ACTION MEMORANDUM
FOR
REMOVAL ACTION

PESTICIDE STORAGE FACILITY

FORT RILEY MILITARY INSTALLATION
FORT RILEY, KANSAS

Prepared by:

Installation Restoration Program Office

Environmental and Natural Resources Division

Directorate of Engineering and Housing

1st Infantry Division (Mech) and Fort Riley, Kansas

DECEMBER 1993

PSF_3_5_001

ACTION MEMORANDUM
FOR
PESTICIDE STORAGE FACILITY
FORT RILEY, KANSAS

DATE: December 1993

SUBJECT: Removal Action at the Pesticide Storage Facility (PSF) Site, Fort Riley, Kansas

FROM: The United States Department of the Army (DA), Fort Riley, Kansas

TO: U.S. Environmental Protection Agency (USEPA), Region VII, and Kansas Department of Health and Environment (KDHE)

I. PURPOSE

The purpose of this Action Memorandum is to outline the CERCLA processes followed and to document the Army's decision to take a removal action at the Pesticide Storage Facility, Fort Riley, Kansas. This document also serves as a vehicle to obtain U.S. Environmental Protection Agency (USEPA), Region VII, and Kansas Department of Health and Environment (KDHE) concurrence with the removal action. The Army intends to excavate and dispose of the soils off-site at a Resource Conservation and Recovery Act (RCRA) Subtitle C-permitted hazardous waste facility.

II. SITE CONDITIONS AND BACKGROUND

The following sections provide an overview of the history and current characteristics of the PSF site. The removal action for the PSF is a non-time-critical removal.

A. Site Description

1. Removal Site Evaluation

The PSF is known to have stored pesticides and herbicides (hereafter called "pesticides") since at least 1973. The pesticides stored in the facility were domestic type pesticides commonly available at the time. Prior to about 1975, pesticide wastewaters, rinse water and

concentrated spills were allowed to run on the ground surface east of the PSF. Since about 1976, the majority of pesticide application has been performed by outside contractors to Fort Riley. Contractors are not allowed to use the PSF for formulation or mixing of pesticides. Six inches of gravel was placed over the PSF area in 1986 to protect the site workers from contaminated soils.

A Remedial Investigation/Feasibility Study (RI/FS) is underway and an Engineering Evaluation / Cost Analysis (EE/CA) report has been completed.

2. Physical Location

Fort Riley is located near the confluence of the Republican and Smoky Hill Rivers, occupying approximately 150 square miles in Geary and Riley Counties in Kansas. The PSF is located in the Directorate of Engineering and Housing (DEH) equipment and supply storage yard located in the Main Post cantonment area of Fort Riley. See Pesticide Storage Facility Location Map, attached. The surrounding area is primarily an industrial and administrative area, however a military family housing area is located approximately 1/3 mile north of the site.

3. Site Characteristics

Fort Riley is a federally-owned facility, operated by the Department of the Army (DA), 1st Infantry Division (Mechanized). Fort Riley serves as a major center for military training and military readiness, including the supply and maintenance of facilities and equipment. The DEH is the organizational element responsible for maintaining the facilities and infrastructure of the post.

The PSF site is an area adjacent to the north and east of Building 348, which has historically been used to store insecticides, herbicides, paint, and other maintenance supplies. Pesticide formulation and equipment rinsing occurred at the site. The site is located on a terrace and is partially within the 100-year floodplain of the Kansas River. A lined, intermittent drainage channel lies generally east of the site outside of a security fence which encompasses most of the site.

4. Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant or Contaminant

Based on known past practices as well as soil samples analyzed for the PSF Remedial Investigation, pesticide contamination is known to exist around the PSF. The pesticides determined to be chemicals of concern are dieldrin, DDT, chlordane, and heptachlor. See attached figure entitled Pesticide Contamination of Soil (Based on RCRA Soil Action Levels). An area of arsenic-contaminated soil was identified outside the PSF perimeter

fence. Polynuclear Aromatic Hydrocarbons (PAHs) were also detected in the soils, however, these appear to be a result of runoff from asphalt pavement and treated lumber and are not considered to be chemicals of concern requiring remediation. The total (in-place) volume of soils exceeding risk-based remediation levels is estimated to be less than 1000 cubic yards. The approximate areal distribution of contaminated soils at these risked based levels is similar to, but larger, than that shown in the above mentioned figure which uses RCRA Corrective Action Levels.

The principal migration route for the PSF contamination is through soil erosion. Pesticides typically remain tightly bound to soil and do not readily leach; RI monitoring indicate that groundwater and surface waters have not been significantly impacted by PSF contaminant releases. With heavy rains there is potential for the contaminated soil to migrate to a nearby drainage ditch and continue to the Kansas River approximately 1/2 mile south of the PSF.

5. National Priorities List (NPL) Status

Fort Riley is included on the National Priority List (NPL) and has a tri-party Federal Facility Agreement (FFA) in place. The Pesticide Storage Facility is Operable Unit 002. A Remedial Investigation report is expected to be finalized in January 1994. The remedial action Feasibility Study (FS) for the PSF is expected to be completed in the fall of 1994.

B. Other Actions to Date

1. Previous Actions

To date, institutional actions have been taken to address the PSF contamination. The existing security fence serves to restrict access to the site. As stated earlier, six inches of clean gravel was placed on the contaminated area in 1986. Since the initiation of RI/FS activities, routine use of the area by DEH workers has been discontinued. The area to the west of Building 348 was paved with asphalt in about 1991. Pesticide formulation and mixing is no longer performed at the site. These conditions and low-cost actions have been effective in minimizing exposure.

2. Current Actions

The current plans for the site are to complete the removal action being described in this Action Memorandum. Concurrent with and subsequent to this removal action, the Army will complete a feasibility study to identify remedial actions necessary, if any, that are not addressed by this removal action.

C. State and Local Authorities' Role

In 1991, a Federal Facility Agreement (FFA) was entered into by the U.S. Department of the Army (DA), 1st Infantry Division (Mechanized) and Fort Riley, KDHE and USEPA. The general purposes of the FFA are: 1) to ensure that the environmental impacts associated with past and present activities at Fort Riley are thoroughly investigated and appropriate remedial action is taken as necessary to protect the public health, welfare and the environment; 2) to establish a procedural framework and schedule for developing, implementing and monitoring appropriate response actions at Fort Riley in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the National Contingency Plan (NCP), Superfund guidance and policy, the Resource Conservation and Recovery Act (RCRA) guidance and policy, and applicable state law; and 3) to facilitate cooperation, exchange of information and participation of the parties in such actions.

The KDHE and the USEPA, Region VII, reviewed and provided comments on the EE/CA described below.

III. POTENTIAL THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Under current conditions, there is little threat to public health or welfare or the environment, however, the potential exists for exposure to the contaminated sub-surface soils should intrusive activities, such as utility repairs, take place in the area of contamination. Major rainfall(s) that causes significant erosion could lead to exposure to workers repairing the eroded areas and coming into contact with the contaminated sub-surface soils. Future changes in land use and work practices could result in increased exposures via dermal contact and inhalation.

The impact on the site on the local ecosystem is considered to be low. Wildlife that may potentially be impacted by contact with eroded soils in the sediments of the nearby drainage ditch or downstream in the Kansas River.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances and/or pollutants or contaminants from this site, if not addressed, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed Action Description

Soils exceeding the risk-based remediation goals stated in the EE/CA for the "Future Site Worker" exposure scenario will be excavated. Dust control and other methods will be used to minimize exposure during excavation and material handling activities. Confirmation sampling will be used to determine the actual lateral and vertical limits of excavation. Toxicity Characteristic Leaching Procedure (TCLP) analyses will determine whether the soils are Resource Conservation and Recovery Act (RCRA) "characteristically" hazardous. The soils have been determined to not be "listed" wastes by the USEPA Region VII.

Excavated soils will be transported via a licensed transporter to a permitted, RCRA Subtitle C (hazardous waste) facility authorized to receive Superfund wastes. Off-Site disposal will be accomplished in compliance with the "off-site policy". Treatment and disposal will be the responsibility of the selected disposal in accordance with Federal, State and local requirements. This action is technically feasible and effective, providing a permanent remedy, eliminating the need for future management and monitoring of site soils.

The site will be restored for unrestricted future use consistent with existing land use patterns, i.e. as an equipment and material storage area. No post-removal site control is necessary.

Comments received from EPA Region VII and KDHE impacted the scope of the removal action as described in V. A. 4. below.

2. Contribution to Remedial Performance

The proposed removal action is anticipated to constitute all or the majority of the final remedy for the PSF site. Alternatives for the final remedial action will be evaluated in the Feasibility Study (FS), and the final remedy will be determined in the Record of Decision (ROD) for the PSF site. The FS will focus on non-soil media not addressed by the EE/CA and this removal action.

3. Description of Alternative Technologies

The removal action for the PSF focuses on reducing or eliminating exposure to contaminated soils. The technologies considered to address the soils included institutional actions (fences, signs, access restrictions, etc.), institutional actions with capping, and removal and disposal. These technologies are evaluated in the EE/CA. Most alternatives to land disposal were screened out due to cost or effectiveness.

4. Engineering Evaluation / Cost Analysis (EE/CA)

The EE/CA Study Report for the PSF was issued for public review 17 August 1993 through 16 September 1993. The EE/CA provides an evaluation of non-time-critical removal action alternatives for addressing the PSF soils.

The objective of the EE/CA was to evaluate ways to reduce or eliminate both current and future exposure to contaminated soils. The EE/CA focused on site soils only. Six alternatives ranging from no-action to removal and disposal were evaluated in the EE/CA. The institutional controls, grading and capping (asphalt/concrete) alternative provided the best balance of cost effectiveness and protection.

The EE/CA recommended placing institutional controls and capping the site with an asphalt and concrete cap. This alternative would be effective by eliminating the route of exposure, although it would not achieve a permanent remedy, reducing the toxicity and/or volume of wastes. The excavation, treatment, and disposal alternative was not favored in the EE/CA due to its high estimated cost. However, following comments by EPA and KDHE, more cost-effective and permanent alternatives were considered further. The October 1993 nation-wide extension for the operation of existing RCRA Subtitle D landfills made the on-post disposal option feasible and cost effective.

In the development of the Rapid Response removal project (see Section V.A.6. below), cost estimates for both on-post stabilization and landfilling and off-site RCRA Subtitle C disposal, based on the determination that the wastes would be "characteristic," not "listed," were also obtained and re-evaluated. This evaluation illustrated that off-site disposal would be as cost-effective, while requiring less coordination and being less sensitive to poor weather conditions.

The off-site disposal cost estimate provided in this Action Memorandum has been revised from that provided in the EE/CA to reflect Rapid Response team cost estimates.

Responses to USEPA and KDHE comments on the EE/CA Study Report are included in the Responsiveness Summary, provided as an attachment to this Action Memorandum. A Technical Review Committee (TRC) meeting was held at Fort Riley on 1 September 1993. The Management Plan (attachment to the EE/CA) was discussed at this meeting. Answers to questions raised at the TRC meeting are also included in the Responsiveness Summary. A public meeting was scheduled at Fort Riley on 7 September 1993. However, the meeting was not held due to lack of public attendance.

5. Applicable or Relevant and Appropriate Requirements (ARARs)

Removal actions taken under CERCLA are required to comply with ARARs to the extent practical. ARARs may consist of several types of requirements. Three types of ARARs may be determined: chemical-specific, location-specific and action-specific. Specifically, under the FFA, "with respect to releases of hazardous waste covered by this Agreement, RCRA shall be considered an applicable or relevant and appropriate requirement pursuant to Section 121 of CERCLA." Because the removal action at the PSF is to be integrated into the final site remedial activities, compliance with ARARs to the extent practicable is a primary objective.

Chemical-Specific ARARs

Chemical-specific ARARs are usually health- or risk-based numerical action values or methodologies which, when applied to site-specific conditions, result in the establishment of appropriate clean-up levels. These values establish the acceptable concentrations of constituents for a particular pathway. The principal contaminants of concern in soils at the site are chlordane, DDT, dieldrin, heptachlor, and arsenic.

- The risk-based, site-specific remediation goals (clean-up levels) are outlined below. (Based on the "Future Site Worker" scenario in the PSF baseline risk assessment.)
    - Arsenic - 0.12 mg/kg
    - Chlordane - 0.17 mg/kg
    - Dieldrin - 0.014 mg/kg
    - DDT - 0.66 mg/kg
    - Heptachlor - 0.050 mg/kg

- OSHA Regulations (29 CFR Part 1926 Subpart D - Occupational Health and Environmental Controls).

Location-Specific ARARs

The following location-specific ARARs are applicable to the removal action:

- Flood Plain Management (Executive Order 11988, 16 USC 661 et seq. 40 CFR 6.302, Appendix A);

- Endangered Species Act of 1973 (16 USC 1531-1544);

- Fish and Wildlife Protection (16 USC 661-666c, 16 USC 2901 et seq., 33 CFR 320-330; 40 CFR 6.302);

- Surface Water Use Designations (KAR 28.16.28d);
- Designation of Critical Water Quality Management Areas (KAR 28.16.70);
- Historic, Architectural, Archeological, and Cultural Sites (Executive Order 11593, 40 CFR 6.302);
- Clean Water Act, Section 404 Permitting Requirements (33 USC 1341, 33 CFR 320-330, 40 CFR 230); and
- Clean Water Act, Section 401 Water Quality Certification (33 USC 1341).

As described in the EE/CA, location specific ARARs identified for consideration, but not applicable to the removal action include:

- Protection of Wetlands (Executive Order 11990, 40 CFR 6.302, Appendix A);

Action-Specific ARARs

Action-specific ARARs include:

- Land Disposal Restrictions (40 CFR 268)
- Procedures for Planning and Implementing Offsite Response Actions (40 CFR 300.440)
- National Emission Standards for Hazardous Air Pollutants (NESHAP) (40 CFR 61);
- National Ambient Air Quality Standards (NAAQS) (Clean Air Act 40 CFR 50);
- Ambient Air Quality Standards and Air Pollution Control Regulations (KAR 28.19);
- Solid Waste Management Regulations (KAR 28.29 Part II); and
- Stormwater Discharge Requirements, National Pollutant Discharge Elimination System (Clean Water Act 40 CFR 122.26).

These ARARs are described in greater detail in the EE/CA. This removal action is intended to address both the physical and chemical concerns at the site. Identified ARARs can be met through proper implementation of site controls during construction.

6. Project Schedule

The removal action is planned to be completed by April 1994. Fort Riley is utilizing the "Rapid-Response" contracting capabilities of the U.S. Army Corps of Engineers, Omaha District, for the execution of this project. Preliminary planning and discussions took place 1 December 1993. The work plan for the removal action is expected in early January 1994 and field work is expected to begin in mid-February.

B. Estimated Costs

The following cost estimate is based on order-of-magnitude estimates developed by the Rapid Response team and differ from those provided in the EE/CA. (Values have been rounded.)

Contract Costs		
Planning and Reporting		15,000
Mobilization		3,000
Excavation	850 CY	17,000
Confirmation Sampling and Analysis		50,000
Site Restoration		20,000
Transportation and Disposal	850 CY @ $275	235,000
De-Mobilization		3,000
Administration & Support		15,000
Contract Subtotal		**$ 360,000**
Rapid Response Costs		
User Fee	1.5 %	6,000
Supervision & Administration (S & A)	10 %	36,000
Engineering and Design (E & D)	5 %	18,000
Rapid Response Subtotal		**$ 60,000**
Contingencies (20%) with S & A		**$ 80,000**
TOTAL PROJECT COST		**$ 500,000**

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

No significant health risks would arise should the removal action be delayed or not done unless a change in land use patterns and/or disturbance of the soils occurs. The potential for exposure to the contaminated soil and for contaminant migration through erosion would still exist. Heavy rains, which typically occur in the spring, could cause further erosion and spread contamination.

VII. OUTSTANDING POLICY ISSUES

No outstanding policy issues are known to exist for the PSF site.

VIII. RECOMMENDATION

This decision document represents the selected removal action for the PSF site at Fort Riley, Kansas, developed in accordance with CERCLA as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the site. Conditions at the site meet the NCP section 300.415(b)(2) criteria for a removal.

REFERENCES

Fort Riley, 1993. Engineering Evaluation/Cost Analysis (EE/CA) Study Report for Remedial Investigation/Feasibility Study, Pesticide Storage Facility, Fort Riley, Kansas. 16 August 1993.

CDM, 1992. Community Relations Plan, Installation Restoration Program, Fort Riley, Kansas. January 1992.

USEPA, 1991. United States Environmental Protection Agency Region VII and the State of Kansas in the Matter of: the U. S. Department of the Army, 1st Infantry Division (Mechanized) and Fort Riley, Fort Riley, Kansas: Federal Facility Agreement. (Docket No. VII-90-F-0015)

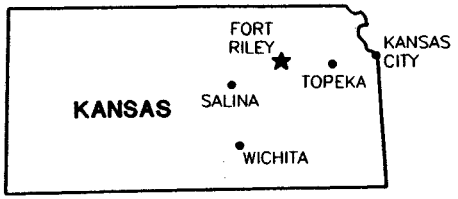
USEPA, 1990. Superfund Removal Procedures Action Memorandum Guidance. OSIER Dir. 9360.3-01. December 1990.

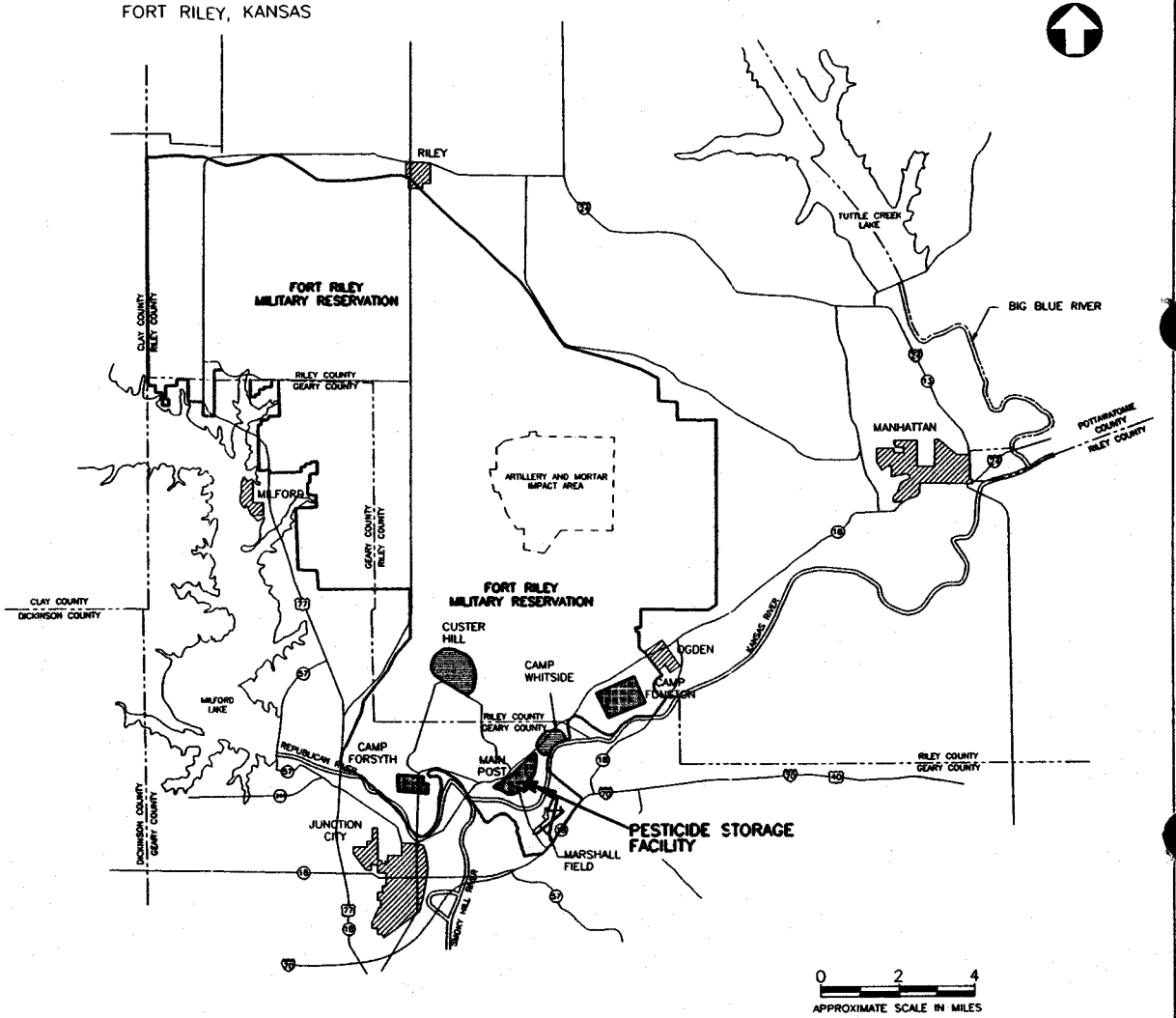
FIGURES

- Pesticide Storage Facility Location Map
- Pesticide Contamination of Soil
  (Based on RCRA Soil Action Levels)

PESTICIDE STORAGE FACILITY LOCATION MAP

FORT RILEY, KANSAS



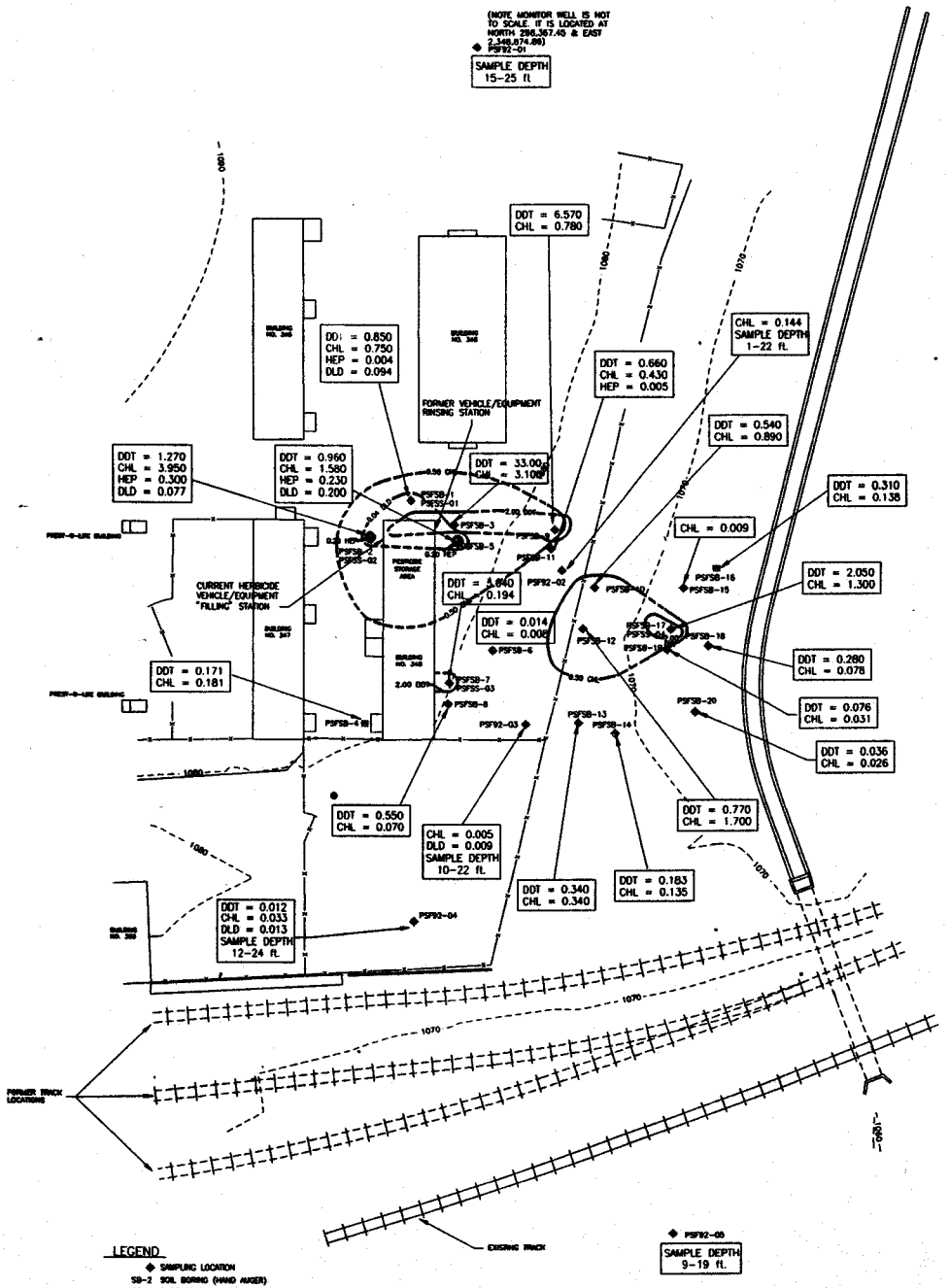


LAW ENVIRONMENTAL INC.
GOVERNMENT SERVICES BRANCH

filename: pest/fig1-1

PESTICIDE CONTAMINATION OF SOIL
(BASED ON RCRA SOIL ACTION LEVELS)

PESTICIDE STORAGE AREA
FORT RILEY, KANSAS



LEGEND

- ◆ SAMPLING LOCATION
- SB-2 SOIL BORING (HAND AUGER)
- SS-1 SURFACE SOIL BORING
- MW-5 MONITORING WELL BORING
- ELEV=1082.9 ELEVATION OF GROUND SURFACE AT SAMPLING LOCATION IN FEET ABOVE SEA LEVEL
- --1070-- TOPOGRAPHIC CONTOUR LINES (SEE FIGURE 4-6)
- —x— FENCE
- RAILROAD
- LINED PORTION OF DRAINAGE DITCH
- HEP HEPTACHLOR
- CHL CHLORDANE
- DLD DIELDRIN
- —2.00 DDT— = INTERPOLATED CONTOUR LINE OF DDT CONCENTRATIONS- RCRA ACTION LEVEL: 2.00 mg/Kg
- —0.50 CHL— = INTERPOLATED CONTOUR LINE OF CHLORDANE CONCENTRATIONS- RCRA ACTION LEVEL: 0.50 mg/Kg
- —0.20 HEP— = INTERPOLATED CONTOUR LINE OF HEPTACHLOR CONCENTRATIONS- RCRA ACTION LEVEL: 0.20 mg/Kg
- —0.04 DLD— = INTERPOLATED CONTOUR LINE OF DIELDRIN CONCENTRATIONS- RCRA ACTION LEVEL: 0.04 mg/Kg

NOTES:

1. ALL CONCENTRATIONS ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/Kg).
2. ALL CONCENTRATIONS REPRESENT SAMPLES COLLECTED FROM 0-4.5 FEET BELOW GROUND SURFACE, UNLESS OTHERWISE INDICATED.
3. SAMPLES COLLECTED IN APRIL/MAY, 1992.
4. DDT CONCENTRATIONS REPRESENT TOTAL CONCENTRATION OF DDT AND ITS METABOLITES (DDE AND DDD).
5. CHLORDANE CONCENTRATIONS REPRESENT SUM OF ALPHA- AND GAMMA-CHLORDANE CONCENTRATIONS.
6. THIS MAP DISPLAYS POSITIVE CONCENTRATIONS OF CONTAMINANTS ONLY (NON-DETECT READINGS ARE NOT SHOWN).
7. CONCENTRATIONS SHOWN REPRESENT THE HIGHEST VALUE OF EACH PARAMETER FROM SAMPLES COLLECTED FROM 0 - 4.5 FEET BELOW GROUND SURFACE

0 60 120
SCALE IN FEET

LAW ENVIRONMENTAL INC.
GOVERNMENT SERVICES BRANCH

filename: 36383pef.dwg

ACTION MEMORANDUM
FOR
PESTICIDE STORAGE FACILITY
FORT RILEY, KANSAS

20 Dec 93
COL John F. Hepler — Date
Garrison Commander
U.S. Army, 1st Infantry Division (Mechanized) and Fort Riley

1/6/94
David A. Wagoner — Date
Chief, Waste Management Division
U.S. Environmental Protection Agency, Region VII

December 20, 1993
Charles F. Jones — Date
Director, Division of Environment
Kansas Department of Health and Environment

RESPONSIVENESS SUMMARY

PESTICIDE STORAGE FACILITY
ENGINEERING EVALUATION / COST ANALYSIS

- Surface Water Use Designations (KAR 28.16.28d);
- Designation of Critical Water Quality Management Areas (KAR 28.16.70);
- Historic, Architectural, Archeological, and Cultural Sites (Executive Order 11593, 40 CFR 6.302);
- Clean Water Act, Section 404 Permitting Requirements (33 USC 1341, 33 CFR 320-330, 40 CFR 230); and
- Clean Water Act, Section 401 Water Quality Certification (33 USC 1341).

As described in the EE/CA, location specific ARARs identified for consideration, but not applicable to the removal action include:

- Protection of Wetlands (Executive Order 11990, 40 CFR 6.302, Appendix A);

Action-Specific ARARs

Action-specific ARARs include:

- Land Disposal Restrictions (40 CFR 268)
- Procedures for Planning and Implementing Offsite Response Actions (40 CFR 300.440)
- National Emission Standards for Hazardous Air Pollutants (NESHAP) (40 CFR 61);
- National Ambient Air Quality Standards (NAAQS) (Clean Air Act 40 CFR 50);
- Ambient Air Quality Standards and Air Pollution Control Regulations (KAR 28.19);
- Solid Waste Management Regulations (KAR 28.29 Part II); and
- Stormwater Discharge Requirements, National Pollutant Discharge Elimination System (Clean Water Act 40 CFR 122.26).

These ARARs are described in greater detail in the EE/CA. This removal action is intended to address both the physical and chemical concerns at the site. Identified ARARs can be met through proper implementation of site controls during construction.