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# SAMPLING PLAN FOR THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY FOR THE GROUNDWATER OPERABLE UNITS AT THE CHEMICAL PLANT AREA AND ORDNANCE WORKS AREA, WELDON SPRING, MISSOURI (APPENDIX TO THE WORK PLAN) ADDENDUM 2: INSTALLATION AND SAMPLING OF NEW MONITORING WELL IN THE LOWER SOUTHEAST DRAINAGE

Weldon Spring Site Remedial Action Project
Weldon Spring, Missouri

**APRIL 1997** **REV. 0**

U.S. Department of Energy
Oak Ridge Operations Office
Weldon Spring Site Remedial Action Project

Prepared by MK-Ferguson Company and Jacobs Engineering Group

MK-FERGUSON
A MORRISON KNUDSEN COMPANY

Weldon Spring Site Remedial Action Project
Contract No. DE-AC05-86OR21548

Rev. No. 0

PLAN TITLE: Sampling Plan for the Remedial Investigation/Feasibility Study for the Groundwater Operable Units at the Chemical Plant Area and Ordnance Works Area, Weldon Spring, Missouri (Appendix to the Work Plan) Addendum 2: Installation and Sampling of New Monitoring Well in the Lower Southeast Drainage

## APPROVALS

| | |
|---|---|
| Department Manager | 4/25/97<br>Date |
| Data Administration Manager | 4/25/97<br>Date |
| Quality Assurance Manager | 4-28-97<br>Date |
| Project Director (or Deputy Project Director) | 4-29-97<br>Date |

DOE/OR/21548-445

Weldon Spring Site Remedial Action Project

# Sampling Plan for the Remedial Investigation/Feasibility Study for the Groundwater Operable Units at the Chemical Plant Area and Ordnance Works Area, Weldon Spring, Missouri (Appendix to the Work Plan) Addendum 2: Installation and Sampling of New Monitoring Well in the Lower Southeast Drainage

Revision 0

April 1997

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for the

U.S. DEPARTMENT OF ENERGY
Oak Ridge Operations Office
Under Contract DE-AC05-86OR21548

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# 1. INTRODUCTION

In situ groundwater sampling was conducted in 1995 and 1996 in the lower portion of the Southeast Drainage as part of the data requirements for the *Remedial Investigation for the Groundwater Operable Unit at the Chemical Plant* (Ref. 1). The results of the in situ sampling showed elevated concentrations of uranium in the groundwater within the drainage (Ref. 2). Additional sampling of the groundwater is required to characterize uranium concentrations within the drainage. Additionally, the other contaminants of concern identified in the *Draft Final Baseline Risk Assessment* (Ref. 3) (nitrate, nitroaromatics, and volatiles) will be sampled during the first sampling event, and thallium will be sampled to obtain concentrations at lower detection limits than previously obtained.

## 2. SAMPLING AND ANALYSIS REQUIREMENTS

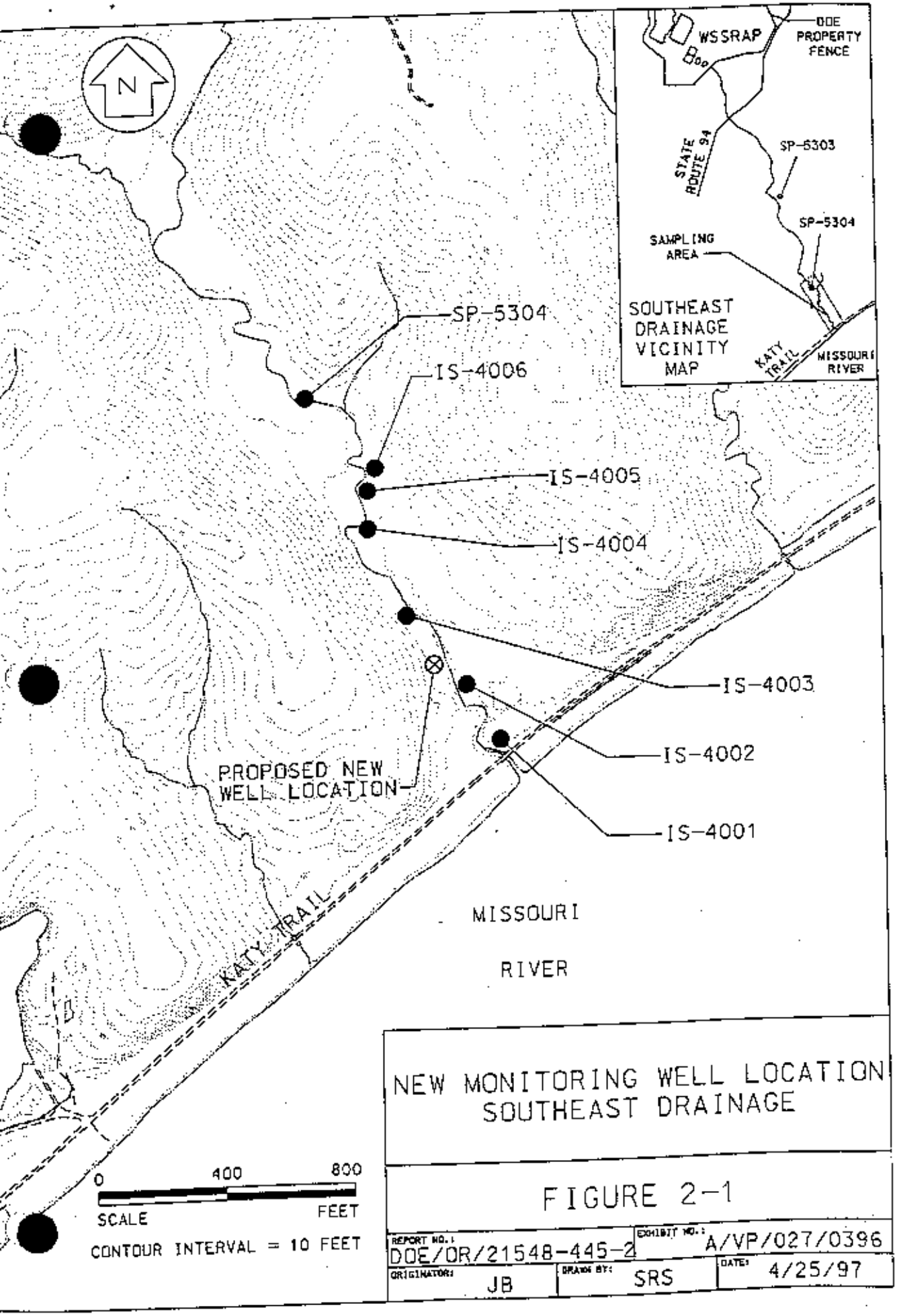
A monitoring well will be installed in the lower portion of the Southeast Drainage to obtain groundwater data. The location of the new well has been selected south of in situ Location 4003, as shown on the attached figure (Figure 2-1). Results of sampling in this area have shown elevated concentrations of uranium and groundwater was encountered between 8 and 20 ft. The new monitoring well shall be constructed of 2 in. diameter PVC pipe, installed to a depth of approximately 20 ft, and screened from 10 to 20 ft below ground surface. A field geologist will determine the final well location and screening interval at the time of installation. The monitoring well is projected to be installed by April 30, 1997, and sampling of the groundwater will be conducted as soon as possible after well development. A survey of the monitoring well will be conducted after installation to obtain topographic coordinates of the well location.

Groundwater samples will be collected on a quarterly basis and analyzed for uranium. Samples will also be taken during the first sampling event and analyzed for the following parameters: uranium(total), thallium, nitrate, nitroaromatics, and volatiles.

Samples shall be collected in accordance with Procedure ES&H 4.4.1, *Groundwater Sampling*. During the first sampling event, unfiltered and filtered samples will be collected. Following the first sampling event, unfiltered groundwater samples will be collected on a quarterly basis.

The following sampling containers and preservatives shall be used: uranium in 500-ml plastic bottles, preserved with nitric acid to a pH of less than 2; thallium in a 1-liter plastic bottle preserved with nitric acid to a pH of less than 2; nitrates in a 250-ml plastic bottle, preserved with sulfuric acid to a pH of less than 2; nitroaromatics in a 1-liter amber glass bottle, kept cool at 4° Celsius; and volatiles in two 40-ml glass vials filled to allow no headspace to remain in the vial, and preserved with approximately two drops of hydrochloric acid (HCL). All samples shall be kept at 4° Celsius after preservation until they are shipped to a laboratory for analysis. A 7-day turnaround time shall be requested for the first round of sampling for this well. The only change required in the selection of analytical methods will be that the methods used shall obtain a detection limit of lower than 5 µg/l for trichloroethylene, and the detection limit for thallium shall be lower than 2 µg/l.

Samples shall be identified as groundwater samples according to Procedure ES&H 4.1.1. The sampling location shall be tentatively identified as MW-SED1. Once the well is installed, a permanent sample identification number will be given to the well in accordance with Procedure ES&H 4.1.1.




NEW MONITORING WELL LOCATION
SOUTHEAST DRAINAGE

FIGURE 2-1

| | | |
|---|---|---|
| REPORT NO.: DOE/OR/21548-445-2 | EXHIBIT NO.: A/VP/027/0396 | |
| ORIGINATOR: JB | DRAWN BY: SRS | DATE: 4/25/97 |

# 3. QUALITY CONTROL

Sample Chain of Custody Forms will be prepared for shipment of samples to the off-site analytical laboratory and placed in the sample coolers. Sample coolers prepared for shipment will be sealed with Chain-of-Custody Control Seals that are signed and dated by the shipper. Chain-of-Custody Forms and Seals will be prepared in accordance with WSSRAP Procedure ES&H 4.1.2, *Initiation, Generation, and Transfer of Environmental Chain of Custody*. Dedicated sampling equipment will be used to collect samples. Quality control samples will be collected in accordance with Procedure ES&H 4.1.4, *Quality Control Samples for Aqueous and Solid Matrices: Definitions, Identification Codes, and Collection Procedures*.

## 4. REFERENCES

1. MK-Ferguson Company and Jacobs Engineering Group, *Remedial Investigation for the Groundwater Operable Units at the Chemical Plant Area and the Ordnance Works Area, Weldon Spring, Missouri*, Rev. A. DOE/OR/21548-571. Prepared for the U.S. Department of Energy, Oak Ridge Operations Office. St. Charles, MO. In press.

2. MK-Ferguson Company and Jacobs Engineering Group. *Sampling Plan for the Remedial Investigation/Feasibility Study for the Groundwater Operable Units at the Chemical Plant Area and at the Ordnance Works Area, Weldon Spring, Missouri (Appendix to the Work Plan)*, Rev. 1. DOE/OR/21548-445. Prepared for the U.S. Department of Energy, Oak Ridge Operations Office. St. Charles, MO. July 1995.

3. Argonne National Laboratory, *Baseline Risk Assessment for the Groundwater Operable Unit*, Rev. A. DOE/OR/21548-568. Prepared for the U.S. Department of Energy, Oak Ridge Operations Office. St. Charles, MO. In press.

## PROCEDURES

| | |
|---|---|
| ES&H 4.1.1 | *Numbering System for Environmental Samples and Sampling Locations* |
| ES&H 4.1.4 | *Quality Control Samples for Aqueous and Solid Matrices: Definitions, Identification Codes, and Collection Procedures* |
| ES&H 4.4.1 | *Groundwater Sampling* |