

**2995**

**OEPA COMMENTS ON THE RI/FS WORK PLAN**

**05/07/87**

**OEPA/DOE-FO  
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LETTER**



State of Ohio Environmental Protection Agency

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May 7, 1987

Mr. Rick Collier  
Environmental Engineer  
U.S. DOE/FMPC  
Post Office Box 398705  
Cincinnati, Ohio 45239

Dear Mr. Collier:

Enclosed please find a copy of OEPA comments on the RI/FS workplan.

These comments are mainly those of Rich Bendula (District Geologist) and Mike Starkey (Group Leader in Unregulated Sites).

If you have any questions regarding these comments, please contact me.

Sincerely,

Graham E. Mitchell  
Unit Supervisor  
Division of Water Quality Monitoring  
and Assessment

GEM:lmr

Bob - FYI ; I  
understand USEPA-5  
2995 comments (which are in  
the mail) incorporate  
these comments  
from OEPA.  
Rick Collier  
5-11-87

MAY 11 1987

Date \_\_\_\_\_  
To \_\_\_\_\_  
From \_\_\_\_\_  
Library \_\_\_\_\_

COMMENTS ON WORK PLAN VOLUME

1. Page 1-1, first paragraph, line 13: Typo - Greater Miami River should be Great Miami River.
2. Page 1-3, Section 1.3, second paragraph, lines 7 and 8: Sentence should read ...environmental impacts associated...at the FMPC are thoroughly and adequately investigated....  
  
Page 1-3, Section 1.3, second paragraph, last line: SARA stands for Superfund Amendments and Reauthorization Act of 1986.
3. Page 1-3, second bullet: Change "chemical components in air, soils,..." to chemical contaminants or pollutants in air, soils,....
4. Page 1-4, third bullet: Change "most environmentally and economically acceptable alternatives in the FS" to most environmentally sound and cost-effective alternatives in the FS.
5. Page 1-4, Section 1.4, second paragraph: FMPC does not recommend remedial action alternative(s). This is left for USEPA to do based upon the alternative(s) evaluated in the FS and in consultation and concurrence with Ohio EPA.
6. Page 2-5, Section 2.1.3.1: The specific values for DOE's and the U.S. Public Health Service's guidelines for maximum uranium in drinking water should be specified. USEPA's recommended levels should also be given. Consideration must be given that the DOE and USPHS guidelines are probably antiquated and are no longer appropriate as guidelines.
7. Page 2-5, Section 2.1.3.3: No mention is made of the waste pits as sources of environmental concern in terms of their leaking and contaminating groundwater. This is certainly a concern of Ohio EPA.
8. Page 2-8, Section 2.2.1, first paragraph: Reference to pit #5 as having been operated until 1983 is misleading since it is currently in use for wastewater treatment.
9. Page 2-10, Section 2.2.4: Locations of fly ash piles and Southfield area should be shown on a site map. Also, the dates of operation of the Southfield area should be provided.
10. Page 2-11, Section 2.2.5, first paragraph: The first sentence does not make any sense. The other metals that are known to be present in the K-65 silos should be specified.
11. Page 2-13, Section 2.3.4: The last sentence does not make sense? \* In what will the various sumps and other types of subfloor reservoirs be included?

12. Page 2-25, Section 2.5.5, first paragraph: What are the private wells located to the south of the FMPC used for, if they are not used for potable water? Are they still accessible as a potable water source?
13. Page 2-25, Section 2.6.3, Ingestion: Any risk assessment must also consider ingestion of sediments from children playing in either Paddy's Run or the Great Miami River, as well as ingestion of contaminated ground water from existing or future wells.
14. Page 3-1, Section 3.1, first paragraph: How can one predetermine the most plausible remedial action alternatives for a site without conducting a complete RI in order to determine the nature and extent of contamination? This is counter to the intent of performing an RI under CERCLA/SARA and allows a PRP to ignore or downplay areas of potential environmental and public health concerns. The FMPC work plan is supposed to only identify potential remedial technologies applicable to the site and then assess data needs for the RI based on these technologies.
15. Page 3-1, Section 3.1, third paragraph: The analysis of remedial alternatives in an FS is concerned with more than just cost-effectiveness.
16. Page 3-2, Figure 3.1: An investigation of contaminant effects must be conducted on aquatic organisms in Paddy's Run and the Great Miami River.
17. Page 3-4, bullet item at top of page: The no action alternative serves as a baseline for environmental and public health evaluation, not for determination of cost-effectiveness. It must be understood that cost-effectiveness is secondary to public health and environmental considerations.
18. Figure 3.2: What do the small speck-like dots in some of the columns mean?
19. Figure 3.3: See comment #18 above.
20. Page 3-20, Section 3.4.1.3: This section appears to summarily dismiss groundwater treatment at the site without any sound justification. It is a well-documented fact that FMPC has contaminated groundwater, and some sort of groundwater extraction and treatment will undoubtedly be necessary. Cleanup standards as provided in section 121 of SARA would have to be met, including State applicable, or relevant, and appropriate requirements (ARARs). The second paragraph expresses concern that regional sources of groundwater pollutants would likely reduce the effectiveness of the pump and treat alternative. No evidence or data is given in the work plan to substantiate this. What regional sources, if any, could have an impact on this alternative? FMPC is fairly well isolated and it is doubtful this would occur. Even p. 2-17 of the Description of Current Situation stated that on-site production wells were not believed by Spieker and Norris (in their 1962 groundwater study of the area) to be influencing regional groundwater movement. The feasibility of groundwater pumping and treatment should not be determined in the RI/FS work plan, but instead should be determined in a properly conducted FS.

21. Page 3-26, Figure 3.4: See comment #18 above.
22. Page 3-29, Figure 3.5: See comment #18 above.
23. Page 3-32, Figure 3.6: See comment #18 above.
24. Section 3, general comment: Many of the discussions on potential remedial actions given in this section mention cost-effectiveness. It is inappropriate to be discussing cost-effectiveness until the remedial alternative evaluation stage of the FS.
25. Page 4-5, last paragraph: What is meant by a "reference level of 35 pCi/gram" for uranium concentration in soils? Although the Federal Register notice in which this value appears is given in the text, the document is not readily available. Therefore, an explanation of the basis and appropriateness for using 35 pCi/gram as a "reference level" should be given here.
26. Figure 4.2: Although page 4-8 states that all waste storage areas will be sampled in order to characterize their contents, Figure 4-2 shows that no samples will be obtained from pit #6. Pit #6 must be sampled. In addition, sediments in the clear well should also be sampled and analyzed for HSL and radiological compounds.
27. Page 4-8: The first full sentence at the top of the page does not make sense.
28. Page 4-14, second full paragraph: The borings that are drilled around the waste pits must be back-filled with bentonite-cement grout.
29. Page 4-18, Section 4.2.1.6: The second paragraph in this section is out of place. It should be moved to Section 4.2.1.5 under Ground Water - Sampling Locations and Frequency.
30. Page 4-21, fourth bullet item: Miami River should be Great Miami River.
31. Page 4-21, Section 4.2.1.8, Methodology for Air Sampling: The name of the document EPA-600/4-77-027a should be provided. This work plan, once approved, will be a public document and the public will not know what EPA document is being referred to here.
32. Page 4-24: Fish and benthic organisms must be collected at points as close as possible to plant discharges into receiving waters (i.e., Paddy's Run and Great Miami River).
33. Pages 4-44 through 4-47, Section 4.4.4: An Endangerment Assessment (EA) must be conducted at the FMPC that follows and is consistent with CERCLA/SARA, the USEPA document "The Endangerment Assessment Handbook" (August 1985), and the USEPA guidance document titled "Toxicology Handbook - Principles Related to Hazardous Waste Site Investigations" (August 1985). The purpose of an EA is to address the potential human health and environmental effects of a site under the no action alternative.

33. (continued) The heading "Public Health Risk Assessment" should be changed to "Endangerment Assessment." Under CERCLA/SARA and USEPA guidance, an EA consists of the following four elements:
1. Identification of Contaminants of Concern
  2. Toxicity Assessment
  3. Exposure Assessment
  4. Risk Characterization
34. Section 4.4.4.1: "Hazard Identification" should be renamed "Contaminant Identification" to correspond with the above-mentioned guidance. The third bullet item in this section should not be included here, but instead should be included and discussed in the toxicity assessment portion of the EA. Contaminants of concern are usually selected on the basis of their intrinsic toxicological properties, because they are present in large quantities, or because of potentially critical exposure routes (i.e., being released into a drinking water supply).
35. Section 4.4.4.2: "Dose-Response Relationships" should be renamed Toxicity Assessment to be consistent with USEPA endangerment assessment guidance. A toxicity assessment is a two-step process consisting of a toxicological evaluation and a dose-response assessment. The toxicological evaluation is a qualitative evaluation of data to determine the nature and severity of actual or potential health and environmental hazards associated with exposure to a chemical or radiological substance. The evaluation also involves a critical evaluation and interpretation of toxicity data from epidemiological, clinical, animal, and in vitro studies resulting in a toxicity profile for each contaminant of concern.
- The dose-response assessment for noncarcinogenic chemicals utilizes quantitative indices for toxicity such as NOELs, NOAELs, LC<sub>50</sub>, etc. that are identified during the toxicological evaluation to determine "acceptable" exposure levels for contaminants of concern which are not expected to cause adverse health effects. The "acceptable levels" can be expressed as acceptable daily intakes (ADIs), ambient air standards, water quality criteria, etc.
- The dose-response assessment for carcinogenic chemicals gives estimates of the probability that a specific adverse effect will occur.
36. Section 4.4.4.4: Risk characterization should integrate all of the information that is developed in the exposure and toxicity assessments to yield a complete characterization of all types of potential or actual risks at the FMPC including carcinogenic risks, noncarcinogenic risks, environmental risks, and risks to public welfare. Risks to public welfare include adverse effects on property values, future land uses, recreational and commercial activities, public perception and opinion, quality of life, etc.

37. Page 4-47, Section 4.4.4.5: The activities described in this section which are modeled after the Statement of Work (SOW) are flawed. Potential remedial actions are not screened or evaluated in the remedial investigation. The whole purpose for analyzing the site investigation results in relation to potential remedial technologies applicable to the site is to determine the adequacy of data quality and quantity to support the feasibility study and to identify any additional data needs. The screening and elimination of potential remedial actions is a task to be performed in the feasibility study.
38. Page 4-48, Section 4.4.4.6: The first paragraph states that the CLP list constituents will be compared to the recommended limits in Table 1 of 40 CFR 264.94 (note correct citation). Table 1 is a partial list of the maximum contaminant levels permitted by the National Primary Drinking Water Regulations in 40 CFR 141 and as such are more than just recommended limits. This entire section should be deleted because contaminants of concern should be identified and discussed as part of the endangerment assessment and cleanup standards for contaminants both on and off-site must be those specified in Section 121 of SARA and must include state ARARs. Those RCRA issues discussed in this section and in the SOW may be part of federal ARARs for FMPC and should be addressed in the FS.
39. Page 5-1, Section 5.1, first paragraph: A citation of the Superfund Amendments and Reauthorization Act of 1986 (SARA) should be provided.
40. Page 5-4, Section 53, second paragraph: Technologies must include both on-site and off-site remedies, depending on site problems.
41. Page 5-5, Section 5.4: Under SARA, treatment alternatives for source control actions must be developed (where feasible) ranging from an alternative that would eliminate the need for long-term management (including monitoring) at the site, to an alternative using, as the major element, treatment that would reduce the toxicity, mobility, or volume of site waste. Further, an alternative that involves waste containment with little or no treatment but provides protection of human health and the environment primarily by preventing potential exposure or reducing the mobility of the waste must be developed.
42. Page 5-5, sixth bullet item: These alternatives must closely approach the level of protection provided by any applicable or relevant standards.
43. Page 5-6, Section 5.5: Cost is to be considered last when initially screening alternatives. Cost is only to be used to discriminate among alternatives which provide similar results. Cost may be used to discriminate among treatment alternatives or nontreatment alternatives but not between treatment and nontreatment alternatives.

With respect to effectiveness, and in addition to providing protection to human health, welfare, and the environment, alternatives must be evaluated as to whether they attain federal and state ARARs or other criteria,

advisories, or guidance. Alternatives must also be evaluated for their ability to significantly and permanently reduce toxicity, mobility, or volume of hazardous constituents.

Alternatives that rely on unproven or innovative technologies should be carried through the initial screening when there is reasonable belief that the technology offers potential for better treatment performance or implementability; will have fewer or lesser adverse impacts than other available approaches; or will have lower costs for similar levels of performance than demonstrated treatment technologies.

44. Page 5-7, Section 5.6: Detailed analysis of alternatives must be consistent with SARA Section 121. The last sentence in the first paragraph should read: Alternative analysis will include....

The heading under Task 13a should be: Technical Analysis. Also, the first sentence before the bullet items should read: Technical Analysis.

45. Page 5-10, Section 5.7: The appropriate remedy for the FMPC site must be selected from those alternatives that:
1. are protective of human health and the environment.
  2. except as provided under Section 121(d)(4) of SARA, attain applicable or relevant and appropriate federal and state public health and environmental requirements (ARARs) that have been identified by USEPA and Ohio EPA.
  3. utilize treatment technologies and permanent solutions to the maximum extent practicable as determined by technological feasibility, availability, and cost-effectiveness.
  4. are cost-effective, accomplishing a level of protection that cannot be achieved by less-costly methods.

#### COMMENTS ON DESCRIPTION OF CURRENT SITUATION VOLUME

1. Page 3-69, Section 3.8.2.2: Discussion of the 41 site monitoring wells is meaningless without their locations being identified on a site map and included in this section. It is not clear which "off-site" and "on-site" wells make up the 41-well monitoring system.
2. Page 3-70 and 3-71, Table 3.17: Perchloroethylene (#18 on list "D") and tetrachloroethylene (#44 on list "D") are the same compound.
3. Page 3-72, Table 3.18: Sampling points T1S, 1D are not shown in Figure 3.8. Why are the results of the remaining wells shown in Figure 3.8 not listed in Table 3.18? Footnote "b" does not make any sense.
4. Tables 3.18 and 3.19 should provide uranium concentration equivalents between pCi/l and µg/l.

5. Page 3-74, second bullet item: The first sentence uses poor grammar and its meaning is unclear. In the fourth bullet item, what is meant by the "TP" designation after the well numbers?
6. Page 3-81: Footnote "b" should indicate what calendar period constitutes a fiscal year.
7. Page 3-93, Section 3.8.4.1, second paragraph: What is a quadrat?
8. Page 3-93, Section 3.8.4.1, first, third, and fifth paragraphs: References to Figure 2.11 should be Figure 2.12.
9. Page 3-93, Section 3.8.4.2, last paragraph: Reference to Figure 2.9 should be Figure 2.12.
10. Tables 3.28, 3.29, 3.30, 3.31, 3.32, and 3.34: What is meant by "Bq/g" in the footnotes in these tables?
11. Page 4-8, Section 4.2.3.4, second paragraph: It should be stated what the contaminated private wells south of the FMPC are used for, if they are not currently used for a potable water supply and also whether these contaminated wells are still accessible by the public for potable or other use.
12. Page 4-9, Section 4.2.4.3: The ingestion mode must consider potential health impacts as a result of ingestion of surface soils or stream sediments by children playing in Paddy's Run or the Great Miami River.
13. Page 4-14, Section 4.3.3, first paragraph: The text should provide the basis for which 35 pCi/g is used by FMPC as a reference point for "acceptance of decontaminated areas."

#### COMMENTS ON SAMPLING PLAN VOLUME

1. Page I.I-1, Preliminary Evaluation, first paragraph: See concerns in comment #14 of the Work Plan Volume.
2. Page I.I-11, Section I.1.3, second paragraph: Explain what is meant by "Type IV" and "Type V" data.
3. Page I.1-1, Section 1.1, fourth paragraph: A ppm equivalent, if any exists, should be given for the 35 pCi/g used as a reference level for soils.
4. Page I.1-1, Section 1.1, last two paragraphs: Applicable pages of 40 and 46 CFR should be reproduced and included for reference in this work plan.
5. Page I.2-5, Section 2.4, second paragraph: Why will two different methods be used to obtain soil samples when the only difference in the soil samples appears to be that some will be 6-inch cores and some will be 2-inch cores?

6. Figures 2.1 and 2.2: Areas where 6-inch deep core samples will be obtained should be coincident with the areas of surface soil sampling using the fine grid system of Figure 2.1. Likewise, areas where 2-inch core samples are to be taken should be in those areas within the coarse grid system as identified in Figure 2.1.
7. Page I.3-1, Section 3.1: A sixth bullet item should be added that states that groundwater sampling is also being conducted in order to determine the extent (both vertically and horizontally) of contamination from FMPC.
8. Figures 3.1, 3.2, 3.3, and 3.4: Additional monitoring wells should be located immediately downgradient of waste pits #1, 2, 3, 5, and 6. Additional intermediate and/or shallow monitoring wells should also be located downgradient of the lime sludge ponds, fly ash piles 1 and 2, and the sewage treatment plant. Well 131 is not labeled on Figure 3.2.
9. Page I.3-8, Section 3.2.1, first paragraph: The proposed wells shown in Figure 3.2 do not fulfill the objective as stated in this paragraph - that it is "necessary to place a grouping of shallow wells immediately around the waste storage units...."
10. Page I.3-9, Section 3.2.2, first paragraph: The proposed shallow wells given in Figure 3.2 will only "isolate" groundwater contamination effects from pit #4, but not from pits #1, 2, 3, 5, or 6. Therefore, the objective of these wells as stated in this paragraph will not be met.
11. Page I.3-16, Section 3.3.3, first paragraph: The intermediate wells must extend at least five (5) feet above the water table to allow for seasonal fluctuations.
12. Page I.3-17, first paragraph: Monitoring well screens should be no longer than ten (10) feet.
13. Figure 4.2: Many of the proposed boring locations in this figure would make ideal locations for additional monitoring wells and should, therefore, be used as such.
14. Page I.4-9, Section 4.7.4: At least two samples per borehole which meet one or both of the criteria specified in this section should be subjected to a full HSL analysis. This section also appears to be contradictory to the last paragraph of Section 4.2.1.4 on page 4-14 of the Work Plan which states that a composite sample from each borehole from the new till wells will be tested for HSL organics and inorganics.
15. Page I.5-5, first full paragraph: If soil borings or surface soil samples on-site, especially around the waste pits, show the presence of organic compounds, then sediments from Paddy's Run and the Great Miami River will have to be resampled and analyzed for the complete list of CLP organics. There also seems to be some contradiction regarding the analysis (or lack

of analysis) of HSL compounds between this section and Section 4.2.1.6 (page 4-19) of the Work Plan which states that half of the surface water samples and sediment samples will be analyzed for HSL and additional site-specific parameters.

16. Page I.5-6, Figure 5.1: A sediment sample should be obtained immediately downstream of the discharge from the buried effluent line into the Great Miami River.
17. Page I.5-15, Section 5.8: How can sediment samples be field screened for TOC, TOX and general water quality parameters (i.e., metals, etc.)? All surface water locations shown in Figure 5.1 (including the location in comment #16) must have sediment samples collected and analyzed for TOC, TOX, and the general water quality parameters listed on page I.5-16.
18. Page I.6-2, Section 6.3.1.1, second paragraph: Typo - quadrant.
19. Page I.6-5, second bullet item: "Down-gradient" should be down-wind since the text is referring to agricultural crop and garden sampling.
20. Page I.6-6, third bullet item: Three samples of fish tissue should be analyzed from each surface water sampling location in both Paddy's Run and the Great Miami River.
21. Page I.6-7, Section 6.3.6: Because uranium and other radionuclides are known to occur on-site and the inherent uncertainties with pinpointing optimum locations for soil and sediment sampling based upon field screening, plant and animal tissues should be analyzed for all of the parameters listed on page I.6-7.

#### COMMENTS ON QAPP VOLUME

1. Page 2 of 2, Section 2.1: SARA should be cited here in addition to RCRA and CERCLA. Line 2 on page 2 of 2 should read: Liability Act, 42 USC 9601....
2. Page 2 of 2, second full paragraph: See concerns in comment #5 of the Work Plan Volume.
3. Page 27 of 63, Section 5.2, second bullet: Where potable water is used as a drilling fluid, samples of the fluid must be taken from the hose of the water tank/truck and analyzed for HSL compounds. This is to document that the "clean" drilling water has not been contaminated by what may have been in the tank prior to the tank's use at FMPC.
4. Page 27 of 63, Section 5.2: The sixth bullet item does not make any sense.
5. Page 28 of 63, Section 5.2, last bullet: Only air rotary drilling should be used for holes advanced into bedrock.

6. Page 30 of 63, second bullet: Sampling of soils in borings should be continuous to the base of the till and then every five feet or change in material thereafter.
7. Page 34 of 63, second bullet: Well screens should not exceed ten (10) feet in length.
8. Page 38 of 63, second bullet: Absolutely no mud should be used during well drilling.

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subject Comments on FMPC's Work Plan

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1. Pg. 2-2. Identify soil types and properties based on Hamilton and Butler County Soil Surveys.
2. Pg. 2-5. The three off site wells showing contamination were at one time used for drinking purposes.
3. Pg. 2-7. Direct contact may come from the regional aquifer when bathing, washing and cooking.
4. Pg. 2-8. Waste Pit 6 is not inactive i.e. leachate from pit 4 goes to 6 then to 5. (At least until February, 1987)
5. If only pits 3 and 5 received liquid wastes, what happened to liquid wastes generated at the facility prior to 1959 when pit 3 was operational?
6. Include breaching of soil covers as a continuing potential source of contamination from the waste pits.
7. Pg. 2-10. The fly ash piles need to be shown on a site map.
8. Pg. 2-11. Leakage of leachate to Paddy Run through cracked silos should be a 4th issue in 2,2.5.
9. Pg. 2-13. Need to test existing underground tanks for leaks and remove old tanks which are leaking or out of use.
10. Pg. 2-21. Include perched groundwater flow into storm sewer outfall ditch and the clear well.
11. The storm water retention basin cannot hold a 10 year 24 hour storm event and thus cannot prevent discharges to Paddys Run.
12. Pg. 2-22. Include past protective pumping scenarios for protection of production wells from the waste pits.
13. Pg. 2-23. Most evident receptor of Paddys Run is local water supplies.
14. Pg. 3-5. Infiltration suggests a discharge to groundwater.
15. Pg. 3-20. Section 3.4.1.3 the option of groundwater pumping and treatment should not be eliminated from potential remedial action. Flushing of the aquifers in this case is inappropriate.
16. Pg. 3-22. Section 3.4.2.2 Background water quality should determine clean-up criterion and not water quality standards as suggested.
17. Pg. 3-25. Cost effectiveness should not be a consideration on remedial actions of pumping and treatment of groundwater off-site.

18. Pg. 3-30. The option to drill deeper wells to obtain potable water should not prevent remediation of the contaminated upper aquifer.
19. The work plan submitted is brief and references supporting documents in task 1 and 2 to fulfill the requirements of a work plan. This may not be adequate. (see task 3).
20. Pg. 4-48. Primary Drinking Water Standards should not be used to determine if groundwater contamination is occurring rather, background water quality data should be used for a comparison.
21. Pits 5 and 6 should be included as RCRA waste pits since leachate from pit 4 has been disposed of in both pits 5 and 6.

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subject: Comments on Task 1 and 2 of the RI for FMPC

1. Table I.2 indicates modified proctor compaction tests on subsurface soils will be performed. Meaningfull measurements of permeability, density and consolidation must be performed on in-situ soils.
2. Figure 3.1 needs to include more downgradient monitor wells around the Fly ash pile #2, sanitary landfill pit 1 through pit 6.
3. Monitor well locations need to be located with respect to local and regional groundwater flow patterns, i.e. Sewage Plant, Scrap pile etc.
4. Groundwater investigations need to define if a cone of depression exists around the production wells and what effect this has on flow patterns in shallow and intermediate aquifers.
5. Section 3.3 Monitor well construction
  - a. Hollow-stem augering is the preferred drilling method,
  - b. Need to determine the frequency of soil sampling. Subsurface samples should be collected continuously until the detailed site specific setting is defined then sampling at 5 foot increments or at changes in lithology should be used for boreholes.
  - c. If any water needs to be added during drilling
    - i. Quantity and quality of water used must be recorded.
    - ii. Samples of the drill water must be obtained at the hose before the water is pumping into the well,
    - iii. During well development at least 5 times the amount of water added must be removed and 3 constant readings of pH, temperature and conductivity obtained at 5 minute intervals to insure proper well development.
  - d. Abandonment of monitor wells should include pulling the well casing.
  - e. How will well logs and the hydrogeologic setting be described in a similar manner if engineers and geologists are logging the samples? All soil samples should be retained and one qualified geologist should review the samples and correct the logs for consistency when necessary. SWDO geologists would like to participate in this review of soil samples.
  - f. Section 5 pg. 28 states several times that approval will be required if the field program varies from the plan. Who will approve? OEPA and USEPA should have direct input.
  - g. A waver may be required for the use of PVC well casing.
  - h. Pg. 34 Volume V section 5. States that 316 Stainless Steel well casing will be used while Volume 1 section 3 states PVC. Stainless steel wellscreens are preferred when low level VOC's are suspected.

- i. Screen lengths should be limited to 10' lengths.
  - j. The use of a submersible pump may aid in removing fines during well development.
  - k. Water from well development, sampling or pump tests should be placed in a 55 gallon drum, tested and disposed of in the waste water system unless it can be shown that the water is not contaminated. In no case should this water be discharged to Paddys Run or other surface water without obtaining proper permits.
  - l. The method of drilling wells to be used for slug tests needs to be defined on pg. 51 in Section 5.
  - m. Injection wells should not be used for aquifer characterization.
  - n. Screen sand pack material should be designed for each specific formation to be monitored and should not be arbitrarily chosen.
6. Groundwater sampling should be conducted quarterly for at least the 1st year to determine seasonal fluxuations and trends in the water quality data. The sampling program can be revised based on review of the 1st years data.
  7. Page I.3-22, 3rd paragraph; During decontamination of sample equipment, how will it be known if organics are present and warrant an acetone rinse?
  8. Field filtration needs to be performed for metals. Page 3-22 states that radionuclide samples will also be filtered. May need to do total and dissolved radionuclides.
  9. Should include Ammonia, COD and TOC for groundwater parameters on pg.3-2c.
  10. Subsurface soil samples should be collected continuously in the till due to the depth of the waste pits and the heterogenety of the soils.
  11. Shelby tube samples of the blue clay should be taken for permeability testing and USCS soil classification.

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