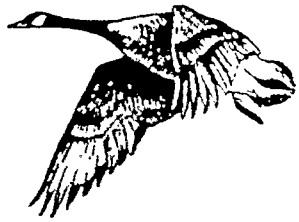
Crab Orchard National Wildlife Refuge
MISCA Areas Operable Unit
Fact Sheet



Fact Sheet Number 3 December 1996

Introduction

This fact sheet describes the Remedial Investigation for the Miscellaneous Areas Operable Unit (MISCA OU) at the Crab Orchard National Wildlife Refuge (Refuge). Background information about the Refuge, results of the Remedial Investigation, and the next stage in the investigation are addressed.

Site Background

The Refuge was established in 1947 by Congress with a mission to support wildlife, recreation, agriculture, and industry. Prior to modern environmental laws, it was common practice for industrial facilities, including those on the Refuge, to use unlined landfills and dumps to dispose of the waste generated by their operations. As a result, a number iof locations on the Refuge became contaminated.

In 1987, the Refuge was placed on the Superfund National Priorities List, which is a national list of hazqrdous waste sites prioritized for cleanup. Superfund is the common nam for the Comprehensive Environmental Response, Compensation & Liability Act (CERCLA) of 1980 and its amendments.

CERCLA Cleanup

Based on the types of contamination, the CERCLA cleanup at the Refuge has been divided into five OUs, including a removal action. These five OUs are:

- *Polychlorinated Biphenyls Areas (PCB) OU
- *Metals Areas (Metals) OU
- *Explosives/Munitions Manufacturing Areas (EMMA) OU
- *Miscellaneous Areas (MISCA) OU
- *Water Tower Area (Towers) Removal Action

MISCA OU Remedial Investigation

The Remedial Investigation was completed according to a Federal Facilities Agreement (FFA) among the Department of the Interior, the U.S. Environmental Protection Agency (USEPA), the Illinois EPA (IEPA), and the Department of the Army. The FFA listed 23 sites at the MISCA OU that required investigation, with one additional investigation site added by the Department of the Interior for a total of 24 sites. Table 1 is a list of those sites, with a description and the investigation status of each.

During the planning process, 11 of the 24 sites were excluded from the Remedial

Investigation. These 11 sites were excluded for the following reasons:

*Site 13 may be investigated under another Operable Unit

*Site 18 may be investigated under another OU.

*Sites 24,25, and 26 do not require work since they are outside the Refuge boundary. Also, the 1988 O'Brien and Gere investigation found that these sites do not pose an exposure risk to human health, wildlife, or the environment.

*Sites 30 and 31 do not contain potential sources of contamination based on the 1988 investigation by O'Brien and Gere Engineers.

*Site 34 is being monitored by the IEPA, the Illinois Department of Public Health, Southern Illinois University, and the U.S. Fish and Wildlife Service (USFWS). It will be investigated under another OU.

*Sites 21, 27, and 35 were examined by USFWS and other agencies' representatives in October 1992, July 1993, and October 1994. At the time of those visits, there was no evidence of contamination. Also, the 1988 O'Brien and Gere investigation found that these sites do not pose an exposure risk to human health, wildlife, or the environment.

The Remedial Investigation of the remaining 36 sites was completed in two phases.

WHAT IS A REMEDIAL INVESTIGATION?

A Remedial Investigation (RI) is an intensive study of a Superfund Site. It is carried out by a team of health and environmental specialists such as hydro geologists, engineers, and biologists to determine the exact nature of the hazardous wastes, the nature of threat, if any, that may be posed to human health or the environment, and the extent of any contamination present at a site.

The RI report describes the type and extent of onsite and offsite contamination, effects of contamination on surface water and ground water, and the degree of contamination in the soil. To achieve these findings, a contractor supervised by EPA and USFWS collects soil and surface water at various site locations. In addition, monitoring wells are installed to sample ground water.

Samples are sent to laboratories to be analyzed for various contaminants, including metals and organics. Sampling also is used to determine whether or not the contaminants are moving from the site, where they might go, and what sensitive areas may be affected. Based on this information, a human health abd ecological risk assessment is conducted to estimate the contaminants' potential impact on human health and the environment.

Phase I RI

In early 1993, the Phase I Remedial Investigation gathered chemical and ecological data at the 13 sites. This data was used to complete a preliminary evaluation of the potential risk to human health, wildlife, and the environment. Additional soil, sediment, and sludge samples also were collected and analyzed. Data for Phase I identified eight sites, Sites 7, 7A, 8, 9, 11, 11A, 12, and 20, that required no further investigation. (Fact Sheet 1 for the MISCA OU provides more detailed Phase I information.)

The remaining five sites, Sites 10,14,16, 22A, and 36, had elevated concentrations of some compounds. These sites were evaluated in the Phase II Remedial Investigation.

Phase II

Phase II was completed in three stages from December 1993 to March 1995. The purpose of Phase II was to gather enough environmental chemistry data to complete a baseline ecological risk assessment, and to collect additional data at Sites 14, 22A, and 36 to complete a human health risk assessment. In particular, Phase II objectives included:

- *confirming the results from Phase I at these sites;
- *estimating contamination location;
- *determining if the identified compounds have impacted shallow groundwater at sites 14, 22A, and 36;
- *and determining if the identified compounds have impacted surface water quality and stream sediments.

The following sections present the results from Phase I and II at Sites 10,14,16, 22A, and 36.

Site 10 - North Drainage Channel

The baseline ecological risk assessment considered the risk to heron and raccoon, which were selected as representative animals that might feed on aquatic life in the drainage channel. The assessment concluded there was negligible risk to these predators. Because of low contaminant concentrations in surface water at Site 10, a human health risk assessment was not done at this site.

Site 14 - Solvent Storage Drainage Ditch

The baseline ecological risk assessment determined a potential risk to small birds and terrestrial animals, such as robins and mice, from the metals in soils at site 14.

A human health risk assessment from this site considered exposure pathways to contaminated media (soil, groundwater, surface water, fish, and deer meat), to the potential users of this site (site worker, construction workers, and recreational users). Analysis of soil, sediment, surface water, and groundwater pathways indicates no unacceptable adverse health effects and that the lifetime cancer risks to users of Site 14 are below USEPA's acceptable target range.

Site 16 - Industrial Park

The baseline ecological risk assessment identified that potential risk to small terrestrial animals was unlikely from contaminants in the soil. Therefore, ecological impacts associated with this site are thought to be negligible. There was no baseline human health risk assessment at this site.

Site 22A - Post Treating Facility

The baseline ecological risk assessment identified a potential risk to wildlife (mice, robins, fox, quail, and hawk) from contaminants in the soils and sediment.

The baseline human health risk assessment considered possible exposure to occasional site workers, construction workers, and recreational users of this site. The assessment determined potential lifetime cancer and noncancer risks are within USEPA's acceptable target range.

Since the baseline ecological risk assessment indicated Site 22A posed an unacceptable ecological risk, contaminated soil was excavated under a removal action and disposed in the Metals Landfill.

Site 36 - Waste Water Treatment Plant

Four locations at this site were sampled and analyzed separately. These include Dove Creek, East Pond, Primary Lagoon, and West Pond. The baseline ecological risk assessment evaluated the heron and raccoon as representative animals that might feed on aquatic life at Site 36. The assessment determined there is no ecological risk to the heron and raccoon at Dove Creek and West Pond. Evaluation of East Pond and Primary Lagoon identified contamination posing a potential risk to heron. Chemicals in sediments of Dove Creek, East Pond, and the Primary Lagoon exceed sediment cleanup levels.

The human health risk assessment for this site considered site workers, construction workers, and recreational users who could be exposed to potentially contaminated soil, sediment sludge, groundwater, surface water, fish and deer meat. Analyses of these pathways for site workers indicated no unacceptable adverse health effects and that the lifetime cancer risks to users of Site 36 are within USEPA's acceptable target range. These conclusions also are true for recreational users ingesting contaminants in fish meat.

At the Primary Lagoon and East Pond, however, unacceptable non-cancer adverse health effects were identified for construction workers exposed to sediments and sludges. The lifetime cancer risks to these users are within USEPA's acceptable target range.

The Next Step...

A Feasibility Study is now under a review comment period by Federal and State Agencies. This study evaluates potential cleanup alternatives for the three remedial investigation sites that pose risks to human health, wildlife, or the environment. The sites under evaluation include 14, 22A, and 36.

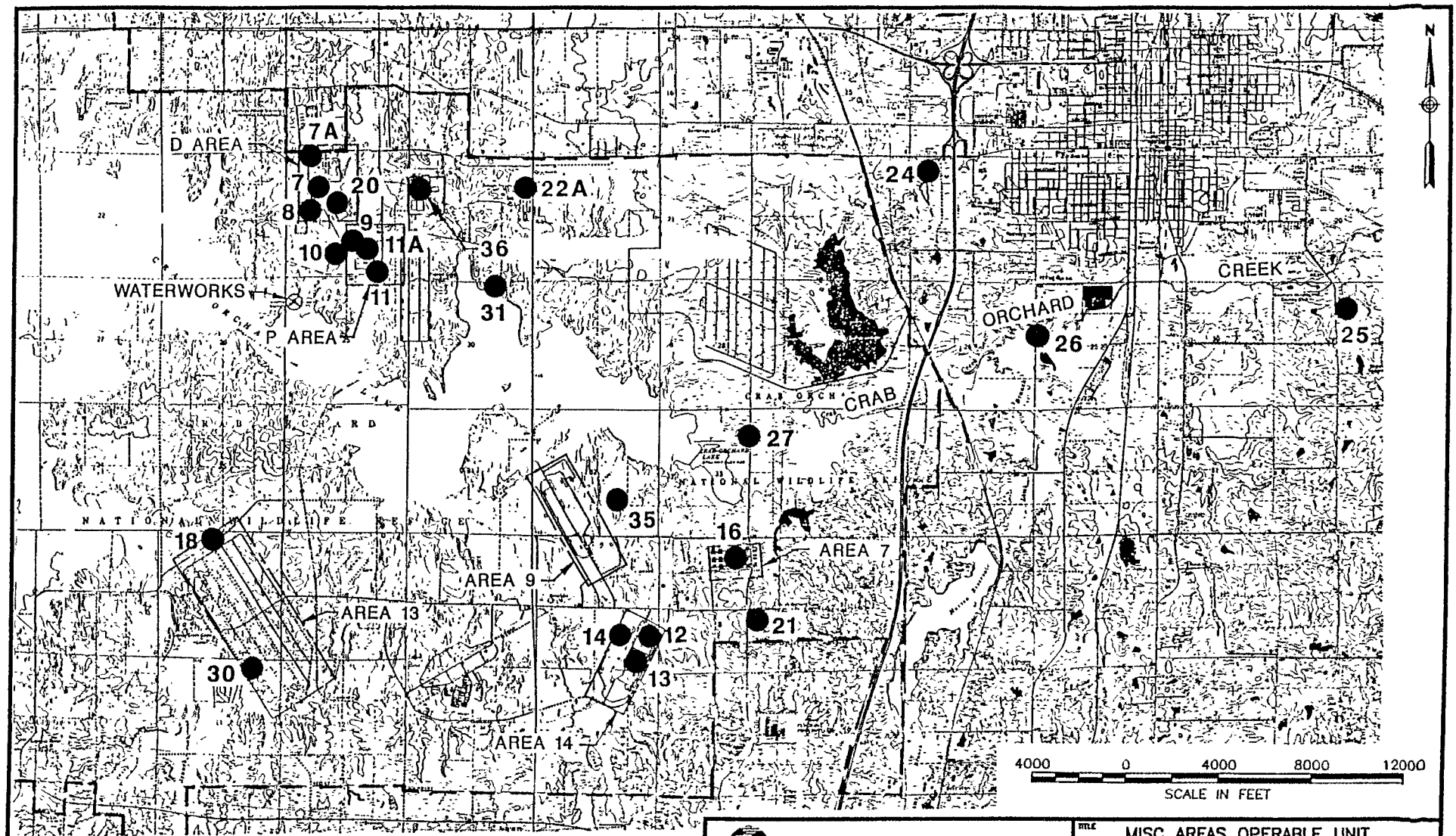
Table 1 Status of the Miscellaneous Areas Operable Unit Sites

Sites	Area	Site Name	Site Status
7	D Area	Southeast Drainage Channel	No further investigation[1]
7A	D Area	North Lawn	No further investigation[1]
8	D Area	Southwest Drainage Channel	No further investigation[1]
9	P Area (north)	Northwest Drainage Channel	No further investigation[1]
10	P Area (north)	North Drainage Channel	No further investigation[2]
11	P Area	Southeast Drainage Channel	No further investigation[1]
11A	P Area (north)	Walkway Structures	No further investigation[1]
12	Area 14	Impoundment	No further investigation[1]
13	Area 14	Change House	Investigation under a separate OU
14	Area 14	Solvent Storage Drainage Ditch	Investigated in RI, evaluated in Feasibility Study
16	Area 7	Industrial Park	Investigated in RI
18	Area 13	Loading Platform	Investigation under a separate OU
20	D Area	South Drainage Channel	No further investigation[1]
21	Area 7	Southeast Corner Field	Excluded from RI[3]
22A	Old Refuge Shop	Post Treatment Facility	Investigated in RI, conducted removal action
24	Pepsi Plant	West Drainage Ditch	Outside Refuge boundary
25	Crab Orchard Creek	Marion Landfill	Outside Refuge boundary
26	Crab Orchard Creek	Marion Sewage Treatment Plant	Outside Refuge boundary
27	Crab Orchard Creek	Dredge Area	Excluded from RI[3]
30	Area 13	Munitions Control Site	Excluded from RI[3]
31	None established	Refuge Control Site	Excluded from RI[3]
34	Crab Orchard Lake	Crab Orchard Lake	Investigated under a separate OU
35	Area 9	East Waterway	Excluded from RI[3]
36	Area 3 North	Waste Water Treatment Plant	Investigated in RI, evaluated in Feasibility Study

[1] Phase I determined no further investigation necessary.

[2] Phase I and II determined no further investigation necessary.

[3] 1988 investigation determined health risks do not exist; excluded from Remedial Investigation.


D AREA
7A
7
20
8
9
10
11A
11
22A
36
31
24
WATERWORKS
P AREA
CREEK
ORCHARD
26
25
CRAB
27
35
16
AREA 7
18
AREA 9
AREA 13
21
14
12
13
30
AREA 14
N
4000 0 4000 8000 12000
SCALE IN FEET
REFUGE BOUNDARY
SITE LOCATION
MAP SOURCE: U.S.G.S. 7.5 MINUTE SERIES QUADRANGLE MAPS MARION, ILL. 1966, PHOTOREVISED 1990, AND CRAB ORCHARD LAKE, ILL. 1966, PHOTOREVISED 1978.
Golder Associates
Chicago, Illinois
CLIENT/PROJECT
MW/CRAB ORCHARD RI/IL
TITLE
MISC AREAS OPERABLE UNIT
CRAB ORCHARD
NATIONAL WILDLIFE REFUGE
DRAWN TPK
DATE 12-21-93
JOB NO. 923-8108
CHECKED RA
SCALE AS SHOWN
DWG. NO. 6
REVIEWED RA
FILE NAME 923-8108
FIGURE NO. 2

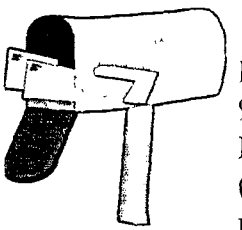
Public Participation Opportunities

As part of the ongoing public involvement program at the Refuge, information about investigation and remediation activities will be provided to you through the Administrative Record, Information Repositories, public meetings, and mailings.

Documents pertaining to this cleanup are also available for your review at the following Information Repositiories: Crab Orchard National Wildlife Refuge Headquarters, Marion Carnegie Public Library, Carbondale Public Library, SIU Morris Library 5th Floor, and the Marion Penitentiary Law Office

PUBLIC MEETING

The USFWS will host a public meeting on Tuesday, December 10, 1996, at 7:00 pm in the Visitor's Center. USFWS and consultants will present the results of the Remedial Investigation and proposed cleanup alternatives of the FS.



Have you received a new 9-1-1 address change? Please contact our office at (618) 997-5491 and leave us a message with your name, old address, and new address. Thanks. We want to keep you on our mailing list.

Each agency has Project Managers who serve as key team members. Those Project Managers are: Denise Steurer at Crab Orchard National Wildlife Refuge, (618) 997-3344; Nam Gowda at USEPA, (312) 353-9236; and Stephen Nussbaum at IEPA, (217) 782-9803.

FOR FURTHER INFO...

Each Federal and State Agency has a Community Relations Coordinator who serves as a primary point of contact to assist you.

USEPA, Region V	IEPA-Office of Community Relations	US Fish & Wildlife Service
Attn: John Perrecone	Attn: Michelle Nickey-Tebrugge	Attn: Georgia Parham
77 W Jackson Blvd	2200 Churchill	620 S Walker Street
Chicago, IL 60604	Springfield, IL 62794	Bloomington, IN 47403
(312) 353-1149	(217) 524-4825	(812) 334-4261