

FUSRAP St Louis Dose and Risk Assessments

Discussion Points



FUSRAP
DOCUMENTS



GATHERING DATA



ASSESSING RISK



INFORMING THE
PUBLIC

FUSRAP Documents

<https://www.mvs.usace.army.mil/Missions/FUSRAP/>

St. Louis District > Missions > FUSRAP

mvs.usace.army.mil/Missions/FUSRAP/

An official website of the United States government [Here's how you know](#)

Contact About Business With Us Missions Locations Careers Media Library 150th Anniversary

US Army Corps of Engineers St. Louis District Website

Missions / FUSRAP

Welcome to the FUSRAP homepage

The Formerly Utilized Sites Remedial Action Program (FUSRAP) is an environmental remediation program. The FUSRAP team devotes itself to finding and remediating radiological contamination generated by activities of the Manhattan Engineer District and the Atomic Energy Commission (MED/AEC) during development of the atomic weapons in the 1940s and 1950s.

After MED/AEC activities ceased, uranium-processing sites were decontaminated according to the standards of the day. However, today's cleanup standards are much more stringent, requiring additional cleanup. During its sampling activities, the FUSRAP team tests for FUSRAP contaminants of concern (COCs) per the Record of Decision (ROD) for the North St. Louis County Sites, but it doesn't test for other, unrelated (non-FUSRAP) contaminants that may be present.

Watch Citizens Outreach video!

[Virtual FUSRAP Citizens Outreach Meeting recording - Sept. 18, 2024](#)

View status maps

[North St. Louis County \(NORCO\) status maps](#)
[St. Louis Downtown Site \(SLDS\) status map](#)

Watch FUSRAP Open House video! Includes closed captioning, transcript

[FUSRAP - St. Louis Sites](#)

FUSRAP Open House

St. Louis District Sites

- Formerly Utilized Sites Remedial Action Program (FUSRAP)
- Iowa Army Ammunition Plant (IAAAP)
- Latty Avenue Properties
- Madison, Illinois, Site
- St. Louis Airport Site (SLAPS)
- St. Louis Airport Site Vicinity Properties (SLAPS VPs)
- St. Louis Downtown Site (SLDS)

June 8 Public Meeting

- [FUSRAP Project Manager Report](#)
- [St. Louis Downtown Site \(SLDS\) Report](#)
- [North St. Louis County Sites Report](#)

St. Louis District Sites

Formerly Utilized Sites Remedial Action Program (FUSRAP)

Iowa Army Ammunition Plant (IAAAP)

Latty Avenue Properties

Madison, Illinois, Site

St. Louis Airport Site (SLAPS)

St. Louis Airport Site Vicinity Properties (SLAPS VPs)

St. Louis Downtown Site (SLDS)

St. Louis Downtown Site

[Collapse All](#) [Expand All](#)

- Site Location
- Site History
- Site Progress
- Inaccessible Soils
- Documents**

[Record of Decision for the Inaccessible Soil Operable Unit Associated with Group 1 Properties at SLDS - Rev 0 9-29-2014](#)

[Community Involvement Plan](#)

[Environmental Monitoring Implementation Plan for the St. Louis Downtown Site for Calendar Year 2023](#)

[Environmental Monitoring Implementation Plan for the St. Louis Downtown Site for Calendar Year 2022](#)

[Environmental Monitoring Implementation Plan for the St. Louis Downtown Site for Calendar Year 2021](#)

[Environmental Monitoring Implementation Plan for the St. Louis Downtown Site for Calendar Year 2020](#)

[Environmental Monitoring Implementation Plan for the St. Louis Downtown Site for Calendar Year 2019](#)

- St. Louis Downtown Site Annual Environmental Monitoring Data and Analysis Report (EMDAR) for Calendar Year 2022
- St. Louis Downtown Site Annual Environmental Monitoring Data and Analysis Report (EMDAR) for Calendar Year 2021
- St. Louis Downtown Site Annual Environmental Monitoring Data and Analysis Report (EMDAR) for Calendar Year 2020
- St. Louis Downtown Site Annual Environmental Monitoring Data and Analysis Report (EMDAR) for Calendar Year 2019
- St. Louis Downtown Site Annual Environmental Monitoring Data and Analysis Report (EMDAR) for Calendar Year 2018
- St. Louis Downtown Site Annual Environmental Monitoring Data and Analysis Report (EMDAR) for Calendar Year 2017
- St. Louis Downtown Site Annual Environmental Monitoring Data and Analysis Report for Calendar Year 2016
- St. Louis Downtown Site Annual Environmental Monitoring Data and Analysis Report for Calendar Year 2015
- St. Louis Downtown Site Annual Environmental Monitoring Data and Analysis Report for Calendar Year 2014

[SLDS EMDAR CY13 Rev 0 7-23-2014](#)

[SLDS EMDAR Rev 07-19-2013](#)

[SLDS EMDAR Rev 07-13-2012](#)

[SLDS EMDAR Rev 07-08-2011 - main text \(172 pages\)](#)

[SLDS Record of Decision - main text \(90 pages\)](#)

[SLDS Record of Decision - Appendix A, Detailed Responses to Comments \(115 pages\)](#)

[SLDS Proposed Plan \(16 pages\)](#)

[SLDS Feasibility Study \(258 pages\)](#)

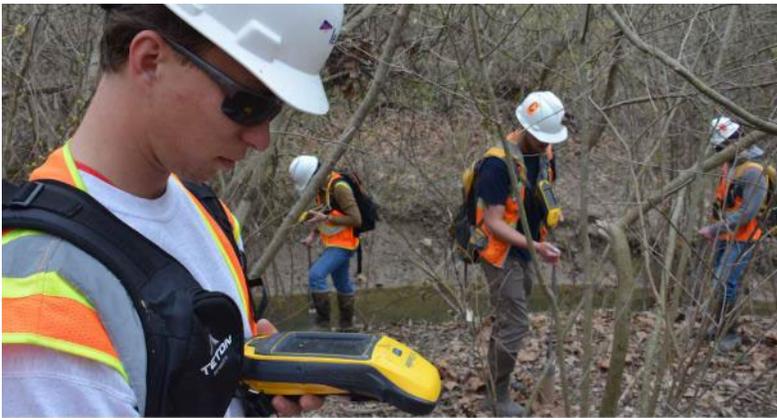
[SLDS ISOU Proposed Plan for Group 1 Properties](#)

[SLDS ISOU-RI Final 09-20-2012 Part 1](#)

[SLDS ISOU-RI Final 09-20-2012 Part 2](#)

FUSRAP Documents

- CERCLA Decision Documents
 - Record of Decision (ROD)
 - FSPP
 - Remedial Investigation (RI)
- There is generally risk related information in each document
- The Baseline Risk Assessment for Exposure to Contaminants at the St Louis Site

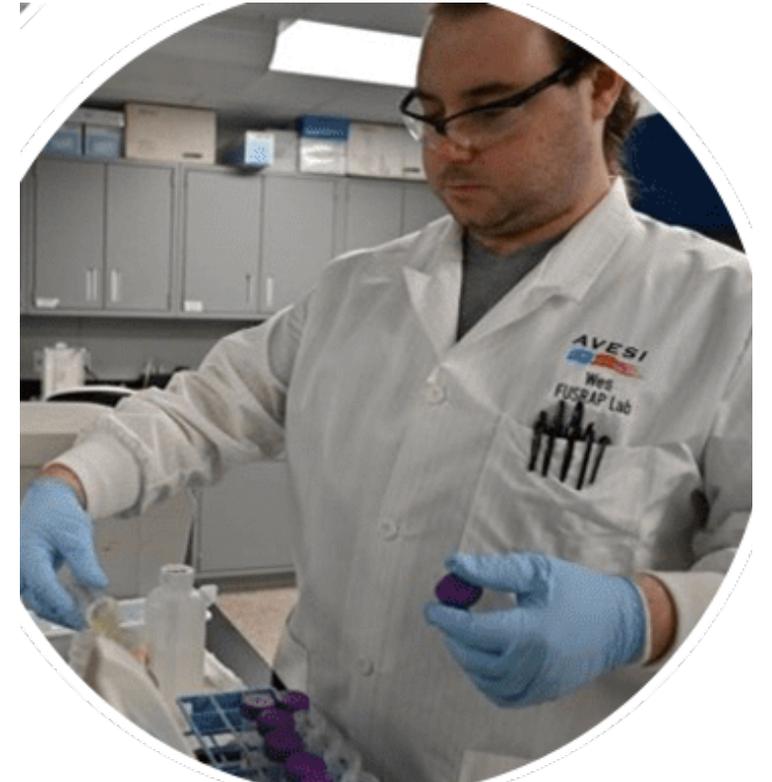


Gamma walkover surveys

Gathering Data

Characterization/ Verification

- Gamma Walkover Surveys
- Soil/Sediment Sampling
- Ground/Surface Water Sampling
- Laboratory Analysis



Environmental Monitoring Data

- Air, water, and sediment samples are collected during remedial activities to ensure the public and the workers are protected
- Annual environmental monitoring data reports can be accessed on the USACE FUSRAP website



St. Louis Airport Site

- ▣ Site Location
- ▣ Site History
- ▣ Site Progress
- ▣ Documents

[Community Involvement Plan](#)

[Utility Support Policy](#)

Visit the [CIP page](#) to view [Community Involvement Plans](#) administered by the St. Louis District:

- ▣ [Iowa Army Ammunition Plant FUSRAP Site CIP complete document, main document and appen](#)
- ▣ [St. Louis FUSRAP Sites CIP complete document, main document and appendices](#)

Pre-Design Investigation Summary Report for St. Cin Park, the Archdiocese of St. Louis Property an Duchesne Park

- ▣ Part 1
- ▣ Part 2
- ▣ Part 3
- ▣ Part 4

[Environmental Monitoring Implementation Plan for the North St. Louis County Sites for Calendar Y](#)

[Environmental Monitoring Implementation Plan for the North St. Louis County Sites for Calendar Y](#)

[Environmental Monitoring Implementation Plan for the North St. Louis County Sites for Calendar Y](#)

FUSRAP Data

The quality data informs decisions on:

- Cleanup activities
 - Additional remediation
 - Release of properties
- Protectiveness
 - Public
 - Project personnel
- Communication

Assessing “Additional” Risk, Dose and Chemical Hazard Index to Hypothetical Receptors

- CERCLA process requires evaluating “additional” health risk from exposure to MED/AEC waste
 - CERCLA requires ARARS to be considered: this brings in “additional” dose evaluations for radioactivity and “additional” health index evaluations for chemicals
- Record of Decision (ROD)
 - Documents risk, dose and chemical hazard index evaluations of conditions existing at the time of the ROD (pre-remediation)
 - Selected remedy is identified
 - Requires post-remediation residual risk and dose assessment to ensure remedial action is effective
 - 10 CFR 300.430: Protectiveness is achieved when additional lifetime risk is less than 1 in 10,000
- “Additional” means more than naturally occurring background



Risk from
Naturally Occurring
Radioactive Material
(NORM)
Background
(Non-FUSRAP)

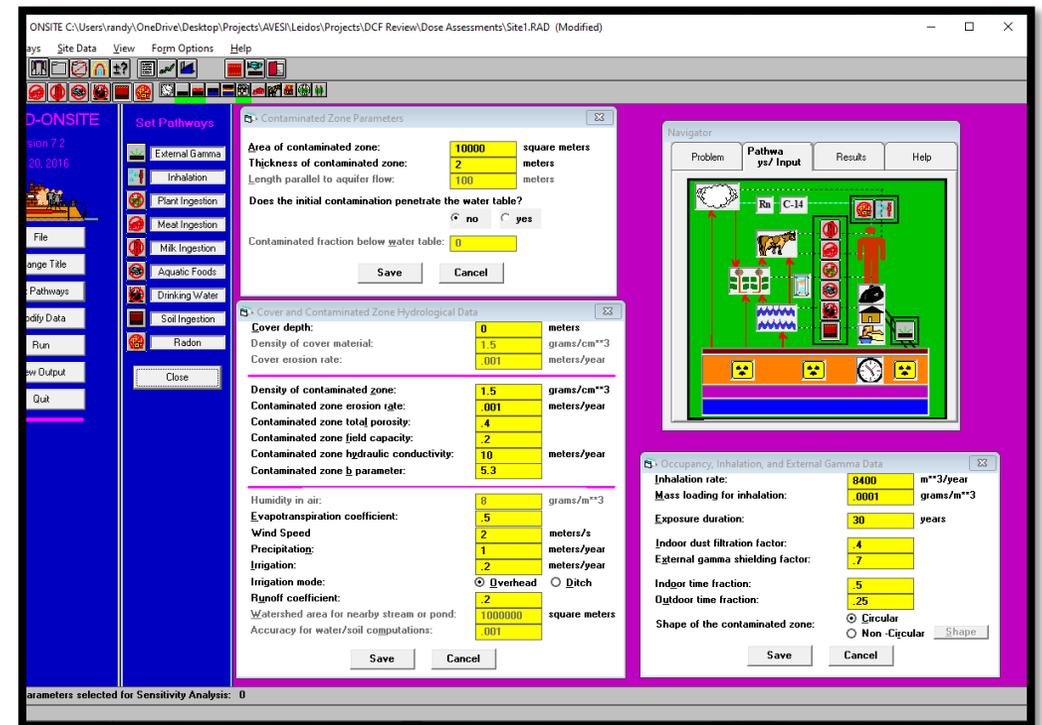
- NORM (Background concentrations)
 - Resident
 - $1.8E-4$ Risk
 - ~ 2 in 10,000
 - Resident Farmer
 - $2.8E-4$ Risk
 - ~ 3 in 10,000

Post Remedial Action Dose and Risk Assessment

- Dose and risk are evaluated on every impacted property regardless of remediation
- Risk and hazard index for chemicals are only applied to soil on properties listed in the ROD
- Soil sample data is used to determine dose, risk and hazard index to a resident living on the property
- Structure survey data is used to determine dose and risk for building occupants
- Dose, risk and hazard index must meet the protectiveness requirements listed in the ROD

- RESRAD used for radiological risk and dose: Accepted for use by DOE, NRC, EPA, State agencies
- Spreadsheets used for chemical risk and hazard index
- Ingestion, inhalation and external gamma exposure pathways are considered
- Information entered into the software:
 - Designed to overestimate dose, risk and hazard index
 - Site-specific when possible

Modeling Software



Dose and Risk Assessment Example

St Louis Airport Site (SLAPS)

	Pre-Remediation (listed in ROD)	Post-Remediation (listed in PRAR)
Additional Risk	4,000 in 100,000	1 in 100,000
Additional Dose	3,400 mrem/yr	1 mrem/yr
Additional Chemical Hazard Index	2.3	< 1.0

Dose, risk and hazard evaluations confirm FUSRAP cleanup activities result in protectiveness.



Informing the Public

- USACE Website
 - EMDAR / Other documents
- Public Meetings
- Area Postings
 - Active remediation
 - Areas exceeding release limits

St. Louis District > Missions > > X +

mvs.usace.army.mil/Missions/FUSRAP/

An official website of the United States government Here's how you know

Contact About Business With Us Missions Locations Careers Media Library 160

US Army Corps of Engineers St. Louis District Website

/ Missions / FUSRAP

Welcome to the FUSRAP homepage

The Formerly Utilized Sites Remedial Action Program (FUSRAP) is an environmental remediation program. The FUSRAP team devotes itself to finding and remediating radiological contamination generated by activities of the Manhattan Engineer District and the Atomic Energy Commission (MED/AEC) during development of the atomic weapons in the 1940s and 1950s.

After MED/AEC activities ceased, uranium-processing sites were decontaminated according to the standards of the day. However, today's cleanup standards are much more stringent, requiring additional cleanup. During its sampling activities, the FUSRAP team tests for FUSRAP contaminants of concern (COCs) per the Record of Decision (ROD) for the North St. Louis County Sites, but it doesn't test for other, unrelated (non-FUSRAP) contaminants that may be present

Watch Citizens Outreach video!

[Virtual FUSRAP Citizens Outreach Meeting recording - Sept. 18, 2024](#)

View status maps

[North St. Louis County \(NORCO\) status maps](#)
[St. Louis Downtown Site \(SLDS\) status map](#)

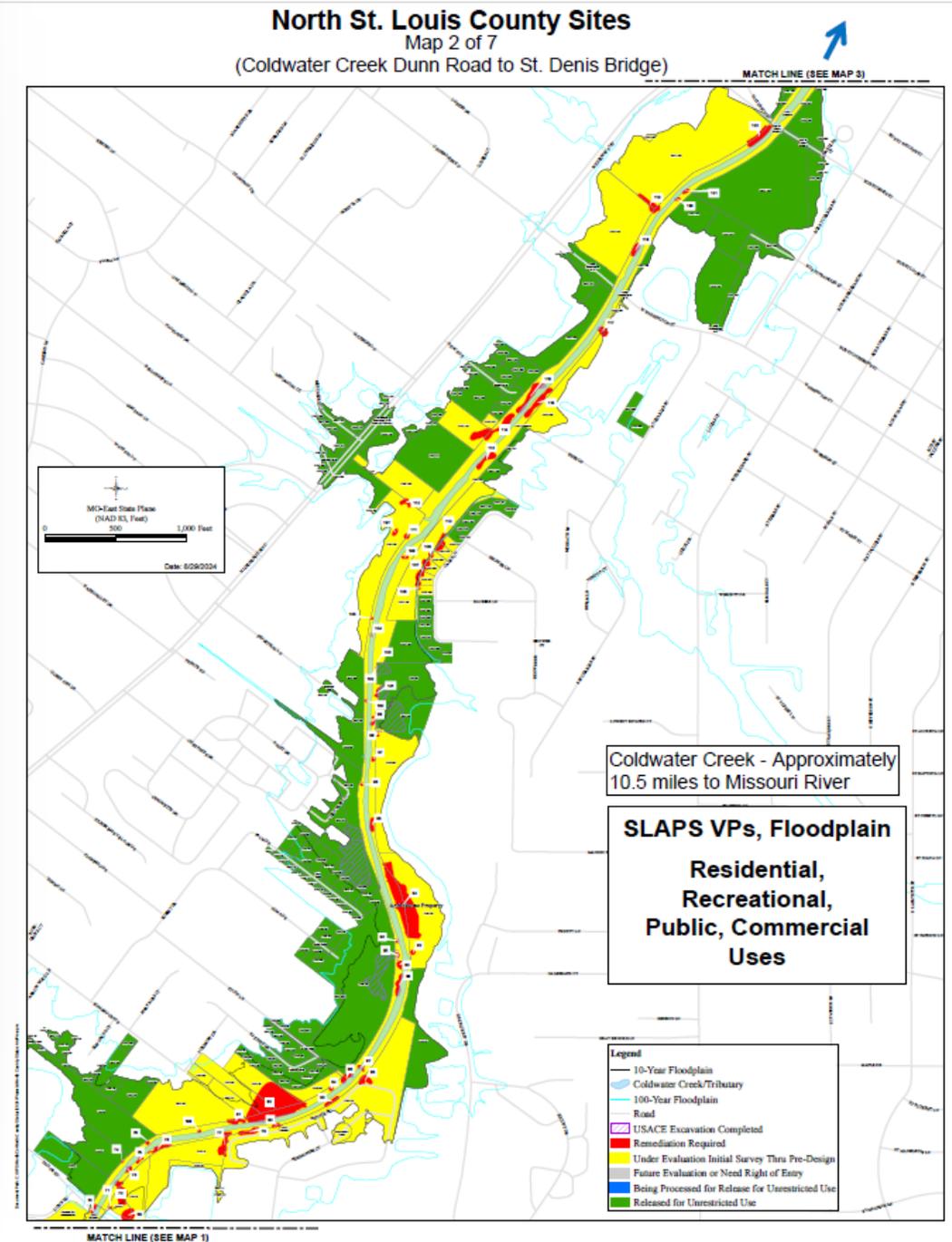
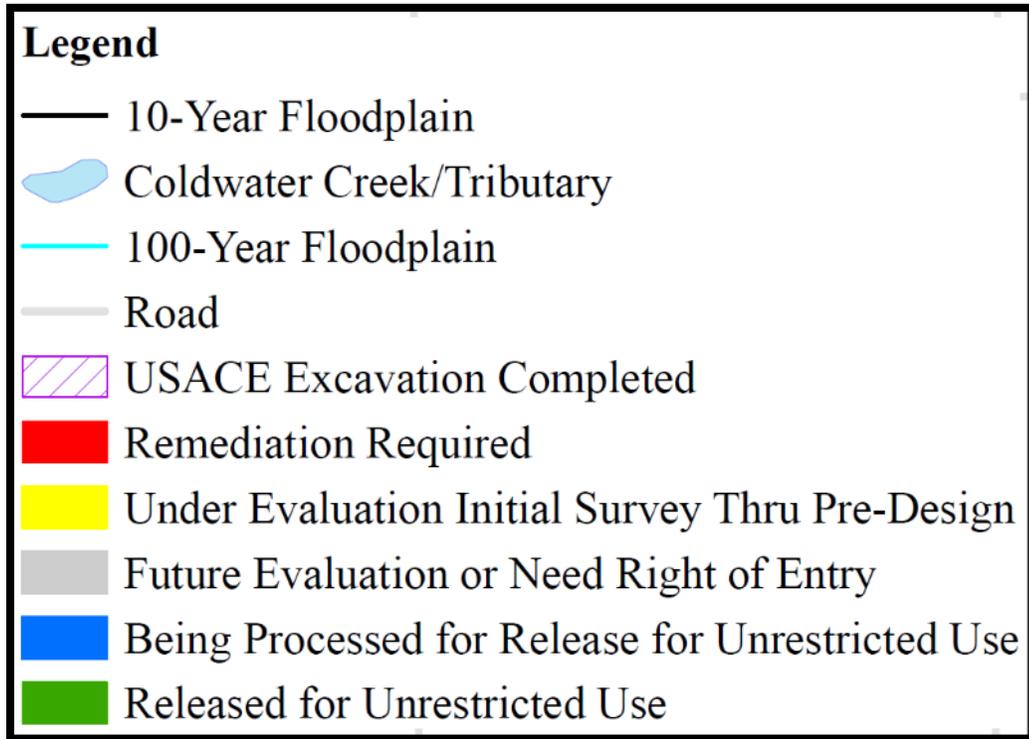
Watch FUSRAP Open House video! Includes closed caption transcript

US Army Corps of Engineers
St. Louis District
FUSRAP - St. Louis Sites
Welcome

FUSRAP Open House



Coldwater Creek Characterization Map



Questions?

USACE FUSRAP Dose and Risk Assessment