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Coordination of Groundwater Activities in the 100 N Area

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COORDINATION OF GROUNDWATER ACTIVITIES IN THE 100 N AREA

EXECUTIVE SUMMARY

The initiation of the N Springs Expedited Response Action (ERA) in the 100 N Area will affect the groundwater monitoring networks of two *Resource Conservation and Recovery Act of 1976* (RCRA) units. The 1301-N and 1325-N Liquid Waste Disposal Facilities have been monitored under RCRA interim status since 1987 and are scheduled for RCRA closure in 1999. In September 1994, the Washington State Department of Ecology (Ecology) directed the U.S. Department of Energy (DOE) to expedite remedial action by installing a system to pump groundwater from the 1301-N contaminant plume and treat it to remove ^{90}Sr.

Groundwater in the 100 N Area is part of the 100-NR-2 Operable Unit under the regulatory authority of Ecology. The 1301-N and 1325-N facilities are included in the 100-NR-1 source Operable Unit.

Several options for coordinating the RCRA, ERA, and Operable Unit groundwater programs are available. They all include proceeding with the ERA. The options are:

1. Continue interim-status RCRA monitoring while the pump and treat system is active (no change)
2. Modify RCRA networks with existing wells to accommodate changes to the flow system caused by the ERA
3. Modify RCRA networks with new wells
4. Add RCRA constituents to ERA monitoring
5. Suspend RCRA monitoring and declare parity between cleanup programs.

Option 5 is recommended because it results in remedial action earlier than under RCRA, it enhances regulatory coordination between RCRA and the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA), and it is the most cost effective. The 1301-N and 1325-N units will be incorporated into the Hanford Facility RCRA Permit in 1999. At that time, they will be regulated under final-status requirements, and a groundwater protection standard will be established for ^{90}Sr, along with other contaminants of concern. The concentrations of ^{90}Sr in groundwater would almost certainly force the sites into RCRA corrective action, which would be coordinated with the Operable Unit cleanup. Because the ERA is addressing ^{90}Sr contamination at 1301-N now, the prudent approach is to discontinue interim-status RCRA monitoring and allow the 100-NR-2 Operable Unit to address groundwater. EPA guidance encourages a consolidated approach between RCRA and CERCLA when parity exists between programs.

The pump-and-treat system will affect groundwater flow direction and chemistry beneath the 1301-N and 1325-N facilities. Meeting the objectives of RCRA indicator evaluation monitoring will no longer be possible because samples will no longer accurately represent the quality of the groundwater

flowing beneath the facilities. Continuing RCRA monitoring at 1301-N and 1325-N during the operation of the pump-and-treat system costs approximately $188,000 each year. This money will not be used effectively if the data obtained do not meet the intended objectives.

Groundwater will be sampled to assess the effectiveness of the ERA pump-and-treat system. Groundwater monitoring will also continue for the 100-NR-2 Operable Unit and for the 1324-N/NA RCRA site, which is located beyond the expected area of influence of the pump-and-treat system.

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TERMS

BHI	Bechtel Hanford, Inc.
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CFR	*Code of Federal Regulations*
DOE	U.S. Department of Energy
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ERA	Expedited Response Action
RCRA	*Resource Conservation and Recovery Act of 1976*
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
TSD	treatment, storage, or disposal
WAC	*Washington Administrative Code*
WHC	Westinghouse Hanford Company

1.0 INTRODUCTION

1.1 PROBLEM DESCRIPTION

The initiation of the N Springs Expedited Response Action (ERA) in the 100 N Area will affect the the groundwater monitoring networks of two *Resource Conservation and Recovery Act of 1976* (RCRA) units (Figure 1). The 1301-N and 1325-N facilities are treatment, storage, or disposal (TSD) units that have been monitored under RCRA since 1987. In September 1994, the Washington State Department of Ecology (Ecology) issued an action memorandum, instructing the U.S. Department of Energy (DOE) to take the following actions.

- Install a system to pump groundwater from the 1301-N contaminant plume and treat it to remove ^{90}Sr
- Install a grouted-hinge sheet pile barrier near the river's edge to slow the transport of ^{90}Sr to the Columbia River (Ecology and EPA 1994).

Attempts to install a sheet pile barrier have been unsuccessful, and are now suspended.

The planned pump-and-treat system will preclude meeting the specific objectives of interim-status RCRA groundwater monitoring (i.e., to collect representative samples and detect adverse impacts of the TSD units on groundwater). However, under RCRA final-status requirements, which will be implemented in 1999, corrective action for groundwater contamination will probably be required. The U.S. Environmental Protection Agency (EPA) has declared parity between RCRA corrective action and *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) remedial action decisions (EPA 1994). The 1301-N and 1325-N facilities are still in interim-status and therefore are not in the category of "RCRA corrective action." However, DOE's position is that parity exists between RCRA and the ERA because RCRA corrective action will almost certainly be required in the future.

The ERA relates to the 100-NR-2 groundwater Operable Unit, which is defined as a RCRA past-practice unit (Ecology et al. 1994). A change request may be submitted that will redefine 100-NR-2 as a CERCLA unit. For clarity in this document, the groundwater activities for the ERA and the 100-NR-2 Operable Unit will be referred to as "CERCLA" to distinguish them from the activities for the RCRA TSD.

1.2 BACKGROUND

The 1301-N facility was the primary liquid waste disposal facility for the N Reactor from 1963 until 1985. Discharges to the 1301-N facility were primarily radioactive, including ^{60}Co, ^{137}Cs, ^{90}Sr, and tritium. Minor amounts of dangerous waste also were discharged. The 1301-N facility consists of a concrete basin with an unlined, zig-zagging extension trench, all covered with concrete panels (see Figure 1).

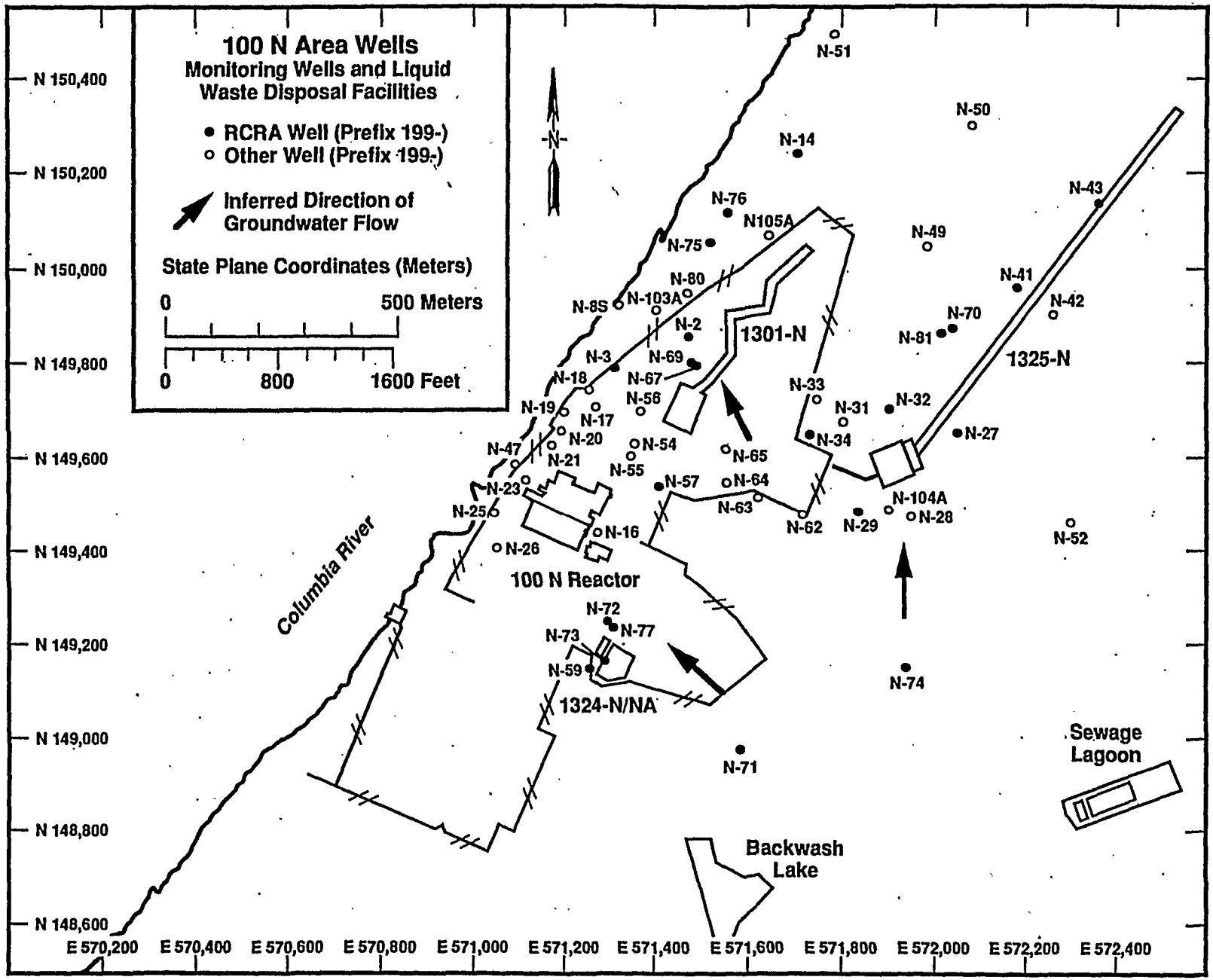

Figure 1. RCRA Units and Groundwater Monitoring Wells in the 100 N Area.

The 1325-N facility was constructed in 1983, and N Reactor effluent was divided between it and the 1301-N LWDF. In 1985, discharge to the 1301-N facility ceased, and all effluent was sent to 1325-N until late 1991, when all discharge to the facility ceased. The 1325-N facility consists of a concrete basin and an unlined extension trench, all covered with concrete panels.

The uppermost aquifer beneath the 100 N Area is unconfined sand and gravel of the Ringold Formation. It is approximately 9 to 12 m (30 to 40 ft) thick, and is highly permeable. The base of the uppermost aquifer is a finer grained unit in the Ringold Formation.

Depth to groundwater is approximately 21 m (70 ft) beneath most of the 100 N Area. Water levels have varied with artificial recharge from liquid waste disposal. Groundwater levels beneath the 100 N Area have dropped approximately 6 m (20 ft) since June 1989. The groundwater gradient in June 1989 was 0.01; the current gradient is approximately 0.001 to 0.003. Groundwater flows toward the northwest beneath the 1301-N site, and toward the north beneath the 1325-N site, discharging to the Columbia River.

Radionuclides have been monitored in 100 N Area groundwater by RCRA, CERCLA, Hanford Surveillance, and Operational programs. The primary contaminants of interest are ^{90}Sr and tritium, both associated with the 1301-N and 1325-N facilities. Data indiate that the ^{90}Sr in groundwater is limited to the top 20 ft of the aquifer. Wells completed deeper in the aquifer detect no ^{90}Sr. Tritium evidently is distributed evenly through the aquifer thickness (Hartman and Lindsey 1993). ^{90}Sr is also present in seeps and springs on the Columbia River bank at 100 N Area, known as "N Springs." Because ^{90}Sr concentrations in the springs exceed the drinking water standard (8 pCi/L), Ecology has mandated an expedited response action (Ecology and EPA 1994).

2.0 GROUNDWATER REQUIREMENTS

Groundwater requirements in the 100 N Area include RCRA, the N Springs ERA, and the 100 NR-2 Operable Unit.

2.1 RCRA TREATMENT, STORAGE, AND DISPOSAL

Interim-status RCRA groundwater monitoring began in the 100 N Area in December 1987 in accordance with *Washington Administrative Code* (WAC) 173-303-400 and Title 40 *Code of Federal Regulations* (CFR) Part 265. After the first year of monitoring, one well at the 1301-N site (N-3) and all four downgradient wells at the 1324-N/NA site showed elevated specific conductance. These sites began groundwater quality assessment programs under RCRA in the spring of 1989.

Results of the assessment programs are discussed in Hartman (1992). Assessment results indicated that no hazardous constituents (i.e., RCRA-regulated constituents) from the facilities are in the groundwater. The elevated specific conductance that triggered assessment was primarily caused by high sulfate and sodium concentrations from 1324-N/NA. Sulfate and sodium are not regulated constituents, and, in such cases, the regulations allow

sites to reinstate indicator evaluation programs. The 1301-N unit is currently monitored under an indicator evaluation program. The 1325-N site has remained in an indicator evaluation program since monitoring began. The current monitoring programs are described in Hartman (1993a, 1993b).

Although 1301-N and 1325-N have not introduced dangerous waste constituents to groundwater, they were sources of radioactive contamination. The primary radionuclides in groundwater are ^{90}Sr and tritium (Figures 2 and 3). These constituents are also detected in N Springs.

The objective of RCRA interim-status groundwater monitoring is to determine whether RCRA-regulated waste constituents from the facility have reached groundwater. If background values are exceeded, a groundwater quality assessment program is initiated to determine the rate and extent of contamination. There is no corrective action program under interim status. Radionuclides are not regulated under RCRA interim status, but because of process knowlede ^{90}Sr and tritium have been monitored routinely at 1301-N and 1325-N. In the past, a gamma scan was also performed routinely.

1301-N and 1325-N monitoring wells are currently sampled twice per year for the constituents listed in Table 1. Concentrations of indicator parameters in downgradient wells are compared to critical mean values (or critical ranges) that are determined based on upgradient data. If critical values are exceeded, the sites will enter assessment programs.

In 1999 the 1301-N and 1325-N facilities will be incorporated into the Hanford Site RCRA Permit (Ecology 1994). At that time, RCRA groundwater monitoring will be required to meet final status regulations (WAC 173-303-645 and 40 CFR 264) and the 1301-N and 1325-N TSDs will undergo RCRA closure. Under final status, a list of site-specific constituents would be proposed and groundwater protection standards established. If the standards were exceeded, the site would enter RCRA corrective action. Corrective action is likely to be required for ^{90}Sr at 1301-N and perhaps 1325-N[1]. RCRA corrective action will be integrated with cleanup of the operable units.

In summary, data collected during 7 years of monitoring show that the 1301-N and 1325-N facilities are not contributing hazardous waste constituents to the groundwater, but they have contributed radionuclides. The 1301-N and 1325-N facilities are expected to be influenced by the pump-and-treat operation. The 1324-N/NA site is outside of the expected influence of the pump-and-treat system.

RCRA monitoring currently is conducted for DOE by Westinghouse Hanford Company (WHC). Bechtel Hanford, Inc. (BHI) has been tasked with the remediation of the 100 N Area, and is responsible for RCRA closure activities at 1301-N, 1325-N, and 1324-N/NA.

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[1]Radionuclides are not dangerous waste constituents under WAC 173-303-645. However, a groundwater protection standard will probably be identified for ^{90}Sr under final status because it is the primary contaminant of concern in groundwater at 1301-N and 1325-N. A similar approach was taken for uranium at the 300 Area Process Trenches.

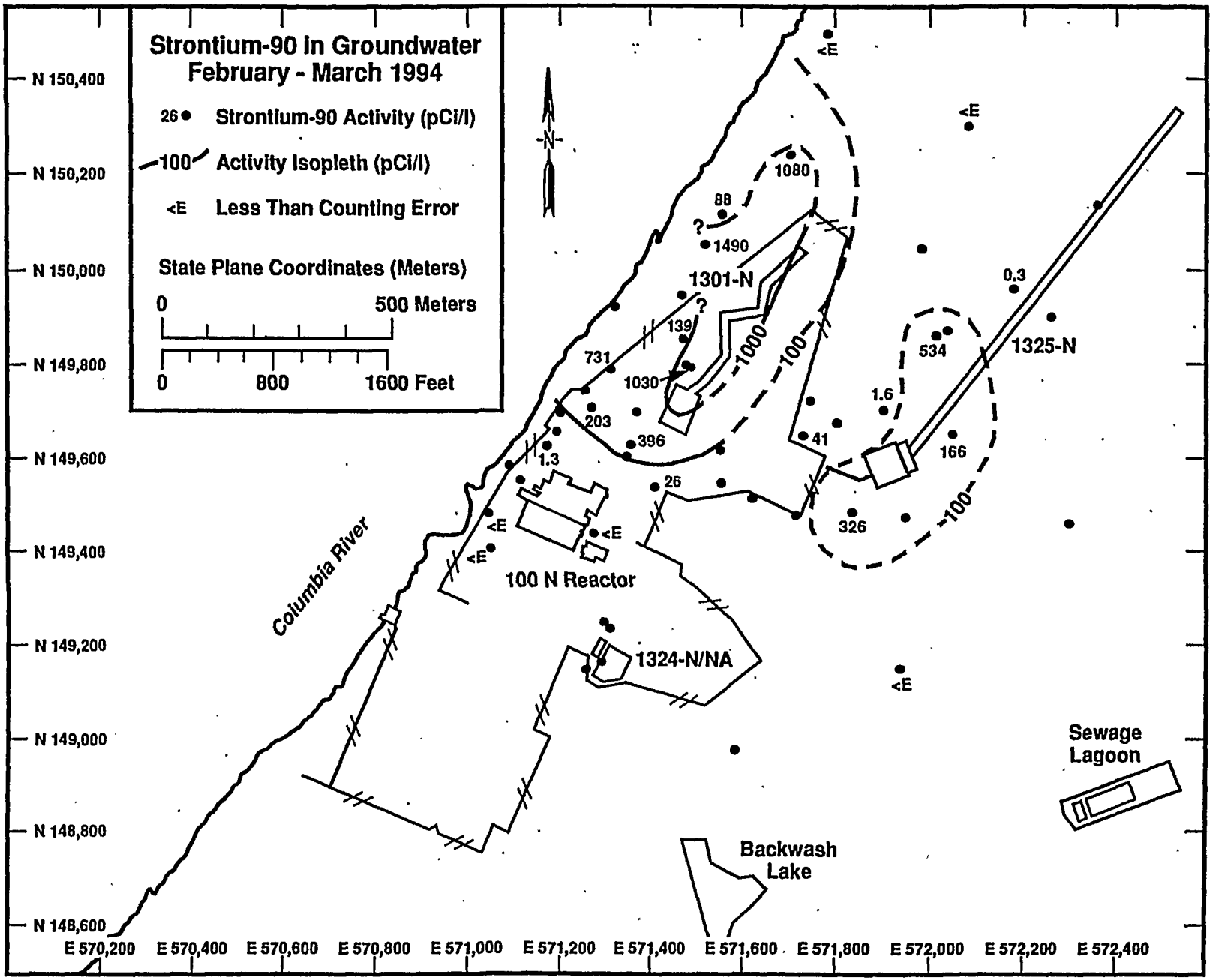


Figure 2. ^{90}Sr in Groundwater in the 100 N Area.

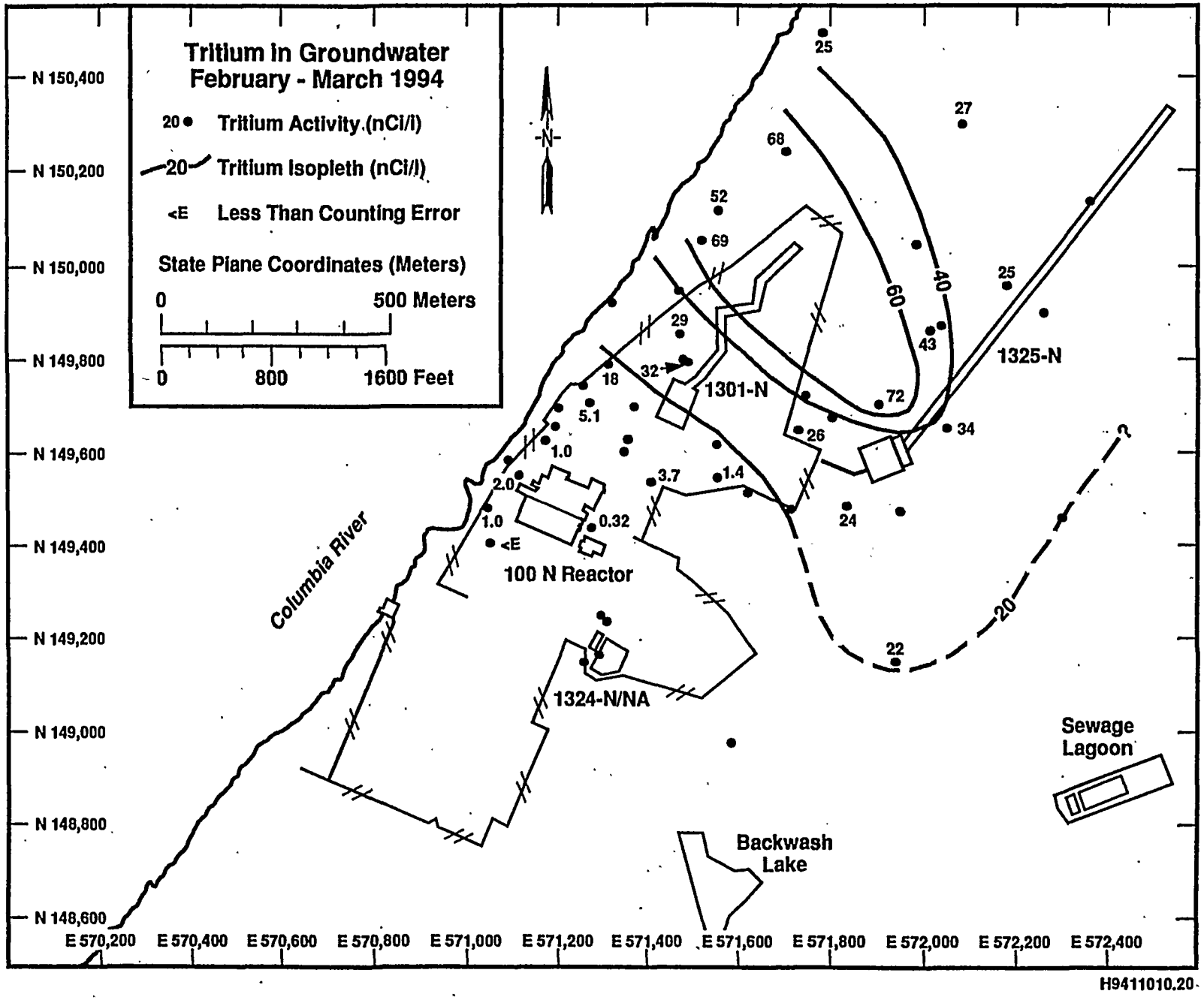


Figure 3. Tritium in Groundwater in the 100 N Area.

Table 1. Constituent List for RCRA Groundwater Monitoring at 1301-N and 1325-N.

Indicator parameters:
pH (field and laboratory)
Conductivity (field and laboratory)
Total organic halogen
Total organic carbon
Turbidity (field)
ICP metals (filtered)
Anions
Lead (filtered)
Alkalinity
Gross alpha
Gross beta
Phenols (annually)

2.2 N SPRINGS EXPEDITED RESPONSE ACTION

The objectives for the N Springs ERA are outlined in an action memorandum to DOE (Ecology and EPA 1994). The action memorandum requires a grouted-hinge sheet pile barrier in the aquifer near the river's edge and a pump-and-treat system with a starting capacity of 190 L/min (50 gal/min). Attempts to install a sheet pile barrier have been unsuccessful (Knepp et al. 1995), but plans to initiate pump-and-treat are continuing. The three objectives of the groundwater pump-and-treat system are as follows:

- Evaluate commercially available treatment options for ^{90}Sr
- Provide data necessary to set demonstrable ^{90}Sr groundwater cleanup standards
- Reduce ^{90}Sr flux to the Columbia River by reducing the concentration of ^{90}Sr in groundwater.

Functional and operational requirements for the pump-and-treat system are described in Frain and Jackson (1995). Groundwater will be pumped from the contaminant plume downgradient of the 1301-N facility, the water will be treated to remove ^{90}Sr, and the treated effluent will be injected into wells near the 1325-N unit. The scheduled life of the pump-and-treat system is 10 years. The ERA is managed for DOE by BHI.

Two existing wells (N-14 and N-75) and two new wells (N-103A and N-105A) will be used as extraction wells (Figure 4, Borghese et al. 1995). These wells will be pumped in various combinations to achieve the desired 190-L/min (50-gal/min) withdrawal rate. One new well (N-104A) will be used as the primary injection well. Two existing wells (N-29 and N-31) will be used as back-up injection wells. Additional extraction wells will be added if the pump-and-treat system is expanded to a greater capacity in the future.

Numerical models are being developed to simulate the hydrologic effects of the pump-and-treat system. Figure 4 is a conceptual drawing of anticipated effects of the pump-and-treat system on groundwater flow.

It will be important not to draw down the water table too far because the ^{90}Sr is limited to the top of the aquifer and the vadose zone. Adjustments will be made in the number and location of pumping wells and their discharge rates as necessary to optimize performance.

Samples of groundwater from the pumping wells will be analyzed before and after treatment to assess the effectiveness of the system. Performance assessment monitoring is described in BHI (1995).

2.3 100-NR-1 AND 100-NR-2 OPERABLE UNITS

Past-practice waste sites in the 100 N Area are grouped together in the 100-NR-1 source Operable Unit. Groundwater is in the 100-NR-2 groundwater Operable Unit. These operable units are defined as RCRA past-practice units in the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology et al. 1994). The 100-NR-1 and 100-NR-2 Operable Units are under the regulatory authority of Ecology. BHI is tasked with remediation of the operable units.

Investigations to support cleanup of the operable units are described in work plans (DOE 1994a, 1994b). Cleanup plans are evolving as additional data are collected. The cleanup will be coordinated with RCRA TSD remedial action, and will conform with the requirements for documentation set forth in the Tri-Party Agreement and its amendments (Ecology et al. 1994). Current plans are to prepare a closure-plan/corrective-measures study. This combined document will be based on existing information as well as data obtained during operable-unit investigations, and will include applicable aspects of the following:

- RCRA closure plans (WAC 173-303-610)
- RCRA corrective-measures studies (40 CFR 264.524 and 264.535)
- CERCLA feasibility studies (40 CFR 300).

The objectives of operable unit groundwater monitoring are to determine the nature and extent of contamination in the groundwater (including radionuclides) and to understand the fate and transport of these contaminants in the aquifer. Groundwater is sampled and analyzed semiannually for the constituents listed in Table 2. The monitoring plan will be revised in the near future. The 100-NR-2 monitoring program has been coordinated with the RCRA program to share data that are useful to both programs.

Figure 4. Conceptualization of the Effect of the Pump-and-Treat Systems on Groundwater Flow.

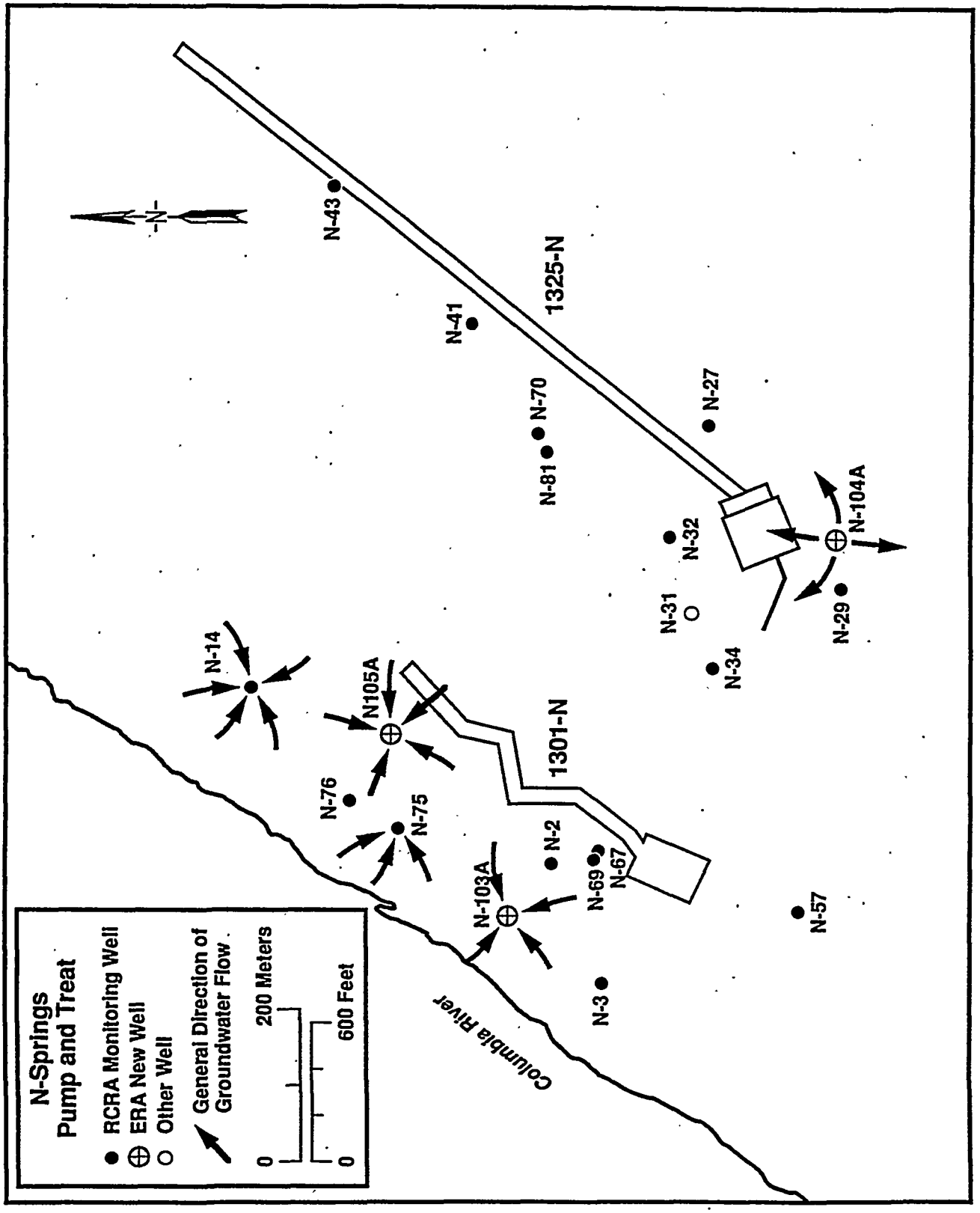


Table 2. Constituent List for 100-NR-2 Groundwater Monitoring Near 1301-N and 1325-N.

Indicator parameters:
pH (field and laboratory)
Conductivity (field and laboratory)
Turbidity (field)
ICP metals
Anions
Gross alpha
Gross beta
^{90}Sr
Tritium
Gamma spec
Total petroleum hydrocarbons*
Oil and grease*

*Selected wells

3.0 STRATEGY FOR RCRA-CERCLA COORDINATION

3.1 TRI-PARTY AGREEMENT

The Tri-Party Agreement (Ecology et al. 1994) specifies that the 100-NR-1 and 100-NR-2 Operable Units, which contain the 1301-N, 1325-N, and 1324-N/NA facilities and groundwater, are defined as RCRA past-practice units under the authority of Ecology. The RCRA past-practice process generally follows the same approach as the CERCLA process.

Section 5.5 of the Tri-Party Agreement states that "Ecology, the EPA, and DOE agree that past-practice authority may provide the most efficient means for addressing mixed-waste groundwater contamination plumes originating from a combination of TSD and past-practice units." In keeping with this guidance, environmental restoration in the 100 N Area shall be achieved under past-practice authority.

3.2 RECOMMENDATIONS FOR COORDINATING RCRA AND CERCLA GROUNDWATER MONITORING AND REMEDIATION IN THE 100 N AREA

Five options are discussed for coordinating groundwater activities in the 100 N Area:

1. Continue interim-status RCRA monitoring while the pump-and-treat system is active (no change)

2. Modify RCRA networks with existing wells to accommodate changes to the flow system caused by the ERA

3. Modify RCRA networks with new wells

4. Add RCRA constituents to ERA monitoring.
5. Suspend RCRA monitoring and declare parity between cleanup programs.

Options 1 through 4 attempt to meet the requirements of RCRA interim status and continue RCRA monitoring. Option 5 assumes parity between final-status RCRA corrective action and the ERA.

3.2.1 Continue Interim-Status RCRA Monitoring

Groundwater monitoring programs for RCRA and the 100-NR-2 Operable Unit currently are independent, although some wells are sampled jointly to avoid duplication. Results of sampling and analysis are reported separately. In addition, a performance assessment monitoring program for the N Springs ERA (planning still in progress) will be separate from RCRA or 100-NR-2 monitoring.

Advantages. No significant advantages.

Disadvantages. Continuing the current RCRA monitoring program at 1301-N and 1325-N is not considered a viable option because groundwater flow directions near the 1301-N extraction wells will change. Some of the wells currently monitored as downgradient will no longer be downgradient (e.g., N-76; see Figure 4). At the 1325-N facility, the ERA may use well N-29 for injecting treated water, so this well will no longer be suitable for RCRA monitoring. The injected water near 1325-N will be a new source of recharge to groundwater, and will make it impossible to monitor the 1325-N facility separately from the injected water.

The pump-and-treat system will undergo modifications as it progresses (e.g., choice of pumping and injection wells, withdrawal rates). These changes would require continual modifications to the RCRA monitoring program, an additional cost.

3.2.2 Modify RCRA Networks with Existing Wells

Under this option monitoring would remain separate for CERCLA and RCRA, but the RCRA networks would be modified by substituting existing wells for RCRA wells affected by the ERA. The new pumping wells at 1301-N (N-103A and N-105A) might be sampled as downgradient well N-76 and possibly wells N-3 and N-14 would be dropped, because they will no longer be directly downgradient (see Figure 4). Well N-67 may go dry after groundwater extraction lowers the water table and, therefore, may no longer be useful.

Advantage. Sampling the pumping wells could be coordinated between the ERA and RCRA to avoid duplication. No new wells would be required for RCRA.

Disadvantages. As discussed in Section 3.2.1, the injection of treated water within the 1325-N monitoring network will make RCRA monitoring unrepresentative at that site. At 1301-N, the pumping wells will draw in water from all directions, so samples will not be representative of groundwater flowing under the facility. In one scenario, for example, groundwater may be diluted by river water or water from outside the influence

of 1301-N. In a second scenario, the pumping wells may draw in a plume of high-conductivity groundwater south of 1301-N (Figure 5), falsely triggering assessment monitoring. The source of the high-conductivity water was the 1324-NA Percolation Pond, which is mainly caused by high concentrations of sulfate and sodium (Hartman 1992). Finally, as stated in Section 3.2.1, changes to the ERA would necessitate continual revision of the RCRA monitoring networks.

If the 1301-N site entered assessment monitoring because the pumping wells drew in high-conductivity groundwater from the south, additional costs would be incurred. Assessment monitoring requires sampling quarterly instead of semiannually, more wells would probably be sampled, and in the worst case, new wells would have to be installed.

3.2.3 Modify RCRA Networks with New Wells

This option is similar to the one discussed in Section 3.2.2 but new monitoring wells would be installed between the 1301-N trench and the ERA pumping wells.

Advantage. Samples would be more representative of groundwater flowing beneath the 1301-N facility because they would be less diluted.

Disadvantages. At least two new wells would be required, and they would be located in a radiation zone, making installation very costly (more than $100,000 per well). Changes in flow directions may still result in high-sulfate/high-sodium groundwater being detected in RCRA monitoring wells. This option brings no improvement in the representativeness of 1325-N groundwater samples.

3.2.4 Add RCRA Constituents to ERA Monitoring

Pumping wells would be sampled in conjunction with ERA performance assessment monitoring. This option is similar to the one described in Section 3.2.2, except that RCRA monitoring and reporting would be combined with the ERA and would be the responsibility of BHI instead of WHC.

Advantage. Further avoidance of duplication.

Disadvantages. Same as for the option described in Section 3.2.2.

3.2.5 Suspend RCRA Monitoring

Under this option, interim-status groundwater monitoring for the 1301-N and 1325-N facilities would be suspended while the ERA is active (scheduled for 10 years). Groundwater monitoring would continue under the 100-NR-2 Operable Unit and for the ERA performance assessment. RCRA monitoring would continue at the 1324-N/NA site, where the network is expected to be undisturbed by the pump-and-treat system.

The 1301-N and 1325-N facilities will be regulated under RCRA final-status requirements in 1999, and corrective action for ^{90}Sr will probably be

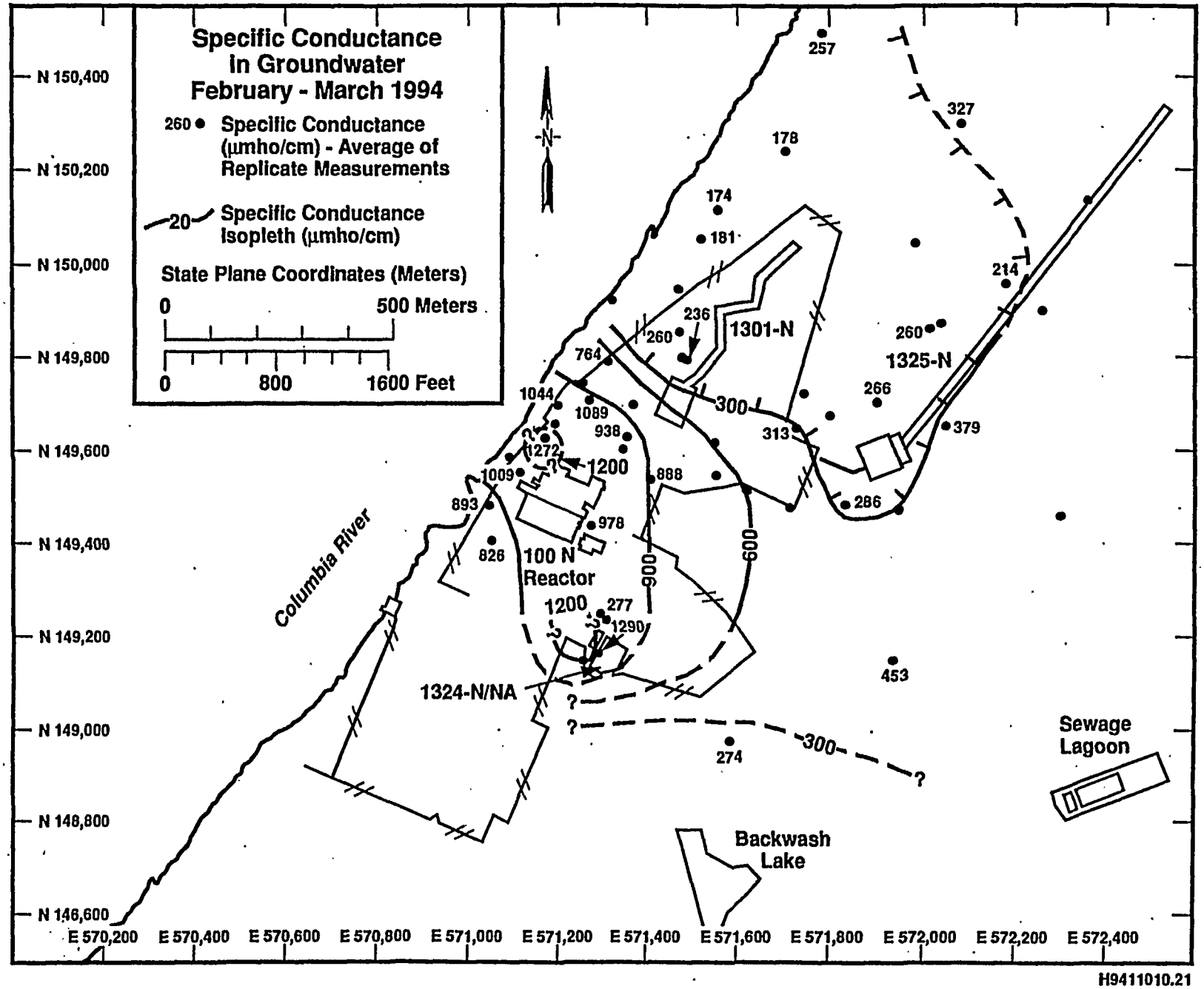


Figure 5. Specific Conductance in Groundwater in the 100 N Area.

required. The environmental results achieved through the ERA are expected to be equivalent to RCRA corrective action. EPA and DOE have issued guidance on RCRA and CERCLA interaction in cases where such parity exists between cleanup actions (EPA 1994, DOE 1995). That guidance encourages a consolidated approach where one program will normally not recheck or re-open unit-specific decisions made by the other program. The EPA guidance states: "For regulated units that have leaked, there may be little reason to continue to strictly apply the interim-status groundwater requirements in those cases where the contamination has been successfully assessed and where the priority is to remediate such contamination...." The contamination at the 1301-N and 1325-N facilities has been assessed by both the RCRA and CERCLA programs.

Advantages: The 1301-N and 1325-N sites will be regulated under final status beginning in 1999. RCRA corrective action would not begin until after that date. Under the ERA, equivalent cleanup begins 4 years sooner than under RCRA (Figure 6). By declaring parity between the programs, this option accelerates corrective action, eliminating the need for continued RCRA interim-status monitoring.

As discussed in previous sections, the operation of the pump-and-treat system will preclude collecting representative groundwater samples. This option avoids the cost of collecting samples and reporting results that are not representative and do not meet the objectives of RCRA interim-status monitoring.

Maintaining the RCRA indicator evaluation monitoring program for the 1301-N and 1325-N facilities costs DOE approximately $188,000 per year. Seventeen wells are sampled twice a year, resulting in 34 well trips. Costs are broken down as follows:

Scheduling, sampling, shipping: $1,327 per well trip x 34 =	$ 45,118
Analysis: $3,487 per well x 34 trips =	$118,558
QC samples (15% of total analytical cost):	$ 17,784
Project scientist support:	$ 6,240
TOTAL:	$187,700

The 100 NR-2 monitoring program uses some of the data collected under RCRA. Some of the RCRA constituents may need to be added to the 100-NR-2 analyses. The additional cost to 100-NR-2 is estimated to be approximately $6,000 per year. Thus, the total savings by discontinuing RCRA interim-status monitoring is approximately $182,000.

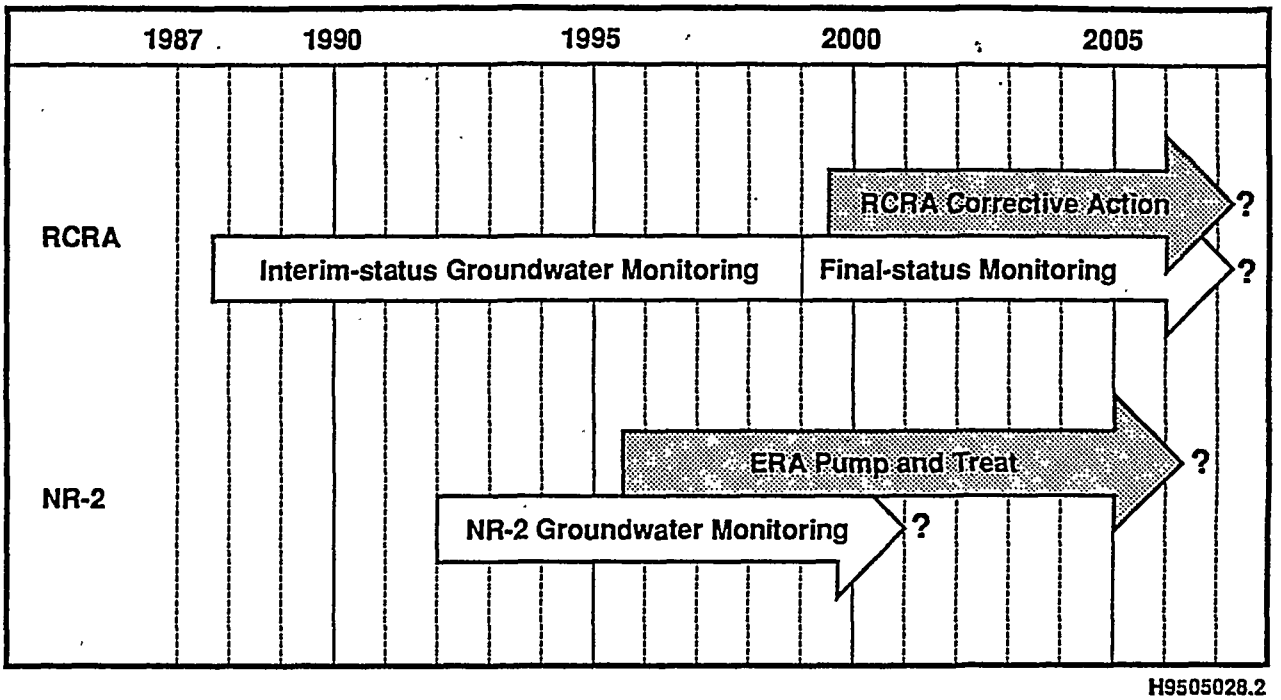
Additional savings result from avoiding an assessment program caused by high-conductivity water from another facility (see Section 3.2.2).

Disadvantage: This option requires regulatory approval to waive RCRA interim-status groundwater monitoring.

3.2.6 Recommendation

DOE recommends suspending RCRA interim-status monitoring for the 1301-N and 1325-N facilities, Option 5 (Section 3.2.5). This option assumes

Figure 6. Schedules for Corrective Action and Monitoring in the 100 N Area.



parity between the ERA and RCRA corrective-action activities. ^{90}Sr contamination at the 1301-N facility will be addressed by the ERA at least 4 years before it would under RCRA. This option avoids the costs that would be incurred by sampling and reporting data that will not meet the objectives of RCRA-indicator-parameter monitoring, and takes the next logical step to begin cleanup. RCRA closure and post-closure requirements of the 1301-N and 1325-N facilities will be integrated with the 100-NR-1 and 100-NR-2 Operable Units.

The ERA will remain the responsibility of the environmental restoration contractor (currently BHI). The operations contractor (currently WHC) will review documents for parity.

3.3 PLANNING DOCUMENTS

The EPA guidance document states: "Decision documents and the related public notices and proposed plans should explain that the selected action will satisfy the requirements for remediation under both [RCRA and CERCLA]" (EPA 1994). The approved strategy will be documented in appropriate permits and plans to establish a clear pathway to accomplish the requirements of both programs. The following documents must be revised to incorporate this strategy:

- ERA performance assessment monitoring plan
- 100 NR-2 monitoring plan

- RCRA closure plans
- RCRA groundwater monitoring plan (Hartman 1993)
- Hanford Facility RCRA Permit (Ecology 1994).

4.0 REFERENCES

40 CFR 264, "Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," *Code of Federal Regulations*, as amended.

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