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JUN 01 1999

Mr. James A. Saric, Remedial Project Manager
U.S. Environmental Protection Agency
Region V-SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

DOE-0776-99

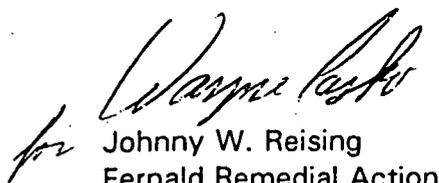
Dear Mr. Saric:

**TRANSMITTAL OF RESPONSES TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY
COMMENTS ON THE WETLAND MITIGATION DESIGN PLAN FOR THE AREA 1, PHASE I
MITIGATION SITE**

Enclosed please find responses to the U.S. Environmental Protection Agency's (U.S. EPA) technical review comments on the Wetland Mitigation Design Plan for Area 1, Phase I. The Department of Energy (DOE) appreciates the approval from the U.S. EPA to begin project activities in parallel with resolving the comments on the design. As you will find in the comment responses, DOE is proposing that the design not be revised at this stage of the project and that outstanding issues be resolved in this comment response document.

Please contact Kathleen Nickel at (513) 648-3166 or Robert Janke at (513) 648-3124 if you have any questions or comments regarding these documents.

Sincerely,


for Johnny W. Reising
Fernald Remedial Action
Project Manager

FEMP:Nickel

Enclosure

JUN 01 1988

Mr. James A. Saric

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cc w/enclosure:

G. Jablonowski, USEPA-V, SRF-5J
R. Beaumier, TPSS/DERR, OEPA-Columbus
T. Schneider, OEPA-Dayton
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N. Hallein, EM-42/CLOV
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J. Chiou, FDF52-0
T. Hagen, FDF/65-2
J. Harmon, FDF/90
R. Heck, FDF/2
S. Hinnefeld, FDF/31
J. Homer, FDF/65-2
C. Straub, FDF/65-2
T. Walsh, FDF/65-2
E. Woods, FDF/65-2
ECDC, FDF/52-7

**RESPONSES TO U.S. EPA TECHNICAL REVIEW COMMENTS ON THE
WETLAND MITIGATION DESIGN PLAN FOR THE
AREA 1, PHASE I MITIGATION SITE
(20700-PL-0001, Revision 0)**

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

GENERAL COMMENTS

Commenting Organization: U.S. EPA
Section #: Not Applicable (NA)
Original General Comment #: 1

Pg #: NA

Commentor: Saric
Line #: NA

Comment: Figures in the document should be renumbered or reordered to be consistent with their order of citation in the text. The existing figure numbering scheme is confusing and should be revised to more closely correspond with the text discussion. In addition, figure titles should identify the portion of the document where they appear.

Response: DOE would like to avoid revision of the Wetland Mitigation Design for Area 1, Phase I at this stage in the project. It is DOE's intent to resolve issues related to the design through this comment response document and not submit another revision of the text. The wetland mitigation design plan was developed to be utilized as a field document. There are four documents which comprise the wetland mitigation design and each document was written to be used independently in the field. The figures which accompany each document are for field direction and reference. DOE understands the nature of the issue raised in the comment and will make the numbering of figures more clear in future design documents.

Action: DOE will clarify numbering of figures and tables in future design documents.

Commenting Organization: U.S. EPA
Section #: NA
Original General Comment #: 2

Pg #: NA

Commentor: Saric
Line #: NA

Comment: The text indicates that mitigation goals include constructing a wetland system that will be similar in form and structure to wetlands that occurred naturally in Hamilton and Butler Counties. In addition, the text identifies avoiding the need for long-term maintenance as one of the mitigation goals. The text should more clearly and specifically explain how the selection of a series of eight cascading basins with four water control devices (such as precast concrete headwalls with stoplogs) meets these goals.

Response: The eight basin design maximizes wetland acreage and provides natural appearance using curved and meandered shaping. This design emulates the form and structure of wetlands that might have occurred in this region historically, prior to agriculture. The wetland system was designed to maximize use of water available in the project area. The use of water control structures is necessary to optimize water levels within the wetland system. Once the hydrology of the wetland system is observed for a period of several years and adequate water levels are obtained, the water control structures will be made permanent and should not require maintenance. The concrete structures will be embedded within the berm of the basin with only the stoplog exposed. The stoplogs will be adjusted to obtain appropriate water levels.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: NA

Line #: NA

Original General Comment #: 3

Comment: The document fails to clearly explain how the wetland design is based on calculation of a water budget for the site. The text should present water budget calculations and should identify the expected water depth in each basin.

Response: Site conditions in the project area have demonstrated sufficient hydrology to support the wetland as evidenced by permanent inundation of a soil borrow depression located at the southern most end of the mitigation area. This depression was approximately 100 ft x 100 ft with standing water at a depth of 6-8 feet for more than two years. In addition, standing water has been observed within the sedimentation basins in Area 1, Phase I during the spring season over the last several years. The sedimentation basins are only designed to hold water for 24 hours. This site was selected for wetland mitigation in part based on existing hydrology. The area of watershed contributing to the wetland has been calculated and is presented in the design. DOE did not conduct detailed modeling of projected water levels in the individual basins due to the uncertainty associated with such modeling. DOE is proposing to use the water that is available in the project area, coupled with proper design of the basins for water retention, to charge the wetland system. The grading required to construct Basins 6, 7 and 8 has been completed and significant amounts of water have accumulated in the basins immediately after installation. The design contractor (Munro Ecological Services) has conducted a site walk through of the project and has confirmed that the desired water levels are already being held in Basins 6, 7, and 8. This point is particularly encouraging given the below average rainfall that has occurred during April and May. Average rain fall for these months is 8.03 inches, whereas the 1999 rain fall for these months has been 5.28 inches. Photos of the completed basins are available on the Fernald Web Site.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: NA

Line #: NA

Original General Comment #: 4

Comment: The text should clearly explain how the proposed seed mixes were derived. For example, the text should clearly state whether the selections of seed mix and plant species are intended to replace impacted on-site species or to match species found in local, naturally occurring wetlands. In addition, although the text and appendixes indicate that the seed mix ratio will be set by Munro Ecological Services, Inc., and the restoration ecologist, the plan should provide a breakdown of the number of seeds required for each species on each square foot of the site and should present a calculation of the corresponding targeted species density for each patch and the site.

Response: Seed mixes were proposed based on species present in local wetlands. Seed mix ratios were set by the design contractor in conjunction with the restoration ecologist based on experience and availability of seed mix from suppliers. The intent of the design is to have each vegetation patch designated for a seed mix to develop adequate cover. Eighty percent survival and cover requirements will be implemented as part of monitoring and management to ensure establishment of vegetation. Data on the content of seed mixes is attached to this comment response document.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: NA

Line #: NA

Original General Comment #: 5

Comment: The text should clearly state whether a cover crop will be planted with the herbaceous seed mixes and should clarify whether a grass seed mix will be planted between the woody stock plantings.

Response: As indicated on Page 15 of the Wetland Mitigation Plan, flexibility is allowed to use Oats as a cover crop with the upland grass mix. All forest patches will contain the appropriate seed mix (i.e. UG, WP, etc.) between plantings. All shrub patches will be completely mulched and will not contain seed mix between plantings.

Action: None required.

SPECIFIC COMMENTS

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 2

Line #: 23

Original Specific Comment #: 1

Comment: The text indicates that the watershed acreage feeding the mitigation site is about 20 acres. The text should clarify whether the 12.87 acres of the proposed mitigation site and the acreage east and northeast of the site are included in the 20 acres.

Response: The watershed acreage feeding the mitigation site does not include the 12.87 acres in the project area or the acreage to the east and northeast. This area is shown on Figure 2 in the first section of the design.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 3

Line #: 3

Original Specific Comment #: 2

Comment: The text indicates that one of the mitigation goals is "to construct 6.24 acres of ecologically and diverse wetland to satisfy the need to replace wetlands destroyed during site decontamination process." In addition, the text identifies avoiding the need for long-term maintenance as a mitigation goal. The text should explain how the proposed concrete structures will serve to meet these goals (see Original General Comment 2).

Response: As indicated in the response to Original General Comment No. 2, the headwalls will be virtually buried within the berm and will not inhibit the appearance of a natural system. The area has been designed for minimal long-term maintenance. Some maintenance could be required in the future. For example, it is likely that wildlife structures installed at the site will have to be repaired or replaced at some point. The site will be monitored and if maintenance is required in the future, it will be implemented as maintenance that will be required on fences, signs, access points, etc.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 4

Line #: 17

Original Specific Comment #: 3

Comment: The text discusses herbivory concerns with respect to white-tailed deer and Canada geese. Plans and associated rationale are provided in the text for white-tailed deer, but control of Canada geese is not discussed. Although Canada geese are addressed elsewhere in the plan, the text on Page 4 should briefly discuss control of this species.

Response: Canada Geese are recognized as a concern on Page 4 of the design and Page 13 provides specific steps to control them.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 6

Line #: 30

Original Specific Comment #: 4

Comment: The text indicates that liner material will contain no stones greater than 6 inches in diameter. However, Appendix 1 (Page 4) indicates that rock inclusions greater than 4 inches in diameter will disqualify that material as suitable liner material. The text should be revised to resolve this inconsistency.

Response: The information in Appendix 1 is incorrect. The liner will contain no stones greater than 6 inches. Rock inclusions are being observed during formation of liner material.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 6

Line #: 36 and 37

Original Specific Comment #: 5

Comment: The text indicates that Figure 2 in Appendix 1 provides the basic formula expressing the relationship of water level, overexcavation, water depths, liner elevations, and thickness. Figure 2, the Clay Liner Installation Cross Section, shows elevation relative to the design water level, liner, topsoil thicknesses, and elevations but does not provide the formulas used to calculate excavation or grading. The text should (1) more accurately describe the information shown in Figure 2 and (2) explain the impact that additional excavation to obtain an adequate volume of acceptable on-site clay liner material may have on the overall project design and grading plan.

Response: The term "formula" is somewhat misleading in this portion of the text. The intent of Figure 2 (Appendix 1) was to display the relationships of all aspects related to liner installation. The need for additional excavation to obtain an adequate amount of clay liner material was never considered as part of the wetland design. Soils in the vicinity of the wetland mitigation project have a measured insitu permeability of approximately 6×10^{-6} cm/sec to 9×10^{-9} cm/sec liners. Given the low permeability of the native clays, the liners were created by compacting the insitu material. Each liner met the requirement for 85% modified proctor testing as required by the design.

Action: None required.

Commenting Organization: U.S. EPA

Section #: NA

Original Specific Comment #: 6

Pg #: 9

Commentor: Saric

Line #: 2 through 20

Comment: The text discusses proposed water control structures such as precast concrete headwalls with stoplogs and poured concrete plugs, pole drains, and log and fabric structures. The text should clearly explain how these various structures meet the objectives and goals of (1) constructing a wetland system similar in form and structure to naturally occurring wetlands in the area and (2) avoiding the need for long-term maintenance (see Original General Comment 2).

Response: See response to comment 2. Bioengineering techniques will be used to the extent practicable to maximize available water and maintain a natural appearance. Maintenance is expected to be minimal once the project is completed.

Action: None required.

Commenting Organization: U.S. EPA

Section #: NA

Original Specific Comment #: 7

Pg #: 9

Commentor: Saric

Line #: 18

Comment: According to the text, Figure 4 in Appendix 2 specifies a fabric-covered swale between Basins 7 and 8. However, Figure 3 in Appendix 2 specifies that Basin 8 will have a pole drain as its sole outlet. The plan should be revised to resolve this inconsistency.

Response: Figure 3 in Appendix 2 is incorrect. There will be no pole drain installed in Basin 8. The text should indicate that a pole drain will be installed in Basin 5 in addition to Basins 2 and 3.

Action: None required.

Commenting Organization: U.S. EPA

Section #: NA

Original Specific Comment #: 8

Pg #: 9

Commentor: Saric

Line #: 29 and 30

Comment: The text indicates that if any field tiles are detected in locations that potentially drain water from site wetlands, the tiles will be crushed and sealed. The text should be revised to state that tile destruction will occur only under the condition that it will have no downstream impacts.

Response: Drain tiles running through the mitigation site were installed to carry water to the same swale that is currently carrying water off-property from the project area. The existing discharge point will be maintained for the wetland mitigation project. Therefore, the elimination of drain tiles should have no overall impact on downstream areas as water previously carried by the tile will now be diverted into the wetland and discharged in the same location.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 10

Line #: 1 and 2

Original Specific Comment #: 9

Comment: The text indicates that the wetland system will include two deep ponds with maximum depths of 7 to 8 feet. The text should clearly explain why the deep ponds have been included in the mitigation design.

Response: The deep ponds were incorporated into the design to provide habitat diversity. It is expected that the deeper ponds will provide aquatic habitat year round.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 10

Line #: 11 and 12

Original Specific Comment #: 10

Comment: The text indicates that the feeding watershed covers approximately 20 acres (Figure 2). The text should clarify whether this watershed acreage is limited to the shaded area in Figure 2 or also includes the 12.87 acres of the proposed mitigation site and acreage east and northeast of the site boundary (see Original Specific Comment 1).

Response: The 20 acres of watershed that is identified in the text does not include the 12.87 acres of the mitigation site and does not include any acreage east or northeast of the site. The area east and northeast of the mitigation site is down-gradient of the mitigation site and will provide no contribution to the mitigation site.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 11

Line #: 2

Original Specific Comment #: 11

Comment: The text indicates that the containment embankments for two basins have the same basic configurations and specifications. The text should specify which of the eight basins it is referring to.

Response: The word "two" is incorrect in the text. The correct text should read: "The containment embankments for all basins have the same basic configuration and specifications."

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 14

Line #: 10

Original Specific Comment #: 12

Comment: The text identifies "herbaceous marsh" as one of seven vegetation cover types; however, several figures (Appendix 3, Sheets 1, 2, and 3; Appendix 2, Sections 1, 2, and 3) do not indicate the presence of herbaceous marsh. Appendix 3, Sheets 1, 2, and 3 indicate the presence of wet meadow rather than herbaceous marsh, and the sheets in Appendix 2 have no legend. The text and figures throughout the plan should use clear, consistent cover-type terminology.

Response: The text on Page 14 refers to a herbaceous marsh as one of the Wetland cover types proposed in the design. The text on Page 17 defines the symbol for the herbaceous marsh as "WH" in error. The symbol for the herbaceous marsh should be "WM" which is used on a number of the figures in the design.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 15

Line #: 4

Original Specific Comment #: 13

Comment: It is unclear whether the 35 pound per acre seed application rate for native perennial grassland species includes a nurse or cover crop. In addition, based on the species planned and the seed mix ratio stated in Appendix 2, calculations indicate that the seed application rate for this mix will be about 114 seeds per square foot. In areas planted with prairie grasses only, an application rate of 30 to 40 seeds per square foot should provide adequate coverage. The text should provide a rationale for the proposed seed application rate, or the application rate should be revised.

Response: The 35 pounds per acre presented in the design was not pure live seed and did not include a cover crop. However, in consultation with the design contractor, the amount of seed has been reduced to 15 pounds pure live seed per acre with an additional 20 pounds per acre of oats as a cover crop. A cover crop of Oats is not being used for the Wetland Marsh mixture due to concerns over mortality of the Oats in the wetter conditions. This change will be documented through a design change notice.

Action: Complete design change notice for reduction in seeding rate.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 17

Line #: 15

Original Specific Comment #: 14

Comment: The text identifies "herbaceous marsh" as a cover type. Original Specific Comment No. 12 applies here as well and should be addressed.

Response: The designation of "WH" should have been "WM" as used in the figures in the design document. See response to Specific Comment No. 12.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 17

Line #: 16

Original Specific Comment #: 15

Comment: The text identifies "marsh (herbaceous)" as a wetland cover type covering 2.74 acres. However, Appendix 2, Sheet 1 does not show a "marsh (herbaceous)" cover type but instead shows wet meadow. The plan should be revised to resolve this inconsistency (see Original Specific Comment 12).

Response: Please refer to response to Specific Comment No. 12.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 17

Line #: 22

Original Specific Comment #: 16

Comment: The text identifies a herbaceous marsh seed application rate of 20 pounds per acre. However, the text does not indicate whether this application rate includes a nurse or cover crop. The 20 pound per acre application rate appears to be excessive. Revegetation could be achieved with a 13 pound per acre marsh seed application rate and a 5 pound per acre cover crop application rate. The text should be revised accordingly.

Response: The marsh mix does not contain a cover crop. Based upon experience, the application rate is appropriate. A cover crop is not being used due to concerns over mortality of the Oats in the wetter conditions.

Action: None required

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 18

Line #: 22

Original Specific Comment #: 17

Comment: The text identifies a seed application rate of 20 pounds per acre but fails to indicate the percentage of forbs and the percentage of grasses in the mix. The text should specify these percentages and should provide a rationale or cite a reference to support the proposed mix.

Response: The percentage of forbs and grasses in the seed mix were determined based upon availability and supplier experience. A list of suppliers were recommended by the design contractor and one of the recommended suppliers was used on the project based in past experience. The mix provided by the supplier resulted in slight variations in the species composition. Suppliers were required to get as close to the desired mix as possible, but there is flexibility to consider supplier recommendations based on experience and availability.

Action: DOE will provide both U.S. EPA and Ohio EPA with the exact seed mix used on the wetland mitigation project.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 19

Line #: 1 through 4

Original Specific Comment #: 18

Comment: The text indicates that clumps of shrub species will be planted in the shrub swamp patch. The text should clearly explain whether the areas between the clumps will be planted with herbaceous vegetation or simply mulched. If the areas are to be mulched only, the text should explain how this approach will meet the mitigation goals.

Response: Areas between individual shrub plantings will be mulched per the design (Pages 12 and 16). The application of mulch will help minimize the invasion of weed species and will promote moisture retention in the soil to help ensure the success of the shrub patches. The amount of shrub material specified for the project will provide adequate vegetative cover to meet the goals of the design.

Action: None required.

Commenting Organization: U.S. EPA

Section #: NA

Original Specific Comment #: 19

Pg #: 21

Commentor: Saric

Line #: 1 through 3

Comment: The text indicates that each sand pile will consist of 1 cubic yard of sand placed in an 8-inch depression. The text also indicates that each sand pile will be about 4 feet across and will project about 10 inches above the surrounding soil. This information is inconsistent with Appendix 2, Figure 7, which indicates that each pile will consist of 2 to 4 cubic yards of sand placed in a 12-inch depression and will extend 6 inches above the surrounding soil. The text or figure should be revised to resolve this inconsistency.

Response: DOE agrees that the design is inconsistent on the exact dimensions of the sand piles. Consultation with the design contractor has confirmed that the exact dimensions of the sand piles are not critical as long as the depression for the sand is at least 8 inches deep and the sand protrudes above the ground by at least 6 inches.

Action: DOE will ensure that the installation of the sand piles meets minimum requirements for depth and protrusion.

Commenting Organization: U.S. EPA

Section #: NA

Original Specific Comment #: 20

Pg #: NA

Commentor: Saric

Line #: NA

Comment: According to the text, the figure found in the pocket folder and titled "Existing Topography for the Wetland Mitigation A1PI Plan" shows the existing topography at the mitigation site. According to Page 3 of Appendix 1, however, the current site topography is not know. The figure should be revised to clearly indicate that it represents only the approximate site topography. In addition, several features in the figure are not identified. All figure features should be clearly identified.

Response: The figure provided in the design entitled "Existing Topography for the Wetland Mitigation A1PI Plan" does accurately depict the vast majority of features in the mitigation site. There were some features in the mitigation site that could not be depicted on the topographic map such as the depth of the basin in the southern end of the mitigation site. In addition, some features were left off of the map inadvertently. The map does depict the topography of the mitigation site with enough accuracy to support the design. As stated in the text on Page 3 of Appendix 1, the impact of the uncertainty of some features on the topographic map is that an accurate earthwork balance for the project could not be prepared. The earthwork balance was performed by FDF Construction personnel after receipt of the design. As a result of the earthwork balance evaluation, some basins were raised from the elevations shown in the design. All relationships between liner, topsoil and berm elevations are being maintained and the changes in the basin elevations will be documented in a design change notice.

Action: Complete design change notice to document changes in basin elevations.

SPECIFIC COMMENTS ON APPENDIX1: CONSTRUCTION DETAILS

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 3

Line #: 1 through 4

Original Specific Comment #: 21

Comment: The text indicates that the existing contour map for the site is based on conditions prior to the stripping of contaminated surface materials and that the current topography of the site is not known. The text also indicates that an accurate earthwork balance cannot be achieved without an accurate topographic survey. However, the text states that the planned site topography can be constructed with a possible net export of site materials. The text should explain how this conclusion was reached without a topographic survey. In addition, it is unclear whether an accurate topographic survey will be completed before site grading activities begin. The text should be revised to state whether a topographic survey will be conducted and, if so, when.

Response: Please see response to Specific Comment No. 20. The topographic features presented in the design are accurate with some minor exceptions. An "as built" drawing of all topographic features of the site will be prepared at the completion of the project.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 3

Line #: 7 through 11

Original Specific Comment #: 22

Comment: The text indicates the possibility of raising one or two basins by 2 feet to accommodate an earthwork balance, but the need for such modifications will be known only during Section 2 of the work. The possible raising of the basins could affect the overall mitigation acreage. The text should explain (1) who will be responsible for implementing the possible modifications, (2) what criteria will be used to assess the implementation, and (3) whether associated corrective measures would be implemented.

Response: Please see response to Specific Comment No. 20. DOE and FDF will take responsibility for changes made in basin elevations. The design did allow flexibility for changes to be made in basin elevations provided relationships between liner, topsoil and berm are maintained. The changes that have been made in the basin elevations should not impact overall mitigation acreage as the key requirements to retain water in the basins are not being changed.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 3

Line #: 13 through 16

Original Specific Comment #: 23

Comment: The text discusses how the site topsoil will be mixed with wood chips, sawdust, or composted leaf mulch. The text should state whether this mixing activity will be conducted on a basin-by-basin basis.

Response: Sufficient topsoil is available on the mitigation site to replace in-situ topsoil on Basins 2, 6, 7, 8, and a portion of Basins 1 and 5. Renovated topsoil will be required for Basins 3, 4, and a portion of Basins 1 and 5. Wood chips available on site will be used

for the majority (if not all) of this activity. If sufficient wood chips are not available, saw dust will be purchased from an off-site vendor. Renovation of topsoil for Basins 3 and 4 will occur together and renovation of topsoil for Basins 1 and 5 will occur together.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Figure #: 4

Pg #: NA

Line #: NA

Original Specific Comment #: 24

Comment: The figure shows water control structure details and installation. The figure should also indicate the typical downstream swale slope. In addition, a detail should be included to depict an outlet with a concrete headwall and a pole drain used in combination.

Response: DOE agrees that this detail would have been useful in the mitigation design. Consultation with the design contractor has clarified the proper approach for installation of these two structures. The pole drains at the outfall of Basins 2 and 3 will be installed next to the concrete headwall structures at an elevation lower than the outfall elevation of the headwall structure. This will allow some continuous flow between basins even when water levels are below the elevations necessary for water to flow over the headwall structure. The pole drains will be constructed and installed per the detail provided in Figure 3 in the "Figures and Tables" Section after Appendix 1.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Table #: 1

Pg #: 5

Line #: NA

Original Specific Comment #: 25

Comment: Table 1 indicates that the Basin 8 outlet structure will consist of a full-width, fabric-only swale. However, according to Appendix 2, Figure 3, Basin 8 will have a pole drain as its sole outlet, and according to Appendix 2, Sheet 1, Basin 8 will have a fabric-only water control structure. The text and figures should accurately and consistently reflect the actual control structure to be used for Basin 8.

Response: The text provided in Appendix 2, Figure 3 is not accurate. The text should indicate that pole drains will be present in Basins 2, 3 and 5. Basin 8 does have a fabric only swale that has been installed.

Action: None required.

SPECIFIC COMMENTS ON APPENDIX 2: PLANTING DETAILS

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 2

Line #: 14

Original Specific Comment #: 26

Comment: The text identifies "marsh" as one of the cover types specified for the mitigation site. Appendix 2, Sheet 1 indicates a wet meadow cover type but does not indicate any marsh cover type. The text or figure should be revised to resolve this inconsistency.

Response: The Wetland Marsh cover type is introduced on Page 14 in the first section of the wetland mitigation design. The wetland marsh cover type is then discussed in more detail on Page 17 of the design and then is designated on the figures in the mitigation design as "WM." For additional clarification, please see Specific Response No. 12.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 4

Line #: 27 through 33

Original Specific Comment #: 27

Comment: The text indicates that all trees and shrubs will be fertilized with Agriform 20-10-5 or an equivalent and provides specific fertilizer application rates. The text should explain the rationale used to select the fertilizer needs and application rates.

Response: The application of the "Agriform" fertilizer, which is a slow release fertilizer tablet recommended by the design contractor, has been incorporated into the design to maximize the chances of survival for the trees and shrubs. The cost of adding the fertilizer is judged to be worth the effort given the benefits that it provides. The application rate is based on the manufacturer's recommendations.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 4

Line #: 37 through 38

Original Specific Comment #: 28

Comment: The text states that the sedge and rush plugs are to be planted along pond and creek shorelines within 1 foot of the water. This statement indicates the plugs will not be planted until the basins fill with water. The text should clearly state when the plugs will be planted. In addition, several of the proposed plug species have a maximum water depth tolerance of 0.5 foot, so the text should specify the planting elevation for the plugs.

Response: Basins 6, 7, and 8 currently have water standing at the desired elevations. Plugs will be planted within one foot of the standing water level, but not below the water level. Water levels within the basins will vary somewhat during the year; however the standing water levels within the basin will be close to water levels currently observed in the field. Planting elevation of the plugs will vary slightly, but no plugs will be planted at an elevation that will have standing water deeper than 0.5 foot for an extended period of time.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 6

Line #: 7 through 30

Original Specific Comment #: 29

Comment: The text describes seed mixes and application rates. The text should state whether the seed to be used will consist of cleaned pure live seed. In addition, the text indicates that grass seed mix will be applied at 35, marsh seed mix at 20, and wet prairie seed mix at 20 pounds per acre. The text should state whether these application rates are considered high for this type of restoration and whether nurse or cover crops are included in these rates.

Response: The application rates for the upland grass mix was determined to be high after further consultation with the design contractor. Please see Specific Response Nos. 13 and 16 for additional clarification.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 9

Line #: 6 through 8

Original Specific Comment #: 30

Comment: The text indicates that each sand pile will consist of 1 cubic yard of sand placed in an 8-inch depression. The text also indicates that each sand pile will be about 4 feet across and will project about 10 inches above the surrounding soil. According to Figure 7, however, each pile will consist of 2 to 4 cubic yards of sand placed in a 12-inch depression and will extend 6 inches above the surrounding soil. The text or figure should be revised to resolve these inconsistencies.

Response: After consultation with the design contractor it has been determined that there is no exact requirement for installation of the sand piles; however, minimum requirements for depth of the sand and height of the sand above the ground should be met during installation of the sand piles. Please see Specific Response No. 19 for additional clarification.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 9

Line #: 22 through 25

Original Specific Comment #: 31

Comment: The text indicates that rock placements will be made at various locations along creek and pond edges and cites "Sheet 1-pocket." However, "Sheet 1-pocket" shows no rock placements of any kind. The text should be revised to state that the rock placement locations are shown in Sheets 1 through 3.

Response: Rock placement locations are shown on the three fold out maps at the end of Appendix 2 which show the individual planting patches for each section of the mitigation project.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Table #: 1

Pg #: NA

Line #: NA

Original Specific Comment #: 32

Comment: Table 1 should show that Basin 6 will have a log and fabric inlet structure as indicated in Section 1.

Response: Table one correctly identifies a concrete headwall structure for the outfall of Basin No. 6. The log and fabric structure identified for the outfall of Basin No. 7 will provide the inflow of water to Basin No. 6.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Figure #: 3

Pg #: NA

Line #: NA

Original Specific Comment #: 33

Comment: The figure indicates Basin 8 will have a pole drain as its sole outlet. However, Table 1 and Section 1 indicate that the outlet in Basin 8 will consist of fabric only. Figure 3 should be revised to resolve this inconsistency.

Response: Please see Specific Response No. 25 for clarification on this issue.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Figure #: 7

Pg #: NA

Line #: 1 and 3

Original Specific Comment #: 34

Comment: The figure provides sand pile dimensions different from those listed on Page 9. Original Specific Comment 30 applies here as well and should be addressed.

Response: Please see Specific Response No. 19 for clarification on this issue.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: 1 through 3

Pg #: NA

Line #: NA

Original Specific Comment #: 35

Comment: Sections 1 through 3 are figures showing proposed installation features. These sections show deer fencing extending across open water in Basins 2, 3, and 4. The text should explain the placement of deer fencing in this manner. In addition, although the sections show goose line placement, it is extremely difficult to see the exact locations of the goose line on the color copies of the sections. The sections should clearly depict these locations. Moreover, each section legend should include the proposed cover types, and the sections should show the water flow direction and the water control structure elevations.

Response: The referenced figures for Sections 1, 2, and 3 show deer fencing around the perimeter of the mitigation site, outside of all open water areas. The figures do show goose line across two open water areas in Section 2 and one open water area in Section 3. The color for the goose line appear very close to the color for the deer fence on the figure which may cause some misunderstanding. There is no deer fence proposed around individual open water areas in the mitigation site.

Action: None required.

SPECIFIC COMMENTS ON APPENDIX 3: MONITORING/MANAGEMENT PLAN

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 3

Line #: 30 through 38

Original Specific Comment #: 36

Comment: The text states that the landscape contractor and earthwork contractor will work under U.S. Department of Energy and Fluor Daniel Fernald supervision and oversight and will have no responsibilities for the quality of work performed. The text should provide a clear justification for this statement. In addition, the text should clarify whether this

approach has been agreed to by the parties involved and should clearly state how this approach will impact seed and plant guarantees as well as resolution of any potential grading or hydrology issues.

Response: The text in this case may be somewhat misleading. Wise Construction is performing all earthwork and planting for the mitigation project under the supervision of FDF Construction and Natural Resource Management. FDF is responsible for ensuring that Wise performs required work according to the mitigation design. Ultimately, both DOE and FDF have responsibility for ensuring that the project is successfully completed. The text is intended to convey that if the requirements for desired hydrology or survival of the plants are not met after project completion, the grading and planting contractor (in this case Wise Construction) will not have financial responsibility for rework or replacing plant stock.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 4

Line #: 21

Original Specific Comment #: 37

Comment: The text requests advisement on the question of holding the upland vegetation stock to the 80 percent survival rate standard. It is unnecessary to hold the upland vegetation to the 80 percent survival rate standard in order to meet the mitigation goals.

Response: Agreed. The 80 percent survival rate to determine the success of the wetland vegetation will be applied to wetland patches only. Upland patches will not be held to the 80 percent survival rate. DOE appreciates this clarification.

Action: Monitoring performed on the wetland mitigation project will evaluate success of the wetland vegetation and wetland mitigation project based on 80 percent survival in the wetland planting patches only. Upland planting patches will not be held to the 80 percent survival requirement.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 4

Line #: 23

Original Specific Comment #: 38

Comment: The text indicates that approximately 3.48 acres of the site will be covered with "herbaceous marsh" or wet prairie communities. As stated in several previous comments, the term "herbaceous marsh" is not used consistently in the plan and its appendixes. The plan should be revised to eliminate this inconsistency.

Response: Please see Specific Response No. 26 for clarification on this issue.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 5

Line #: 24

Original Specific Comment #: 39

Comment: The text indicates that all fences and structures will be checked "each monitoring period." However, the text should clearly define what "each monitoring period" means.

Response: Fences and structures will be checked as part of the monitoring performed for wildlife presence. The schedule for this component of the monitoring plan is presented on Page 9 of the Monitoring/Management Plan.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 5

Line #: 31 through 33

Original Specific Comment #: 40

Comment: The text indicates that local weekly precipitation data will be collected on a monthly basis. However, the text should identify the personnel responsible for the data collection.

Response: Daily precipitation data for the FEMP is collected by FDF as part of the ongoing meteorological monitoring at the site. FDF Natural Resource personnel are on distribution for that data which is distributed on a weekly basis.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 6

Line #: 4 through 7

Original Specific Comment #: 41

Comment: The text indicates that water quality will be monitored by assessing pond water samples for pH, dissolved oxygen, conductivity, temperature, turbidity, odor, color, and the presence or absence of aquatic life and that the water quality data will be recorded on a monitoring data form. However, the data form to be used does not include the presence or absence of aquatic life parameter. The text or form should be revised to resolve this inconsistency.

Response: The presence of aquatic life at a specific sampling location will be noted on the Water Quality Sampling Record form under the column for "Notes."

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 6

Line #: 4 through 10

Original Specific Comment #: 42

Comment: According to the text, if the water quality data collected indicates an "imbalance in the system," corrective action can be planned. The text should define what is meant by an "imbalance in the system" and should state who will be responsible for identifying and implementing appropriate corrective action. In addition, the text should clearly explain how it will be determined whether "aquatic indicator organisms show a stressed environment" and state who will make this determination.

Response: The design does not establish specific acceptable ranges for water quality criteria, nor are there published standards for water quality in wetlands. Imbalances in the system will be diagnosed through consideration of the water quality data (e.g. color, pH, dissolved oxygen) along with other observational data (i.e. plant survival). If the health of the system appears to be declining, all monitoring data will be evaluated to determine which parameters may be contributing to the decline, and to determine appropriate corrective action. The corrective action would have to be planned and implemented in consultation

with U.S. EPA, Ohio EPA and the other Natural Resource Trustees. Determinations as to "system imbalances" and "stressed environments" would be made by the DOE and it would be the responsibility of DOE to ensure that monitoring information is shared with the above-mentioned Agencies in a timely manner.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 7

Line #: 5

Original Specific Comment #: 43

Comment: The text indicates that animal populations at the site will be observed and recorded in May of monitoring years three and five. The text should state that wildlife observations will also be made and recorded during other monitoring visits to the site.

Response: Agreed. Use of the site by wildlife will be observed and noted on an ongoing basis as stated on Page 6 of the Monitoring/Management Plan.

Action: None required.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: NA

Pg #: 7

Line #: 6

Original Specific Comment #: 44

Comment: The text indicates that amphibians at the site will be inventoried using "appropriate means." The text should define "appropriate means."

Response: The approach to amphibian monitoring is anticipated to be visual observation that would be carried out by passive viewing in the wetland basins and closer inspections of rock outcrops, etc. Flexibility is built into the plan if other means are recommended by U.S. EPA or other Agencies.

Action: None required.

Marsh Mix (standard mix provided by Ernst Conservation Seeds)

	Lbs/acre
<i>Alisma subcordatum</i> (Water plantain)	0.6
<i>Asclepias incarnata</i> (Swamp milkweed)	0.4
<i>Aster puniceus</i> (Swamp aster)	1
<i>Caltha palustris</i> (Marsh marigold)	0.4
<i>Carex comosa</i> (Bearded sedge)	1
<i>Carex lurida</i> (Lurid sedge)	1
<i>Carex vulpinoidea</i> (Fox sedge)	2
<i>Dicanthelium clandestinum</i> (Deertongue)	4
<i>Eupatorium perfoliatum</i> (Common boneset)	1
<i>Glyceria striata</i> (Fowl manna grass)	0.8
<i>Juncus effusus</i> (Soft rush)	0.4
<i>Panicum virgatum</i> (Switch grass)	3
<i>Rudbeckia laciniata</i> (Green-headed coneflower)	0.6
<i>Scirpus atrovirens</i> (Green bulrush)	0.2
<i>Scirpus acutus</i> (Hard-stemmed bulrush)	0.2
<i>Scirpus cyperinus</i> (Woolgrass)	0.4
<i>Solidago gigantea</i> (Late goldenrod)	1.4
<i>Spartina pectinata</i> (Prairie cordgrass)	1
<i>Verbena hastata</i> (Blue vervain)	0.6

Total Marsh Mix - 55 lbs

Supplier: Ernst Conservation Seeds
 9006 Mercer Pike
 Meadville, PA 16335
 (800) 873-3321

Wet prairie (standard mix from Ernst Conservation Seeds) pounds per acre

	Lbs/acre
<i>Andropogon gerardii</i> (Big bluestem)	8
<i>Anemone canadensis</i> (Canada anemone)	0.4
<i>Aster nova-angliae</i> (New England aster)	1
<i>Calamagrostis canadensis</i> (Blue-joint)	1.6
<i>Carex lurida</i> (Lurid sedge)	1
<i>Carex lupulina</i> (Hop sedge)	1
<i>Juncus effusus</i> (Soft rush)	0.4
<i>Spartina pectinata</i> (Prairie cordgrass)	4
<i>Eupatorium perfoliatum</i> (boneset)	1
<i>Solidago gigantea</i> (Smooth goldenrod)	0.8
<i>Solidago graminifolia</i> (Lance-leaved goldenrod)	0.8

Total wet prairie mix - 15 lbs

Supplier: Ernst Conservation Seeds
9006 Mercer Pike
Meadville, PA 16335

(800) 873-3321

Upland Grassland Seed Mix

Andropogon gerardii (Big bluestem) - 4 pls/acre
Bouteloua curtipendula (Side-oats grama) - 1 pls/acre
Elymus virginicus (Virginia Wild-Rye) - 3 pls/acre
Panicum clandestinum (Deertongue) - 0.5 pls/acre
Panicum virgatum (Switch grass) - 0.5 pls/acre
Schyzachyrium scoparium (Little bluestem) - 3 pls/acre
Sorghastrum nutans (Indian grass) - 3 pls/acre

Total acreage - 3.80 acres

Total upland grass mix - 57 lbs

Supplier: Osenbaugh Grass Seeds
RR 1, Box 44
Lucas, Iowa 50151

1-800-582-2788