#### MINUTES

St. Louis Site Remediation Task Force Local Priorities Working Group

August 9, 1995 Meeting

Berkeley City Hall Berkeley, Missouri

# Participants Attending

# Support

Lori Batton, City of Berkeley Jack Frauenhoffer, Mallinckrodt Chemical Kay Drey Donovan Larson, St. Louis County Water Co. Tom Manning, City of Hazelwood Jean Montgomery, City of Berkeley Josh Richardson, City of Berkeley Jan Titus, Lambert Airport Miranda Duncan, Co-Facilitator Jim Dwyer, Facilitator Dave Miller, SAIC Sarah Snyder, FUSRAP

Agenda_Item	Minutes	<b>Determination</b>
Call to Order	Jim Dwyer called the meeting to order at 9:36 a.m.	
Agenda	Mr. Dwyer suggested the following agenda for the meeting:	The group concurred with the proposed agenda.
	Minutes (Review/Correct) Review Matrix Package FY 96 Priorities FY 97 Priorities Long Term Priorities SLAPS/Coldwater Creek Schedule	· · · ·
Approval of Minutes	Mr. Dwyer distributed draft minutes from the August 2 meeting of the Local Priorities Working Group for review and comment.	The minutes were approved as amended.

# 134087

Lori Batton asked that the following sentence be included in the discussion of the impact of SLAPS on Coldwater Creek: "Bob Boland stated that surgical removal was in fact possible and is being done throughout the United States, including Mallinckrodt."

The group agreed to the addition.

Dave Miller provided the correct spelling for "gabion" wall.

Donovan Larson said the correct diameter of the water main along Coldwater Creek is 30 inches, and not the 36 inches noted in the minutes.

Matrix Package

Mr. Dwyer reviewed the information that the working group identified for inclusion on the matrix.

1. Source of data

Mr. Miller said he would prepare a reference citation. The data used for the matrix were taken from the feasibility study.

2. Logic behind the categories

Jack Frauenhoffer and Mr. Miller agreed to develop this language.

3. Cleanup costs

Mr. Miller said he would draft a short explanation for the figure of \$1,100 per cubic yard.

4. Cleanup volumes

Mr. Miller said he will prepare the citation for the source of the data and the assumptions used in the matrix.

## 5. Sites identified on matrix

Mr. Dwyer said he would draft a short explanation.

#### 6. Disposal categories

Mr. Dwyer said there needs to be an explanation of why the working group used three categories for the degree of contamination. Kay Drey said she thought the "medium" category of 2 to 50 for the sum-of-the-ratios was too broad. She also said the assumption that DOE can do surgical removal of hot spots is possibly misleading. Mr. Dwyer said that the information contained in the matrix is subject to change as new information is developed. Ms. Drey said there needs to be a "huge disclaimer" on the matrix about how it may change as new information is developed. She also indicated her desire to attach a minority report in the event the airport site is suggested as an interim storage location for any material that is not currently located within the fenced site.

Mr. Miller and Mr. Frauenhoffer agreed to draft language explaining the disposal categories.

Ms. Drey also said she objected to comparing the very rich ore from the former Belgian Congo with flyash. Mr. Dwyer explained that the matrix did not suggest that wastes with higher levels of radioactivity would be disposed of in a commercial landfill; however, he said the matrix assumes that some low-level material may be suitable for disposal in an existing commercial landfill. Mr. Miller said he and Mr. Frauenhoffer would develop a clear explanation for inclusion in the matrix.

# 7. Sum-of-the-ratios

Mr. Miller is preparing the explanation for this concept. He said he will discuss the sampling process and how lab analysis identifies all the various radioactive isotopes. The explanation also will include a discussion about picocuries per gram. Finally, he said he will link these concepts using an analogy of a shopping basket the capacity of which represents the level beyond which cleanup is required. This "shopping basket" can only hold a maximum number of apples, oranges, and grapes. Each piece of fruit represents a different isotope, each of which has a different cleanup standard.

Ms. Drey said she wants to include language indicating that these are the <u>permissible</u> levels, rather than background or "safe" levels.

8. Definitions of "interim storage" and "permanent disposal"

Mr. Dwyer said he would draft language for this explanation.

Ms. Drey said she is most concerned about cleaning up SLAPS because of its impact on Coldwater Creek, which feeds into the Missouri River, from which ultimately St. Louis gets its drinking water.

She referred to several existing reports concerning contamination of groundwater at SLAPS, noting that the authors can't even agree on background levels. A 1984 report

SLAPS/Coldwater Creek

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prepared for Oak Ridge National Laboratory said background is 45 picocuries per liter; another Oak Ridge report says it is .1 picocuries per liter, and still another says it is .8 picocuries per liter. She said one report shows that there are roughly 2,000 to 8,000 picocuries per liter in the groundwater at SLAPS.

Mr. Dwyer said it is essential that Ms. Drey's information be communicated to the Task Force. He said it is important for the Task Force to understand her concerns. (A summary prepared by Ms. Drey is included in the minutes.)

Ms. Batton said the proposed study of the impact of SLAPS on Coldwater Creek will address a lot of Ms. Drey's concerns. She. suggested letting the study proceed and not continue talking about the groundwater until a report has been generated. Tom Manning reminded the working group that it once discussed the option of a slurry wall to stop migration of the contamination to Coldwater Creek, and suggested that similar containment measures could be considered again.

Donovan Larson said he doesn't want to discuss the issue any more because there isn't any more information than there was last week. However, he said the lack of information is a critical point. He also said it is important to remember timing when discussing this issue. Because some decisions cannot be made until the study is complete, it is important that the groundwater study proceed before some of the other issues are brought to the table.

Mr. Dwyer provided an update on the proposed study. He said a panel of independent credentialed experts will be

assembled to evaluate the information about contamination loading from SLAPS to Coldwater Creek and determine if that information is sufficient. The panel also will try to reach some kind of conclusion about the groundwater. Mr. Miller said DOE is trying to create a panel of independent experts to focus on the issues of surface water and groundwater, as well as the long-term impacts of SLAPS on the groundwater. One of the most pressing questions is to determine how much contamination is going into Coldwater Creek from stormwater runoff and from the groundwater, and to put the relative contributions of the two sources into perspective.

He said he has contacted some experts, who are both qualified and available, which he will present to the working group for consideration. Mr. Miller said he would like to have five experts on the panel, with a nationally known expert -- Dave Miller of Geraghty and Miller -- serving as the chair.

As currently planned, the panel would convene shortly after Labor Day. Mr. Miller said he anticipates the panel completing its work by mid October.

Ms. Drey asked if DOE could ask the U.S. Geological Service do a similar study on a longer term. She also asked if the panel could evaluate solutions as well. Mr. Frauenhoffer suggested that the panel should look at the initial questions and then possibly focus on solutions later.

Mr. Dwyer told the working group that he was asked to write a letter to the Missouri Department of Natural Resources asking for its participation on this panel. Members agreed that state participation was important, but emphasized that the state panelist should

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#### be sufficiently credentialed.

FY 96 Priorities

The working group reviewed a proposal prepared by Dave Adler suggesting potential applications of FY 96 and FY 97 cleanup funds. The proposed projects include:

- 1) Evaluate the use of local disposal facilities (e.g., demolition fills, municipal landfills) for minimally contaminated soils
- Identify and evaluate suitable location(s) for a new in-state disposal facility
- Remove contaminated soils from haul route properties located in North County
- 4) Restore and stabilize airport-owned properties
- 5) Continue cleanup efforts at the St. Louis Downtown Site
- 6) Continue treatability investigations for St. Louis site soils

Mr. Dwyer asked if there were any activities not captured in Mr. Adler's list. The additions suggested by the working group included:

- West Lake Landfill
- Coldwater<sup>-</sup>Creek
- Addressing the issue of the Fleischer property

Jan Titus, who had to leave early, said she didn't have problems with options 1, 2, or 3. She said she had a problem with option 4 because of political considerations that have to be taken into account. She said she did not believe that option 4 was a FY 96 project. Ms. Titus said there may be parts of option 4 that could be done, but without additional details she didn't know. Mr. Miller explained that option 4 called for restoring the ballfields and returning them to use. If the approximately 53,000 cubic yards of soil removed from the ballfields were moved to SLAPS, it would cover about 80 percent of SLAPS to a depth about 2 feet. The option also calls for establishing erosion control to prohibit flushing of sediment into Coldwater Creek.

Tom Manning said he would like to clean up Coldwater Creek so flood control improvements can be made where it runs through the City of Hazelwood. However, he said he can't proceed with plans until the questions about contamination loading are answered. The groundwater study is the key. He said the U.S. Army Corps of Engineers will not assist in making improvements to Coldwater Creek if contamination still is coming into the creek.

Ms. Titus asked that option 4 not be part of FY 96 budget right now.

Jean Montgomery said she is concerned about commercial property owners who can't get their properties in use. She wanted the priorities to reflect consideration of that situation. She said she prefers option 4 as her first choice.

Mr. Dwyer said that there could be a hierarchy of properties if option 3 is selected and that the hierarchy might be a way to address property owners' concerns in a timely manner.

Mr. Frauenhoffer said that the timelines sometimes are dependent on each other. He said the working group needs to identify the sub-activities that need to take place for the overall activity to happen. Ms. Titus said she would identify some of those sub-activities.

Ms. Drey said she cannot support putting contaminated soil on SLAPS and letting it then wash into the ditches.

Mr. Miller said he thought the working group was confusing near-term priorities with longterm priorities. He said some of the short-term activities are protective and will allow the working group to focus on the long-term.

Ms. Batton said she thinks it is ludicrous for the City of Berkeley to not have access to the ballfields. The city is being penalized, she said.

Ms. Drey asked the cost to ship about 53,000 cubic yards to Envirocare. Mr. Miller said it is about \$58.2 million at \$1,100 per cubic yard.

Ms. Batton said surgical removal of hot stuff at SLAPS is a starting point. She also said surgical removal of some of the hot spots on the ballfields could make the remaining material acceptable for storage at SLAPS.

Ms. Drey suggested surgically removing hot spots at the ballfields, shipping that highly contaminated soil for disposal at Envirocare, and then covering the ballfields with a protective layer of clean-soil.

Josh Richardson asked Ms. Drey if removing the hot spots from the ballfields and SLAPS and then putting the protective layer of clean soil on the ballfields would be acceptable to her. She indicated that it might be acceptable because surgical removal might be possible at the ballfields, whereas it doesn't seem feasible for SLAPS.

Mr. Richardson said it is possible to dewater areas in order to surgically remove hot spots of contamination. He reminded the working group that it needs to develop ways to spend the funds being allocated for FY 96 and FY 97. He said there are only two weeks in which to develop a recommendation for FY 96.

Ms. Drey said she also worries about actions that leave people thinking the problem is solved for the long term, when it is not.

Mr. Dwyer said there hasn't been much said about the utilities corridors, which ranked as a high priority with the working group. Mr. Larson said he is concerned about utility workers digging in radioactive soil. However, Mr. Miller said remediation of the utility corridors is factored into option 4.

Ms. Drey asked why DOE simply can't buy replacement ballfields for Berkeley. She said it seems that so much land has been abandoned for noise abatement with the airport. Mr. Richardson said most of the large tracts of land in the city already have uses planned for them.

The working group then revised some of the scopes under the activities proposed by Mr. Adler. Members then discussed how to prioritize the activities.

Ms. Drey said she wanted to do a "wish list" of priorities to get ideal preferences on the record. Mr. Miller cautioned against an approach that resulted in "putting out fires" because those options may not present technically sound decisions in the long run.

Ms. Batton asked the group for its reaction to the concept of surgically removing hot spots at the ballfields and then putting clean fill on top. Members said they liked the idea, provided it was engineered to protect groundwater and to prevent erosion into Coldwater Creek.



Mr. Dwyer then suggested that the working group identify dollar amounts for each of these activities.

The working group discussed funding for treatability studies. Several members suggested eliminating that budget item. Ultimately, the working group decided to recommend that up to \$250,000 be spent on treatability studies in the next two fiscal years, with the proviso that the experiments be conducted using St. Louis Site soils. The working group also decided to recommend that local universities and laboratories be given the opportunity to do this work, where appropriate.

The group agreed on annual funding amounts for the other identified options, not in order of priority:

- Evaluate the use of local disposal facilities (e.g., demolition fills, municipal landfills) for minimally contaminated soils -- \$200,000 for each year
- Identify and evaluate suitable
  location(s) for a new in-state disposal
  facility -- \$200,000 for each year
- 3) Remove contaminated soils from haul route properties located in North County -- \$4 million for each year
- 4) Restore and stabilize airport-owned properties -- \$3.5 million for each year
- 5) Continue cleanup efforts at the St. Louis Downtown Site -- \$4 to \$4.5 million for each year

Ms. Batton reminded the working group of the Fleischer situation, saying that he was still trying to sell his property. She asked whether members had any problem with allowing him to store contaminated soils on his property as an interim measure. The group agreed, as long as the storage was done on an interim basis in engineered, monitored conditions.

# Attachments

Attachments include:

- Dave Adler's potential applications for FY 96 and 97 cleanup funds, as revised
- Information to be attached to the matrix that is distributed to Task Force members

Ms. Drey asked that the following information be included with the minutes:

- Drawing showing areas and depths of radioactive contamination at SLAPS
- Selected excerpts from documents concerning the impact of the contaminated groundwater at the airport site on Coldwater Creek

The next meeting of the Local Priorities Working Group is scheduled for August 16, 1995. The meeting adjourned at 3 p.m.

Approved August 23, 1995

# POTENTIAL APPLICATIONS OF FY '96 AND '97-CLEANUP FUNDS

1) Evaluate use of local disposal facilities (e.g. demolition fills, municipal landfills) for minimally contaminated soils.

Scope: Attempt to obtain approvals from appropriate regulatory agencies, particularly the State of Missouri. Coordination with the federal Nuclear Regulatory Commission and the Environmental Protection Agency would also be required.

\* Find a willing vendor of disposal services and establish necessary contractual mechanisms.

Cost: \$200,000

# 2) Identify and evaluate suitable location(s) for a new in-state disposal or interim storage facility.

**Scope:** Work with the State of Missouri to identify a location(s) for construction and permanent management of a disposal or interim storage facility. Establish and utilize state criteria to identify land areas for evaluation as potential sites.

\* Critically evaluate existing geological surveys and other siting studies for hazardous waste facilities. Perform supplementary evaluations as needed, incorporating values, criteria and objectives stated in the Alternative Sites Working Group report to the Task Force of April 1995.

3) Remove contaminated soils from haul route properties and Latty Avenue properties 1-L through 6-L located in North County.

Scope: Continue cleanup efforts along Frost and Hazelwood avenues (public and private properties) by excavating soils alongside the roadways, then restoring roadsides using clean soil. Material located underneath roadways would not be removed. Generated soils could either be stored locally on an interim basis in engineered and monitored conditions or shipped to Utah for disposal.

Cost: \$4,000,000

## 4) Restore and Stabilize Airport-owned Properties.

Scope Proposed by DOE: Relocate above-guideline ballfields soil to the southern portion of the Airport property. Restore and release ballfields. Create clean corridor north of McDonnell

Boulevard for relocation of multiple utility lines currently located on south side of McDonnell Boulevard. Mitigate current erosion activity by removing concentrated contamination in roadside ditches along McDonnell Boulevard, and installing an enclosed culvert along south side of McDonnell Boulevard. Ship all soils generated by selected "hot spot" excavations to Utah. Recontour and vegetate southern airport property with minimally contaminated soils generated by cleanup activity.

Scope Proposed by Priorities Working Group: Excavate "hot spots" from ballfields and SLAPS and ship to Utah. Recontour and cover ballfields with clean soil. Create clean corridor for relocation of multiple utility lines. Additional details to be determined.

#### Cost of DOE Scope: \$13-\$15,000,000

Proposed Funding: \$3,500,000

#### 5) Continue cleanup efforts at the St. Louis Downtown site.

Scope: Mallinckrodt planners are currently determining priorities for FY '96 and '97 funds. Actual site restoration measure/techniques would be similar to those applied this year for the Plant 10 cleanup. Resultant soil/rubble with above guideline contamination could either be managed onsite or shipped to Utah.

Cost: \$4-\$4,500,000

#### 6) Continue treatability investigations for St. Louis site soils.

Scope: Options range from continuation of laboratory based evaluation/refinement of technical treatment techniques to deployment of onsite pilot plants to conduct applied tests of field-scale treatment technologies.

Cost: \$100,000-\$250,000

SENT BY:LEWISBURG OFFICE EQUIP: 8-15-95 3:55FM ;

DRAFT SUPPORTING COMMENTS FOR LOCAL PRIORITIES WORKING GROUP MATRIX - REPORT 09 August 1995 SUM OF RATIOS

In order to determine where cleanup must take place, soil samples are obtained and analyzed for radium-226, uranium-238, thorium-230, and thorium-230. If these radionuclides are found to exceed the cleanup criteria, then the area from which the sample was obtained must be cleaned.

In soils, the concentration of radionuclides is measured in picocuries per gram (pCi/g). A picocurie is one trillionth of a curie (Ci). A curie is a measure of radioactivity equivalent to 37 billion disintegrations per second. Therefore, a picocurie represents approximately one disintegration every 27 seconds.

The cleanup criteria vary with depth for radium and thorlum, whose effects to a receptor on the surface diminish rapidly with depth. The concentrations of radium-226, thorium-230, or thorium-232 can't be greater than 5 pCl/g in the top 6 inches of soil. For soils deeper than 6 inches, the concentrations of those radionuclides can't be greater than 15 pCi/g. The concentration of uranium-238 can't exceed 50 pCi/g at any depth. The criteria for uranium-238 is different because it has been determined to be less dangerous than the other three radionuclides.

Recognizing that each isotope's contribution to the contamination is additive, a calculation is used to determine the cleanup criteria. It takes into account the depth from which a sample comes and fact that more than one radionuclide can be present in the sample. This calculation is known as is sum-of-the-ratios procedure. It gets its name from the concept that the concentration of each radionuclide measured in the sample is compared against the criteria described above. By necessity, the sum-of-the-ratios is expressed mathematically.

The calculation of the sum-of-the-ratios depends on the depth of the sample and whether Th-230 is present in greater or lesser concentrations than Ra-226. It is calculated as follows:

If the sample was taken from the top 15 cm (6 inches) of soil, and if the concentration of Th-230 is greater than the concentration of Ra-226, then:

the sum-of-the-ratios =  $\frac{Th230 + Th232}{5} + \frac{U238}{50}$ 

If the sample was taken from the top 15 cm (6 inches) of soil, and if the concentration of Th-230 is less than or equal to the concentration of Ra-226, then:

the sum-of-the-ratios =  $\frac{Ra226 + Th232}{5} + \frac{U238}{50}$ 

If the sample was taken from below the top 15 cm (6 inches) of soil, and if the concentration of Th-230 is greater than the concentration of Ra-226, then:

the sum-of-the-ratios =  $\frac{Th230 + Th232}{15} + \frac{U238}{50}$ 

If the sample was taken from below the top 15 cm (6 inches) of soil, and if the concentration of Th-230 is less than or equal to the concentration of Ra-226, then:

the sum-of-the-ratios = 
$$\frac{Ra226 + Th232}{15} + \frac{U238}{50}$$

If the result of this calculation (e.g., the sum-of-the-ratios) exceeds 1.0, then the area from which the sample was taken must be cleaned up. For example, a sample taken from 3 inches below the soil surface shows the following laboratory results:

radium-226 = 2.0 pCi/g thorium-230 = 3.0 pCi/g thorium-232 = 1.0 pCi/g uranium-238 = 25 pCi/g

The sum-of-the-ratios =  $\frac{3+1}{5} + \frac{25}{50} = 1.3$  which exceeds 1.0.

Therefore, the area from which the sample was taken must be cleaned. Note that the value for thorium-230 was used rather than the value for radium-226, because of its higher concentration.

To clarify the concept of the sum-of-the-ratios, it may be helpful to leave the realm of equations and use more familiar concepts. For instance, imagine a fruit basket that can hold either five oranges, five apples, or fifty grapes. (In other words, ten grapes occupy the same space as either one apple or one orange).

If you went to the produce market with this basket and wanted to buy a combination of these fruits, you could fit, for example, two oranges, two apples, and ten grapes into your basket. Anything more, even one grape, and your basket would be overflowing. You can imagine other combinations. Say, three apples and two oranges; or one orange and forty grapes; et cetera. The same concept applies to the criteria established for cleanup. The isotopes of radium and thorium are equivalent to the apples and oranges, and the grapes are equivalent to uranium. So that if there are two pCi/g of radium-226 and two pCi/g of thorium-232, and 11 picocuries of uranium-238, the cleanup basket is too full. In terms of the equations above, if the equals 1.0 exactly, thebasket is full.

#### Soil Volume Estimates

The estimates for the soil volumes for each group of properties were determined based on field sampling and were taken from the Feasibility Study (SAIC, April 1994). In a few cases, more discrete volume estimates were required and the estimates were made directly from the field sampling data.

#### Cost Estimates

The working group recognized that it may be necessary to use more than one disposal option for the soils of the St. Louis site, and that some properties may be less difficult to clean than others. However, to keep the cost comparisons as simple as possible, it was decided to use one unit cost (\$1,100 per cubic yard) which assumes only the Envirocare of Utah, Inc. disposal option. More detail on how the complexity of specific sites affects the cost of cleanup is provided in the minutes of the Local Priorities Working Group from July 12, 1995 (attached).

#### Categories of Contamination

The degree of contamination categories were not intended to override the fact that there are potential sub-activities that would address higher or lower areas of contamination. While the letter designation might indicate the preferred method of disposal for small sites, all three disposal methods (if available) would have to be used for the larger sites. This division was done to express the concept that there are distinct differences in the levels of radioactivity in the soils at the St. Louis site. Disposal alternatives were a convenient way of demonstrating that there are large volumes of minimally contaminated soil which, if a suitable, less costly disposal alternative could be found, could greatly reduce the cost of cleanup and allow smaller, more highly contaminated soils to addressed more effectively.

#### Subsite Grouping

In order to rank priorities, the matrix was developed to address specific issues that affect priority. Site groups were determined based on them having similar characteristics within the following categories: current use, planned use, risk/level of exposure, economic value, social benefit, degree of contamination, soil volume, and cost of cleanup. For example, since the residential properties have been remediated, the commercial properties along the haul routes have similar characteristics in each of the categories. Therefore, it was not necessary or desirable to list all haul road commercial properties individually.

#### Level of Exposure Categories

The level of exposure evaluation was based on the data provided in the Baseline Risk Assessment (Argonne, 1993). The numbering scheme (e.g., 1 through 3) was developed by the working group to assist in the priority ranking process.

An annotated bibliography will be provided shortly.

Some quotes from documents about the impact of the contaminated groundwater at the Airport Site on COLDWATER CREEK:

An example of the DOE position regarding the Airport Site is as follows: "Stable conditions currently exist at both SLAPS and HISS; i.e., <u>there is no persistent migration of contaminants off-site in</u> <u>either the surface stormwater runoff or groundwater</u>, nor are there any significant airborne contaminants moving offsite." (from "The St. Louis Site Comprehensive Interim Action Plan," an enclosure with the Jan. 30, 1995, fourth 1994 "Quarterly Progress Report" to EPA).

From Kay Drey

A. <u>Environmental Impact Assessment of the Former Airport Storage</u> <u>Site of the Atomic Energy Commission -- St. Louis County, MO</u>. by Weston, as consultant to Oak Ridge Natl.Lab., July 6 1979.

1. "The site slopes gently to the west toward Coldwater Creek (C.Ck.) which borders the site. Groundwater recharge occurs to the east <u>and</u> <u>on the site itself</u> and flows toward this creek. Due to the underlying lacustrine (lake bed) deposits, most groundwater which infiltrates the site empties into C.Ck. Stormwater runoff from the site also drains into this creek, either by direct overland flow or through drainage ditches which parallel the site.... The stream provides excellent dilution potential even under low flow conditions." (pp.1-1, 1-2)

2. "The site is about 20 feet above C.Ck. which forms the west boundary. Micro relief of the site is highly variable because of past filling and grading activities. The fill has not been compacted or stabilized with vegetation in a systematic fashion; 1 differential settling and erosion have occurred throughout the site as a result. ... The site is elevated compared to its surroundings, including drainage ditches along Brown Road, the railroad right-of-way, and C.Ck. The predominant surface drainage is toward C.Ck." (p.3-4)

3. "... the direction of groundwater flow at the site is from the topographic high area in the east corner toward C.Ck in the west corner (Figure 3-3). Groundwater recharge occurs in the topographic high areas to the east and on the site itself. The net flow indicates that most of the groundwater which infiltrates into the site will discharge into C.Ck. The rate of groundwater movement has been calculated to be 0.019 feet/day .... Using the calculated groundwater velocity, the average daily groundwater discharge into C.Ck. from the site is estimated to average 450 gallons per day." (pp.3-6, 3-9).

[Please note: Hydrogeologist Tom Aley estimates the mean daily groundwater recharge at about 5000 gals/day, not including the groundwater passing into the site area from adjacent areas -- in his 4/9/85 letter report to the Coalition for the Environment. Quoting from his conclusions: "The available evidence indicates that there is substantial lateral groundwater movement presently occurring beneath the waste site. Estimates by Weston (1979 and 1982) are unrealistically low and are not supported by existing site data.... It is my conclusion that these water volumes are unacceptably large for a long-term radioactive waste site in a metropolitan area."]

4. "The western one-third of the property is within the C.Ck. flood plain and is designated a flood plain district .... " (p.9-1)

B. <u>Results of the Groundwater Monitoring Program ... Airport Site ...</u> Jan.1981 through 1983. by C. Clark and B. Berven, ORNL. March 1984.

1. "The maximum concentration of uranium-238 observed at this well was 2230 pCi/L. This well water sample exceeded the maximum background U-238 concentration (45 pCi/L) measured in groundwater throughout the state of Missouri by a factor of 50. Based on the results of the U-238 concentration measured (in well water) at the former SLAPSS, leaching of radionuclides is occurring, resulting in concentrations of U-238 in the groundwater above background levels. . . Although there appears to be some movement of the groundwater into C.Ck., adjacent to the site, due to dilution of the creek water, the concentrations of radionuclides in C.Ck. are expected to be substantially below MPC [maximum permissible concentration]." (from the abstract)

[Two notes: (1) According to a report from Oak Ridge National Laboratory, the average uranium concentration in Missouri groundwater is 0.71 pCi/L. A different report says 0.1 pCi/L. (2) The 1986 annual report gives a uranium level of 8671 pCi/L in one groundwater well sample.]

-- perhaps to be continued (?!)



12 US Documentation of Other Public Meetings

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Formerly Utilized Sites Remedial Action Program (FUSRAP)

# ADMINISTRATIVE RECORD

# for the St. Louis Site, Missouri



U.S. Department of Energy

4.14-1070.2

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