

SACM (SUPERFUND ACCELERATED CLEANUP
MODEL): A NEW APPROACH TO
SUPERFUND

BY

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SACM (SUPERFUND ACCELERATED CLEANUP
MODEL): A NEW APPROACH TO
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LIST OF ACRONYMS

AOC	Administrative Order on Consent
ARAR	Applicable and Relevant and Appropriate Requirements
ATSDR	Agency for Toxic Substances and Disease Registry
CDC	Center for Disease Control
CERCLA	Comprehensive Emergency Response Compensation and Liability Act
CoPC	Chemicals of Potential Concern
EPA	Environmental Protection Agency
FS	Feasibility Study
NPL	National Priorities List
ODEQ	Oklahoma Department of Environmental Quality
OSDH	Oklahoma State Department of Health
OWRB	Oklahoma Water Resources Board
PRP	Potentially Responsible Party
RCRA	Resource Conservation Recovery Act
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
SACM	Superfund Accelerated Cleanup Model
SARA	Superfund Amendments and Reauthorization Act
UAO	Unilateral Administrative Order
ZCA	Zinc Company of America

CHAPTER 1

INTRODUCTION

Government Regulations

In 1978, two years after the passage of the initial RCRA (Resource Conservation and Recovery Act), the nation began to realize that the generation and disposal of hazardous wastes was not something new. It was then, in a residential area of Niagara Falls, New York, called Love Canal, that foul-smelling chemicals and other substances were found seeping into basements of homes. Rocks struck against the sidewalks would send off colorful sparks, and the drinking water tasted and smelled peculiar. Upon investigation it was determined that these homes and a nearby school had knowingly been built on donated land above an industrial waste site that had long been closed. As other sites became known to pose environmental risks, the nation also became aware that the by-products of rapid economic growth in the 1950's and 1960's must have been disposed of somewhere. The problem of old hazardous waste disposal sites was not confined to an isolated environmental event. More and more sites were being uncovered where wastes had been disposed of years before. (Portney, Dower, Freeman, Russell, & Shapiro, 1990).

At first it was assumed that such remnants of prior disposal practices would fall under the regulatory structures of RCRA, but it later became obvious that RCRA

was inadequate to deal with abandoned sites. For one thing, the abandoned sites were not going to disappear as a result of regulations designed to curb future problems, yet the latter were the main focus of RCRA. For another, it was not always clear who was responsible for having disposed of wastes at an abandoned site. (Portney et al., 1990).

The response by Congress was passage of the Comprehensive Environmental Response, Liability, and Compensation Act of 1980 (or CERCLA, better known as Superfund). There is perhaps no more telling evidence of the supercharged political atmosphere that began Superfund than that it was passed by a lame-duck Congress during the transition from a Democratic to a Republican administration. Most other environmental programs evolved over many years but Superfund emerged much more rapidly. Superfund was a monument to public concern that had set a precedent in environmental law. The 1980 act was amended in 1986 by the Superfund Amendments and Reauthorization Act, or SARA. (Portney et al., 1990).

Superfund did indeed have a lofty purpose, but it has not worked well. The process is too slow, too expensive, and in many cases the site is never effectively cleaned up. In March of 1994, the Superfund Accelerated Cleanup Model regulations were released. These regulations were an attempt to correct the faults in the Superfund process.

One of the first sites to use these new SACM regulation was the National Zinc Company Superfund site in Bartlesville, Oklahoma.

Problem

In this study we will review the current Superfund process and compare it to the new SACM (Superfund Accelerated Cleanup Model) regulations. We want to know if there is overlapping of regulations since RCRA and Superfund are both involved at a proposed Superfund site in Bartlesville, Oklahoma. We are looking for a process that can gain the acceptance and support of the community, reduce excess costs, and clean up the site. We want to know if the SACM regulations will work.

Purpose

The purpose of this study is to determine if there is needless waste of time, resources and money in the Superfund process at a proposed site in Bartlesville, Oklahoma.

Objectives

To accomplish these purposes, the following objectives have to be attained: (a) To identify the basic components of the Superfund Accelerated Cleanup Model as it pertains to the proposed Superfund site at Bartlesville, Oklahoma, (b) to determine the basic components of the State Delegation Pilot Project as it pertains to the proposed Bartlesville

site, (c) to compare the dollar amount spent on two Superfund sites and the projected cost of the Bartlesville site, and (d) to compare the time frame for the two Superfund sites, start to finish, with the Bartlesville site.

Procedure

The Data

The data for this research comes primarily from a review of literature, but also from interviews with persons involved. The literature will be reviewed and interpreted as it pertains to the proposed Superfund site in Bartlesville, Oklahoma.

The Research Methodology

The research presented in this paper will be a qualitative documentary analysis of two Superfund sites as compared to the proposed Superfund site in Bartlesville, Oklahoma.

Specific Treatment of the Data

Purpose

The purpose is to determine if there is needless waste of time, resources and money in the Superfund process. Information from the Compass Industries site and the Tar

Creek site will be reviewed and compared to the data from the Bartlesville site.

The data needed to accomplish the purpose is: (a) Superfund Accelerated Cleanup Model (SACM) regulations, (b) the State Delegation Pilot Project regulations, (c) Feasibility Studies for two Superfund sites, and (d) the Feasibility Study for the Bartlesville, Oklahoma site.

All the literature can be obtained from the United States Environmental Protection Agency and the Oklahoma State Environmental Protection Agency. The literature will be reviewed and interpreted as it pertains to the Bartlesville site.

CHAPTER 2

REVIEW OF THE LITERATURE

The paragraphs that follow briefly describe the Superfund regulations and the Superfund Accelerated Cleanup Model regulations.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

Years ago, people did not understand how certain wastes might affect people's health and the environment. Many wastes were dumped on the ground, in rivers, or left out in the open. As a result, thousands of uncontrolled or abandoned hazardous waste sites were created.

In response to growing concern over health and environmental risks posed by hazardous waste sites, Congress established the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, also known as Superfund) in December 1980. The new law established a program to investigate and correct actual and potential releases of hazardous substances at sites throughout the United States. In 1986, Congress reauthorized the law under the Superfund Amendments and Reauthorization Act (SARA) and increased the size of the fund from \$1.6 billion to \$8.5 billion. The United States EPA administers the Superfund program in cooperation with individual states. (Congress of the United States, 1980).

Superfund is unique in several ways. First, it addresses past environmental degradation, not prevention. Secondly it puts the EPA in a unique position, that of regulator and also of a hazardous waste engineering firm, conducting site cleanups, subject to their own regulations.

Superfund's cleanup process is designed to control short and long term threats to public health and the environment from uncontrolled releases of hazardous substances. The program responds to hazardous waste emergencies wherever they occur; but only sites listed on the National Priorities List (NPL) are eligible for long-term cleanup under Superfund. (Portney et al., 1990).

The major steps in the cleanup process as shown in Figures 2 and 3 are:

1. The site discovery and investigation are usually by State officials.

2. An EPA evaluation of the possible hazards posed by site contaminants and, if warranted, the addition of the site to the National Priority List (NPL). Hazardous materials that pose imminent threats may be removed anytime during the cleanup process.

3. Negotiations to encourage potentially responsible parties to pay for cleanup are held during each of the following steps.

4. Detailed studies are done to assess what contaminants are present, how serious the contamination is, and what the potential risks to the community are. Studies

FIGURE 1

THE CURRENT SUPERFUND PROCESS

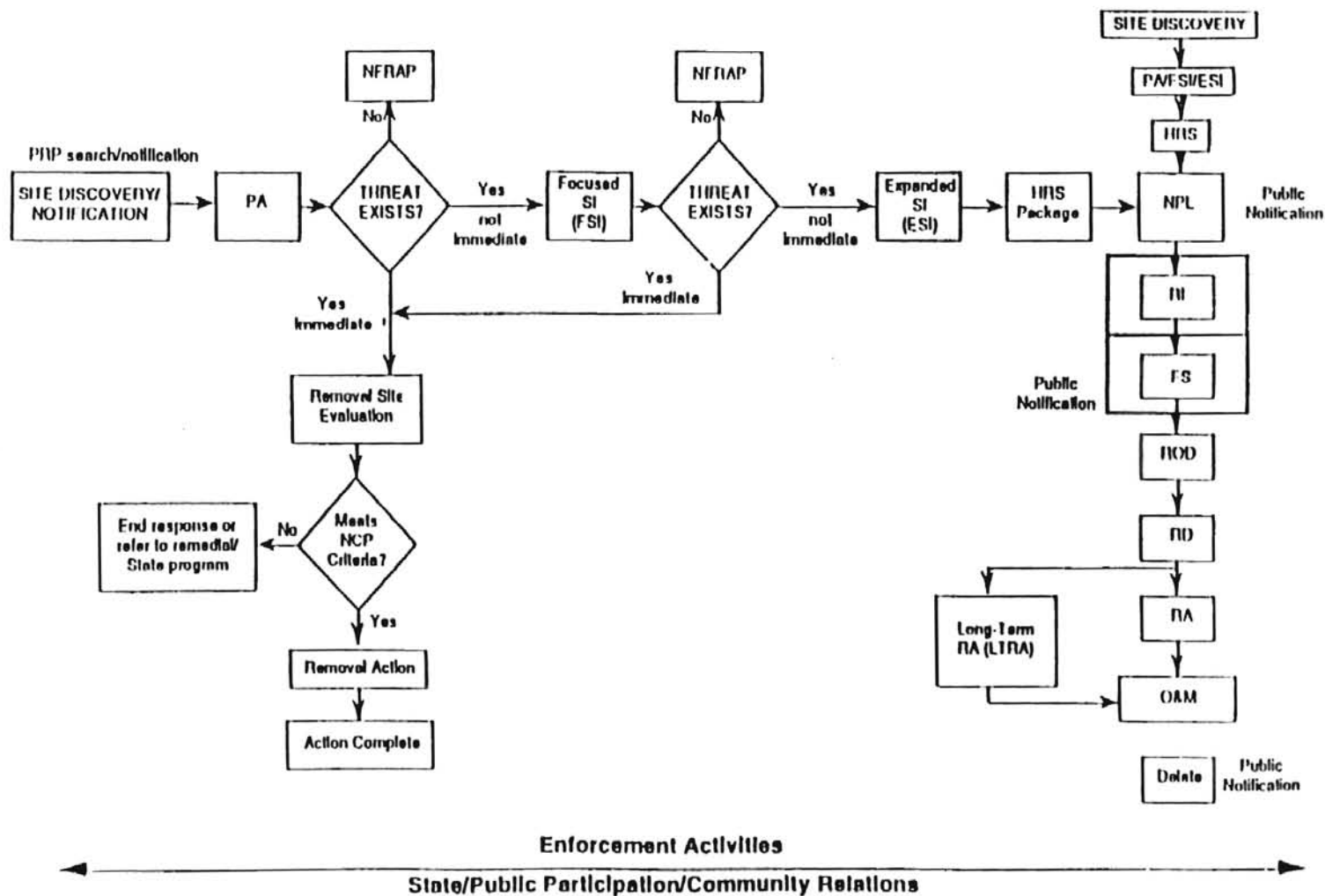


FIGURE 2
SACM MATRIX

NCP Terminology	Early Actions			Long Term Actions	
	Emergencies	Time Critical	Non-Time Critical		Remedial
Funding Source and Authority	Removal	Removal	Removal	Remedial	Remedial
Types of Actions Generally Performed Under Each Authority	Classic Emergencies	Site Access Direct Threats Water Supply Visible Soil Contamination Remove Surface Structure and Debris	Source Control (soil and waste) - Treatment (Incineration and other technologies) - Containment Capping DNAPL Source Extract GW Plume Containment	Post Removal Site Control (By P/FP or State)	Restore - Groundwater - Surfacewater Sediments Wetlands/Estuaries Large Mining sites Actions With Extended O&M Property Acquisition Permanent Relocation Institutional Controls
Enforcement Vehicles Available	Administrative Order on Consent Consent Decree Unilateral Order				
State Role	Notification, Consultation and Optional Participation			Notification, Consultation and Participation	
Cost Share	Not Required		Optional	Required	
Contractor Vehicle	EPCs FII/IAT		FII/IAT	EPCs and ARCs and COE FIT	
Requirements - AHA/NS	Required To Extent Practicable (or get waiver)			Required (or get waiver)	
Community Relations	Extent Varies Based on Urgency and Duration			Required	
Public Comment	No Requirement	Comment After Removal Begins	Required on EE/CA	Required on RIVFS	
Baseline Risk Assessment	Risk Documented in Action Memo		Informal Under EPA Policy	Generally Required	
Preference for Treatment	As Time Allows (but not required)		Preferred Under EPA Policy	Required	
Documentation	Action Memo Emergency Waiver Administrative Record - (After the Fact)	Action Memo Emergency Waiver Consistency Waiver Administrative Record	Consistency Waiver	Quick ROD HHS Scoring NPL Listing RIVFS CA/SSC Administrative Record	

6

are done to determine which cleanup methods may be the most effective. This process can take 18 to 30 months and the average cost is about \$1 million. The EPA conducts a two-part investigation of all the NPL sites. The first part, a remedial investigation, identifies contamination and site-related threats to the environment and public health. The second part of the investigation, a feasibility study, evaluates various approaches to addressing site conditions. The EPA attempts to identify parties who may be legally responsible for site contamination. Once identified, these parties are asked to participate in the investigation and remedial process. If they do not agree to participate, the EPA may seek their participation through legal means.

5. After a public comment period on the EPA's proposed cleanup plan, the EPA chooses the most appropriate alternative as a final remedy for the site.

6. The EPA then designs a site-specific cleanup that implements its plan. This takes about 12 to 18 months and costs an average of \$1 million.

7. Following the selection of a final remedy, the EPA designs and implements the chosen remedy. The EPA negotiates with the parties responsible for the contamination of the site to design, implement and pay for the final remedy. If an agreement cannot be reached, the EPA proceeds with the final remedy. The EPA may, through legal action, later recover costs from the responsible parties. (U.S. Congress, 1980: U.S. Congress, 1986).

Since the passage of Superfund, the pace of the remedial actions under the act has been slower than expected. Of the 30,000 sites requiring preliminary investigation for ranking, about 90 percent have been investigated. However, the EPA has stated that of the sites requiring cleanup, only 41 have been completely cleaned up, as illustrated in Figures 3 and 4. (Portney et al., (1990).

Superfund Accelerated Cleanup Model (SACM)

There have been many criticism of the Superfund process. The slowness of the process is a major fault. Another criticism of the process is that too much money is spent on litigation. The Superfund act imposes what is known as strict, joint and several liability on responsible parties. Simply put, this means that the EPA can hold one party whose wastes were disposed of at a particular site responsible for all the costs associated with cleaning up the site, regardless of the share of total waste disposed of. (Portney et al., (1990).

The present Superfund program operates within a complex pattern that was designed eleven years ago to accommodate a new and complicated law. The public does not now, or in the past, fully understand the present process, or grasp the full scope of the Superfund work. The public wants faster cleanup, and believes that enough money has been given to Superfund to get the job done. The outside perception of

- FIGURE 3
SUPERFUND TIME FRAME

<u>PROCESS</u>	<u>TIME</u>
EPA AWARE OF SITUATION	AVERAGE 43 MONTHS
PRELIMINARY ASSESSMENT	
NATIONAL LISTING	20 MONTHS
REMEDIAL INVESTIGATION AND FEASIBILITY STUDY	38 MONTHS
RECORD OF DECISION	18 MONTHS
REMEDIAL DESIGN	25 MONTHS
REMEDIAL ACTION	?
WORK COMPLETE	
DELISTED	12 YEARS

FIGURE 4

NUMBER OF SITES AT MAJOR STAGES OF THE SUPERFUND PROCESS

STATUS OF SITES	NUMBER OF SITES
Sites in the EPA information system	30,844
Preliminary assessments completed	28,101
Site inspections completed	9,902
Sites with no further action planned`	12,416
National Priority List	
Final	890
Proposed	273
Total	1,163
Removal Actions	
NPL	274
Non NPL	1,073
Total	1,347
Remedial investigation or feasibility study, cumulative starts	845
Remedial design, cumulative starts	300
Remedial action, cumulative starts	204
Site work completed	41
Delisted from NPL	26

Source: EPA " Superfund Progress Report" (March 1989)

Superfund is poor. It is too slow, provides scanty environmental improvement and there is not enough money in cleanup. The internal Superfund process is inefficient, redundant, poky and allows too much 'cool down' time. The bottom line is that there will not be a lowering of expectations or a rise in resources. These factors have crystallized into a new focus on attempting to radically speed up and streamline the program within existing statutory and regulatory constraints.

The new focus is (a) simple and flexible - to allow the fastest possible, worst case first, risk reduction, (b) free of unnecessary administrative constraints that divide and diffuse the totality of reduced risk reported at remedial and removal sites, (c) realistically achievable in that cleanup commitments are made and delivered on time, and (d) focused on rapid protection of people and the environment, rather than the unattainable goal of returning all groundwater to pristine condition. (U.S. EPA, 1991).

For Superfund to work better it needs to quickly reduce acute risks and restore the environment over a long term period. The program needs to be streamlined by eliminating delays and reworking, expanding the "worst first" cases, and funneling money into cleanup. The Superfund Accelerated Cleanup Model has attempted to incorporate these changes.

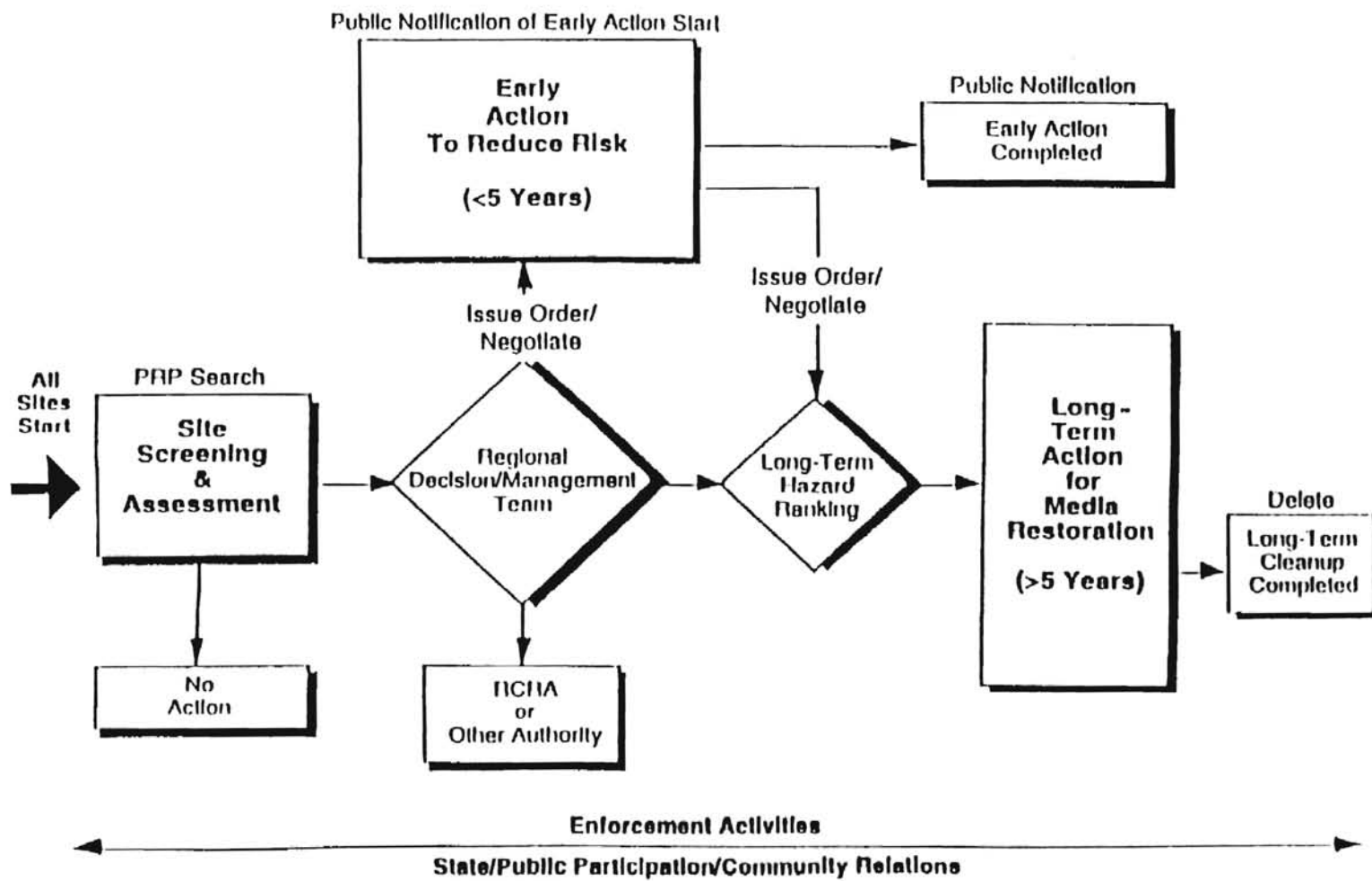
The current system for Superfund cleanups has led to the evolution of two discrete programs - remedial and removal. The remedial program tends to address long term

cleanup sites on the National Priorities List (NPL). Separate and apart are the activities of the removal program. These sites enter the system through a different "door", usually the States seeking help at a specific release. Under SACM all sites at which Superfund takes any kind of cleanup action are Superfund sites. Rather than viewing removal and remedial actions as parts of separate programs, they will be viewed as separate legal authorities with different, but complimentary, application at Superfund sites. See Figure 5. (U.S. EPA, 1992).

Rather than entering the program through one or two doors marked "remedial" or "removal", all sites will enter through one door marked "Superfund". All site assessment will take place in one program, combining, as appropriate, elements of the present removal assessments; Preliminary Assessments/Site Investigations (PA/SIs), Remedial Investigations (RIs), and risk assessments. At any point during or after the assessment process, a Regional Decision Team may consider short term activities to address threats to the health and safety of the existing population. These actions include cleanup activities that will generally take no more than three or, at the most, five years. Based on the program's demonstrated ability to identify and address the immediate risks to people and the environment, three to five years was determined to be a reasonable time frame. (U.S. EPA, 1992b).

FIGURE 5

THE NEW STREAMLINED PROCESS



These activities will be published on a Quarterly basis in the Federal Register (for public information purposes only, not as rulemaking) on an Early Action List. Though these actions are "short term" and quickly implemented, in some cases, they may eliminate the majority of human risk from Superfund sites. Enforcement activities for early actions would commence immediate PRP search and notification, expedite orders and negotiations, and the opportunity for consensual cleanup. Because the vast majority of risk reduction will occur in this part of the program, most of the EPA's public participation and information activities will be focused here. (U.S. EPA, 1991).

The Regional Decision Team can also determine if and when long term remediation is appropriate. The sites would then be placed on a Long Term Action List and cleaned up over many years. Regional Decision Teams could also decide that no Federal action was appropriate or the site should be deferred to RCRA. (U.S. EPA, 1991).

State Pilot Project

Memorandum of Understanding of the National Zinc Company Superfund Site Bartlesville, Oklahoma

Background

The National Zinc company site in Bartlesville was

proposed for addition to the National Priorities List on May 10, 1993. The City of Bartlesville and others from the community have expressed concern that placement of the site on the NPL will negatively impact the local community, especially the economy. In September 1993, Federal elected officials asked EPA to consider allowing investigation and site cleanup to proceed under State oversight of the potentially responsible parties without final NPL designation. The EPA agreed to not make a final determination to list the Site on the NPL as long as the pilot project proceeds in a timely manner and achieves CERCLA quality results. This agreement is known as the State Pilot Project, Memorandum of Understanding (MOU) between the EPA and the ODEQ. The MOU will govern the relationship between the EPA and the ODEQ with respect to the state PRP pilot project and the remedial action at the National Zinc Company Superfund site.

The purposes of the MOU are (a) to outline a mechanism to ensure prompt CERCLA quality cleanup of the site, (b) to define the level of EPA involvement necessary to ensure adequate remediation and (c) to ensure that no further response actions will be necessary.

Provisions

The ODEQ shall take over the responsibilities of the Administrative Record and ensure that it is made available to the public.

The ODEQ shall ensure that work at the site shall follow a Health and Safety plan which conforms to OSHA and EPA regulations.
RI/FS/RD

The ODEQ shall make an oral presentation to the EPA regarding the RI/FS/RD within 30 days of the start of the state PRP pilot project. The purpose of such oral presentations is to facilitate a mutual exchange of information. This presentation should describe the procedures to be used by the ODEQ to insure that all RE/FS/RD work shall be conducted in accordance with EPA, CERCLA and NCP guidelines.

The ODEQ shall submit to the EPA a draft RI/FS report for EPA review. The ODEQ and the PRP's shall perform the ecological risk assessment for incorporation into the RI/FS.

Proposed Plan

The ODEQ shall submit a draft Proposed Plan. The plan will meet EPA, CERCLA, and NCP requirements. There is a time limit here.

Final Remedy Selection, Record of Decision and Administrative Record File

Within 30 days after the closing of the public comment period regarding the Proposed Plan, the ODEQ shall submit to EPA a draft final ROD, a draft final Responsiveness Summary, the draft final Administrative Record and Index. The EPA

will submit written comments to the ODEQ within 30 days of its receipt. Within 30 days of the receipt of comments from the EPA, the ODEQ shall submit to the EPA the final ROD, the final Responsiveness Summary, the final Administrative Record and Index. If the EPA does not agree that the ODEQ ROD meets the requirements of CERCLA and the NCP, the EPA may proceed with the process toward inclusion of the Site on the NPL.

Remedial Design

The Remedial Design for this project shall commence during the RI/FS phase and be completed after the ODEQ remedy is selected. Within 30 days after the ODEQ issues the final RD, the ODEQ shall make an oral presentation to the EPA describing the procedures to be used by the ODEQ to complete the RD. The ODEQ final submission of the RD should include a complete set of plans and specifications that fulfill all the requirements of the ODEQ ROD.

Remedial Action

The ODEQ shall be responsible for implementation of the Remedial Action in accordance with the Schedule. An oral presentation shall be made by the ODEQ regarding the RA, prior to the beginning of the RA, that describes procedures to be used to ensure that all work will be conducted according to EPA, CERCLA and NCP guidelines.

The ODEQ shall ensure that all Local, State and Federal permits are obtained and that all work is in compliance with Federal laws.

CHAPTER 3

METHODOLOGY

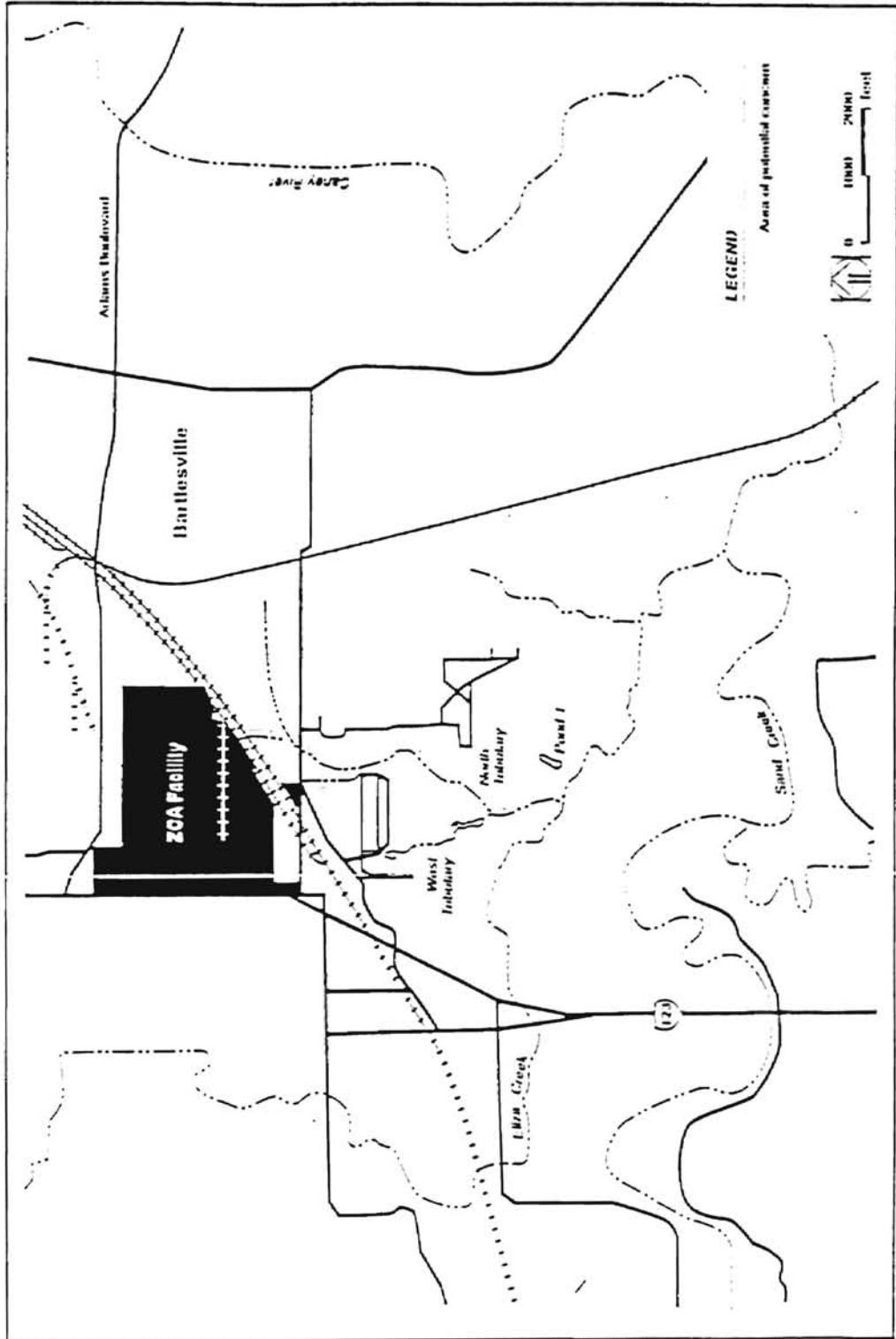
Before relating how the implementation of the regulations discussed above affects the proposed Superfund site in Bartlesville, Oklahoma, we need to be knowledgeable about the site. A history of the site is briefly discussed in the following paragraphs.

Site Background

In reviewing the Superfund process in Bartlesville, Oklahoma, Compass Industries, Oklahoma, and Tar Creek, Oklahoma, we must look at how the Superfund regulations apply to the site in Bartlesville, Oklahoma. The remedial investigation, feasibility study and remedial design of the Bartlesville site were done by PTI Environmental Services. In the remedial investigation PTI states that the site in Bartlesville, as defined by the EPA, consists of an area within a three mile radius of the Zinc Corporation of America (ZCA) facility. (See Map 1.) The ZCA facility lies immediately west of the City of Bartlesville and is bounded to the west, northwest, and south by industrial and commercial properties. Residential properties border the ZCA facility to the north, northeast, east, and southeast. The primary commercial district of the area is in the center of Bartlesville northeast of the ZCA facility. The oil industry remains a major force in the local economy although

MAP 1

PRELIMINARY LARGE AREA OF POTENTIAL CONCERN FOR SEDIMENT



it has declined in recent years. The major agricultural enterprise in the area is cattle ranching. The EPA estimated that in 1993 approximately 7,235 people lived within one mile of the ZCA facility, and approximately 26,972 people lived within four miles of the facility.

In 1907, three horizontal retort zinc smelters commenced operation at the location of the present ZCA facility. Two of the smelters appear to have ceased operations in the 1920's. In 1976, the remaining horizontal retort zinc smelter was converted to an electrolytic zinc refinery, which is not currently operating. Air emissions from the smelter were essentially uncontrolled until 1976, when the old retort furnaces were replaced by an electrolytic smelting process. The pre 1976 smelting operations are the source of widespread off-site contamination. (PTI Environmental Services, 1994).

In addition to the air-borne particles, the current railroad grade of the Atchison Topeka and Santa Fe contains retort residue and clinker buried at depth. This suggests that the railroad may have used solid waste as ballast, a common practice in the United States. Solid waste materials may also be present at the sites of historical railroad grades that have been abandoned as development has occurred in Bartlesville. (PTI, 1994).

Arsenic, cadmium, and lead are considered to be CoPC based on their potential for effects on human health. Some, or all, of these metals have been found in elevated

concentrations in soil, surface water, and sediments at the Site, and in shallow groundwater at the ZCA facility. (PTI, 1994).

Status of Superfund Activities

Superfund is addressing the contamination outside the fenced boundary of the smelter facility. The Superfund removal program is being used to address short term cleanup and the Superfund remedial program is being used to address long term cleanup. The RCRA program is addressing contamination at the currently operating facility through corrective action signed in August 1993. A corrective action by RCRA is essentially equivalent to a Superfund cleanup.

In the spring of 1991 the EPA conducted Phase 1 of blood lead studies. Phase 2 and 3 and a follow up were conducted by July of 1993.

An Emergency Response Removal Action was begun by EPA in August, 1992 and continued through November, 1992. The focus of the action was to remove or cap soils from 25 "high access" areas (e.g. day care centers, school playgrounds, and city parks). Figure 6 lists and Map 2 shows the places where children would potentially be exposed to contaminated soils. (PTI, 1994).

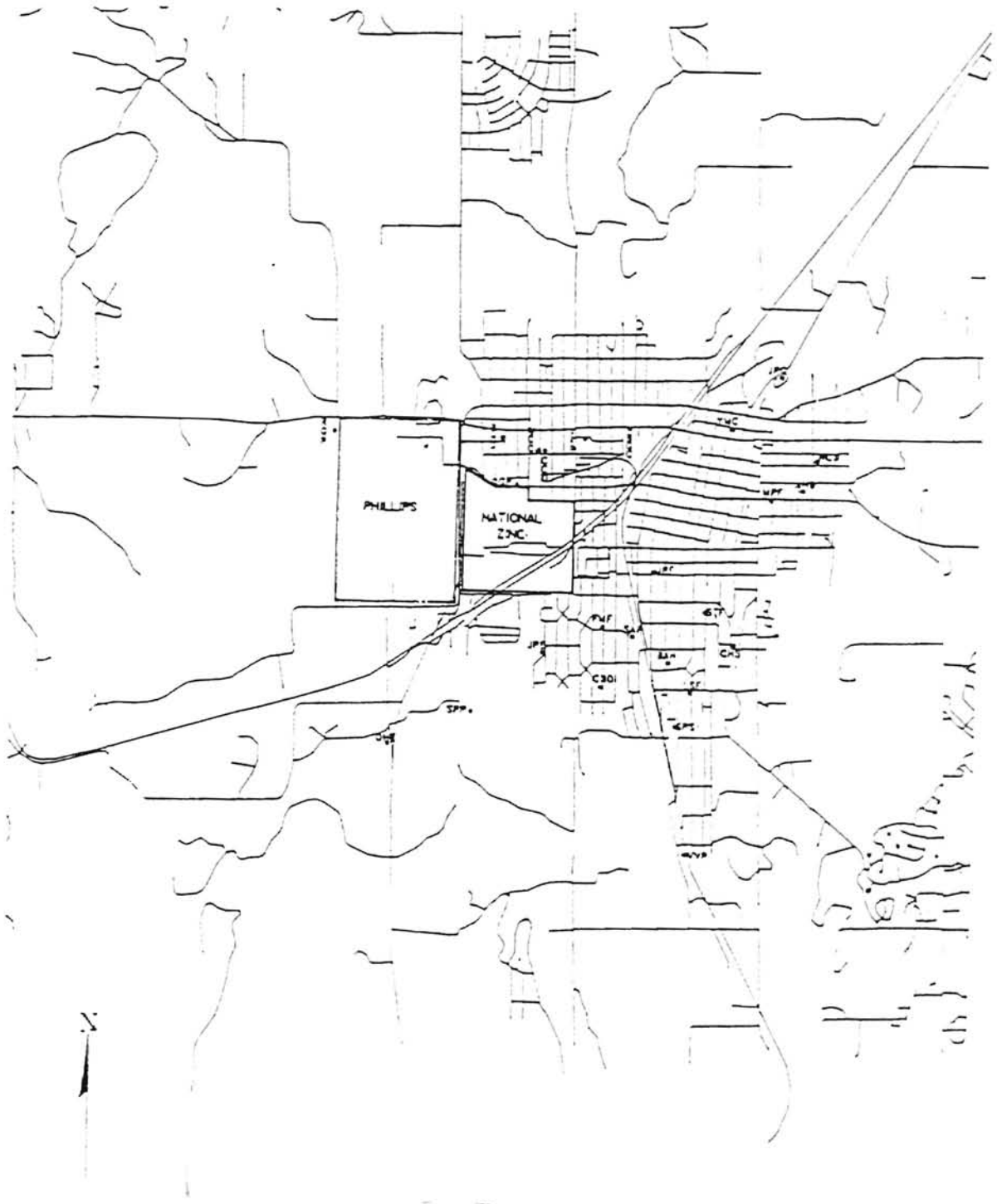
In February, 1993 the EPA issued a Unilateral Administrative Order (UAO) to potentially responsible parties to do more removal work on residential yards where

FIGURE 6

High Access Areas Phase I Removal

BHD Bartlesville Headstart
WCC Westside Community Center
JPE Jane Phillips Elementary
SPS Southview Pre-School
OHE Osage Hills Elementary
FMF Francis McGuire Family Care
CDD Colorland Daycare Center
CDD Concern Child Learning Center
AHD Almost Home Daycare
STF Sherry Trammel Family Care
JPF Judy Park Family Care
MPF Mary Parmeter Family Care
LSF Liz Shidler Family Care
WCD Wee Care Extended Care
CHS College High School
BAH Bartlesville Alternative H. S.
SPP Sunset Place Park
DGP Douglas Park
BGC Boys and Girls Club
YMC YMCA
FFP Frontier Park
JMP John Macanaw Park
RGP Rodeo Grounds
VVP Valley View Park
SAP Santa Fe Park
JPC Johnstone Park

MAP 2
HIGH ACCESS AREAS
PHASE I REMOVAL



soils had concentrations of either lead or cadmium exceeding 1,500 or 90 mg/kg respectively. This continued until August of 1995. The plan was for the removal action to be phased out when the remedial action began. Map 4 illustrates the lead and cadmium concentrations. (Oklahoma Department of Environmental Quality {ODEQ}, 1994).

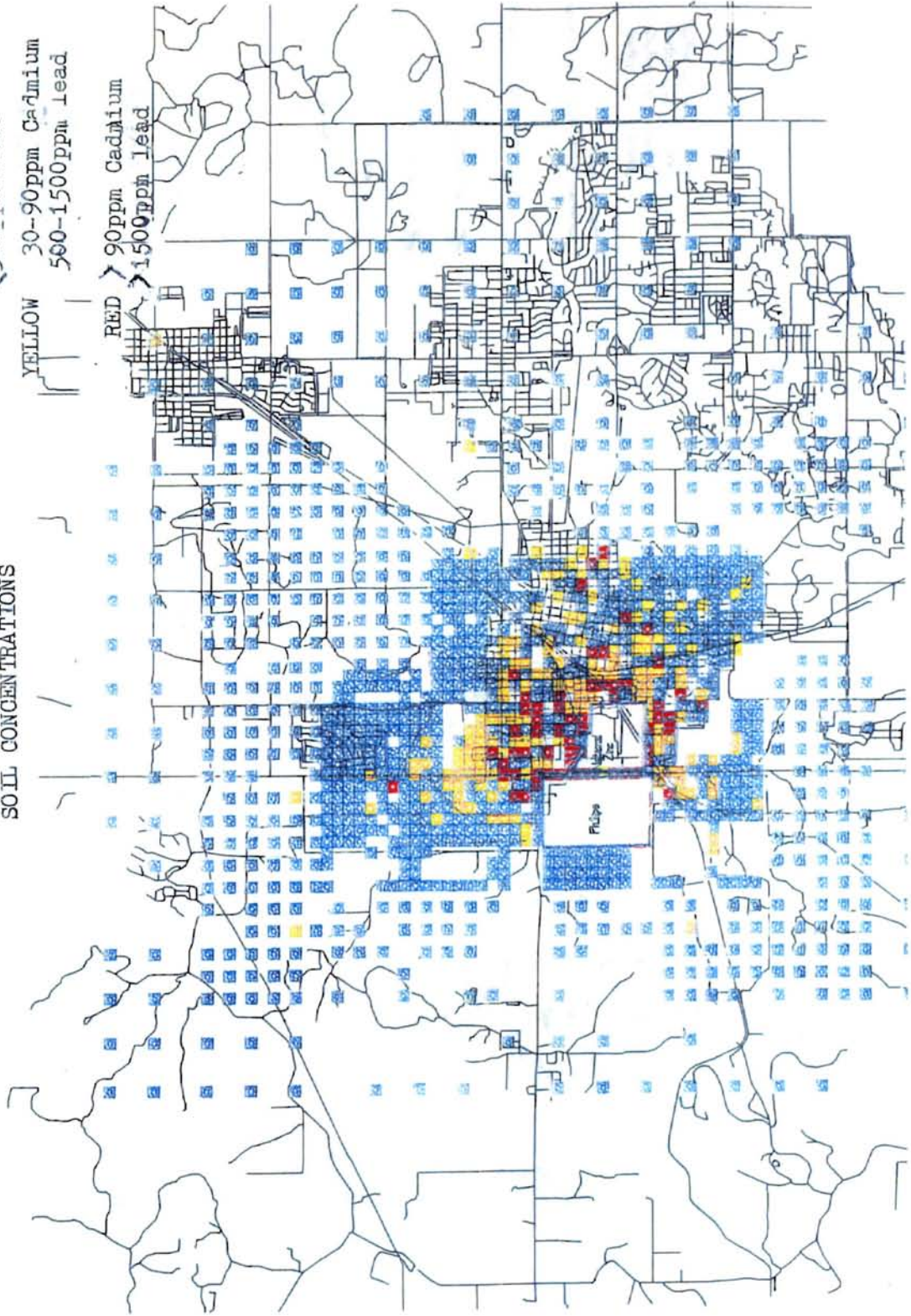
The data from the removal program investigations comprised approximately 90% of the data needed for the Remedial Investigation/Feasibility Study. The Remedial Design was performed concurrently with the RI/FS. (ODEQ, 1994).

In order to meet schedule requirements of the SACM approach, the Site has been divided into two operable units. Operable Unit 1 includes the areas subject to human-health based remediation goals. Operable Unit 2 consists of areas subject to ecological risk based remediation goals (e.g. agricultural, grasslands, forests, riparian areas, and streams). Maps 3 and 4 show these areas in detail. (ODEQ, 1994).

MAP 4

SOIL CONCENTRATIONS

GREEN < 30ppm Cadmium
< 500ppm Lead
YELLOW 30-90ppm Cadmium
500-1500ppm Lead
RED > 90ppm Cadmium
> 1500ppm Lead



MAP 5

LAND USE AND HABITAT CATEGORIES

LEGEND

Operable Unit No. 1
Land Use Categories

-  Occupational
-  Recreational/Public
-  Residential
-  Agricultural

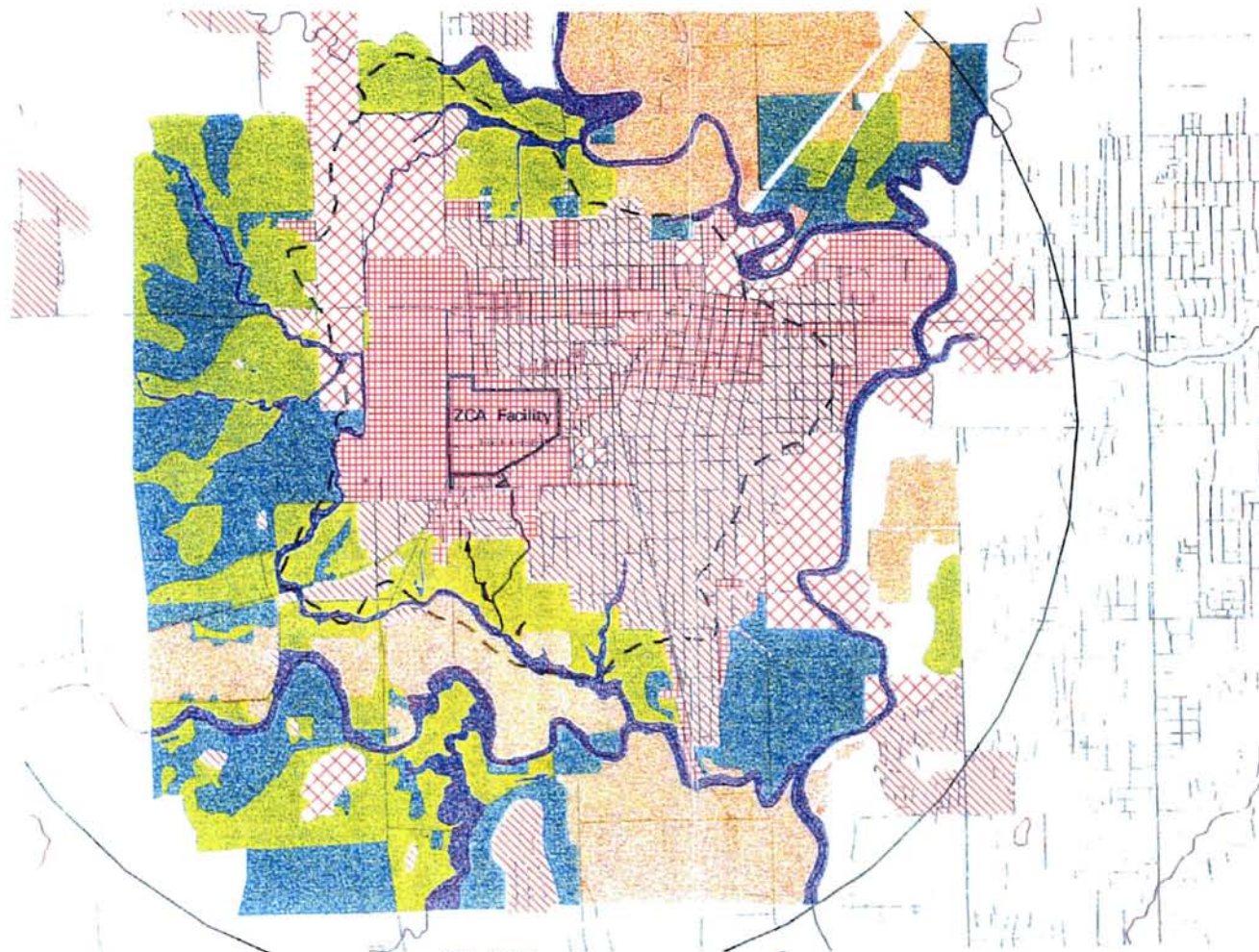
Operable Unit No. 2
Habitat Categories

-  Grassland
-  Riparian
-  Woodland

— CoPC concentration contour*

*Includes areas with soil concentrations greater than:

Arsenic	15 mg/kg
Cadmium	20 mg/kg
Lead	250 mg/kg
Zinc	2000 mg/kg



CHAPTER 4

FINDINGS

Sequence of Events

In the spring of 1991 the site was identified and blood lead tests were done. Emergency removal action was done by the EPA in August of 1992 while blood lead level tests continued. The site was proposed for NPL listing in May of 1993 while removal actions continued. The city officials of Bartlesville met with the EPA and explained their reasoning for not wanting Bartlesville placed on the NPL. At this point they are not listed, although no final decision has been made. The city officials also asked to have Bartlesville classified as a state pilot project and to be able to employ local workers to do the removal action rather than EPA contractors, which would return an economic benefit to the community of approximately seven fold. All of these requests were granted. In March of 1994 the EPA issued a unilateral order rather than a consent agreement at the request of the PRPs. The PRPs felt it was more beneficial to their legal stance to have a unilateral order rather than just a consent agreement. The PRPs agreed to do removal action for 2 years or until the remedial action, which has different goals, picked up. The PRPs negotiated and signed a second consent agreement and the final order for cleanup on August 7, 1995. (ODEQ, 1994).

Superfund Accelerated Cleanup Model

In reviewing the CERCLA (Superfund), RCRA, SACM, and the State Pilot Project regulations I did not find any overlapping. The Superfund, SACM and State Pilot Project regulations dealt with the area outside the fence of the National Zinc Company and the RCRA regulations dealt with the area inside the fence of the operating National Zinc Company.

The Superfund regulations were revised by SACM. This revision significantly reduced the time and the money spent by the EPA on testing. During the removal action the EPA did three phases of removal. Over 8,000 soil samples were taken at that time. Air monitoring and water sampling were also done. The results of these tests were used for the removal and were given to the EPA contractors who did the Human Health Risk Assessment. Under the pilot project, the DEQ had a consent agreement with the PRPs to do the RI/FS. The DEQ found that the sampling the EPA had done would constitute approximately 90% of the sampling necessary to do the RI/FS. All the test results were given to the contractors hired by the PRPs to do the RI/FS. The contractors went ahead and did some further sampling, but the tests were not duplications of what had already been done. The contractors attempted to take dust samples inside houses and correlate it to soil levels outside. They also did feeding samples where contaminated soil was fed to animals to see what the uptake was. Speciation was also

done. Speciation consists of analysis of soil samples from Bartlesville to determine where the lead came from, since there were a number of potential sources. (PTI, 1994).

Prior to SACM there were many redundancies in the Superfund program. Hazardous waste sites often received numerous similar assessments before any kind of cleanup began. Sites were evaluated by the removal program, the site assessment program (PAs (Preliminary Assessments), SIs (Site Investigations), Expanded SIs, and Hazard Ranking System (HRS) scoring), the remedial program (RIs and baseline risk assessments), and even in some cases by the RCRA program. ATSDR, State, local, and private party assessments might also have occurred. Many, if not all of these assessments started from scratch, they did not necessarily consider the information and data generated by the studies that preceded them. (U.S. EPA, 1992). The Bartlesville site, which was one of the first to use the SACM guidelines, did not have duplication of regulations or tests in any form. The new process seemed to be very effective and successful.

SACM regulations help to resolve some of the conflict resolution at Superfund sites. Prior to SACM, the EPA did the remedial investigation, the cleanup and then decided who paid and how much. Years of litigation were not uncommon as well as millions of dollars spent on attorneys and the site never being effectively cleaned up. In many cases, as much as ninety percent of the money spent on the Superfund site

went for litigation between the EPA and the PRPs. To date, at the Operational Unit I of proposed Superfund site in Bartlesville, there has been no litigation.

NPL Listing

The determination of whether time, resources and money were wasted at the proposed site is actually two issues. The first would have to be the necessity of situation. SACM purports to build public confidence by using a "worst first" approach. Was Bartlesville one of the worst? SACM regulations were released in March of 1994, in May of 94 Bartlesville was proposed for the NPL list. Bartlesville was the first site to use the SACM regulations. Was it all really necessary? Monte Elder with the Oklahoma State Department of Environmental Quality stated that if the time was one to two years later things would not have gone so quickly, but that they would have happened. We would have had the normal Superfund process that would have extended the time into the next century, and the way it is now it will be done by the next century. The average time between the site identification, placement on the NPL and the RI/FS is ten years according to Elder. Under the normal Superfund process the RI/FS would have come out in the year 2000. All the activity that has occurred, would have occurred, but would have been strung out forever, and the expense would have continued to climb as well if, for no other reason than inflation.

Comparison of Sites

Tar Creek

To accurately compare the old process with the new process two Oklahoma Superfund sites within a 75 mile radius were selected, and the time frames compared with the Bartlesville site. The two sites are Tar Creek in Ottawa County and Compass Industries in Tulsa County.

Tar Creek's contamination problem was identified in early 1980, and in 1981 the site was proposed for NPL listing. The site was not officially listed until September of 1983, however. The RI/FS was completed in December of 1983, followed by the ROD (Record of Decision) in June of 1984. Construction was completed in December of 1986 but groundwater was monitored for 2 more years. In 1991 groundwater monitoring began again and, at this point is ongoing. The original cleanup did not take into account pollution caused by the mine tailings, and the whole process is about to begin again with blood lead level testing occurring at this time in Ottawa County and soil removal to begin soon. The cost for this site, at completion in 1986 was 5.5 million dollars with an additional 7,200 dollars being expended on operation and maintenance. The time that elapsed from NPL proposal to completion was 5 years. The situation at this site was urgent since the contaminated groundwater was the source of drinking water for much of Ottawa county. However, the current lead contamination from

mine tailing will entail more Superfund action for years to come. (U.S. EPA, 1994: U.S. EPA, 1994b).

Compass Industries

Compass Industries was proposed for NPL listing in September of 1983, but not listed until September of 1984. The RI/FS was completed in July, 1987 and the ROD was issued September 27, 1987. The EPA issued a Unilateral Agreement to the PRPs and removal was complete in 1988. Remedial design was completed in April of 1989 and the remedial action completed in November of 1990. Repairs to the soil cap were needed in 1991 and the operation and maintenance, monitoring of the clay cap, and groundwater treatment began. The cost at the time of completion was 12 million dollars. Compass Industries was proposed for NPL listing in 1983 and the work was completed in 1990 or 1991 if you take into account repairs, a period of 8 years. (U.S. EPA, 1990: Mathes, 1987).

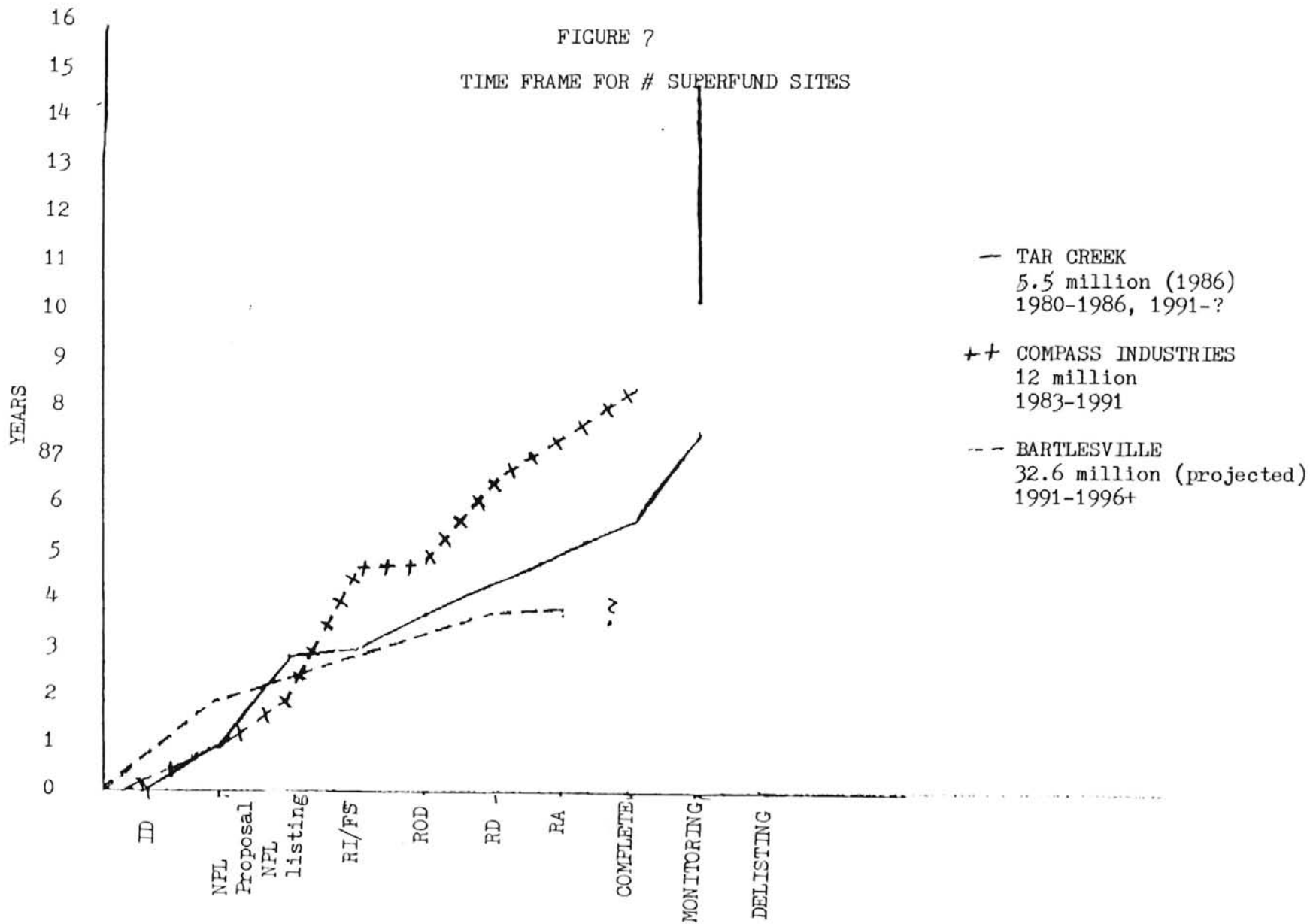
National Zinc Company

The EPA investigated alleged contamination at the Bartlesville site in the spring of 1991, and in November of 1991 OSDH (Oklahoma State Department of Health) began Phase I blood lead level tests. Emergency removal action was done by the EPA in August of 1992 to remove or cap soils in 25 high access areas, while phase II and III of biomedical investigations were being conducted. May 10, 1993, the

Bartlesville site was proposed for NPL listing, but no decision has been made. Also in 1993 removal actions continued and expanded to include residential soils from yards of houses where children's blood lead levels were elevated. The PRPs were issued a unilateral order by the EPA in 1994, while removal work in residential yards where contaminants were high continued. Also in 1994 the EPA gave oversight of remedial activities to the DEQ through the State Delegation Pilot Project. (U.S. EPA, 1994b). Removal action continued during 1995 until August 7 when the remedial action took over. The site was proposed for NPL listing in 1993. Removal work was completed August 7, 1995 and remedial action began August 8, 1995. Completion is estimated to be several years. The time from proposed NPL listing until completion could be as short as 4 years. As of September, 1993, 4.2 million had been spent on cleanup. The actual cost of the proposed Superfund site remains to be seen, but the projected cost is approximately \$32.6 million. Figure 7 illustrates a comparison of the three sites.

Necessity

Another side to the question of wasted resources, time and money has to be the side that asks "Was it really necessary? Was Bartlesville really one of the worst polluted places?" Certainly it is not one of the worst in terms of acute exposure or death causing. However it is one of only a very few sites where there is a demonstrated, not



potential, not modeled, not maybe, health effect associated with it. There are definitely elevated blood lead levels in children that are definitely associated with lead in the soil that came from the smelter. Other people who have reviewed the work from outside agree with that conclusion. Most Superfund sites have no actual health data connected with them at all. If you look at it from that standpoint, it certainly would be one of the worst sites because we know, and have the demonstrated health effects. One of the points of controversy is that this is not a contamination that kills people. Some people think that if it is not a deadly problem, then it is not a problem. Bartlesville is a chronic long term problem rather than an acute problem. (Monte Elder, Oklahoma State Department of Environmental Quality, personal communication, April 21, 1995).

Conclusion

The new SACM regulations seem to be working well at the Bartlesville site. There appeared to be no duplication of regulations. Testing at each site constituted a large portion of the expenditures prior to SACM. Testing will be even more important now. Thoroughness will be more crucial since the tests are only done once. The Bartlesville site did not have duplication of tests and all parts of the process seemed to work very smoothly. The projected time for completion at the Bartlesville site is 4-5 years which is a record for any (non emergency) site that the EPA has

been associated with. This fact is especially noteworthy when you consider the site is not contaminated with a substance that kills people.

The State Pilot Project allowed the contractors hired by the PRPs to do the removal action to employ local workers. Local workers were given 40 hours training before they began working. Because these people had never done anything like this before the removal action got off to a slower start than it would have had the EPA's contract workers been employed. The economic benefit to the community is estimated to be about seven fold, a 1:7 ratio on payroll.

The Bartlesville cleanup is viewed by government officials as a model for the future. For the first time, the United States Environmental Protection Agency agreed to step out of the way and let the state agency, in this case the Oklahoma Department of Environmental Quality, oversee the project.

At the time the lead problem was disclosed in 1990, the city was slated for listing on the National Priorities List, with a cleanup estimated to be \$100 million. The cleanup, under SACM, is pegged at a cost of at least \$32.6 million. A cleanup of this magnitude, if supervised by the EPA, and would take at least 10 years to get to the point where it is now in Bartlesville. (Ventress, David, 1995).

The real test of the SACM regulations remain to be seen. Time will be a crucial factor, but for the site in Bartlesville, Oklahoma SACM did everything it proposed to

do: reduced the risk rapidly, allocated more money to
cleanup, not study/support, and was time and cost efficient.

BIBLIOGRAPHY

- Congress of the United States of America (1980). Comprehensive Environmental Response Compensation and Liability Act of 1980. Washington D.C.: United States Environmental Protection Agency, Office of Emergency and Remedial Response, U.S. Government Printing Office.
- Congress of the United States of America (1986). Superfund Amendments and Reauthorization Act of 1986. Washington D.C.: United States Environmental Protection Agency, Office of Emergency and Remedial Response, U.S. Government Printing Office.
- Congress of the United States of America (October, 1992). SACM Notebook, Concept Paper Superfund Accelerated Cleanup Model (SACM) Washington D.C.: U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, U.S. Government Printing Office.
- Mathes, John and Associates, Incorporated (July, 1987). Feasibility Study Report for the Compass Industries Landfill Superfund Site. Oklahoma City, Oklahoma: Oklahoma State Department of Health.
- Mathes, John and Associates, Incorporated (August, 1987). Endangerment Assessment Compass Industries Landfill Superfund Site. Oklahoma City, Oklahoma: Oklahoma State Department of Health.
- Oklahoma Department of Environmental Quality, (September, 1994). Proposed Plan for Remedial Action, National Zinc Site, Bartlesville, Oklahoma: Oklahoma Department of Environmental Quality.
- Portney, P.R., Dower, R.C., Freeman, A.M. III, Russell, C.S. and Shapiro, M. (1990). Public policies for environmental protection. Washington D.C.: Resources for the Future.
- PTI Environmental Services (1994). National Zinc Site: Remedial Investigation, Feasibility Study. Washington D.C.: United States Environmental Protection Agency, Office of Emergency and Remedial Response.
- U.S. Environmental Protection Agency (July, 1991). "Superfund Accelerated Cleanup Model (SACM)" Publication 2203.1-10FS Washington D.C.: U.S. Government Printing Office.

- U.S. Environmental Protection Agency, Office of Emergency and Remedial Response (November, 1992). "The Superfund Accelerated Cleanup Model (SACM)", Publication 9203.1-021 Washington D.C.: U.S. Government Printing Office.
- U.S. Environmental Protection Agency, Office of Emergency and Remedial Response (December, 1992). "Early Action and Long-Term Action Under SACM - Interim Guidance" Washington D.C.: United States Government Printing Office.
- U.S. Environmental Protection Agency, Office of Waste and Emergency Response (December, 1992). "SACM - Interim Guidance" Publication 9203.1-051 Washington D.C.: United States Government Printing Office.
- United States Environmental Protection Agency, Region 6 (January, 1990). "Compass Industries Landfill".
- United States Environmental Protection Agency, Region 6 (April, 1994). "Five Year Review, Tar Creek Superfund Site" Ottawa County, Oklahoma.
- United States Environmental Protection Agency, Region 6 (March 1994). "Memorandum of Understanding for the National Zinc Company Superfund Site, Bartlesville, Oklahoma".
- United States Environmental Protection Agency, Region 6 (January 1994). "Memorandum, Trip Report, Tar Creek Superfund Site".
- United States Environmental Protection Agency, Region 6 (March, 1988) "Superfund Program Fact Sheet, Record of Decision, Compass Industries Landfill".
- Ventress, D. (1995, August 8). Final lead pact signed. Bartlesville Examiner-Enterprise page 1.

APPENDIX

SUPERFUND ACCELERATED CLEANUP MODEL (SACM)

The present Superfund program operates within a complex pattern that was designed eleven years ago to accommodate a new and complicated law. The public does not now, or in the past, fully understand the present process, or grasp the full scope of the Superfund work. The public wants faster cleanup, and believes that enough money has been given to Superfund to get the job done. The outside perception of Superfund is poor. It is too slow, provides scanty environmental improvement and there is not enough money in cleanup. The internal Superfund process is inefficient, redundant, pokey and allows too much 'cool down' time. The bottom line is that there will not be a lowering of expectations or a rise in resources. These factors have crystallized into a new focus on attempting to radically speed up and streamline the program within existing statutory and regulatory constraints. Therefore, attention was refocused on a few major outcomes that the public would value and understand. These outcomes must be: (a) simple and flexible - to allow the fastest possible, worst case first, risk reduction, (b) free of unnecessary administrative constraints that divide and diffuse the totality of reduced risk reported at remedial and removal

sites, (c) realistically achievable in that realistic cleanup commitments are made and delivered them on time, and (d) focused on rapid protection of people and the environment, rather than the unattainable goal of returning all groundwater to pristine condition.

How can Superfund work better? What is the solution? Superfund will need to provide results the public will value. It needs to quickly reduce acute risks and restore the environment over a long-term period. The program needs to be streamlined by eliminating delays and reworking, expanding the "worst first" cases and funneling money into cleanup. How can this be done?

Improving and streamlining the Superfund process can be done by: one step site screening and risk assessment, regional management teams, "traffic cops", at all sites, early action to reduce immediate risk, and long-term cleanup to restore the environment/media. Enforcement, community relations, and public involvement are prevalent throughout the process.

The current system for Superfund cleanups has led to the evolution of two discrete programs - remedial and removal. The remedial program tends to address long term cleanup sites on the National Priorities List (NPL). Separate and apart are the activities of the removal program. These sites enter the system through a different "door," usually the States seeking our help at a specific release. Under SACM all sites at which Superfund takes any

kind of cleanup action are Superfund sites. Rather than viewing removal and remedial actions as parts of separate programs, they will be viewed as separate legal authorities with different, but complimentary, application at Superfund sites.

Rather than entering the program through one or two doors marked "remedial" or "removal", all sites will enter through one door marked "Superfund". All site assessment will take place in one program, combining, as appropriate, elements of present removal assessments, PA/SIs, RIs, and risk assessments. At any point during or after the assessment process, a Regional Decision Team may consider short term activities to address threats to the health and safety of the existing population. These actions include cleanup activities that will generally take no more than three or, at the most, five years--a reasonable time frame based on the program's demonstrated ability to identify and address immediate risks to people and the environment within three to five years.

These activities will be published on a Quarterly basis in the Federal Register (for public information purposes only, not as rulemaking) on an Early Action List. Though these actions are "short term" and quickly implemented, in some cases, they may eliminate the majority of human risk from Superfund sites. Enforcement activities for early actions would commence immediate PRP search/notification, expedite orders/negotiations, and the opportunity for

consensual cleanup. Because the vast majority of risk reduction will occur in this part of the program, most of the EPA's public participation/information activities will be focused here.

The Regional Decision Team can also determine if and when long term remediation is appropriate. Sites would then be placed on a Long Term Action List and cleaned up over many years. Regional Decision Teams could also decide that no Federal action was appropriate or the site should be deferred to RCRA.

The major parameters of SACM are outlined below.

1. Single Site Assessment Function. This step streamlines assessment that will speed cleanup. It also blends removal/remedial cultures (action vs. study). The enforcement, search, and notification starts immediately and there is community outreach and public involvement throughout.

There are a number of redundancies in the program as it is structured today. Hazardous waste sites often receive numerous similar assessments before any kind of cleanup begins. Sites are evaluated by the removal program, the site assessment program (PAs, SIs, Expanded SIs, and Hazard Ranking System (HRS) scoring), the remedial program (RIs and baseline risk assessments), and even in some cases by the RCRA program. ATSDR, State, local, and private party assessments may also occur.

Many, if not most of these assessments start from scratch, they do not necessarily take into consideration the information and data generated by the studies that preceded them. Assessment, in all of its forms, now absorbs far more time than any other part of the process. Whole steps in this redundant process must be combined to expedite cleanup.

Discovered sites could be screened once and, if serious, go directly to RI level data collection and risk assessment. Appropriate short term cleanup activity, combined with public participation/outreach, and expedited enforcement action (i.e., PRP search, information gathering, and notification) could begin immediately. These changes in the assessment process could save several years, since the level and type of risk posed by the site would be understood and often eliminated prior to listing.

2. Regional Decision/Management teams. Teams unite management experience: removal, remedial, enforcement, assessment, community relations and State involvement. They serve as the "traffic cop" for sites moving to the Early Action or Long-Term Action List. The teams prioritize workloads to achieve a common goal of risk reduction, and develop standard cleanups and technologies. Regions are often able to identify the most likely alternatives to remediate a site early in the decision process.

The chief benefits are the ability to: (a) reduce the number of assessments; (b) make early action decisions while studies continue; (c) carry out relatively short term

cleanup steps that may, in many cases, be all that is necessary; (d) stay flexible (within CERCLA and the NCP) while various activities are going on, rather than keeping function in rigid and sequential boxes; (e) effectively utilize the decision making expertise in the Regions; and (f) realize time and cost economies.

3. Early Action. The Early Action step eliminates all immediate threats to public health and safety. It also notifies the public when Early Action Starts and when work is complete. Substantial risk reduction in a short timeframe will be the primary measure of success.

Risks at NPL sites fall into a number of categories, but most commonly are associated with the direct contact with wastes or contaminated soil, or drinking contaminated water from ground water sources. The Early Action initiative of SACM would encourage an expansion of non-time critical removal activities and early remedial actions. Surface cleanup (i.e. actions other than long term ground water pump and treat or extensive site restoration technologies such as large mining site cleanups, wetlands/estuaries remediation, or extended incineration projects), would be carried out through the Early Action phase of the program. This would include such activities as: waste and soil removal, preventing access, relocating people, and providing alternate drinking water sources. Most important, immediate threats to public health and safety would be addressed in this part of the process.

Under the New Superfund Accelerated Cleanup Model, the Agency would commit itself first and foremost to substantially reducing or eliminating threats to public health and the environment within a specified time frame and that time frame would be short. This commitment would be the EPA's primary measure of success.

4. Long Term Action. Sites requiring ground water restoration or long term remediation (e.g., mining sites, extended incineration projects, wetlands/estuaries) would be published in the Federal Register. They would not be placed there until the need for such remediation activities was clearly established by the site assessment process. Of greatest benefit, the public would understand that the sites placed on this list would require many years, if not decades, to clean up. These sites, however, would pose no threat to existing populations. (U.S. EPA, 1992).

STATE PILOT PROJECT

MEMORANDUM of UNDERSTANDING of the National Zinc Company Superfund Site Bartlesville, Oklahoma

Background

The Memorandum of Understanding (MOU) between the U.S. Environmental Protection Agency (EPA), and the State of Oklahoma Department of Environmental Quality (ODEQ) regarding remedial action which shall be taken in response to the release of hazardous substances at the National Zinc Company Superfund Site in Bartlesville, Oklahoma. The MOU will govern the relationship between EPA and ODEQ with respect to the State-potentially responsible party (PRP) pilot project for the Site.

Purposes

The purposes of the MOU are to outline a mechanism to ensure prompt CERCLA-Quality Cleanup of the Site, to define the level of EPA involvement necessary to ensure adequate remediation of the Site, and to ensure that no further response actions will be necessary to the Site. Consequently, the ODEQ shall ensure that the remediation is prompt, consistent with CERCLA and the NCP, and that it

provides for a CERCLA-Quality Cleanup. The EPA will review submissions, and provide input to the ODEQ as described in the MOU. Also, the Remedial Investigation/Feasibility Study (RI/FS) oversight costs and claims against the Hazardous Substance Trust Fund, shall continue to be administered according to federal law.

Performance of the Work by or for ODEQ

National Priorities Listing

On May 10, 1993, the Site was proposed to be added to the National Priorities List (NPL). No decision has been made on the final NPL listing of the Site. The final decision will be made according to the authority provided in CERCLA and the NCP.

Administrative Record

The EPA has already commenced including documents in the Administrative Record File regarding the conduct of the Remedial Investigation/Feasibility Study/Remedial Design (RI/FS/RD) for the Site. The ODEQ shall take over those responsibilities and ensure that the Administrative Record File is made available to the public. The ODEQ shall follow the NCP and EPA guidance as it concerns the compilation and procedures for establishing the Administrative Record File. The EPA may require the ODEQ to place additional documents in the Administrative Record File to ensure that the Final

Administrative Record includes all documents which form the basis for the selection of the action, and demonstrate public participation in the selection of the action. The ODEQ shall make all documents available to the public at Information Repositories. The Administrative Record File shall contain documents that may form the basis for the selection of the remedy and/or demonstrate public participation in selection of the remedy shall be included in the Final Administrative record. The final remedy selection decision for the Site shall be made by the ODEQ and documented in the ODEQ Record of Decision (ROD). The ROD for the State-PRP pilot project is an ODEQ decision document.

Health and Safety

The ODEQ shall ensure that work at the site shall follow a Health and Safety Plan for field activities which conforms to the applicable Occupational Safety and Health Administration and the EPA requirements.

RI/FS/RD

1. RI/FS/RD Presentation. The ODEQ shall make an oral presentation to the EPA regarding the RI/FS/RD within 30 days of the start of the State-PRP pilot project. The purpose of such oral presentations is to facilitate a mutual exchange of information. The presentation made by the ODEQ regarding the RI/FS/RD should describe the procedures to be

used by the ODEQ to ensure that all RI/FS/RD work shall be conducted in accordance with EPA Guidance, CERCLA and the NCP.

2. RI/FS Report. The ODEQ shall submit to the EPA, in accordance with the Schedule, the draft RI/FS Report and a list of Applicable and Relevant and Appropriate Requirements (ARARs) for the EPA to review. The EPA is preparing the human health risk assessment and report for incorporation into the RI/FS report. The ODEQ and the PRPs shall perform the ecological risk assessment and report for incorporation in the RI/FS report.

Proposed Plan, Administrative Record File, and
Administrative Record File Index

The ODEQ shall submit to the EPA a draft Proposed Plan, the up-to-date Administrative Record File and Index for the EPA to review. The Proposed Plan (final) shall be submitted to the EPA by the ODEQ on August 1, 1994. The Proposed Plan shall meet the requirements of EPA Guidance, CERCLA and the NCP and in accordance with the schedule.

Final Remedy Selection, the Record of Decision, the
Administrative Record File and Index

Within 30 days after the closing of the public comment period regarding the Proposed Plan, the ODEQ shall submit to the EPA, a draft final ODEQ ROD, a draft final Responsiveness Summary, the draft final Administrative

Record, and the draft final Administrative Record and Index and submit written comments to the ODEQ within 30 days of receipt. Within 30 days of receipt of comments from the EPA, the ODEQ shall submit to the EPA the final ROD, the final Responsiveness Summary, the final Administrative Record and Index. Copies of these documents shall be sent to the Information Repositories according to the Schedule. The parties agree that the State-PRP pilot project ROD is an ODEQ document. The EPA will review the ROD in order to advise the ODEQ as to whether the ROD provides for a CERCLA quality cleanup. The EPA will also review the ROD for consistency with EPA Guidance, the NCP, and CERCLA and will provide comments. If the EPA does not agree that the ODEQ ROD meets the requirements of CERCLA and the NCP, the EPA may proceed with the process toward inclusion of the Site on the NPL.

Remedial Design

1. Presentations. The RD for this project shall commence during the RI/FS phase and be completed after the ODEQ remedy is selected. Within 30 days after the ODEQ issues the final ROD, the ODEQ shall make an oral presentation to the EPA describing the procedures to be used by the ODEQ to complete the RD of the selected remedy in accordance with the requirements to the ODEQ ROD.

2. RD Submission. The ODEQ shall be responsible for completion of the Remedial Design in accordance with the

schedule. The ODEQ's final submission of the RD should include a complete set of plans and specifications that fulfill all the requirements of the ODEQ ROD.

Remedial Action

The ODEQ shall be responsible for implementation of the RA in accordance with the Schedule. An oral presentation shall be made by the ODEQ regarding the RA, prior to the beginning of the RA, that describes the procedures to be used by the ODEQ to ensure that all RA work will be conducted in accordance with the RD, EPA Guidance, CERCLA and the NCP.

Work Shall Achieve Performance Standards

The ODEQ shall ensure that the Work performed by the ODEQ, or by the PRPs, shall achieve the Performance Standards stipulated in the ODEQ ROD.

Off-site Shipment of Waste Material

The ODEQ shall, prior to any off-site shipment of Waste material from the Site to an out-of-state waste management facility, provide written notification to the appropriate state environmental official in the receiving facility's state and to the EPA of such shipment of Waste Material, or the ODEQ shall have the PRPs provide such notification. This notification shall be in accordance with the EPA policy

regarding such notification. The ODEQ shall verify and document that any off-site disposal facility used in the Site's remediation effort is operating in compliance of Section 121 (d) (3) of CERCLA.

Compliance with Other Laws and Permit Requirements

The ODEQ shall ensure that all Local, State and Federal permits which are specifically required for the Work are obtained. The ODEQ shall ensure that the Work is in compliance with all State and Federal laws.

Quality Assurance Sampling and Data Analysis

The ODEQ shall use, and the ODEQ shall require the PRPs to use, quality assurance, quality control, and chain of custody procedures, according to accepted EPA methods as described in EPA Guidance, for all samples. The ODEQ shall ensure that the laboratories it or the PRPs utilize for the analysis of samples taken, perform all analyses according to accepted EPA methods, as described in EPA Guidance.

Access

A. To the extent access to the property is controlled by the ODEQ or the PRPs who are conducting the response action under agreement with the ODEQ, the ODEQ agrees to provide to the EPA and to the EPA's authorized representatives, access, at all reasonable times, to the

Site and to any other property to which access is required for the implementation of the response action at the Site.

B. To the extent that the Site or any other property to which access is required is owned or controlled by persons other than the ODEQ or the PRPs, the ODEQ shall use best efforts, and have the PRPs use best efforts, to secure from such persons access for the ODEQ, the EPA and the EPA's authorized representatives. Nothing in this MOU shall be construed as a waiver of the EPA's access authority pursuant to section 104 (E) of CERCLA.

Progress Reporting Requirements

A. In addition to any other requirement this MOU, the ODEQ shall submit, to the EPA, written monthly progress reports. The monthly progress reports shall include a description of actions which have been taken toward implementing the response action at the Site and toward compliance with this MOU during the previous month and descriptions of such actions planned for the next month. The ODEQ shall submit monthly progress reports to the EPA, on the fifteenth day of each month, until the ODEQ ROD has been issued. After issuance of the ODEQ ROD, progress reports shall be submitted quarterly rather than monthly, until the RA is completed. If requested by the EPA, the ODEQ shall also provide briefings for the EPA on the progress of the Work.

B. In addition, the ODEQ shall, during the Operation and Maintenance (O&M) phase, submit on October 1 of each year, yearly progress reports until O&M is completed.

Revisions of Submissions

Upon receipt of the EPA's comments regarding submissions, the ODEQ shall, within 30 days, address all the EPA comments, notify the EPA of any changes to the document and provide the EPA with the final version of the document.

Inspections

When work at the Site is in progress, the ODEQ shall conduct site inspections during the implementation of the remedy to ensure that the remedy is carried out in accordance with the ROD and RA, and invite the EPA and its authorized representatives to attend. The ODEQ shall notify the EPA 2 weeks in advance of inspections to which the EPA is invited.

Notices and Submissions

A. Whenever, under the terms of the MOU, written notice is required to be given or a document is required to be sent, it shall be directed to the project coordinators at the address specified below, unless those individuals or their successors give notice of a change to the other parties in writing.

B. Submittal by the ODEQ to the EPA of reports and other documents required under this MOU shall be in accordance with the Schedule. The ODEQ shall furnish the EPA five copies of each document submitted under the requirements of this MOU.

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ODEQ
1000 NE 10th Street
Oklahoma City, OK 73112

Alternate Coordinator

Monty Elder
ODEQ
1000 NE 10th Street
Oklahoma City, OK 73112

Certificate of Completion

The ODEQ shall complete, or have the PRPs complete, the RA at the Site according to the Schedule. The RA is complete when the RA is fully performed and the Performance Standards, in the ODEQ and in the RD, have been attained. Within 30 days after the ODEQ concludes that the Remedial Action has been fully performed and the Performance

Standards have been attained, the ODEQ shall notify the EPA that the RA has been completed in full satisfaction of the requirements of the MOU, including, but not limited to, the Performance Standards.

Dispute Resolution

A. Any dispute which arises shall be the subject of informal negotiations between the EPA's and the ODEQ's respective project coordinators. The period for informal negotiations shall not exceed 20 days from the time the dispute arises. The dispute shall be considered to have arisen when one party sends the other party a written Notice of Dispute.

B. In the event that informal dispute resolution does not resolve the dispute, the Branch Chief for the EPA Superfund Programs Branch (or an equivalent EPA management official) and an appropriate ODEQ official will negotiate to attempt to resolve the dispute within 30 days from the time that the dispute arises. If the Branch Chief for the EPA and the ODEQ official do not resolve the dispute within the 30 days from the time that the dispute arises, then the EPA Hazardous Waste Management Division Director will issue a final decision resolving the dispute, based on any written materials submitted by the parties during the 30 day period which began at the time that the dispute arose. The

Hazardous Waste Management Division Director's decision shall be binding, under this MOU, upon the parties.

Effective Date

The effective date of this MOU shall be the date upon which this MOU is signed by both the Director of Hazardous Waste Management Division, EPA Region 6, and by the Executive Director of the ODEQ.

Community Relations

Initial and continuing community acceptance of the State-PRP pilot project is required for its continuance. The ODEQ shall undertake a community involvement program that all the community is informed and provided the opportunity to participate in decision making for the site. The EPA will refer all citizens' inquiries to the ODEQ for response. Community relations during the RI/FS and the selection of remedy phase shall satisfy or exceed the requirements of CERCLA and 40 CFR S 300.430. Community relations during the RD/RA and the operation and maintenance phase shall satisfy or exceed the requirements CERCLA . The ODEQ shall require that the PRPs provide the opportunity for the equivalent of a Technical Assistance Grant (TAG) in the amount of up to \$50,000, to a local citizens group.

Terms and Conditions

A. The parties agree that CERCLA will preempt state law where inconsistencies arise in the Site remediation, if any.

B. The parties agree that the ODEQ shall not borrow employees from other EPA-funded or EPA delegated Oklahoma environmental programs in order to staff its program dealing with a hazardous substance, pollutant or contaminant release at the Site. The staff assigned shall include, but shall not be limited to, a site manager experienced in hazardous waste management, and technical support personnel experienced in risk assessment, laboratory quality assurance, geology, hydrology, biology, environmental science, and an attorney with environmental law expertise. If the EPA determines that the ODEQ does not have adequate staff assigned to the Site to administer the State PRP pilot project for the Site, the EPA may, at its discretion, terminate this MOU.

C. The time period for the completion of certain Work under this MOU is expressed as a number of days, or is described in the Schedule. The parties agree that, if the ODEQ completes the Work within the time periods set forth in this MOU including the approved Schedule (and including adjustments to these time periods, as provided under the modification provisions of the MOU), then the ODEQ has completed the Work in a prompt manner. If, at any time, the

ODEQ has not completed some Work within the time period established under the MOU, then the EPA may terminate the MOU.

D. If, at any time, the EPA determines that the ODEQ is overseeing or conducting remedial action, at the Site, which is inconsistent with CERCLA, or the NCP, or which is not a CERCLA Quality Cleanup, this MOU shall terminate. This MOU may also be terminated by the EPA, if the EPA determines that either of the following conditions exist: 1) The requirements including, but not limited to, the performance standards of the ODEQ ROD and the RD are not being fully satisfied; 2) Noncompliance with the administrative record requirements required by this MOU; 3) Noncompliance with the public participation requirements required by this MOU; 4) Inability to resolve a dispute under the dispute resolution section of this MOU; 5) Statutory/Regulatory modification in federal and/or state law which make this MOU unnecessary, illegal, or otherwise inappropriate.

E. Upon the EPA's endorsement that the provisions of the MOU have been fully satisfied, this MOU between the ODEQ and the EPA shall be terminated

Schedule

ODEQ-PRP Pilot proposal	3/1/94
Draft RI/FS Report	6/1/94
Revised RI/FS Report	7/1/94

Proposed Plan	8/1/94
Public Meeting	9/1/94
ODEQ Issue Record of Decision	Fall 94
Complete Remedial Design	Spring 95
Start Remedial Action	Summer 95

Reimbursement of EPA Expenses

Nothing in this MOU shall be construed as a waiver of the EPA's ability or rights to recover costs pursuant to section 107(a) of CERCLA, 42 U.S.C. S 9607(a) and 40 CFR S 300.700(C). (U.S. EPA, 1994b).

VITA 2

Nancy Williamson

Candidate for the Degree of

Master of Science

Thesis: SACM (SUPERFUND ACCELERATED CLEANUP MODEL): A NEW
APPROACH TO SUPERFUND

Major Field: Environmental Science

Biographical:

Education: Graduated from Ponca City High School, Ponca City, Oklahoma in May 1967; received a Bachelor of Science degree in Education from Oklahoma State University, Stillwater, Oklahoma in May 1971. Attended the University of Central Oklahoma in 1975, pursuing a graduate degree in Education. Completed the requirements for the Master of Science degree with a major in Environmental Science at Oklahoma State University in December, 1995.

Experience: Employed after graduation from Oklahoma State University as a science teacher.

Professional Memberships: Rotarian, National Education Association, Oklahoma Education Association, Bartlesville Education Association, National Science Teachers Association.