THE DEVOLUTION OF MILITARY BASES UPON CLOSURE: A CASE STUDY OF FORT SHERIDAN, ILLINOIS

By

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ABSTRACT

THE DEVOLUTION OF MILITARY BASES UPON CLOSURE:
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The Base Realignment and Closure Commission (BRAC) was chartered on May 3, 1988 by the Secretary of Defense to develop recommendations regarding closure and realignment of United States military installations. In 1991, the U.S. Department of Defense estimated that it will cost nearly $3 billion dollars for renovation and remediation of 59 military bases slated to be closed over the following five years. Military installations that close would need complete evaluation and remediation of toxic materials. Communities that are affected by base closings find themselves in a difficult situation because they are torn between wanting a pollution danger removed and wanting a base reused. Furthermore, the Pentagon has estimated that cleaning up the pollution problems on all of its domestic facilities could cost at least $35 billion over the next 20 years.

This research explores the conflicting environmental regulatory framework for base closures through a case study of the closing of the Fort Sheridan Army Base, located in Illinois. The issues identified in this study are the regulatory process and lead agency authority for the base closure. There have been several agency interpretations and interagency agreements which integrate or incorporate existing statutes, but a clear lead agency oversight of military

environmental cleanups is lacking.

The hypothesis tested proves the authority adopted by the Army conflicts or avoids the authority of interagency cooperation or agreements between State and Federal environmental agencies which could result in endangering the new or future use(s) of the facility. The differing public participation requirements of the applicable environmental laws alter the ability of the public to have an effective input. Therefore, lead agency authority has an important role throughout the remedial investigation and the subsequent response actions.

How the Army communicated risk information to the three affected communities and the review of the risk assessment done at the base show the net effect of the lack of adequate oversight. There are about 700 acres of what are considered some of Illinois' most valuable real estate available for future use once the base closes. The role of the State of Illinois in overseeing the cleanup is central to the conflict and pertinent to local level input into environmental cleanups.

DEDICATION

To My Family

ACKNOWLEDGMENTS

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CHAPTER I

INTRODUCTION

The Fort Sheridan Army Garrison, as it was known originally, has been active since 1887. Hereafter referred to as the Fort Sheridan Army Base, it is slated for closure and remediation (News-Sun, 1988). It is the headquarters for the Fifth U.S. Army and U.S. Army Recruiting Command for the Great Lakes region. Its closure will have a significant economic and environmental impact on the region, particularly the three surrounding communities.

The Base Realignment and Closure Commission (BRAC) was chartered on May 3, 1988 by the Secretary of Defense to develop recommendations regarding closure and realignment of United States military installations. In 1991, the U.S. Department of Defense estimated that it will cost nearly $3 billion dollars for renovation and remediation of 59 military bases slated to be closed over the following five years (Cushman, 1992, Palmer, 1992). Military installations that close would need complete evaluation and remediation of toxic materials (Goodwin, 1985, Shulman, 1992). The Pentagon has estimated that cleaning up the pollution problems on all of

its domestic facilities could cost at least $35 billion over the next 20 years (GAO, 1988).

This research explores the conflicting environmental regulatory framework for base closures through a case study of the closing of the Fort Sheridan Army Base, located in Illinois. This case study identifies the regulatory process and lead agency authority for the base closure. The discussion also includes the environmental assessment of polluted military facilities in general. In theory, the States, the U.S. Environmental Protection Agency (USEPA), and other Federal agencies share the ultimate goal of cleaning up Federal facilities. However, they disagree about which laws should govern individual installations.

There are about 700 acres of what are considered some of Illinois' most valuable real estate available for future use once the base closes. This study identifies the hazards that were found and then analyzes the process by which the conflicting regulatory authorities assessed the facility. Particular emphasis will be on the relationship between the Federal and State regulatory authorities. Further discussion focuses on how the Army communicated the risks found at the base to the three surrounding communities.

The process for ascertaining the risk information was risk analysis (Cohrssen, 1989). It is a method used for hazard characterization. It does not provide an empirical formula for dealing with risk issues, nor does it resolve the complicated socio-economic and political tradeoffs inherent in

most risk-related decisions. But it does greatly enhance the ability of scientists and decisionmakers to identify, evaluate, control, and reduce risks associated with human activities. However, before one communicates risk information, some kind of factual analysis and an assessment of the community's perception to it should occur. Risk communication, on the other hand, is the process by which the community is advised of the hazards and their perception of the hazards (NRC,1989). Risk communication may not improve a situation but poor risk communication will almost always make it worse (Cohrssen, 1989).

The environmental problems that confront military facilities, and their surrounding communities, are as varied and diverse as the military itself. Past waste management practices have led to large-scale contamination of soil and groundwater with toxic or hazardous fuels, solvents, trace metals, pesticides, explosives, and propellants (Shulman, 1992). Fort Sheridan was suspected of containing these and other materials, such as; unexploded munitions, stored chemicals, asbestos-containing materials, radon, and lead. Communities that are affected by base closings find themselves in a difficult situation because they are torn between wanting these pollutants removed and wanting the reuse of the property. This study also identifies the incomplete assessment of lead at the base and the need for further study.

BRAC requires the implementing actions for closure to conform to the provisions of the National Environmental Policy

Act of 1969 (NEPA[1]), as implemented by the Council on Environmental Quality (CEQ) regulations. The USEPA considers the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA[2]) and NEPA to be functionally equivalent while the applicability of NEPA to CERCLA remedial actions at Federal facilities is still an outstanding question (Yost, 1986).

The Illinois Environmental Protection Agency (IEPA), which is the lead environmental regulatory agency at the State level, has charged that based on reviews of its Federal Sites Management Unit and USEPA Region V, Environmental Review Branch reports[3], a number of regulatory issues require immediate attention to enable the base to proceed toward completing the closure status under other provisions of Federal and State law. IEPA insisted that the base closure law was not exclusive of other environmental laws.

The conflicting regulatory process centers on the two primary Federal laws which govern cleanup of military installations; the Resource Conservation and Recovery Act of 1976 (RCRA[4]) and CERCLA . Still, the BRAC commission mandates

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[1]National Environmental Policy Act of 1969, 42 U.S.C. S 4321 et seq.

[2]Comprehensive Environmental Response, Compensation and Liability Act of 1980, Codified as amended at 42 U.S.C.A. 9601-9675 (1982 & Supp. V 1987).

[3]These reports were reported to the Army through a communique from the IEPA dated January 18, 1993.

[4]Resource Conservation and Recovery Act of 1976, 42 U.S.C. S 6901 et seq.

that base closures conform to NEPA. While CERCLA and RCRA do not necessarily conflict with NEPA, the agencies that enforce each statute differ sharply on how they are implemented (Day, 1989). USEPA has Federal jurisdiction over all CERCLA actions and may delegate RCRA authority to States.

The U.S. General Accounting Office (GAO), the watchdog agency for Federal government operations, reports that USEPA has not been consistent in its application of CERCLA and RCRA provisions to Federal facilities (St. Clair, 1990). It is also well documented that USEPA itself has overlapping and conflicting requirements regarding the two primary regulatory processes governing cleanup at Federal facilities. In the USEPA's standard practice, non-federal facilities are not evaluated or regulated by CERCLA, if RCRA applies. However, at Federal facilities both CERCLA and RCRA requirements must be met necessitating the need for integration and lead agency coordination (Davidson, 1989). Furthermore, courts[5] have upheld the fact that a waste determined to be nonhazardous under RCRA does not prevent it from being listed as hazardous under CERCLA.

CERCLA provides procedures for remediating the release of hazardous substances, including the reporting of releases, evaluating remedies, determining the most suitable level of remedial action, and ensuring that the selected remedy is cost-effective. Section 3004(u) of RCRA contains a corrective

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[5]State of Arizona v Motorola, Inc., D.Ariz.1991, 774 F.Supp. 566.

action provision for remedying environmental contamination caused by the release of hazardous waste or constituents. The fundamental objectives of the RCRA corrective action process are essentially the same as those of CERCLA. However, significant differences between public participation and cleanup level determination exist between the two regulatory processes. Also, a Federal facility that is listed or proposed for inclusion on the CERCLA National Priorities List (NPL) may also have RCRA permitted units. In this situation, there are unresolved issues about which statute should be used as the primary vehicle to ensure a comprehensive cleanup.

Adding to the conflict and complexity, and another tool available to local jurisdictions, is the Federal Facilities Compliance Act of 1992 (FFCA)[6]. This act waives the sovereign immunity federal agencies have enjoyed against RCRA. The agencies are now subject to civil penalties when found in violation, and their employees can face criminal prosecution. Though the act does not specifically reference base closures, it does, however, clear up the issue of hazardous waste contamination at military bases and other government-owned sites to the benefit of States that have RCRA authority. It is most beneficial to States that have USEPA delegated authority. As a result of this delegation, the State issues and enforces the permit. This authority nevertheless seems to be applicable only to permitted facilities. Though the IEPA

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[6]Federal Facilities Compliance Act of 1992. Publ. L. 102-386 [H.R. 2194]; October 6, 1992.

has permitted Fort Sheridan, the FFCA's applicability to RCRA rather than CERCLA raises additional concerns regarding lead agency authority.

Statement of Problem

The military industry has produced extensive contamination from the hazardous byproducts of activities related to defense and questionable practices of waste management (Schneider, 1991). The potential transfer of military facilities to civilian use has generated a need to assess the properties extensively. The number and types of military facilities slated for closure create a challenge for military and regulatory agencies. Though the Army feels that these installations are not necessarily available for unlimited use, the communities that accept these parcels usually have uses fundamentally different from the military's intended use (Shannon, 1993). Some of these parcels of land have been unregulated and uninspected insomuch as their respective communities are aware.

Other departments of the Federal government (e.g., Energy) have coordinated agreements between state-level regulatory authorities and the U. S. Environmental Protection Agency (USEPA, 1988, St. Clair, 1990). However, this authority is not mandated for military base closures.

This study investigates the feasibility of interagency agreements to facilitate environmental compliance at military base closings when conflicting regulatory requirements exist.

It appears that not until the Federal Facilities Compliance Act was promulgated did the Army feel any accountability to established hazardous waste regulations, particularly at the State level. Past practices at Army facilities show good and bad habits, but no specific regulatory mandate. It appears that historically wastes were either improperly discharged or buried.

Fort Sheridan has operated full service hazardous waste disposal facilities without public regulatory authority. Seven landfills were closed and other waste units either closed or abandoned. Because of time constraints during the closure, the Army insisted on minimal public involvment. Also, the differing public participation requirements of each law alters the ability of the public to have an effective input.

On September 3, 1992, representatives from IEPA, USEPA, USATHAMA, and the Army Corps of Engineers (ACE) met to discuss the remedial investigation/feasibility study (RI/FS) for closure of Fort Sheridan. During the meeting, the representatives discussed the need for a community relations plan. USEPA policy requires that a community relations plan accompany any CERCLA remedial investigation and response (USEPA,1988). ACE did the initial scoping for the environmental impact statement. The options offered during public hearings, held during the EIS, differed from the alternatives suggested during the RI. In the RI/FS process, the only required gathering is a public hearing at the end of

the FS. All other meetings are voluntary. Therefore, if the lead agency does not coordinate effective public involvement, then certain future use scenarios may become impossible. Future use is therefore inextricably tied to contaminant mitigation.

Questions to be Explored

The question that arises is: Does the Army have a responsibility for the protection of the environment once a facility closes or is transferred to civilian use? If so, who is in charge of the cleanup of contaminated military property and does the affected community(s) effectively have input into those decisions?

The issue to be explored is whether the authority adopted by the Army, through its CERCLA intraagency agreement, conflicts with the authority of interagency cooperation between State and Federal environmental regulatory agencies overseeing a military base closure and cleanup. The conflict centers on:

* the remedial response actions of CERCLA,
* the corrective action provisions of RCRA,
* the pollution control provisions of applicable State laws, and
* the environmental assessment provisions of NEPA.

Pertinent to the conflict is the importance of lead

agency authority throughout the remedial investigation and the subsequent response actions. For example, the conflict could result in endangering the new or future use(s) of the facility.

By investigating what occurred during the process of closing Fort Sheridan, three additional questions present themselves. Does the military take appropriate action to assure the absence of future environmental problems? Does the military adequately convey to potential recipients of the closed bases the limitations that should be imposed on future uses of the land? Do the potential recipients accurately receive the messages conveyed by the military and do they care about these messages?

Research Hypotheses

The following hypotheses are framed:

1. The military takes full and effective steps to assure the absence of future environmental health problems when it disposes of property under the Base Closure and Realignment Act.

2. The military puts certain limits on the future uses of such property and effectively communicates these limits to potential future users.

3. Local officials who are potential recipients of the

closed facilities understand the limits on future uses that the military either suggests or implies.

Research Methods

A case study has been selected as the most appropriate method to investigate the complexities of environmental regulations governing cleanup and transfer of military facilities to civilian use. To illustrate the full diversity and range of potential environmental impacts Fort Sheridan Army Base has been selected the subject site. It has seven landfills, four coal storage areas, underground storage tanks, asbestos in buildings, PCB-containing transformers, a cemetery, a historic district, five ravines, and measurable amounts of contaminants in several buildings, including housing. Because of this mix of environmental concerns, Fort Sheridan is confronted with numerous complex regulatory compliance issues related to base closure and transfer to civilian use. This is one of the few military facilities have had extensive environmental studies of this kind prior to closure.

In addition, Fort Sheridan, located north of Chicago, is a large facility surrounded by both natural and man-made environments. It abuts Lake Michigan, a wildlife refuge, and three neighboring communities. The size and complexity of the base, as well as its surroundings, added to its appropriateness as the study site.

This case study addresses whether adequate information was transmitted during the environmental remediation process and which agency had lead authority for the environmental actions. The public involvement provisions of CERCLA, RCRA, NEPA, and how the Army proposed to accommodate these provisions given the apparent conflict with the environmental regulatory agencies are addressed as well.

The research protocol contains three major parts. The first is a review of the laws and regulations addressing hazardous waste and Federal facilities and the mandates of the Base Realignment and Closure commission (BRAC) . Information was obtained through online database searches and legal research. The facilities of the Michigan State University and the Thomas Cooley Law School libraries provided valuable information and assistance in finding specific laws and statutes. Specific databases used for this research included ERIC, Legal-Trac, Newspaper Abstracts, Toxic Release Inventory, and U.S. Government Monthly Catalog, as well as the computerized catalogs of the libraries.

The individual laws mentioned above are both comprehensive and ambiguous in regard to military base closures. Because of the comprehensiveness, there is an inherent overlap in applicability when the laws are implemented simultaneously. Because of the ambiguity of the laws, regulations are unclear as to the authority for administering some of the provisions. This section, therefore, addresses the laws as written and highlights the

applicable provisions related to military base closures.

The second part is the acquisition of data. Data cited in this research was acquired through Freedom of Information (FOI) requests and furnished mostly by the Illinois Environmental Protection Agency (IEPA). IEPA supplied files from its Office of General Counsel, Air, Water and Land Pollution Control Divisions, Federal Sites Management Unit, and the Office of Government and Community Affairs. FOI requests also were used to access the Environmental Impact Statement from the Corps of Engineers, Louisville, KY. Division and the Remedial Investigation from U.S. Army Toxic and Hazardous Materials Agency in Aberdeen Proving Grounds, MD. Additional information was acquired through records supplied by the Fort Sheridan Museum, the Lake County Public library and other public records (i.e., local, statewide, and national newspapers).

The relevance of the risk data and the analysis of the results are oftentimes based on how the data are perceived, though perception is not the focus of this research. The specific protocol for the risk analysis follows the recommendations for remedial investigations as formulated by USEPA, the U.S. Army, and the National Academy of Sciences.

The framework for the estimate of risk is key to the understanding of future hazards. Also, the State-level authority is usually manifested in the oversight and review of the estimate of risk. This case study explores the conflict between the authority for oversight and review, though the

Army clearly estimated the risk.

The third part of this study protocol includes the responses of interviews with local elected officials. Personal interviews were conducted with the mayors of the three communities adjacent to Fort Sheridan. The interviews were tape recorded and were held in the offices of each of the mayors. The interviews were initially structured to get responses to the same question from each mayor, however, because of the responses and intent of each mayor only some of the questions were duplicated. Nevertheless, each mayor was asked if the Army disclosed the hazards found on the base. Then, based on that response, the question was asked "does the local community still wish to acquire the property?" The interviews lasted an average of two hours with only the mayor answering questions.

The local officials were the conduit between the Army and the local communities. Though each official may have a different agenda, the Army interfaced with the communities through them via public hearings.

The study proceeds as follows. Chapter II discusses the historical and social setting of Fort Sheridan and the surrounding communities. Particular attention focuses on the human population characteristics and the adjoining communities land use issues (i.e., zoning, water use, etc.).

Chapter III provides the statutory and regulatory actions for Federal facilities. Emphasis is placed on the laws as written and the conflicts encountered in implementing them by

the various State and Federal regulatory agencies.

Chapter IV discusses intergovernmental decisionmaking. When laws are vague or overlapping, it may require more than one agency to implement them. In this study, and this chapter, the process of how the Army investigated contamination at Fort Sheridan is outlined. The question of lead agency authority and the sequence of actions taken are given.

Chapter V provides the methodology for risk analysis. It also contains the results and findings of the remedial investigation. The remedial investigation is the technical evaluation of how the government evaluated the risks.

Chapter VI discusses intergovernmental risk communication. This chapter contains the interviews held with the local officials and plans and options offered by the public. Finally, Chapter VII includes the conclusions, discussion, and recommendations.

Summary

The closing of Fort Sheridan is a complex undertaking. The mandates of the BRAC commission and the Army's chosen sequence of activities conflicted with an orderly chain of events. This is due largely to the overlapping nature of the environmental laws and regulations. According to the Army, the schedule for closing and oversight of the risk analysis were obstacles that added to the conflict. Hence, this research investigated the conflict and examined the utility of

interagency agreements, interpretations, and compliance to the mandates of the base closure.

CHAPTER II

THE HISTORY & SOCIAL SETTING OF FORT SHERIDAN AND THE ADJOINING COMMUNITIES

History of Fort Sheridan[7]

Fort Sheridan (Fig.1) was established in 1887 to make a military force immediately available to the citizens of Chicago. Historical antecedents for the need of such forces were the Chicago fire of October, 1871 and the Haymarket riots in May, 1886. As evidence of the city's desire for nearby troops, land for the Post was donated to the government by Chicago citizens.

The Post was named after General Philip Sheridan, General of the Union Cavalry during the Civil War and Commander in Chief of the Army during the years the Post was established. The first troops camped on the Post in November, 1887. Construction of the first permanent buildings, many of which are still standing, was begun in 1889.

Fort Sheridan carried out important missions for the Army

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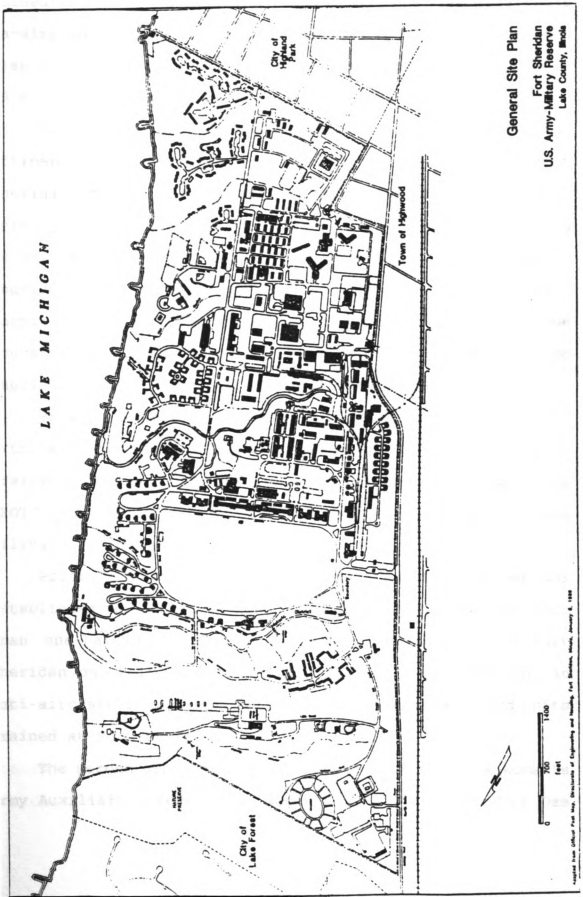
[7]Unless otherwise cited, information in this chapter was supplied by the Fort Sheridan Museum. The museum was originally housed in Building 33 in the historic district on the Fort. A file and other artifacts also are located at the Lake Forest, Illinois Public Library.

Figure 1


LAKE MICHIGAN
City of Highland Park
Town of Highwood
City of Lake Forest
General Site Plan
Fort Sheridan
U.S. Army-Military Reserve
Lake County, Illinois
0
750
1500
feet

during the War periods. Infantry and cavalry from the Post joined in the troop movement to Cuba in 1898. In 1913, Post cavalrymen participated in the Mexican border incidents and also joined in the Punitive Expedition against Pancho Villa in 1916 (Chicago Tribune, 1970).

Participation in World War I was foreshadowed by the Officer Training Program introduced to the Army at Fort Sheridan in 1913. Following the declaration of war against Germany in 1917, 6,000 men trained at Fort Sheridan and served as officers in Infantry, Cavalry, and Artillery regiments. Sheridan was the site of one of the first of the base hospitals set up in the United States to treat war wounded and convalescents. More than 60,000 patients were treated at the Sheridan Center, then called Lovell General Hospital.

Between wars, garrisons included infantry, field artillery and coast artillery. The Post also participated in training programs of the Reserve Officer Training Corps (ROTC), Civilian Conservation Corps (CCC), and Citizens Military Training Camps (CMTC).

Prior to World War II, a recruit reception center was established at Fort Sheridan. During the war period, more than one-half million men and women passed through Fort Sheridan on their way to military service. In addition, an anti-aircraft brigade and two Federalized National Guard units trained at Fort Sheridan.

The second group of women soldiers sent from the Women's Army Auxiliary Corps (later Women's Army Corps) at Fort Des

Moines came on Post in December, 1942. A rehabilitation center and the Sixth Service Command Training Center were established during the war period. The Post also was administrative headquarters for prisoner-of-war camps in Michigan, Illinois, and Wisconsin. At war's close, the Post served as one of the Army's largest separation centers. Over 520,000 military personnel returned to civilian life through Fort Sheridan (Chicago Tribune, 1979).

Since the close of World War II, Fort Sheridan has been the supply and service source for the Army's air defense system in the midwest area. In May, 1967, it became the new home of Headquarters, Fifth United States Army. In consequence, the Post is now the site and center for command operations for Army activities in the 13 states embracing the Fifth Army area.

The Post is located in an area bordering the shores of Lake Michigan. The natural advantages of a great fresh water lake and the charm of the land , with colorful woodlands and deep ravines, are part of the picturesque landscape which characterizes the neighboring communities of Lake Forest, Highland Park, and Highwood. These suburban communities are among the nation's highest family income areas.

The closure of Fort Sheridan includes the inactivation of the existing garrison operations, the transfer or elimination of approximately 1,000 military and 1,700 civilian jobs, the placing of property prior to disposal in temporary caretaker status; the transport of material, equipment, and personnel to

selected receiving installations; and the continued operation of a Reserve Component Area on existing Fort Sheridan property. Approximately 250 military and 250 civilian personnel will remain in the area. In addition, it is anticipated that the existing cemetery will be transferred to the Department of Veterans Affairs for continued operation and maintenance.

The economic impacts in the Lake County region relating to the closure of Fort Sheridan, according to the Army, have been estimated to involve a decrease in regional sales volume of $31.3 million, a decrease in regional employment of 2,964 person-years, and a decrease in regional income of approximately $68.0 million (The News-Sun, 1988).

Human Population Characteristics

Current and Future Land Use

Fort Sheridan consists of approximately 700 acres along Lake Michigan in Lake County, Illinois. According to the U.S. Army Corps of Engineers (1984a), land areas at the installation are used for some 14 major functions and activities. The existing land uses are essentially unchanged since 1976 (Table 2-1) with adjustments for present assignments of temporary facilities (World War II Barracks), and the demolition and replacement of other temporary buildings.

Military housing is located along the east, south, and west peripheries with administrative and support activities

Table 2-1

Existing Fort Sheridan
Land Use Allocations

Land Use Function of Activity	Approximate Area (Acres)	Percent of Total Area
Administration	32	5
Helipad[1]	10	1
Unaccompanied Officer Quarters	5	1
Cantonment Area	37	5
Cemetery	7	1
Community Facilities	26	4
Family Housing (Officer & NCO)	117	17
Medical	6	1
Ravines, Bluffs, and Shoreline	103	15
Recreation	174	25
Service & Storage	91	13
Training, Parade Ground & Operations	59	8
Troop Housing Area	12	2
Other Areas	15	2
Total	694	100

[1]Does not include take-off safety zone or approach-departure zone.

clustered in the center of the installation. The northern quarter of the facility contains recreational facilities, a helipad, reserve training facilities, a cemetery, and two ravines. The lakeshore contains a beach recreation area.

Areas now utilized at the installation for training purposes are predominately administrative or educational in nature. There are no open firing ranges on the installation, however, a recreational trap shooting facility remains at the extreme northeast corner of the installation. The reserve center has a five-bay indoor rifle range. The former airfield has been converted to a rotary-wing aircraft facility thereby reducing clearance slope requirements to areas within the perimeter boundaries. Part of the golf course is also used for training activities (parades, etc.) as needed.

A Memorandum of Understanding signed August 8, 1991 between the Secretary of the Army and the Secretary of the Navy effectively transfers approximately 142 acres of land and improvements, including 329 units of military family housing, and a parcel of land approximately 40 acres between the site of the future Army Reserve Center and present housing areas to the U.S. Navy. The Navy has indicated that most uses will remain essentially the same; however, no formal plan has been submitted.

Adjoining Community Land Use and Zoning

Lake Forest Land Use and Zoning

The City of Lake Forest abuts Fort Sheridan to the north

and northwest. The northern boundary of the installation is adjacent to a nature preserve owned and maintained by the City of Lake Forest. The northern portion of the installation's western boundary is Sheridan Road with the City of Lake Forest to the west. The property immediately west of Sheridan Road is developed as a pedestrian/bicycle path between Sheridan Road and the Northwestern Railroad right-of-way. West of the railroad, the land use is single family residential, as is the land use north of the nature preserve.

In the early 1970's, Lake Forest annexed approximately 150 acres of the installation immediately south of its' present city limits. The annexed area includes the cemetery, reserve center, archery range, and trap shooting facility, all of Jane's Ravine, part of Hutchinson Ravine and holes 6 thru 10 of the golf course.

The zoning district map for Lake Forest indicates that the land immediately north of the installation boundary is zoned R3 Single Family Residence with a minimum lot size of 40,000 square feet. Land to the west of the installation is zoned R2 Single Family Residence with a minimum lot size of 20,000 square feet. The area of the installation annexed by the City is zoned in the highest residential category, R5 Single family Residence with a minimum lot size of 130,000 square feet. The permitted uses are detached single family dwellings; municipal buildings and facilities; farms, stables, and kennels with housed farm animals not within 200 feet of a residential district; and nurseries, flower gardens and

accessory buildings.

Highland Park Land Use and Zoning

The City of Highland Park is located on the southern boundary of the installation. Part of the southern one-third of the installation is actually in the city. Highland Park incorporated prior to the establishment of Fort Sheridan and the status of that part of the installation within the city has not changed. Land use in Highland Park, south of the installation boundary is all single family residential on varying lot sizes. A synagogue is located on the lakeshore immediately south of the installation boundary.

The Comprehensive Master Plan for Highland Park recommends that the part of the installation east of Patton Road, within Highland Park, almost 160 acres, be used for a new park facility. The remainder of the installation within the City of Highland Park and the area of the city immediately adjacent to the installation remain residential.

According to the Highland Park Zoning Ordinance District Map, the southeastern region of Fort Sheridan is designated as a low to moderate residential district. Certain government, educational, religious, and recreational facilities are permitted on an as-needed basis. Permitted uses consist of single and multi-family dwellings, rectories, parking facilities, and in-home offices.

Highwood Land Use and Zoning

The Town of Highwood is much more intensely developed than either Highland Park or Lake Forest. Consequently, land use along the border of the installation is more varied than that in the other two communities. The existing land uses range from isolated, individual commercial activity, to small shopping centers, to multi-family residential, and a hotel. There are small lots of undeveloped land in Highwood along the installation boundary. The city has no future land use plan.

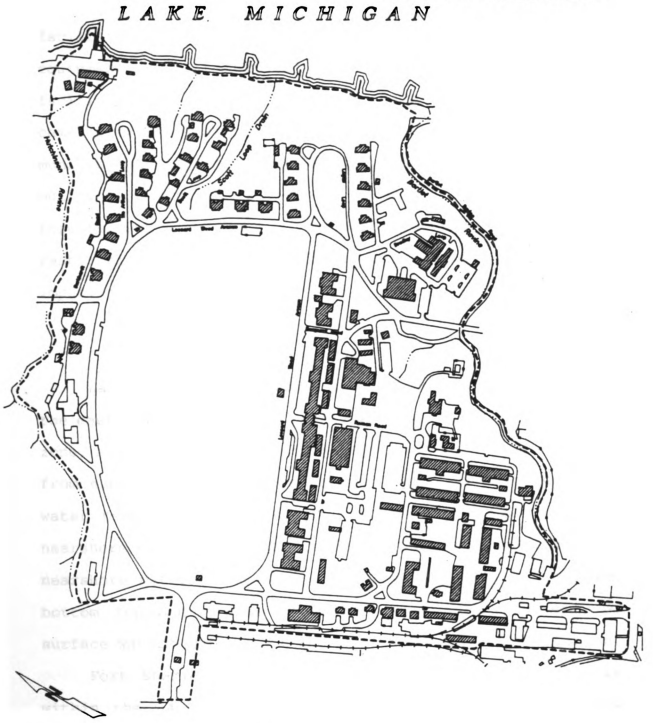
No portion of Fort Sheridan is currently zoned by Highwood. All of the land in the Town of Highwood that abuts Fort Sheridan is zoned for business or retail. The property immediately west of the installation's truck entrance and north of Washington Avenue is zoned for a Planned Unit Development and includes a variety of land uses including business, hotel, and retail. The only residential zoning occurring along the installation's boundary is two lots on Lakeview Avenue between Walker Avenue and Webster Avenue. This R-4 zone is for apartments.

Lake County Zoning

Under the Lake County ordinance, the central portion of Fort Sheridan is designated as a Special Use District. This area has been designated an historic site by the State of Illinois (Fig. 2). This district was originated to accommodate a variety of uses creating unique impact upon

Figure 2

The Historic District
Fort Sheridan, Illinoiis



Adapted from Official Post Map
Directorate of Engineering & Housing
Fort Sheridan, Illinois, January 6, 1989

0 600 1200
feet

adjoining properties. The property types are ones that cannot be categorized with the other districts. The permitted uses include, but are not limited to, public stables, agricultural facilities less than five acres, storage of construction equipment and materials, manufacturing and warehouse facilities, research laboratories, truck or rail terminals, cemeteries, churches and synagogues, government offices and municipal buildings, recreational and entertainment use buildings, aviation facilities, personnel training centers, forests and open space. The zoning regulations are non-restrictive with a maximum floor factor of 0.50 and maximum impervious surface ratio of 0.75.

Water Use

Lake Michigan is immediately adjacent to Fort Sheridan to the east. Within the lake, there are two "zones," a nearshore zone, and an offshore zone that begins about five or ten miles from shore. The two zones are the result of differences in water temperature and density. There is little mixing of nearshore and offshore waters, so pollutants discharged into nearshore waters tend to remain close to shore. Winds and bottom topography also restrict the offshore movement of surface waters and inhibit the spread of nearshore pollution.

Fort Sheridan and the surrounding communities all lie within the 34,100 acre Lake Michigan Basin-North drainage area. The drainage basin is a narrow strip along the Lake Michigan coastline in Lake County which includes 31 miles of

shoreline from the Cook County border northward to the Wisconsin state line. The basin width ranges from approximately one mile at the southern boundary to three miles at the northern boundary. Within the Fort Sheridan boundaries, there are six ravines that drain surface water from the area into Lake Michigan.

The only existing impoundment at Fort Sheridan is the Rod and Gun Club Pond located near the northeast corner of the installation. This impoundment has a surface area of approximately one acre and is 15 feet deep at the maximum pool elevation. Constructed in 1967 and stocked with largemouth bass, bluegill, and channel catfish, the pond is fed by a groundwater well and has no watershed. The Fort has one swimming beach which was restricted to base personnel and their families. Potable water is fed and distributed from a water treatment station on the eastern edge of the installation.

Demographics

As of March, 1990, the total authorized personnel at Fort Sheridan included 1,300 military and 2,000 civilian positions, for a total population of approximately 3,300. In addition there were approximately 2,800 dependents of military personnel and 4,200 dependents of civilian personnel. There were nearly equal numbers of military personnel and dependents that lived on and off base.

Sensitive Human Subpopulations of Concern

Data concerning the number of persons less than 5 years of age and greater than 62 years of age residing in communities adjoining Fort Sheridan have been estimated from the 1990 U.S. census. The data for these age groups, which represent subpopulations that are generally considered to be more sensitive to disease and illness than the general population, are presented in Table 2-2. In addition, the estimated numbers of males and females residing in the vicinity of Fort Sheridan are also provided, since there are sexual differences in susceptibility to various illnesses.

Habitat/Community Structure

Most of the natural habitat at Fort Sheridan has been disturbed as a result of extensive residential, commercial, and industrial development. As a result, the presence of well-defined, distinct natural communities is limited. Approximately 600 acres of Fort Sheridan consists of artificially maintained, landscaped habitat including manicured lawns and horticultural vegetation (USACE, 1990). Approximately 100 acres is undeveloped and includes a variety of native tree, shrub, and herbaceous species, as well as several mosses and liverworts.

The undeveloped areas of Fort Sheridan are characterized by ravines, bluffs, and the shoreline of Lake Michigan, which forms the eastern boundary of the installation (1990 EIS). Six ravines drain the area, but the natural vegetation and

Estimated Population of Communities Adjacent to Fort Sheridan

Location	1990 Census Population	Female	Male	Under 5 Years of Age	6-17 Years of Age	18-64 Years of Age	65 Years of Age and Over	Median Age
Highland Park (HP)	30,575	15,624	14,951	2,243	5,308	19,239	3,785	37.9
Highwood (HW)	5,331	2,562	2,769	386	771	3,467	707	32.2
Lake Forest (LF)	17,836	9,246	8,590	1,107	3,318	11,364	2,047	37.5
Total	53,742	27,432	26,310	3,736	9,397	34,070	6,539	35.9
Percent Population in HP, HW, LF		51%	49%	7%	17.5%	63.4%	12.2%	
Percent Population in United States		51.2%	48.8%	7.4%	21.3%*	58.9%♣	11.3%	
Median Age in United States								32.9

Source: Lake County Department of Planning, Zoning, and Environmental Quality (LCDPZEQ); based on 1990 census data.

U.S. Census Bureau; based on actual 1990 census data.

* The U.S. Census Bureau grouped ages differently than the LCDPZEQ; 18 and 19 year olds were included in these totals.

♣ The U.S. Census Bureau grouped ages differently than the LCDPZEQ; 18 and 19 year olds were not included in these totals.

community structure of these ravines have been seriously disturbed; some have been used as landfills and storm sewer drainages, and one (Bartlett Ravine) has been paved for use as a roadway to the beach.

Potentially Exposed Wildlife

As a result of extensive development at Fort Sheridan, few undisturbed, distinct natural communities exist, and species diversity and densities have been reduced. The ravines, Lake Michigan shoreline and bluffs, golf course, and undeveloped areas of Fort Sheridan and the adjacent wildlife preserve provide the most habitat for wildlife species found onsite (USACE, 1990).

SUMMARY

It is clear that whatever "new" use comes of Fort Sheridan, children and adult recreational use will predominate. It is this mix of wildlife, historic buildings, and sensitive areas (e.g., shoreline, ravines, etc.) that will limit other uses. Contamination of these areas require identification and remediation. For example, the Army's assumption of lead in paint and other sources is insufficient to render the base safe for children and civilian recreational purposes. The contamination findings will be discussed later in this study but it is important that complete assessment of the base is necessary to assure maintenance of these valuable resources.

CHAPTER III

STATUTORY AND REGULATORY ACTIONS FOR FEDERAL FACILITIES

Introduction

In April, 1988, U.S. Rep. Dick Armey (R-Texas) introduced H.R. 4481[8], a bill whose purpose was to streamline procedures to expedite the closing and realignment of unneeded military bases in the United States. An amendment was added providing that Congress can vote to disapprove the list of bases recommended for closing but cannot vote to approve the list. Another amendment, designed to widen the base-closing net to include American bases in other nations, was defeated. The House approved the amended legislation with the U.S. Senate approving and the President signing soon afterward.

A 12-member Commission on Base Realignment and Closure (BRAC) was created by this law. The Commission's charter is to determine, (1) the best process , including necessary administrative changes, for identifying bases to be aligned or closed, (2) how to improve and best use Federal government incentive programs to overcome the negative impacts, and (3) the criteria for realigning and closing bases. There are 890 military bases in the U.S. and its territories. The panel's

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[8]Base Realignment and Closure Act (P.L. 102-136).

principal recommendation was that 86 bases be closed, 5 bases be partially closed, and 54 bases be realigned. The Commission's initial budget allocation was $300 million for fiscal year 1990. Pentagon officials estimated that the Commission's recommendations will save approximately $693 million a year and include the elimination of some 24,000 civilian jobs (Mardon, 1991).

In January, 1992, the Bush Administration sharply increased its estimate of the cost of cleaning up pollution on military bases (Cushman, 1992). The Administration's request for funds for fiscal year 1993 is $3.7 billion. Ironically, the entire operating budget for the U.S. Environmental Protection Agency, the agency responsible for pollution clean-ups, is $2.7 billion for 1993. Congress estimates that the cost to clean-up 1,800 known polluted sites on military bases easily exceeds $20 billion (Palmer, 1992). These figures include military bases currently operating and those slated for closure. The clean-up priority for military bases slated for closure is unknown.

NEPA

The National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190) has as its' primary function, and as related to Fort Sheridan, the development of an environmental impact statement. NEPA seeks to insure that environmental values will receive proper placement among socioeconomic and technical priorities considered during decision-making which

affects the quality of the human environment.

It is the basis of NEPA that prior to any major federal action (defined as any federal action exceeding $50,000.00), the concerned agency identify the nature of the resource and evaluate the impact of its decision on it. One element of that resource is the historic or cultural patterns that exist in an area. NEPA specifically states that the nation may "preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice."

NEPA has been described by the U.S. Federal judiciary as "at the very least ... an environmental full disclosure law" (Anderson and Daniels, 1973). This requirement is simultaneously the most demanding and most trivial aspect of NEPA environmental impact assessments. It is demanding in the sense that it requires the prediction of all consequences of an action. Thus, it requires that the techniques of environmental science be expanded to encompass secondary effects and effects occurring at long physical and temporal ranges. It is often trivialized in practice by assessments dominated by long catalogs of the communities that will be paved over and species whose habitat will be altered.

The U.S. Council on Environmental Quality (CEQ,1986) requires a comparison of alternatives to the primary focus of environmental impact statements under NEPA. The purpose of the comparison is to allow decisionmakers to balance

environmental effects against other considerations when choosing an action. In many cases, alternatives to the preferred action would not be considered without this provision. Comparison of alternatives has been commonly interpreted as disclosure of the effects of each alternate action followed by some summary comparison. Although comparison is central to environmental impact assessment, it has been treated as just one way of evaluating acceptability in risk assessment (Whyte and Burton, 1980).

The basic provisions and requirements of NEPA are outlined below. The President during the course of this study has abolished the Council on Environmental Quality and proposed the elevation of the USEPA to cabinet level.

A. NEPA does not contain substantive environmental standards.

B. It is a procedural statute requiring an agency to take a "hard look" at the environmental consequences of a proposed action.

C. It does require federal agencies to prepare a detailed statement on the environmental impact of "major federal actions significantly affecting the quality of the human environment."

D. NEPA requires public participation for the express purpose of gathering information on alternatives to the proposed action. This information is to be obtained through formal public hearings.

E. NEPA does not compel an agency to select a course of action that elevates environmental concerns over other appropriate considerations.

Roles of the Council on Environmental Quality and the U.S. Environmental Protection Agency (USEPA) during this study.

A. NEPA created the CEQ within the executive office of the President. The CEQ oversees the administration of NEPA by:

1. assisting and advising the President in preparing the annual Environmental Quality Report for Congress,

2. serving as the agency responsible for resolving interagency disputes about the environmental impact of proposed actions, and

3. issuing regulations.

B. The USEPA's role in NEPA is most notable when a an EIS is not required.

C. USEPA is not required to comply with NEPA when an action is in accordance with other regulatory laws or when actions involve national security.

RCRA

The Resource Conservation and Recovery Act (RCRA) gives USEPA broad authority to develop a comprehensive regulatory program to govern the management and disposal of all waste, including hazardous waste. The hazardous waste sections of

RCRA concern the identification, handling, and disposal of wastes in an environmentally sound manner. Under RCRA, USEPA is responsible for identifying wastes that are subject to regulation and for regulating and permitting generators, transporters, treaters, storers, and disposers of waste covered by the regulations. RCRA also gives USEPA broad authority to promulgate regulations necessary to protect human health and the environment from adverse impacts associated with hazardous waste management[9]. RCRA allows the USEPA to authorize States to operate their own hazardous waste management program if the requirements are as stringent or more stringent than the Federal program.

RCRA mandates that USEPA inspect and enforce the timely closing and cleanup of hazardous waste land disposal facilities. RCRA provides the regulatory framework for controlling hazardous waste. RCRA and CERCLA, provide for the cleanup of hazardous waste sites. Under RCRA, USEPA may delegate to a State agency the authority to implement hazardous waste management regulations if the State agency program is equivalent to the Federal RCRA program. This authority lets States issue hazardous waste permits directly. An authorized State program may adopt requirements as long as they are not inconsistent with th Federal program. USEPA has overall responsibility for implementing both RCRA and CERCLA.

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[9]Subtitle C, of RCRA, is the principal portion of the law devoted to hazardous waste regulations, including corrective action.

Forty-five States, including Illinois, the District of Columbia, and Guam have been authorized to administer RCRA and USEPA oversees their activities.

Improper facility closure may cause adverse human health effects and environmental damage. To ensure proper closure, USEPA requires hazardous waste facility owners/operators to meet closure and post-closure standards. The rules, issued under RCRA, spell out the duties of facility owner/operators when waste treatment, storage, or disposal is discontinued.

Under RCRA, a hazardous waste permit will trigger compliance with 40 CFR 264 Subpart F permitting standards for groundwater monitoring applicable to regulated units. This in turn mandates the performance of corrective actions when the groundwater protection standard is exceeded. In addition, the necessity of a permit will trigger compliance with Section 3004(u), which can require performance of corrective action for releases from RCRA units which stopped receiving waste prior to July 26, 1982, and from any other solid waste management unit at the facility. Compliance with these provisions is a mandatory obligation on the part of permitees, and requires the demonstration of financial assurances to discharge these responsibilities.

On the other hand, owners/operators of waste piles and surface impoundments closing in a manner not requiring post-closure care are under no regulatory obligation to address contamination from any solid waste management units which are not the subject of the closure procedures. In addition, under

certain circumstances, it is unclear whether the owners/operators of surface impoundments have a regulatory obligation to address the contamination caused by the units closing.

In cases where no hazardous waste permit is involved, but USEPA believes contamination may have occurred, an interim status corrective action order, Section 3008(h) is the principal authority available for addressing groundwater and other potential environmental contamination. While Section 3008(h) is theoretically similar to Section 3004(u) authority, practical considerations may result in significant differences in how the two provisions are actually applied. First, the use of the 3008(h) authority is discretionary while compliance with Section 3004(u) is mandatory. In addition, the informational burden on the regulatory authority to trigger 3008(h) orders is greater. Authorized states also may possess 3008(h) or similar authority, thereby placing much of the resource burden on USEPA in this area. There are no public participation procedures in place for the issuance of 3008(h) orders. Finally, it is not clear whether 3008(h) authority is available when the facility has been certified closed and is no longer in interim status[10], although USEPA considers it available regardless of the closure status of the facility.

While courts have ruled that RCRA is the functional

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[10]Interim status is applicable to facilities that have not been granted closure status. USEPA grants interim status to permitted facilities prior to closure.

equivalent of NEPA (Environmental Reporter, 1990), it is not specific for corrective action plans. Therefore, its applicability to grant lead agency authority to the State is very unclear.

CERCLA

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as "Superfund," was enacted in 1980 and amended in 1986 with the Superfund Amendments and Reauthorization Act (SARA), which extensively revised and added new authorities to CERCLA[11]. CERCLA serves two fundamental purposes: it establishes the requirements for reporting and responding to spills of hazardous substances, and it governs the remedial response activities of hazardous substances at inactive waste sites. Unlike RCRA, CERCLA does not allow USEPA to authorize a State program to operate in lieu of the Federal program[12]. CERCLA is implemented when there is an imminent or substantial endangerment to human health or the environment from the release of a hazardous substance. CERCLA response actions are initiated by a "release or threatened release" into the environment of a hazardous substance, pollutant, or contaminant. Section 101(14), of CERCLA, defines "hazardous substance" as any substance that USEPA designates as any "hazardous waste,"

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[11]Codified as amended at 42 USCA 9601-9675 (1982 & Supp. V 1987).

[12]55 Fed. Reg. 8667 (03/08/90); National Oil and Hazardous Substances Contingency Plan.

under RCRA. A "release" is broadly defined under CERCLA to cover almost any possible way in which a hazardous substance, including RCRA hazardous wastes or constituents, could enter the environment. As defined by Section 101(22) of CERCLA, a release means "any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment."

Section 120 of CERCLA mandates that Federal facilities comply with RCRA requirements, including corrective action. Federal facilities at which hazardous wastes are managed are subject to both CERCLA remedial action and RCRA corrective action authorities. The preamble to Section 120 states:

> "USEPA intends to coordinate the application of RCRA and CERCLA authorities through the use of interagency agreements, as provided under the authority of Section 120(e) of CERCLA. These agreements will provide the vehicle for explicitly defining the procedural and technical requirements for corrective action, in satisfaction of the statutory and regulatory authorities of both CERCLA and RCRA."

Section 121 of CERCLA requires selection of a remedial action that is protective of human health and the environment. USEPA's approach to determining protectiveness involves risk assessment. The risk assessment includes consideration of site-specific factors such as types of hazardous substances

present, potential for exposure, and presence of sensitive populations. Acceptable exposure levels are generally determined by applicable or relevant and appropriate Federal and State environmental requirements. Section 121 also provides that for any hazardous subatance, pollutant, or contaminant that will remain on site, remedial actions undertaken, pursuant to Section 120, must satisfy any applicable or relevant and appropriate Federal requirement and any applicable or relevant and appropriate promulgated State standard, requirement, criterion, or limitation under State environmental or facility siting law that is more stringent than the Federal requirement if the State requirement is identified in a "timely" manner. CERCLA requires that any applicable or relevant and appropriate requirement, known as ARARs, be considered during CERCLA actions. Though the amendments to CERCLA address Federal facilities, the timeliness and special requirements established under Section 120 have been subject to different interpretations by the State and Federal agencies.

CERCLA actions are most often confused with actions taken under RCRA. There are two scenarios under which RCRA requirements may be applicable to CERCLA (USEPA, 1989c). First, if the lead agency determines that RCRA listed or characteristic hazardous waste is present and the wastes were treated, stored, or disposed at the site after the effective date of the RCRA Subtitle C requirements under consideration, then the pertinent RCRA Subtitle C requirements will be

applicable to the waste activity. Generally, traditional RCRA regulated facilities that have been listed on the NPL may fall into this category, even if the proposed CERCLA action would not involve treatment, storage, or disposal. For example, if a RCRA Subtitle C landfill operated at the site after the effective date of the RCRA closure requirements, then the lead agency would need to comply with the applicable closure requirements for those units in completing the remedial action.

Under the second scenario, the CERCLA activity involves treatment, storage, or disposal of hazardous waste. If the lead agency determines that RCRA listed or characteristic hazardous waste is present at the site (even if the waste was disposed before the effective date of the requirement) and the proposed CERCLA action involves treatment, storage, or disposal as defined under RCRA Subtitle C, then RCRA requirements related to those actions would be applicable. However, before USEPA may proceed or require a Federal agency through negotiation of an interagency agreement to implement the longer term remedial action at a site contaminated with hazardous substances, the site must first be placed on the National Priority List (NPL)(USEPA, 1988d).

Through the authority of CERCLA, the USEPA develops a National Contingency Plan (NCP). The NCP prioritizes sites nationwide that must be remediated. This official list is known as the NPL. The sites are scored and the risk to the public is determined and prioritized by the hazards found and

the economic feasibility. USEPA also publishes a list of sites that need further evaluation. This list is referred to as the CERCLIS list. The distinction between the CERCLIS list and the NPL list is the center of the conflict between the State and Federal interpretation of lead agency authority and extent of public involvement. Summarily, if a site is on the NPL then clearly CERCLA applies. In the case of the CERCLIS list, no clear regulatory mandate is provided.

Public participation provisions of CERCLA are limited. During the remedial investigation stage of a CERCLA action only one public hearing is required. The hearing can be done anytime prior to the feasibility study. The remedial investigation/feasibility study process will be discussed in the next chapter.

FFCA

The Federal Facilities Compliance Act (FFCA) also appears relevant to military base closures. It is also another tool available to local jurisdictions. The act waives the sovereign immunity Federal agencies have enjoyed against RCRA. To support this position, the courts[13] haved ruled that even if inactive hazardous waste pits on military bases are not used to "store" hazardous wastes, so as to require permit under RCRA, where undisputed evidence is established, the

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[13]McClellan Ecological Seepage Situation (MESS) v Cheney, E.D.Cal.1989, 763 F.Supp. 431.
Mitzelfelt v Department of Air Force, C.A. 10(N.M.) 1990, 903 F.2d 1293.

waste placed in pits intended for permanent disposal had occurred since USEPA's permit regulations took effect are regulated under the statute. The Act is applicable to RCRA in regard to Federal facility inspections. Section 42, Subsection 6927 of FFCA states:

"The Administrator shall undertake on an annual basis a thorough inspection of each facility for the treatment, storage, or disposal of hazardous waste which is owned or operated by a department, agency, or instrumentality of the United States to enforce its compliance with regulations promulgated hereunder. Any State with an authorized hazardous waste program also may conduct an inspection of any such facility for purposes of enforcing the facility's compliance with the State hazardous waste program. With respect to the first inspection of each such facility occurring after October 6, 1992, the Administrator shall conduct a comprehensive groundwater monitoring evaluation at the facility, unless such an evaluation was conducted during the 12-month period preceding October 6, 1992."

The agencies are now subject to civil penalties when found in violation, and their employees can face criminal prosecution (Cheng, 1990). Though the act does not specifically reference base closures, it does, however, clear up the issue of hazardous waste contamination at military bases and other government-owned sites to the benefit of

states that have RCRA authority. This authority nevertheless seems to be applicable only to permitted facilities.

SUMMARY

Laws, of course, are written by the legislative branch of the government and implemented by the executive branch. When conflicts are not resolved between the two, the courts (judicial branch) interpret and rule on the dispute. If the legislative branch is not satisfied by the ruling, then it could simply pass another law. This case study examines the multiple laws that address military base closures.

The laws and statutes listed above are broad in scope and overlapping in applicability to contaminated sites. The Base Realignment and Closure Commission (BRAC) mandates that actions taken during military base closures conform to NEPA. Federal facilities generally comply with the provisions of NEPA. Conformance to RCRA and CERCLA are arguably different. The Federal Facilities Compliance Act while intending to bridge the gap between Federal and State level authority does not fully grant lead agency authority. In this case study, the provisions of delegation of authority between RCRA and CERCLA clearly conflict with local level authority. Though USEPA delegated RCRA authority to IEPA, CERCLA prohibits delegation of Federal authority to States. CERCLA requires consideration of State regulatory actions, such as ARARs, but no lead agency authority is granted when both laws are applicable. FFCA, which was intended to bridge the gap

between Federal and State law, applies only to RCRA permitted sites. None of the statutes above directly apply to Federal facilities when they close.

In this case study, the status of Fort Sheridan in regards to CERCLA and the differing regulatory interpretations center of the authority mandated by the individual laws. Thus, the role of the lead agency is not the question, but which agency has the authority to direct the remedial activities of the closure. The lead agency status also would influence public participation.

CHAPTER IV

INTERGOVERNMENTAL RELATIONS AND AUTHORITY AT FORT SHERIDAN

Fort Sheridan was recommended to the Secretary of Defense for closure by the Commission on Base Realignment and Closure. The Commission mandated conformance with NEPA and because of budgetary considerations imposed a timetable for closure. The resulting closure schedule was imposed by the Secretary of Defense and the Pentagon based on the closure list (GAO,1992).

To support Department of the Army decisions regarding preparation of the property for release, U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) is responsible for implementing environmental studies and, if necessary, restoration activities before property transfer. The U.S. Army Installation Restoration Program (IRP) was designed to identify and control or abate contaminant migration resulting from past operations at Army installations. The IRP is the Army's response authority under CERCLA. Unlike NEPA, CERCLA does not require future use alternatives to be considered during the scoping process. As delegated by Executive Order 12580, the Army is responsible for determining response actions, consistent with the National Contingency Plan (NCP), 40 CFR Part 300, necessary for the abatement of contamination resulting from releases of hazardous substances.

Studies done at military facilities prior to the base closure act were usually done without USEPA approval. Under NEPA, USEPA is not required to conduct assessments involving

national security. According to Army officials, U.S. Army facilities conducted environmental assessments at its discretion, however, under the auspices of USATHAMA. The closure act mandates compliance to NEPA and now Federal facilities also are under the authority of the provisions of CERCLA and RCRA.

Preliminary assessments at Fort Sheridan, conducted in 1982 and 1989, identified actual and potential contamination related to previous post landfilling activities; storage and handling of petroleum, oils, and lubricants (POL), as well as other motor pool wastes; PCB-containing electrical equipment; Nike missile silos and missile fueling points; underground storage tanks; radon and asbestos-containing materials; and storage and handling of pesticides.

The nature and duration of the Draft Final Remedial Investigation Report Remedial Investigation/Feasibility (RI/FS) Study submitted to the Army on February 29, 1992 was warranted to verify and quantify the extent of contamination identified during previous studies (ESE, 1992). According to IEPA, the previous studies were ordered and overseen by the Army without State level input. Nevertheless, IEPA assumed oversight for the review of the remedial investigation[14]. The remedial investigation is designed to provide information for input to the feasibility study. The feasibility study

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[14]IEPA, in communications to interested parties during public comment regarding the remedial investigation, unilaterally assumed lead agency authority (IEPA, 1992). Ironically, the Army sponsored and conducted the hearings.

involves the development and screening or reviewing of a range of remedial alternatives, ranging from a treatment alternative that would eliminate the need for long term maintenence of the site, to a containment option involving little or no treatment, to a no action alternative (Matthews, 1990).

USATHAMA, which conducted the RI/FS, assumed the lead agency role for any future remedial action. The IEPA claimed lead agency authority for accepting or rejecting the remedial investigation (IEPA, 1992). The results of the remedial investigation and selection of remedial alternatives form the bases for disagreement between the Army and the Federal and State environmental regulatory agencies. The Army, while proclaiming that Fort Sheridan is not an NPL site, proceeded with the RI/FS process as mandated under CERCLA, albeit with some revisions.

Remedial investigations require the sampling of soils and groundwater for contamination. The RI determines the depth and areal extent of contamination of groundwater quality (U.S. Army, 1992). Forty-two (42) sites have been identified by the Army on the base which required further investigation (ESE, 1992).

The Illinois Environmental Protection Agency (IEPA) has been working with the Army since 1990 providing oversite on document submittals generated from the IRP. The Department of Defense and the State Memorandum of Agreement (DSMOA) was signed January, 1990 which included the Fort Sheridan Army Base (ESE, 1992). This agreement provided the IEPA with an

enhanced oversight role during the RI/FS and Remedial Design/Remedial Action (RD/RA) activities along with cost reimbursement for State project related activities. Thus, the primary issues for all parties concerned were:

- To what extent does IEPA have jurisdiction over the environmental issues at Fort Sheridan, and
- Is it safe for residents on base to live in housing units adjacent to contaminated areas.

The design and implementation of remedial actions can occur best when lead and support agencies work together in a partnership arrangement. CERCLA, as amended, and the revisions to the NCP establish particular points at which interaction between lead and support agencies must occur in the pre-remedial and remedial response processes (USEPA, 1989c). However, the responsibilities of the State agency as lead and as support agency is unclear for Federal facility cleanups when a facility closes. The dispute resolutions under the IRP also lacks a designated lead role for the State, except to ensure State applicable or relevant and appropriate requirements (ARARs) are offered in a timely manner. It appears that the State lead role is applicable only to RCRA generated closure activities at Federal facilities. Other State-level lead agency authority has to be a part of an interagency agreement (USEPA, 1988d). Thus, the Army relied on the CERCLA generated interagency IRP agreement.

Based on the comments of the Federal Sites Management Unit and the USEPA Region V Environmental Review Branch, and reviewed by IEPA, a number of regulatory issues require immediate attention to enable the Base to proceed toward completing the RI closure status (IEPA, 1992). As stated by IEPA, these issues include:

-- Fort Sheridan does not have a RCRA permit to store hazardous waste or a sufficient groundwater monitoring program to determine rate and extent of contamination;

-- Submission of final documents to the IEPA for review without incorporating previous IEPA comments on the draft documents. Fort Sheridan submitted final documents to the Illinois Environmental Protection Agency (IEPA) for review without incorporating previous IEPA comments on draft documents. This is a major concern for State level authority for monitoring the environmental impact of the closure;

-- Fort Sheridan selected remedies without completion of the remedial investigation. This issue raises serious questions about the sequence of activities and public involvement during the closure process. This scheduling problem was of prime concern to the Army;

- No community relations plan developed.

-- No approved Quality Assurance Project Plan (QAPP) or approval of the RI, from either IEPA or USEPA. According to IEPA, this resulted in insufficient laboratory data being submitted during the Preliminary Assessment. Also the U.S. Army Toxic and Hazardous Materials Agency's (USATHAMA) Contract Laboratory Program was not verified by IEPA or USEPA;

- Insufficient laboratory data submitted during the Preliminary Assessment (USATHAMA's Contract Laboratory Program has not yet been verified by IEPA or USEPA.

- Performed the RI without an approved QAPP from IEPA or USEPA.

- Fort Sheridan did not provide the previous preliminary assessments, conducted in 1982 and 1989, leading up to the recommendation of further study needed.

- Refusal to comply with CERCLA Section 120 (Application of CERCLA/SARA to Federal Facilities).

- No RCRA Inspection.

The Army's position for the base closure is based largely on the closure schedule (U.S. Army, 1992). Clearly, the Army assumed the leadership role based on its authority under the

IRP. It is unclear, by both sides, if the DSMOA granted veto power to the State or USEPA or was grandfathered back to include oversight over previous studies. USATHAMA informed the IEPA[15] that it will not address the IEPA's comments to their original work plans for the following reasons:

-- The Fort Sheridan Army installation, as of April 1, 1993, the close-out date of this study, has not been proposed or listed on the NPL List of Superfund sites. The installation has been placed on the CERCLIS[16] list of possible Superfund sites slated for further investigation;

- Performing much of the field work over again, which would be required according to IEPA comments, would make the Army unable to meet its current schedule to permit cleanup and sale of the installation so that revenue generated could help in the base closure.

- Rewriting the RI/FS work plans would also result in a delay of months to the RI/FS schedule.

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[15]This information was communicated to the IEPA through correspondence between IEPA and USATHAMA (U.S. Army, 1992). This document and other correspondence was made available by IEPA through a Freedom of Information request.

[16]The CERCLIS list was created under CERCLA legislation for sites that may require further study. Sites on the list are tentative until a final decision is made.

- Since Fort Sheridan is not on the National Priorities List (NPL), the Army maintains that they do not have any serious problems and that they do not have to comply with the NCP or CERCLA.

According to the Army (Shannon, 1992), there are no clear rules to the selection of environmental options. Neither the BRAC Commission, the environmental regulatory agencies, nor the Army have any mandate to select one option over the other. In the Army's opinion, the options are decided as part of the RI process. The regulatory statutes indicated above by IEPA clearly overlap the intentions of the Army.

Obviously, a major confounding point confronting the various regulatory agencies is that Fort Sheridan was not a National Priority Listed (NPL) site. Under CERCLA, once a site has been evaluated for remedial response, the lead agency conducts interviews with affected residents and community leaders to determine their level of interest in the site, major concerns and issues, and information needs. Based on those results a community relations plan is developed and an administrative record for selection of a response action is established at or near the site (USEPA, 1988). At Fort Sheridan much of this directive was done. However, the Army apparently adopted the information gathered during the EIS, because of their insistance that the site is not on the NPL list. The IEPA disagreed that a community relations plan was

developed.

Community Concerns and Economic Impact of Base Closure

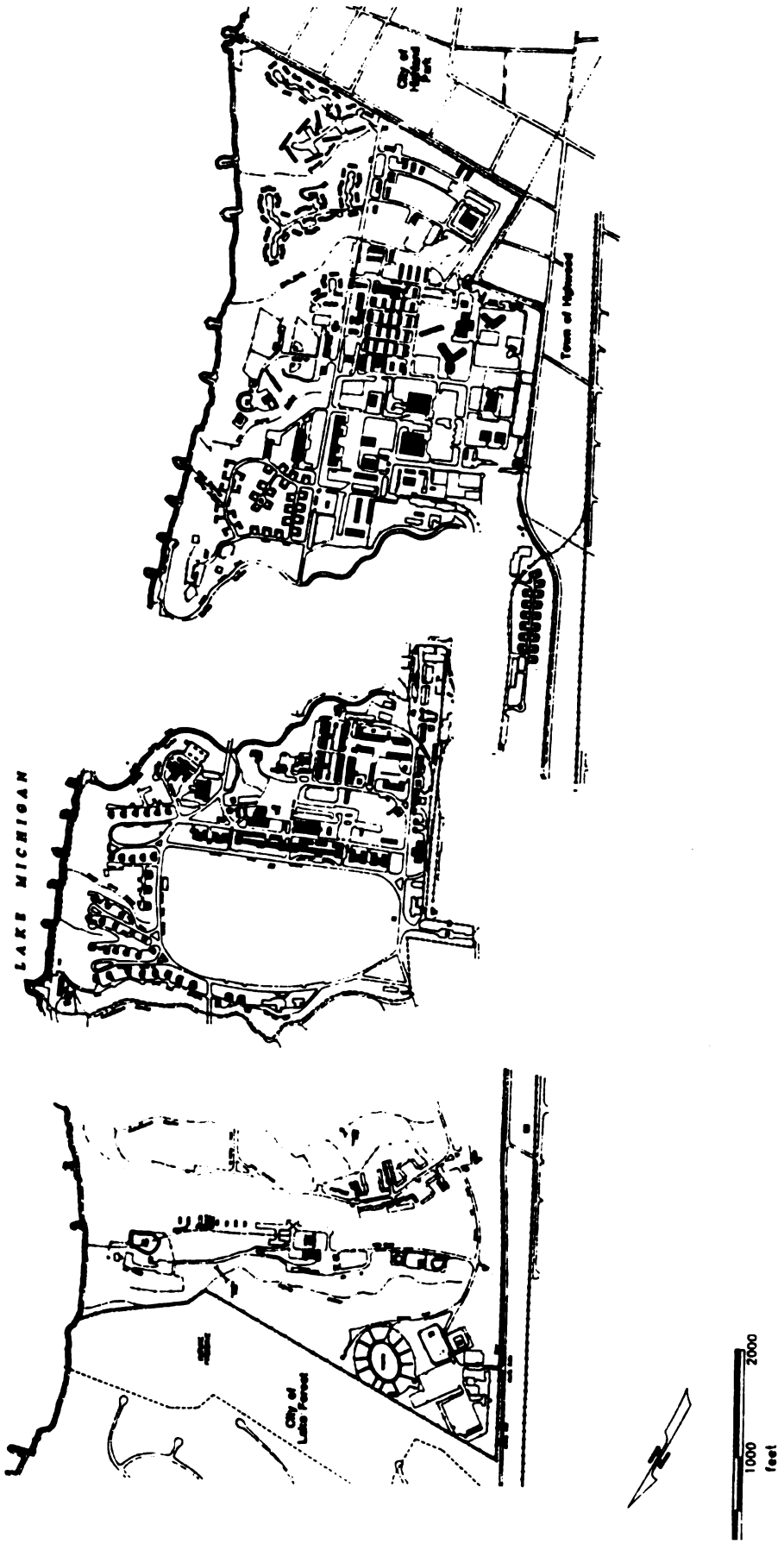
In considering options and alternatives for remedial actions, the agency (Army) also has to receive opinions from the affected communities. In this case, two separate levels of hearings were conducted, the environmental impact statement level and the RI/FS level.

In the May, 1990 Environmental Impact Statement (EIS) (Army, 1990), the Army received suggestions and offered several alternatives for future use of Fort Sheridan. The Office of the District Engineer of the ACE, in Louisville, Kentucky, was responsible for development of the EIS. The ACE's primary concern was a need to receive a fair market price for the land to offset base closure expenses. The following suggestions were formulated during public hearings under the requirements of NEPA:

- Potential designation of some existing homes and/or apartments to serve mentally and physically disabled.

- The University of Illinois at Chicago (UIC) submitted a proposal to recommission a substantial part of Fort Sheridan as a "Great Lakes Environmental and Aerodynamic Graduate Education and Research Center" within a maritime conservation and lakefront recreation park. This center would be established through a consortium of universities

Figure 3


Fort Sheridan
U.S. Army-Military Reserve
Lake County, Illinois
LAKE MICHIGAN
City of Lake Forest
Town of Highland
2000
1000
feet

under the leadership of UIC.

- The North Suburban Sierra Club, as a member of the Advocates for the Public Interest in Fort Sheridan, suggested a range of reuse options including academic, community service, office, cultural arts or museum facilities and housing.

- The Kaja Group presented a plan for the establishment of the "Broadlands" under the jurisdiction of a newly created Village of Fort Sheridan. This plan proposed the development of three zones (See Figure 3) including a northern zone for newly developed U.S. Army facilities and public access; a central historic zone for Broadlands health and research activities; and a southern zone for residential housing.

- The Advocates for the Public Interest in Fort Sheridan presented a draft plan to meet a broad range of reuse goals. Key elements of their plan would include maintenance and enlargement of the military cemetery; provisions for the U.S. Army Reserve, the Commissary and PX facilities, and military and middle income housing; maximization of public access and use of the property; and leasing of the office and residential units to general operation and maintenance income.

- Public entities proposed ownership of the installation (i.e., National Park Service, the Lake County Forest Preserve District and the Illinois Department of Conservation).

- Public interest groups suggested the concept of maintaining Fort Sheridan under single ownership and management (prohibiting annexation by adjacent communities).

- The reuse of Fort Sheridan to maximize open space and recreational benefits for the general public with emphasis on lake access and park resources.

- Reuse of existing buildings to provide low and moderate income housing to meet established Lake County needs.

Under the provisions of NEPA, these alternative actions have to be considered but no action is mandated. In other words, a discussion of the alternatives is required but no statutory authority is given to the agency conducting the EIS. Another element, in the context of NEPA, is land use. Projects, when accepted as part of programs that are largely initiated and managed by the States, or subdivisions thereof, but receive a considerable part of their financing from the Federal government, are subject to federal requirements. These land use impacts are manifest first on the land

developed and second on the surroundings urbanized by people benefited or attracted as a result of the development (Mayer, 1982).

The Army, during the remedial investigation, identified two major environmental impacts of closing Fort Sheridan: solid/hazardous waste and community facilities (Army, 1992). Economic considerations included utility systems improvements, traffic, and cultural resources.

The following solid/hazardous waste issues strongly point to potentially significant environmental problems:

- Potential asbestos, radon, and lead-based paint on or within existing buildings.
- Potential for live ammunition buried within installation boundaries.
- Potential leaking underground storage tanks, munitions burning site contamination, and PCB spills.
- Potential landfill problems and status of closure plans, includung identification of any hazardous waste sites.
- Identification of clean-up alternatives, costs and impacts on future use of the property.

The Army also identified potential impacts on the local and regional economy, which included the following community facilities impacted by the closure:

- Potential impacts to fire and police protection capabilities.
- Potential impacts to users of Fort Sheridan's medical facilities including local veteran populations.
- Potential loss of other community facility services to area military retirees.
- Potential loss of shoreline access for public recreational purposes.
- Potential loss of the one-third existing school population for Highwood-Highland school district and the approximately 30 teachers/staff affected by the loss.

Other Proposed Options[17]:

The Department of the Army wanted a museum in Washington D.C. and had been looking for years for a site that would accomodate a museum. A property came on the market that had been foreclosed on by a large national insurance company. The site was described to the Army as a beautiful piece of property. The insurance company and the Department of the Army held discussions and the concept arose regarding a land trade. It was proposed that the insurance company trade the property in Washington D.C. for land on Fort Sheridan. Early in 1992, representatives from the insurance company visited the base and toured the site. They thought the historic

[17]The information contained in this section was collected during the personal interviews of the mayors. No documentation was offered to substantiate these claims but are expressions of their beliefs.

district, which is in the center of the facility, would be a wonderful housing development area. They expressed great interest and went back and proposed doing an environmental assessment. The State of Illinois had objections to any destruction of any historical district. The insurance company said that there wouldn't necessarily be any destruction of the historic site. The insurance company stated to the three Mayors that they were looking for a re-use of the existing historic structure and its' possible conversion into residential use. For example, there is a building approximately 800-900 thousand square feet of offices/ administrative offices (See Fig. 2) for the Fifth Army. Their strong point, from a real estate standpoint, is they will get the asbestos cleared out because there is a major asbestos problem in the historic area. Anybody acquiring the property has to be responsible for cleaning out the asbestos. The surrounding communities are willing to acquire the property provided the Army abates the asbestos. Asbestos, incidently, was the only contaminant recognized by the local officials as a "problem".

CHAPTER V

RISK ANALYSIS

Prior to the closing of Fort Sheridan, and as mandated by the BRAC commission through the Base Closure and Realignment Act, an assessment of environmental risks is required. The Army conducted the risk analysis as part of the remedial investigation/feasibility study, under the authority of CERCLA.

This chapter analyzes the components of risk and discusses the alternatives suggested by the public. The public input was received before the technical analysis was complete. Therefore, a true perception of the public's knowledge of the risks was not available to any regulatory agency. The findings resulting from the risk analysis also appear in this chapter.

Perhaps another reason for the lack of public perception of the risk findings is that according to John Shannon, then Acting Assistant Secretary of the Army stated, "the environmental restoration of an installation does not necessarily mean unlimited usage of a base after closure. It more specifically means identification of potential toxic problems[18]". Thus, the identification of the risks is paramount to determining future uses.

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[18]Secretary Shannon made these remarks to the BRAC commission during a hearing telecast on C-Span on April 15, 1993.

The term risk is defined as the possibility of suffering harm from a hazard. A hazard is a source of risk and refers to a substance or action that can cause harm (Cohrssen, 1989).

Risk assessment (NRC,1983) refers to the technical assessment of the nature and magnitude of risk. Although risk analysis has often been used synonymously with risk assessment, it is used here to include methods of risk assessment as well as methods to best use the resulting information.

Risk perceptions are important factors influencing both risk assessment and risk management. People perceive risks differently, depending on the likelihood of a hazard having adverse effects; whom it affects; how widespread, familiar, and dreaded the effects are; how a hazard affects the individuals personally; and whether they have voluntarily agreed to bear the risks (Slovic, 1986). Perceptions of risk are also influenced by the benefits derived from accepting the risks (Slovic, 1987). Risk perceptions and technical assessment of risks are not always synonomous. USEPA has shown that public perception and expert judgment differ on prioritizing risks (USEPA, 1990).

Determining the Significance of Risks

This phase of the study is probably the most subjective. It involves judgment and tradeoffs to answer the question of what risk level is acceptable. After collecting analytical environmental data (e.g., soil, groundwater, and building samples), a variety of formal techniques can be used to

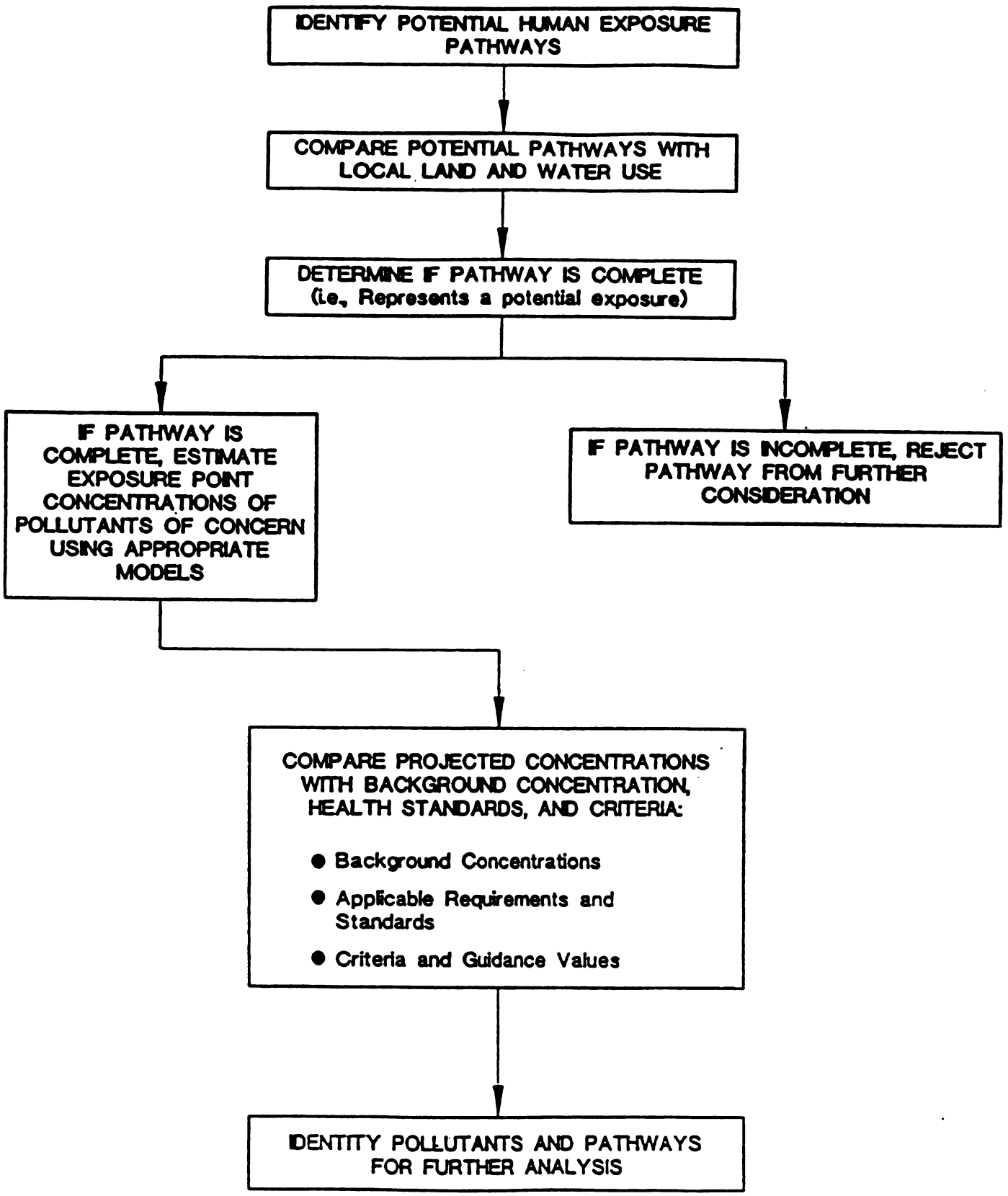
address the question of risk. These include risk-perception analysis, cost-benefit analysis, and decision-analysis. However, the use of such techniques to determine an acceptable level of risk is controversial. Like risk assessment, these techniques provide insight, but also involve uncertainties.

The following risk assessment technique (Merkhofer, 1984, Covello, 1989) was used to assess the data gathered in this study:

1. Hazard Identification
   - Is chemical data adequate?
   - What criteria should be used to identify chemicals of concern?
2. Exposure Assessment (see Figure 4)
   - What receptors are important (human)?
   - What are exposure pathways?
   - How will exposure point concentration be calculated?
   - How will exposure dose be calculated?
3. Toxicity Assessment
   - What toxicity values or concentrations limits are pertinent?
   - Do chemicals interact?
4. Risk Characterization
   - Is quantitative estimate of risk required?
   - What level of uncertainty assessment is appropriate?

Since it is impossible to eliminate all risks associated with

Figure 4


IDENTIFY POTENTIAL HUMAN EXPOSURE PATHWAYS
COMPARE POTENTIAL PATHWAYS WITH LOCAL LAND AND WATER USE
DETERMINE IF PATHWAY IS COMPLETE (i.e., Represents a potential exposure)
IF PATHWAY IS COMPLETE, ESTIMATE EXPOSURE POINT CONCENTRATIONS OF POLLUTANTS OF CONCERN USING APPROPRIATE MODELS
IF PATHWAY IS INCOMPLETE, REJECT PATHWAY FROM FURTHER CONSIDERATION
COMPARE PROJECTED CONCENTRATIONS WITH BACKGROUND CONCENTRATION, HEALTH STANDARDS, AND CRITERIA:
● Background Concentrations
● Applicable Requirements and Standards
● Criteria and Guidance Values
IDENTITY POLLUTANTS AND PATHWAYS FOR FURTHER ANALYSIS

exposure, the risks can be weighed in terms of:

- the risks of doing nothing, and
- tradeoffs between the benefits of incremental efforts to reduce the risks and then communicating the potential benefits.

At this point the affected public should have the opportunity to debate alternatives. However, the Fort Sheridan decisions were made at the agency level because of the NEPA non-mandatory requirement to disregard public comments.

CONTAMINATION FINDINGS AT FORT SHERIDAN

This chapter provides an overall presentation of the risks associated with the contaminants detected at Fort Sheridan. These are the results of the technical assessment (risk assessment) done at the Fort. Under CERCLA, before an agency can consider remedial response actions for future use of a facility and before a facility can close a technical assessment must be completed.

According to the USEPA's Risk Assessment Guidance Document (EPA, 1989b), addressing every single chemical detected at a site where a large number of chemicals have been detected can "result in a report that is large, unwieldy with numerous tables and text, making it difficult to read and understand, and may distract from the dominant risks presented

by the site." Thus, to use the available information effectively, a subset of chemicals, collectively termed chemicals of concern (COCs), is described both here and in the guidance document.

COCs are those site-related constituents that pose the most critical health concerns to human and/or environmental receptors (EPA, 1988b). To select COCs, the database of analytical results is evaluated to select chemicals that are site-related, toxic to humans and biota, mobile, frequently detected, persistent in the environment, and detected at locations of potential receptor exposure. To ensure that the COCs represent the most prominent chemicals at the site and to identify any trends in concentrations, all available environmental data are evaluated during COC selection.

The COCs represent the classes of chemicals that are expected to dominate the site risk(s) such that the need for remedial action can be determined. If action is required, the classes of COCs that are posing the unacceptable risks are addressed in a feasibility study (FS), whereby all chemicals of that class, not just the individual COCs, are reviewed for remedial alternative screening. Addressing all chemicals of the class of chemicals posing unacceptable health risks ensures that (1) all chemicals that exceed an applicable or relevant and appropriate requirement (ARAR) are identified, and (2) chemicals that may be excluded from remediation due to treatment technologies that are not selective for a particular

compound in a class, are addressed in the final phase of the remediation process.

Thus, selecting COCs to be evaluated in a baseline risk assessment (RA) serves as a mechanism to make the most effective and efficient use of the large database of information and ensures that estimated health risks are representative of potential exposures to the site (EPA, 1991b). In addition, the RA component of the FS assures that all chemicals in a class of chemicals represented by a COC are included in the evaluation of remedial alternatives and new treatment technologies for a site or area of concern.

CONTAMINATION ASSESSMENT

Preliminary assessments done at Fort Sheridan, performed by Chemical Systems Laboratory, Environmental Technology Division (1981), Environmental Science & Engineering, Inc. (ESE) (August, 1987), Argonne National Laboratory (October, 1989), and E.C. Jordan (July, 1990) were investigations ordered by the Army during routine environmental assessments of the facility. These prior investigations were in compliance to laws other than the base closure. The findings presented here do reflect the Army's assessment of the base prior to closure. Based on these findings a total of 45 separate sites, grouped into 9 categories were identified for further remedial investigation at Fort Sheridan (ESE, 1992). These 9 categories are:

- Landfills (LFs) - 7 sites
- Coal Storage Areas (CSAs) - 4 sites
- Underground Storage Tank Areas (USTs) - 3 sites
- Vehicle and Equipment Storage Areas (VESs) - 6 sites
- Miscellaneous Yard Areas (MYAs) - 6 sites
- Buildings - 7 sites
- NIKE Missile Installations (NMSF) and Missile Fueling Points (MFS) - 3 sites
- Storm drainage (3 sites) and ravine systems (6 sites), and
- Pole-mounted transformers (PTs).

Pole-mounted transformer areas were investigated as a separate study which was presented as a separate report titled "Report of Findings for Polychlorinated Biphenyls (PCB) Transformer Sampling Conducted at Ft. Sheridan, Illinois (ESE, November 1991). The remaining field investigations performed by ESE in 1991, were conducted in two phases; the first phase (November, 1990 to April, 1991) involved the installation of 68 borings and 46 monitoring wells. Phase 2 (July, 1991 to October, 1991) involved installing an additional 18 borings and 15 wells. The October sampling event entailed resampling of a combination of 15 soil borings and test pits.

CONTAMINANT CHARACTERIZATION

Because the type of activity performed and chemicals used differ at each site within each category (i.e. VES, CSA, UST,

BLDG, NMSF AND MFP, LF, MYA, PT, and ravines and drainages), contaminant characterization was conducted independently for each site (Table 6-1). These characterizations included the summary of the minimum, maximum, and mean detected concentration and/or detection limit, the units, number of records and number of detections for each site and for each category that was sampled (ESE, 1991). Table 6-1 summarizes the sites and categories presented in Appendix A, of that report. The report identifies the contaminant characterization for each area of concern and also includes the results of the quality assurance (QA) samples and tentatively identified compounds (TICs).

CONTAMINANT SCREENING

The objective of the chemical screening procedure is to limit the chemicals to be addressed in the risk assessment to those likely to contribute a majority of the total risk (e.g., those representing 99 percent of the risk) as a result of potential exposure to contaminated media, including groundwater, soil, surface water, and sediments. The baseline RA, therefore, focuses on the most significant COCs, which are the site-related contaminants posing the majority of the total health and environmental risk. This approach allows the baseline RA to focus on those chemicals and areas of most significant concern while making the most effective use of a large chemical database (EPA, 1989a).

The chemical selection process begins by (1) collecting

and summarizing the available analytical data to be used in the RA, followed by, (2) the identification of two sets of evaluation criteria to be used in determining the COCs to be addressed in the RA. One set of evaluation criteria includes the chemical/site-specific factors (i.e., persistence, mobility, frequency and location of detection). The second set of criteria includes the noncarcinogenic and carcinogenic toxicity of the potential COC. Once the two sets of evaluation criteria are identified, these criteria are evaluated to reduce the number of COCs to be included for detailed analysis.

USATHAMA Screening Process

The analytical data used in the chemical screening process is data available from the USATHAMA database. These data have to pass USATHAMA's quality assurance procedures to be used in the baseline RA for Ft. Sheridan. In addition, two sets of data, air data and analytical results, were reported by ESE's Peoria Laboratory. These data are not included in this study because they provide no pertinent results.

Once all analytical data are obtained, the first step in selecting COCs is to evaluate the data following the procedures described in the Guidance for Data Useability in Risk Assessments (EPA, 1990)(Fig. 4). Evaluation under this guidance involves gathering all analytical data generated during site investigations and sorting the data by medium; evaluating analytical methods; evaluating the quality of data

with respect to sample quantitation limits, qualifiers, codes, and blanks; evaluating tentatively identified compounds (TICs); comparing potential site-related contamination with background concentrations; and producing a set of data that qualifies for use in a RA.

Blank samples provide a measure of contamination that may have been introduced into a sample set either (1) in the field while the samples were being collected or transported to the laboratory, or (2) in the laboratory during sample preparation or analysis. To prevent the inclusion of non-site-related contaminants, in the study, the concentrations of chemicals detected in blanks are compared with concentrations of the same chemicals detected in site samples or at regional background levels. Blank data should be compared with the results from samples with which the blanks are associated, however, it is often impossible to determine the association between certain blanks and data (EPA, 1989a). In this case, the blank was compared with results from the entire sample data set as directed by EPA's RA guidance (EPA, 1989a). Common laboratory contaminants include: acetone (ACET), methylene chloride (CH_2Cl_2), chloroform ($CHCl_3$), toluene (MeC_6H_5), and the phthalate esters. Phthalates are commonly used as plasticizers and their presence may result from the plastic sample storage containers. Chloroform, methylene chloride, toluene, and trichlorofluoromethane (CCl_3F) are common laboratory solvents.

As per the RA guidance (EPA, 1989a), if the blank

contains detectable levels of common laboratory contaminants, then the sample results should be considered as positive results only if the concentrations in the sample exceed ten times the maximum amount detected in the blank. Because CH_2Cl_2, MeC_6H_5, and B_2EHP were identified in samples at concentrations greater than ten times the maximum amount detected in the blanks these three compounds were retained as COCs. As per the RA guidance (EPA, 1989a), if the sample concentration is less than 10 times the blank concentration, then the chemical is considered below detection in the particular sample and the blank-related concentrations of the chemical is to be the quantitation limit for the chemical in that sample. Because the concentrations of CHC_{l3}, ACET, and CCl_3F were less than 10 times the blank concentration, these three compounds were excluded as potential COCs.

Tentatively Identified Compounds (TICS)

Depending on the number of TICs relative to non-TICS, there are two options for addressing TICs. When few TICs are present and no historical or other site information indicates that either a particular TIC may indeed be present at the site or that the estimated concentration may be very high, then TICs are generally not included as COCs (EPA, 1989a). When there are many TICs present (e.g., byproduct of a chemical operation conducted when the site was active) or that the estimated concentration may be very high (i.e., the risk would be dominated by TIC), then the TICs should be included as

chemicals of potential concern and the uncertainty in both identity and concentration should be noted (EPA, 1989a).

Based on the results of the analytical data, 23 TICS were identified in groundwater, 16 in surface water, and approximately 35 in soils. Several of the TICS were already chosen as COCs (e.g. toluene, methylnaphthalenes, and DDD) while several TICs which were positively identified in other samples were excluded in the concentration-toxicity screen (i.e. 1,1,1-TCE, 1,1,2-TCE, 1,2-DMB, 1,3-DMB). A majority of the TICs present are straight-chain and branched-chain hydrocarbons (paraffins) (i.e. C_{10}, C_{12}, C_{13}, C_{20}, C_{25}, 2-TMPD, etc) and were most frequently detected at concentrations less than 1 mg/kg. These compounds are typical components of mineral base and synthetic crankcase oil (used as engine lubricants) which may have been used at the installation, particularly at the vehicle equipment storage areas. Because these TICs are site related and are not necessarily represented by the positively identified COCs, they were included as chemicals of potential concern and discussed qualitatively.

Comparison to Background

A comparison of sample concentrations with background concentrations was performed to identify the non-site related chemicals that are found at or near the site (Table 6-2). Information collected during the RI provides onpost background data for Fort Sheridan soil and groundwater using the data

from selected borings and monitoring wells installed around each of the seven landfills investigated. While the samples were not collected offpost, they represent upgradient background concentrations onpost. In addition, regional background levels of inorganics for northeastern Illinois were obtained from United States Geological Survey reports (Shacklette and Boerngen, 1984) to provide for comparison to site concentrations (Table 6-2). A number of inorganic parameters were not selected as COCs (i.e. arsenic, barium, beryllium, magnesium, manganese, etc.) as the concentrations across the installation are well within the regional background concentrations for northeastern Illinois (Schacklette and Boerngen, 1984). In addition, the concentration of many of the inorganic parameters are similar at all categories of sites sampled across the installation indicating that the concentrations are not site-related, rather these concentrations are representative of regional background concentrations.

ESTABLISHING A SET OF CHEMICAL/SITE-SPECIFIC EVALUATION CRITERIA

Establishing chemical/site-specific evaluation criteria is part of the second step in selecting COCs. This step involves identification of chemical/site-specific criteria and determining non-carcinogenic and carcinogenic toxicity ranking values.

Chemical-Specific Criteria

Chemical-specific criteria used in selecting COCs include (EPA, 1988a):

1. Historical information to identify the type of chemicals associated with site activities;
2. Carcinogenicity of the chemical;
3. Chemical/physical factors that determine a chemical's mobility, persistence, and bioaccumulation potential in the environment;
4. Frequency of detection;
5. Special exposure routes [i.e., some chemicals are highly volatile and may pose significant inhalation risk due to the home use of contaminated water, particularly for showering, or soil ingestion (EPA, 1989a)];
6. Treatability of chemicals (as some chemicals are more difficult to treat than others during remediation); and
7. Applicable or Relevant and Appropriate Requirements (ARARs).

Determination of Concentration-Toxicity Evaluation Criteria

As part of the second step in selecting COCs, a concentration-toxicity screen was performed on the Ft. Sheridan analytical database to provide toxicity ranking values for each chemical detected at the site. This screening process consists of the following three steps:

1. Calculating individual chemical scores for each chemical in a contaminated medium (soil, air, groundwater, surface water, and sediment);
2. Calculating total chemical cores for each medium; and
3. Eliminating chemicals from the final COC list based on an evaluation of chemical scores and site-specific selection criteria (EPA, 1989a).

The individual score or risk factor (RF) of a chemical is based on its concentration and toxicity. RFs are calculated separately for non-carcinogenic (NRF) and carcinogenic compounds (CRF) by multiplying the maximum detected concentration of the chemical in a medium by its corresponding toxicity value, which is the reciprocal of the Reference Dose (1/RFD) for non-carcinogens or by the cancer slope factor (CSF) for the carcinogens. Chemical-specific RFs are summed for each medium to obtain the total RF for all potential COCs in a medium. Separate sums are obtained for carcinogenic and non-carcinogenic effects for each medium (EPA, 1989a).

Once the RFs were determined for each potential COC, the chemicals that contributed less than 1 percent (0.01) of the overall total RF (a lower fraction would be required if the site risks are high) were eliminated from consideration for further analysis. Chemicals without toxicity values, such as aluminum, calcium, and lead cannot be screened using this procedure and are evaluated separately as potential COCs by only considering site-specific criteria and EPA guidance

values, such as frequency of detection and drinking water criteria, respectively. In most cases, chemicals for which no RfDs have been determined are represented by the high concentrations of the COCs from the same class (i.e., inorganic or volatile organic). In some instances, the compound with no RfD is a breakdown product of one of the COCs but is present at lower concentrations than the parent compound for which toxicity information is available.

SUMMARY OF CHEMICALS OF POTENTIAL CONCERN

The final List of COCs (Table 6-3) for Fort Sheridan was determined by evaluating the two sets of evaluation criteria the chemical/site-specific evaluation criteria, and the concentration-toxicity ranking values. Based on the results of criteria evaluation, 45 COCs were initially selected for the Ft. Sheridan RA to represent seven classes of chemicals to include 2 anions/cations; 8 inorganic chemicals; 3 nitro-compounds (Table 6-4). These chemicals were selected to represent the most toxic to human and ecological receptors, persistent, mobile, and prevalent contaminants at the study areas of concern. Most of the COCs were selected based on toxicity (NRF and CRF scores) and measured concentrations at the site to include the PAHs, pesticides, and several of the metals (especially lead). Chemicals were also selected due to secondary criteria such as: carcinogenicity, mobility, persistence, bioaccumulation potential, high frequency of detection, exceedance of an ARAR (i.e. metals), or

contribution of a large percentage of the total risk factor. Several chemicals were not detected frequently nor have evaluated NRF or CRF scores, however, they are associated with site activities and in some cases, they are the only chemicals detected to represent the COCs for a particular area of concern (i.e. VOCs at the VES areas). Thus, the final list of COCs is a comprehensive list of chemicals that represent the type of contamination detected at each area of concern. A list of the COCs detected in site groundwater and miscellaneous media, and ravines are listed for each category of the site in Table 6-4.

Summary of Risk Findings

The results of the Fort Sheridan remedial investigation list numerous chemicals of concern (Table 6-4). The list includes organic and inorganic materials. The most important measurement, for evaluation of these COCs, is whether or not a Federal standard is exceeded. The second evaluation is whether any applicable relevant and appropriate requirement (ARAR) is exceeded. These secondary standards are usually at the State level.

The Fort Sheridan risk assessment calculated the daily chemical exposures for each completed pathway for each potential receptor using the exposure formulas and factors presented in the Risk Assessment Guidance for Superfund (RAGS), Human Health Evaluation Manual, Part A (EPA, 1989) and Supplemental Guidance (EPA, 1991b). After determining daily

exposures, the assessment calculated the potential carcinogenic and noncarcinogenic risks associated with those exposures using risk reference doses (RfDs) and cancer slope factors (CSFs) available in EPA's Integrated Risk Information System (IRIS, 1991) and Health Effects Assessment Summary Tables (HEAST) (EPA, 1991a). Where no RfD was available, a provisional value calculated from a Maximum Contaminant Level (MCL) or health advisory, if available, or chronic animal data (with appropriate uncertainty factors) was used.

Though some exceeded State ARARs, the organics found at the site, because of their locations, can be adequately remediated. The organics were associated with either underground tanks, landfills or storage facilities. Since the base uses treated Lake Michigan water for drinking, groundwater was not a problem for remedial alternatives. The inorganics, for the sites identified, did not exceed any State ARARs nor proved any particular cleanup problem. There are no federal cleanup standards for inorganics in soils.

However, the findings still do not adequately address lead. Most of the environmental sources of lead were notably absent. The lack of a State ARAR for lead essentially defaults to a comparison to background (See Table 6-2). Background comparisons are at best arbitrary. The infrastructure of Fort Sheridan, like most military installations is extremely old. Remediation of lead at the facility could be significant. It is not known if the base, it's bridges, piping infrastructure and other structures,

still use lead-based paints, the removal of which will increase exposures whatever the future use of the facility (Day, 1979). The Army assumes that lead-based paint is in units (including houses) on the base (Clark, 1985, Sayre, 1974, Shier, 1977). Lost and buried ordnance and target ranges also contribute to potentially vast amounts of lead on military installations.

It is very apparent that children are the most sensitive group from exposures to lead (Lin-Fu, 1982, Needleman, 1979,1981, Perlman, 1966, Ziegler, 1978) . The future use of Fort Sheridan will impact children under most of the proposed plans. None of the laws or studies mentioned above have recommended or suggested the reduction or elimination of this material prior to the transfer to "other" uses. Therefore, an adequate assessment of risk and the subsequent perception of the risks found cannot be obtained.

Finally, further evaluation of lead exposure at Fort Sheridan seems warranted. The maximum contaminant level (MCL) for lead in Illinois is 50 ppb. In addition, the 500 ppm soil cleanup guidance level may not be protective if children are being concurrently exposed to other sources of lead. For example, one groundwater sample, from a building sample, contained 190 mg/l of lead which exceeds the characteristic level of 5 mg/l. Although water samples are not subject to leaching procedures, they are defined as characteristic if the concentration exceeds a regulatory threshold (Table 6-5). Other sources of lead need to be identified and determined to

not present an additive risk in order to expect that the 500 ppm soil level will not cause a child to have blood lead levels greater than the CDC recommended 10 ug/dL level.

Table 5-1

Study Areas Evaluated in the Contaminant Characterization

Category	Site
Upgradient Groundwater Site-wide groundwater	(represented by LF1MW01, LF2MW02, LF3MW03, LF5MW01, LF6MW01, and LF7MW02).
Upgradient Soil Site-wide groundwater	(represented by LF1SB01, LF2SB02, LF2SB03, SF5SB01 LF6SB01, and LF7SB02).
Downgradient Groundwater Site-wide groundwater	(represented by downgradient samples across the entire installation).
Buildings	B43, B70, B122, B137/137x, B139, B142, and B361.
Coal Storage Areas	CS1, CS2, CS3, and CS4.
Landfills	LF1, LF2, LF3, LF4, LF5, LF6 and LF7.
Nike Missile Silos and Fueling North Missile Silo	(NMS), South MSU Point MS (WMS),
Missile Fueling Point	(MFP).
Ravines	Janes (JANESRAV), Hutchinson (HUTCRAV), Bartlett (BARTRAV), Van Horne (VHRAV), Wells (WELLSRAV), and Shenck (SHENKRAV).
Drains	Airport (APDRN), Scott Loop (SLDRN), Officer Family Housing (OHDRN).
USTs	UB115, UB125, and UB208.
Vehicle Equipment Storage Areas	VES1, VES2, VES5, VES6, VES7, and VES9.
Miscellaneous Yard Areas	YB126, YB128, YB216, YB368, YB377, and YB902.
Pole-Mounted Transformers	110 electrical transformers.

Source: ESE, 1992.

Table 5-2

Regional Background Concentrations of Inorganic Parameters

Inorganic parameter	Average Concentrations of Inorganics for Northeastern Illinois (mg/kg) (a)
Aluminum	0,000 - 50,000
Antimony	<1 - 1.3
Arsenic	2.6 - 16
Barium	200 - 700
Beryllium	<1 - 1
Calcium	7,900 - 18,000
Chromium	30 - 70
Copper	30 - 50
Iron	20,000 - 50,000
Lead	30 - 300
Magnesium	5,000 - 10,000
Manganese	150 - 1000
Mercury	0.032 - 2
Nickel	7 - 200
Selenium	<0.1 - 5
Sodium	5,000 - 10,000
Tin	0.5 - 1
Vanadium	50 - 100
Zinc	45 - 510

Note: mg/kg = milligrams per kilogram.

(a) Ranges obtained from "Elemental Concentrations in Soils and Other Surficial Materials of the Conterminous United States. United States Geological Survey Professional Paper 1270. U.S. Government Printing Office, Washington, DC. 1984.

Table 5-3 Final List of Chemicals of Concern for the Human and Ecological Baseline Risk Assessment of Ft. Sheridan (Page 1 of 2).

Analytical Parameter	Abbreviation
Polycyclic Aromatic Hydrocarbons	
Anthracene	ANTRC
Benzo(k)fluoranthene	BKFANT
Chrysene	CHRY
Fluoranthene	FANT
Fluorene	FLRENE
Phenanthrene	PHANTR
Pyrene	PYR
Acenaphthene	ANAPNE
Benz(a)anthracene	BAANTR
Benzo(b)fluoranthene	BBFANT
Benzo(g,h,i)perylene	BGHIPY
Indeno(1,2,3-cd)pyrene	ICDPYR
Benzo(a)pyrene	BAPYR
Naphthalene	NAP
Methylnaphthalene, 2-	2MNAP
Volatile Organics	
Benzene	C6H6
Dichloroethene, 1,1-	11DCE
Ethylbenzene	ETC6H5
Methylene chloride	CH2CL2
Tetrachloroethene	TCLEE
Toluene	MEC6H5
Semivolatile Organics	
Bis(2-ethylhexyl)phthalate	B2EHP
Dichlorobenzene, 1,2-	12DCLB
1,4-Dichlorobenzene, 1,4-	14DCLB
Trichlorobenzene, 1,2,4-	124TCB

Table 5-3 Final List of Chemicals of Concern for the Human and Ecological Baseline Risk Assessment of Ft. Sheridan (Page 2 of 2).

Analytical Parameter	Abbreviation
Inorganics	
Cadmium	CD
Copper	CU
Chromium (total)	CR
Lead	PB
Mercury	HG
Silver	AG
Thallium	TL
Zinc	ZN
Anions / Cations	
Chloride	CL
Sulfate	SO4
Nitro-compounds	
Dinitrobenzene, 1,3-	13DNB
HMX	HMX
RDX	RDX
Pesticides	
DDD, p,p'-	PPDDD
DDE, p,p'-	PPDDE
DDT, p,p'-	PPDDT
Heptachlor	HPCL
Methoxychlor	MEXCLR
Lindane	LIN

Source: ESE.

Table 5-4 Chemicals of Concern in Site-wide Groundwater and Miscellaneous Samples
(Page 1 of 2).

Chemical Of Concern	Groundwater	Wood	Concrete	Swipe
Acenaphthylene				
Anthracene				
Benzo(k)fluoranthene				
Chrysene				
Fluoranthene				
Fluorene				
Phenanthrene		W		
Pyrene				
Acenaphthene				
Benz(a)anthracene				
Benzo(b)fluoranthene				
Benzo(g,h,i)perylene				
Indeno(1,2,3-cd)pyrene				
Benzo(a)pyrene				
Naphthalene	GW			
Methylnaphthalene, 2-		W		
Tetrachloroethene				
1,2,4,-Trichlorobenzene				
Ethylbenzene	GW			
Benzene	GW			
Methylene chloride	GW			
Toluene	GW			WP
Bis(2-EH)phthalate	GW			
1,2-Dichlorobenzene				
1,4-Dichlorobenzene				
1,1-Dichloroethene				
Copper	GW		C	WP
Cadmium	GW		C	WP
Chromium (total)	GW		C	
Lead	GW		C	WP
Mercury	GW			
Silver				WP
Thallium				
Zinc	GW		C	WP

Table 5-4 Chemicals of Concern in Site-wide Groundwater and Miscellaneous Samples
(Page 2 of 2).

Chemical Of Concern	Groundwater	Wood	Concrete	Swipe
Chloride	GW			
Sulfate	GW			
1,3-Dinitrobenzene	GW			
HMX	GW			
RDX	GW			
DDD, p,p'-				
DDE, p,p'-		W		
DDT, p,p'-		W		
Heptachlor				
Methoxychlor				
Lindane				

Note:
Groundwater = GW, collected across the installation.
Wood = WD, samples collected from BG70.
Concrete = C, samples collected from BG137/137x and 139.
Wipe = WP, samples collected from BG122, 137/137x, 139, 142, and 361.

Source: ESE.

Table 5-5

LEAD SURVEY RESULTS FOR LAKE COUNTY, ILLINOIS

CITIES	Highland Park	Waukegan	Libertyville
LEAD	54 mg/kg	23.8 mg/kg	31 mg/kg

LEAD SURVEY RESULTS FOR CHICAGO CONSOLIDATED METROPOLITAN STATISTICAL AREA
(all values in mg/kg)

PARAMETER*	Number of Data Points	Minimum Conc.	Maximum Conc.	Median
LEAD	40	8.00	346.00	30.10

* Data were not normally distributed and therefore the arithmetic mean and standard deviation were not calculated.

Source: Illinois Environmental Protection Agency, Water Quality Division, Springfield.

Chapter VI

Intergovernmental Risk Communication

The primary risk communication forum used in, for example, urban settings are public meetings. These meetings are opportunities to express the goals and objectives of waste generators to the potentially affected population, administrations and special interest groups (Chess, 1988). Risk communication as a concept for analysis and application may be defined as an "interactive process of exchange of information and opinion among individuals, groups, and institutions. It involves multiple messages about the nature of risk and other messages, not strictly about risk, that express concerns, opinions, or reactions to risk messages or to legal and institutional arrangements for risk management (NRC, 1989).

Because of national security and other reasons, defense installations usually deal with other governmental bodies, as opposed to the public. At Fort Sheridan, plans to deal with risk scenarios were conveyed through public officials to mitigate concerns. Where needed, the public was to be educated about the realities of risk in the operation of the respective facilities. This scenario would be "sufficient" if the public officials were educated about the risks. The following section addresses and suggests a reasonable communication link.

In 1988, the USEPA published a set of guidelines for effective risk communication (Covello, 1988). The defense department apparently does not adhere to these guidelines. The guidelines below, however, stress USEPA goals.

- Accept and involve the public as a caring neighbor would. This will demonstrate respect for the public and support for early community contact.
- Plan carefully and evaluate performance. This involves clear and explicit objectives, such as providing accurately and timely information, stimulating emergency response, and contributing to any conflict resolution.
- Communicate effectively. Incorporating concerns expressed by interested parties. Listen carefully.
- Establishment of trust and credibility through honest, frank and open dialogue and informational releases will be an essential operational guideline.
- Help the media develop specific goals. The media can be a help or a nemesis often predicated by level of corporate cooperation. Thereby, establishing rapport with the media by providing reliable and accurate descriptions of facts in a timely manner.

Based on the RCRA preliminary hazardous waste site assessment reported on June 9, 1987, the IEPA determined that some 10,000 residents would be affected if contaminants from Fort Sheridan reached Lake Michigan. The neighboring communities then began formal alliances to address the subsequent closing issue.

U.S. Representative John Porter, of Illinois, in whose district Fort Sheridan lies, was largely responsible for

communicating the loss of the base. He was the representative who initially contacted the communities of Lake Forest, Highwood and Highland Park. Based on the BRAC closure list, he recommended that an organization be formed. On April 3, 1992 the Congressman met with community representatives formed what is now called the Fort Sheridan Commission (Advocates, 1992). He declared there be representatives of the three neighboring communities plus State representatives, himself, and certain environmental organizations. He recommended the Lake County Forest Preserve and representatives from open lands, representatives from the wildlife refuge, the great lakes commission, and other selected environmental groups (News-Sun, 1988).

The following groups, at various times during public meetings, participated in debate regarding the closing of Fort Sheridan[19]. Their expressed goal during these meetings was to maintain Fort Sheridan for the public and most participated in or offered alternative use plans. These meetings were either with the local officials or amongst the groups themselves.

- Open Lands Project, whose goal is open space for the public and only wants Fort Sheridan as parkland;
- Advocates for Public Interest in Fort Sheridan;

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[19]On April 11, 1992, the Advocates for the Public Interest in Fort Sheridan called a special meeting, in Highland Park, IL., to discuss the Department of Defense's response to the Fort Sheridan land distribution. This and other informal meetings were held as "updates" about the future of Fort Sheridan.

- League of Women Voters;
- Lake Michigan Federation;
- Highland Park Conservation Society;
- Illinois Audubon Society;
- Sierra Club, both Local & State;
- Illinois Association of Park Districts;
- Landmark Preservation Society;
- Lake County Forest Preserve District; and the
- Junior League of Highland Park.

Charles Clark, Mayor of Lake Forest, stated that he works very closely with the Highland Park administration. This alliance between Highland Park and Lake Forest focused on Fort Sheridan and nearby Great Lakes Naval Base. The Mayor stated that if the Great Lakes Naval Base is also put on the closure list, it would drastically effect the cities of North Chicago, Waukegon, and the entire economy of Lake County. This premise is because the huge number of jobs at Fort Sheridan and Great Lakes have a tremendous impact on all of Lake County. Accordingly, the minority communities would be particularly affected by these closures because Fort Sheridan alone has over 1500 employees that live in the largely minority communities of North Chicago and Waukegan (Clark, 1993).

The Mayors of the three surrounding cities[20]

[20]By agreement no Army or IEPA staff members are identified in this paper. Face to face interviews were conducted in the offices of the Mayors of the three communities surrounding Fort Sheridan: Charles Clark, Lake Forest; Dan Pierce, Highland Park; and Fidel

participated in public meetings regarding the base closure. Likewise, they all attempted to get a consensus among the various organizations as to what would be best use of Fort Sheridan. They stated that because it is a huge chunk of land, over 700 acres, there are a lot of different opinions as to what would be the best future use of the land. These meetings were held after the Army's formal EIS activities. However, Fort Sheridan officials sometimes met with the local officials informally.

From the City of Lake Forest's standpoint, the mayor stated that what it wanted as a community was a passive southern neighbor. It abuts the base to the north where there is a small forest preserve. What it did not want to see is a large housing development on the north part of the fort. According to its mayor, the City's primary concern was traffic. Traffic, if there was a large housing development, would all come through Lake Forest and really disrupt its modest street system.

Officials from Lake Forest initially talked to Mr. Durwinski, Director of the Department of Veterans Affairs (VA). According to Mr. Clark, he very much wanted a veterans cemetery on the north section of Fort Sheridan that would be like Arlington National Cemetery in Washington. He showed Mr. Clark a need for it based on the fact that it would be the closest facility outside Milwaukee, Wisconsin. Milwaukee is

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Ghini, Highwood. The interviews were held February 8-9, 1993.

the site for the only other military cemetery in the region. Lake Forest's position supported the VA (Clark, 1993).

The Lake County Forest Preserve, aggressively over the preceding few years, had been buying up what they consider prime sites all over Lake County. During meetings between Lake Forest and the citizen groups, the Lake County Forest Preserve offered to buy the northern section of Fort Sheridan suggesting that the existing golf course would fit into its plan. The Preserve's plan was to improve the golf course and make it open to the public. This section of the Fort also included nature trails and the beach, which is not a very good bathing beach because it is relatively narrow and rocky. But it is a wonderful walking beach with trails and sandstones. Basically that proposal was supported by Lake Forest and Highland Park (Clark,1993).

What was not known at the time was that the Navy had a need for housing. The Navy, being a sister organization within the Department of Defense, has priority use (Mardon, 1991). The Navy wanted the base for the housing. A verbal deal was made with the Navy which allocated the southeast section of the Fort (Advocates, 1992). This agreement essentially ruled out the idea of developing the VA cemetery. The VA then proposed acquiring 120 acres, which is less than they originally wanted. Thereby, Lake Forest suggested 120 acres more or less in the northwest section of the Fort for a veteran's cemetery and the balance of the land on the north will be negotiated with the Department of the Army for

purchase (Clark, 1993). Apparently the deal did not involve any cash, it was an intergovernmental kind of a deal.

The following statement is a recollection from Mayor Clark of events related to the cemetary deal.

> "Mr. Durwinski was terminated before the 1993 election campaign that ended the Bush administration. Mr. Durwinski had the clout within the VA to consumate the deal and with him being dismissed, the driving force behind the cemetery was lost. Apparently there were people at lower levels within the Department of the Army that didn't think it was a good deal. Finally, the decision ended up with the Secretary of Defense who had the ultimate responsibility for intergovernmental defense decisions."

Mr. Clark, nevertheless, wrote him a letter urging him to sign it before he left office. However, it never got signed.

The City of Highwood has a totally different objective than the other communities. Elderly housing, retirement housing, and starter condominiums for young families were mentioned most prominently by the Highwood administration. According to its Mayor, Highwood is a small community that is desperately in need in sales tax revenue (Ghini, 1993). Highwood would like to annex some of Fort Sheridan into its' community so it would generate sales tax revenue, such as a

supermarket, auto agency or whatever.

Mayor Ghini stated that "the communities of Highland Park and Lake Forest were somehow freezing him out and he believes they have more influence than he does." The mayor stated that Highwood is entitled to part of Fort Sheridan, based on the history of the land (Ghini, 1993).

It was abundantly clear that economics overshadowed environmental concerns, according to the elected officials. The question of whether environmental problems, either real or perceived, altered their interest in the property was seemingly overshadowed by the prospect of potential economic gain. The one common question asked of each mayor was "Do you know the environmental condition of the base at this time?" The answer was, in each case, no. There also was no interest in that information in regards to acquiring the property.

The lack of authority, at the local level, or ignorance on the part of elected officials, may override the mandatory public involvement of NEPA and renders the public with no real voice in alternative actions. Even the enhanced and ambiguous role assumed by IEPA also would warrant public input.

CHAPTER VII

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Clearly, the Army and the IEPA differ on the scope, oversight, and regulatory authority for the environmental impacts found at Fort Sheridan. At best, there was minimal input from the general public regarding any actions taken at the facility.

The State of Illinois was relegated to accepting alternative agreements and other coercive plans rather than cooperative waste management options. The City of Lake Forest even zoned parts of the base. They failed, however, to exercise compliance to any zoning violations. The public simply had no voice. The laws that are in effect for the closing either do not require a public forum or do not have to adhere to any public input.

According to local elected officials (Clark, 1993), economics of the area was the overridding issue. Furthermore, it appears that the local community did not grasp a clear understanding of the risks found or the assumed risks present on the base. This is based on the interviews of the local elected officials and the views expressed by interested

community groups (U.S. Army, 1990, IEPA, 1992) showing a genuine lack of concern or demand for full environmental disclosure.

The transfer to and future use of the base could result in cleanup and health costs not fully anticipated. The ubiquitious nature of lead was certainly not fully assessed nor perceived as a potential risk. It was listed as a chemical of concern but the sources of lead chosen for testing were incomplete. On the other hand, asbestos was described as a potential problem, but it was more a bargaining chip than an environmental issue. Asbestos cleanup was part of an offer to rehabilitate housing (Mardon, 1991).

Since the primary objectives of remediation of hazardous waste sites is the protection of human health and the environment, risk assessment and risk communication forms an integral part of the process. Environmental impact assessment is considered the most diverse of the assessment techniques, both because of the diversity of activities that are considered under NEPA and because NEPA requires that the assessments be performed by multidisciplinary teams. Because of this legal mandate, NEPA is predictive, comparative, and concerned with all effects on the environment. Because of the demand for full disclosure of effects, more time should be spent on the full range of affected environmental components.

Any assessment problem can be formulated as a comparison of alternatives, but most assessments focus on selection and justification of a preferred action, rather than on

comparison. NEPA contains a specific requirement that alternative actions be considered and compared to the preferred action.

Risk assessment and risk communication, which were germane to this study, are components of risk analysis. The completeness of the environmental assessment and remediation at Fort Sheridan depended upon the analysis of risk. Though a catalog of impacts were identified in the environmental impact statement, the risk analysis did not determine the usefulness of the land for future activities. After the assessment was done, communicating the risk information to the public was done. The public participation provisions of the different laws also factored into the conflict. The public hearings held for the environmental impact statement were mutually exclusive from the hearings held for the RI/FS. The availability of on-site environmental data during the EIS and the RI/FS differs considerably.

In this research, sensitive human subpopulations were discussed, among other things, to highlight the issue of lead in future land use scenarios. The findings in this study showed an incomplete evaluation of lead. Because most, if not all, the land use alternatives recommended to and by the Army would affect potential exposure, lead would need to be thoroughly evaluated. This lack of information also highlights the necessity for more public participation.

Conclusions

Environmental actions during military base closures should and are mandated to follow NEPA. Nevertheless, the CERCLA RI/FS process, which compares risk management alternatives pertaining to remediation, is the principal environmental program governing base closures.

Thus, the first question posed in the hypothesis is "Does the military take appropriate action to assure the absence of future environmental problems?" The Army assumed control of the remediation of Fort Sheridan under the authority of the Army Installation Restoration Program (IRP). Because the IRP is a CERCLA action, the Illinois EPA essentially had no authority. However, the dispute provisions of the IRP lacks substantive authority for the environmental agencies. USATHAMA believes, both then and now, that because the Fort is not a NPL site, no external regulatory agency has jurisdiction over remediation.

CERCLA is retrospective rather than predictive and focuses heavily on liability and compensation. Whereas, NEPA goals are to assure beneficial uses of the environment without degradation, risk to health and safety, or other undesirable and unintended consequences. NEPA also lacks statutory authority to mandate serious consideration of alternatives, though it requires that alternatives be compared.

Therefore, it appears that inadequate actions were taken at Fort Sheridan to assure the absence of future environmental problems. It also appears that the IRP process satisfies

military uses of a facility but purposely lack non-military uses. This is borne out by the military's position that a base may not have unlimited uses after conversion to civilian use(s) (Shannon, 1993). These apparent differences in intended or future use(s) are central to regulatory oversight of the base closure.

The second question is regarding adequate conveyance to potential recipients regarding limitations on future uses. RCRA would appear to be a promising intergovernmental route for military base closures, rather than CERCLA or NEPA, in this regard. This is because of its public disclosure mandates. Notable differences exist in regulatory procedures for conduct of public notification, public review and comment, and public meetings. A RCRA public hearing is more formal than a CERCLA public meeting.

Furthermore, a contributing factor to impediments of hazardous waste cleanups at military installations has been the inability of State enforcement authority to impact closure plans. Since the addition of corrective action authority in the 1984 amendments to RCRA, there has been considerable overlap in the application of RCRA and CERCLA. Those amendments require facilities seeking permits for treatment, storage, or disposal of hazardous wastes to cleanup releases of hazardous constituents at the facility, regardless of when the release occurred or when the waste was disposed. This corrective action authority is nearly identical with USEPA's authority to require cleanup of hazardous substances under

CERCLA. But unlike CERCLA, RCRA allows States to implement corrective action as part of a State hazardous waste regulatory program in lieu of the Federal program. This is the most conflicting element of military compliance.

The Federal Facilities Compliance Act (FFCA) would appear to certainly render power to States, if the cleanup action were solely under RCRA mandate. FFCA clears the conflict between Federal facilities and State authority under RCRA. On the other hand, the 1986 amendments to CERCLA confound the relationship between RCRA and CERCLA. Under CERCLA, if a facility is listed under the National Contingency Plan (NCP), which then becomes an NPL site, USEPA and the facility must negotiate an agreement governing cleanup of the facility. The agreement allows cleanup decisions to remain largely within the control of the facility, though USEPA makes the final decision. But many of these facilities are also subject to RCRA and to RCRA's corrective action requirements. Under RCRA, corrective action decisions are made by USEPA or the authorized States. Despite language in CERCLA stating that it does not impair Federal agencies' obligation to comply with corrective action requirements, Federal agencies frequently claim that CERCLA preempts state RCRA cleanup authority, even at Federal facilities that are on the National Priorities List.

FFCA is intended to remove this major obstacle to military environmental compliance. The act mandates that the military adhere to environmental concerns of local governments

similar to the requirements of industry. The act is directly aimed at RCRA closure rules rather than across the board environmental compliance. Nevertheless, adhering to the predictive regulatory framework of NEPA will allow for public participation much earlier in the process. These concerns become vital when coupled with future use scenarios of the respective bases. For example, the U.S. Department of Energy (DOE) uses an integrated approach to CERCLA and NEPA. The EIS is added to the RI/FS process. However, statutory differences in the public participation processes make combining these public inputs for base closures difficult. Thus, the primary difficulty identified in this research is the lack of designation of the lead agency overseeing the closure. The void that this creates, in closing a military base, is that of appropriate public input. By the Army choosing this regulatory pathway, for base closures, assures scheduling timetables but seriously diminishes alternative options and local input.

The third question asked in this research is whether potential recipients accurately receive the messages conveyed by the military and do they care? This is primarily a question of risk communication and a question of risk perception.

Favoring CERCLA over RCRA at federal facilities places the authority over cleanups with the Federal facility. Allowing the agencies that polluted these sites in the first place to oversee their cleanup may result in less stringent

cleanups and increased public distrust of the government. The surrounding communities of Fort Sheridan showed no real interest in the environmental condition of the base. Nearly all of the communiques between the Army and local officials centered on future use rather than past use determinations. And after the interviews with the local mayors, there was no concern regarding cleanup costs.

Furthermore, under CERCLA, USEPA has no mandate for overseeing State-conducted cleanups. USEPA's ability to clean up sites is constrained by how it has defined its cleanup responsibilities in the NCP. USEPA believes that limiting its remedial cleanup actions to NPL sites is necessary to ensure that the worst sites in the nation receive adequate treatment. Because of national security, military facilities were not included on NPL lists initially. States subsequently lacked uniform criteria to determine the appropriate level of cleanup necessary to alleviate the risks at these sites. USEPA supports this view, because it maintains that all cleanups at Federal facilities on the NPL list must meet CERCLA requirements. Court opinions cited earlier in this study have generally upheld most authority to USEPA's decision-making and usually favored Federal action over State actions.

Argueably military-controlled base closures make bureaucratic sense. Reducing the number of regulatory agency mandates is perhaps even cost-effective. Even the attractiveness (i.e., potential value) of certain parcels clouds rational decisionmaking. The question, however, was

the accuracy and perception of the message. The decisionmaking involving conversion to alternative use(s) should include persons most affected. Even if the affected persons are ignorant, don't care or uninterested the same level of accuracy and full disclosure of alternatives is necessary. Why? Because the prior uses of military bases represent unusual challenges. The bases have had few, if any, outside inspections. Because of national security claims, the environmental elements on a base were secret and waste management unknown. The importance of the outcomes to the general public by any measure hirarchy differ from the military and thus require disclosure prior to the selection of remediation. The indifference of the public at the present time may prove costly in the future.

Recommendations

One of the primary disagreements between the IEPA and the Army was the lead agency's role in the review of the remedial investigation. The authority for conducting the investigation was under CERCLA, thereby seriously reducing State-level authority. By the Army choosing CERCLA over RCRA, the RI/FS process was implemented.

The following recommendations are offered to reduce the conflict between the parties and additional areas of research identified during the course of this study:

1. Since CERCLA does not require alternative or future

use considerations, it is recommended that the sequence of activities for the investigation be modified. The scoping for the risk assessment should precede the sampling portion of the remedial investigation. The reliance on non-regulated reports done prior to the current investigation laid the groundwork for disagreements. Given the Army's schedule for closure, the prospect of a workable agreement at Fort Sheridan was untenable.

2. The public participation involvement in future scenarios also should be done with informed officials. The City of Highland Park raised the issue in a communication to IEPA (Highland Park, 1992). The issue was having hearings and issuing preliminary reports before final drafts are available. It is recommended that feasibility study recommendations should be an integral part of the public hearing, since CERCLA RI/FS studies only require one hearing. The public cannot make informed recommendations for future use of a facility if certain uses are physically or economically impossible. Even if local officials do not understand or care about the environmental status of a facility, the hearing has to contain accurate information.

3. To ensure adequate independent oversight of non-NPL and Federal facility cleanups, CERCLA should be amended

to give priority to the States corrective action authority under RCRA. NEPA and FFCA would perform similarly. Nevertheless, the missing tool is public participation and reasonable comparison of alternatives. Future work in this area also would be the development of cost/benefit analyses of retrospective versus predictive alternatives to base closure environmental actions.

4. Future research might consider the applicability of interagency agreements versus regulatory reform when regulatory agency interpretations overlap. For example, the Department of Energy (DOE) uses interagency agreements when intergration of overlapping regulations exist at contaminated DOE facilities (St. Clair, 1990). These agreements seem to work well, given the clear cut nature of lead agency authority. The procedure for selecting the lead agency for military and other types of Federal facilities needs further research. CERCLA applicability to other laws allow for lead agency authority under certain circumstances. However, military base closures are not mandated under current law.

5. Lastly, further research is needed in determining public perceptions of contaminated sites which will have demonstrably different uses than the original intended use. The discussion of alternatives has to consider uses for a facility that are feasible, likely and possible.

CHAPTER IX

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