

JUL 09 1992 ENGINEERING DATA TRANSMITTAL

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) Environmental Remedial Action Group	4. Related EDT No.: NA
5. Proj./Prog./Dept./Div.: Environmental Restoration/ 81225	6. Cog. Engr.: R. C. Roos	7. Purchase Order No.: NA
8. Originator Remarks: Approval/Release		9. Equip./Component No.: NA
11. Receiver Remarks:		10. System/Bldg./Facility: NA
		12. Major Assm. Dwg. No.: NA
		13. Permit/Permit Application No.: NA
		14. Required Response Date: 6-31-92



15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Impact Level	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	WHC-SD-EN-AP-098		0	DOW 100N-SS-27/28 LUST Investigation	3Q	1		

16. KEY			
Impact Level (F)	Reason for Transmittal (G)		Disposition (H) & (I)
1, 2, 3, or 4 (see MRP 5.43)	1. Approval 2. Release 3. Information	4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Impact Level for required signatures)											
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1	1	Cog.Eng. R. C. Roos (5)	<i>[Signature]</i>	6-25-92	H4-25	EDMC (2)	<i>[Signature]</i>	6-25-92	H4-22	3	
1	1	Cog. Mgr. W. L. Johnson (1)	<i>[Signature]</i>	6-25-92	H4-55	IRA Clearance (1)	<i>[Signature]</i>	6-25-92	H4-17	3	
1	1	QA R. W. Perusse	<i>[Signature]</i>	6-26-92	H4-16	M. R. Adams (1)	<i>[Signature]</i>	6-26-92	H4-55	3	
		Safety				R. P. Henckel (1)	<i>[Signature]</i>		H4-55	3	
		Env.									

18. R. C. Roos <i>[Signature]</i> Signature of EDT Originator Date: 6-26-92	19. Authorized Representative Date for Receiving Organization	20. <i>[Signature]</i> W. L. Johnson Cognizant/Project Engineer's Manager Date: 6/25/92	21. DOE APPROVAL (if required) Ltr. No. <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments
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of

# INFORMATION RELEASE REQUEST

References:  
WHC-CM-3-4

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<b>Purpose</b>		<b>New ID Number</b> WHC-SD-EN-AP-098, Rev. 0
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		Date Release Required 7-3-92

<b>Title</b> DOW for 100N-SS-27/28 LUSI Investigation	<b>Unclassified Category</b>	<b>Impact Level</b> 3Q
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## COMPLETE FOR SPEECH OR PRESENTATION


<b>Title of Journal</b> NA	<b>Group or Society Sponsoring</b> NA
<b>Date(s) of Conference or Meeting</b> NA	<b>City/State</b> NA
<b>Title of Conference or Meeting</b> NA	Will proceedings be published? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Will material be handed out? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

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Publication Services	<input checked="" type="checkbox"/>	<input type="checkbox"/>	L. Hermann	<i>[Signature]</i>	7/7/92
Other Program	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
References Available to Intended Audience	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Joseph	<i>[Signature]</i>	7/7/92
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Information conforms to all applicable requirements. The above information is certified to be correct.

<b>Author/Requestor (Printed/Signature)</b> R. C. Roos	<b>Date</b> 6-25-92
<b>Responsible Manager (Printed/Signature)</b> W. L. Johnson	<b>Date</b> 6/26/92

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<b>Date Received</b> 6/29/92

**Intended Audience**

Internal     Sponsor     External

SUPPORTING DOCUMENT

1. Total Pages 8

2. Title

DOW for the 100-N-SS-27/28 LUST Investigation

3. Number

WHC-SD-EN-AP-098

4. Rev No.

0

5. Key Words

100N, UST, LUST, Soil Sampling

6. Author

Name: R. C. Roos

*R. C. Roos* 6-25-92  
Signature

**APPROVED FOR  
PUBLIC RELEASE**

Organization/Charge Code 81225/KN33C

7. Abstract

*7/7/92 N. Solis*

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10. RELEASE STAMP

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BY WHC  
DATE JUL 09 1992  
*Sta. 21*

9. Impact Level *39*

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## 1.0 SCOPE OF WORK

Two underground storage tanks (UST) used to store gasoline and diesel fuel for the 100-N Area gas station have been removed. During removal it was discovered that one or both tanks have leaked product into the soil.

This description of work outlines field activities associated with three sampling boreholes/groundwater monitoring wells in the 100-N Area. The wells will be used to assess contamination of soil and groundwater from the leaking underground storage tanks. This description of work should be used in conjunction with WHC (1992b) for specific procedures. Analytical parameters and field quality assurance will be in accordance with the Washington State Department of Ecology (Ecology 1991).

## 2.0 SITE BACKGROUND/PROJECT DESCRIPTION

Two underground tanks stored fuel for the automotive fuel station at the 100-N Area. The 100N-SS-27 tank was installed in approximately 1967 and removed in 1990. The tank was used for storage of unleaded gasoline. The 100N-SS-28 tank was installed in 1976 and removed in 1990. It was used for storage of both unleaded gasoline and diesel fuel.

Petroleum contamination was identified in the soil at removal of the 100N-SS-27 tank in December 1990. However, highest concentrations of contamination were measured in the excavation, near the 100N-SS-28 tank. When the 100N-SS-28 tank was removed in July 1991, visual evidence of a loose pipe connection and consequent soil contamination was observed.

During September 1991, contaminated soil was removed using a backhoe at the 100N-SS-27/28 tank site. Soil removal continued to the depth limit of the backhoe, approximately 25 ft below ground surface. Contamination was still present at this depth according to measurements taken with field instruments.

To assess the depth limit of contamination, one sampling borehole will be installed at the location of greatest remaining soil contamination (Figure 1). This borehole will extend to groundwater and will be developed as a groundwater monitoring well. If contamination is observed within 5 ft of groundwater, two additional wells will be installed downgradient of the tank site (Figure 1).

## 3.0 WORK REQUIREMENTS

### 3.1 HEALTH AND SAFETY

All personnel working in the exclusion zone will have completed the 40-h Hazardous Site Worker training program. Work will be performed in accordance with the appropriate job safety analysis or site safety plan.

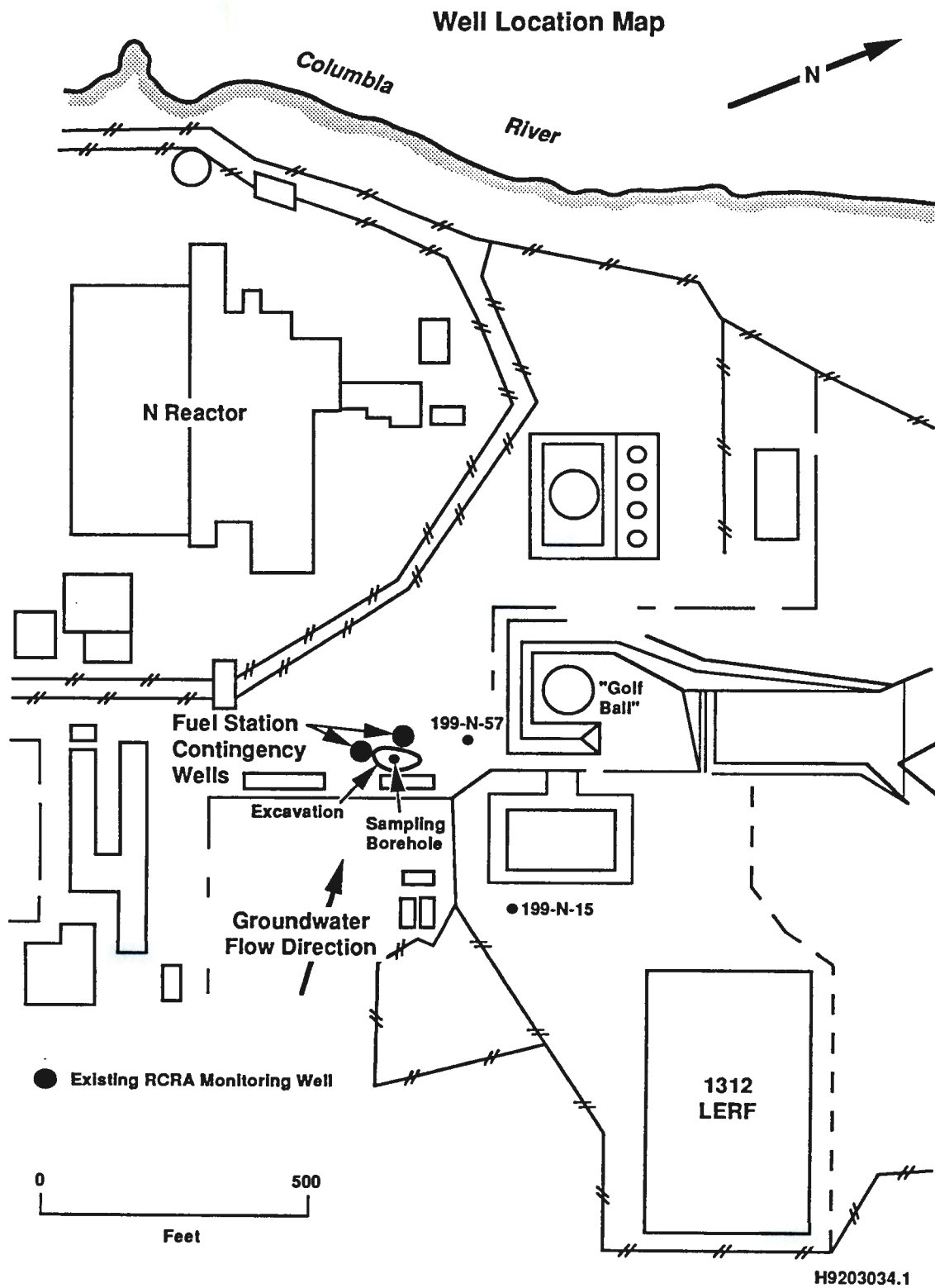


Figure 1. Well Location Map.



### 3.2 QUALITY ASSURANCE PLAN

The basic objective of the Quality Assurance (QA) plan is to ensure that data, findings, and results are sufficiently accurate and reliable to support decisions associated with site evaluation and selection of remedial alternatives. Activities will be based on approved procedures. To achieve the basic QA objective, work will be performed to guidelines specified in this document and the following:

- *Generic Specifications for Groundwater Monitoring Wells* (WHC 1989)
- *Environmental Engineering, Technology, and Permitting Function Quality Assurance Program Plan* (WHC 1990)
- *Industrial Safety Manual*, Vol. 1 through 3 (WHC 1992c)
- *Environmental Compliance Manual* (WHC 1992a)
- *Environmental Investigation and Site Characterization Manual* (EII) (WHC 1992b) will be followed throughout the sampling effort. The procedures are listed in Table 1.

Table 1. Environmental Investigation Instruction.

Subject	EII
Sampling Procedures	3.4, 5.2, 5.8
Drilling Procedures	6.1, 6.4, 6.6, 6.7, 6.8, 6.10
Geologic Logging	9.1
Groundwater Sampling	10.1, 10.2, 10.3, 10.4
Sample Handling	5.2, 5.11
Field Documentation	1.5, 5.1, 5.10
Equipment Decontamination	5.4, 5.5
Site Entry Requirements	1.1
Deviation from procedures (EIIs)	1.4
Personnel Requirements	1.1, 1.7
Health and Safety Requirements	1.1, 1.7, 2.1, 2.2, 2.3, 3.2

Additional procedures, contained in WHC (1992b), may be applicable to specific field situations. However, procedures listed here should apply to the majority of work.

Laboratory analysis of chemical properties will be conducted in accordance with procedures and laboratory QA/QC specified in SW 846 (EPA 1986).

## 4.0 DRILLING AND SAMPLING ACTIVITIES

### 4.1 BOREHOLE LOCATION AND DESCRIPTION

One boring will be advanced at the site of highest remaining contamination at the UST site. Upon completion, the boring will be constructed as a groundwater monitoring well in accordance with WHC (1989). If petroleum contamination is found within 5 ft of groundwater in the original boring, two additional downgradient wells will be constructed. Soil at the site of the additional well locations is not expected to be contaminated. Therefore, no soil samples will be collected in the second and third wells unless field instruments indicate contamination.

If soil contamination is indicated, soil will be sampled during drilling in accordance with guidelines for the original borehole. The three borings will be located as follows:

- ORIGINAL BOREHOLE/WELL--Within the area of the tank excavation, at the site of greatest known contamination
- CONTINGENT WELLS--Downgradient (west-northwest) within 100 ft of the original well (drilling locations will be staked for identification).

Drill cuttings will be contained in accordance with guidance provided in Ecology (1991). Cuttings will be placed on plastic at the drill site or in the contaminated spoils piles. Analysis of borehole samples will be used to determine if cuttings from each borehole are contaminated. If contaminated, cuttings will be stored for remediation with other contaminated soil from the tank area.

The borings will be advanced approximately 15 ft beyond the water table. The screened interval for the groundwater wells will be 20 ft and will extend from the bottom of the well to 5 ft above the water table.

### 4.2 FIELD SCREENING

Samples and cuttings will be field screened for evidence of volatile organics using an organic vapor monitor or other suitable instrument. Field instruments will be used, maintained, and calibrated consistent with EII 3.2, Health and Safety Monitoring Instruments, and EII 3.4, Field Screening. Field readings will be recorded in the borehole log in accordance with EII 9.1, Geologic Logging.

### 4.3 BOREHOLE SAMPLE COLLECTION

Three soil samples and one groundwater sample will be collected from the borehole for laboratory analysis. Soil samples will be collected at intervals of 5 ft during drilling activities. Of the samples collected, three will be selected for laboratory analysis. The three selected will be as follows:

- Sample from the interval with the highest readings on field instruments



- Deepest sample with readings above background on field instruments
- Sample in vadose zone nearest to the water table.

If one sample location meets two or more of the selection criteria, the field team leader will select a sample or samples to complete a set of three total samples from the borehole.

If field screening results are equal to or less than background (as measured in ambient air) for all soil samples collected from the boring, the following sample intervals will be utilized for laboratory analysis:

- 5 - 10 ft below ground surface
- Sample nearest water table
- Sample midway between intervals 1 and 2.

Soil samples will be collected by split-spoon or other similar downhole samplers. Groundwater samples will be collected using a sampling pump or a stainless steel or teflon (a tradename of E.I. Dupont de Nemours) bailer after completing well development activities.

Because of the sample selection process, a few days may elapse between collection of a sample and shipment to the laboratory. Care must be taken to ensure that samples remain cool and chain of custody is not violated (EII's 5.1 and 5.2).

After well development, fluid level measurements will be made daily for 2 days, or until the level has stabilized. At that time, the presence of phase-separated hydrocarbons will be assessed using a bailer or oil-water interface probe. If free product is detected in the boreholes after well development, Ecology will be notified.

#### 4.4 SAMPLE ANALYSES

Samples collected during drilling activities will be analyzed for the following [U.S. Environmental Protection Agency (EPA) methods from SW 846 (EPA 1986)]:

- Soil samples
  - TPH, EPA Method 3540/8015 (Diesel)
  - TPA, EPA Method 5030/8015 (Gasoline)
  - Benzene, Ethylbenzene, Toluene, Xylenes (BETX)  
EPA Method 5030/8020
  - Total Lead, EPA Method 3050/7421
- Groundwater samples
  - TPH, EPA Method 3510/8015 (Diesel)
  - TPH, EPA Method 5030/8015 (Gasoline)
  - BETX EPA Method 5030/8020
  - Total Lead, EPA Method 3010/7421.

#### 4.5 FIELD QUALITY ASSURANCE/QUALITY CONTROL

Field QA/QC will include one duplicate sample, one trip blank, one transfer blank, and one equipment blank for soil samples. One similar QA/QC sample set will be collected from groundwater. To ensure comparability of QA/QC samples with sample media, clean silica sand will be used for QA/QC samples when soil is the sample medium, and distilled water will be used as QA/QC for groundwater samples.

#### 5.0 PROJECT FOLLOWUP

At the conclusion of the initial investigative phase outlined in this description of work, followup activities will be determined. A groundwater monitoring program will be implemented at the site for 1 yr. Fluid level measurements will be conducted monthly in each groundwater monitoring well, and quarterly groundwater quality samples will be collected from each well. Chemical analytical parameters will be the same as specified in Section 4.2.3. However, the list of analytes may be reduced or expanded based on results obtained as the investigation progresses. Remediation alternatives will be evaluated based on data obtained during borehole sampling; supplemented as necessary by followup monitoring.

#### 6.0 REFERENCES

- Ecology, 1991, *Guidance for Remediation - Releases from Underground Storage Tanks*, U.S. Department of Ecology, Washington, D.C.
- EPA, 1986, *Test Methods for Evaluating Solid Waste - Physical/Chemical Methods*, 3rd Ed. SW-846, U.S. Environmental Protection Agency, Washington, D.C.
- WHC, 1989, *Generic Specifications for Groundwater Monitoring Wells*, WHC-S-0141, Rev. 3, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1990, *Environmental Engineering, Technology, and Permitting Function Quality Assurance Program Plan*, WHC-EP-0383, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1992a, *Environmental Compliance Manual*, WHC-CM-7-5, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1992b, *Environmental Investigations and Site Characterization Manual*, WHC-CM-7-7, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1992c, *Industrial Safety Manual*, WHC-CM-4-3, Vol. 1 - 3, Westinghouse Hanford Company, Richland, Washington.