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INITIAL SCREENING OF ALT. O.U. 5

10/01/90

OEPA/DOE-FMPC

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LETTER

OU5



State of Ohio Environmental Protection Agency

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Richard F. Celeste
Governor

October 1, 1990

Re: INITIAL SCREENING OF
ALT. O.U. 5

Mr. Bobby Davis
U.S. DOE-FMPC
P.O. Box 398705
Cincinnati, Ohio 45239

Dear Mr. Davis:

Attached are Ohio EPA's comments on the Initial Screening of Alternatives Report for O.U. 5. Overall this report provides a fairly complete listing of potential alternatives for the environmental media operable unit and Ohio EPA concurs with those that have been screened out. Please respond to the attached comments within 30 days of the date of this letter. If you have any questions please contact me.

Sincerely,

Graham E. Mitchell
DOE Coordinator

GEM/ycr

cc: Tom Winston, Ohio EPA
Jack Van Kley, Ohio AG
Catherine McCord, USEPA-5
Robert Owen, ODH
Lisa August, Geotrans

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OHIO EPA COMMENTS
INITIAL SCREENING OF ALTERNATIVES O.U. 5

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1. Page ES-2, First Paragraph: Why weren't aquatic fauna and flora analyzed for Radium-226/228 and Actinium-227 during the RI/FS sampling? Radium is a contaminant of concern in sediments along Paddys Run and has been detected in the Great Miami River at levels equalling the MCL, making it available for uptake by the aquatic community. Actinium-227 is currently being discharged into the Great Miami River at approximately 200% of the DOE DCG thus warranting concern as to its effects on aquatic biota.
2. Page ES-2: Alternative 6, as given here, is incorrect. According to Table 6-1, Alternative 6 includes extraction and discharge for groundwater, and excavation, treatment, and on-site disposal for sediments/soils.
3. Page 2-1 2.1.1 Third Paragraph - The reference to the Great Miami River flows should also include: minimum flow, 7-day 10-year low flow, and maximum flow.
4. Page 2-3 2.1.3 Second Paragraph - Add the number of overflows that have occurred since the storm water retention basins were put into service.
5. Page 2-9, First Paragraph: Typographical error "deciderous woodlands" should be changed to "deciduous woodlands".
6. Page 2-9, First and Third Paragraphs: The first paragraph states the FMPC contains eight species of mammals, while the third paragraph lists thirteen species of mammals on FMPC. This inconsistency needs to be corrected.
7. Page 2-11, First Line: For correctness, the reference to the "town of Hamilton" should be changed to the "city of Hamilton".
8. Page 2-12 2.6.2 Discuss the current meteorological data collected at FMPC. How does this data compare to data from Cincinnati and Dayton?
9. Page 3-1 Because this is an RI/FS document, the third bullet which cites the RI/FS data base should be listed first, followed by RCRA data and then the annual environmental monitoring report, etc.
10. Page 3-3, Second Paragraph: DOE Order 5400.5 is cited as (DOE 1990) in the paragraph but is not presented on the List of References page in Section 8.

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11. Page 3-3, Last Paragraph: The use of average inorganic containment concentrations across 2000-, 3000- and 4000-series wells is not helpful in determining isolated areas of contamination. Averages by specific wells would be more useful in determining localized areas of groundwater contamination above response levels. It should also be noted that within the central 2000-series wells, the concentrations of combined Radium-226/228 and Barium averaged just below the respective MCLs for these constituents (See Table A-3). Average concentrations of Radium-226 and 228 were consistently above detection limits and near the MCL in the 3000- and 4000- series wells (See Tables A-4 through A-7). This suggests these substances may be contaminants of concern and should be recognized in the risk assessment.
12. Page 3-3 3.1.1 Second Paragraph: What about organics in DOE wells that appear to be related to the PRRS. These chemicals are still part of the DOE "Site" and some mention of this situation should be made. [DOE well 2094].
13. Page 3-4: Uranium should not be the only contaminant of concern for the regional aquifer. For example, volatile organic compounds, nitrates, and heavy metals need to also be considered as contaminants of concern at the site. The text states that no VOCs were detected above the MCLs however PCE was detected in samples collected from monitor well 2021 at 11ppb which is greater than the Primary Drinking Water Standard of 5ppb (1/24/90 revised MCLs).

Parameters such as Total Dissolved Solids, Sulfates, Chlorides, etc. should be considered as parameters of concern because elevated levels of these constituents can cause degradation of natural resources and may exceed Secondary Drinking Water Standards. Also, the sources for these parameters may result in plumes of contaminated ground water which do not migrate in the same direction or rate as uranium.

14. Page 3-4, First Full Paragraph: Simply stating that organic contaminant levels do not exceed MCLs is misleading since few of the contaminants found have MCLs. Significant contamination exists in several 2000- and 3000- series wells by organic constituents other than those having MCLs (i.e., acetone and cyclohexane). Such levels of contamination need to be recognized, included in the risk assessment, and remediated. In addition, DOE should also compare parameters detected to proposed MCLs and MCLGs, not

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merely restrict its comparison to MCLs. There is also some apparent inconsistency between the various operable units over the use of 25% of existing MCLs as action levels for each operable unit. DOE should explain why Operable Unit 5 is using MCLs when Operable Units 1, 3, and 4 are using 25% of the MCL.

15. Page 3-8, Second Paragraph: Areas of soil where uranium levels exceed background are considered contaminated and should be considered due to their potential to redistribute contaminants to other media. Action levels will be determined through a complete risk assessment, thus areas of concern cannot be determined until the risk assessment has been completed and approved. As far as the use of 35 pCi/g as a cleanup level for soils around Manhole 180 or its use to identify soil areas of concern, no USEPA or Ohio EPA approval has been given regarding the acceptability of this level for long-term clean-up of the FMPC site.
16. Page 3-9, Second Paragraph: Since soils with elevated levels of uranium were identified along the southern boundary of the site, additional soil samples should have been taken in this area during 1988 and 1989 in order to further delineate this contamination.
17. Figure 3-4: From the legend in this figure, it is unclear where the southfield area fits into the operable unit scheme.
18. Page 3-8, Third Paragraph: The third sentence implies that Tables A-12 and A-13 indicated specific areas of concern. However, these tables do not indicate specific locations of samples. Therefore, the sentence in the report should be re-worded.
19. Page 3-9 Second Paragraph: Explain what is meant by "relatively low".
20. Page 3-9 Last Paragraph: Identify possible areas of concern for Thorium 230 in soils. What levels of uranium are also present in these soils?
21. Page 3-11, First Paragraph: The statement that the "only radionuclide that has routinely been present above detection limits has been uranium" is misleading and should be corrected. Strontium-90 has been found in samples from the Great Miami River above the detection limit for three out of four years between 1985 and 1988, during the

Environmental Monitoring program (see Table A-16). Also, Radium-228 was detected at concentrations above detection in 1988 and 1989 during the RI/FS sampling of surface water, both times equalling the MCL for combined Ra-226/228 (see Table A-17).

22. Page 3-11, Last Paragraph: The Sentence beginning "An evaluation of the impacts ..." is incomplete. Clarification is needed. The point of the last sentence in this paragraph is unclear. It appears that DOE is trivializing the fact that above background concentrations of uranium were found in water from the storm sewer outfall ditch, comparing these concentrations to DOE discharge limits (set by themselves) and to concentrations found in outfall ditch samples from a period when DOE had little regard for the environment.
23. Page 3-11 3.1.3 This section should discuss background surface water concentrations of radiological parameters in the Fernald area.
24. Page 3-11 3.1.3 Fourth Line: Technecium 99 is a radiological parameter that has been routinely detected in effluent at concentrations above background. Is this statement correct?
25. Page 3-12, First Paragraph: Figure 3.5 indicates Paddys Run sampling locations. The text indicates samples were taken downstream of the confluence with the storm sewer outfall ditch, and Figure 3.5 indicate results of any samples taken from this particular location. Why not?
26. Page 3-12 Sixth Line: "35 pCi/g" should this be 35 pCi/l?
27. Page 3-14, Second Paragraph: The statement that no identified metals exceed the MCL drinking water standards in Paddys Run or the Great Miami River is incorrect. Selenium was found at a concentration of 16.9 mg/l in Paddys Run above the MCL of 10 mg/l. The detection limit for selenium from Great Miami River samples was approximately three times the MCL thus making it impossible to determine if it was in excess of the standard.
28. Page 3-16, Fourth Paragraph: The first sentence appears to be incomplete and requires clarification. It appears from Table A-33 that there are two locations for sampling milk, one of which is near the FMPC and one of which is approximately 30 km away. The text in this paragraph should be re-worded as such.

29. Page 3-17, Second Full Paragraph: The last sentence cites "Table A-36" when it should be "Table A-37". Were fish that were analyzed for radionuclides during RI/FS sampling based on a whole body analysis or with head, scales, and entrails removed, as is the case in the Environmental Monitoring sampling? If whole body analysis was not used, comparing levels found in macroinvertebrates to those in fish to determine if bioaccumulation is occurring is invalid. It is unclear why fish and other aquatic fauna were not analyzed for Actinium-227 and Radium-226/228. (Also see comment #1).
30. Page 3-20, Last Paragraph: DOE's assertion that above background concentrations of uranium within and outside the FMPC boundary are below the "level of concern" is premature. Pending the evaluation of these above background levels in the risk assessment, Ohio EPA does not feel that the 35 pCi/g value is acceptable for a "level of concern".
31. Page 4-2: Inhalation of contaminated groundwater from showering should also be added as an exposure pathway for groundwater. This can be a significant exposure route for volatile organics.
32. Page 4-2, Last item: A punctuation mark is missing after "Sediment release into surface water".
33. Page 4-3 The regional aquifer in the vicinity of FMPC encompasses areas outside the Sole Source Aquifer boundaries and should require protection for possible future use.
34. Page 4-3, Human Health Bullets: The first bullet should state as an additional objective the need to prevent the inhalation of volatile constituents in contaminated groundwater through showering. Also, in this bullet, emphasis should not be solely on the 30 ug/l uranium guideline (since it may not be an acceptable long-term cleanup level to Ohio EPA) or on the ability of groundwater to simply meet standards since other health and/or risk related cleanup criteria will be developed in the risk assessment where no standards exist or where standards are not sufficiently protective. In addition, a sixth bullet objective should be added here stating the need to prevent the ingestion of contaminated vegetation or animal products. One item which the RI may have overlooked is the need to collect samples of tissue from cattle/pigs for analysis of radionuclide contamination since uranium has a greater affinity for muscle and bones than milk.

35. Page 4-15, Section 4.4.2.2: The statement "data has shown soil contamination within the FMPC boundary only" is a misrepresentation of the data. Page 3-8 states that levels of uranium in the soil exist above background levels outside the FMPC boundary. Such misrepresentations need to be corrected. Contamination exists when levels are elevated significantly above background. Areas of concern should be defined based on the risk assessment.
36. Page 4-16, Right Column, Second Item: Comment is incomplete. It currently reads "Potentially applicable in localized".
37. Page 4-16, Left Column, Third Item: The words "CONTROL/CONTAINMENT" appears too low in this column, and as a result the Table implies that Vertical Barriers are an institutional action, while the text on page 4-15 identifies Vertical Barriers properly as a control/containment option.
38. Page 4-25, Right Column, Fourth Item: As per the text on page 4-21, there is only one removal option available for soil, and that action is "Mechanical Excavation". Table 4-4 implies there are two options, "Excavation" and "Mechanical".
39. Page 4-26, Right Column, Fourth Item: Similar to previous comment. Table 4-5 implies there are three options for removal, but in fact there are only two ("Mechanical Excavation" and "Dredging").
40. Page 5-3 (Table 5-1): The Capital Cost and O & M cost of ion exchange are both listed as "moderate" in this table, but are both listed as "high" in the text on page 5-14.
41. Page 5-7, Second Paragraph, First Bullet: The effectiveness of the paved stream technology is short-sighted since the true source of contaminants is not being controlled, only a pathway is controlled. This will only result in contaminants entering another media (i.e., Great Miami River). Removal of the actual source of contaminants flowing into Paddys Run is more effective and would not require the continued maintenance of the paved stream. Therefore, a ranking of "low" may be more appropriate for this process option.
42. Page 5-9, First Bullet: The words "as well as uranium" should be replaced with "including uranium".

43. Page 5-15, First Paragraph: The text states that ion exchange is selected as the representative treatment process, but gives no explanation or justification for this selection. This is significant because several of the other treatment options appear to be quite viable.
44. Page 5-16, Second Bullet: There is an incomplete sentence that reads "permit". The intended words or meaning are not obvious. Also, it is unclear why implementability of this option is only "moderate" when the implementability of a new pipeline is rated as "high". Is it the case that repairs to an existing pipeline require significantly greater effort than installing a brand new pipeline?
45. Page 5-15 to Page 5-17: Implementability of discharge is confusing. Implementability of building a new pipeline is rated as "high" when the water is treated but only moderate when the water is untreated. Implementability of using the existing pipeline is rated as "moderate" when the water is treated but "high" when the water is untreated. This is an inconsistent analysis.
46. Page 5-16, Section 5.2.6.2, Second Bullet: Please clarify whether modifications and repairs to the existing effluent pipeline are currently being made or will they be made only if this alternative is used. Will the repair on the pipeline require remediation of soils possibly contaminated by faulty piping and will this delay the use of this alternative? Also, in the third sentence, either an extra word was added to this sentence or a sentence was left out beginning with "... and security. permit." This requires correction.
47. Page 5-17, Bullet 5: As with the case where untreated water is discharged via a new pipeline, public and agency opposition should be expected if untreated water is discharged via the existing pipeline. This should be added to this bullet item.
48. Page 5-17, Section 5.2.6.4, First Bullet: The effectiveness of this alternative is also reduced due to the increased loading of uranium into the Great Miami River. It may also result in the continued noncompliance of FMPC with DOE's DCG for uranium, since some concentrations of uranium within the plume may exceed 400 ug/l.

49. Page 5-21, Section 5.3.2.2, Second Bullet: The statement "Currently, data show elevated soil contamination within the FMPC boundary only" is incorrect. See Comment #35.
50. Page 5-22, First Bullet: In order to implement modifications within the channel of a stream (ie. dredge or fill), a 404 permit may be required from the U.S. Army Corps of Engineers (USACOE). This involves the consent of various state and federal agencies.
51. Page 5-22, Section 5.3.4, Last Bullet: A 404 permit may be required for the removal of sediments (dredge or fill) from a stream. See Comment #50.
52. Section 5.3.5. No explanation or justification is given for selecting soil washing as the representative treatment technology for soil and sediment (it is touched upon in Section 5.4.2, however).
53. Page 5-26 5.3.5.5 Under effectiveness DOE should at least mention the benefit of waste volume reduction that usually occurs with vitrification.
54. Page 6-2, Column Headings: Options 6 and 7 should say "ON-SITE disposal" rather than "DISPOSAL".
55. Page 6-3: Alternative six and alternative 2 are identical as written. Alternative six should include "Treatment" for soils/sediments.
56. Page 6-4, Second Bullet: The DOE DCG for uranium in groundwater is 30 ug/l, not 33 ug/l as given here.
57. Figure 6-2: If Albright & Wilson's wells are shut down once the facility is connected to the alternate water supply, will the south plume then be drawn into the Ruetgers-Nease production well?
58. Page 6-7, Last Paragraph: Page 3-4 states the DOE DCG for uranium in groundwater is 30 ug/l, not 33 ug/l as given here.

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59. Page 6-8, Third Bullet: Please clarify whether the eight pumping wells are additional wells or are four new wells in addition to the four already proposed under the South Plume EE/CA.
60. Page 6-8, Last Paragraph: The removal of sediments should not be based upon removing a given area but based upon the removal of soil until an acceptable target level of contamination is reached. Removal based on area may require removing too much sediment (that which is below the target level) or allow some areas of contamination above the target level to remain unremediated. Once again it is important to note that this action may require a USACOE 404 permit to allow the removal of stream sediments. This comment applies to all alternatives which remove sediments from the stream no matter what the final disposition of those sediments is.
61. Page 6-8, Next to Last Paragraph: Reference should be made to Figure 3-4 and not Figure 3-5.
62. Page 6-9, Third Paragraph: Reference should be made to Figure 3-4 and Figure 3-5. Also the text refers to "number[s] keyed to the following calculations for effective areas/volumes subject to removal [on this figure]". These are not apparent on Figure 3-4.
63. Page 6-11, Section 6.4.2, Second Paragraph: This section should provide more detail on the requirements of shipping soils/sediments to an off-site disposal facility.
64. Page 6-12, First Paragraph: The removal, treatment and replacement of large pieces of soil/sediment from Paddys Run may require a USACOE 404 permit for both the removal and replacement of those soils/sediments.
65. Page 7-2, Last Paragraph: Alternative 2 will be ineffective in that it will not allow FMPC to discharge below the DOE DCG for uranium when the more highly contaminated (400 ug/l) portions of the plume are extracted. This alternative provides little long-term protection of the environment since the concentration of uranium discharged to the Great Miami River will only increase over time. Since uranium loading to the Great Miami River will only increase with this alternative, a score of "3" is unrealistic. A score of 1 or 2 would be more appropriate.

66. Page 7-4, Last Paragraph: As previously noted, the removal of sediments from Paddys Run may require a USACOE 404 permit. Once again this comment applies to all alternatives which would remove sediments from Paddys Run.
67. Page 7-5, Last Paragraph: The off-site disposal of sediments/soils will have an increased risk of human exposure due to the hazards of shipping. This should reduce the short-term effectiveness score below that of on-site disposal (such as in Alternative 3). The long-term protection of human health and the environment of Alternative 4 would be superior to that of Alternative 3 since contaminated soils/sediments will be disposed of off-site. Contaminated soils/sediments will remain on-site in Alternative 3 thereby posing potential long-term threats to human health and the environment.
68. Page 7-7, Last Paragraph: The modifications of the stream channel of Paddys Run as required by Alternative 8 again may require the a USACOE 404 permit. Capping alternatives are probably less likely to obtain approval from the various state and federal agencies involved in the 404 permit process than would be an alternative which removed contaminated sediments from the stream. This should be considered in the implementability rating for this alternative.
69. Appendix A, Tables A-1, A-2, and A-3: The unit of concentration in which mercury is reported should be "ug/l" rather than "mg/l".
70. Appendix A, Table A-5: The values associated with Iron, Zinc, and pH are misaligned.
71. Appendix A, Table A-6: The values associated with Iron, Lead, Zinc, Conductance, and pH are misaligned.
72. Appendix A, Table A-7: The values associated with Iron, Lead, Zinc and pH are misaligned.
73. Appendix A, Table A-8: Contamination has recently been found in monitoring well 2095 (170 ug/l of 2, 4-Dimethylphenol and 1 ug/l of 1, 1, 1-Trichloroethane) during sampling of this well as part of the Paddys Run Road Site RI/FS. Since this well is upgradient of the Paddys Run Road Site and downgradient of FMPC, DOE should begin to sample this well for volatile and semi-volatile Hazardous Substance List compounds to confirm this data.

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74. Appendix A, Table A-17: It appears that surface water sampling and analysis for Actinium-227 was overlooked in the RI/FS. Actinium-227 was discharged into the Great Miami River at approximately 200% of DOE's DCG. Sampling for Actinium-227 should be conducted on surface waters and sediments which drain the FMPC site.
75. Appendix A, Table A-35: It would be appropriate to analyze deer muscle tissue for radionuclide contamination due to the potential human exposure pathway. Another recommendation would be to analyze raccoon and muskrat specimens for radionuclides (including radium and actinium) and other hazardous substances due to their close association with the aquatic community and its contaminants.
76. Appendix B: This appendix is poorly organized and sections are out of order. For example, Section B.1.3 follows Section B.1.4 when it should precede it. Table B-1 is presented before it is even cited. These and other errors or omissions cited below must be corrected.
77. Appendix B, Table B-1: An action-specific state of Ohio ARAR which should be listed in this table is ORC 3767 (nuisance prevention). Another action-specific state ARAR which must be included in Table B-1 is ORC 6111 (prohibits pollution of "waters of the state"). The citation for Ohio hazardous waste treatment, storage, or disposal facility location standards is incorrect. The correct citation is: OAC 3745-54-18.
78. Appendix B, Page B-8: Proposed MCLs and MCLGs must be listed as federal TBC criteria.
79. Appendix B, Page B-9, Second Bullet: Not all portions of OAC 3745-9 apply exclusively to new wells intended for human consumption. For example, OAC 3745-5-10 covers the abandonment of test holes and wells and constitutes an action-specific state ARAR for remedial actions involving the installation of any borings or wells (whether for water supply or monitoring purposes) at the FMPC.
80. Appendix B, Page B-10, Last Bullet: DOE's statement that "specific criteria for chemical concentrations have so far only been established for Lake Erie and the Ohio River" is not accurate. OEPA has surface water quality criteria for both acute and chronic effects on aquatic organisms as part of OAC 3745-1-07. Also, in this section on Ohio ARARs, the states's air pollution law should be cited (ORC 3704).