



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

December 24, 1997

DRP-8J

Mr. Paul Freed  
Environmental Protection Code 095  
Naval Surface Warfare Center  
300 Highway 361  
Crane, Indiana

RE: Ground Water Monitoring Plan  
Subpart X Application  
Naval Surface Warfare Center  
Crane, Indiana

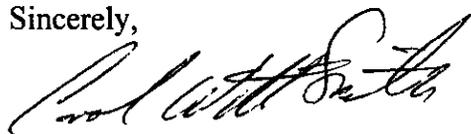
Dear Mr. Freed:

The United States Environmental Protection Agency (U.S. EPA) has reviewed the Draft RCRA Ground Water Monitoring Plan for the Ammunition Burning Ground (ABG), Old Rifle Range (ORR) and the Demolition Range (DEMO), dated November 1997. We have found the document to be very deficient and needing a great deal of work to bring the document into the permit application. The document appears to be a bare outline to address the regulations, without any substantial data summarized to support the ground water program for the regulated units. Attached are the comments that the U.S. EPA could put together based on our review. We would suggest comparing this document to a unit already permitted for ground water monitoring in the State of Indiana. Even though much detail on how to sample and test the water is to be incorporated in the Field Sampling Plan and the Quality Assurance Plan, this plan must support the justifications for the program itself, historical delineation of the problems, and proposals for what the actual program will consist of for how long.

We wish to discuss further with you how to modify this plan and have a document suitable for the permit application. We had thought all our previous meetings on objectives and meeting the regulations and content of the application were sufficient, but somehow that failed. We would like to discuss this thoroughly and compare another application prior to the major revisions being made. This plan is critical to making a permitting decision prior to mid-February. If modifications can not be made that soon to our satisfaction, your permit decision will be delayed significantly into summer or fall.

These comments do not reflect the review by the State of Indiana geologist which also must be satisfied for the ABG area. If you have any questions regarding this mater, please contact me at (312) 886-6146.

Sincerely,



Carol Witt-Smith  
Corrective Action Expert  
WMB, IL/IN/MI Section

cc: Tom Linson, IDEM  
Michelle Timmerman, IDEM  
Ralph Basinski, B&R  
Jerry Kujawa, ORC  
Al Debus, WMB  
Dave Payne, WPTD  
→ Jim Hunsicker, NSWC  
Adrienne Wilson, SOUTHDIV

**NOTICE OF DEFICIENCY**  
**Draft Ground Water Monitoring Plan for ABG, ORR, & Demo Range**  
**Naval Surface Warfare Center**  
**Crane, Indiana**

**A. General Comments**

1. There are references to 40 CFR 270, but not specifically to 40 CFR 264 compliance throughout the document.
2. There is not a good flow of the true objectives, we are monitoring ABG for the purposes of Corrective Action 3004(u) and (v), closure of the surface impoundments and any State waste pile post-closure requirements, and RCRA permitting of the Subpart X units. A plume exists therefore both Compliance and Corrective Action monitoring are triggered.

For ORR monitoring is both for Corrective Action 3004(u) and RCRA permitting of the Subpart X unit. A plume exists therefore both Compliance and Corrective Action monitoring are triggered.

For Demo although there was some contamination shown in the active range area, no contamination was found at the Point of Compliance therefore Detection Monitoring is triggered.

3. The whole document is like an outline and not a plan. It references various other studies but does not adequately summarize those results in decision making for permitting. This must be a stand alone document that coordinates with the QAP and Field Sampling Plan. The plan is grossly deficient in being a true RCRA permit application plan. The plan also has the same problems carried over from the QAP and the Field Sampling Plan that are wrong.

**B. Subpart F requirements**

1. There is no explanation on how 264.91(a)(1), (2), and (3) are objectives to meet for this project for ABG and ORR.
2. The Regional Administrator's decision was already given to the Navy that both the Compliance and Corrective Action programs of Subpart F would apply to ABG and ORR, yet Corrective Action is not addressed. Also, Karst monitoring, phytoremediation, and Natural Attenuation are not addressed. There is also a lack of our previous meeting resolutions on frequency and the affects of the composting program on the monitoring of ABG.

3. There is a lack of connection between the monitoring results and how they will have to meet the ground water protection standard established in the RCRA permit at the Point of Compliance. There is a “down gradient” discussion but it must be clear towards meeting the regulatory requirement.
4. At ABG, TCE and its degradation products are required to be monitored quarterly, not just annually in the Appendix IX sampling.
5. There is no section discussing how the Appendix VIII group was justified down to monitoring only the Appendix IX list. This must be included to make sure that the Navy does not have an Appendix VIII parameter that should be kept in the program. Also, if the Navy proposes after one round of Appendix IX monitoring to petition to reduce that list, they must reference and comply with the requirements of 40 CFR 264.93(b). This should be explained in the plan.
6. There is no discussion how the objective of all the concentration limits will be met (MCLs, background and ACLs). An ACL would apply at the ABG Springs since surface water quality needs to be met.
7. The MCL parameters of 2,4,5-TP Silvex and 2,4-D are missing for the plan. All MCL parameters have to be monitored.
8. 40 CFR 264.95, the Point of Compliance which the U.S. EPA designated is not described for each unit.
9. The use of “uppermost aquifer” is not consistent with the Agency definition. The first two aquifers described are the uppermost aquifer because they are clearly interconnected.
10. The 264.96 compliance period is not referenced. It will be the active life of the unit plus the closure and any post-closure periods.
11. The objectives should relate to 40 CFR 264.97. The background well samples must represent the quality of background water that has not been affected by leakage from the regulated unit. The Point of Compliance well samples must represent the quality of ground water passing the point of compliance. The POC wells must allow for the detection of contamination when hazardous waste or hazardous constituents have migrated from the waste management area to the uppermost aquifer.
12. Section 6 should reference compliance with 40 CFR 264.97(c).
13. Section 7 should reference compliance with 40 CFR 264.97(d) and (e) and then cross reference the approved QAP and Field Sampling Plans as they are finalized with this plan.

14. In all the plans, 40 CFR 264.97(f) must be met, determining the ground water surface elevation each time ground water is sampled.
15. It is not defined in any documents what the established background levels are. Are you planning on re-establishing it? Comply with 40 CFR 264.97(g).
16. Compliance with Record Keeping of 40 CFR 264.97(j) is not included in this plan. In the Field Sampling Plan it is incorporated but records are not being held in the location required.
17. For the Demo Range, it must be clear that 40 CFR 264.98 is being met.
  - a. The Point of Compliance must be described and mapped.
  - b. Parameters justified.
  - c. Background established.
  - d. It is not clear if 40 CFR 264.98(d) was included in the Field Sampling Plan and the QAP. It is not specifically identified as being required in the GWMP.
  - e. The ground water flow rate and direction in the uppermost aquifer must be established annually. Explain exactly how this will be done. Not just a water level reading taken. Maps, explanations, etc. must be defined.
  - f. The plan should propose the time period between samples results received and statistical evaluation, pursuant to 40 CFR 264.98(f).
  - g. The plan does not explain how resampling and notifications will be performed after a statistically significant increase is determined, pursuant to 40 CFR 264.98(g) and (h).
18. For ABG and ORR, a compliance program following 40 CFR 264.99 must be established.
  - a. Background must be established.
  - b. Compliance with MCLs must be defined.
  - c. An explanation of meeting surface water monitoring standards at the Springs of ABG must be defined.
  - d. All hazardous constituents and reaction and degradation products must be listed for each unit. (TCE is not included at ABG quarterly)

- e. The ground water flow rate and direction in the uppermost aquifer must be established annually. Explain exactly how this will be done. Not just a water level reading taken. Maps, explanations, etc. must be defined.
  - f. The plan should propose the time period between samples results received and statistical evaluation, pursuant to 40 CFR 264.99(f).
  - g. The plan does not explain how resampling and notifications will be performed after a statistically significant increase is determined, pursuant to 40 CFR 264.99(g), (h), (I) and (j).
  - h. The Point of Compliance must be defined and mapped as agreed upon.
  - I. It must be clear which wells will have the statistics applied to.
  - j. The compliance period of the life of the unit, closure period and post-closure period should be incorporated into scheduling.
19. Since the plumes at ORR and ABG are from the regulated unit activities, 40 CFR 264.100 must be addressed, NOT proposed potentially for the future.
- a. The Corrective Action program must describe how hazardous constituents will be prevented from exceeding their respective concentration limits at the compliance point by removing the hazardous waste constituents or treating them in place. The application is supposed to specify the specific measures that will be taken. This should include prevention of the plume impacting surface water at ORR, and the natural attenuation and phytoremediation at ABG at the springs. Or, other alternatives.
  - b. A proposal for schedules and plans to implement the corrective action program should be included in the application.
  - c. The objectives and program must monitor how the corrective action implementation will be effective. And, meet 40 CFR 264.100(e), removing or treating the plume between the POC and the boundary and anything that migrated off-site.
  - d. A reasonable time period of the corrective action implementation must be proposed.
  - e. The corrective action program must continue until the ground water protection standard is met at the POC again for three-consecutive years.
  - f. Record keeping must be described as in 40 CFR 264.100 (g).

20. The requirements of 40 CFR 264.101 Corrective Action should be reflected in the documents, since these are being done simultaneously with permitting.

C. Document Specific Comments

1. The Cover sign-off page should include a Navy representative and IDEM for the ABG issues.
2. Keep “ground water” two words throughout the document.
3. Add “approved” prior to any cross-references to the Field Sampling Plan or the QAP, since it is only the final approved plans which can be used, not drafts.
4. Section 1.0 should describe the Natural Attenuation request since it is similar to the “No migration” waiver. Otherwise a Technical Impracticability Waiver should be requested for the karst situation at ABG.
5. Section 2.0
  - a. The whole Interim Status history should be described. Expand the description better. The whole context of regulatory and corrective action and closure should be explained better.
  - b. The ground water monitoring for ABG began earlier when the surface impoundments became regulated. Check back to 1980. Appendix IX was also done at ABG.
  - c. RCRA Facilities Investigation should be RCRA Facility Investigation. NSWC is one facility with several investigations.
  - d. Explain what data was valid and what wasn't. See the RUST work.
  - e. All the wells for each unit should be described in Section 2.1.
  - f. The document needs to stand alone and not expect the reviewer or the public to track down the other documents. A good summary of the data needs to be incorporated in this document.
  - g. IN Section 2.4, Springs need to be added, and Drinking Water and Surface Water standards need to be discussed for comparing to.
6. Page 3-3, Section 3.1.2

Weren't the latitudes and longitudes taken of the wells? They should have been therefore the wells are tied to topography.

7. Page 3-5, Figure 3-3, and Page 3-11, Figure 3-5

Is the boundary of the unit correct? Going beyond the road which was the designated POC.

8. The actual boundaries of the units need to be shown on the maps. This is critical for permitting.

9. Page 3-12, Section 3.2.2

Include a description of Johnson Hollow being intermittent, and how Little Sulphur Creek is a sinking stream. A karst description would also help.

10. Page 3-13, Section 3.3.1.1

You keep referring to other documents and the descriptions need to be here.

11. Page 3-27, Section 3.3.2.1

Define the uppermost aquifer according to U.S. EPA definitions.

12. Page 3-36

Add a karst description.

13. Page 3-43

Add a description about the seeps that exist and when they do.

14. Page 3-45

Add to the hydraulic characteristics that the area is technically defined as a wetland based on the saturated perched water, plants, soil type, etc.

15. Page 4-1

Are the 1993 application maps still going to be used?

16. Section 5.0

- a. This whole section needs improvement. A true plume description is not included, just a rough outline is with no detail. Maps for each unit showing concentrations and rate and extent must be included. A summary of historical delineation should be provided here and information included in an Appendix.

- b. The definition of uppermost aquifer needs modification.
  - c. ABG sampling should have started earlier.
  - d. In Section 5.1.1, describe the metal and explosive contamination also. Relate contamination to sources of the regulated units. Are you sure TCE is primarily in the SW when the solvent burn pits were in the SE.
  - e. In Section 5.1.2, the aquifer is “interconnected” versus “infiltrated.” Explain how water flows through the formation and through the fractures. Refer to past pump test evaluations and the karst descriptions. Add a description about the sinking stream.
  - f. Include maps of the plume and concentrations and constituents. The spring data should also relate to drinking water and surface water - standards. Put the values of the highest concentrations that trigger non-compliance with background or MCLs or other standards.
  - g. Low flow karst monitoring is also important.
  - h. Instead of “relatively low concentrations” put in values.
  - i. What happened to our discussions about the TCE may have been from well integrity problems and investigating the integrity of the deeper wells. Also, aren’t we only monitoring 1 or 2 wells not all Beaver Bend ones.
  - j. Explain Section 5.2. Are you talking about contamination shown when wells were on the range versus at the POC?
  - k. Define the ORR plume.
17. Section 6.0
- a. Explain how permitting and closure are also a factor at these units.
  - b. Refer to the well logs in the FSP.
  - c. Explain why longer screens were allowed.
  - d. In Section 6.2.1, “summarized” should be “summarizes.”
18. Section 7.0
- a. Add reference that certain down gradient wells are POC wells.

- b. For Demo, delete the “has been” affected. You are trying to establish if there is a plume beyond the unit boundary. Otherwise the Demo Range must have a compliance program.
- c. Flow Rate and Direction must be determined annually. Water level readings must be taken at the 2nd and 4th quarters, in Table 7-2.
- d. All MCL parameters must be included semi-annually.
- e. Check that the tables and the QAP and FSP all agree with each other. The objectives should be expanded to incorporate regulatory type objectives explained earlier.

19. Section 8.0

- a. Compliance program is required not only for statistically significant but constituents above Drinking Water standards, etc.
- b. Delete the last two sentences of Section 8.0, par. 1.
- c. In Table 8-1, the compliance wells are beyond the POC.
- d. The compliance wells have another objective of monitoring the plume.
- e. There needs to be a karst and natural attenuation description with objectives. There also needs to be a description of why springs are being monitored.
- f. In Table 8-3, TCE and degradation products are quarterly and annually. Flow rate and direction is annual. Water level readings are quarterly. Check to make sure this table and the QAP and FSP are all matching. The Natural Attenuation parameters are missing.
- g. What about our discussion about quarterly monitoring for three years or until composting completed at ABG, and then a possible reduction?
- h. 2,4,5-TP Silvex and 2,4D appear to be missing.
- i. We thought ORR was quarterly, not semi-annually. Flow rate and direction is annual. Water levels are quarterly.

20. Page 9-2

Springs can be affected by seasonal fluctuations. Karst needs explaining.

21. What happens after a statistically significant increase is found?

22. Section 10.0

ORR and ABG need a program described. ABG should discuss source controls, phytoremediation potential, guaranteeing SW quality, natural attenuation or technical Impractability demonstrations, etc. See the regulations.

23. Section 11.0

This section should refer to the actual operating permit issued, and should include plans for the OJT to be submitted with a schedule.