GWOU ADMINISTRATIVE RECORD
SECTION TITLE:
GW–400-401-1.16

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ENVIRONMENTAL ASSESSMENT DIVISION
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January 30, 2004

Mr. Tom Pauling
U.S. Department of Energy
Weldon Spring Site Remedial Action Project
7295 Highway 94 South
St. Charles, MO 63304

Dear Mr. Pauling:

Per your request, we have prepared a summary of the ecological and other environmental assessments that have been performed for the Weldon Spring site. These assessments and investigations are applicable for supporting a Natural Resource Damage Assessment (NRDA) preassessment screen (PAS) for determining whether a full NRDA is warranted. The overall conclusion is that when results of the various ecological evaluations are applied to the NRDA PA, it does not appear that an NRDA for biological resources is warranted for the WSSRAP. This summary is attached.

Please call me if you have any questions.

Sincerely,

Mary Picel
Project Manager

Attachment

cc:
P. Thompson, DOE
S.Y. Chen, ANL
I. Hlohowskyj, ANL

ATTACHMENT A

Topic: NRDA and Ecological Risk Assessments at the Weldon Spring Site Remedial Action Project (WSSRAP), Weldon Spring, MO

A number of ecological investigations have been conducted in support of the CERCLA compliance at the DOE WSSRAP site. These investigations evaluated the potential unacceptable risks to ecological resources from exposure to past radiological and chemical releases from the site, and supported the evaluation of remedial alternatives with regard to potential injuries to natural resources (especially biological resources) from remedy implementation and operation. In addition, these investigations are directly applicable to the Natural Resource Damage Assessment (NRDA) process (43 CFR 11) and can be used to support an NRDA preassessment screen (PAS) for determining whether a full NRDA is warranted.

These investigations employed evaluations of existing scientific literature and site-specific data together with new, site-specific field and laboratory studies and ecological modeling to identify and delineate ecological resources that occur at and in the vicinity of the site and estimate contaminant exposure and associated potential risks to those ecological resources. In addition, the various ecological investigations provided a baseline for evaluating potential natural resource injuries that may occur with implementation of various remedial alternatives, and for identifying ecological mitigation measures for avoiding or minimizing potential implementation impacts.

The following provides brief summaries of the ecological investigations that have been conducted at the site, and the relationship of these investigations to the NRDA process.

1.0 WSSRAP ECOLOGICAL INVESTIGATIONS

Several ecological risk assessments (ERAs) have been conducted at the site to determine whether site-related contaminant releases have resulted in environmental concentrations that pose unacceptable risks to ecological resources, and whether current concentrations have, or continue to, adversely affect ecological resources at the site in surrounding areas. Individual ERAs have been conducted for:

- The Quarry Bulk Wastes;
- The Quarry Residuals Operable Unit (OU);
- The Chemical Plant OU;
- The Southeast Drainage; and
- The Groundwater OU.

These ERAs provide data and results that may be used in the Preassessment Screen (PAS), and may also fulfill, in part, the NRDA requirements for establishing that biological injuries have occurred as a result of a site release (43 CFR 11.62).

The first step of the NRDA process is the PAS, the purpose of which is to determine whether formal NRDA is warranted following a contaminant release and subsequent remediation. Per the NRDA regulations (43 CFR 11.23), the PAS evaluates existing data to determine whether natural resources (NRs) have been injured as a result of a site release, and the whether subsequent remediation has adequately mitigated any release-related injuries. The outcome of the PAS then identifies whether a full NRDA may be warranted. The NRDA regulations permit DOE and other NR trustees to use the CERCLA ecological risk assessment (ERA) (or other similar processes) as an alternative to the PAS to avoid duplication of effort.

In conducting the PAS, five questions must be answered, and all five must receive a "Yes" answer in order for a full NRDA to considered to be warranted (43 CFR 11.20). The five PAS questions are:

1. Has a release of a hazardous substance occurred?
2. Have natural resources been adversely affected by the hazardous substance release?
3. Is the quantity and concentration of the released hazardous substance sufficient to potentially cause injury to those resources?
4. Are data sufficient to pursue an assessment readily available or obtainable at a reasonable cost? And
5. Will response actions not be sufficient to remedy injury without further action?

Questions 2 through 5 are directly related to the ERAs and other ecological evaluations conducted at the WSSRAP site.

In addition to the ERAs, numerous other ecological investigations were conducted to identify ecological resources that exist at or may use habitats associated with the WSSRAP site and surrounding vicinities. These investigations, which were conducted in direct support of the ERAs or separately, included both qualitative and quantitative surveys of aquatic (invertebrates and fish) and terrestrial biota (vegetation, reptiles and amphibians, mammals and birds). In addition, wetland investigations were conducted to identify and delineate jurisdictional wetlands at the site and in areas that could be affected by remedial activities. Consultations were also conducted with the USFWS and the State of Missouri to identify any listed biota that may be exposed to site releases and/or affected by remedial activities. The data generated by these various studies were used to not only identify ecological resources that could be exposed to site-related releases, but also those resources that could be impacted during remedy implementation.

The ecological investigations conducted at the WSSRAP are summarized in the following sections, as their applicability to the PAS and NRDA process are discussed.

2.0 QUARRY BULK WASTES

2.1 Ecological Evaluations

The baseline evaluations of the quarry bulk wastes (DOE 1990) included a qualitative screening-level ERA that evaluated site-specific media concentrations with existing contaminant toxicity and biological uptake information to determine whether ecological resources associated with the quarry could be exposed at a level that would result in potentially unacceptable risks. A very limited ecological community was found to occur at the quarry because of the lack of suitable habitat provided by the quarry. No adverse impacts to biota was evident. Tissue data previously collected from the quarry area showed very low contaminant levels in fish and mammals, and no external indications of negative impacts were detected in biota collected from the quarry area. A walkover survey was conducted along the abandoned rail corridor that was being considered to provide a dedicated haul road between the quarry and the contaminant storage areas at the chemical plant: the survey qualitatively evaluated wildlife habitat along the corridor with regard to potential for adverse impacts to be incurred from the construction and operation of a haul route. Contaminant levels were determined to pose potentially unacceptable risks in the future if the bulk wastes were to remain in the quarry, and only very limited and minor impacts were identified for development of the haul road corridor.

2.2 Relationship to the NRDA PAS

Although no adverse effects were evident at the quarry, the data presented in the Quarry Bulk Waste assessment cannot be directly applied to the PAS. While concentrations of the hazardous substances were at levels that could pose unacceptable ecological risks (PAS Question 3), no direct evidence of adverse contaminant effects was evident (PAS Question 1). In addition, subsequent remediation of the quarry bulk waste in effect eliminated any potential future exposure of ecological resources at the site. The remedial actions undertaken for the Quarry Bulk Waste and Quarry Residuals Operable Units were sufficient to remedy possible ecological injuries associated with the contaminant release.

3.0 QUARRY RESIDUALS OU

3.1 Ecological Evaluations

The baseline risk assessment for the Quarry Residuals OU (DOE 1997) included an ERA of the quarry proper, Femme Osage Slough, Femme Osage Creek, and Little Femme Osage Creek. Media concentrations were screened against 'safe' benchmark values that included Federal ambient water quality criteria, State water quality standards, EPA ecotoxicity threshold values, USFWS ecotoxicity data, and other available data. Complete exposure pathways were identified for representative ecological receptors and conservative exposure scenarios were modeled to estimate contaminant doses to receptors. These results were then used to determine whether site conditions posed a potentially unacceptable ecological risk.

Quantitative and qualitative biological surveys were conducted at the site and reference locations to evaluate whether past conditions at the quarry (associated with both the quarry residuals and bulk wastes) may have adversely affected local ecological resources. Plants, reptiles, amphibians, and birds were collected and examined for external abnormalities such as lesions, tumors, or physical deformities. Small mammals were sampled to evaluate abundance and population structure. No external abnormalities were observed in any collected wildlife, and no signs of population effects were evident from the survey results and small mammal studies.

Small mammals and fish were also collected for tissue analyses, and these data were evaluated together with previously collected tissue data. No evidence of elevated radionuclide concentrations were identified for specimens collected from the site. The small mammals collected for tissue analyses were also necropsied, and no gross abnormalities were observed. With few exceptions, total uranium concentrations in fish were similar to levels in fish collected from background reference locations, while concentrations of arsenic and lead were elevated in some creek-derived samples.

Contaminant uptake modeling identified no unacceptable risks to wildlife receptors, while potentially unacceptable risks to aquatic biota (estimated by comparing maximum reported media concentrations to the 'safe' benchmark concentrations) were indicated for some biota and contaminants. However, surveys of the fish communities in the slough and creek did not indicate any adverse impacts to the resident fish communities. Based on these results, there is no evidence that current contaminant levels in surface water and sediment of the slough and creek pose potentially unacceptable risks to aquatic biota in these habitats.

3.2 Relationship to the NRDA PAS

The ERA results for the Quarry Residuals OU address some of the PAS questions. Some of the maximum media concentrations of site-related contaminants measured at the site were found to exceed benchmark concentrations reported in the scientific literature to be 'safe', and thus may pose potentially unacceptable ecological risk to aquatic biota (PAS Question 3). However, the results of several site-specific investigations found no evidence that the contaminants associated with the quarry residuals (or with the previously removed quarry bulk wastes) have adversely impacted ecological resources associated with the quarry area (PAS Question 2). In addition, the remedies that were implemented at the quarry effectively eliminated the exposure pathways, thus precluding the potential for future exposure and injury (PA Question 5)

Because one of the questions would receive a "No" answer, a full NRDA would not be warranted for the Quarry Bulk Waste and Residuals OUs.

4.0 CHEMICAL PLANT OU

4.1 Ecological Evaluations

A baseline risk assessment was conducted for the Chemical Plant area (DOE 1992) that included an ERA. Site-specific media concentrations were compared to benchmark values. These values included Federal ambient water quality criteria, State water quality standards, EPA ecotoxicity thresholds, USFWS ecotoxicity data, and data from the available scientific literature. Risk (dose) estimates were also calculated for each site-related contaminant. Complete exposure pathways were identified for a variety of wildlife receptors and were used to develop very conservative exposure scenarios which, in turn, supported contaminant uptake (dose) modeling for wildlife. The modeled doses were then compared to dose-based benchmark concentrations to identify potentially unacceptable ecological risks. In addition, literature-based toxicity reviews were conducted to identify potential adverse effects that may be incurred following exposure.

Because of the industrial setting of the chemical plant area and the subsequent absence of suitable habitat, no complete exposure pathways were identified for the chemical plant proper. For the more natural northern and western portions of the site, measured media concentrations were compared to the appropriate benchmark concentrations, and no potentially unacceptable risks were indicated for contaminants in soil and surface water. Concentrations of contaminants in the surface waters of the raffinate pits were indicated to pose a potential for unacceptable ecological risks. Similarly, the maximum concentrations of some contaminants in offsite surface waters (Burgermeister Spring and the Southeast Drainage) exceeded benchmark concentrations, indicating a potential for unacceptable risks. Detailed ecological risks were conducted later for these two areas and are discussed in later sections of this summary.

The remedial actions at the chemical plant included the removal and treatment of surface water and sediment from the raffinate pits and Ash Pond. This action effectively eliminated the exposure pathways from these areas to biota, and thus also potential impacts and risks. Similarly, remediation of soils from the chemical plant area eliminated potential exposures, risks, and impacts to terrestrial biota that could use the site.

Ecological impacts associated with the remediation included the elimination of approximately 38 acres of on-site wetlands and an additional 2.5 acres of wetlands from a nearby borrow area that provided clean soil site remediation. To mitigate these impacts, DOE initiated consultations with the US Fish and Wildlife Service (USFWS) and the State of Missouri (both Natural Resource Trustees) and developed a mitigation plan that included the construction of approximately 50 acres of replacement wetland within the Missouri Department of Conservation (MDC) August A. Busch Conservation Area and Weldon Spring Conservation Area.

4.2 Relationship to the NRDA PAS

The ERA results can be used to address several PAS questions. The site data indicated that contaminant concentrations in soil, sediment, and surface water in some locations of the site were at levels that could pose potentially unacceptable ecological risks and injure ecological resources at the site (PAS Question 1). While the ERA did not document the presence or absence of adverse effects (PAS Question 2), the selected remedy effectively eliminated the exposure pathways, thus precluding the potential for future exposure and injury (PAS Question 5). Because two of the questions would receive a "No" answer, a full NRDA would not be warranted for the Chemical Plant OU.

5.0 SOUTHEAST DRAINAGE

5.1 Ecological Evaluations

The ERA for the Chemical Plant OU identified a potential for unacceptable risks to biota from exposure to site-related contaminant present in sediment and surface waters in the Southeast Drainage. An ERA was conducted as part of an EE/CA for the drainage (DOE 1996). Sediment and surface water concentrations were compared to 'safe' benchmark media concentrations, and potential risks were estimated to a variety of aquatic biota. Complete exposure pathways were identified for representative ecological receptors, and conservative exposure scenarios were modeled to estimate exposure and calculate potential risks to selected wildlife receptors.

Maximum concentrations of some contaminants were measured in surface water at levels that could pose potentially unacceptable risks to aquatic biota. However, toxicity testing of surface water using invertebrates, fish, and amphibians identified only limited toxicity at one location. Biotic surveys of terrestrial wildlife were conducted and the results indicated the presence of diverse communities and no indication of adverse impacts. While depauperate aquatic communities were identified in the drainage, these were most likely due to the intermittent nature of the stream; similar aquatic communities were found at a reference stream.

Based on the weight-of-evidence, the assessment concluded that contaminant levels in the sediment and surface water of the drainage were not sufficient to pose potentially unacceptable risks to ecological resources. While maximum media concentrations exceeded some benchmark values, actual media testing showed little surface water toxicity, and the intermittent nature of the stream would support only a limited aquatic community. Following selective removal of contaminated sediments from the drainage together with the removal of contaminant sources at the chemical plant would result in reducing risks to acceptable levels in the drainage.

5.2 Relationship to the NRDA PAS

The maximum concentrations of some site-related contaminants exceeded 'safe' benchmark levels and could thus potentially affect aquatic biota in the drainage (PAS Question 3). However the results of the ERA showed no indication that ecological resources in the drainage have been adversely affected by site-related contaminants (PAS Question 2). In addition, the selected remedy would effectively eliminate the exposure pathways, thus precluding the potential for future exposure and injury (PAS Question 5). Because two of the PAS questions would receive a "No" answer, a full NRDA would not be warranted for the Southeast Drainage.

6.0 GROUNDWATER OU

6.1 Ecological Evaluations

An ERA was conducted as part of the baseline risk assessment for the Groundwater OU (DOE 1997). The ERA focused on Burgermeister Spring and evaluated impacts and potential risks to aquatic biota inhabiting the spring and downstream waters. Other springs were not evaluated because surface water in the other springs is only present during certain times of the year, thus precluding the establishment of a permanent aquatic community. In contrast, potential risks to wildlife using the springs for drinking water were evaluated for all springs.

Biotic surveys using EPA protocols were conducted at the Burgermeister Spring and downstream locations to provide direct information on:1) the status of the aquatic community in the spring that receives site-related contaminants; and 2) the habitat quality in the spring and at downstream locations. Sediment and surface water concentrations were compared to 'safe' benchmark concentrations and potential risks to aquatic biota were estimated. Sediment and surface waters were collected for aquatic toxicity testing, and fish and invertebrates were collected for tissue analysis. Potential risks to wildlife were estimated by modeling contaminant uptake from drinking water.

Although some toxicity to aquatic biota was indicated for sediment and surface water, and some maximum contaminant concentrations exceeded 'safe' benchmark levels, site-specific survey results showed no indication that the aquatic communities in the spring and downstream locations have been adversely affected by exposure to site-related contaminants. The invertebrate, fish, and amphibian communities that were found are representative of communities that would be expected in similar habitats in the Midwest. No unacceptable risks were indicated to wildlife drinking from any springs receiving site-related contaminants. Thus, the overall conclusion of the ERA was that the groundwater associated with the chemical plant does not pose an unacceptable risk to aquatic or terrestrial biota.

6.2 Relationship to the NRDA PAS

Maximum reported sediment and surface water concentrations were found to exceed 'safe' benchmark values, suggesting that concentrations of some of the site-related contaminants could adversely affect ecological resources (PAS Question 3). However, site-specific surveys of Burgermeister Spring and downstream locations found no evidence of adversely impacted aquatic communities, and dose modeling of terrestrial wildlife indicated no unacceptable risks to wildlife drinking from the spring (PAS Question 2). In addition, the removal of the contaminant source at the chemical plant would reduce and ultimately eliminate the exposure pathways, thus precluding the potential for future exposure and injury (PAS Question 5). Because two of the PAS questions would receive a "No" answer, a full NRDA would not be warranted for the Groundwater OU.

7.0 CONCLUSIONS

The ecological evaluations conducted in support of the CERCLA activities at the WSSRAP provide sufficient information to answer several of the five PAS questions. On the basis of these ERA results, contaminant concentrations in media related to past activities at the chemical plant and quarry may pose potentially unacceptable ecological risks to some biota, however, there is no evidence that biological resources associated with the site have actually incurred adverse ecological impacts. Furthermore, while some wetlands were impacted because of remediation, mitigation was implemented to replace those wetlands (and their ecological services). In addition, the remedial alternatives that have been implemented at the site will have eliminated future exposures of aquatic and terrestrial biota, thereby effectively mitigating future ecological impacts. Applying the results of the various ecological evaluations to the NRDA PA, it does not appear that an NRDA for biological resources is warranted for the WSSRAP.

Weldon RI/FS Reports Containing Detailed Environmental/Ecological Discussions and Evaluations

1. U.S. Department of Energy, Jan. 1990, *Baseline Risk Evaluation for Exposure to Bulk Wastes at the Weldon Spring Quarry, Weldon Spring, Missouri*, DOE/OR/21548-065.

2. U.S. Department of Energy, Nov. 1992, *Baseline Assessment for the Chemical Plant Area of the Weldon Spring Site*, DOE/OR/21548-091.
   - Chapter 7 (Ecological Resources and Contaminants of Concern);
   - Chapter 8 (Assessment of Impacts to Other Environmental Resources);
   - Appendix C (Biotic Resources of St. Charles County and the Busch Wildlife Complex); and
   - Appendix D (Literature Review of Ecological Impacts on Select Biota).

3. U.S. Department of Energy, Nov. 1992, *Remedial Investigation for the Chemical Plant Area of the Weldon Spring Site* DOE/OR/21548-074, Vol. 1.
   - Chapter 5 (Nature and Extent of Radiological and Chemical Contamination).

4. U.S. Department of Energy, Nov. 1992, *Feasibility Study for Remedial Action at the Chemical Plant Area of the Weldon Spring Site*, DOE/OR/21548-148.
   - Appendix H (Floodplain/Wetland Assessment for the Remedial Action at the Chemical Plant Area of the Weldon Spring Site); and
   - Appendix I (Biological Assessment for the Remedial Action at the Chemical Plant Area of the Weldon Spring Site).

5. U.S. Department of Energy, Sept. 1993, *Record of Decision for Remedial Action at the Chemical Plant Area of the Weldon Spring Site*, DOE/OR/21548-376.
   - Chapter 6 (Summary of Site Risks); and
   - Section 10.6 (Irreversible and Irretrievable Commitment of Resources).

6. U.S. Department of Energy, Aug. 1996, *Engineering Evaluation/Cost Analysis for the Proposed Removal Action at the Southeast Drainage near the Weldon Spring Site, Weldon Spring, Missouri,* DOE/OR/21548-584.

7. U.S. Department of Energy, Feb. 1998, *Baseline Risk Assessment for the Quarry Residuals Operable Unit of the Weldon Spring Site, Weldon Spring, Missouri*, DOE/OR/21548-594.
   - Chapter 6 (Ecological Risk Assessment).

8. U.S. Department of Energy, Feb. 1998, *Remedial Investigation for the Quarry Residuals Operable Unit of the Weldon Spring Site, Weldon Spring, Missouri*, DOE/OR/21548-587.
   - Chapter 5 (Ecological Investigations);
   - Chapter 6 (Soil Investigations);
   - Chapter 7 (Surface Water and Sediment Investigations);

- Chapter 8 (Hydrogeologic Investigations); and
- Chapter 9 (Groundwater Quality Investigations).

9. U.S. Department of Energy, March 1998, *Feasibility Study for Remedial Action for the Quarry Residuals Operable Unit at the Weldon Spring Site, Weldon Spring, Missouri*, DOE/OR/21548-595.
   - Section 1.3 (Summary of Baseline Risk).

10. U.S. Department of Energy, Sept. 1998, *Record of Decision for Remedial Action for the Quarry Residuals Operable Unit at the Weldon Spring Site, Weldon Spring, Missouri*, DOE/OR/21548-725.
    - Chapter 5 (Summary of Site Risks); and
    - Section 9.6 (Irreversible and Irretrievable Commitment of Resources).

11. U.S. Department of Energy and U.S. Department of the Army, July 1998, *Baseline Risk Assessment for the Groundwater Operable Units at the Chemical Plant Area and the Ordnance Works Area, Weldon Spring, Missouri*, DOE/OR/21548-568.
    - Chapter 6 (Ecological Risk Characterization); and
    - Sections 7.2 and 7.3 (Summary of Ecological Risk Assessment and Conclusion).

12. U.S. Department of Energy and U.S. Department of the Army, July 1998, *Remedial Investigation for the Groundwater Operable Units at the Chemical Plant Area and the Ordnance Works Area, Weldon Spring Site, Weldon Spring, Missouri*, DOE/OR/21548-571.
    - Chapter 2 (Study Area Investigations);
    - Chapter 3 (Hydrogeological Investigations of the Study Area);
    - Chapter 4 (Nature and Extent of Contamination); and
    - Chapter 6 (Summary of the Baseline Risk Assessment).

13. U.S. Department of Energy and U.S. Department of the Army, Dec. 1998, *Feasibility Study for Remedial Action for the Groundwater Operable Units at the Chemical Plant Area and the Ordnance Works Area, Weldon Spring, Missouri*, DOE/OR/21548-569.
    - Section 1.3 (Summary of Human Health and Ecological Assessments).

14. U.S. Department of Energy, Sept. 2000, *Interim Record of Decision for Remedial Action for the Groundwater Operable Unit at the Chemical Plant Area of the Weldon Spring Site*, DOE/OR/21548-798.

15. U.S. Department of Energy, Aug. 1996, *Engineering Evaluation/Cost Analysis for the Proposed Removal Action at the Southeast Drainage Near the Weldon Spring Site, Weldon Spring, Missouri*, DOE/OR/21548-584.

16. ANL, Feb. 1995, *A Survey of the Wetlands and Floodplains of the Borrow Area and Wetland/Shorebird Complex for the Remedial Action at the Chemical Plant Area of the Weldon Spring Site,* ANL/EAD/TM-26.

17. ANL, Nov. 1995, *Floodplain/Wetlands Assessment for the Remediation of Vicinity Property 9 at the Weldon Spring Site, Weldon Spring, Missouri,* ANL/EAD/TM-49.

18. ANL, Oct. 1999, *Floodplain/Wetlands Assessment for the Interceptor Trench Field Study near the Weldon Spring Quarry, Weldon Spring Site, Missouri.*

19. ANL, Oct. 1999, *Floodplain/Wetlands Assessment for the Borrow Areas for the Restoration of the Weldon Spring Quarry, Weldon Spring Site, Missouri.*

20. McCracken, S., April 10, 1991, letter from McCracken (U.S. Department of Energy, Weldon Spring Site Remedial Action Project Office, St. Charles, MO) to T. Mehan, III, (Missouri Department of Natural Resources, Jefferson City, MO).

ATTACHMENT B

Department of Energy
Oak Ridge Operations
Weldon Spring Site
Remedial Action Project Office
Route 2, Highway 94 South
St. Charles, Missouri 63303

April 10, 1991

Mr. Tracy Mehan, III
Director,
Missouri Department of Natural Resources
Post Office Box 176
Jefferson City, Missouri 65102

Dear Mr. Mehan:

NOTIFICATION TO NATURAL RESOURCE TRUSTEES, 40 CFR 300.135(j)
SUBPART G - TRUSTEES FOR NATURAL RESOURCES

As a trustee for natural resources located on, over, or under land administered by the United States, this letter is to officially notify you as a co-trustee that the Department of Energy (DOE) is planning to remediate the Weldon Spring Site. The remediation work will be performed in accordance with decisions reached under NEPA and CERCLA.

Discharges or releases of hazardous substances have occurred. The WSSRAP is being conducted to eliminate potential hazards to the public and the environment that are associated with a uranium processing facility that operated from 1957 to 1966. The site consists of four large waste pits, an inactive Chemical Plant, and a quarry that has been filled with contaminated debris. Also, included are several small areas outside the Chemical Plant and the quarry called vicinity properties contaminated as a result of activities associated with previous uranium processing.

The WSSRAP has been listed on the Environmental Protection Agencies National Priorities List. As such, the EPA has final approval authority on cleanup, treatment and disposal decisions. To date, a number of interim actions have been or are being carried out to reduce offsite discharges, improve site safety and to better stabilize the site. Enclosed is a list of these activities. For each of the activities listed, a decision making document(s) was prepared and agreed upon by the State of Missouri and EPA. The most significant decision to date was finalized in March, 1991 and involves the removal transport and temporary storage of waste from the quarry. Two other important decisions that are now in various stages of engineering and construction involve treatment and discharge of contaminated surface waters at the quarry and chemical plant. Any of the listed documents can be made available to you at your request.

Upcoming decisions in 1991 and 1992 will establish requirements for demolition of structures at the chemical plant and requirements for final cleanup, treatment and disposal of all radiological and chemical waste. We will put your office on distribution for documents related to these decisions.

If you have any questions please give me a call. In order to assist you in carrying out your responsibilities as a Natural Resource Trustee we would be pleased to meet with you and provide a comprehensive briefing.

Sincerely,

Jerry S. Van Fossen

for Stephen H. McCracken
Project Manager
Weldon Spring Site
Remedial Action Project

Enclosure:
As stated

cc w/o enclosure:
Bill Adams, EW-90
Peter Gross, SE-31
W.E. Murphie, EM-423
Jim Powers, PMC
Margaret MacDonell, ANL

Removal and Remedial Actions

	Action	Document	
1.	Electrical Power Line and Pole Removal	EE/CA	11/87
2.	Ash Pond Isolation Dike	EE/CA	06/88
3.	Army Vicinity Property	EE/CA	11/87
4.	Overhead Piping/Asbestos Removal	EE/CA	11/87
5.	Disposal of Containerized Chemicals	EE/CA	11/87
6.	PCB Transformer Removal	EE/CA	11/87
7.	Debris Consolidation	EE/CA	11/87
8.	Dismantling of Building 409	EE/CA	11/87
9.	Dismantling of Building 401	EE/CA	11/87
10.	Dismantling of Non-Process Buildings	EE/CA	08/90
11.	Dismantling of Process Buildings	EE/CA	in draft
12.	Site Water Treatment Plant	EE/CA	07/90
13.	Quarry Water Treatment Plant	EE/CA	01/89
14.	Quarry Bulk Waste Removal	ROD	03/91

EE/CA - Engineering Evaluation/Cost Analysis
ROD - Record of Decision

ATTACHMENT C

MISSOURI DEPARTMENT OF CONSERVATION

JERRY J. PRESLEY, Director

August A. Busch Conservation Area
2360 Highway D
St. Charles, MO 63304

September 16, 1993

Mr. Stephen H. McCracken
Department of Energy
W.S.S.R.A.P.
7295 Highway 94 South
St. Charles, MO 63304

Dear Stephen:

In response to DOE's committment to provide wetlands mitigation, it is our desire to develop seasonal herbaceous wetlands on the Busch Conservation Area. This unique habitat type is extremely limited on the area and will provide significant benefits to resident and migratory wildlife. As we have discussed, the proposed site is well suited for wetland creation and will serve us well for mitigation purposes.

A fact sheet and maps are enclosed outlining the description, development, and management objectives of the proposed wetland. As we have discussed, funding for this project is needed this fall (1993). This will expedite construction which is a concern since most equipment may be committed next summer (1994) for repairing flood damage on Department owned lands.

Let me know if you have any questions or need further information. Thank you for your consideration.

Sincerely,

Dan J. Crigler

Dan J. Crigler
Wildlife Management Biologist

COMMISSION

JERRY P. COMBS ANDY DALTON ANITA B. GORMAN JOHN POWELL

Description

Location: Northeast corner of the Busch Conservation Area (See map).
Drainage Area: 220 acres
Wetland Size: 57 acres

Development

Levee length: 4800 feet
Cubic Yards of Earth Fill: 20,000
Levee Side Slopes: 4:1
Levee Top Width: 8 feet
Stop-log water Control Structure: 6 feet
Outlet Pipe: 24 inches (diameter)
60 feet (length)
Seeding Specifications (Levee): Switchgrass at 6 pounds (Pure Live Seed) per acre
Oats 1/2 bushel per acre - temporary cover.
Fertilizer at 90N-90P-90K actual pounds of plant food per acre.
Lime at 4 tons per acre.

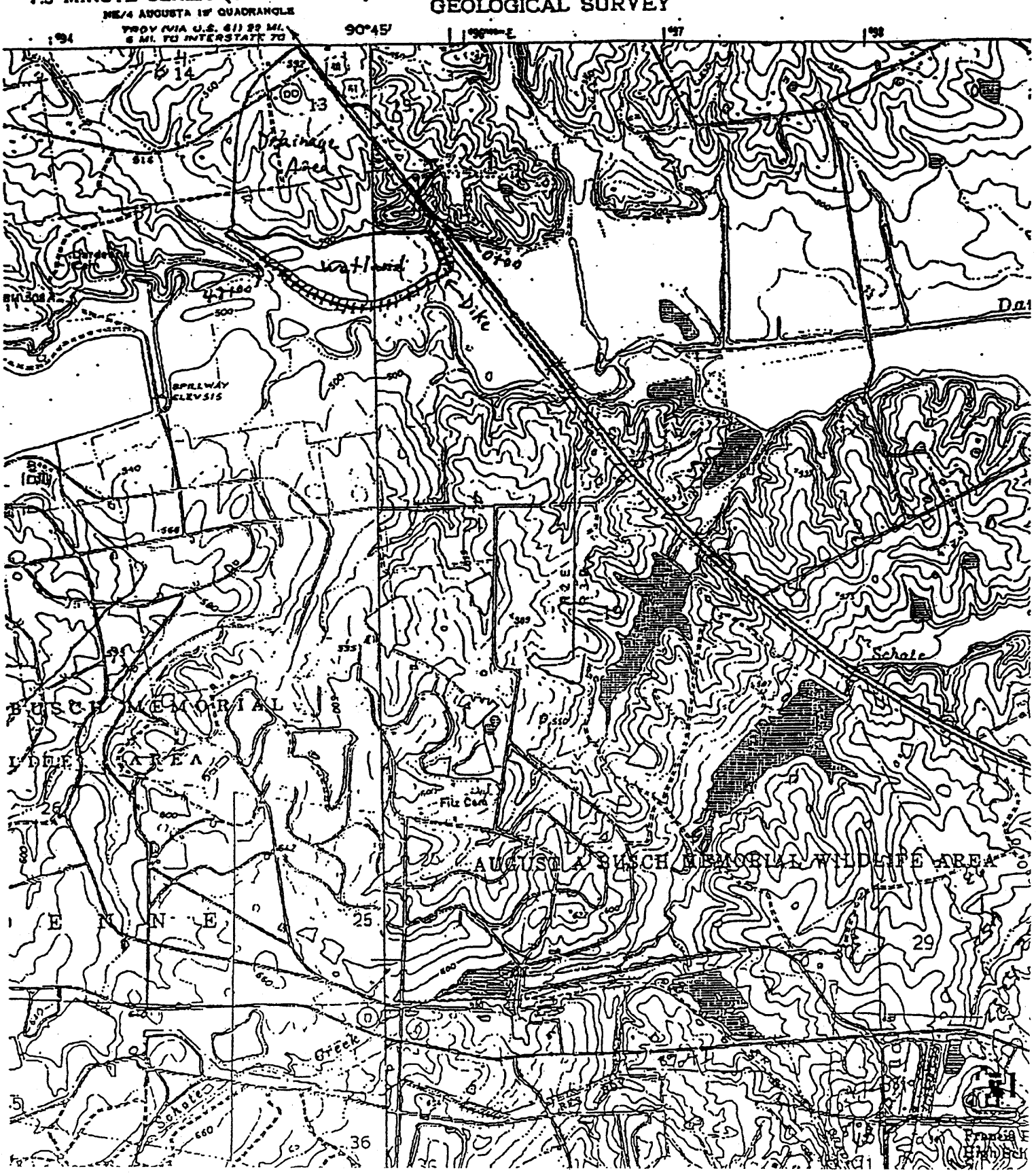
Objectives

1. Provide feeding habitat for resident and migratory wildlife.
2. Provide breeding and feeding areas for amphibians and reptiles.
3. Evaluate and if feasible, provide quality youth-only waterfowl hunting.
4. Provide a wetland demonstration area for private landowners and public education.
5. Evaluate and if feasible, construct a parking lot for area users.

Management

Existing Habitat Type: Cropland
Current Land Use: Agricultural
Current Wildlife Use: High energy winter food source
Proposed Wetland Type: Herbaceous. Late Spring and summer drawdowns will be used to encourage natural moist soil plants that are high seed producers and provide good invertebrate substrate (smartweeds, beggarticks, barnyardgrass, rice cutgrass, sedges, pigweed, panicum, crabgrass, etc.)
Emergent vegetation would be encouraged in the deep water habitat (cattails, bulrush etc.)

Flooding Schedule and Duration:	Dependent on rainfall. Generally flooding will occur after moist soil plants are well established. This would mean flooding in late summer/early fall. Shallow water (1-10") and mud flats would be made available throughout the peak spring migration (March 1 - April 15) for waterfowl and shorebirds.
Habitat Maintenance:	Farming will be used to control succession and maintain the herbaceous component. This management strategy would occur every 3-5 years.

DEFIANCE QUADRANGLE
MISSOURI—ST. CHARLES CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY