NAVAL AIR FACILITY (NAF) EL CENTRO

EL CENTRO CALIFORNIA

AUGUST 2003

PUBLIC COMMENT INVITED
Navy Proposes Environmental Actions at Magazine Road Landfill
Naval Air Facility El Centro

Preferred Alternative

The alternatives presented in this Proposed Plan/Draft RAP are based on the evaluation of results from sampling and analyses of soil and groundwater at Installation Restoration Program Site 1, the Magazine Road Landfill. A landfill cap is already in place that has been designed to prevent contaminants from spreading through soil or into air. However, there is a possibility that contamination could move through **groundwater**. Results of studies recommend that action be taken to reduce the possibility of contamination moving through groundwater, away from Site 1, and reaching surface water through an adjacent drainage ditch.

Four alternatives were developed and evaluated to remove the possibility of risk to human health and the environment:

1) no action (doing nothing and leaving the landfill as is);
2) continued **groundwater monitoring** (program already in place);
3) continued groundwater monitoring, restrictions on irrigation in adjacent agricultural fields, and restrictions to protect the landfill cap currently in place;
4) **continued groundwater monitoring, restrictions on irrigation in adjacent agricultural fields, restrictions to protect the landfill cap currently in place, and lining the adjacent drainage ditch.**

Alternative 4, the most comprehensive and protective, is the Navy's preferred alternative. This document explains how this action was developed and why the Navy feels it is the best one to implement.

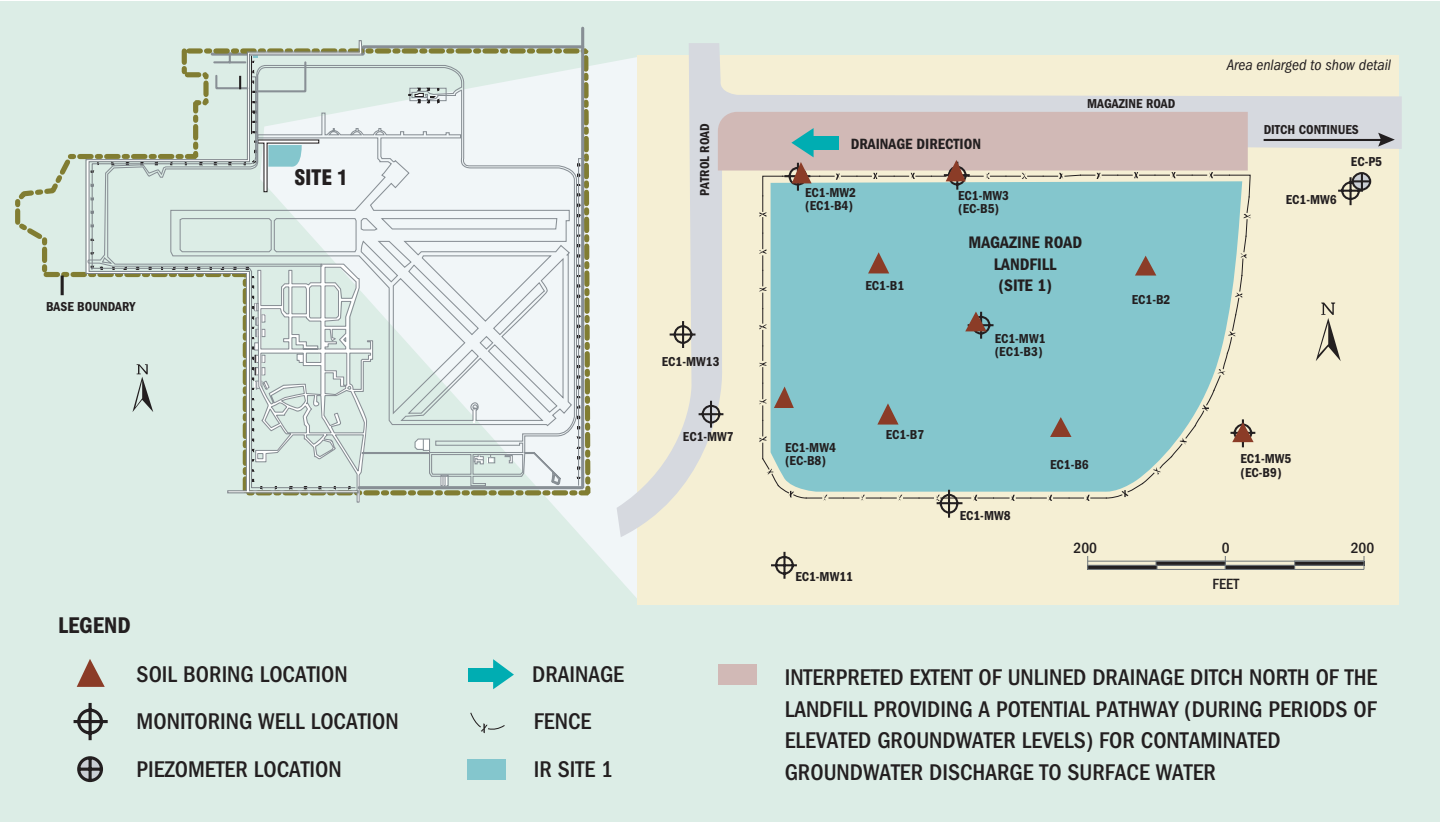
You are invited to review and comment on the Navy's proposal to do further treatment at a former landfill on Naval Air Facility (NAF) El Centro, located in Imperial County, California. The proposal is to line a nearby drainage ditch and continue monitoring and other controls to make sure that no chemicals from the landfill waste get into soil or groundwater. This Proposed Plan/Draft Remedial Action Plan (RAP) describes the Navy's proposal, the history of the landfill, the results of environmental studies, and the treatment options considered.

The 30-day review and comment period is from **September 8 through October 8, 2003.** You are also invited to attend a public meeting on **September 16, 2003,** to hear more about the proposal and tell us what you think. Comments received during this review period will be incorporated into a Responsiveness Summary and will be considered in the final decision for action at the landfill.

The Magazine Road Landfill, called Site 1, is part of the Navy's Installation Restoration (IR) Program, which identifies, investigates, and cleans up hazardous wastes resulting from handling and disposal during past military operations.

➤ *Figure 1 — Regional Location Map*

Words in **bold font** are defined in the Glossary on page 11.



➤ *Figure 2 — Site 1, Magazine Road Landfill, at NAF El Centro*

FACILITY BACKGROUND

NAF El Centro is an operational naval base located approximately 7 miles northwest of El Centro and 85 miles east of San Diego, California (Figure 1). The facility has operated since 1942. NAF El Centro historically provided support to fleet squadrons that took advantage of the clear, dry weather and open space of the Imperial Valley. The base has supported naval parachute testing and training and aeronautical escape system testing, evaluation, and design. In the early 1990s the mission of NAF El Centro was redefined and it became a support and training facility for military aviation units.

SITE LOCATION

IR Site 1, the Magazine Road Landfill, is located in the northwestern portion of NAF El Centro, south of Magazine Road and east of Patrol Road (Figure 2). Site 1 covers about 6.8 acres, is roughly rectangular in shape, and extends about 600 feet along Magazine Road and 400 feet along Patrol Road.

➤ *Figure 3 — Unlined Agricultural Drainage Ditch Immediately North of Site 1 (looking east)*

A field, formerly used for agriculture, borders the site on the east and south. An unlined drainage ditch is located about 30 feet north of the landfill and extends to the east off the base. The bottom of the ditch ranges from about 2 to 5 feet below ground surface along the northwestern part of the landfill to about 10 feet below ground surface along the northeastern part of the landfill (see Figure 3).

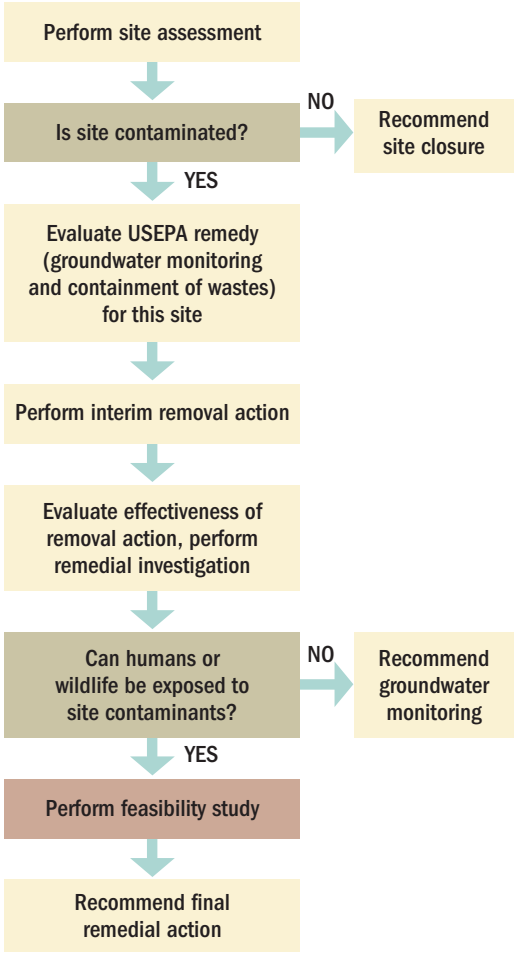
Words in **bold font** are defined in the Glossary on page 11.

SITE HISTORY

Site 1 operated as a municipal landfill between 1965 and 1983. It was converted from a former **borrow pit**; however, neither a liner nor a **leachate-collection system** was installed during landfill construction. About 60 percent of the deposited waste consisted of household rubbish produced on base. The remaining wastes included construction debris and industrial wastes also produced on base, such as plating wastes, asbestos, fuels, used lubricating oil and hydraulic fluids, paints, solvents, photographic chemicals, sandblasting grit, batteries, and spent ammunition cartridges. Waste management practices at the landfill included monthly burning to reduce waste volume. The waste was covered with about 24 inches of soil when use of the landfill was discontinued in 1983.

The IR Program

The Installation Restoration Program was established by the Department of Defense in 1980 to identify and control old hazardous waste sites. The IR Program follows the **Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).** This Proposed Plan/Draft RAP was developed in accordance with Section 117 of CERCLA and applicable provisions of the **National Oil and Hazardous Substance Pollution Contingency Plan (NCP),** and fulfills the public participation requirements of the lead agency, the Navy. This Proposed Plan/Draft RAP also complies with the provisions of Section 25356.1 of the California Health and Safety Code.



➤ *Figure 4 — Site 1 Remediation Decision Flowchart*

ENVIRONMENTAL INVESTIGATION OVERVIEW

A number of environmental studies have been conducted at NAF El Centro. The first environmental investigation was the 1987 Preliminary Assessment and Site Inspection. The Magazine Road Landfill was identified at that time as a possible IR Program site and was designated IR Site 1. Figure 4 presents a flow chart showing the investigation and cleanup decision process followed at Site 1.

Periodic monitoring (sampling and testing) of groundwater started at Site 1 in 1992. In 1993, a solid waste water quality assessment test and site investigation was done to learn more about the geology and **hydrogeology** of the area and how possible contamination from landfill wastes might move offsite into soil, surface water, and groundwater (see Figure 5).

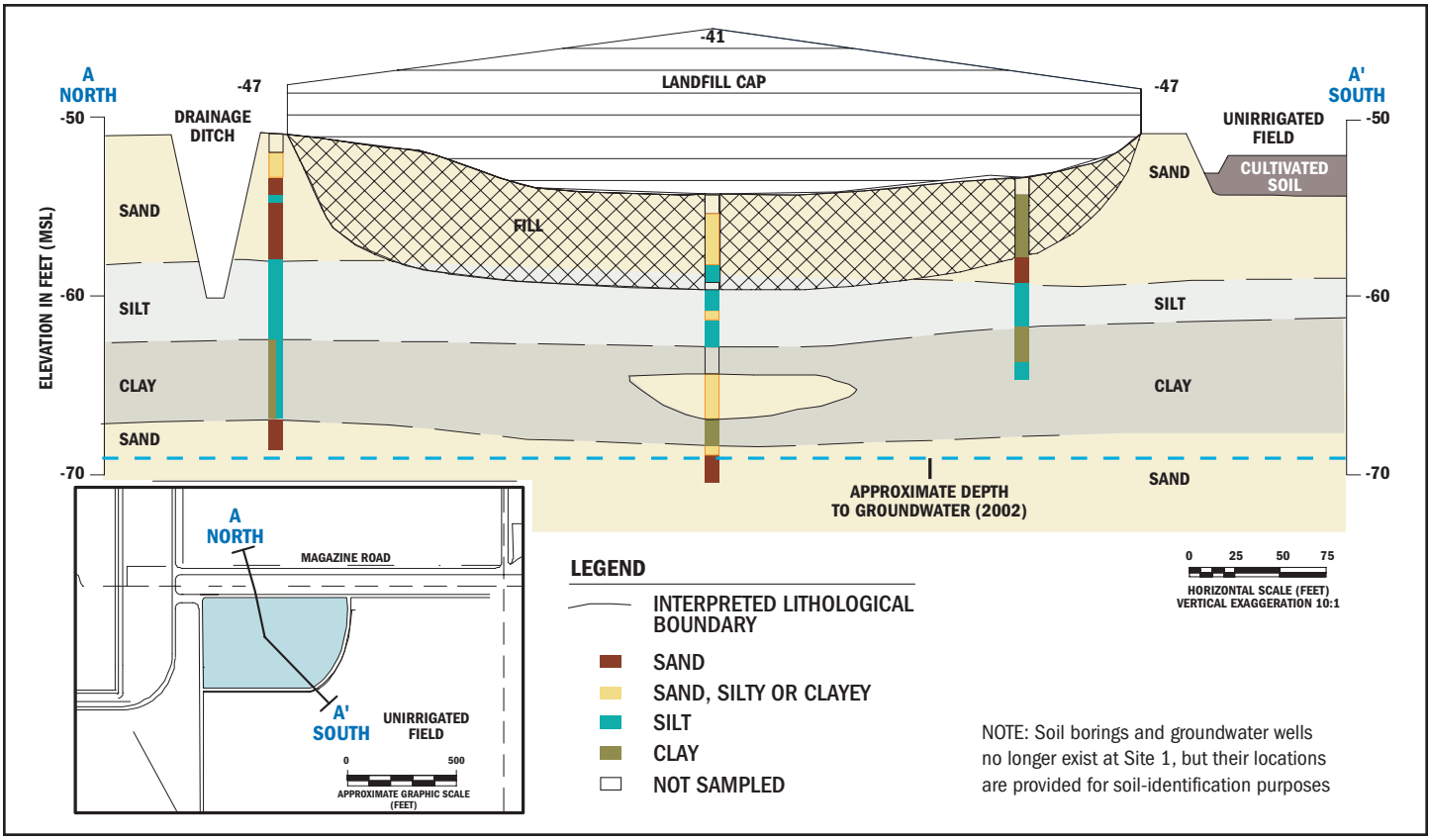
In 1997 and 1998, further studies were done at Site 1 to learn more about the nature of landfill wastes and whether the wastes were creating gases (particularly **methane**, a commonly produced landfill gas), at concentrations that would require action to be taken. Soil borings were drilled and groundwater-monitoring wells

were installed both inside and outside the landfill boundary. Samples of soil and groundwater were taken to determine whether metals present were typical of background (naturally occurring) or the result of human activities (waste disposal). Ecological studies were also done to determine what plants and animals were in the area and whether they could be affected by the presence of landfill wastes.

Sample results reported low levels of fuel-related chemicals, heavy metals, and **volatile organic compounds (VOCs)** in Site 1 soil and groundwater. The metals copper and zinc were reported at levels exceeding background levels, and the metal arsenic exceeded one of the federal levels requiring action. However, arsenic is a naturally occurring element in soils of the Imperial Valley and is often found at levels exceeding the federal criteria requiring action.

In 1998, a cap was constructed over the landfill as part of a **removal action**. The purpose of the cap was to reduce the possibility of exposing humans and **ecological receptors** (plants and animals) to landfill wastes, and to limit the possibility of contaminant migration (movement) into the groundwater by reducing the flow of water (e.g., rain) through the landfill. A **landfill cap**, composed of a foundation layer, a **geosynthetic** clay liner, a 4-foot-thick layer of imported silty sand material, and a 6-inch-thick gravel layer, was placed over Site 1. Drainage facilities were built to reduce the chance of water settling in ponds on the cap and possibly draining down into the landfill, a perimeter fence with a locked gate was erected to permit site access to authorized personnel only, and a road was built around the site for ease of access to inspect the cover system (see Figure 6). In addition, two gas vents were installed to allow passive venting (natural release) of landfill gas to the atmosphere and to allow for gas monitoring. Quarterly maintenance of the landfill cap and associated drainage facilities is ongoing.

In 1998, the Navy further requested that farmers discontinue agricultural irrigation of the field south and east of Site 1 to lower groundwater



➤ *Figure 5 — Conceptual Cross-Section of Landfill and Surrounding Soil Layers*

Words in **bold font** are defined in the Glossary on page 11.

What is Being Done at the Site 1 Landfill?

According to federal and state regulations and guidance, the most frequent remedy for an "inactive landfill" (one that has not been in use for some time) and that poses no significant risk to human health or the environment is capping or placing a cover on the landfill, and monitoring the landfill periodically for early detection of potential releases of contaminants from the landfill. Because the Site 1 landfill was never a permitted landfill under the federal Resource Conservation and Recovery Act (RCRA), it can be closed through a different process than active, permitted landfills.

Site 1 has been properly capped and fenced to begin its 30-year post-closure period as an "inactive landfill" according to regulations. As part of the closure process, which involves participation by the California Regional Water Quality Control Board (RWQCB), Colorado River Basin Region, the landfill is subject to a monitoring/checking and sampling process. The landfill cap is checked monthly for such things as cracks, erosion, standing water, and vegetation growth. The landfill gas venting system is checked for methane (landfill gas) four times a year; however, no methane has been detected since the monitoring program began. Groundwater monitoring is conducted twice a year. All sampling and monitoring results are reported regularly to the RWQCB.

levels beneath the landfill. This action was successful in lowering water levels to maintain 5 to 10 feet of separation between the bottom of landfill wastes and groundwater, thus reducing the likelihood that contaminants could move through groundwater into surface water. This agreement to discontinue irrigation was formalized in the NAF El Centro's Base Master Plan, prepared in 2002, as a **land-use control** for Site 1.

REMEDIAL INVESTIGATION

In 2001, a **remedial investigation report** was prepared to evaluate environmental conditions, contaminant levels, and potential risk to human health and the environment at Site 1. The report concluded that:

- Contamination reported in landfill wastes and groundwater are primarily metals and organic compounds
- Ongoing sampling and monitoring of the landfill soil and groundwater show that the organic contaminants at Site 1 are naturally degrading over time

Figure 6 — View of the Site 1 landfill looking north from the south-western corner. Photo shows the western portion of the landfill cap, the perimeter drainage ditch, fence, and access road.

- The landfill cap prevents wind and water erosion, keeping landfill soils in place; therefore soil is not a medium (substance) of concern (i.e., there is no pathway for exposing humans and the environment)
- Off-site movement of metals is greatly hindered by the overall slow rate of groundwater flow (about 1 to 2 feet per year)
- Future use of Site 1 is open space within the base, as it is close to an operational airfield and

Groundwater at NAF El Centro

The Colorado River Basin Regional Water Quality Control Board (RWQCB) is the agency responsible for overseeing and protecting water resources in the Imperial Valley area. The RWQCB has designated groundwater in the Imperial Hydrologic Unit, which includes NAF El Centro, as having municipal and industrial beneficial uses. However, the shallow groundwater beneath NAF El Centro (groundwater to depths of about 70 feet below mean sea level) is generally of poor quality (contains high levels of dissolved solids, salt, and sulfates) and low yield (quantity). As a result, the RWQCB has not designated shallow groundwater at NAF El Centro as a potential source of drinking water. Like other parts of the Imperial Valley, water for drinking and other municipal uses at NAF El Centro comes from the Colorado River.

Words in **bold font** are defined in the Glossary on page 11.

within the approach path for one of the flight runways, as well as within the explosive arc for the ordnance storage area

- No methane has been reported, and only minor levels of other organic compounds have been reported in landfill gas
- The unlined drainage ditch to the north of Site 1 provides a possible pathway, during periods of high groundwater levels, for discharge of contaminated groundwater to surface water (and ultimately to humans and ecological receptors)

Given present contaminant concentrations and current and foreseeable land use, and because there is low potential for contaminant movement, leaving the landfill material in place is appropriate as long as groundwater levels remain low to maintain separation between groundwater and landfill wastes.

Studies suggest that the only two media (substances) that could be affected are groundwater and surface water. To protect human health and the environment, the remedial investigation report made recommendations addressing both groundwater and surface water. The report recommended that:

1) long-term groundwater monitoring be conducted for early detection of potential releases of contaminants and to monitor continued separation of landfill wastes and groundwater; and

2) a **feasibility study** be prepared to evaluate: a) remedial (cleanup) alternatives to maintain separation between groundwater and landfill wastes; and b) potential discharge of groundwater to surface water by way of the unlined ditch.

FEASIBILITY STUDY

In 2002, a feasibility study was completed that evaluated alternatives for achieving the recommendations presented in the remedial investigation report. The feasibility study developed **remedial action objectives** (treatment or cleanup goals) for groundwater and surface water for the purpose of protecting human health and the environment, as follows.

- Prevent the release of chemicals of concern to groundwater
- Prevent contact between contaminated groundwater and surface water through the drainage ditch north of the landfill
- Maintain the integrity (stability) of the landfill cap and monitoring systems (groundwater and landfill gas)
- Monitor groundwater to detect potential releases

DEVELOPING ALTERNATIVES

Part of the feasibility study included developing options or alternatives for addressing an environmental concern. According to NCP requirements, the "no action" alternative (what would happen if nothing were done) is always included for comparison. Additional alternatives were also developed in considering other NCP requirements, such as off-site treatment when feasible, attaining or exceeding federal requirements to protect human health and the environment, and reducing the likelihood of present or future risks from potential exposure to the contaminants.

After reviewing a group of options for both groundwater and surface water, several additional remedial alternatives were developed, as shown below.

Alternative 1	Alternative 2	Alternative 3	Alternative 4
No Action (baseline comparison)	Continued groundwater monitoring	Continued groundwater monitoring, restrictions on irrigation near the landfill, and restrictions to protect the landfill cap currently in place	Continued groundwater monitoring, restrictions on irrigation near the landfill, restrictions to protect the landfill cap currently in place, and lining the adjacent ditch

Words in **bold font** are defined in the Glossary on page 11.

Groundwater monitoring is included in Alternatives 2 through 4 because it is required as part of post-closure landfill monitoring requirements and is already being implemented. Alternative 3 reflects the current action at Site 1, as it includes restrictions on irrigation, begun in 1998, and restrictions to protect the landfill cap and other parts of the remedy. Alternative 4 is similar to Alternative 3 but also includes lining of the adjacent drainage ditch.

PRELIMINARY CRITERIA USED TO EVALUATE THE ALTERNATIVES

Each option was then screened by a set of regulatory criteria that included short- and long-term effectiveness (how well the option works to solve the problem), implementability (how well the option can be carried out), and cost.

Although Alternative 1 (no action) is easy to implement and costs nothing, it was screened out because it does not achieve the remedial action objectives discussed above. Therefore, Alternative 1 was considered "not applicable." However, Alternative 1 was carried over for detailed analysis and comparison, per federal requirements.

Alternative 2 is implementable but would require reduction of or restriction on some of the activities already underway at Site 1. Alternative 3 is already being implemented – the monitoring, irrigation restrictions, and landfill cap protection measures are already in place. Alternative 4, which includes lining of the ditch, better addresses protection of human health and the environment and prevents groundwater from reaching surface water. Alternatives 2, 3, and 4 were considered "applicable" and were retained for further detailed analysis.

Detailed Analysis of Alternatives

According to federal regulations, the alternatives are subject to a second, more detailed level of evaluation according to each of the following criteria. These criteria are divided into three groups. For a remedy to be selected it must meet the threshold criteria.

Threshold criteria

Overall protection of human health and the environment—does the alternative provide adequate protection of human health and the environment?

Compliance with federal and state "applicable or relevant and appropriate requirements" (ARARs)—does the alternative meet federal and state environmental laws?

Primary Balancing Criteria

Long-term effectiveness and permanence—will the alternative be effective for a long time, even permanent, and will it succeed?

Reduction of toxicity, mobility, or volume—does the alternative include some recycling or other treatment process that reduces the toxicity, the movement, or the amount of the contamination?

Short-term effectiveness—are there short-term risks to the community while carrying out this alternative?

Implementability—is this alternative technically and administratively feasible? Are various services or materials needed to carry out this alternative readily available?

Cost—what are the relative costs associated with materials, construction, annual operation and maintenance, etc.?

Modifying Criteria

State acceptance—is this alternative acceptable to the state regulatory agencies involved?

Community acceptance—is this alternative acceptable to the local community, based on comments received on the feasibility study?

RESULTS OF APPLYING THE PRIMARY BALANCING CRITERIA

The Primary Balancing criteria were weighted, with Effectiveness given the most weight, followed by Implementability and then Cost. Note that the Cost criterion is presumed to have higher value (weight) if the cost is lower; that is, the less expensive the alternative is to implement, the higher it is weighted. The table below summarizes the results of applying these criteria to each of the three alternatives.

Summary of Comparison of Site 1 Remedial Alternatives

Criterion/Alternative	Alternative 1 No Action	Alternative 2 Continued Monitoring	Alternative 3 Continued Monitoring & Land Use Restrictions	Alternative 4 Continued Monitoring Restrictions & Ditch Lining
1. Overall Protection of Human Health and the Environment	Not Protective	Not Protective	Protective	Protective
2. Compliance with ARARs	N/A	Does Not Comply	Complies	Complies
3. Long-Term Effectiveness	○	○	◒	●
4. Reduction of Toxicity, Mobility, or Volume	○	○	◒	●
5. Short-Term Effectiveness	○	○	◒	●
6. Implementability	●	●	●	◒
7. Cost*	●	◒	◒	○
8. State Acceptance	**	**	**	●
9. Community Acceptance	This criterion will be addressed in the record of decision (community acceptance not determined until Proposed Plan is reviewed by the public)			

*Note: the Cost criterion evaluates the present-worth cost and is given a higher weighting value if the cost is lower. This does NOT reflect a cost-benefit analysis.

**Note: the State indicated a preference for the most protective alternative, which is Alternative 4.

Relative Performance in Satisfying NCP Criteria

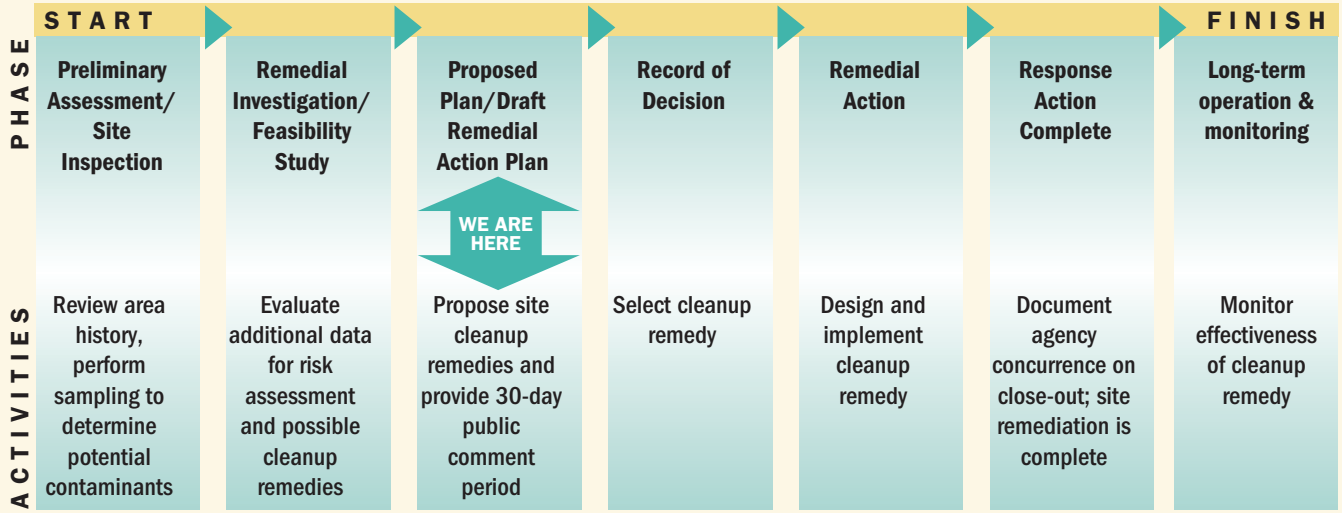
○ ◒ ●

Lowest → **Highest**

Alternative 4 is rated the highest overall, followed closely by Alternative 3. Alternatives 2 and 1 are not fully protective of human health and the environment, which is a Threshold Criterion.

THE NEXT STEP...

Public comments on this Proposed Plan/Draft RAP are being accepted from September 8 to October 8, 2003. Comments received will be considered in making the final environmental determination for IR Site 1. Responses to significant comments will be addressed in a Responsiveness Summary. The Responsiveness Summary will be part of the Record of Decision/Final RAP, which will formally document the specific environmental action selected for Site 1. See the cover page for more information on opportunities to comment on this Proposed Plan/Draft RAP.



Steps in the Cleanup Process at NAF El Centro Site 1

ADMINISTRATIVE RECORD

The reports and studies used to identify and justify the preferred action at Site 1 are compiled in the Administrative Record. These documents, as well as other environmental investigation and cleanup information for NAF El Centro, are available to the public. Please contact:

Ms. Diane Silva,
Records Management Specialist
Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway Building 129
San Diego, CA, 92132
(619) 532-3676

Agency Involvement

At NAF El Centro, the Navy is the lead federal agency for environmental investigation and cleanup activities conducted through its IR Program. Southwest Division of the Naval Facilities Engineering Command manages the IR Program at NAF El Centro. However, other agencies—California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DSTC) and the California Regional Water Quality Control Board, Region 7—also are partners in the Navy's work at NAF El Centro.

INFORMATION REPOSITORIES

Information repositories (locations where site-related reports and documents are available to the public) have been established for the NAF El Centro IR Program. Community members are encouraged to use these resources to learn more about the IR Program at NAF El Centro. Two repositories are located in the community:

El Centro Public Library
539 State Street
El Centro, CA 92243
(760) 337-4565

Hours:
9 AM—7 PM Monday-Tuesday
9 AM—6 PM Wednesday-Thursday
9 AM—5 PM Friday-Saturday

Brawley Public Library
400 Main Street
Brawley, CA 92227
(760) 344-1896

Hours:
Noon—8 PM Tuesday-Wednesday-Thursday
9 AM—5 PM Friday-Saturday

FOR MORE INFORMATION

For more information about the environmental cleanup program at NAF El Centro or questions about the IR Program, please contact:

Bob Fischer, Code 45.RF
Installation Restoration Program Manager
Naval Air Facility El Centro
1605 Third Street, Building 504
El Centro, CA 92243-5001
(760) 339-2284

Mike Gonzales, Code 5DEN.MG
Remedial Project Manager
SWDIV Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, CA 92132-5190
(619) 532-3178

Leticia Hernandez
Public Participation Specialist
California EPA/DTSC
5796 Corporate Avenue
Cypress, CA 90630
(714) 484-5488

Liann Chavez
Senior Engineering Geologist
California EPA/RWQCB
73-72- Fred Waring Drive, Suite 100
Palm Desert, CA 92260
(760) 776-8945

Did You Know?

You can read more about the Navy's environmental program at NAF El Centro on the Internet! The web address is:

www.efdsw.navfac.navy.mil/Environmental/ElCentro.htm

GLOSSARY

borrow pit—an area where dirt, rocks, sand, or other such materials were extracted ("borrowed") and where removal of materials resulted in the creation of a pit or depression in the ground

CERCLA—the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, also known as "Superfund", that addresses sites contaminated as a result of past hazardous waste handling and disposal practices

ecological receptors—plants and animals on or near a site where chemicals of concern are known to exist; an "ecological risk assessment" evaluates whether such ecological receptors may be at risk from contamination at a site

feasibility study—following remedial investigation (study conducted to better understand a contamination problem; see "remedial investigation report" below), the feasibility study develops possible cleanup alternatives and evaluates their suitability according to a series of criteria

geosynthetic—a man-made material, used in place of natural geologic materials, to make liners for landfills and other uses

groundwater—water found beneath the earth's surface in geologic formations and that supplies wells and springs

groundwater monitoring—a sampling and analysis program conducted periodically to monitor for the presence or absence of contaminants in groundwater

hydrogeology—the study of interrelationships between groundwater (see above) and geologic materials and processes

Installation Restoration (IR)—a comprehensive environmental program developed by the Department of Defense in response to CERCLA (see above) and conducted by the Navy to identify, investigate, and clean up hazardous waste sites at all its facilities

landfill cap—a cap or cover placed over a landfill that is engineered for site-specific conditions

land-use control—a control (engineering or institutional) placed on the use of a site, where contaminants are left in place, to ensure that contaminants do not pose an unacceptable risk to human health or the environment; for example, fencing a site, capping a site, and limiting public access to or irrigation at a site

leachate-collection system—an engineered system that gathers leachate (water that collects contaminants as it trickles through landfill wastes) and pumps it to the surface for treatment

methane—a colorless, odorless, flammable gas created by decomposition of organic materials (such as those found within a landfill)

NCP—the National Oil and Hazardous Substances Pollution Contingency Plan, the federal regulation that guides the CERCLA program (see above)

proposed plan—also referred to as a "remedial action plan" the proposed plan sets forth the preferred remedy for a site, based on information provided in the feasibility study (see above)

remedial action objectives—aims or goals of remedial actions

remedial investigation report—following fieldwork (sampling and analyses of soil, groundwater, surface water, etc.) and evaluation of the potential risk to human health and the environment at a site, the results are used to determine whether further action (study and/or cleanup) is needed at a site; the report presents this information and recommends further or no further action

removal action—a cleanup remedy that can be a short-term solution, or one component of a long-term solution, for contamination at a site

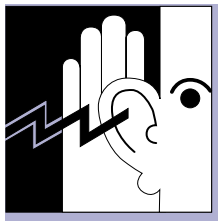
volatile organic compounds—organic (carbon-containing) compounds that evaporate ("volatilize") readily at room temperature

Naval Air Facility El Centro
Environmental Division
1605 3rd Street, Building 504
El Centro, CA 92243-5001

Inside:

- **Information on Site 1 Proposed Action**
- **Public Comment Period : September 8-October 8, 2003**
- **Public Meeting: September 16, 2003**

This fact sheet is printed on recycled paper



OPPORTUNITIES FOR COMMUNITY INVOLVEMENT

Public comment period: September 8 to October 8, 2003
Public meeting: September 16, 2003

You are encouraged to comment on the Proposed Plan/Draft RAP and the supporting documents during the 30-day public comment period. Comments should be postmarked no later than October 8, 2003 and mailed to Mr. Mike Gonzales, Code 5DEN.MG, Remedial Project Manager, SWDIV Naval Facilities Engineering Command, 1220 Pacific Highway, San Diego, CA 92132-5190.

Comments received during this review period will be incorporated into the Responsiveness Summary portion of the Record of Decision/Final RAP and will be considered in the final decision for Site 1.

A public meeting will be held on Tuesday September 16, 2003, at 7 pm in the auditorium of the Imperial Irrigation District, located at 1285 Broadway, El Centro.