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1993 MAY 21 DEPARTMENT OF NATURAL RESOURCES

OFFICE OF THE DIRECTOR

P.O. Box 176 Jefferson City, MO 65102-0176 (314)751-4422

FAX (314)751-7627

May 20, 1993

Mr. David Adler  
St. Louis FUSRAP Site Manager  
Former Sites Restoration Division  
U. S. Department of Energy  
Oak Ridge Operations, P.O. Box 2001  
Oak Ridge, Tennessee 37831-8723

Dear Mr. Adler,

The Missouri Department of Natural Resources (DNR) has reviewed the draft Feasibility Study - Environmental Impact Statement for the Contaminants at the St. Louis Site (DOE/OR/21950-130, February, 1993) and the draft Proposed Plan for the St. Louis Site (DOE/OR/21950-131, February 1993). The Missouri DNR does not agree with the U.S. Department of Energy's (DOE) selection of Alternative 3, capping and consolidation, as the preferred alternative for the St. Louis site. Specifically, we do not agree that this alternative is protective of human health and the environment because it is not a sufficiently permanent solution to this problem.

The Missouri Department of Natural Resources (DNR) has also reviewed the partial draft (Chapters 1,2,3 and 4) Site Suitability Study for the St. Louis Airport Site (Bechtel National, July 1992) which we received in April 1993. We requested this study in 1991 because we believe that facility siting and design requirements of the Missouri Hazardous Waste Management Law and Regulations should be considered relevant and appropriate if these wastes are disposed of in Missouri. To the extent that the site does not meet the siting requirements, any proposed disposal facility should be designed to provide equivalent protection as that of the Missouri requirements. The Missouri DNR does not believe that sufficient characterization of the site has been completed to support a decision regarding disposal at the site. We also believe that the site suitability study should be completed before a proposed plan is developed.

I also remain concerned about the lack of progress on the cleanup of the uncontrolled waste on miles of roads and dozens of privately owned vicinity properties especially in the Hazelwood and Berkeley areas. I understand that there are continuing problems with contaminated soil on vicinity properties being

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disturbed or spread. It is DOE's responsibility to cleanup the uncontrolled waste on these properties when there is a threat of the waste being spread or otherwise disturbed. Since it may require 10 years or more to complete a final disposal solution it is essential to develop interim storage capacity.

In 1992 DOE proposed an expansion of the Hazelwood Interim Storage Site in order to provide a temporary storage area for waste from the cleanup of these properties. I believe that it is critical to cleanup these to prevent further spread of the waste. The Hazelwood interim storage project should be initiated immediately. If this is not possible, then DOE should immediately prepare another interim plan.

#### GENERAL COMMENTS

I continue to be concerned by the direction taken by the DOE's approach to the St. Louis Site. I believe that a large part of the problem is that DOE's Formerly Used Sites Remedial Action Program (FUSRAP) is managed as a low-budget, low-priority program. Indeed, the FUSRAP often seems to be the orphan of DOE's environmental restoration efforts. The DOE seems to assume that the sites in the FUSRAP are small, unimportant sites. Yet, in the specific case of the St. Louis Site, three large sites and dozens of privately owned vicinity properties have been consolidated into a even larger site. The waste volume is equivalent to that at the nearby Weldon Spring site (over 800,000 cubic yards), the upper range of radionuclide contamination is generally higher at the St. Louis Site than at the Weldon Spring Site, and the waste is scattered in many locations in a highly urbanized area whereas the Weldon Spring Site is in an area surrounded by public lands. Unlike the St. Louis FUSRAP site, the Weldon Spring site is managed as a major project with a dedicated budget.

The Missouri DNR is also concerned about the reliability of long term funding for the St. Louis FUSRAP site. In previous communications with the DOE regarding DOE's Five-year Plan for Environmental Restoration and Waste Management we have also commented on how the DOE manages the entire FUSRAP program as single budget item. The St. Louis site is never guaranteed a budget since DOE feels free to arbitrarily reallocate St. Louis site funds to another FUSRAP site. Another policy unique to sites in the FUSRAP is an arbitrary and self-imposed budget cap of \$25,000,000 per year for each FUSRAP site. As a result, the St. Louis Site is not guaranteed adequate funding to complete the project in an appropriate or timely basis. Indeed, recent

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discussions with DOE personnel indicate that cost will be the primary criteria for remedy selection rather than completeness or permanency. It does make sense to manage this major project in an urban area within a program which consists primarily of small sites scattered in many states.

In the past year the state of Missouri has become particularly concerned with the direction taken by the DOE regarding the St. Louis Site. Last year the DNR objected to the consideration of "beneficial use" as means of disposal for contaminated soil. Under this concept, the DOE contemplated disposing of contaminated soil under newly constructed roads in the area or runways at the St. Louis-Lambert Airport.

More recently, the DOE has considered consolidating waste from the other portions of the St. Louis Site at the St. Louis Airport Site (SLAPS) and then capping the site. Once again this concept would involve leaving contaminated soil in place and in contact with groundwater at the SLAPS. This approach would not provide the protection of groundwater that the Missouri DNR believes is necessary. In addition, this approach cannot be considered a permanent solution since it requires continual monitoring and institutional controls to ensure that the groundwater is not used for drinking water purposes. The new plan would also designate as "access-restricted" many soils under buildings or roads, relying heavily on complex and perhaps unreliable institutional controls to prevent improper land uses or disturbance of the contaminated soils.

Our review of the partial draft of the Site Suitability Study for the St. Louis Airport Site also raises concerns about the adequacy of DOE's proposed plan. The site suitability study indicates that the currently available data does not show that the site is underlain by a continuous aquitard protecting the regional aquifer. Also, the water table beneath the site is seasonally within a few feet of the surface and waste material could easily be in contact with groundwater as well as surface water from flood events. These concerns must be adequately addressed before the site can be considered suitable for a waste disposal facility. These concerns also emphasize that the DOE's proposal for consolidation and capping is inadequate to contain the waste.

It is the issue of relative permanency of the proposal that most concerns the Missouri DNR. DOE's proposal may be protective of the environment and public health in the short run (decades) but may not be protective in the long run (centuries) because of the lack of physical containment and excessive reliance on maintaining current land uses by institutional controls. DOE's proposal also relies excessively on assumptions that current

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patterns of groundwater and surface water use will continue. We do not agree that the water in the St. Louis urban area should be permanently "written-off" as unusable for drinking water or other purposes.

SPECIFIC COMMENTS ON THE FEASIBILITY STUDY-ENVIRONMENTAL IMPACT  
STATEMENT FOR THE ST. LOUIS SITE

Pages ES-2 and 2-78: These pages indicate that non-radiological contaminants that cannot be definitely attributed solely to the MED/AEC uranium enrichment activities are not within the scope of this FS-EIS. The DNR disagrees with this approach. An acceptable approach would be to remediate all non-radiological contaminants unless it can be documented that the contaminants did not result from, or could not reasonably be expected to result from MED/AEC activities.

Page ES-4: The third paragraph states that the St. Louis site SLAPS (St. Louis Airport site), HISS (Hazelwood Interim Storage Site), and Futura properties were placed on the NPL (National Priorities List) by EPA based on radiological contamination considerations. Also, no commingled chemical contamination has been found that meets the definition of a Resource Conservation and Recovery Act (RCRA) hazardous waste. The paragraph then concludes that non-radiological contamination in and of itself is not a FUSRAP issue for the St. Louis site, but commingled waste will be remediated.

The MDNR believes that regardless of the basis for the NPL listing, any additional contaminants at the St. Louis site should be remediated appropriately (see comment above). Also, the definition of hazardous waste is not an appropriate threshold for determining whether or not non-radiological contaminants should be remediated.

Page ES-4: In the second paragraph, the "low-yield nature of the formation" is not in itself a valid reason to not remediate the ground water.

Page 1-7: In the second paragraph, although the Westlake Landfill is beyond the scope of the FS-EIS, DOE should consider the need for the additional disposal volume that could be generated by remediation of the Landfill.

Figure 2-9, p. 2-22 - This figure contains a typographical error in description of limestone bedrock, "chart modules" should be "chert nodules."

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Figure 2-9, p. 2-22 - Note: "United" should be "Unified."

Pages 2-28, 3-6, 3-10, 3-11, Appendix A and other locations: The EPA groundwater classification system is not a promulgated standard and Missouri does not recognize the classification system. It is not implemented at any location in Missouri. The Safe Drinking Water Act and the Missouri Water Quality Standards are Applicable or Relevant and Appropriate Requirements (ARAR) for groundwater at the St. Louis FUSRAP site.

Page 2-29, first paragraph - The discussion of the hydraulic interconnection between the upper and lower alluvial units is unclear. Does the discussion mean that the lower unit is confined or that there is a perched water table in the upper alluvial unit?

Figure 2-12, p. 2-31 - The title for this figure is misleading. No natural material is totally "impermeable" as it is suggested here. The term "slowly permeable" or "low permeability" would be a better choice. This same unit is called "a relatively impermeable clay layer" on p. 4-4 and 4-5.

Page 2-32: The location of the eight off-site wells should be identified here or in the Remedial Investigation report.

Pages 2-62, 2-64, 2-66, 2-71, and 2-74: These pages briefly discuss the presence of metal contaminants at levels that do not fail the EP Toxicity or TCLP test. This test is useful to determine if a regulatory threshold is exceeded and if the metals are in a form that will leach under certain conditions. However, this test should not be used as the basis for determining if metals should be remediated.

Page 2-75: The third paragraph under 2.3.3 "Contaminants of Concern" refers to the industrial nature of the St. Louis site and contaminants in the soil and groundwater from onsite sources unrelated to MED activities and from upgradient sources. The DNR recognizes the industrial nature of the St. Louis Downtown Site. Does DOE have documentation of prior industrial activities at the airport area and Latty Avenue sites? Also, any upgradient sources of groundwater contamination at any of the sites should be identified through sampling and analysis.

Page 2-81: In 2.5, *Summary of Baseline Risk Assessment*, it is stated that "For purposes of comparison, about one in three Americans will develop cancer." This appears to be a generalized, unexplained comparison without documentation and could be misleading. In any case, it is not relevant to whether or not a site should be remediated.

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Page 3-6: DNR does not recognize the EPA policy of groundwater classification and does not agree with the IIIA classification of groundwater at the St. Louis FUSRAP site.

Pages 3-10 & 3-11: These comments on the usability of local groundwater and surface water indicate that DOE is assuming current land uses. According to the DOE's own guidelines the facility should be designed to last for 200-1,000 years; therefore, current lands uses cannot be assumed. Consequently, the Safe Drinking Water Act is an Applicable or Relevant and Appropriate Requirement (ARAR) for the St. Louis site.

Page 3-18 & 3-19: Further discussion is needed on containment technologies. The text indicates that vertical barrier walls could be constructed down to an impermeable natural horizontal barrier. The site suitability study does not support the existence of such barrier above the regional aquifer.

Page 3-26: How can a slurry wall be considered to be a groundwater remediation technology?

Page 3-28: The last paragraph under 3.4.4 "Treatment" discusses solidification/stabilization and rejects it from further consideration. MDNR requests that the following issues be addressed before rejecting this treatment option:

a. The paragraph states that solidification/stabilization would greatly reduce the mobility of radioactive contaminants, but later states that there would be minimal realized benefit. Reduction of mobility would be a major benefit.

b. The paragraph appears to conclude that the resulting increase in volume of treated soil would cause a proportional increase in disposal costs. This does not account for the fixed costs in any excavation, treatment, and disposal option.

c. The last sentence refers to "limited effectiveness under site conditions." What site conditions are referred to and why do they limit the effectiveness?

d. Tables 2-20 and 2-21 list many "Chemical Contaminants of Concern" that could benefit from reduction of mobility in a disposal setting.

Pages 4-3 and 4-4: DNR does not necessarily agree with the list of "access-restricted" soils. Designation of "access-restricted" soils should be negotiated on case-by-case basis. In general we believe that too many contaminated soil areas have

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been designated as "access-restricted." Whenever soils are left in place there should a legally binding agreement between DOE and the property owner regarding what can be done to the property and who is responsible when the property changes ownership, use or is disturbed, when the contaminants are to be removed, who is responsible for removal and where disposal would take place. Does DOE intend to reopen the disposal facility each time that additional "access-restricted" must be placed in final disposal?

Page 4-5: In the first and second paragraph, no specific data is provided to substantiate the generalized permeabilities assigned to the overburden units. However, the accuracy of the hydraulic conductivity testing performed in the past is in question (see comments on SLAPS site suitability study). MDNR recommends that additional in situ permeability testing be performed at the St. Louis Airport site and the ballfields area.

Pages 4-13, 4-14, and 4-30: These pages discuss the "limited benefit" of treatment and reject soil washing, the only retained treatment option from Section 3. These portions should be reevaluated considering the previous comment on page 3-28.

Page 4-25: In the second paragraph, is the 10,000 dilution factor by the flow in Coldwater Creek at SLAPS?

Page 4-26: Under 4.3.5.3 "RU Alternative GW3 - Containment," the option of draining an encapsulated subsurface area with interceptor drains and sumps is discussed. Other parts of the FS-EIS indicate that the low permeability and heterogeneity of the subsurface inhibit this option.

Pages 4-28 to 4-30: The option of groundwater remediation is discussed here, and rejected in favor of natural attenuation. The option of stopping further spread of contamination should also be considered here, including passive methods of containing the plume of contamination, particularly with regard to the Airport area sites.

The estimated groundwater movement rate of 1.75 feet/year is significant when considering the long half-life of the radiological contamination. The difficulty in remediating the groundwater at the Airport area sites because of the low permeability will only be magnified in the future.

Page 5-10, Table 5-2: The element of Monitoring under Alternative 4 indicates that groundwater monitoring will terminate at HISS when the site is remediated. The current contamination in groundwater may preclude this. Also, this Table does not reflect that the magnitude of institutional controls are

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greatly reduced over the long term for Alternative 4 over Alternative 3, because the source of the groundwater contamination is removed. The importance of removing the source of contamination is also not discussed in the text of Section 5.

Page 5-12, Table 5-3: What assumptions were used under the "ingestion of water" exposure pathway? What property use scenario was assumed for the Ball Field Area Exposure Location?

Page 5-19: Section 5.2.2.1 "Overall Protection of Human Health and the Environment," it states that Alternative 2, institutional controls, is protective of human health and the environment. Does this option include restricting access to the SLAPS vicinity properties and Latty Avenue properties?

Page 5-23: If contaminated soil remains in place beneath the ball field, how does DOE plan to deal with the rubble/demolition fill in the ball field?

Page 5-25: Since Alternative 3 relies on the assumption that ground water will never be used as a drinking water source, this discussion under "Overall Protection of Human Health and the Environment" needs to be revised with consideration of all other comments in this letter.

Pages 5-25 and 5-26: This section raises more issues on the use of institutional controls of "access-restricted" soils and the Class IIIA groundwater designation. See comments above.

Page 5-26: Under 5.2.3.2 "Compliance with ARARs," the fourth paragraph states that "there are no groundwater ARARs." The Missouri Water Quality Standards are a groundwater ARAR.

Page 5-29: *Geology and Soils*, second paragraph - The position of the "temporary cover phase" is unclear. Would the temporary cover be placed in-between the existing contaminated soil at SLAPS and the excavated and transported waste or above that layer? If this cover is temporary, will it be removed before the cap is installed?

Page 5-34: The first full paragraph states that "Excavating contaminated soils at HISS, Latty Avenue, and other vicinity properties would release these areas for unrestricted use." Does this statement account for leaving "access restricted" soils in place? What is the basis for this statement?

Pages 5-54, 5-55, and 5-59: Note "DOE Budget Constraints." What is the statutory basis of a \$25,000,000 budget cap? Does this cap apply only to FUSRAP sites or to all DOE sites?



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Page A-7, Table A-3: This table of location specific ARARs does include the Missouri Regulations for Hazardous Waste Landfills, 10 CSR 25-7.264. It should also cite the Missouri Hazardous Waste Law, 260.350 to 260.434 RSMo. The MDNR believes that these laws and regulations are an ARAR for the St. Louis FUSRAP site.

Pages A-8 to A-28, Table A-4: MDNR believes that this Table contains substantial inaccuracies and needs to be revised. This letter does not contain comprehensive comments regarding the list of ARARs in this table and the DOE interpretation.

#### SPECIFIC COMMENTS ON THE PROPOSED PLAN FOR THE ST. LOUIS SITE

Page 12, *Environmental Restoration Objectives* - It is recommended that the phrase "or eliminate" be dropped from this sentence because it is unlikely that the preferred alternative given in the Proposed Plan would (totally) eliminate potential future health hazards posed by site contamination in soils, buildings, sediment, and groundwater.

Page 13 - A potential environmental pathway is not included: offsite migration of contaminated groundwater - potential future risk if used for drinking water supply.

Page 13: The statement that groundwater pumping is ineffective serves to increase the importance of selecting an option that effectively removes all of the source of contamination, or isolates it with effective barriers. It also dictates that the spread of contamination be halted now if necessary.

Page 13, *Technology Screening*, third paragraph - Despite that fact that solidification does not satisfy all the balancing criteria it has been identified as a remedial alternative at the Weldon Spring Site. Why has it been totally disregarded at the St. Louis Site?

Page 14, *Technology Screening*, last paragraph - How long will groundwater monitoring continue after clean-up? The possibility for future offsite migration of contaminated groundwater is not addressed here. If this should occur, what would be the response by DOE?

Page 14, *Institutional Controls*: This section states that institutional controls are already maintained at the SLAPS. I understand, however, that DOE will no longer maintain site security at SLAPS after July 1, 1993. In the interim, who will maintain the site after July 1, 1993? Under Alternative 2 would DOE re-establish these controls?

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Pages 14 to 27, *Detailed Analysis of Site-Wide Alternatives and Disposal Options and Comparative Analysis of Site-Wide Alternatives*: These analyses are not useful because they group together significantly different alternatives. For example on Page 27, Cost: This cost analysis is completely inadequate for deciding cost the effectiveness of the alternatives. The ranges given for Alternative 4 & 5 are useless for comparing costs. What is the cost of an off-site but in-state facility? What is the cost of an on-site facility at SLAPS (with & without liners). What is the cost of shipping to the Envirocare facility or the Hanford site? What is the cost of a dedicated FUSRAP facility (East or West)?

Page 18 and 19, *Alternative 4 and 5 - Partial-Complete Excavation and Disposal*, More information is needed for the proposed staging area at SLAPS which would temporarily store dredged and dewatered sediments. Would this be an engineered structure?

Page 20, first bullet - The sentence "Next, all St. Louis site excavated wastes would be placed at SLAPS and portions of the ball field, and then onto the base where it would be covered with an engineered cover similar to that used in Alternative 3" is confusing. Which base is being addressed here? Would the sentence be more clear and have the same meaning if the phrase "onto the base where" was dropped?

Pages 27 to 29, *Description of the Preferred Alternative and Rationale for Selection of the Preferred Alternative*: The Missouri DNR does not agree with the preferred alternative of "consolidation and capping". Specifically, we do not agree that this alternative is protective of human health and the environment as long term and sufficiently permanent solution.

Page 28, *Description of the Preferred Alternative*, first paragraph - Capping alone for these examples may comply with the Uranium Mill Tailings Radiation Control Act but not the Missouri Hazardous Waste Regulations.

#### SPECIFIC COMMENTS ON THE SITE SUITABILITY FOR THE ST. LOUIS SITE

Page 5: The Central Lowlands region is a province. The word "Province" should be added to the end of the first sentence.

Page 6, Figure 2-1: The Chouteau Group is part of the Kinderhookian Series rather than the Osagean Series.

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Page 7, Figure 2-1: The Epoch from the Lamotte Sandstone to the Eminence dolomite is the "Upper Cambrian Series". The stratigraphic nomenclature for a majority of the formations listed is incorrect. Six of the nine formations listed are misnamed; i.e., Gasconade Formation should be "Gasconade Dolomite". Correct stratigraphic nomenclature can be obtained from T.L. Thompson, chairman of the Stratigraphic Names Committee, Division of Geology and Land Survey (DGLS), Missouri DNR.

Page 16: The DNR does not consider the St. Louis area as being "tectonically quiet". Discussions on subsequent pages, however, accurately describes the seismotectonics of the area. Figure 2-4 and Table 2-1 notes several earthquakes in the vicinity of SLAPS with Richter magnitudes of 3.0 - 4.2. The relatively thick saturated lacustrine deposits that lie beneath much of this site may make this particular area more susceptible to accelerated ground movement and liquefaction than other portions of the St. Louis area. Cell design should address such concerns. The earthquake provisions of Subtitle D of RCRA may be an ARAR.

Page 41: The description of Unit 4 states that the lab permeability of this unit is  $1 \times 10^{-6}$  cm/s. This sounds extremely low for the description of the unit. It appears that the chert and gravel portion of the unit may have been discarded during laboratory tests. A detailed description of test methodology along with raw data should be provided.

Page 45 - 54: Geologic cross sections indicate the majority of the site is not underlain by an aquitard that is adequate to conform with State regulations. A very small portion of the site has 20 feet of  $1 \times 10^{-7}$  cm/sec. permeability material beneath the site and even less contains 30 feet of such material (as required by regulations).

The cross sections give no indication of water levels within the wells to better determine the potential interconnection between the various units on site. Several sets of water level data should be provided.

Page 56, Paragraph 2 identifies Unit 4 as "probably a layer of residuum". Previous discussions identify Unit 4 as glacial in origin (p. 38 and 39). The origin of this unit should be obvious from examining the unit during drilling. Descriptions of the unit should be consistent.

Page 57 - 66: Isopach and structural contour maps presented are very helpful in interpreting site conditions. Figure 3-18 makes it very clear that you must go northwest of Coldwater Creek (off

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site) before the low permeability subunit (3M) is 30 feet or more in thickness. Only limited areas on site are underlain by 20 feet or more of this material. These conditions will not meet Missouri state hazardous waste siting criteria.

Page 70, Table 3-3: This table implies questions about the validity of current permeabilities assigned to the various units on site. Why were numerous types of field permeability testing utilized in the determination of field permeability? The DNR prefers to see one test method used on each unit defined beneath the site. Two stage borehole tests are excellent methods for determining both horizontal and vertical in situ permeabilities.

Unit 3M exhibits a large difference in permeability between laboratory test methods and field permeabilities. One field test is probably not adequate to determine an accurate field permeability. This seems to indicate that either the lab or field data is inaccurate.

The lab permeability of Unit 4 appears to be too low (see comment above on page 41). The description of this unit indicates that the cherty gravel fraction of the sample may have been discarded prior to testing. The field permeability is more realistic.

Page 80: DNR agrees that a hydraulic connection exists between the unconsolidated sediments at the site and the bedrock at the site. It may be appropriate to install more bedrock wells to further investigate this relationship.

Page 86, Figure 4-5: Portions of this figure are not readable as presented.

Page 94: Presence of macropores in the vadose zone is a definite concern. Previous discussions indicate that no permeability testing has been done on Unit 1. Will Unit 1 be removed? Only one in situ permeability test has been done on Unit 2. There is also an admitted lack of geochemical data on unconsolidated materials.

Page 100: Flooding related to Coldwater Creek is still a concern. It appears from Figure 4-9 that there is a definite potential for flooding along McDonnell Blvd. and the N-S drainage near the center of the site. How will these areas be addressed during remediation?

Thank you for the opportunity to comment on these documents. We reserve the right to make further comments on additional preliminary drafts or during the public review period. We request that a response to all individual comments be provided with an indication of any changes that have been made or will be

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made to subsequent revisions of these documents. The Missouri DNR looks forward to further discussions on these documents. Please coordinate further discussions with Mr. David Bedan of my staff.

Sincerely yours,

DEPARTMENT OF NATURAL RESOURCES



David Shorr  
Director

c: Mr. William Rice, U.S. Environmental Protection Agency, Region  
VII  
Dr. Coleen Kivlahan, MDOH