

U.S. ENVIRONMENTAL PROTECTION AGENCY  
REGION 10

8904732

0 005752



Hanford Project Office  
Federal Building, Rm. 178  
P.O. Box 550, A7-70  
Richland, Washington 99352

November 8, 1989

REPLY TO  
ATTN OF: A7-70

Mr. Michael Thompson, Unit Manager  
U.S. Department of Energy  
P.O. Box 550, A6-95  
Richland, Washington 99352

Mr. Toby Michelena, Unit Manager  
State of Washington  
Department of Ecology  
Mail Stop PV-11  
Olympia, Washington 98504

RE: Purge Water Disposal Issue

Dear Meserrs. Thompson and Michelena:

Paul Day has requested that I take an active role in the resolution of the purge water disposal issue. As a result of his request, I have put together an outline of actions that could be taken in order to move towards resolution of this issue.

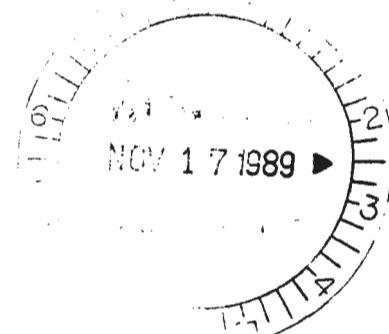
The purpose of this letter and the attached write-up is to focus on those critical steps that must be undertaken before a comprehensive solution to the purge water disposal issue can be finalized. Until such time as the method of disposal and/or treatment is determined for purge water from each well, all waters from such activities within operational waste management areas are being stored. This is a time consuming and costly process which would, if continued, draw resources away from other important characterization, clean-up, permitting, treatment, and disposal activities. The steps that I feel could be taken to move this issue towards resolution include:

determination of background levels for naturally occurring substances

agreement on ground rules for designation of purge waters into the appropriate purge water disposition category

identification of a technical representative to review existing chemical and radionuclide data and

preliminary designation of well waters into the appropriate purge water disposition category.



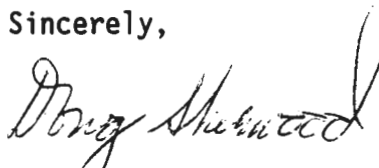
At this time, it seems best to proceed using the previously specified criteria (proposed by the Department of Ecology) with some exceptions for naturally occurring substances. Comparison of these criteria to analytical results from wells with existing chemical and radionuclide data will allow each well to be placed in the appropriate purge water disposition category. In addition, this process will allow us to identify which wells require additional analyses to determine their disposition and which wells lie in areas not subject to disposal restrictions (i.e., far-field, background, and confined aquifer wells). This effort should also result in definitive information required to address purge water treatment including substances, volumes, and concentration ranges.

For this effort to work, all parties must be involved and must follow a consistent set of ground rules. I realize there are concessions to be made on both sides, but without an approach that represents the middle ground it is clear to me that dispute resolution is unavoidable.

In order to get this process restarted, I have reviewed some of the existing ground water data to identify candidate wells for background level determination. These wells have analytical results for those constituents that background levels must be defined. Further, I have put together a set of ground rules for an initial purge water disposal designation process.

Please review this information and let me know if you would be willing to participate in an effort to evaluate existing ground water data in the manner described or with some modifications. Please do not hesitate to call me for clarification of this write-up at (509) 376-9529. Thank you for your consideration.

Sincerely,



Doug Sherwood  
Unit Manager

Attachment

cc w/att:

R. G. Holt, DOE

J. W. Waite, WHC ✓

K. R. Fecht, WHC

## Ground Rules for Purge Water Disposal Designation Process

Agreement on a consistent set of ground rules represents the first critical step toward categorizing all existing and future wells into the appropriate purge water disposal designations. The proposed ground rules for this technical evaluation of existing groundwater data for the purpose of determining purge water disposition are as follows:

- 1) Background levels of naturally occurring substances in Hanford groundwaters must be agreed to by all parties.
- 2) The criteria as proposed using Maximum Concentration Limits (MCL's) and Freshwater Chronic Toxicity Criteria and ten times those values will be the basis for comparison in the purge water designation process.
- 3) Listed waste or listed waste leachate will not enter into the purge water designation process.
- 4) Wells with insufficient data to designate will be placed into an additional category requiring further investigation or additional analyses prior to final disposition.
- 5) Substances with Freshwater Chronic Toxicity Criteria below the present analytical detection limit with no previous disposal history nor record of detection will not be used in this initial designation.
- 6) Maximum Concentration Limits (MCL's) for radionuclides will be based on U.S.E.P.A. 1976 National Interim Primary Drinking Water Regulations. EPA-570/9-76-003, Office of Water Supply, Washington, D.C.
- 7) Hazardous Substances without MCL's or Freshwater Chronic Toxicity Criteria found in Hanford groundwaters will be categorized in accordance with Health Advisories (preliminary risk levels) listed in the EPA's IRIS Data Base.
- 8) Due to the presence of rust and particulates from aging well casings and pumps, filtered metals results will be used in the designation process.
- 9) All parties shall supply a technical representative to review analytical results on a well by well basis to assure that the criteria are applied in a consistent manner across all monitoring networks.
- 10) Treatment Technologies for purge water will not be considered until after the initial designation process is complete. Treatment capabilities will be used to refine the final set of hazardous and radioactive constituents for which treatment processes are applicable.
- 11) A data package containing all cleared and/or published groundwater analytical results obtained since January 1, 1987 will be used as the basis for the designation process. This data will be supplied to each technical representative prior to the first meeting of the purge water designation working group.

With agreement on these ground rules and background levels, a technical working group could convene to designate wells in the various purge water categories. Designation would likely take on the order of 2 to 4 days, but would result in a sound basis for treatment process design as well as storage capacity. A summary of the expected results follows.

### Results

This effort should result in the designation of all wells into one of four categories. Either Levels A, B, C, as described in the proposed WDOE criteria, or further investigation required will be the designation for each well in the various monitoring networks. This designation process will help us focus on appropriate treatment technologies and define the concentration ranges under which those technologies must be effective. Since it is clear that the Best Available Technologies may not be capable of treating certain substances (i.e., tritium, nitrate, and others), it will allow us to focus in on those substances that can be effectively removed by available treatment methods and potentially identify alternate treatment criteria for substances not effectively removed by available technologies.

Further investigation required wells will then be dealt with by geographic location and/or analytical screening methods. Wells in far removed geographic locations may be placed into categories based on neighboring wells while wells within waste management areas may require limited screening based on the previously identified substances in adjacent wells. The additional screening process will take time and money to complete. The schedule and budget for this screening should be left to DOE with the understanding that certain wells in waste management areas will be subject to collection, storage, and treatment until such time as their designation is changed, based on available data.

This process, if accepted, will provide a basis for categorization of all future wells in a consistent manner.

This process will not produce a legally binding solution, but it could move the parties closer to a final solution. At the end of the initial designation process, a schedule would be set up to address the remaining issues.

### Candidate Background Wells

A preliminary review of existing groundwater data has been performed to identify wells that are unaffected by Hanford Operations. These well waters must also have been analyzed for the substances listed in Table 1. Candidate background wells and the dates sampled between January 1, 1987, and January 1, 1989, are listed in Table 2. Candidate background well locations are shown on Figure 1.

Based on an initial review of the published data, these wells appear to be unaffected by Hanford Operations. Resolution of the background groundwater quality issue is required for all operable unit investigations as well as purge water designation. These ten wells and thirty-three sampling events provide a broad cross-section of wells in outlying locations across the Hanford Site.

Transmittal of complete data sets for each of the sampling events listed in Table 2 will be required prior to agreement on Hanford background groundwater quality. In addition, well construction detail for each of these candidate background wells is also required.

TABLE 2 - Candidate Background Wells and Dates Sampled Between January 1, 1987, and January 1, 1989.

<u>WELL#</u>	<u>DATES SAMPLED</u>	<u>WELL#</u>	<u>DATES SAMPLED</u>
6-S31-1	Jun. 22 1987 Aug. 24 1987 Aug. 4 1988	6-29-78	Nov. 15 1987 Jan. 6 1988 Apr. 28 1988 Aug. 25 1988
6-S8-19	Jun. 9 1987 Aug. 28 1987	6-32-77	Nov. 15 1987 Jan. 4 1988
6-S3-25	Jan. 8 1987 Sep. 15 1987		May 11 1988 Aug. 24 1988
6-14-38	Jan. 5 1988 Apr. 28 1988 Aug. 23 1988	6-51-75	Mar. 25 1987 Jun. 22 1987 Sep. 8 1987
6-19-43	Dec. 28 1987 Feb. 3 1988 May 22 1988 Sep. 16 1988	6-55-76	Dec. 2 1987 Feb. 12 1988 Jun. 6 1988 Nov. 21 1988
		6-67-86	Dec. 22 1987 Feb. 23 1988 Jun. 22 1988 Aug. 30 1988

TOTALS    10 Wells  
               33 Sampling Events

TABLE 1 - Constituents Requiring Background Determination

Substance/Parameter

Alkalinity  
Aluminum  
Arsenic  
Barium  
Beryllium  
Cadmium  
Calcium  
Chloride  
Chromium  
Copper  
Fluoride  
Iron  
Lead  
Magnesium  
Manganese  
Mercury

Substance/Parameter

Nickel  
Nitrate  
Phosphate  
Potassium  
Selenium  
Silver  
Sodium  
Strontium  
Sulfate  
Vanadium  
Zinc  
T O C  
pH  
Alpha  
Beta  
Tritium

Figure 1. Candidate Background Wells 0

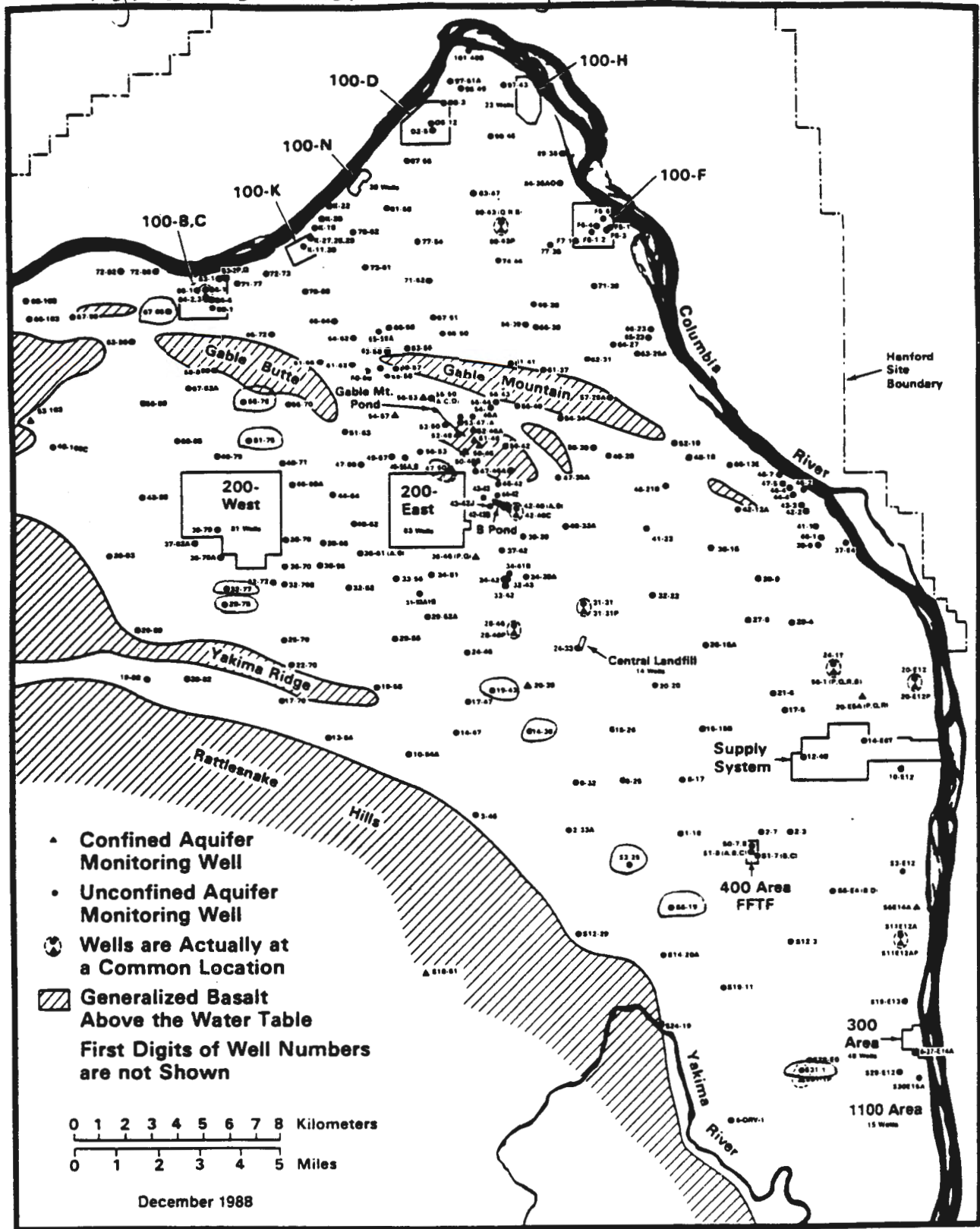


FIGURE 5.1. Hanford Site Monitoring Well Locations (Jagush and Boyce 1999)



## DISTRIBUTION COVERSHEET

<b>Author</b> D. Sherwood, EPA  cc:JL Waite  <b>Subject</b> Purge Water Disposal Issue	<b>Addressee</b> M. Thompson, DOE/RL	<b>Correspondence No.</b> Incoming Letter # 8904732
---	---	--

11/14/89JLW:dh		Internal Distribution			
Approval	Date	Name	Location	w/att	
		Correspondence Control	A3-01	X	
		L. C. Brown	H4-51	X	
		C. DeFigh-Price	H4-52	X	
		K. L. Hoewing	B3-06	X	
		R. E. Lerch (Assignee)	H4-51	X	
		H. E. McGuire	H4-51	X	
		R. C. Nichols	B3-02	X	
		J. E. Nolan	B3-01		
		L. L. Powers	H4-51	X	
		D. E. Simpson	B3-51	X	
		D. A. Turner	R1-10	X	
		J. L. Waite	H4-52	X	
		S. A. Wiegman	H4-50	X	
		R. D. Wojtasek	H4-17	X	
		TPA Integr. & Control	H4-52	X	
		EDMC	H4-51	X	
		AR: N/A			
		M. R. Adams	L4-92	X	
		K. R. Fecht	H4-56	X	
		R. R. Thompson	R1-10	X	

