

# ornl

**OAK RIDGE  
NATIONAL  
LABORATORY**

**MARTIN MARIETTA**

OPERATED BY  
MARTIN MARIETTA ENERGY SYSTEMS, INC.  
FOR THE UNITED STATES  
DEPARTMENT OF ENERGY



3 4456 0053641 8

ORNL/TM-9730

**BIBLIOGRAPHIC CITATIONS  
PERTINENT TO THE  
WELDON SPRING SITE  
ST. CHARLES COUNTY, MISSOURI**

P.T. Owen  
D.C. Michelson  
N.P. Knox

OAK RIDGE NATIONAL LABORATORY  
CENTRAL RESEARCH LIBRARY  
CIRCULATION SECTION  
250N. ROOM 174  
**LIBRARY LOAN COPY**  
DO NOT TRANSFER TO ANOTHER PERSON  
If you wish someone else to see this  
report, send in name with report and  
the library will arrange a loan.

Printed in the United States of America. Available from  
National Technical Information Service  
U.S. Department of Commerce  
5285 Port Royal Road, Springfield, Virginia 22161  
NTIS price codes—Printed Copy: A05; Microfiche A01

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

**BIBLIOGRAPHIC CITATIONS PERTINENT TO THE  
WELDON SPRING SITE  
ST. CHARLES COUNTY, MISSOURI**

Compiled by

**P.T. Owen, D.C. Michelson, and N.P. Knox**

Remedial Action Program Information Center  
Information Research and Analysis  
Information Resources Organization

at the request of the  
U.S. Department of Energy  
Oak Ridge Operations Office  
Technical Services Division  
Oak Ridge, Tennessee

for the  
U.S. Department of Energy  
Division of Remedial Action Projects  
Washington, DC

Date of Issue: August 1985

OAK RIDGE NATIONAL LABORATORY  
Oak Ridge, Tennessee 37831  
operated by  
MARTIN MARIETTA ENERGY SYSTEMS, INC.  
for the  
U.S. DEPARTMENT OF ENERGY  
Under Contract DE-AC05-84OR21400



MARTIN MARIETTA ENERGY SYSTEMS LIBRARIES  
3 4456 0053641 8



## CONTENTS

ABSTRACT .....	v
INTRODUCTION .....	vii
Site Description and History .....	vii
Citation Form .....	viii
Indexes .....	viii
Information Sources .....	viii
ACKNOWLEDGMENTS .....	xi
BIBLIOGRAPHIC REFERENCES .....	1
INDEXES	
Author .....	23
Author Affiliation .....	27
Title Word .....	31
Publication Description .....	69



## ABSTRACT

This report is a compilation of 166 bibliographic references pertinent to the Weldon Spring Site (WSS), St. Charles County, Missouri. The WSS is a surplus U.S. Government facility which consists of the Weldon Spring Chemical Plant; two separate low-level radioactive waste storage properties, designated the "raffinate pits" and "quarry"; and a number of potentially contaminated vicinity properties. The facility was used by the U.S. Atomic Energy Commission from 1957 to 1966 to refine uranium. After several years the U.S. Department of the Army acquired responsibility for the Weldon Spring Chemical Plant, performed some limited radiological decontamination, and then cancelled plans to construct a chemical process. Contamination of the facility and adjacent lands resulted from operation of the refining facility and the storage, transport, and disposal of process wastes on the property, as well as subsequent decontamination activities. All identified references to published technical documents that relate to the WSS were included in this report. In some cases citations from the reference section of existing documents were included in this report with no hardcopy to substantiate the existence of the document referenced.



## INTRODUCTION

This report has been prepared by the staff of the Remedial Action Program Information Center (RAPIC) located at the Oak Ridge National Laboratory. RAPIC is funded by the U.S. Department of Energy, Division of Remedial Action Projects, and operates under the auspices of the Office of Surplus Facilities Management, UNC Nuclear Industries, Inc., and the U.S. Department of Energy, Richland Operations Office, Surplus Facilities Management Program Office, Richland, Washington.

RAPIC serves as a comprehensive, centralized source of information concerning the scientific, technological, regulatory, and socioeconomic aspects of radioactively contaminated facilities and site remedial actions. RAPIC developed and maintains the Nuclear Facility Decommissioning and Site Remedial Actions database.

The Remedial Action Program Information Center developed an online interactive database containing the bibliographic citations of all identified published documents pertinent to the Weldon Spring Site (WSS). This bibliography was published from the WSS database. Supplements may be prepared, or the bibliography may be reprinted when a sufficient number of additional references are identified and added to the database.

For further information concerning the WSS database or this publication please contact:

Park T. Owen  
Remedial Action Program Information Center  
Oak Ridge National Laboratory  
P.O. Box X, Building 2001  
Oak Ridge, Tennessee 37831  
Phone: 615/576-0568  
FTS 626-0568

## SITE DESCRIPTION AND HISTORY

The Weldon Spring Site (WSS), located in St. Charles County, Missouri, is a surplus U.S. Government facility which consists of the Weldon Spring Chemical Plant; two separate low-level radioactive waste storage properties, designated the "raffinate pits" and "quarry"; and a number of contaminated vicinity properties.

The Weldon Spring Chemical Plant (WSCP) occupies about 169 acres and is located approximately 13 miles southwest of the city of St. Charles and 25 miles west of St. Louis. The Missouri River is about 1.5 miles southeast of the plant.

The area that includes the WSCP was originally a portion of the Weldon Spring Ordnance Works (WSOW), an explosives (TNT and DNT) production facility operated for the U.S. Department of the Army. Approximately 205 acres of the WSOW was transferred from the Army to the Atomic Energy Commission (AEC) in August 1956 for the construction and operation of a feed materials plant in support of the U.S. atomic energy program. The facility was operated for the AEC by Mallinckrodt Chemical Works, St. Louis, Missouri. The uranium and thorium processing conducted from 1957 to 1966 resulted in the radiological contamination of the facility and the immediate terrain. When AEC operation was closed out, the facility returned to the Army for conversion to a herbicide production facility. The property transferred by the AEC excluded the waste materials in four raffinate

pits. The Army attempted to radiologically decontaminate three of the former AEC processing buildings but was unsuccessful in achieving applicable guidelines for release to the general public. The herbicide project was cancelled prior to reaching operational status, and the Army retained the property along with a license for possession and storage of the source materials in the form of contamination. The raffinate pits were transferred back to the AEC, and, with no Department of Defense or Department of the Army mobilization requirements, the plant entered a care and custody status pending further disposition. The plant is scheduled to be transferred to the U.S. Department of Energy on or before October 1, 1985.

The raffinate pits facility, a 52-acre site which is the larger of the two storage properties, is located southwest of the WSCP. The four raffinate pits were constructed onsite during AEC occupancy to receive low-level radioactive processing wastes. These pits contain an estimated 150 tons of uranium and 75 tons of thorium as residues (settled sludge) from the processing of uranium ore concentrates, thorium compounds, and scrap materials.

The Weldon Spring Quarry, an abandoned 8.6-acre rock quarry, is located between Missouri State Route 94 and Femme Osage Creek, about 4 m south of the Weldon Spring Chemical Plant. The quarry was first utilized as a dump site for TNT-contaminated soil in the 1940s and later for rubble resulting from a decontamination effort at the Weldon Spring Chemical Plant. The first usage of the quarry for the disposal of radioactive materials occurred in 1959 under the auspices of the AEC. Use of the quarry for the disposal of radioactive wastes continued until 1969.

## **CITATION FORM**

The references have been sorted by date of publication and are arranged in reverse chronological order. The data fields printed for each citation in the reference section should contain the following bibliographic elements: date of publication, title, author, author's affiliation, and publication description.

## **INDEXES**

Indexes are provided to assist the reader in easily locating needed references. Indexes are provided for individual title words, authors, author affiliation, and publication description (report number). The number(s) appearing after each listing in the indexes correspond to the record number assigned to each citation. An alphabetical listing of every individual author is provided. The corporate affiliation index is also an alphabetical listing. The title index is a permuted index of individual title words. A number of title words have been suppressed from this index, including: Weldon, Spring, Site, Missouri, Chemical, Plant, St., Charles, and County, as well as all conjunctions, prepositions, articles, and auxiliary verbs. The publication description index is a sorted list of all report numbers or other unique document descriptions.

## **INFORMATION SOURCES**

The following is a list of organizations that are sources of information pertaining to the Weldon Spring Site. This list is not intended to be comprehensive. Requests for copies of documents cited should be directed to the organization that published the document.

Bechtel National, Inc.  
P.O. Box 350  
800 Oak Ridge Turnpike  
Oak Ridge, TN 37831-0350

Attention: Ethel McDonald  
Librarian  
615/482-0305

East-West Gateway Coordinating Council  
Resource and Information Center  
100 South Tucker Blvd.  
St. Louis, MO 63102

Attention: Barbara McKinney  
314/421-4220  
618/274-2750

Missouri Department of Conservation  
Special Use Areas  
P.O. Box 180  
2901 North Ten Mile Drive  
Jefferson City, MO 65102-0180

Attention: M. LeRoy Heman  
314/751-4115

Missouri Department of Natural Resources  
Division of Geology and Land Survey  
P.O. Box 176  
Jefferson City, MO 65102

Attention: Thomas J. Dean  
314/751-3443

Missouri Department of Natural Resources  
Water Pollution Control Program  
P.O. Box 1368  
Jefferson City, MO 65102

Attention: Richard J. Laux

Missouri Department of Social Service  
Division of Health  
P.O. Box 570  
Jefferson City, MO 65102

Attention: Robert L. Hotchkiss, M.D.  
Director

National Technical Information Service  
5285 Port Royal Road  
Springfield, VA 22161

Attention: Customer Services  
703/4867-4600

Oak Ridge National Laboratory  
Remedial Action Program Information Center  
Building 2001  
P.O. Box X  
Oak Ridge, TN 37831

Attention: Park T. Owen  
Information Analyst  
615/576-0568  
FTS 626-0568

St. Charles City-County Library District  
2323 Elm Street  
St. Charles, MO 63301

Attention: Kathryn M. Linnemann  
Branch Library  
Bonnie Dillard  
Reference Librarian

U.S. Department of Energy  
Office of Scientific and Technical  
Information  
P.O. Box 62  
Oak Ridge, TN 37831

Attention: Customer Services  
615/576-1304

## ACKNOWLEDGMENTS

The references contained in this report were contributed by: U.S. Department of Energy, Oak Ridge Operations Office; Argonne National Laboratory; Bechtel National, Inc.; and Oak Ridge National Laboratory.

The authors wish to thank: Jerry Wing, U.S. Department of Energy, Oak Ridge Operations Office, for giving many helpful suggestions, providing project guidance, and contributing citation references; Ethel McDonald and Jeannette Hoffman, Bechtel National, Inc., for contributing information sources and references used in this report and for proofreading the report; and Barbara Payne and Lars Soholt, Argonne National Laboratory, for contributing many of the references cited.

The authors also wish to thank Joe Rich and Sherry Hawthorne of the Information Resources Organization's Technical Publications Office for editing assistance and Janet Scott of Information Research and Analysis's Computer Services Group for the computer production of this report.

The authors appreciate the time that John Coobs, Operations Division, and Tom Lomenick, Chemical Technology Division, contributed in reviewing this report.



1

1985, April

**Addendum to the Engineering Evaluation of Alternatives for the Disposition of the Weldon Spring Raffinate Pits Site**

Bechtel National, Inc., Oak Ridge, TN

DOE/OR/20722-5 (Addendum 1); 142 pp.

2

1985, February

**Geochemical Information for Sites Contaminated with Low-Level Radioactive Wastes: III - Weldon Spring Storage Site**

Seeley, F.G., and A.D. Kelmers, Oak Ridge National Laboratory, Oak Ridge, TN

ORNL-6112; 45 pp.

3

1985, February

**Evaluation of Alternatives for Stabilizing Low Level Wastes Located at the Weldon Spring Raffinate Pits**

Barber, R.B., Bechtel National, Inc., Oak Ridge, TN

CONF-850242; Management of Uranium Mill Tailings, Low-Level Waste and Hazardous Waste, Proceedings of the Seventh Symposium, Fort Collins, CO, February 6-8, 1985, 592 pp.; (pp. 73-82)

4

1985, February

**Critical (Public) Masses: A Case Study of a Radioactive Waste Site**

Williams, R.G., and B.A. Payne, Argonne National Laboratory, Environmental Research Division, Argonne, IL

CONF-850242; Management of Uranium Mill Tailings, Low-Level Waste and Hazardous Waste, Proceedings of the Seventh Symposium, Fort Collins, CO, February 6-8, 1985, 592 pp.; (pp. 33-42)

5

1985, January

**Results of Analysis of Water Samples Collected from Weldon Spring Chemical Plant: Collection of Letter Reports - June 1977 Through January 1985**

U.S. Department of the Army, Environmental Hygiene Agency, Aberdeen Proving Ground, MD

6

1984, November

**Geologic Report: Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri**

Bechtel National, Inc., Oak Ridge, TN

DOE/OR/20722-6; 448 pp.

7

1984, October

**Survey Plan for the Radiological Characterization of the Weldon Spring Quarry**

Bechtel National, Inc., Oak Ridge, TN

DOE/OR/20722-47; 18 pp.

8

1984, September

**Characterization and Assessment for the Weldon Spring Quarry Low-Level Radioactive Waste Storage Site**

Berkeley Geosciences Associates, Berkeley, CA

DOE/OR-853; 471 pp.

9

1984, August

**Radiological Survey Report for the Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri**

Bechtel National, Inc., Oak Ridge, TN

DOE/OR/20722-7; 39 pp.

10

1984, August

**Analysis of Potential Groundwater Contamination in the Vicinity of the Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri**

Tsai, S.Y., J.M. Peterson, and M.C.B. Winters, Argonne National Laboratory, Argonne, IL

ANL/ER-84-4; 35 pp.

11

1984, June

**Weldon Spring Site Environmental Monitoring Report - Calendar Year 1983**

Bechtel National, Inc., Oak Ridge, TN

DOE/OR/20722-16; 45 pp.

12

1984, April

**Weldon Spring Site Project Management Plan**

U.S. Department of Energy, Oak Ridge Operations Office, Oak Ridge, TN

ORO-839; 62 pp.

13

1984, April

**Engineering Evaluation of Alternatives for the Disposition of the Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri**

Bechtel National, Inc., Oak Ridge, TN

DOE/OR/20722-5; 295 pp.

14

1984, March 2

**Compliance with the National Environmental Policy Act - Intent to Prepare an Environmental Impact Statement and Conduct a Public Scoping Meeting on Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring, Missouri**

U.S. Department of Energy, Washington, DC

Federal Register 49(43):7851-7854

15

1984

**U.S. Geological Survey Common-Depth-Point Seismic-Reflection Survey Between Mississippi River Miles 195 and 210 (R/V Neecho, Cruise NE-80-3)**

Winget, E.A., and G.B. Tirey, U.S. Geological Survey, Woods Hole, MA

OFR-83-0082; 5 pp.

16

1984

**Common-Depth-Point Seismic-Reflection Survey on the Mississippi River in the Vicinity of Alton, Illinois**

Tirey, G.B., R.A. Wise, and E.A. Winget, U.S. Geological Survey, Woods Hole, MA

U.S. Geological Survey Open File Report 84-0081;  
19 pp.

**17**

1983, December

**General Plan for Ground Water Tracing,  
Weldon Spring Area, St. Charles County,  
Missouri - Part I of the Study Missouri  
Department of Natural Resources, Water  
Resources Division, Jefferson City, MO**

**18**

1983, November 17

**Weldon Spring Site Project Management  
Plan (FY 1984-85)**

U.S. Department of Energy, Oak Ridge Opera-  
tions Office, Oak Ridge, TN

**19**

1983, November

**Environmental Monitoring of the DOE-  
Owned Surplus Facility Weldon Spring  
Site (WSS)**

Kuhaida, A.J., and D.P. Carnes, Bechtel  
National, Inc., Oak Ridge, TN

CONF-831116; Proceeding of the 111th Annual  
American Public Health Association Meeting,  
Radiological Health Session, Dallas, TX, Novem-  
ber 11-13, 1983

**20**

1983, August

**Land Use Plan of Incorporated St.  
Charles County**

St. Charles County Zoning and Planning Com-  
mission, St. Charles, MO; East-West Gateway  
Coordinating Council, St. Louis, MO

**21**

1983, August

**Land Use Plan of Unincorporated St.  
Charles County**

East-West Gateway Coordinating Council, St.  
Louis, MO

**22**

1983, July 29

**Laboratory Testing of Soils, Weldon  
Spring Storage Site, Weldon Spring, Mis-  
souri**

McClelland Engineers, Inc., St. Louis, MO

MEI/03830014

**23**

1983, July

**Weldon Spring Storage Site Geologic  
Characterization 1982-1983**

Bechtel National, Inc., Oak Ridge, TN

**24**

1983, July

**Weldon Spring Storage Site Seismicity  
and Design Earthquake Considerations**

Bechtel Civil and Minerals, Inc., San Francisco,  
CA

25

1983, May

**Weldon Spring Site Environmental Monitoring Report - Calendar Year 1982**

Bechtel National, Inc., Oak Ridge, TN

BNI-10-05-201-002; 42 pp.

26

1983, March

**Geophysical Measurements: U.S. Department of Energy (DOE) Raffinate Pit Site Weldon Spring, Missouri**

Weston Geophysical Corporation, Westboro, MA

27

1983

**Summary of Water Tracing Experiments at Weldon Spring Complex**

Dean, T.J., Missouri Geological Survey, Department of Natural Resources, Rolla, MO

28

1983

**Action Description Memorandum - Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring and St. Louis, Missouri**

U.S. Department of Energy, Oak Ridge Operations Office, Oak Ridge, TN

29

1983

**Geologic Aspects of Individual Home Liquid-Waste Disposal in Missouri**

Duley, J.W.

Engineering Geology Report No. 7

30

1983

**Comparison of Four Engineering Options for a Low-Level Radioactive Waste Disposal Site**

Kanehiro, B.Y., Lawrence Berkeley Laboratory, Earth Sciences Division, Berkeley, CA

LBL-15500; Earth Sciences Division Annual Report 1982; (pp. 183-186)

31

1983

**Late Cretaceous Marine Foraminifers from Pleistocene Fluviolacustrine Deposits in Eastern Missouri**

Thompson, T.L., Missouri Department of Natural Resources, Division of Geology and Land Survey, Rolla, MO

Journal of Paleontology 57(6):1304-1310

32

1983

**Water Resources Data - Missouri, Water Year 1982**

Waite, L.A., D.O. Hatten, and P.W. Cross, U.S. Geological Survey, Washington, DC

Water Resources Data Report MO-82-1

33

1982, September

**Assessment and Evaluation of Engineering Options at a Low-Level Radioactive Waste Storage Site**

Kanehiro, B.Y., and V. Guvanasen, Lawrence Berkeley Laboratory, Earth Sciences Division, Berkeley, CA

LBL-13600; Earth Sciences Division Annual Report 1981; (pp. 35-38)

34  
1982, May 25

**Report to the Congress of the United States by the Comptroller General "Cleaning Up Nuclear Facilities" - An Aggressive and Unified Program is Needed**

U.S. General Accounting Office, Gaithersburg, MD

GAO/EMD-82-40

35  
1982, May

**Weldon Spring Site Environmental Monitoring Report - Calendar Year 1981**

Bechtel National, Inc., Oak Ridge, TN

BNI-10-05-201-001; 39 pp.

36  
1982, May

**Soil Survey of St. Charles County, Missouri**

Tummons, R.L., U.S. Department of Agriculture, Soil Conservation Service, Beltsville, MD

37  
1982, April 19

**Weldon Spring Storage Site Environmental Monitoring Report for 1979 and 1980**

Weidner, R.B., and M.W. Boback, NLO, Inc., Cincinnati, OH

NLCO-1176; 54 pp.

38  
1982, April

**An Aerial Radiological Survey of the Area Surrounding the Abandoned Quarry Near the Weldon Spring Chemical Plant, St. Charles, Missouri - July 1980**

EG&G Energy Measurements Group, Las Vegas, NV

EP-F-005

39  
1982, January 15

**Semiannual Environmental Sampling at Weldon Spring**

Haywood, F.F., Eberline Instrument Corporation, Oak Ridge, TN

40  
1982, January

**Radiochemical Analysis and Experimental Treatment Results of Solution from Weldon Spring, Missouri Ponds**

Taylor, P.A., Oak Ridge National Laboratory, Oak Ridge, TN

Y/DU-35 (Addendum)

41  
1982

**Springs of Missouri**

Vineyard, J.D., and G.L. Feder, Missouri Department of Natural Resources, Division of Geology and Land Survey, Rolla, MO; Missouri Department of Natural Resources, Water Resources Division, Jefferson City, MO

Water Resources Report No. 29

42  
1982

**Preliminary Investigation of Ground-Water Occurrences in the Weldon Spring Area, St. Charles County, Missouri**

Roberts, C.M., and C.V. Theis, U.S. Geological Survey, Water Resources Division, Washington, DC

U.S. Geological Survey Open File Report 82-1008; 36 pp.

43  
1981, December 1

**An Engineering Evaluation of Waste Disposal Options at Weldon Spring Quarry - Final Report**

Cothran, H.E., Science Applications, Inc., Oak Ridge, TN

SAI-148-WSQ

44  
1981, November 12

**Weldon Spring Site Analytical Data from U.S. Army**

National Lead Company of Ohio, Cincinnati, OH

45  
1981, October 6

**Radiological Program - Weldon Spring Site**

Stukenbroeker, G.L., NLO, Inc., Cincinnati, OH

46  
1981, October

**Weldon Spring and Niagara Falls Sites Industrial Hygiene**

National Lead Company of Ohio, Cincinnati, OH

47  
1981, October

**Land Use Data Base Update - Technical Report**

East-West Gateway Coordinating Council, St. Louis, MO

EWG-CL-0424.07.0

48  
1981, October

**Land Use Data Base Update - Summary Report**

East-West Gateway Coordinating Council, St. Louis, MO

EWG-CL-0424a.07.0

49  
1981, August

**Environmental Monitoring Program for DOE Weldon Spring, Missouri Site**

Ficker, C.F., NLO, Inc., Cincinnati, OH

NLCO-009EV (Special); 39 pp.

50

1981, July

**Preliminary Characterization and Assessment of the Weldon Spring Low-Level Waste Disposal Site**

Kanehiro, B.Y., V. Guvanasen, A. Smith, and R. Sterrett, Lawrence Berkeley Laboratory, Earth Sciences Division, Berkeley, CA

LBL-12100; Earth Sciences Division Annual Report 1980; (pp. 201-203)

51

1981, June

**Distribution and Possible Causes of Radionuclides in Groundwaters of Missouri**

Marikos, M., Missouri Department of Natural Resources, Division of Geology and Land Survey, Rolla, MO

CONF-8106251; Trace Substances in Environmental Health, Proceedings of the 15th Annual Conference, Columbia, MO, June 1-4, 1981

52

1981

**A Checklist of Birds of the August A. Busch Memorial Wildlife Area, Weldon Spring, Missouri**

Missouri Department of Conservation, Jefferson City, MO

FD/2/81

53

1981

**Evaluation of the Future of a Low Level Radioactive Waste Disposal Site, Weldon Spring, Missouri**

Kanehiro, B.Y., V. Guvanasen, A. Smith, and B. Moed, Lawrence Berkeley Laboratory, Berkeley, CA

LBL-11481

54

1980, November 21

**Results of Weldon Spring Technical Support for FY-1980**

Taylor, P.A., Y-12 Plant, Development Division, Chemical Process Department, Oak Ridge, TN

Y/DU-113; 10 pp.

55

1980, September

**Preliminary Characterization and Assessment of the Weldon Spring Low-Level Radioactive Waste Disposal Site, Weldon Spring, Missouri**

Kanehiro, B.Y., V. Guvanasen, R. Sterrett, A. Smith, B. Moed, T. Doe, and H. Wollenberg, Lawrence Berkeley Laboratory, Earth Sciences Division, Berkeley, CA

LBL-11481 (Draft)

56

1980, April 7

**Revised Proposal for Phases II, III, and IV Weldon Spring Study**

Napier, J.M., and W.W. Pitt, Oak Ridge National Laboratory, Oak Ridge, TN

Y/DU-37 (Revised)

57

1980, March 12

**Radiochemical Analysis and Experimental Treatment Results of Solution from Weldon Spring, Missouri Ponds - Draft Report - Addendum to Y/DU-36**

Taylor, P.A., Y-12 Plant, Development Division, Chemical Process Department, Oak Ridge, TN

Y/DU-36 (Addendum); 5 pp.

58

1980, January

**Preliminary Draft: Radiological, Hydrogeological, Geochemical and Geophysical Assessment of the Weldon Spring Quarry, Missouri Disposal Site**

Strisower, B., Lawrence Berkeley Laboratory, Earth Sciences Division, Berkeley, CA

LBID-152; 144 pp.

59

1980

**Land Use and Land Cover: 1972-1976 - St. Louis, Missouri - Illinois**

U.S. Geological Survey, Washington, DC

60

1979, December 10

**Chemical Analysis of Ponds 3 and 4 at Weldon Spring, Missouri**

Taylor, P.A., J.M. Napier, F.M. Scheitlin, and G.W. Strandberg, Y-12 Plant, Development Division, Chemical Process Department, Oak Ridge, TN; Oak Ridge National Laboratory, Oak Ridge, TN

Y/DU-36; 10 pp.

61

1979, September

**Draft Preliminary Risk Assessment of the Weldon Spring Rock Quarry**

Science Applications, Inc., Oak Ridge, TN

SAI-OR-79-135-01; 92 pp.

62

1979, September

**Program Plan for the Decontamination and Disposition of Weldon Spring Chemical Plant**

Atomics International Division, Rockwell International, Energy Systems Group, Canoga Park, CA

ESG-79-31

63

1979

**Geologic Map of Missouri**

Anderson, K.H.

64

1979

**Program Plan for the Decontamination and Disposition of Weldon Spring Chemical Plant**

Rockwell International Corporation, Energy Systems Group, Aberdeen Proving Grounds, MD

ESG-79-31

65

1978, September

**Weldon Spring Dose Calculations**

Dickson, H.W., G.S. Hill, and P.T. Perdue, Oak Ridge National Laboratory, Oak Ridge, TN

ORNL/TM-6272; 30 pp.

**66**

1978, July

**Nuclear Regulatory Commission License Application for Source Material License for Possession of Source and Special Nuclear Material Present as Contamination at Weldon Spring Chemical Plant (Replaces NRC SMB-938)**

U.S. Department of the Army, Army Armament Material, Readiness Command, Rock Island, IL

**67**

1978, June 2

**Weldon Spring Chemical Plant - Phase IV: Proposal for Quantitative Analysis**

Ryckman, Edgerley, Tomlinson and Associates, St. Louis, MO

Study Report 22

**68**

1978, June

**Weldon Spring Chemical Plant - Survey and Assessment, Final Report**

Ryckman, Edgerley, Tomlinson and Associates, St. Louis, MO

Report; 79 pp.

**69**

1978, May 25

**Weldon Spring Chemical Plant - Revised Natural Disasters Report**

Ryckman, Edgerley, Tomlinson and Associates, St. Louis, MO

Study Report 21

**70**

1978, May

**Phase III Report: Assessment of Disposition Alternatives Weldon Spring Chemical Plant, St. Charles County, Missouri**

Ryckman, Edgerley, Tomlinson and Associates, St. Louis, MO

Study Report 20

**71**

1978, May

**St. Louis, Missouri Water Quality Management Plan Area-Wide Waste Treatment Management Study**

East-West Gateway Coordinating Council, St. Louis, MO

EWG-ES-0369.02.0; Study Report 208

**72**

1978, February 15

**Weldon Spring Chemical Plant - Phase II (Survey) Technical Supplement: Decontamination/Handling Cost Factors**

Ryckman, Edgerley, Tomlinson and Associates, St. Louis, MO

Study Report 18

**73**

1978, February 13

**Weldon Spring Chemical Plant - Phase II (Survey): Data Appendix**

Ryckman, Edgerley, Tomlinson and Associates,  
St. Louis, MO

Study Report 17

**74**

1978, January 17

**Weldon Spring Chemical Plant - Health  
and Safety Report No. 4: Synopsis of Elec-  
trical Power Status at Site Following  
Survey Completion**

Ryckman, Edgerley, Tomlinson and Associates,  
St. Louis, MO

Study Report 16

**75**

1978, January 13

**Weldon Spring Chemical Plant - Phase III  
(Assessment) Technical: Costs and Sched-  
ule Proposal**

Ryckman, Edgerley, Tomlinson and Associates,  
St. Louis, MO

Study Report 15

**76**

1978

**An Archaeological Survey of the Little  
Femme Osage River Hills Area and the  
Loutre River Valley: A Multivariate  
Approach to Environment and Site Distri-  
bution in the Lower Missouri Valley II  
Locality**

Haas, D., C. Chapman, and V. Reidhead,  
National Park Service, Washington, DC

**77**

1977, December 22

**Weldon Spring Chemical Plant - Phase II  
(Survey): Narrative Report**

Ryckman, Edgerley, Tomlinson and Associates,  
St. Louis, MO

Study Report 14

**78**

1977, December

**Weldon Spring Chemical Plant Ground  
Survey Summary**

EG&G Energy Measurements Group, Las Vegas,  
NV

**79**

1977, October 21

**Weldon Spring Chemical Plant - Health  
and Safety Report No. 3: Negative Health  
Hazards from Bird Droppings**

Ryckman, Edgerley, Tomlinson and Associates,  
St. Louis, MO

Study Report 13

**80**

1977, September 9

**Weldon Spring Chemical Plant - Data  
Management Plan**

Ryckman, Edgerley, Tomlinson and Associates,  
St. Louis, MO

Study Report 10

**81**

1977, September 9

**Technical Proposal for Phase II: Cost and  
Schedule - Weldon Spring Chemical Plant,  
St. Charles, Missouri**

Ryckman, Edgerley, Tomlinson and Associates,  
St. Louis, MO

Study Report 11

**82**  
1977, September 9

**Weldon Spring Chemical Plant - Operational Health and Safety Plan**

Ryckman, Edgerley, Tomlinson and Associates,  
St. Louis, MO

Study Report 12

**83**  
1977, September 8

**Technical Proposal for Phase II: Building Survey Plan - Weldon Spring Chemical Plant, St. Charles, MO**

Ryckman, Edgerley, Tomlinson and Associates,  
St. Louis, MO

Study Report 09

**84**  
1977, September 2

**Weldon Spring Chemical Plant - Radiological Supplement to Environmental Survey Plan**

Ryckman, Edgerley, Tomlinson and Associates,  
St. Louis, MO

Study Report 08

**85**  
1977, August 16

**Weldon Spring Chemical Plant - Environmental Survey Plan**

Ryckman, Edgerley, Tomlinson and Associates,  
St. Louis, MO

Study Report 07

**86**  
1977, July 19

**Weldon Spring Chemical Plant - Health and Safety Report No. 2: Detailed Walk-Through Survey**

Ryckman, Edgerley, Tomlinson and Associates,  
St. Louis, MO

Study Report 06

**87**  
1977, July 11

**Weldon Spring Chemical Plant - Revised Health Physics Plan**

Ryckman, Edgerley, Tomlinson and Associates,  
St. Louis, MO

Study Report 05

**88**  
1977, July 8

**Weldon Spring Chemical Plant - Health and Safety Report No. 1: Preliminary Survey Considerations**

Ryckman, Edgerley, Tomlinson and Associates,  
St. Louis, MO

Study Report 04

**89**  
1977, June 24

**Weldon Spring Chemical Plant - Catalog of On-Site Files**

Ryckman, Edgerley, Tomlinson and Associates,  
St. Louis, MO

Study Report 02

90

1977, June 24

**Weldon Spring Chemical Plant - Survey Plan Considerations**Ryckman, Edgerley, Tomlinson and Associates,  
St. Louis, MO

Study Report 03

91

1977, May 27

**Weldon Spring Chemical Plant - Draft Health Physics Plan**Ryckman, Edgerley, Tomlinson and Associates,  
St. Louis, MO

Study Report 01

92

1977, April 25

**Study of Radioactive Waste Storage Areas at ERDA-Weldon Spring Site**

National Lead Company of Ohio, Cincinnati, OH

NLCO-1144 (Special); 52 pp.

93

1977, April

**The Resources of St. Charles County, Missouri: Land, Water, and Minerals**

Dean, T.J., D.E. Miller, A.W. Rueff, W.H. Allen, Jr., R.A. Ward, and I.R. Satterfield, Missouri Geological Survey, Department of Natural Resources, Rolla, MO

The Resources of St. Charles County, Missouri: Land, Water, and Minerals, Harris, B., L.N. Stout, and J.D. Vineyard, (Eds.), 233 pp.

94

1977, April

**The Land - Soil, Rock, and Land Slopes**

Allen, W.H., Jr., R.A. Ward, and I.R. Satterfield, Missouri Geological Survey, Department of Natural Resources, Rolla, MO

The Resources of St. Charles County, Missouri: Land, Water, and Minerals, Harris, B., L.N. Stout, and J.D. Vineyard, (Eds.), 233 pp.; (pp. 107-158)

95

1977, April

**Minerals**

Rueff, A.W., Missouri Geological Survey, Department of Natural Resources, Rolla, MO

The Resources of St. Charles County, Missouri: Land, Water, and Minerals, Harris, B., L.N. Stout, and J.D. Vineyard, (Eds.), 233 pp.; (pp. 83-106)

96

1977, April

**Water**

Miller, D.E., Missouri Geological Survey, Department of Natural Resources, Rolla, MO

The Resources of St. Charles County, Missouri: Land, Water, and Minerals, Harris, B., L.N. Stout, and J.D. Vineyard, (Eds.), 233 pp.; (pp. 31-82)

97

1977, April

**Land Use Suitability**

Dean, T.J., Missouri Geological Survey, Department of Natural Resources, Rolla, MO

The Resources of St. Charles County, Missouri: Land, Water, and Minerals, Harris, B., L.N. Stout, and J.D. Vineyard, (Eds.), 233 pp.; (pp. 7-30)

**98**

1977, January

**Weldon Spring: A Proposal for a Regional Environment Education Center, St. Louis Coalition for the Environmental Through a Grant from the LAD Foundation**

Lark, J.D., Resource Planning and Design Group, St. Louis, MO

**99**

1977, January

**Aerial Radiological Survey of the Weldon Spring Chemical Plant (St. Charles, Missouri) - Date of Survey: May 11-14, 1976**

Jobst, J.E., EG&G Energy Measurements Group, Las Vegas, NV

EGG-1183-1700; 39 pp.

**100**

1977

**Water Resources of the St. Louis Area, Missouri**

Missouri Department of Natural Resources, Division of Geology and Land Survey, Rolla, MO; Missouri Department of Natural Resources, Water Resources Division, Jefferson City, MO

Water Resources Report No. 32

**101**

1977

**Land Use and Land Cover and Associated Maps for St. Louis Missouri**

U.S. Geological Survey, Washington, DC

U.S. Geological Survey Open File Report 77-7

**102**

1976, December 30

**Canvass of Nuclear Industry for Salability of Weldon Spring Chemical Plant: Final Report - September 30-December 30, 1976**

Ewing, R.A., and H.L. Toy, Battelle Columbus Laboratories, Columbus, OH

AD-A-062288/65T; 47 pp.

**103**

1976, November

**Revised Zoning Order for St. Charles County, Missouri**

St. Charles County Zoning and Planning Commission, St. Charles, MO

**104**

1976, November

**Installation Restoration at Weldon Spring Chemical Plant: Environmental Impact Assessment**

Anderson, G.A., U.S. Department of the Army, Washington, DC

**105**

1976, September

**Environmental Impact Assessment for the Weldon Spring Site**

HOK Associates, Inc., St. Louis, MO

106

1976, June 30

**Radioactive Waste Management Plan**

National Lead Company of Ohio, Cincinnati, OH

107

1976, April 21

**Aerial Radiological Survey of the Weldon Spring Chemical Plant (St. Charles, Missouri) - Date of Survey: November 22, 1975**

Jobst, J.E., EG&amp;G Energy Measurements Group, Las Vegas, NV

EGG-1183-1688; 46 pp.

108

1976, April

**Preliminary Radiological Survey of the Weldon Spring Chemical Plant**

Jacobsen, J.R., U.S. Department of the Army, Ballistic Research Laboratories, Aberdeen Proving Ground, MD

BRL-MR-2610

109

1976, March 1

**Assessment of Weldon Spring Chemical Plant in St. Charles County, Missouri: Interim Report - April 1975 - March 1976**

Niedbrmeyer, G.J., U.S. Department of the Army, Office of the Project Manager for Chemical Demilitarization and Installation Restoration, Aberdeen Proving Ground, MD

AD-A-062588; 180 pp.

110

1976

**Water Resources of South-Central Missouri - Atlases and Maps**

Gann, E.E., U.S. Geological Survey, Washington, DC

U.S. Geological Survey Hydrological Investigation Atlas HA-550

111

1975, December

**Soil Moisture Ground Truth: Lafayette, Indiana, Site, - St. Charles, Missouri, Site - Centralia, Missouri, Site**

Jones, E.B., Bittinger (M.W.) and Associates, Inc., Fort Collins, CO

NASA-CR-144717; 51 pp.

112

1975, November 10

**Soils Maps Supplement to Soil Moisture Ground Truth: Lafayette, Indiana, Site - St. Charles, Missouri, Site**

Jones, E.B., and S.E. Olt, Bittinger (M.W.) and Associates, Inc., Fort Collins, CO

NASA-CR-144732; 14 pp.

113

1975, September 10

**Weldon Spring Decommissioning Study - Quarry Supplement**

National Lead Company of Ohio, Cincinnati, OH

NLCO-1121 (Supplement 1) (Special)

114

1975, June 20

**ERDA-Weldon Spring: Weldon Spring Decommissioning Study**Pennak, A.F., J.H. Cavendish, and E.W. Mautz,  
National Lead Company of Ohio, Cincinnati, OH

NLCO-1121 (Special); 87 pp.

115

1974, November 9

**University of Missouri Weldon Spring Property, Task 1 Report, Investigation and Preliminary Evaluation of Development and Marketing Potentials**

HOK Associates, Inc., St. Louis, MO

116

1974, November 5

**Study for Decommissioning the AEC-Weldon Spring Site and Quarry: Request for Proposals**

NLO, Inc., Cincinnati, OH

117

1974, September 25

**Weldon Spring Raffinate Pits Stabilization Project RY-04-02**

National Lead Company of Ohio, Cincinnati, OH

118

1974, April

**Flood Hazards Studies in the Mississippi River Basin Using Remote Sensing**

Rango, A., and A.T. Anderson, National Aeronautics and Space Administration, Goddard Space Flight Center, Greenbelt, MD

NASA-TM-X-70682; X-913-74-125; 44 pp.

119

1974

**Water Resources of the St. Louis Area, Missouri**

Miller, D.E., L.F. Emmett, J. Skelton, H.G. Jeffery, and J.H. Barks, Missouri Department of Natural Resources, Division of Geology and Land Survey, Rolla, MO; Missouri Department of Natural Resources, Water Resources Division, Jefferson City, MO

Water Resources Report No. 30; 114 pp.

120

1974

**Flood Hazards Studies in the Mississippi River Basin Using Remote Sensing**

Rango, A., and A.T. Anderson, National Aeronautics and Space Administration, Goddard Space Flight Center, Greenbelt, MD

Water Resources Bulletin 10(5):1060-1081

121

1973, August

**Flood Plain Information: Femme Osage Creek, St. Charles County, Missouri**

Army Engineer District, Kansas City, MO

**122**  
1973, March

**Land Use and Transportation Plans for  
St. Charles County - Final Report**

Harland Bartholomew and Associates, St. Louis,  
MO

**Land-Use Coding, St. Charles County,  
Missouri**

East-West Gateway Coordinating Council, St.  
Louis, MO

PB-184-828; 40 pp.

**123**  
1972

**Groundwater Contamination and Sinkhole  
Collapse Induced Leaky Impoundments in  
Soluble Rock Terrain**

Aley, T.J., Missouri Department of Natural  
Resources, Water Resources Division, Jefferson  
City, MO

**127**  
1968

**Reconnaissance of the Ground-Water  
Resources of the Missouri River Alluvium  
Between St. Charles and Jefferson City,  
Missouri**

Emmett, L.F., and H.G. Jeffery, U.S. Geological  
Survey, Washington, DC

U.S. Geological Survey Hydrological Investigation  
Atlas HA-315

**124**  
1971, January 3

**Study of Scrap Pit No. 3 (FMPC)**

Hoffmeyer, C., and P.E. Kenneth, National Lead  
Company of Ohio, Cincinnati, OH

**128**  
1967, June 1

**Weldon Spring Raffinate Pits and Quarry -  
Task Force Report**

Lenhard, J.A., J.N. Holt, and F.H. Belcher, U.S.  
Atomic Energy Commission, Oak Ridge Opera-  
tions Office, Oak Ridge, TN

**125**  
1968, November

**Land Use Analysis, St. Charles County,  
Missouri**

East-West Gateway Coordinating Council, St.  
Louis, MO

PB-184-871; 67 pp.

**129**  
1967, April 21

**Summary of Seepage Conditions, Weldon  
Spring Raffinate Pits, Weldon Spring Ord-  
nance St. Charles County**

Missouri Department of Natural Resources, Divi-  
sion of Geology and Land Survey, Rolla, MO

**126**  
1968, November

**130**  
1967

**Mineral and Water Resources of Missouri**

Missouri Department of Natural Resources,  
Water Resources Division, Jefferson City, MO

Missouri Geological Survey, Water Resources  
Division Bulletin, Volume 43, Series 2

**131**  
1966

**Guidebook to Middle Ordovician and Mississippian Strata, St. Louis and St. Charles Counties, Missouri**

Martin, J.A., and J.S. Wells, Missouri Department of Natural Resources, Water Resources Division, Jefferson City, MO

Water Resources Report No. 34; Proceedings of the 1966 Annual American Association of Petroleum Geologists Meeting; 48 pp.

**132**  
1965

**Atomic Energy Commission Feed Materials Production Facilities: Semi-Annual Off-Site Environmental Monitoring Report - 1965**

Mallinckrodt Chemical Works, Uranium Division, Weldon Spring, MO

**133**  
1964, January

**Design Memorandum for 12 M Cubic Feet Raffinate Pit, Atomic Energy Commission Plant, Weldon Spring, Missouri**

Reitz, H.M., Mallinckrodt Chemical Works, Uranium Division, St. Louis, MO

Engineering Project Report 44-385-005

**134**  
1964

**Weldon Spring: An Introduction**

Mallinckrodt Chemical Works, Uranium Division, St. Louis, MO

Brochure

**135**  
1964

**Atomic Energy Commission Feed Materials Production Facilities: 2nd Semi-Annual and Annual Summary Off-Site Environmental Monitoring Report - 1964**

Mallinckrodt Chemical Works, Uranium Division, Weldon Spring, MO

**136**  
1964

**Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual AEC Quarry Environmental Report - 1964**

Mallinckrodt Chemical Works, Uranium Division, Weldon Spring, MO

**137**  
1964

**Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual Off-Site Environmental Monitoring Report - 1964**

Mallinckrodt Chemical Works, Uranium Division, Weldon Spring, MO

138  
1963

**Some Aspects of Land Forms of the Lower Missouri River Floodplain**

Schmudde, T.H.

Association of American Geographers Annals  
53(1):60-73

139  
1963

**Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual AEC Quarry Environmental Report - 1963**

Mallinckrodt Chemical Works, Uranium Division,  
Weldon Spring, MO

140  
1963

**Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual Off-Site Environmental Monitoring Report - 1963**

Mallinckrodt Chemical Works, Uranium Division,  
Weldon Spring, MO

141  
1962, May

**A Review of A Two-Year Urinary Uranium Study Conducted on Operators of a Uranium Sample Plant**

Mallinckrodt Chemical Works, Uranium Division,  
St. Louis, MO

TID-7616; Bio-Assay and Analytical Chemistry, Proceedings of the Sixth Annual Meeting, Santa Fe, NM, October 13-14, 1960; (pp. 99-100)

142  
1962

**Atomic Energy Commission Feed Materials Production Facilities: 2nd Semi-Annual and Annual Summary Off-Site Environmental Monitoring Report - 1962**

Mallinckrodt Chemical Works, Uranium Division,  
Weldon Spring, MO

143  
1962

**Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual AEC Quarry Environmental Report - 1962**

Mallinckrodt Chemical Works, Uranium Division,  
Weldon Spring, MO

144  
1962

**Atomic Energy Commission Feed Materials Production Facilities: 2nd Semi-Annual AEC Quarry Environmental Report - 1962**

Mallinckrodt Chemical Works, Uranium Division,  
Weldon Spring, MO

145  
1962

**Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual Off-Site Environmental Monitoring Report - 1962**

Mallinckrodt Chemical Works, Uranium Division,  
Weldon Spring, MO

146  
1961

**Progress and Improvements in Laboratory Research, Pilot Plant Development, Production Technology: Weldon Spring Feed Materials Plant**

Mallinckrodt Chemical Works, Uranium Division,  
St. Louis, MO

147  
1961

**Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - January, February, March 1961**

Mallinckrodt Chemical Works, Uranium Division,  
Weldon Spring, MO

148  
1961

**Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environmental Report - 3rd Quarter 1961**

Mallinckrodt Chemical Works, Uranium Division,  
Weldon Spring, MO

149  
1961

**Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environmental Report - 4th Quarter 1961**

Mallinckrodt Chemical Works, Uranium Division,  
Weldon Spring, MO

150  
1961

**Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - 3rd Quarter 1961**

Mallinckrodt Chemical Works, Uranium Division,  
Weldon Spring, MO

151  
1961

**Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - 2nd Quarter 1961**

Mallinckrodt Chemical Works, Uranium Division,  
Weldon Spring, MO

152  
1961

**Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environmental Report - 2nd Quarter 1961**

Mallinckrodt Chemical Works, Uranium Division,  
Weldon Spring, MO

153  
1960, June

**Possible Use of Quarry at Mallinckrodt Chemical Works, Weldon Spring, Missouri, for the Disposal of Uranium Contaminated Building Debris and Rubble and Residues Containing Thorium and Uranium**

Richardson, R.M., U.S. Geological Survey, Washington, DC

154  
1960

**Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - October, November, December 1960**

Mallinckrodt Chemical Works, Uranium Division, Weldon Spring, MO

155  
1960

**Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environmental Report - 4th Quarter 1960**

Mallinckrodt Chemical Works, Uranium Division, Weldon Spring, MO

156  
1960

**Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - July, August, September 1960**

Mallinckrodt Chemical Works, Uranium Division, Weldon Spring, MO

157  
1960

**Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - 1st Quarter 1960**

Mallinckrodt Chemical Works, Uranium Division, Weldon Spring, MO

158  
1960

**Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - 2nd Quarter 1960**

Mallinckrodt Chemical Works, Uranium Division, Weldon Spring, MO

159  
1959

**Atomic Energy Commission Feed Materials Production Facilities: Annual Off-Site Environmental Monitoring Report - 1959**

Mallinckrodt Chemical Works, Uranium Division, Weldon Spring, MO

160  
1956, June

**Geology of the South Half of the Weldon Spring Quadrangle**

Krummel, W.J., Jr., Washington University, St. Louis, MO

Unpublished Report

**161**  
1956

**Soil Survey of St. Charles County, Missouri**

Sharader, W.D., and H.H. Krusekopf, U.S. Department of Agriculture, Soil Conservation Service, Beltsville, MD

Soil Conservation Service Report Series 1939, No. 28

**162**  
1951, December

**Preliminary Investigation of Groundwater Occurrences in the Weldon Spring Area, St. Charles County, Missouri**

Roberts, C.M., and C.V. Theis, U.S. Geological Survey, Indianapolis, IN

**163**  
1944, January

**The Contamination of Ground and Surface Waters by Liquid Wastes from the Weldon Spring Ordnance Works, Missouri**

Fishel, V.C., and C.C. Williams, U.S. Geological Survey, Lawrence, KS

**164**  
1934, April

**A Mineralogical Study of Loess Near St. Charles, Missouri**

Oefelein, R.T.

Journal of Sedimentary Petrology 4(1):36-44

**165**  
**Weldon Spring Remedial Action Plan**

U.S. Department of Energy, Washington, DC

**166**  
**Drawing Detailing Location of the Test Wells at Weldon Spring Quarry**

Test Drilling Service Company, Maryland Heights, MO

Drawing Number 00X-4850-X-00007 (Revision 2)



# **AUTHOR INDEX**



## AUTHOR INDEX

- Aley, T.J. 123  
 Allen, W.H., Jr. 93, 94  
 Anderson, A.T. 118, 120  
 Anderson, G.A. 104  
 Anderson, K.H. 63  
 Barber, R.B. 3  
 Barks, J.H. 119  
 Belcher, F.H. 128  
 Boback, M.W. 37  
 Carnes, D.P. 19  
 Cavendish, J.H. 114  
 Chapman, C. 76  
 Cothran, H.E. 43  
 Cross, P.W. 32  
 Dean, T.J. 27, 93, 97  
 Dickson, H.W. 65  
 Doe, T. 55  
 Duley, J.W. 29  
 Emmett, L.F. 119, 127  
 Ewing, R.A. 102  
 Feder, G.L. 41  
 Ficker, C.F. 49  
 Fishel, V.C. 163  
 Gann, E.E. 110  
 Guvanasen, V. 33, 50, 53, 55  
 Haas, D. 76  
 Hatten, D.O. 32  
 Haywood, F.F. 39  
 Hill, G.S. 65  
 Hoffmeyer, C. 124  
 Holt, J.N. 128  
 Jacobsen, J.R. 108  
 Jeffery, H.G. 119, 127  
 Jobst, J.E. 99, 107  
 Jones, E.B. 111, 112  
 Kanehiro, B.Y. 30, 33, 50, 53, 55  
 Kelmers, A.D. 2  
 Kenneth, P.E. 124  
 Krummel, W.J., Jr. 160  
 Krusekopf, H.H. 161  
 Kuhaida, A.J. 19  
 Lark, J.D. 98  
 Lenhard, J.A. 128  
 Marikos, M. 51  
 Martin, J.A. 131  
 Mautz, E.W. 114  
 Miller, D.E. 93, 96, 119  
 Moed, B. 53, 55  
 Napier, J.M. 56, 60  
 Niedbrmeyer, G.J. 109  
 Oefelein, R.T. 164  
 Olt, S.E. 112

**AUTHOR INDEX**

- Payne, B.A. 4
- Pennak, A.F. 114
- Perdue, P.T. 65
- Peterson, J.M. 10
- Pitt, W.W. 56
- Rango, A. 118, 120
- Reidhead, V. 76
- Reitz, H.M. 133
- Richardson, R.M. 153
- Roberts, C.M. 42, 162
- Rueff, A.W. 93, 95
- Satterfield, I.R. 93, 94
- Scheitlin, F.M. 60
- Schmudde, T.H. 138
- Seeley, F.G. 2
- Sharader, W.D. 161
- Skelton, J. 119
- Smith, A. 50, 53, 55
- Sterrett, R. 50, 55
- Strandberg, G.W. 60
- Strisower, B. 58
- Stukenbroeker, G.L. 45
- Taylor, P.A. 40, 54, 57, 60
- Theis, C.V. 42, 162
- Thompson, T.L. 31
- Tirey, G.B. 15, 16
- Toy, H.L. 102
- Tsai, S.Y. 10
- Tummons, R.L. 36
- Vineyard, J.D. 41
- Waite, L.A. 32
- Ward, R.A. 93, 94
- Weidner, R.B. 37
- Wells, J.S. 131
- Williams, C.C. 163
- Williams, R.G. 4
- Winget, E.A. 15, 16
- Winters, M.C.B. 10
- Wise, R.A. 16
- Wollenberg, H. 55

## **AUTHOR AFFILIATION INDEX**



## AUTHOR AFFILIATION INDEX

- Argonne National Laboratory, Argonne, IL 10
- Argonne National Laboratory, Environmental Research Division, Argonne, IL 4
- Army Engineer District, Kansas City, MO 121
- Atomics International Division, Rockwell International, Energy Systems Group, Canoga Park, CA 62
- Battelle Columbus Laboratories, Columbus, OH 102
- Bechtel Civil and Minerals, Inc., San Francisco, CA 24
- Bechtel National, Inc., Oak Ridge, TN 1, 3, 6, 7, 9, 11, 13, 19, 23, 25, 35
- Berkeley Geosciences Associates, Berkeley, CA 8
- Bittinger (M.W.) and Associates, Inc., Fort Collins, CO 111, 112
- East-West Gateway Coordinating Council, St. Louis, MO 20, 21, 47, 48, 71, 125, 126
- Eberline Instrument Corporation, Oak Ridge, TN 39
- EG&G Energy Measurements Group, Las Vegas, NV 38, 78, 99, 107
- Harland Bartholomew and Associates, St. Louis, MO 122
- HOK Associates, Inc., St. Louis, MO 105, 115
- Lawrence Berkeley Laboratory, Berkeley, CA 53
- Lawrence Berkeley Laboratory, Earth Sciences Division, Berkeley, CA 30, 33, 50, 55, 58
- Mallinckrodt Chemical Works, Uranium Division, St. Louis, MO 133, 134, 141, 146
- Mallinckrodt Chemical Works, Uranium Division, Weldon Spring, MO 132, 135-137, 139, 140, 142-145, 147-152, 154-159
- McClelland Engineers, Inc., St. Louis, MO 22
- Missouri Department of Conservation, Jefferson City, MO 52
- Missouri Department of Natural Resources, Division of Geology and Land Survey, Rolla, MO 31, 41, 51, 100, 119, 129
- Missouri Department of Natural Resources, Water Resources Division, Jefferson City, MO 41, 100, 119, 123, 130, 131
- Missouri Geological Survey, Department of Natural Resources, Rolla, MO 27, 93-97
- National Aeronautics and Space Administration, Goddard Space Flight Center, Greenbelt, MD 118, 120
- National Lead Company of Ohio, Cincinnati, OH 44, 46, 92, 106, 113, 114, 117, 124
- National Park Service, Washington, DC 76
- NLO, Inc., Cincinnati, OH 37, 45, 49, 116
- Oak Ridge National Laboratory, Oak Ridge, TN 2, 40, 56, 60, 65
- Resource Planning and Design Group, St. Louis, MO 98
- Rockwell International Corporation, Energy Systems Group, Aberdeen Proving Grounds, MD 64
- Ryckman, Edgerley, Tomlinson and Associates, St. Louis, MO 67-70, 72-75, 77, 79-91
- Science Applications, Inc., Oak Ridge, TN 43, 61
- St. Charles County Zoning and Planning Commission, St. Charles, MO 20, 103

## AUTHOR AFFILIATION INDEX

- Test Drilling Service Company, Maryland Heights, MO 166
- U.S. Atomic Energy Commission, Oak Ridge Operations Office, Oak Ridge, TN 128
- U.S. Department of Agriculture, Soil Conservation Service, Beltsville, MD 36, 161
- U.S. Department of Energy, Oak Ridge Operations Office, Oak Ridge, TN 12, 18, 28
- U.S. Department of Energy, Washington, DC 14, 165
- U.S. Department of the Army, Army Armament Material, Readiness Command, Rock Island, IL 66
- U.S. Department of the Army, Ballistic Research Laboratories, Aberdeen Proving Ground, MD 108
- U.S. Department of the Army, Environmental Hygiene Agency, Aberdeen Proving Ground, MD 5
- U.S. Department of the Army, Office of the Project Manager for Chemical Demilitarization and Installation Restoration, Aberdeen Proving Ground, MD 109
- U.S. Department of the Army, Washington, DC 104
- U.S. General Accounting Office, Gaithersburg, MD 34
- U.S. Geological Survey, Indianapolis, IN 162
- U.S. Geological Survey, Lawrence, KS 163
- U.S. Geological Survey, Washington, DC 32, 59, 101, 110, 127, 153
- U.S. Geological Survey, Water Resources Division, Washington, DC 42
- U.S. Geological Survey, Woods Hole, MA 15, 16
- Washington University, St. Louis, MO 160
- Weston Geophysical Corporation, Westboro, MA 26
- Y-12 Plant, Development Division, Chemical Process Department, Oak Ridge, TN 54, 57, 60

# TITLE WORD INDEX



## TITLE WORD INDEX

### Abandoned

- An Aerial Radiological Survey of the Area Surrounding the Abandoned Quarry Near the Weldon Spring Chemical Plant, St. Charles, Missouri - July 1980 38

### Act

- Compliance with the National Environmental Policy Act - Intent to Prepare an Environmental Impact Statement and Conduct a Public Scoping Meeting on Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring, Missouri 14

### Addendum

- Addendum to the Engineering Evaluation of Alternatives for the Disposition of the Weldon Spring Raffinate Pits Site 1  
Radiochemical Analysis and Experimental Treatment Results of Solution from Weldon Spring, Missouri Ponds - Draft Report - Addendum to Y/DU-36 57

### AEC

- Study for Decommissioning the AEC-Weldon Spring Site and Quarry: Request for Proposals 116  
Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual AEC Quarry Environmental Report - 1964 136  
Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual AEC Quarry Environmental Report - 1963 139  
Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual AEC Quarry Environmental Report - 1962 143  
Atomic Energy Commission Feed Materials Production Facilities: 2nd Semi-Annual AEC Quarry Environmental Report - 1962 144  
Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environmental Report - 3rd Quarter 1961 148  
Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environmental Report - 4th Quarter 1961 149  
Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environmental Report - 2nd Quarter 1961 152  
Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environmental Report - 4th Quarter 1960 155

### Aerial

- An Aerial Radiological Survey of the Area Surrounding the Abandoned Quarry Near the Weldon Spring Chemical Plant, St. Charles, Missouri - July 1980 38  
Aerial Radiological Survey of the Weldon Spring Chemical Plant (St. Charles, Missouri) - Date of Survey: May 11-14, 1976 99  
Aerial Radiological Survey of the Weldon Spring Chemical Plant (St. Charles, Missouri) - Date of Survey: November 22, 1975 107

### Aggressive

- Report to the Congress of the United States by the Comptroller General "Cleaning Up Nuclear Facilities" - An Aggressive and Unified Program is Needed 34

### Alluvium

- Reconnaissance of the Ground-Water Resources of the Missouri River Alluvium Between St. Charles and Jefferson City, Missouri 127

### Alternatives

- Addendum to the Engineering Evaluation of Alternatives for the Disposition of the Weldon Spring Raffinate Pits Site 1  
Evaluation of Alternatives for Stabilizing Low Level Wastes Located at the Weldon

## TITLE WORD INDEX

- Spring Raffinate Pits   **3**  
 Engineering Evaluation of Alternatives for the Disposition of the Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri   **13**  
 Phase III Report: Assessment of Disposition Alternatives Weldon Spring Chemical Plant, St. Charles County, Missouri   **70**
- Alton**  
 Common-Depth-Point Seismic-Reflection Survey on the Mississippi River in the Vicinity of Alton, Illinois   **16**
- Analysis**  
 Results of Analysis of Water Samples Collected from Weldon Spring Chemical Plant: Collection of Letter Reports - June 1977 Through January 1985   **5**  
 Analysis of Potential Groundwater Contamination in the Vicinity of the Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri   **10**  
 Radiochemical Analysis and Experimental Treatment Results of Solution from Weldon Spring, Missouri Ponds   **40**  
 Radiochemical Analysis and Experimental Treatment Results of Solution from Weldon Spring, Missouri Ponds - Draft Report - Addendum to Y/DU-36   **57**  
 Chemical Analysis of Ponds 3 and 4 at Weldon Spring, Missouri   **60**  
 Weldon Spring Chemical Plant - Phase IV: Proposal for Quantitative Analysis   **67**  
 Land Use Analysis, St. Charles County, Missouri   **125**
- Analytical**  
 Weldon Spring Site Analytical Data from U.S. Army   **44**
- Annual**  
 Atomic Energy Commission Feed Materials Production Facilities: Semi-Annual Off-Site Environmental Monitoring Report - 1965   **132**  
 Atomic Energy Commission Feed Materials Production Facilities: 2nd Semi-Annual and Annual Summary Off-Site Environmental Monitoring Report - 1964   **135**  
 Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual AEC Quarry Environmental Report - 1964   **136**  
 Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual Off-Site Environmental Monitoring Report - 1964   **137**  
 Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual AEC Quarry Environmental Report - 1963   **139**  
 Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual Off-Site Environmental Monitoring Report - 1963   **140**  
 Atomic Energy Commission Feed Materials Production Facilities: 2nd Semi-Annual and Annual Summary Off-Site Environmental Monitoring Report - 1962   **142**  
 Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual AEC Quarry Environmental Report - 1962   **143**  
 Atomic Energy Commission Feed Materials Production Facilities: 2nd Semi-Annual AEC Quarry Environmental Report - 1962   **144**  
 Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual Off-Site Environmental Monitoring Report - 1962   **145**  
 Atomic Energy Commission Feed Materials Production Facilities: Annual Off-Site Environmental Monitoring Report - 1959   **159**
- Appendix**  
 Weldon Spring Chemical Plant - Phase II (Survey): Data Appendix   **73**
- April**  
 Assessment of Weldon Spring Chemical Plant in St. Charles County, Missouri: Interim Report - April 1975 - March 1976   **109**

## TITLE WORD INDEX

### Archaeological

- An Archaeological Survey of the Little Femme Osage River Hills Area and the Loutre River Valley: A Multivariate Approach to Environment and Site Distribution in the Lower Missouri Valley II Locality 76

### Area

- General Plan for Ground Water Tracing, Weldon Spring Area, St. Charles County, Missouri - Part I of the Study Missouri Department of Natural Resources, Water Resources Division, Jefferson City, MO 17
- An Aerial Radiological Survey of the Area Surrounding the Abandoned Quarry Near the Weldon Spring Chemical Plant, St. Charles, Missouri - July 1980 38
- Preliminary Investigation of Ground-Water Occurrences in the Weldon Spring Area, St. Charles County, Missouri 42
- A Checklist of Birds of the August A. Busch Memorial Wildlife Area, Weldon Spring, Missouri 52
- St. Louis, Missouri Water Quality Management Plan Area-Wide Waste Treatment Management Study 71
- An Archaeological Survey of the Little Femme Osage River Hills Area and the Loutre River Valley: A Multivariate Approach to Environment and Site Distribution in the Lower Missouri Valley II Locality 76
- Water Resources of the St. Louis Area, Missouri 100
- Water Resources of the St. Louis Area, Missouri 119
- Preliminary Investigation of Groundwater Occurrences in the Weldon Spring Area, St. Charles County, Missouri 162

### Areas

- Study of Radioactive Waste Storage Areas at ERDA-Weldon Spring Site 92

### Army

- Weldon Spring Site Analytical Data from U.S. Army 44

### Assessment

- Characterization and Assessment for the Weldon Spring Quarry Low-Level Radioactive Waste Storage Site 8
- Assessment and Evaluation of Engineering Options at a Low-Level Radioactive Waste Storage Site 33
- Preliminary Characterization and Assessment of the Weldon Spring Low-Level Waste Disposal Site 50
- Preliminary Characterization and Assessment of the Weldon Spring Low-Level Radioactive Waste Disposal Site, Weldon Spring, Missouri 55
- Preliminary Draft: Radiological, Hydrogeological, Geochemical and Geophysical Assessment of the Weldon Spring Quarry, Missouri Disposal Site 58
- Draft Preliminary Risk Assessment of the Weldon Spring Rock Quarry 61
- Weldon Spring Chemical Plant - Survey and Assessment, Final Report 68
- Phase III Report: Assessment of Disposition Alternatives Weldon Spring Chemical Plant, St. Charles County, Missouri 70
- Weldon Spring Chemical Plant - Phase III (Assessment) Technical: Costs and Schedule Proposal 75
- Installation Restoration at Weldon Spring Chemical Plant: Environmental Impact Assessment 104
- Environmental Impact Assessment for the Weldon Spring Site 105
- Assessment of Weldon Spring Chemical Plant in St. Charles County, Missouri: Interim Report - April 1975 - March 1976 109

## TITLE WORD INDEX

### Associated

Land Use and Land Cover and Associated Maps for St. Louis Missouri 101

### Atlases

Water Resources of South-Central Missouri - Atlases and Maps 110

### August

A Checklist of Birds of the August A. Busch Memorial Wildlife Area, Weldon Spring, Missouri 52

Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - July, August, September 1960 156

### Base

Land Use Data Base Update - Technical Report 47

Land Use Data Base Update - Summary Report 48

### Basin

Flood Hazards Studies in the Mississippi River Basin Using Remote Sensing 118

Flood Hazards Studies in the Mississippi River Basin Using Remote Sensing 120

### Bird

Weldon Spring Chemical Plant - Health and Safety Report No. 3: Negative Health Hazards from Bird Droppings 79

### Birds

A Checklist of Birds of the August A. Busch Memorial Wildlife Area, Weldon Spring, Missouri 52

### Building

Technical Proposal for Phase II: Building Survey Plan - Weldon Spring Chemical Plant, St. Charles, MO 83

Possible Use of Quarry at Mallinckrodt Chemical Works, Weldon Spring, Missouri, for the Disposal of Uranium Contaminated Building Debris and Rubble and Residues Containing Thorium and Uranium 153

### Busch

A Checklist of Birds of the August A. Busch Memorial Wildlife Area, Weldon Spring, Missouri 52

### Calendar

Weldon Spring Site Environmental Monitoring Report - Calendar Year 1983 11

Weldon Spring Site Environmental Monitoring Report - Calendar Year 1982 25

Weldon Spring Site Environmental Monitoring Report - Calendar Year 1981 35

### Canvass

Canvass of Nuclear Industry for Salability of Weldon Spring Chemical Plant: Final Report - September 30-December 30, 1976 102

### Catalog

Weldon Spring Chemical Plant - Catalog of On-Site Files 89

### Center

Weldon Spring: A Proposal for a Regional Environment Education Center, St. Louis Coalition for the Environmental Through a Grant from the LAD Foundation 98

### Central

Water Resources of South-Central Missouri - Atlases and Maps 110

### Centralia

Soil Moisture Ground Truth: Lafayette, Indiana, Site, - St. Charles, Missouri, Site - Centralia, Missouri, Site 111

## TITLE WORD INDEX

### Characterization

- Survey Plan for the Radiological Characterization of the Weldon Spring Quarry 7
- Characterization and Assessment for the Weldon Spring Quarry Low-Level Radioactive Waste Storage Site 8
- Weldon Spring Storage Site Geologic Characterization 1982-1983 23
- Preliminary Characterization and Assessment of the Weldon Spring Low-Level Waste Disposal Site 50
- Preliminary Characterization and Assessment of the Weldon Spring Low-Level Radioactive Waste Disposal Site, Weldon Spring, Missouri 55

### Checklist

- A Checklist of Birds of the August A. Busch Memorial Wildlife Area, Weldon Spring, Missouri 52

### City

- General Plan for Ground Water Tracing, Weldon Spring Area, St. Charles County, Missouri - Part I of the Study Missouri Department of Natural Resources, Water Resources Division, Jefferson City, MO 17
- Reconnaissance of the Ground-Water Resources of the Missouri River Alluvium Between St. Charles and Jefferson City, Missouri 127

### Cleaning

- Report to the Congress of the United States by the Comptroller General "Cleaning Up Nuclear Facilities" - An Aggressive and Unified Program is Needed 34

### Coalition

- Weldon Spring: A Proposal for a Regional Environment Education Center, St. Louis Coalition for the Environmental Through a Grant from the LAD Foundation 98

### Coding

- Land-Use Coding, St. Charles County, Missouri 126

### Collapse

- Groundwater Contamination and Sinkhole Collapse Induced Leaky Impoundments in Soluble Rock Terrain 123

### Collected

- Results of Analysis of Water Samples Collected from Weldon Spring Chemical Plant: Collection of Letter Reports - June 1977 Through January 1985 5

### Collection

- Results of Analysis of Water Samples Collected from Weldon Spring Chemical Plant: Collection of Letter Reports - June 1977 Through January 1985 5

### Common

- U.S. Geological Survey Common-Depth-Point Seismic-Reflection Survey Between Mississippi River Miles 195 and 210 (R/V Neecho, Cruise NE-80-3) 15
- Common-Depth-Point Seismic-Reflection Survey on the Mississippi River in the Vicinity of Alton, Illinois 16

### Completion

- Weldon Spring Chemical Plant - Health and Safety Report No. 4: Synopsis of Electrical Power Status at Site Following Survey Completion 74

### Complex

- Summary of Water Tracing Experiments at Weldon Spring Complex 27

### Compliance

- Compliance with the National Environmental Policy Act - Intent to Prepare an Environmental Impact Statement and Conduct a Public Scoping Meeting on Long-Term

**TITLE WORD INDEX**

- Management of Existing Radioactive Materials in the Vicinity of Weldon Spring, Missouri   **14**
- Comptroller**  
Report to the Congress of the United States by the Comptroller General "Cleaning Up Nuclear Facilities" - An Aggressive and Unified Program is Needed   **34**
- Conduct**  
Compliance with the National Environmental Policy Act - Intent to Prepare an Environmental Impact Statement and Conduct a Public Scoping Meeting on Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring, Missouri   **14**
- Conducted**  
A Review of A Two-Year Urinary Uranium Study Conducted on Operators of a Uranium Sample Plant   **141**
- Congress**  
Report to the Congress of the United States by the Comptroller General "Cleaning Up Nuclear Facilities" - An Aggressive and Unified Program is Needed   **34**
- Contaminated**  
Geochemical Information for Sites Contaminated with Low-Level Radioactive Wastes: III - Weldon Spring Storage Site   **2**  
Possible Use of Quarry at Mallinckrodt Chemical Works, Weldon Spring, Missouri, for the Disposal of Uranium Contaminated Building Debris and Rubble and Residues Containing Thorium and Uranium   **153**
- Contamination**  
Analysis of Potential Groundwater Contamination in the Vicinity of the Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri   **10**  
Nuclear Regulatory Commission License Application for Source Material License for Possession of Source and Special Nuclear Material Present as Contamination at Weldon Spring Chemical Plant (Replaces NRC SMB-938)   **66**  
Groundwater Contamination and Sinkhole Collapse Induced Leaky Impoundments in Soluble Rock Terrain   **123**  
The Contamination of Ground and Surface Waters by Liquid Wastes from the Weldon Spring Ordnance Works, Missouri   **163**
- Cost**  
Weldon Spring Chemical Plant - Phase II (Survey) Technical Supplement: Decontamination/Handling Cost Factors   **72**  
Technical Proposal for Phase II: Cost and Schedule - Weldon Spring Chemical Plant, St. Charles, Missouri   **81**
- Costs**  
Weldon Spring Chemical Plant - Phase III (Assessment) Technical: Costs and Schedule Proposal   **75**
- Counties**  
Guidebook to Middle Ordovician and Mississippian Strata, St. Louis and St. Charles Counties, Missouri   **131**
- Cover**  
Land Use and Land Cover: 1972-1976 - St. Louis, Missouri - Illinois   **59**  
Land Use and Land Cover and Associated Maps for St. Louis Missouri   **101**
- Creek**  
Flood Plain Information: Femme Osage Creek, St. Charles County, Missouri   **121**

## TITLE WORD INDEX

### Cretaceous

Late Cretaceous Marine Foraminifers from Pleistocene Fluviolacustrine Deposits in Eastern Missouri 31

### Critical

Critical (Public) Masses: A Case Study of a Radioactive Waste Site 4

### Cruise

U.S. Geological Survey Common-Depth-Point Seismic-Reflection Survey Between Mississippi River Miles 195 and 210 (R/V Neecho, Cruise NE-80-3) 15

### Cubic

Design Memorandum for 12 M Cubic Feet Raffinate Pit, Atomic Energy Commission Plant, Weldon Spring, Missouri 133

### Debris

Possible Use of Quarry at Mallinckrodt Chemical Works, Weldon Spring, Missouri, for the Disposal of Uranium Contaminated Building Debris and Rubble and Residues Containing Thorium and Uranium 153

### December

Canvass of Nuclear Industry for Salability of Weldon Spring Chemical Plant: Final Report - September 30-December 30, 1976 102

Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - October, November, December 1960 154

### Decommissioning

Weldon Spring Decommissioning Study - Quarry Supplement 113

ERDA-Weldon Spring: Weldon Spring Decommissioning Study 114

Study for Decommissioning the AEC-Weldon Spring Site and Quarry: Request for Proposals 116

### Decontamination

Program Plan for the Decontamination and Disposition of Weldon Spring Chemical Plant 62

Program Plan for the Decontamination and Disposition of Weldon Spring Chemical Plant 64

Weldon Spring Chemical Plant - Phase II (Survey) Technical Supplement: Decontamination/Handling Cost Factors 72

### Department

General Plan for Ground Water Tracing, Weldon Spring Area, St. Charles County, Missouri - Part I of the Study Missouri Department of Natural Resources, Water Resources Division, Jefferson City, MO 17

Geophysical Measurements: U.S. Department of Energy (DOE) Raffinate Pit Site Weldon Spring, Missouri 26

### Deposits

Late Cretaceous Marine Foraminifers from Pleistocene Fluviolacustrine Deposits in Eastern Missouri 31

### Depth

U.S. Geological Survey Common-Depth-Point Seismic-Reflection Survey Between Mississippi River Miles 195 and 210 (R/V Neecho, Cruise NE-80-3) 15

Common-Depth-Point Seismic-Reflection Survey on the Mississippi River in the Vicinity of Alton, Illinois 16

### Design

Weldon Spring Storage Site Seismicity and Design Earthquake Considerations 24

**TITLE WORD INDEX**

Design Memorandum for 12 M Cubic Feet Raffinate Pit, Atomic Energy Commission Plant, Weldon Spring, Missouri 133

**Detailing**

Drawing Detailing Location of the Test Wells at Weldon Spring Quarry 166

**Disasters**

Weldon Spring Chemical Plant - Revised Natural Disasters Report 69

**Disposal**

Geologic Aspects of Individual Home Liquid-Waste Disposal in Missouri 29

Comparison of Four Engineering Options for a Low-Level Radioactive Waste Disposal Site 30

An Engineering Evaluation of Waste Disposal Options at Weldon Spring Quarry - Final Report 43

Preliminary Characterization and Assessment of the Weldon Spring Low-Level Waste Disposal Site 50

Evaluation of the Future of a Low Level Radioactive Waste Disposal Site, Weldon Spring, Missouri 53

Preliminary Characterization and Assessment of the Weldon Spring Low-Level Radioactive Waste Disposal Site, Weldon Spring, Missouri 55

Preliminary Draft: Radiological, Hydrogeological, Geochemical and Geophysical Assessment of the Weldon Spring Quarry, Missouri Disposal Site 58

Possible Use of Quarry at Mallinckrodt Chemical Works, Weldon Spring, Missouri, for the Disposal of Uranium Contaminated Building Debris and Rubble and Residues Containing Thorium and Uranium 153

**Disposition**

Addendum to the Engineering Evaluation of Alternatives for the Disposition of the Weldon Spring Raffinate Pits Site 1

Engineering Evaluation of Alternatives for the Disposition of the Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri 13

Program Plan for the Decontamination and Disposition of Weldon Spring Chemical Plant 62

Program Plan for the Decontamination and Disposition of Weldon Spring Chemical Plant 64

Phase III Report: Assessment of Disposition Alternatives Weldon Spring Chemical Plant, St. Charles County, Missouri 70

**Distribution**

Distribution and Possible Causes of Radionuclides in Groundwaters of Missouri 51

An Archaeological Survey of the Little Femme Osage River Hills Area and the Loutre River Valley: A Multivariate Approach to Environment and Site Distribution in the Lower Missouri Valley II Locality 76

**Division**

General Plan for Ground Water Tracing, Weldon Spring Area, St. Charles County, Missouri - Part I of the Study Missouri Department of Natural Resources, Water Resources Division, Jefferson City, MO 17

**DOE**

Environmental Monitoring of the DOE-Owned Surplus Facility Weldon Spring Site (WSS) 19

Geophysical Measurements: U.S. Department of Energy (DOE) Raffinate Pit Site Weldon Spring, Missouri 26

Environmental Monitoring Program for DOE Weldon Spring, Missouri Site 49

## TITLE WORD INDEX

### Dose

Weldon Spring Dose Calculations 65

### Draft

Radiochemical Analysis and Experimental Treatment Results of Solution from Weldon Spring, Missouri Ponds - Draft Report - Addendum to Y/DU-36 57

Preliminary Draft: Radiological, Hydrogeological, Geochemical and Geophysical Assessment of the Weldon Spring Quarry, Missouri Disposal Site 58

Draft Preliminary Risk Assessment of the Weldon Spring Rock Quarry 61

Weldon Spring Chemical Plant - Draft Health Physics Plan 91

### Drawing

Drawing Detailing Location of the Test Wells at Weldon Spring Quarry 166

### Droppings

Weldon Spring Chemical Plant - Health and Safety Report No. 3: Negative Health Hazards from Bird Droppings 79

### Earthquake

Weldon Spring Storage Site Seismicity and Design Earthquake Considerations 24

### Eastern

Late Cretaceous Marine Foraminifers from Pleistocene Fluviolacustrine Deposits in Eastern Missouri 31

### Education

Weldon Spring: A Proposal for a Regional Environment Education Center, St. Louis Coalition for the Environmental Through a Grant from the LAD Foundation 98

### Electrical

Weldon Spring Chemical Plant - Health and Safety Report No. 4: Synopsis of Electrical Power Status at Site Following Survey Completion 74

### Engineering

Addendum to the Engineering Evaluation of Alternatives for the Disposition of the Weldon Spring Raffinate Pits Site 1

Engineering Evaluation of Alternatives for the Disposition of the Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri 13

Comparison of Four Engineering Options for a Low-Level Radioactive Waste Disposal Site 30

Assessment and Evaluation of Engineering Options at a Low-Level Radioactive Waste Storage Site 33

An Engineering Evaluation of Waste Disposal Options at Weldon Spring Quarry - Final Report 43

### Environment

An Archaeological Survey of the Little Femme Osage River Hills Area and the Loutre River Valley: A Multivariate Approach to Environment and Site Distribution in the Lower Missouri Valley II Locality 76

Weldon Spring: A Proposal for a Regional Environment Education Center, St. Louis Coalition for the Environmental Through a Grant from the LAD Foundation 98

### Environmental

Weldon Spring Site Environmental Monitoring Report - Calendar Year 1983 11

Compliance with the National Environmental Policy Act - Intent to Prepare an Environmental Impact Statement and Conduct a Public Scoping Meeting on Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring, Missouri 14

Environmental Monitoring of the DOE-Owned Surplus Facility Weldon Spring Site

## TITLE WORD INDEX

(WSS)	<b>19</b>	
Weldon Spring Site Environmental Monitoring Report - Calendar Year 1982	<b>25</b>	
Weldon Spring Site Environmental Monitoring Report - Calendar Year 1981	<b>35</b>	
Weldon Spring Storage Site Environmental Monitoring Report for 1979 and 1980	<b>37</b>	
Semiannual Environmental Sampling at Weldon Spring	<b>39</b>	
Environmental Monitoring Program for DOE Weldon Spring, Missouri Site	<b>49</b>	
Weldon Spring Chemical Plant - Radiological Supplement to Environmental Survey Plan	<b>84</b>	
Weldon Spring Chemical Plant - Environmental Survey Plan	<b>85</b>	
Weldon Spring: A Proposal for a Regional Environment Education Center, St.Louis Coalition for the Environmental Through a Grant from the LAD Foundation	<b>98</b>	
Installation Restoration at Weldon Spring Chemical Plant: Environmental Impact Assessment	<b>104</b>	
Environmental Impact Assessment for the Weldon Spring Site	<b>105</b>	
Atomic Energy Commission Feed Materials Production Facilities: Semi-Annual Off-Site Environmental Monitoring Report - 1965	<b>132</b>	
Atomic Energy Commission Feed Materials Production Facilities: 2nd Semi-Annual and Annual Summary Off-Site Environmental Monitoring Report - 1964	<b>135</b>	
Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual AEC Quarry Environmental Report - 1964	<b>136</b>	
Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual Off-Site Environmental Monitoring Report - 1964	<b>137</b>	
Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual AEC Quarry Environmental Report - 1963	<b>139</b>	
Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual Off-Site Environmental Monitoring Report - 1963	<b>140</b>	
Atomic Energy Commission Feed Materials Production Facilities: 2nd Semi-Annual and Annual Summary Off-Site Environmental Monitoring Report - 1962	<b>142</b>	
Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual AEC Quarry Environmental Report - 1962	<b>143</b>	
Atomic Energy Commission Feed Materials Production Facilities: 2nd Semi-Annual AEC Quarry Environmental Report - 1962	<b>144</b>	
Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual Off-Site Environmental Monitoring Report - 1962	<b>145</b>	
Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - January, February, March 1961	<b>147</b>	
Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environmental Report - 3rd Quarter 1961	<b>148</b>	
Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environmental Report - 4th Quarter 1961	<b>149</b>	
Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - 3rd Quarter 1961	<b>150</b>	
Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - 2nd Quarter 1961	<b>151</b>	
Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environmental Report - 2nd Quarter 1961	<b>152</b>	
Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - October, November, December 1960	<b>154</b>	
Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environ-		

**TITLE WORD INDEX**

- mental Report - 4th Quarter 1960 155
- Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - July, August, September 1960 156
- Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - 1st Quarter 1960 157
- Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - 2nd Quarter 1960 158
- Atomic Energy Commission Feed Materials Production Facilities: Annual Off-Site Environmental Monitoring Report - 1959 159
- ERDA**
- Study of Radioactive Waste Storage Areas at ERDA-Weldon Spring Site 92
- ERDA-Weldon Spring: Weldon Spring Decommissioning Study 114
- Existing**
- Compliance with the National Environmental Policy Act - Intent to Prepare an Environmental Impact Statement and Conduct a Public Scoping Meeting on Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring, Missouri 14
- Action Description Memorandum - Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring and St. Louis, Missouri 28
- Facility**
- Environmental Monitoring of the DOE-Owned Surplus Facility Weldon Spring Site (WSS) 19
- Falls**
- Weldon Spring and Niagara Falls Sites Industrial Hygiene 46
- February**
- Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - January, February, March 1961 147
- Feet**
- Design Memorandum for 12 M Cubic Feet Raffinate Pit, Atomic Energy Commission Plant, Weldon Spring, Missouri 133
- Femme**
- An Archaeological Survey of the Little Femme Osage River Hills Area and the Loutre River Valley: A Multivariate Approach to Environment and Site Distribution in the Lower Missouri Valley II Locality 76
- Flood Plain Information: Femme Osage Creek, St. Charles County, Missouri 121
- Files**
- Weldon Spring Chemical Plant - Catalog of On-Site Files 89
- Final**
- An Engineering Evaluation of Waste Disposal Options at Weldon Spring Quarry - Final Report 43
- Weldon Spring Chemical Plant - Survey and Assessment, Final Report 68
- Canvass of Nuclear Industry for Salability of Weldon Spring Chemical Plant: Final Report - September 30-December 30, 1976 102
- Land Use and Transportation Plans for St. Charles County - Final Report 122
- Flood**
- Flood Hazards Studies in the Mississippi River Basin Using Remote Sensing 118
- Flood Hazards Studies in the Mississippi River Basin Using Remote Sensing 120
- Flood Plain Information: Femme Osage Creek, St. Charles County, Missouri 121

## TITLE WORD INDEX

### Floodplain

Some Aspects of Land Forms of the Lower Missouri River Floodplain 138

### Fluviolacustrine

Late Cretaceous Marine Foraminifers from Pleistocene Fluviolacustrine Deposits in Eastern Missouri 31

### FMPC

Study of Scrap Pit No. 3 (FMPC) 124

### Foraminifers

Late Cretaceous Marine Foraminifers from Pleistocene Fluviolacustrine Deposits in Eastern Missouri 31

### Force

Weldon Spring Raffinate Pits and Quarry - Task Force Report 128

### Forms

Some Aspects of Land Forms of the Lower Missouri River Floodplain 138

### Foundation

Weldon Spring: A Proposal for a Regional Environment Education Center, St. Louis Coalition for the Environmental Through a Grant from the LAD Foundation 98

### Future

Evaluation of the Future of a Low Level Radioactive Waste Disposal Site, Weldon Spring, Missouri 53

### Geochemical

Geochemical Information for Sites Contaminated with Low-Level Radioactive Wastes: III - Weldon Spring Storage Site 2

Preliminary Draft: Radiological, Hydrogeological, Geochemical and Geophysical Assessment of the Weldon Spring Quarry, Missouri Disposal Site 58

### Geologic

Geologic Report: Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri 6

Weldon Spring Storage Site Geologic Characterization 1982-1983 23

Geologic Aspects of Individual Home Liquid-Waste Disposal in Missouri 29

Geologic Map of Missouri 63

### Geological

U.S. Geological Survey Common-Depth-Point Seismic-Reflection Survey Between Mississippi River Miles 195 and 210 (R/V Neecho, Cruise NE-80-3) 15

### Geology

Geology of the South Half of the Weldon Spring Quadrangle 160

### Geophysical

Geophysical Measurements: U.S. Department of Energy (DOE) Raffinate Pit Site Weldon Spring, Missouri 26

Preliminary Draft: Radiological, Hydrogeological, Geochemical and Geophysical Assessment of the Weldon Spring Quarry, Missouri Disposal Site 58

### Grant

Weldon Spring: A Proposal for a Regional Environment Education Center, St. Louis Coalition for the Environmental Through a Grant from the LAD Foundation 98

### Ground

General Plan for Ground Water Tracing, Weldon Spring Area, St. Charles County, Missouri - Part I of the Study Missouri Department of Natural Resources, Water Resources Division, Jefferson City, MO 17

Preliminary Investigation of Ground-Water Occurrences in the Weldon Spring Area, St.

**TITLE WORD INDEX**

- Charles County, Missouri 42
- Weldon Spring Chemical Plant Ground Survey Summary 78
- Soil Moisture Ground Truth: Lafayette, Indiana, Site, - St. Charles, Missouri, Site - Centralia, Missouri, Site 111
- Soils Maps Supplement to Soil Moisture Ground Truth: Lafayette, Indiana, Site - St. Charles, Missouri, Site 112
- Reconnaissance of the Ground-Water Resources of the Missouri River Alluvium Between St. Charles and Jefferson City, Missouri 127
- The Contamination of Ground and Surface Waters by Liquid Wastes from the Weldon Spring Ordnance Works, Missouri 163
- Groundwater**
- Analysis of Potential Groundwater Contamination in the Vicinity of the Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri 10
- Groundwater Contamination and Sinkhole Collapse Induced Leaky Impoundments in Soluble Rock Terrain 123
- Preliminary Investigation of Groundwater Occurrences in the Weldon Spring Area, St. Charles County, Missouri 162
- Groundwaters**
- Distribution and Possible Causes of Radionuclides in Groundwaters of Missouri 51
- Guidebook**
- Guidebook to Middle Ordovician and Mississippian Strata, St. Louis and St. Charles Counties, Missouri 131
- Half**
- Geology of the South Half of the Weldon Spring Quadrangle 160
- Hazards**
- Weldon Spring Chemical Plant - Health and Safety Report No. 3: Negative Health Hazards from Bird Droppings 79
- Flood Hazards Studies in the Mississippi River Basin Using Remote Sensing 118
- Flood Hazards Studies in the Mississippi River Basin Using Remote Sensing 120
- Health**
- Weldon Spring Chemical Plant - Health and Safety Report No. 4: Synopsis of Electrical Power Status at Site Following Survey Completion 74
- Weldon Spring Chemical Plant - Health and Safety Report No. 3: Negative Health Hazards from Bird Droppings 79
- Weldon Spring Chemical Plant - Operational Health and Safety Plan 82
- Weldon Spring Chemical Plant - Health and Safety Report No. 2: Detailed Walk-Through Survey 86
- Weldon Spring Chemical Plant - Revised Health Physics Plan 87
- Weldon Spring Chemical Plant - Health and Safety Report No. 1: Preliminary Survey Considerations 88
- Weldon Spring Chemical Plant - Draft Health Physics Plan 91
- Hills**
- An Archaeological Survey of the Little Femme Osage River Hills Area and the Loutre River Valley: A Multivariate Approach to Environment and Site Distribution in the Lower Missouri Valley II Locality 76
- Home**
- Geologic Aspects of Individual Home Liquid-Waste Disposal in Missouri 29
- Hydrogeological**
- Preliminary Draft: Radiological, Hydrogeological, Geochemical and Geophysical Assessment of the Weldon Spring Quarry, Missouri Disposal Site 58

## TITLE WORD INDEX

### Hygiene

Weldon Spring and Niagara Falls Sites Industrial Hygiene 46

### Illinois

Common-Depth-Point Seismic-Reflection Survey on the Mississippi River in the Vicinity of Alton, Illinois 16

Land Use and Land Cover: 1972-1976 - St. Louis, Missouri - Illinois 59

### Impact

Compliance with the National Environmental Policy Act - Intent to Prepare an Environmental Impact Statement and Conduct a Public Scoping Meeting on Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring, Missouri 14

Installation Restoration at Weldon Spring Chemical Plant: Environmental Impact Assessment 104

Environmental Impact Assessment for the Weldon Spring Site 105

### Impoundments

Groundwater Contamination and Sinkhole Collapse Induced Leaky Impoundments in Soluble Rock Terrain 123

### Indiana

Soil Moisture Ground Truth: Lafayette, Indiana, Site, - St. Charles, Missouri, Site - Centralia, Missouri, Site 111

Soils Maps Supplement to Soil Moisture Ground Truth: Lafayette, Indiana, Site - St. Charles, Missouri, Site 112

### Individual

Geologic Aspects of Individual Home Liquid-Waste Disposal in Missouri 29

### Industrial

Weldon Spring and Niagara Falls Sites Industrial Hygiene 46

### Industry

Canvass of Nuclear Industry for Salability of Weldon Spring Chemical Plant: Final Report - September 30-December 30, 1976 102

### Information

Geochemical Information for Sites Contaminated with Low-Level Radioactive Wastes: III - Weldon Spring Storage Site 2

Flood Plain Information: Femme Osage Creek, St. Charles County, Missouri 121

### Installation

Installation Restoration at Weldon Spring Chemical Plant: Environmental Impact Assessment 104

### Intent

Compliance with the National Environmental Policy Act - Intent to Prepare an Environmental Impact Statement and Conduct a Public Scoping Meeting on Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring, Missouri 14

### Interim

Assessment of Weldon Spring Chemical Plant in St. Charles County, Missouri: Interim Report - April 1975 - March 1976 109

### January

Results of Analysis of Water Samples Collected from Weldon Spring Chemical Plant: Collection of Letter Reports - June 1977 Through January 1985 5

Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - January, February, March 1961 147

## TITLE WORD INDEX

### Jefferson

- General Plan for Ground Water Tracing, Weldon Spring Area, St. Charles County, Missouri - Part I of the Study Missouri Department of Natural Resources, Water Resources Division, Jefferson City, MO 17
- Reconnaissance of the Ground-Water Resources of the Missouri River Alluvium Between St. Charles and Jefferson City, Missouri 127

### July

- An Aerial Radiological Survey of the Area Surrounding the Abandoned Quarry Near the Weldon Spring Chemical Plant, St. Charles, Missouri - July 1980 38
- Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - July, August, September 1960 156

### June

- Results of Analysis of Water Samples Collected from Weldon Spring Chemical Plant: Collection of Letter Reports - June 1977 Through January 1985 5

### Laboratory

- Laboratory Testing of Soils, Weldon Spring Storage Site, Weldon Spring, Missouri 22
- Progress and Improvements in Laboratory Research, Pilot Plant Development, Production Technology: Weldon Spring Feed Materials Plant 146

### LAD

- Weldon Spring: A Proposal for a Regional Environment Education Center, St. Louis Coalition for the Environmental Through a Grant from the LAD Foundation 98

### Lafayette

- Soil Moisture Ground Truth: Lafayette, Indiana, Site, - St. Charles, Missouri, Site - Centralia, Missouri, Site 111
- Soils Maps Supplement to Soil Moisture Ground Truth: Lafayette, Indiana, Site - St. Charles, Missouri, Site 112

### Land

- Land Use Plan of Incorporated St. Charles County 20
- Land Use Plan of Unincorporated St. Charles County 21
- Land Use Data Base Update - Technical Report 47
- Land Use Data Base Update - Summary Report 48
- Land Use and Land Cover: 1972-1976 - St. Louis, Missouri - Illinois 59
- The Resources of St. Charles County, Missouri: Land, Water, and Minerals 93
- The Land - Soil, Rock, and Land Slopes 94
- Land Use Suitability 97
- Land Use and Land Cover and Associated Maps for St. Louis Missouri 101
- Land Use and Transportation Plans for St. Charles County - Final Report 122
- Land Use Analysis, St. Charles County, Missouri 125
- Land-Use Coding, St. Charles County, Missouri 126
- Some Aspects of Land Forms of the Lower Missouri River Floodplain 138

### Late

- Late Cretaceous Marine Foraminifers from Pleistocene Fluviolacustrine Deposits in Eastern Missouri 31

### Leaky

- Groundwater Contamination and Sinkhole Collapse Induced Leaky Impoundments in Soluble Rock Terrain 123

### Letter

- Results of Analysis of Water Samples Collected from Weldon Spring Chemical Plant: Collection of Letter Reports - June 1977 Through January 1985 5

## TITLE WORD INDEX

### License

- Nuclear Regulatory Commission License Application for Source Material License for Possession of Source and Special Nuclear Material Present as Contamination at Weldon Spring Chemical Plant (Replaces NRC SMB-938) **66**

### Liquid

- Geologic Aspects of Individual Home Liquid-Waste Disposal in Missouri **29**  
The Contamination of Ground and Surface Waters by Liquid Wastes from the Weldon Spring Ordnance Works, Missouri **163**

### Locality

- An Archaeological Survey of the Little Femme Osage River Hills Area and the Loutre River Valley: A Multivariate Approach to Environment and Site Distribution in the Lower Missouri Valley II Locality **76**

### Located

- Evaluation of Alternatives for Stabilizing Low Level Wastes Located at the Weldon Spring Raffinate Pits **3**

### Location

- Drawing Detailing Location of the Test Wells at Weldon Spring Quarry **166**

### Loess

- A Mineralogical Study of Loess Near St. Charles, Missouri **164**

### Louis

- Action Description Memorandum - Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring and St. Louis, Missouri **28**  
Land Use and Land Cover: 1972-1976 - St. Louis, Missouri - Illinois **59**  
St. Louis, Missouri Water Quality Management Plan Area-Wide Waste Treatment Management Study **71**  
Weldon Spring: A Proposal for a Regional Environment Education Center, St. Louis Coalition for the Environmental Through a Grant from the LAD Foundation **98**  
Water Resources of the St. Louis Area, Missouri **100**  
Land Use and Land Cover and Associated Maps for St. Louis Missouri **101**  
Water Resources of the St. Louis Area, Missouri **119**  
Guidebook to Middle Ordovician and Mississippian Strata, St. Louis and St. Charles Counties, Missouri **131**

### Loutre

- An Archaeological Survey of the Little Femme Osage River Hills Area and the Loutre River Valley: A Multivariate Approach to Environment and Site Distribution in the Lower Missouri Valley II Locality **76**

### Low

- Geochemical Information for Sites Contaminated with Low-Level Radioactive Wastes: III - Weldon Spring Storage Site **2**  
Evaluation of Alternatives for Stabilizing Low Level Wastes Located at the Weldon Spring Raffinate Pits **3**  
Characterization and Assessment for the Weldon Spring Quarry Low-Level Radioactive Waste Storage Site **8**  
Comparison of Four Engineering Options for a Low-Level Radioactive Waste Disposal Site **30**  
Assessment and Evaluation of Engineering Options at a Low-Level Radioactive Waste Storage Site **33**  
Preliminary Characterization and Assessment of the Weldon Spring Low-Level Waste Disposal Site **50**

**TITLE WORD INDEX**

- Evaluation of the Future of a Low Level Radioactive Waste Disposal Site, Weldon Spring, Missouri 53
- Preliminary Characterization and Assessment of the Weldon Spring Low-Level Radioactive Waste Disposal Site, Weldon Spring, Missouri 55
- Mallinckrodt**
- Possible Use of Quarry at Mallinckrodt Chemical Works, Weldon Spring, Missouri, for the Disposal of Uranium Contaminated Building Debris and Rubble and Residues Containing Thorium and Uranium 153
- Management**
- Weldon Spring Site Project Management Plan 12
- Compliance with the National Environmental Policy Act - Intent to Prepare an Environmental Impact Statement and Conduct a Public Scoping Meeting on Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring, Missouri 14
- Weldon Spring Site Project Management Plan (FY 1984-85) 18
- Action Description Memorandum - Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring and St. Louis, Missouri 28
- St. Louis, Missouri Water Quality Management Plan Area-Wide Waste Treatment Management Study 71
- Weldon Spring Chemical Plant - Data Management Plan 80
- Radioactive Waste Management Plan 106
- Map**
- Geologic Map of Missouri 63
- Maps**
- Land Use and Land Cover and Associated Maps for St. Louis Missouri 101
- Water Resources of South-Central Missouri - Atlases and Maps 110
- Soils Maps Supplement to Soil Moisture Ground Truth: Lafayette, Indiana, Site - St. Charles, Missouri, Site 112
- March**
- Assessment of Weldon Spring Chemical Plant in St. Charles County, Missouri: Interim Report - April 1975 - March 1976 109
- Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - January, February, March 1961 147
- Marine**
- Late Cretaceous Marine Foraminifers from Pleistocene Fluvio-lacustrine Deposits in Eastern Missouri 31
- Marketing**
- University of Missouri Weldon Spring Property, Task 1 Report, Investigation and Preliminary Evaluation of Development and Marketing Potentials 115
- Masses**
- Critical (Public) Masses: A Case Study of a Radioactive Waste Site 4
- Material**
- Nuclear Regulatory Commission License Application for Source Material License for Possession of Source and Special Nuclear Material Present as Contamination at Weldon Spring Chemical Plant (Replaces NRC SMB-938) 66
- Measurements**
- Geophysical Measurements: U.S. Department of Energy (DOE) Raffinate Pit Site Weldon Spring, Missouri 26

## TITLE WORD INDEX

### Meeting

- Compliance with the National Environmental Policy Act - Intent to Prepare an Environmental Impact Statement and Conduct a Public Scoping Meeting on Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring, Missouri 14

### Memorandum

- Action Description Memorandum - Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring and St. Louis, Missouri 28  
Design Memorandum for 12 M Cubic Feet Raffinate Pit, Atomic Energy Commission Plant, Weldon Spring, Missouri 133

### Memorial

- A Checklist of Birds of the August A. Busch Memorial Wildlife Area, Weldon Spring, Missouri 52

### Middle

- Guidebook to Middle Ordovician and Mississippian Strata, St. Louis and St. Charles Counties, Missouri 131

### Miles

- U.S. Geological Survey Common-Depth-Point Seismic-Reflection Survey Between Mississippi River Miles 195 and 210 (R/V Neecho, Cruise NE-80-3) 15

### Mineral

- Mineral and Water Resources of Missouri 130

### Mineralogical

- A Mineralogical Study of Loess Near St. Charles, Missouri 164

### Minerals

- The Resources of St. Charles County, Missouri: Land, Water, and Minerals 93  
Minerals 95

### Mississippi

- U.S. Geological Survey Common-Depth-Point Seismic-Reflection Survey Between Mississippi River Miles 195 and 210 (R/V Neecho, Cruise NE-80-3) 15  
Common-Depth-Point Seismic-Reflection Survey on the Mississippi River in the Vicinity of Alton, Illinois 16  
Flood Hazards Studies in the Mississippi River Basin Using Remote Sensing 118  
Flood Hazards Studies in the Mississippi River Basin Using Remote Sensing 120

### Mississippian

- Guidebook to Middle Ordovician and Mississippian Strata, St. Louis and St. Charles Counties, Missouri 131

### MO

- General Plan for Ground Water Tracing, Weldon Spring Area, St. Charles County, Missouri - Part I of the Study Missouri Department of Natural Resources, Water Resources Division, Jefferson City, MO 17  
Technical Proposal for Phase II: Building Survey Plan - Weldon Spring Chemical Plant, St. Charles, MO 83

### Moisture

- Soil Moisture Ground Truth: Lafayette, Indiana, Site, - St. Charles, Missouri, Site - Centralia, Missouri, Site 111  
Soils Maps Supplement to Soil Moisture Ground Truth: Lafayette, Indiana, Site - St. Charles, Missouri, Site 112

## TITLE WORD INDEX

### Monitoring

- Weldon Spring Site Environmental Monitoring Report - Calendar Year 1983 11  
 Environmental Monitoring of the DOE-Owned Surplus Facility Weldon Spring Site (WSS) 19  
 Weldon Spring Site Environmental Monitoring Report - Calendar Year 1982 25  
 Weldon Spring Site Environmental Monitoring Report - Calendar Year 1981 35  
 Weldon Spring Storage Site Environmental Monitoring Report for 1979 and 1980 37  
 Environmental Monitoring Program for DOE Weldon Spring, Missouri Site 49  
 Atomic Energy Commission Feed Materials Production Facilities: Semi-Annual Off-Site Environmental Monitoring Report - 1965 132  
 Atomic Energy Commission Feed Materials Production Facilities: 2nd Semi-Annual and Annual Summary Off-Site Environmental Monitoring Report - 1964 135  
 Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual Off-Site Environmental Monitoring Report - 1964 137  
 Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual Off-Site Environmental Monitoring Report - 1963 140  
 Atomic Energy Commission Feed Materials Production Facilities: 2nd Semi-Annual and Annual Summary Off-Site Environmental Monitoring Report - 1962 142  
 Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual Off-Site Environmental Monitoring Report - 1962 145  
 Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - January, February, March 1961 147  
 Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - 3rd Quarter 1961 150  
 Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - 2nd Quarter 1961 151  
 Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - October, November, December 1960 154  
 Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - July, August, September 1960 156  
 Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - 1st Quarter 1960 157  
 Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - 2nd Quarter 1960 158  
 Atomic Energy Commission Feed Materials Production Facilities: Annual Off-Site Environmental Monitoring Report - 1959 159

### Multivariate

- An Archaeological Survey of the Little Femme Osage River Hills Area and the Loutre River Valley: A Multivariate Approach to Environment and Site Distribution in the Lower Missouri Valley II Locality 76

### Narrative

- Weldon Spring Chemical Plant - Phase II (Survey): Narrative Report 77

### National

- Compliance with the National Environmental Policy Act - Intent to Prepare an Environmental Impact Statement and Conduct a Public Scoping Meeting on Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring, Missouri 14

### Natural

- General Plan for Ground Water Tracing, Weldon Spring Area, St. Charles County, Mis-

**TITLE WORD INDEX**

- souri - Part I of the Study Missouri Department of Natural Resources, Water Resources Division, Jefferson City, MO   **17**  
Weldon Spring Chemical Plant - Revised Natural Disasters Report   **69**
- NE**  
U.S. Geological Survey Common-Depth-Point Seismic-Reflection Survey Between Mississippi River Miles 195 and 210 (R/V Neecho, Cruise NE-80-3)   **15**
- Neecho**  
U.S. Geological Survey Common-Depth-Point Seismic-Reflection Survey Between Mississippi River Miles 195 and 210 (R/V Neecho, Cruise NE-80-3)   **15**
- Needed**  
Report to the Congress of the United States by the Comptroller General "Cleaning Up Nuclear Facilities" - An Aggressive and Unified Program is Needed   **34**
- Negative**  
Weldon Spring Chemical Plant - Health and Safety Report No. 3: Negative Health Hazards from Bird Droppings   **79**
- Niagara**  
Weldon Spring and Niagara Falls Sites Industrial Hygiene   **46**
- November**  
Aerial Radiological Survey of the Weldon Spring Chemical Plant (St. Charles, Missouri) - Date of Survey: November 22, 1975   **107**  
Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - October, November, December 1960   **154**
- NRC**  
Nuclear Regulatory Commission License Application for Source Material License for Possession of Source and Special Nuclear Material Present as Contamination at Weldon Spring Chemical Plant (Replaces NRC SMB-938)   **66**
- Nuclear**  
Report to the Congress of the United States by the Comptroller General "Cleaning Up Nuclear Facilities" - An Aggressive and Unified Program is Needed   **34**  
Nuclear Regulatory Commission License Application for Source Material License for Possession of Source and Special Nuclear Material Present as Contamination at Weldon Spring Chemical Plant (Replaces NRC SMB-938)   **66**  
Cavass of Nuclear Industry for Salability of Weldon Spring Chemical Plant: Final Report - September 30-December 30, 1976   **102**
- Occurrences**  
Preliminary Investigation of Ground-Water Occurrences in the Weldon Spring Area, St. Charles County, Missouri   **42**  
Preliminary Investigation of Groundwater Occurrences in the Weldon Spring Area, St. Charles County, Missouri   **162**
- October**  
Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - October, November, December 1960   **154**
- Operational**  
Weldon Spring Chemical Plant - Operational Health and Safety Plan   **82**
- Operators**  
A Review of A Two-Year Urinary Uranium Study Conducted on Operators of a Uranium Sample Plant   **141**

**TITLE WORD INDEX****Options**

- Comparison of Four Engineering Options for a Low-Level Radioactive Waste Disposal Site 30
- Assessment and Evaluation of Engineering Options at a Low-Level Radioactive Waste Storage Site 33
- An Engineering Evaluation of Waste Disposal Options at Weldon Spring Quarry - Final Report 43

**Order**

- Revised Zoning Order for St. Charles County, Missouri 103

**Ordinance**

- Summary of Seepage Conditions, Weldon Spring Raffinate Pits, Weldon Spring Ordinance St. Charles County 129
- The Contamination of Ground and Surface Waters by Liquid Wastes from the Weldon Spring Ordinance Works, Missouri 163

**Ordovician**

- Guidebook to Middle Ordovician and Mississippian Strata, St. Louis and St. Charles Counties, Missouri 131

**Osage**

- An Archaeological Survey of the Little Femme Osage River Hills Area and the Loutre River Valley: A Multivariate Approach to Environment and Site Distribution in the Lower Missouri Valley II Locality 76
- Flood Plain Information: Femme Osage Creek, St. Charles County, Missouri 121

**Owned**

- Environmental Monitoring of the DOE-Owned Surplus Facility Weldon Spring Site (WSS) 19

**Phase**

- Weldon Spring Chemical Plant - Phase IV: Proposal for Quantitative Analysis 67
- Phase III Report: Assessment of Disposition Alternatives Weldon Spring Chemical Plant, St. Charles County, Missouri 70
- Weldon Spring Chemical Plant - Phase II (Survey) Technical Supplement: Decontamination/Handling Cost Factors 72
- Weldon Spring Chemical Plant - Phase II (Survey): Data Appendix 73
- Weldon Spring Chemical Plant - Phase III (Assessment) Technical: Costs and Schedule Proposal 75
- Weldon Spring Chemical Plant - Phase II (Survey): Narrative Report 77
- Technical Proposal for Phase II: Cost and Schedule - Weldon Spring Chemical Plant, St. Charles, Missouri 81
- Technical Proposal for Phase II: Building Survey Plan - Weldon Spring Chemical Plant, St. Charles, MO 83

**Phases**

- Revised Proposal for Phases II, III, and IV Weldon Spring Study 56

**Physics**

- Weldon Spring Chemical Plant - Revised Health Physics Plan 87
- Weldon Spring Chemical Plant - Draft Health Physics Plan 91

**Pilot**

- Progress and Improvements in Laboratory Research, Pilot Plant Development, Production Technology: Weldon Spring Feed Materials Plant 146

**Pit**

- Geophysical Measurements: U.S. Department of Energy (DOE) Raffinate Pit Site Weldon

## TITLE WORD INDEX

- Spring, Missouri   **26**  
 Study of Scrap Pit No. 3 (FMPC)   **124**  
 Design Memorandum for 12 M Cubic Feet Raffinate Pit, Atomic Energy Commission  
 Plant, Weldon Spring, Missouri   **133**
- Pits**  
 Addendum to the Engineering Evaluation of Alternatives for the Disposition of the Weldon Spring Raffinate Pits Site   **1**  
 Evaluation of Alternatives for Stabilizing Low Level Wastes Located at the Weldon Spring Raffinate Pits   **3**  
 Geologic Report: Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri   **6**  
 Radiological Survey Report for the Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri   **9**  
 Analysis of Potential Groundwater Contamination in the Vicinity of the Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri   **10**  
 Engineering Evaluation of Alternatives for the Disposition of the Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri   **13**  
 Weldon Spring Raffinate Pits Stabilization Project RY-04-02   **117**  
 Weldon Spring Raffinate Pits and Quarry - Task Force Report   **128**  
 Summary of Seepage Conditions, Weldon Spring Raffinate Pits, Weldon Spring Ordnance St. Charles County   **129**
- Plain**  
 Flood Plain Information: Femme Osage Creek, St. Charles County, Missouri   **121**
- Plan**  
 Survey Plan for the Radiological Characterization of the Weldon Spring Quarry   **7**  
 Weldon Spring Site Project Management Plan   **12**  
 General Plan for Ground Water Tracing, Weldon Spring Area, St. Charles County, Missouri - Part I of the Study Missouri Department of Natural Resources, Water Resources Division, Jefferson City, MO   **17**  
 Weldon Spring Site Project Management Plan (FY 1984-85)   **18**  
 Land Use Plan of Incorporated St. Charles County   **20**  
 Land Use Plan of Unincorporated St. Charles County   **21**  
 Program Plan for the Decontamination and Disposition of Weldon Spring Chemical Plant   **62**  
 Program Plan for the Decontamination and Disposition of Weldon Spring Chemical Plant   **64**  
 St. Louis, Missouri Water Quality Management Plan Area-Wide Waste Treatment Management Study   **71**  
 Weldon Spring Chemical Plant - Data Management Plan   **80**  
 Weldon Spring Chemical Plant - Operational Health and Safety Plan   **82**  
 Technical Proposal for Phase II: Building Survey Plan - Weldon Spring Chemical Plant, St. Charles, MO   **83**  
 Weldon Spring Chemical Plant - Radiological Supplement to Environmental Survey Plan   **84**  
 Weldon Spring Chemical Plant - Environmental Survey Plan   **85**  
 Weldon Spring Chemical Plant - Revised Health Physics Plan   **87**  
 Weldon Spring Chemical Plant - Survey Plan Considerations   **90**  
 Weldon Spring Chemical Plant - Draft Health Physics Plan   **91**  
 Radioactive Waste Management Plan   **106**  
 Weldon Spring Remedial Action Plan   **165**

## TITLE WORD INDEX

### Plans

Land Use and Transportation Plans for St. Charles County - Final Report 122

### Pleistocene

Late Cretaceous Marine Foraminifers from Pleistocene Fluviolacustrine Deposits in Eastern Missouri 31

### Policy

Compliance with the National Environmental Policy Act - Intent to Prepare an Environmental Impact Statement and Conduct a Public Scoping Meeting on Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring, Missouri 14

### Ponds

Radiochemical Analysis and Experimental Treatment Results of Solution from Weldon Spring, Missouri Ponds 40

Radiochemical Analysis and Experimental Treatment Results of Solution from Weldon Spring, Missouri Ponds - Draft Report - Addendum to Y/DU-36 57

Chemical Analysis of Ponds 3 and 4 at Weldon Spring, Missouri 60

### Possession

Nuclear Regulatory Commission License Application for Source Material License for Possession of Source and Special Nuclear Material Present as Contamination at Weldon Spring Chemical Plant (Replaces NRC SMB-938) 66

### Potential

Analysis of Potential Groundwater Contamination in the Vicinity of the Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri 10

### Potentials

University of Missouri Weldon Spring Property, Task 1 Report, Investigation and Preliminary Evaluation of Development and Marketing Potentials 115

### Power

Weldon Spring Chemical Plant - Health and Safety Report No. 4: Synopsis of Electrical Power Status at Site Following Survey Completion 74

### Preliminary

Preliminary Investigation of Ground-Water Occurrences in the Weldon Spring Area, St. Charles County, Missouri 42

Preliminary Characterization and Assessment of the Weldon Spring Low-Level Waste Disposal Site 50

Preliminary Characterization and Assessment of the Weldon Spring Low-Level Radioactive Waste Disposal Site, Weldon Spring, Missouri 55

Preliminary Draft: Radiological, Hydrogeological, Geochemical and Geophysical Assessment of the Weldon Spring Quarry, Missouri Disposal Site 58

Draft Preliminary Risk Assessment of the Weldon Spring Rock Quarry 61

Weldon Spring Chemical Plant - Health and Safety Report No. 1: Preliminary Survey Considerations 88

Preliminary Radiological Survey of the Weldon Spring Chemical Plant 108

University of Missouri Weldon Spring Property, Task 1 Report, Investigation and Preliminary Evaluation of Development and Marketing Potentials 115

Preliminary Investigation of Groundwater Occurrences in the Weldon Spring Area, St. Charles County, Missouri 162

### Prepare

Compliance with the National Environmental Policy Act - Intent to Prepare an Environmental Impact Statement and Conduct a Public Scoping Meeting on Long-Term

**TITLE WORD INDEX**

Management of Existing Radioactive Materials in the Vicinity of Weldon Spring,  
Missouri 14

**Progress**

Progress and Improvements in Laboratory Research, Pilot Plant Development, Produc-  
tion Technology: Weldon Spring Feed Materials Plant 146

**Project**

Weldon Spring Site Project Management Plan 12  
Weldon Spring Site Project Management Plan (FY 1984-85) 18  
Weldon Spring Raffinate Pits Stabilization Project RY-04-02 117

**Property**

University of Missouri Weldon Spring Property, Task 1 Report, Investigation and Prelim-  
inary Evaluation of Development and Marketing Potentials 115

**Proposal**

Revised Proposal for Phases II, III, and IV Weldon Spring Study 56  
Weldon Spring Chemical Plant - Phase IV: Proposal for Quantitative Analysis 67  
Weldon Spring Chemical Plant - Phase III (Assessment) Technical: Costs and Schedule  
Proposal 75  
Technical Proposal for Phase II: Cost and Schedule - Weldon Spring Chemical Plant, St.  
Charles, Missouri 81  
Technical Proposal for Phase II: Building Survey Plan - Weldon Spring Chemical Plant,  
St. Charles, MO 83  
Weldon Spring: A Proposal for a Regional Environment Education Center, St. Louis Coali-  
tion for the Environmental Through a Grant from the LAD Foundation 98

**Proposals**

Study for Decommissioning the AEC-Weldon Spring Site and Quarry: Request for  
Proposals 116

**Public**

Critical (Public) Masses: A Case Study of a Radioactive Waste Site 4  
Compliance with the National Environmental Policy Act - Intent to Prepare an Environ-  
mental Impact Statement and Conduct a Public Scoping Meeting on Long-Term  
Management of Existing Radioactive Materials in the Vicinity of Weldon Spring,  
Missouri 14

**Quadrangle**

Geology of the South Half of the Weldon Spring Quadrangle 160

**Quality**

St. Louis, Missouri Water Quality Management Plan Area-Wide Waste Treatment Man-  
agement Study 71

**Quantitative**

Weldon Spring Chemical Plant - Phase IV: Proposal for Quantitative Analysis 67

**Quarry**

Survey Plan for the Radiological Characterization of the Weldon Spring Quarry 7  
Characterization and Assessment for the Weldon Spring Quarry Low-Level Radioactive  
Waste Storage Site 8  
An Aerial Radiological Survey of the Area Surrounding the Abandoned Quarry Near the  
Weldon Spring Chemical Plant, St. Charles, Missouri - July 1980 38  
An Engineering Evaluation of Waste Disposal Options at Weldon Spring Quarry - Final  
Report 43  
Preliminary Draft: Radiological, Hydrogeological, Geochemical and Geophysical Assess-  
ment of the Weldon Spring Quarry, Missouri Disposal Site 58

## TITLE WORD INDEX

- Draft Preliminary Risk Assessment of the Weldon Spring Rock Quarry 61  
 Weldon Spring Decommissioning Study - Quarry Supplement 113  
 Study for Decommissioning the AEC-Weldon Spring Site and Quarry: Request for  
 Proposals 116  
 Weldon Spring Raffinate Pits and Quarry - Task Force Report 128  
 Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual AEC  
 Quarry Environmental Report - 1964 136  
 Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual AEC  
 Quarry Environmental Report - 1963 139  
 Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual AEC  
 Quarry Environmental Report - 1962 143  
 Atomic Energy Commission Feed Materials Production Facilities: 2nd Semi-Annual AEC  
 Quarry Environmental Report - 1962 144  
 Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environ-  
 mental Report - 3rd Quarter 1961 148  
 Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environ-  
 mental Report - 4th Quarter 1961 149  
 Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environ-  
 mental Report - 2nd Quarter 1961 152  
 Possible Use of Quarry at Mallinckrodt Chemical Works, Weldon Spring, Missouri, for  
 the Disposal of Uranium Contaminated Building Debris and Rubble and Residues Con-  
 taining Thorium and Uranium 153  
 Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environ-  
 mental Report - 4th Quarter 1960 155  
 Drawing Detailing Location of the Test Wells at Weldon Spring Quarry 166

### Quarter

- Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environ-  
 mental Report - 3rd Quarter 1961 148  
 Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environ-  
 mental Report - 4th Quarter 1961 149  
 Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental  
 Monitoring Report - 3rd Quarter 1961 150  
 Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental  
 Monitoring Report - 2nd Quarter 1961 151  
 Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environ-  
 mental Report - 2nd Quarter 1961 152  
 Atomic Energy Commission Feed Materials Production Facilities: AEC Quarry Environ-  
 mental Report - 4th Quarter 1960 155  
 Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental  
 Monitoring Report - 1st Quarter 1960 157  
 Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental  
 Monitoring Report - 2nd Quarter 1960 158

### Radioactive

- Geochemical Information for Sites Contaminated with Low-Level Radioactive Wastes: III  
 - Weldon Spring Storage Site 2  
 Critical (Public) Masses: A Case Study of a Radioactive Waste Site 4  
 Characterization and Assessment for the Weldon Spring Quarry Low-Level Radioactive  
 Waste Storage Site 8  
 Compliance with the National Environmental Policy Act - Intent to Prepare an Environ-

**TITLE WORD INDEX**

- mental Impact Statement and Conduct a Public Scoping Meeting on Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring, Missouri 14
- Action Description Memorandum - Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring and St. Louis, Missouri 28
- Comparison of Four Engineering Options for a Low-Level Radioactive Waste Disposal Site 30
- Assessment and Evaluation of Engineering Options at a Low-Level Radioactive Waste Storage Site 33
- Evaluation of the Future of a Low Level Radioactive Waste Disposal Site, Weldon Spring, Missouri 53
- Preliminary Characterization and Assessment of the Weldon Spring Low-Level Radioactive Waste Disposal Site, Weldon Spring, Missouri 55
- Study of Radioactive Waste Storage Areas at ERDA-Weldon Spring Site 92
- Radioactive Waste Management Plan 106
- Radiochemical**
- Radiochemical Analysis and Experimental Treatment Results of Solution from Weldon Spring, Missouri Ponds 40
- Radiochemical Analysis and Experimental Treatment Results of Solution from Weldon Spring, Missouri Ponds - Draft Report - Addendum to Y/DU-36 57
- Radiological**
- Survey Plan for the Radiological Characterization of the Weldon Spring Quarry 7
- Radiological Survey Report for the Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri 9
- An Aerial Radiological Survey of the Area Surrounding the Abandoned Quarry Near the Weldon Spring Chemical Plant, St. Charles, Missouri - July 1980 38
- Radiological Program - Weldon Spring Site 45
- Preliminary Draft: Radiological, Hydrogeological, Geochemical and Geophysical Assessment of the Weldon Spring Quarry, Missouri Disposal Site 58
- Weldon Spring Chemical Plant - Radiological Supplement to Environmental Survey Plan 84
- Aerial Radiological Survey of the Weldon Spring Chemical Plant (St. Charles, Missouri) - Date of Survey: May 11-14, 1976 99
- Aerial Radiological Survey of the Weldon Spring Chemical Plant (St. Charles, Missouri) - Date of Survey: November 22, 1975 107
- Preliminary Radiological Survey of the Weldon Spring Chemical Plant 108
- Radionuclides**
- Distribution and Possible Causes of Radionuclides in Groundwaters of Missouri 51
- Raffinate**
- Addendum to the Engineering Evaluation of Alternatives for the Disposition of the Weldon Spring Raffinate Pits Site 1
- Evaluation of Alternatives for Stabilizing Low Level Wastes Located at the Weldon Spring Raffinate Pits 3
- Geologic Report: Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri 6
- Radiological Survey Report for the Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri 9
- Analysis of Potential Groundwater Contamination in the Vicinity of the Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri 10
- Engineering Evaluation of Alternatives for the Disposition of the Weldon Spring Raffi-

## TITLE WORD INDEX

- nate Pits Site, Weldon Spring, Missouri 13
- Geophysical Measurements: U.S. Department of Energy (DOE) Raffinate Pit Site Weldon Spring, Missouri 26
- Weldon Spring Raffinate Pits Stabilization Project RY-04-02 117
- Weldon Spring Raffinate Pits and Quarry - Task Force Report 128
- Summary of Seepage Conditions, Weldon Spring Raffinate Pits, Weldon Spring Ordnance St. Charles County 129
- Design Memorandum for 12 M Cubic Feet Raffinate Pit, Atomic Energy Commission Plant, Weldon Spring, Missouri 133
- Reconnaissance**
- Reconnaissance of the Ground-Water Resources of the Missouri River Alluvium Between St. Charles and Jefferson City, Missouri 127
- Reflection**
- U.S. Geological Survey Common-Depth-Point Seismic-Reflection Survey Between Mississippi River Miles 195 and 210 (R/V Neecho, Cruise NE-80-3) 15
- Common-Depth-Point Seismic-Reflection Survey on the Mississippi River in the Vicinity of Alton, Illinois 16
- Regional**
- Weldon Spring: A Proposal for a Regional Environment Education Center, St. Louis Coalition for the Environmental Through a Grant from the LAD Foundation 98
- Regulatory**
- Nuclear Regulatory Commission License Application for Source Material License for Possession of Source and Special Nuclear Material Present as Contamination at Weldon Spring Chemical Plant (Replaces NRC SMB-938) 66
- Remedial**
- Weldon Spring Remedial Action Plan 165
- Remote**
- Flood Hazards Studies in the Mississippi River Basin Using Remote Sensing 118
- Flood Hazards Studies in the Mississippi River Basin Using Remote Sensing 120
- Replaces**
- Nuclear Regulatory Commission License Application for Source Material License for Possession of Source and Special Nuclear Material Present as Contamination at Weldon Spring Chemical Plant (Replaces NRC SMB-938) 66
- Request**
- Study for Decommissioning the AEC-Weldon Spring Site and Quarry: Request for Proposals 116
- Research**
- Progress and Improvements in Laboratory Research, Pilot Plant Development, Production Technology: Weldon Spring Feed Materials Plant 146
- Residues**
- Possible Use of Quarry at Mallinckrodt Chemical Works, Weldon Spring, Missouri, for the Disposal of Uranium Contaminated Building Debris and Rubble and Residues Containing Thorium and Uranium 153
- Resources**
- General Plan for Ground Water Tracing, Weldon Spring Area, St. Charles County, Missouri - Part I of the Study Missouri Department of Natural Resources, Water Resources Division, Jefferson City, MO 17
- Water Resources Data - Missouri, Water Year 1982 32
- The Resources of St. Charles County, Missouri: Land, Water, and Minerals 93

**TITLE WORD INDEX**

- Water Resources of the St. Louis Area, Missouri   **100**  
 Water Resources of South-Central Missouri - Atlases and Maps   **110**  
 Water Resources of the St. Louis Area, Missouri   **119**  
 Reconnaissance of the Ground-Water Resources of the Missouri River Alluvium Between  
 St. Charles and Jefferson City, Missouri   **127**  
 Mineral and Water Resources of Missouri   **130**
- Restoration**  
 Installation Restoration at Weldon Spring Chemical Plant: Environmental Impact  
 Assessment   **104**
- Review**  
 A Review of A Two-Year Urinary Uranium Study Conducted on Operators of a Uranium  
 Sample Plant   **141**
- Risk**  
 Draft Preliminary Risk Assessment of the Weldon Spring Rock Quarry   **61**
- River**  
 U.S. Geological Survey Common-Depth-Point Seismic-Reflection Survey Between Missis-  
 sippi River Miles 195 and 210 (R/V Neecho, Cruise NE-80-3)   **15**  
 Common-Depth-Point Seismic-Reflection Survey on the Mississippi River in the Vicinity  
 of Alton, Illinois   **16**  
 An Archaeological Survey of the Little Femme Osage River Hills Area and the Loutre  
 River Valley: A Multivariate Approach to Environment and Site Distribution in the  
 Lower Missouri Valley II Locality   **76**  
 Flood Hazards Studies in the Mississippi River Basin Using Remote Sensing   **118**  
 Flood Hazards Studies in the Mississippi River Basin Using Remote Sensing   **120**  
 Reconnaissance of the Ground-Water Resources of the Missouri River Alluvium Between  
 St. Charles and Jefferson City, Missouri   **127**  
 Some Aspects of Land Forms of the Lower Missouri River Floodplain   **138**
- Rock**  
 Draft Preliminary Risk Assessment of the Weldon Spring Rock Quarry   **61**  
 The Land - Soil, Rock, and Land Slopes   **94**  
 Groundwater Contamination and Sinkhole Collapse Induced Leaky Impoundments in Sol-  
 uble Rock Terrain   **123**
- Rubble**  
 Possible Use of Quarry at Mallinckrodt Chemical Works, Weldon Spring, Missouri, for  
 the Disposal of Uranium Contaminated Building Debris and Rubble and Residues Con-  
 taining Thorium and Uranium   **153**
- Safety**  
 Weldon Spring Chemical Plant - Health and Safety Report No. 4: Synopsis of Electrical  
 Power Status at Site Following Survey Completion   **74**  
 Weldon Spring Chemical Plant - Health and Safety Report No. 3: Negative Health Haz-  
 ards from Bird Droppings   **79**  
 Weldon Spring Chemical Plant - Operational Health and Safety Plan   **82**  
 Weldon Spring Chemical Plant - Health and Safety Report No. 2: Detailed Walk-Through  
 Survey   **86**  
 Weldon Spring Chemical Plant - Health and Safety Report No. 1: Preliminary Survey  
 Considerations   **88**
- Salability**  
 Canvass of Nuclear Industry for Salability of Weldon Spring Chemical Plant: Final  
 Report - September 30-December 30, 1976   **102**

## TITLE WORD INDEX

### Sampling

Semiannual Environmental Sampling at Weldon Spring 39

### Schedule

Weldon Spring Chemical Plant - Phase III (Assessment) Technical: Costs and Schedule Proposal 75

Technical Proposal for Phase II: Cost and Schedule - Weldon Spring Chemical Plant, St. Charles, Missouri 81

### Scoping

Compliance with the National Environmental Policy Act - Intent to Prepare an Environmental Impact Statement and Conduct a Public Scoping Meeting on Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring, Missouri 14

### Scrap

Study of Scrap Pit No. 3 (FMPC) 124

### Seepage

Summary of Seepage Conditions, Weldon Spring Raffinate Pits, Weldon Spring Ordnance St. Charles County 129

### Seismic

U.S. Geological Survey Common-Depth-Point Seismic-Reflection Survey Between Mississippi River Miles 195 and 210 (R/V Neecho, Cruise NE-80-3) 15

Common-Depth-Point Seismic-Reflection Survey on the Mississippi River in the Vicinity of Alton, Illinois 16

### Seismicity

Weldon Spring Storage Site Seismicity and Design Earthquake Considerations 24

### Semi

Atomic Energy Commission Feed Materials Production Facilities: Semi-Annual Off-Site Environmental Monitoring Report - 1965 132

Atomic Energy Commission Feed Materials Production Facilities: 2nd Semi-Annual and Annual Summary Off-Site Environmental Monitoring Report - 1964 135

Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual AEC Quarry Environmental Report - 1964 136

Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual Off-Site Environmental Monitoring Report - 1964 137

Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual AEC Quarry Environmental Report - 1963 139

Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual Off-Site Environmental Monitoring Report - 1963 140

Atomic Energy Commission Feed Materials Production Facilities: 2nd Semi-Annual and Annual Summary Off-Site Environmental Monitoring Report - 1962 142

Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual AEC Quarry Environmental Report - 1962 143

Atomic Energy Commission Feed Materials Production Facilities: 2nd Semi-Annual AEC Quarry Environmental Report - 1962 144

Atomic Energy Commission Feed Materials Production Facilities: 1st Semi-Annual Off-Site Environmental Monitoring Report - 1962 145

### Semiannual

Semiannual Environmental Sampling at Weldon Spring 39

### Sensing

Flood Hazards Studies in the Mississippi River Basin Using Remote Sensing 118

Flood Hazards Studies in the Mississippi River Basin Using Remote Sensing 120

**TITLE WORD INDEX****September**

- Canvass of Nuclear Industry for Salability of Weldon Spring Chemical Plant: Final Report - September 30-December 30, 1976   **102**  
 Atomic Energy Commission Feed Materials Production Facilities: Off-Site Environmental Monitoring Report - July, August, September 1960   **156**

**Sinkhole**

- Groundwater Contamination and Sinkhole Collapse Induced Leaky Impoundments in Soluble Rock Terrain   **123**

**Sites**

- Geochemical Information for Sites Contaminated with Low-Level Radioactive Wastes: III - Weldon Spring Storage Site   **2**  
 Weldon Spring and Niagara Falls Sites Industrial Hygiene   **46**

**Slopes**

- The Land - Soil, Rock, and Land Slopes   **94**

**SMB**

- Nuclear Regulatory Commission License Application for Source Material License for Possession of Source and Special Nuclear Material Present as Contamination at Weldon Spring Chemical Plant (Replaces NRC SMB-938)   **66**

**Soil**

- Soil Survey of St. Charles County, Missouri   **36**  
 The Land - Soil, Rock, and Land Slopes   **94**  
 Soil Moisture Ground Truth: Lafayette, Indiana, Site, - St. Charles, Missouri, Site - Centralia, Missouri, Site   **111**  
 Soils Maps Supplement to Soil Moisture Ground Truth: Lafayette, Indiana, Site - St. Charles, Missouri, Site   **112**  
 Soil Survey of St. Charles County, Missouri   **161**

**Soils**

- Laboratory Testing of Soils, Weldon Spring Storage Site, Weldon Spring, Missouri   **22**  
 Soils Maps Supplement to Soil Moisture Ground Truth: Lafayette, Indiana, Site - St. Charles, Missouri, Site   **112**

**Soluble**

- Groundwater Contamination and Sinkhole Collapse Induced Leaky Impoundments in Soluble Rock Terrain   **123**

**Solution**

- Radiochemical Analysis and Experimental Treatment Results of Solution from Weldon Spring, Missouri Ponds   **40**  
 Radiochemical Analysis and Experimental Treatment Results of Solution from Weldon Spring, Missouri Ponds - Draft Report - Addendum to Y/DU-36   **57**

**Source**

- Nuclear Regulatory Commission License Application for Source Material License for Possession of Source and Special Nuclear Material Present as Contamination at Weldon Spring Chemical Plant (Replaces NRC SMB-938)   **66**

**South**

- Water Resources of South-Central Missouri - Atlases and Maps   **110**  
 Geology of the South Half of the Weldon Spring Quadrangle   **160**

**Springs**

- Springs of Missouri   **41**

**Stabilization**

- Weldon Spring Raffinate Pits Stabilization Project RY-04-02   **117**

## TITLE WORD INDEX

### Stabilizing

Evaluation of Alternatives for Stabilizing Low Level Wastes Located at the Weldon Spring Raffinate Pits 3

### Statement

Compliance with the National Environmental Policy Act - Intent to Prepare an Environmental Impact Statement and Conduct a Public Scoping Meeting on Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring, Missouri 14

### Status

Weldon Spring Chemical Plant - Health and Safety Report No. 4: Synopsis of Electrical Power Status at Site Following Survey Completion 74

### Storage

Geochemical Information for Sites Contaminated with Low-Level Radioactive Wastes: III - Weldon Spring Storage Site 2

Characterization and Assessment for the Weldon Spring Quarry Low-Level Radioactive Waste Storage Site 8

Laboratory Testing of Soils, Weldon Spring Storage Site, Weldon Spring, Missouri 22

Weldon Spring Storage Site Geologic Characterization 1982-1983 23

Weldon Spring Storage Site Seismicity and Design Earthquake Considerations 24

Assessment and Evaluation of Engineering Options at a Low-Level Radioactive Waste Storage Site 33

Weldon Spring Storage Site Environmental Monitoring Report for 1979 and 1980 37

Study of Radioactive Waste Storage Areas at ERDA-Weldon Spring Site 92

### Strata

Guidebook to Middle Ordovician and Mississippian Strata, St. Louis and St. Charles Counties, Missouri 131

### Suitability

Land Use Suitability 97

### Summary

Summary of Water Tracing Experiments at Weldon Spring Complex 27

Land Use Data Base Update - Summary Report 48

Weldon Spring Chemical Plant Ground Survey Summary 78

Summary of Seepage Conditions, Weldon Spring Raffinate Pits, Weldon Spring Ordnance St. Charles County 129

Atomic Energy Commission Feed Materials Production Facilities: 2nd Semi-Annual and Annual Summary Off-Site Environmental Monitoring Report - 1964 135

Atomic Energy Commission Feed Materials Production Facilities: 2nd Semi-Annual and Annual Summary Off-Site Environmental Monitoring Report - 1962 142

### Support

Results of Weldon Spring Technical Support for FY-1980 54

### Surface

The Contamination of Ground and Surface Waters by Liquid Wastes from the Weldon Spring Ordnance Works, Missouri 163

### Surplus

Environmental Monitoring of the DOE-Owned Surplus Facility Weldon Spring Site (WSS) 19

### Surrounding

An Aerial Radiological Survey of the Area Surrounding the Abandoned Quarry Near the Weldon Spring Chemical Plant, St. Charles, Missouri - July 1980 38

## TITLE WORD INDEX

### Survey

- Survey Plan for the Radiological Characterization of the Weldon Spring Quarry 7  
 Radiological Survey Report for the Weldon Spring Raffinate Pits Site, Weldon Spring, Missouri 9  
 U.S. Geological Survey Common-Depth-Point Seismic-Reflection Survey Between Mississippi River Miles 195 and 210 (R/V Neecho, Cruise NE-80-3) 15  
 Common-Depth-Point Seismic-Reflection Survey on the Mississippi River in the Vicinity of Alton, Illinois 16  
 Soil Survey of St. Charles County, Missouri 36  
 An Aerial Radiological Survey of the Area Surrounding the Abandoned Quarry Near the Weldon Spring Chemical Plant, St. Charles, Missouri - July 1980 38  
 Weldon Spring Chemical Plant - Survey and Assessment, Final Report 68  
 Weldon Spring Chemical Plant - Phase II (Survey) Technical Supplement: Decontamination/Handling Cost Factors 72  
 Weldon Spring Chemical Plant - Phase II (Survey): Data Appendix 73  
 Weldon Spring Chemical Plant - Health and Safety Report No. 4: Synopsis of Electrical Power Status at Site Following Survey Completion 74  
 An Archaeological Survey of the Little Femme Osage River Hills Area and the Loutre River Valley: A Multivariate Approach to Environment and Site Distribution in the Lower Missouri Valley II Locality 76  
 Weldon Spring Chemical Plant - Phase II (Survey): Narrative Report 77  
 Weldon Spring Chemical Plant Ground Survey Summary 78  
 Technical Proposal for Phase II: Building Survey Plan - Weldon Spring Chemical Plant, St. Charles, MO 83  
 Weldon Spring Chemical Plant - Radiological Supplement to Environmental Survey Plan 84  
 Weldon Spring Chemical Plant - Environmental Survey Plan 85  
 Weldon Spring Chemical Plant - Health and Safety Report No. 2: Detailed Walk-Through Survey 86  
 Weldon Spring Chemical Plant - Health and Safety Report No. 1: Preliminary Survey Considerations 88  
 Weldon Spring Chemical Plant - Survey Plan Considerations 90  
 Aerial Radiological Survey of the Weldon Spring Chemical Plant (St. Charles, Missouri) - Date of Survey: May 11-14, 1976 99  
 Aerial Radiological Survey of the Weldon Spring Chemical Plant (St. Charles, Missouri) - Date of Survey: November 22, 1975 107  
 Preliminary Radiological Survey of the Weldon Spring Chemical Plant 108  
 Soil Survey of St. Charles County, Missouri 161

### Synopsis

- Weldon Spring Chemical Plant - Health and Safety Report No. 4: Synopsis of Electrical Power Status at Site Following Survey Completion 74

### Task

- University of Missouri Weldon Spring Property, Task 1 Report, Investigation and Preliminary Evaluation of Development and Marketing Potentials 115  
 Weldon Spring Raffinate Pits and Quarry - Task Force Report 128

### Technical

- Land Use Data Base Update - Technical Report 47  
 Results of Weldon Spring Technical Support for FY-1980 54  
 Weldon Spring Chemical Plant - Phase II (Survey) Technical Supplement: Decontamina-

**TITLE WORD INDEX**

- tion/Handling Cost Factors 72
- Weldon Spring Chemical Plant - Phase III (Assessment) Technical: Costs and Schedule Proposal 75
- Technical Proposal for Phase II: Cost and Schedule - Weldon Spring Chemical Plant, St. Charles, Missouri 81
- Technical Proposal for Phase II: Building Survey Plan - Weldon Spring Chemical Plant, St. Charles, MO 83
- Technology**
- Progress and Improvements in Laboratory Research, Pilot Plant Development, Production Technology: Weldon Spring Feed Materials Plant 146
- Term**
- Compliance with the National Environmental Policy Act - Intent to Prepare an Environmental Impact Statement and Conduct a Public Scoping Meeting on Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring, Missouri 14
- Action Description Memorandum - Long-Term Management of Existing Radioactive Materials in the Vicinity of Weldon Spring and St. Louis, Missouri 28
- Terrain**
- Groundwater Contamination and Sinkhole Collapse Induced Leaky Impoundments in Soluble Rock Terrain 123
- Thorium**
- Possible Use of Quarry at Mallinckrodt Chemical Works, Weldon Spring, Missouri, for the Disposal of Uranium Contaminated Building Debris and Rubble and Residues Containing Thorium and Uranium 153
- Tracing**
- General Plan for Ground Water Tracing, Weldon Spring Area, St. Charles County, Missouri - Part I of the Study Missouri Department of Natural Resources, Water Resources Division, Jefferson City, MO 17
- Summary of Water Tracing Experiments at Weldon Spring Complex 27
- Transportation**
- Land Use and Transportation Plans for St. Charles County - Final Report 122
- Truth**
- Soil Moisture Ground Truth: Lafayette, Indiana, Site, - St. Charles, Missouri, Site - Centralia, Missouri, Site 111
- Soils Maps Supplement to Soil Moisture Ground Truth: Lafayette, Indiana, Site - St. Charles, Missouri, Site 112
- Unified**
- Report to the Congress of the United States by the Comptroller General "Cleaning Up Nuclear Facilities" - An Aggressive and Unified Program is Needed 34
- Unincorporated**
- Land Use Plan of Unincorporated St. Charles County 21
- United**
- Report to the Congress of the United States by the Comptroller General "Cleaning Up Nuclear Facilities" - An Aggressive and Unified Program is Needed 34
- University**
- University of Missouri Weldon Spring Property, Task 1 Report, Investigation and Preliminary Evaluation of Development and Marketing Potentials 115

## TITLE WORD INDEX

### Update

- Land Use Data Base Update - Technical Report 47  
 Land Use Data Base Update - Summary Report 48

### Uranium

- A Review of A Two-Year Urinary Uranium Study Conducted on Operators of a Uranium Sample Plant 141  
 Possible Use of Quarry at Mallinckrodt Chemical Works, Weldon Spring, Missouri, for the Disposal of Uranium Contaminated Building Debris and Rubble and Residues Containing Thorium and Uranium 153

### Urinary

- A Review of A Two-Year Urinary Uranium Study Conducted on Operators of a Uranium Sample Plant 141

### Valley

- An Archaeological Survey of the Little Femme Osage River Hills Area and the Loutre River Valley: A Multivariate Approach to Environment and Site Distribution in the Lower Missouri Valley II Locality 76

### Walk

- Weldon Spring Chemical Plant - Health and Safety Report No. 2: Detailed Walk-Through Survey 86

### Waste

- Critical (Public) Masses: A Case Study of a Radioactive Waste Site 4  
 Characterization and Assessment for the Weldon Spring Quarry Low-Level Radioactive Waste Storage Site 8  
 Geologic Aspects of Individual Home Liquid-Waste Disposal in Missouri 29  
 Comparison of Four Engineering Options for a Low-Level Radioactive Waste Disposal Site 30  
 Assessment and Evaluation of Engineering Options at a Low-Level Radioactive Waste Storage Site 33  
 An Engineering Evaluation of Waste Disposal Options at Weldon Spring Quarry - Final Report 43  
 Preliminary Characterization and Assessment of the Weldon Spring Low-Level Waste Disposal Site 50  
 Evaluation of the Future of a Low Level Radioactive Waste Disposal Site, Weldon Spring, Missouri 53  
 Preliminary Characterization and Assessment of the Weldon Spring Low-Level Radioactive Waste Disposal Site, Weldon Spring, Missouri 55  
 St. Louis, Missouri Water Quality Management Plan Area-Wide Waste Treatment Management Study 71  
 Study of Radioactive Waste Storage Areas at ERDA-Weldon Spring Site 92  
 Radioactive Waste Management Plan 106

### Wastes

- Geochemical Information for Sites Contaminated with Low-Level Radioactive Wastes: III - Weldon Spring Storage Site 2  
 Evaluation of Alternatives for Stabilizing Low Level Wastes Located at the Weldon Spring Raffinate Pits 3  
 The Contamination of Ground and Surface Waters by Liquid Wastes from the Weldon Spring Ordnance Works, Missouri 163

### Water

- Results of Analysis of Water Samples Collected from Weldon Spring Chemical Plant: Col-

## TITLE WORD INDEX

- lection of Letter Reports - June 1977 Through January 1985 5
- General Plan for Ground Water Tracing, Weldon Spring Area, St. Charles County, Missouri - Part I of the Study Missouri Department of Natural Resources, Water Resources Division, Jefferson City, MO 17
- Summary of Water Tracing Experiments at Weldon Spring Complex 27
- Water Resources Data - Missouri, Water Year 1982 32
- Preliminary Investigation of Ground-Water Occurrences in the Weldon Spring Area, St. Charles County, Missouri 42
- St. Louis, Missouri Water Quality Management Plan Area-Wide Waste Treatment Management Study 71
- The Resources of St. Charles County, Missouri: Land, Water, and Minerals 93
- Water 96
- Water Resources of the St. Louis Area, Missouri 100
- Water Resources of South-Central Missouri - Atlases and Maps 110
- Water Resources of the St. Louis Area, Missouri 119
- Reconnaissance of the Ground-Water Resources of the Missouri River Alluvium Between St. Charles and Jefferson City, Missouri 127
- Mineral and Water Resources of Missouri 130
- Waters**
  - The Contamination of Ground and Surface Waters by Liquid Wastes from the Weldon Spring Ordnance Works, Missouri 163
- Wells**
  - Drawing Detailing Location of the Test Wells at Weldon Spring Quarry 166
- Wildlife**
  - A Checklist of Birds of the August A. Busch Memorial Wildlife Area, Weldon Spring, Missouri 52
- Works**
  - Possible Use of Quarry at Mallinckrodt Chemical Works, Weldon Spring, Missouri, for the Disposal of Uranium Contaminated Building Debris and Rubble and Residues Containing Thorium and Uranium 153
  - The Contamination of Ground and Surface Waters by Liquid Wastes from the Weldon Spring Ordnance Works, Missouri 163
- WSS**
  - Environmental Monitoring of the DOE-Owned Surplus Facility Weldon Spring Site (WSS) 19
- Zoning**
  - Revised Zoning Order for St. Charles County, Missouri 103



**PUBLICATION DESCRIPTION INDEX**



## PUBLICATION DESCRIPTION INDEX

- Argonne National Laboratory, Argonne, IL 10
- Argonne National Laboratory, Environmental Research Division, Argonne, IL 4
- Army Engineer District, Kansas City, MO 121
- Atomics International Division, Rockwell International, Energy Systems Group, Canoga Park, CA 62
- Battelle Columbus Laboratories, Columbus, OH 102
- Bechtel Civil and Minerals, Inc., San Francisco, CA 24
- Bechtel National, Inc., Oak Ridge, TN 1, 3, 6, 7, 9, 11, 13, 19, 23, 25, 35
- Berkeley Geosciences Associates, Berkeley, CA 8
- Bittinger (M.W.) and Associates, Inc., Fort Collins, CO 111, 112
- East-West Gateway Coordinating Council, St. Louis, MO 20, 21, 47, 48, 71, 125, 126
- Eberline Instrument Corporation, Oak Ridge, TN 39
- EG&G Energy Measurements Group, Las Vegas, NV 38, 78, 99, 107
- Harland Bartholomew and Associates, St. Louis, MO 122
- HOK Associates, Inc., St. Louis, MO 105, 115
- Lawrence Berkeley Laboratory, Berkeley, CA 53
- Lawrence Berkeley Laboratory, Earth Sciences Division, Berkeley, CA 30, 33, 50, 55, 58
- Mallinckrodt Chemical Works, Uranium Division, St. Louis, MO 133, 134, 141, 146
- Mallinckrodt Chemical Works, Uranium Division, Weldon Spring, MO 132, 135-137, 139, 140, 142-145, 147-152, 154-159
- McClelland Engineers, Inc., St. Louis, MO 22
- Missouri Department of Conservation, Jefferson City, MO 52
- Missouri Department of Natural Resources, Division of Geology and Land Survey, Rolla, MO 31, 41, 51, 100, 119, 129
- Missouri Department of Natural Resources, Water Resources Division, Jefferson City, MO 41, 100, 119, 123, 130, 131
- Missouri Geological Survey, Department of Natural Resources, Rolla, MO 27, 93-97
- National Aeronautics and Space Administration, Goddard Space Flight Center, Greenbelt, MD 118, 120
- National Lead Company of Ohio, Cincinnati, OH 44, 46, 92, 106, 113, 114, 117, 124
- National Park Service, Washington, DC 76
- NLO, Inc., Cincinnati, OH 37, 45, 49, 116
- Oak Ridge National Laboratory, Oak Ridge, TN 2, 40, 56, 60, 65
- Resource Planning and Design Group, St. Louis, MO 98
- Rockwell International Corporation, Energy Systems Group, Aberdeen Proving Grounds, MD 64
- Ryckman, Edgerley, Tomlinson and Associates, St. Louis, MO 67-70, 72-75, 77, 79-91
- Science Applications, Inc., Oak Ridge, TN 43, 61
- St. Charles County Zoning and Planning Commission, St. Charles, MO 20, 103

## PUBLICATION DESCRIPTION INDEX

- Test Drilling Service Company, Maryland Heights, MO 166
- U.S. Atomic Energy Commission, Oak Ridge Operations Office, Oak Ridge, TN 128
- U.S. Department of Agriculture, Soil Conservation Service, Beltsville, MD 36, 161
- U.S. Department of Energy, Oak Ridge Operations Office, Oak Ridge, TN 12, 18, 28
- U.S. Department of Energy, Washington, DC 14, 165
- U.S. Department of the Army, Army Armament Material, Readiness Command, Rock Island, IL 66
- U.S. Department of the Army, Ballistic Research Laboratories, Aberdeen Proving Ground, MD 108
- U.S. Department of the Army, Environmental Hygiene Agency, Aberdeen Proving Ground, MD 5
- U.S. Department of the Army, Office of the Project Manager for Chemical Demilitarization and Installation Restoration, Aberdeen Proving Ground, MD 109
- U.S. Department of the Army, Washington, DC 104
- U.S. General Accounting Office, Gaithersburg, MD 34
- U.S. Geological Survey, Indianapolis, IN 162
- U.S. Geological Survey, Lawrence, KS 163
- U.S. Geological Survey, Washington, DC 32, 59, 101, 110, 127, 153
- U.S. Geological Survey, Water Resources Division, Washington, DC 42
- U.S. Geological Survey, Woods Hole, MA 15, 16
- Washington University, St. Louis, MO 160
- Weston Geophysical Corporation, Westboro, MA 26
- Y-12 Plant, Development Division, Chemical Process Department, Oak Ridge, TN 54, 57, 60

## INTERNAL DISTRIBUTION

- |                   |   |
|-------------------|---|
| 1. B.A. Berven    | 11. T.H. Row  |
| 2. W.J. Boegly    | 12. Biology Library                                   |
| 3. J.T. Ensminger | 13-14. Central Research Library                       |
| 4. C.S. Fore      | 15. Document Reference Section                        |
| 5. N.P. Knox      | 16. IR&A Publications Office                          |
| 6. T.F. Lomenick  | 17-18. Laboratory Record                              |
| 7. D.C. Michelson | 19. Laboratory Records, RC                            |
| 8. C.J. Oen       | 20-168. Remedial Action Program Information<br>Center |
| 9. P.T. Owen      | 169. ORNL Patent Office                               |
| 10. G.D. Robbins  |   |

## EXTERNAL DISTRIBUTION

170. R.B. Barber, Bechtel National, Inc., P.O. Box 350, Oak Ridge, TN 37831
171. J.E. Baublitz, U.S. Department of Energy, Office of Nuclear Energy, Division of Remedial Action Projects, NE-24, Washington, DC 20545
172. J.D. Berger, Oak Ridge Associated Universities, MERT Division, Survey Program, Scarborough Facility, P.O. Box 117, Oak Ridge, TN 37831-0117
173. B.K. Biggs, U.S. Environmental Protection Agency, Region 7, Superfund Branch, 726 Minnesota Avenue, Kansas City, KS 66101
174. Meredith Bollmeier, St. Charles Countians Against Hazardous Waste, 406 Merribrook Lane, O'Fallon, MO 63366
175. W.L. Brinck, U.S. Environmental Protection Agency, Region 7, 726 Minnesota Avenue, Kansas City, KS 66101
176. D.R. Brown, U.S. Department of Energy, Oak Ridge Operations Office, Nuclear Research and Development Division, P.O. Box E, Oak Ridge, TN 37831
177. L.F. Campbell, U.S. Department of Energy, Oak Ridge Operations Office, Technical Services Division, P.O. Box E, Oak Ridge, TN 37831
178. J.C. Chattin, UNC Nuclear Industries, Office of Surplus Facilities Management, P.O. Box 490, Richland, WA 99352
179. J.P. Collins, U.S. Department of Energy, Richland Operations Office, P.O. Box 550, Richland, WA 99352
180. R.N. Coy, UNC Nuclear Industries, Office of Surplus Facilities Management, P.O. Box 490, Richland, WA 99352
181. T.J. Dean, Missouri Department of Natural Resources, Environmental Geology and Land Survey, P.O. Box 1368, Jefferson City, MO 65102-1368
182. E.G. Delaney, U.S. Department of Energy, Office of Nuclear Energy, Division of Remedial Action Projects, NE-24, Washington, DC 20545
183. P.F.X. Dunnigan, U.S. Department of Energy, Richland Operations Office, P.O. Box 550, Richland, WA 99352
184. D. Gardiner, Argonne National Laboratory, Environmental Research Division, 9700 South Cass Avenue, Argonne, IL 60439

185. F.F. Gorup, U.S. Department of Energy, Chicago Operations Office, Technology Management Division, 9800 South Cass Avenue, Argonne, IL 60439
186. F.F. Haywood, Eberline Analytical Corporation, P.O. Box 350, Oak Ridge, TN 37831
187. M.L. Heman, Missouri Department of Conservation, P.O. Box 180, Jefferson City, MO 65102-0180
188. R. Hengerson, Missouri Department of Natural Resources, Office of Enforcement/Superfund, P.O. Box 1368, Jefferson City, MO 65102
189. J. Hoffman, Bechtel National, Inc., P.O. Box 350, Oak Ridge, TN 37831
190. Ann Hood, St. Charles Countians Against Hazardous Waste, 3760 Highway K, St. Charles, MO 63301
191. E.L. Keller, U.S. Department of Energy, Oak Ridge Operations Office, Technical Services Division, P.O. Box E, Oak Ridge, TN 37831
192. W.J. Kyriazis, UNC Nuclear Industries, Office of Surplus Facilities Management, P.O. Box 490, Richland, WA 99352
193. R.J. Laux, Missouri Department of Natural Resources, Water Pollution Control Program, P.O. Box 1368, Jefferson City, MO 65102-1368
194. T. Lorenz, U.S. Environmental Protection Agency, Region 7, EIS Branch, 726 Minnesota Avenue, Kansas City, KS 66101
195. S.H. McCracken, U.S. Department of Energy, Oak Ridge Operations Office, Technical Services Division, P.O. Box E, Oak Ridge, TN 37831
196. E.Q. McDonald, Bechtel National, Inc., P.O. Box 350, Oak Ridge, TN 37831
197. B. McKinney, East-West Gateway Coordinating Council, Resource and Information Center, 100 South Tucker Boulevard, St. Louis, MO 63102
198. P. Merry-Libby, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, IL 60439
199. C.E. Miller, Jr., U.S. Department of Energy, Richland Operations Office, P.O. Box 550, Richland, WA 99352
200. K.V. Miller, Missouri Department of Health, Department of Social Services, Bureau of Radiological Health, P.O. Box 570, 1511 Christy Lane, Jefferson City, MO 65102
201. S. Miller, U.S. Department of Energy, Office of Nuclear Energy, Division of Remedial Action Projects, GC-34, Washington, DC 20545
202. J.F. Nemeec, Bechtel National, Inc., P.O. Box 350, Oak Ridge, TN 37831
203. Office of Assistant Manager, Energy Research and Development, U.S. Department of Energy, Oak Ridge Operations Office, Oak Ridge, TN 37831
- 204-205. Office of Scientific and Technical Information, U.S. Department of Energy, P.O. Box 62, Oak Ridge, TN 37831
206. B.A. Payne, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, IL 60439
207. T.A. Poff, NLO, Inc., Engineering Division, P.O. Box 39158, Cincinnati, OH 45239
208. R.F. Potter, UNC Nuclear Industries, Office of Surplus Facilities Management, P.O. Box 490, Richland, WA 99352
209. R.L. Rudolph, Bechtel National, Inc., P.O. Box 350, Oak Ridge, TN 37831
210. F. Sandburg, U.S. Environmental Protection Agency, Region 7, RCRA Branch, 726 Minnesota Avenue, Kansas City, KS 66101
211. L. Soholt, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, IL 60439
212. D. Sommerhauser, U.S. Environmental Protection Agency, Region 7, 726 Minnesota Avenue, Kansas City, KS 66101
213. St. Charles City-County Library District, Branch Library, 2323 Elm Street, St. Charles, MO 63301
214. Leann Stevens, St. Charles Countians Against Hazardous Waste, 406 Merribrook Lane, O'Fallon, MO 63366
215. G.P. Turi, U.S. Department of Energy, Office of Nuclear Energy, Division of Remedial Action Projects, NE-24, Washington, DC 20545

216. W.R. Voigt, Jr., U.S. Department of Energy, Office of Nuclear Energy, Division of Remedial Action Projects, NE-24, Washington, DC 20545
217. A. Wallo, Aerospace Corporation, Controls and Analyses, 955 l'Enfant Plaza, SW, Suite 4000, Washington, DC 20024
218. D. Williams, NUS Corporation, 910 Clopper Road, Gaithersburg, MD 20875
219. J.F. Wing, U.S. Department of Energy, Oak Ridge Operations Office, Technical Services Division, P.O. Box E, Oak Ridge, TN 37831
220. S.R. Woodbury, U.S. Department of Energy, Office of Nuclear Energy, Division of Remedial Action Projects, PE-252, Washington, DC 20545
221. R.A. Wynveen, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, IL 60439