aug-11	K3548	other liquid
J1KND8	9-Aug-11	K3548	other liquid
J1NLJ6	6-Mar-12	RCF32240	Soil
J1NLJ7	6-Mar-12	RCF32241	Soil
J1NLJ8	7-Mar-12	K3831	Soil
J1NLJ9	7-Mar-12	K3831	Soil

Asbestos Characterization

The 320 and 320BA buildings received good faith asbestos inspections, which included accessible interior rooms and exterior surfaces. Approximately 230 samples were collected and analyzed for asbestos. No asbestos was detected in the 320BA building (CCN 161252). Seven homogenous areas in the 320 building were identified as asbestos containing (CCN 159189). No asbestos remained during removal of the remaining portions of both buildings.

Waste Profiles

Waste profile WP320BLDG001, was used for disposal of the 320 and 320BA building debris and other miscellaneous waste generated during demolition activities. A total of 1283 cubic yards of debris was disposed at ERDF.

Waste profile WP320BLDG001 was used for disposal of the remaining portions of both buildings. A total of 391 tons was disposed of at ERDF.

Status of WIDS Sites Associated With the Building Site

The following "Rejected" WIDS sites were Underground Injection Control (UICs) wells regulated under WAC were excavated and backfilled (decommissioned) during the 320 Building demolition:

UIC – 300-241	320 Building Irrigation Line Effluent, Misc. Stream # 790
UIC – 300-88	320 Building Irrigation Line Effluent, Misc. Stream #626
UIC – 300-89	320 Building Irrigation Line Effluent, Misc. Stream #627
UIC – 300- 90	320 Building Irrigation Line Effluent, Misc. Stream #628
UIC – 300-91	320 Building, Misc. Stream # 350 was not found

300-15 Process sewer was removed to the limits of the layback excavation.

Anomalies Discovered During Demolition

No anomalies were discovered during the demolition of the 320 and 320BA Buildings or removal of the remaining slab and foundations.

Work Packages

Tables 3 and 4 lists the work packages that were used to perform the work to demolish the 320 and 320BA buildings.

Table 3. Work Packages

Work Package #	Title
300-11-05-26-001	Above Grade Demolition of Buildings 320 and 320BA
300-11-09-22-001	Below Grade Demolition of Building 320
300-11-06-13-001	Removal of Hazardous Materials from 320 Boiler Annex
300-11-04-07-001	Perform Asbestos Abatement/Removal of Thermal System Insulation (TSI) Involving Less Than 25 Linear Feet or 10 Square Feet of Material
300-11-04-04-001	Perform Abatement of Class II Asbestos Containing Material in Building 320 Using Manual and Mechanical Methods
300-11-04-04-002	Haz Mat Removal - Building 320
300-11-04-20-001	Remove Selected Building 320 HEPA Filters
300-11-04-06-001	Stabilize Hood #8 in Room 114, Hood #4 in Room 133, and Scrubber 133 in Bldg. 320
300-11-04-04-005	Stabilize Perchloric Acid Hoods in Rooms 115, 138, and 144
300-11-07-14-001	Remove Sludge from 320 Sumps

Table 4. Work Package for Removal of Remaining Portions of 320 and 320BA

Work Package #	Title
300-14-03-31-001	320 Building Complex Demolition

References

CCN 127541, 2006, "Historical Site Assessment for the 300 Area Boiler Annexes", Washington Closure Hanford, Richland, Washington, May 2, 2006.

CCN 154535, 2011, "Industrial Hygiene Exposure Assessment for the Transition of Building 320 from PNNL to WCH Control", Washington Closure Hanford, Richland, Washington, February 24, 2011.

CCN 156403, 2011, "Historical Site Assessment for the 320 Facility", Washington Closure Hanford, Richland, Washington, February, 16, 2011.

CCN 158884, 2011, "Industrial Hygiene Characterization and Verification Sampling Results for Beryllium (Be), Cadmium (Cd), Chromium (Cr) and Lead (Pb) in Building 320", Washington Closure Hanford, Richland, Washington, May 10, 2011.

CCN 159189, 2011, "Asbestos Inspection and Sampling Report for the 320 Low-Level Radiochemistry Building", Washington Closure Hanford, Richland, Washington, June 13, 2011.

CCN 161252, 2011, "Asbestos Inspection and Sampling Report for 320-BA Boiler Annex Building", Washington Closure Hanford, Richland, Washington, September 13, 2011.

DAN11-0168, 2011, "Hanford Site Excavation Permit, Demolition of the 320 Building and 320 Boiler Annex", Washington Closure Hanford, Richland, Washington, June 2, 2011.

D4-300-059, 2012, "Facility Status Change Form, 320 & 320BA", Washington Closure Hanford, Richland, Washington, April 30, 2012.

D4-300-059-1, 2014, "Facility Status Change Form, 320 & 320BA", Washington Closure Hanford, Richland, Washington, June 25, 2014.

DOE/RL-2004-77, 2007, "Removal Action Work Plan for 300 Area Facilities", Rev 2, U.S. Department of Energy, Richland, Washington, December 18, 2007.

Figure 1.
Aerial view looking northeast of the 320 and 320BA Buildings, May 2011

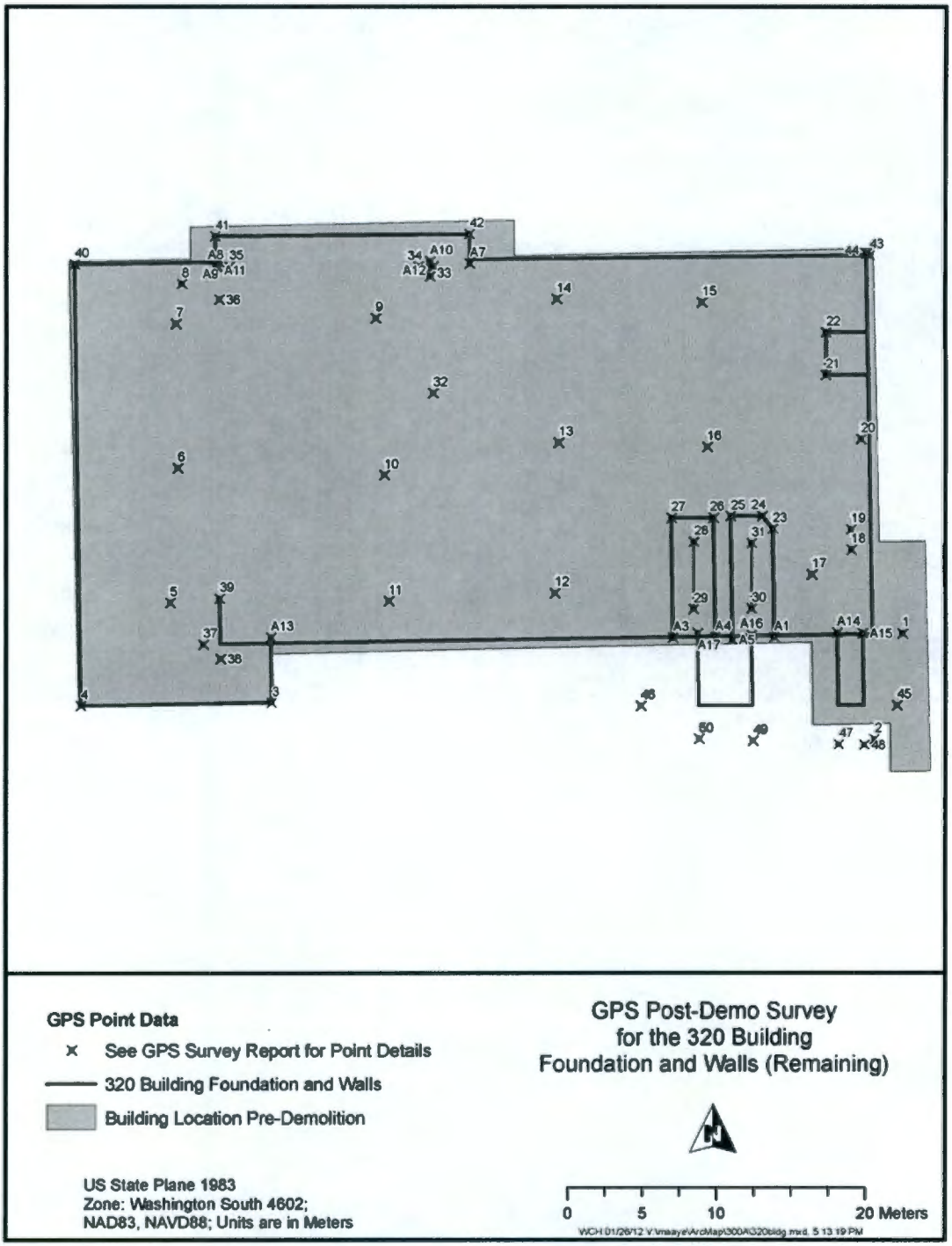
Figure 2.
320 and 320BA Buildings looking towards the southeast, February, 2011.

Figure 3.
Looking east at the 320 Building basement and 320BA slab, March 8, 2012, showing below slab pipe removal.

Figure 4.
Post-Demolition Aerial, Looking north at the 320 & 320BA Building Site, May 2012

Figure 5
320 Foundation & 320BA slab following removal.
Looking northwest on June 10, 2014.

Figure 5. Post-Demolition Survey, 320 Building basement, November 2011



GPS Location of the 320 Building Foundation

Project : 320-building

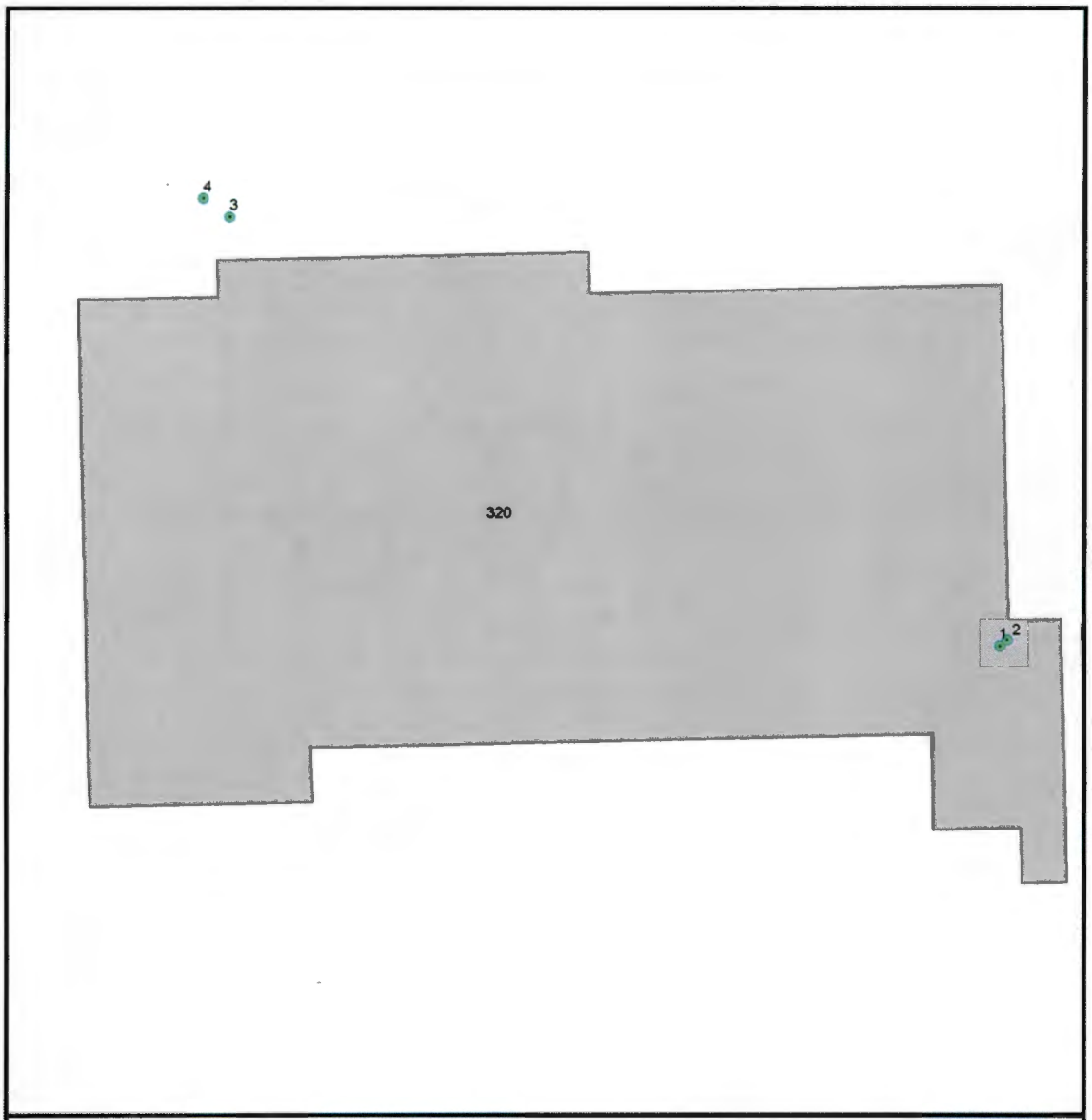
Job 1174

User name	maaye	**Date & Time**	4:53:13 PM 1/26/2012
Coordinate System	US State Plane 1983	**Zone**	Washington South 4602
Project Datum	(WGS 84)		
Vertical Datum	NAVD88	**Geoid Model**	Not selected
Coordinate Units	Meters		
Distance Units	Meters		
Height Units	Meters		

Survey Project Name: 320 Building- Foundation
Date: 11/14/2011
Equipment: 5800
Survey Purpose: Map the remaining foundation and walls
Requested By: Chris Strand
Location: 300
Charge Code:
Field Surveyor: Margo Aye
Survey Software Used: Trimble Survey Controller, and Geomatics Office V.11
Survey Equipment Used: 5800
Control Monuments Used: 300-70
Survey Method: RTK
Horizontal Precision: .020m
Vertical Precision: .050m
Fieldwork Start Date: 11/14/11
Fieldwork Completion Date: 11/14/11
Notes: The building had been Demoloished, with foundation and walls remaining this survey is for that structure, some areas were mapped with offsets, and COGO generated (they have no elevation data).

Name	Northing	Easting	Elevation	Feature Code	Description:
1	115486.730m	593836.487m	122.193m	top-corn-offset	
2	115479.624m	593834.615m	122.080m	top-corn-offset	
3	115482.074m	593794.224m	121.797m	top-corn	
4	115481.883m	593781.420m	121.851m	top-corn	
5	115488.778m	593787.389m	118.972m	floor-topo	
6	115497.780m	593787.889m	118.985m	floor-topo	
7	115507.432m	593787.779m	118.965m	floor-topo	
8	115510.097m	593788.165m	118.892m	36in access	
9	115507.795m	593801.162m	118.985m	floor-topo	
10	115497.304m	593801.739m	118.967m	floor-topo	
11	115488.888m	593802.082m	118.994m	floor-topo	
12	115489.427m	593813.164m	118.973m	floor-topo	
13	115499.478m	593813.402m	118.996m	floor-topo	
14	115509.074m	593813.241m	118.986m	floor-topo	
15	115508.849m	593823.022m	118.970m	floor-topo	
16	115499.178m	593823.381m	118.985m	floor-topo	
17	115490.651m	593830.421m	118.969m	floor-topo	
18	115492.305m	593833.047m	118.945m	48in-access	
19	115493.665m	593833.036m	118.930m	48in-access	
20	115499.700m	593833.679m	118.919m	drain	
21	115504.005m	593831.321m	118.987m	corner-depression	
22	115506.840m	593831.339m	118.983m	corner-depression	
23	115493.708m	593827.785m	119.005m	floor-rise	
24	115494.559m	593827.074m	119.002m	floor-rise	
25	115494.549m	593824.963m	118.997m	floor-rise	
26	115494.459m	593823.810m	118.985m	floor-rise	
27	115494.432m	593820.974m	118.989m	floor-rise	
28	115492.833m	593822.503m	119.185m	floor-rise-top	
29	115488.342m	593822.471m	119.185m	floor-rise-top	
30	115488.377m	593826.386m	119.174m	floor-rise-top	
31	115492.743m	593826.366m	119.166m	floor-rise-top	

32	115502.775m	593805.013m	119.129m	floor-rise-top
33	115510.603m	593804.780m	118.964m	corner-offset
34	115511.248m	593803.988m	118.983m	corner-offset
35	115511.251m	593791.320m	118.941m	corner-offset
36	115509.046m	593790.652m	118.978m	corner-offset
37	115485.994m	593789.627m	118.973m	corner-offset
38	115485.037m	593790.792m	118.964m	corner-offset
39	115489.055m	593790.712m	118.973m	corner-offset
40	115511.425m	593780.985m	122.073m	corner
41	115513.291m	593790.374m	122.011m	corner
42	115513.443m	593807.399m	121.973m	corner
43	115512.018m	593834.262m	122.164m	corner
44	115512.139m	593834.024m	122.194m	corner2offset
45	115481.908m	593836.117m	122.063m	offset2-wall indent
46	115481.850m	593818.927m	122.028m	offset2-wall indent
47	115479.275m	593832.220m	122.145m	offset2-wall indent
48	115479.258m	593833.927m	122.068m	offset2-wall indent
49	115479.525m	593826.483m	121.957m	offset2-wall indent
50	115479.640m	593822.861m	121.980m	offset2-wall indent
A1	115486.460m	593827.892m	?	
A10	115511.602m	593804.766m	?	
A11	115511.244m	593790.520m	?	
A12	115511.257m	593804.988m	?	
A13	115486.473m	593794.159m	?	
A14	115486.773m	593832.109m	?	
A15	115486.757m	593833.817m	?	
A16	115486.624m	593826.379m	?	
A17	115486.738m	593822.756m	?	
A3	115486.434m	593821.092m	?	
A4	115486.461m	593823.927m	?	
A5	115486.301m	593825.084m	?	
A7	115511.443m	593807.428m	?	
A8	115511.292m	593790.404m	?	
A9	115511.546m	593790.615m	?	



Building Location Pre-Demolition

Cut Pipe Locations

Name	Feat_Code	Northing	Easting	Elevation
1	Fire Water -6in Steel	115491.31	593834.40	120.759
2	Process Sewer - 4in Steel	115491.65	593834.81	120.536
3	Sanitary Sewer - Clay Pipe	115516.38	593789.44	120.917
4	Process Sewer - 6in Steel	115517.45	593787.92	120.791

US State Plane 1983
Zone: Washington South 4602;
NAD83, NAVD88; Units are in Meters

GPS Post-Demo Survey
for the 320 Building
Cut Pipe Locations

0 5 10 20 Meters

WCH 01/26/12 V:\maaye\ArcMap\300A\320bldg.mxd, 5:13:19 PM

GPS Survey for the 320 Excavation Pipelines

Project : 320-piping

Job 1207

User name	maaye	**Date & Time**	2:13:23 PM 4/11/2012
Coordinate System	US State Plane 1983	**Zone**	Washington South 4602
Project Datum	(WGS 84)		
Vertical Datum	NAVD88	**Geoid Model**	Not selected
Coordinate Units	Meters		
Distance Units	Meters		
Height Units	Meters		

```
Survey Project Name:        320 Piping
Date:                       4/11/2012
Equipment:                  5800
Survey Purpose:             Map exposed pipes for the 320 excavation
Requested By:               Rick Blackwell
Location:                   300
Charge Code:
Field Surveyor:             Margo Aye
Survey Software Used:       Trimble Survey Controller, and  Geomatics Office V.11
Survey Equipment Used:      5800
Control Monuments Used:     300-70
Survey Method:              RTK
Horizontal Precision:       .020m
Vertical Precision:         .050m
Fieldwork Start Date:       04/11/12
Fieldwork Completion Date:  04/11/12
Notes:                      Pipe Diameters are estimates, and may be smaller or larger than
described.
```

GPS Name	Northing	Easting	Elevation	Feature Code
1	115491.313m	593834.401m	120.759m	fire-water-6in steel cut end
2	115491.659m	593834.813m	120.536m	Process Sewer-4in steel cut end
3	115516.387m	593789.449m	120.917m	Sanitary Sewer-end Clay pipe
4	115517.458m	593787.924m	120.791m	Process Sewer Cut-End 6in

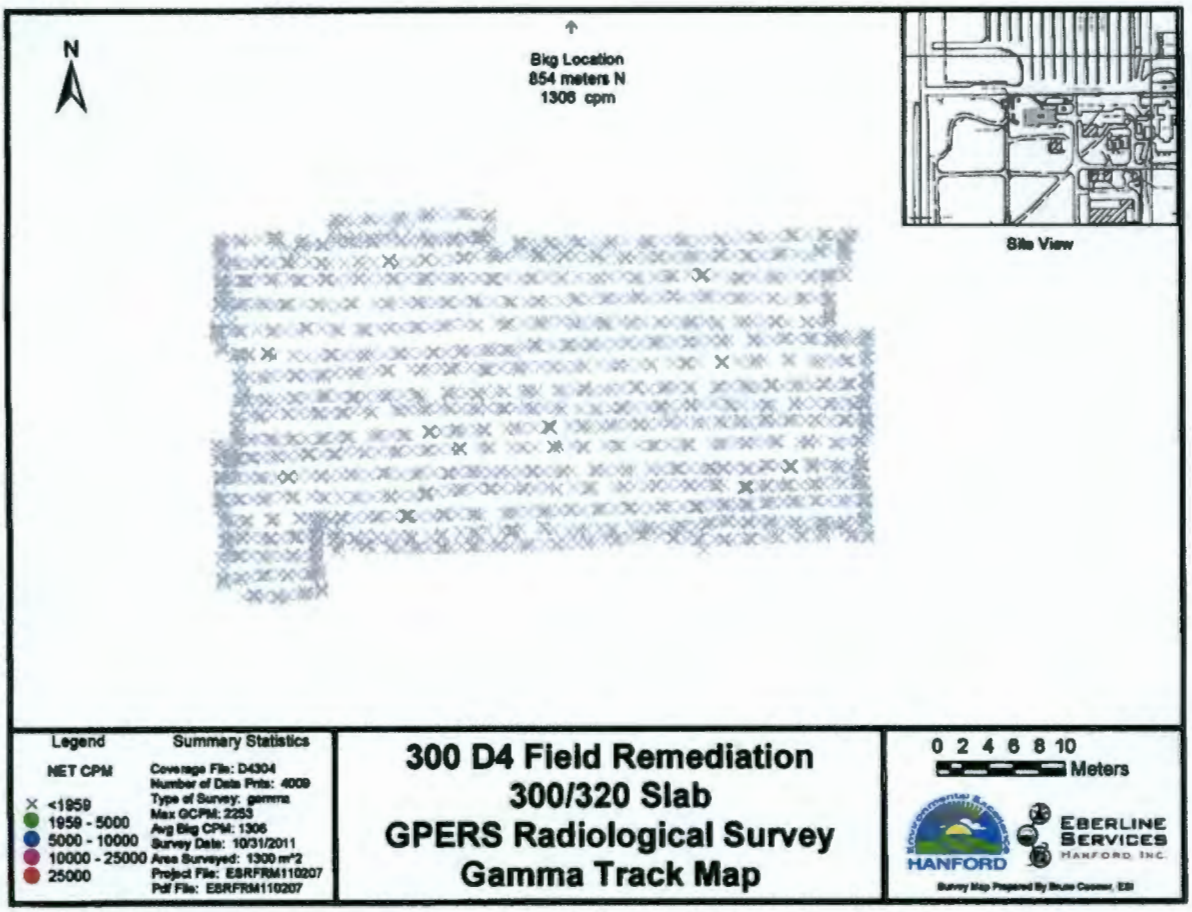



Figure 6. Post-Demolition GPRES Radiological Survey, 320 Building Basement