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MOFFETT FIELD
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Information obtained during groundwater monitoring indicated that organic contaminants are not migrating away from the Site. In addition, metals concentrations in groundwater surrounding the Site 22 landfill are consistent with background concentrations in the area.

Furthermore, landfill gases are not escaping through surface soil or migrating away from the Site 22 landfill. Buried organic materials (such as newspapers, wood, or lawn cuttings) decompose and create methane and carbon dioxide gases. These gases can result in potentially hazardous conditions where methane and carbon dioxide can build up, potentially creating an explosive and/or oxygen deficient atmosphere. Due to this concern, the concentration of landfill gas at Site 22 was also investigated. The results of the investigation indicate that gases are not migrating to the atmosphere from the Site 22 landfill and no gases are migrating beyond the perimeter of the Site 22 landfill.

Soil beneath the Site 22 landfill consists of complex layers of fine- and coarse-grained soils. The waste is buried between 1 and 11 feet below ground surface (bgs). Approximately 5 feet of the waste is below the level of groundwater in some portions of the Site 22 landfill. Shallow groundwater beneath the Site 22 landfill is unfit to drink because of the naturally occurring elevated salt concentrations, which are similar to those in seawater.

RISK SUMMARY

The RI concluded that as long as the landfill debris remains covered (buried), there is no risk to human health or the environment. This conclusion was the result of site-specific human health and ecological risk assessments, which identified contaminants, exposure pathways, potential human and ecological receptors, and the potential risks associated with exposure to the contaminants. However, from animals burrowing in the area of the Site 22 landfill, contaminated materials may be brought to the surface, where humans may come into direct contact with contaminated materials. This is the primary concern for the site and the focus of the response action.

Human Health Risks

US EPA has set target ranges of risk as a means of estimating the potential human health risks caused by exposure to contaminants. Risks are calculated

based on the types and concentrations of contaminants present and on possible exposure pathways to these contaminants. At the Site 22 landfill, the potential exposure pathways are skin contact with soil, oral ingestion, and inhalation of soil or dust. Direct contact and ingestion of groundwater were not considered possible exposure pathways at the Site 22 landfill, since the shallow groundwater is not a drinking water source due to its high salt content. The high salt content also severely limits the use of groundwater for other beneficial purposes.

The carcinogenic (cancer-causing) risks for the Site 22 landfill are within US EPA's acceptable risk range for the three future-use exposure scenarios evaluated (residential, occupational, and recreational); that is, the potential risks from these scenarios are exceedingly low and no action is required. The site risk was also below US EPA's noncarcinogenic (noncancer-causing) hazard threshold and, thus, does not pose an unacceptable risk. The risk to a potential future resident slightly exceeds US EPA's acceptable risk range for noncarcinogenic risk. However, residential housing is not a likely future land use at Site 22.

Ecological Risks

Potential ecological risks were also assessed. The burrowing owl was chosen for evaluation due to potential risk resulting from inhalation of VOCs in their burrows. The evaluation indicated the burrowing owl population within the area of the Site 22 landfill was healthy and that the chemical concentrations at the Site 22 landfill were not harmful to the burrowing owl community.

FEASIBILITY STUDY

A final feasibility study (FS) and an initial Proposed Plan were prepared in March 1999 to evaluate potential remedial alternatives that would prevent animals, namely ground squirrels, from burrowing into and exposing the buried refuse. The FS evaluated the proposed alternatives against nine criteria as required by the Superfund regulations. A description of the nine evaluation criteria is provided in Table 1. A summary of the alternatives evaluated in the March 1999 Final FS are presented in the following sections of this Proposed Plan.

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TABLE 1. Evaluation Criteria for Superfund Remedial Alternatives	
Overall Protection of Human Health and the Environment	<ul style="list-style-type: none"> determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
Compliance with ARARs	<ul style="list-style-type: none"> evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.
Long-term Effectiveness and Permanence	<ul style="list-style-type: none"> considers the ability of an alternative to maintain protection of human health and the environment over time.
Short-term Effectiveness	<ul style="list-style-type: none"> considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.
Reduction of Toxicity, Mobility, or Volume through Treatment	<ul style="list-style-type: none"> evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
Implementability	<ul style="list-style-type: none"> considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
Cost	<ul style="list-style-type: none"> includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate with a range of +50 to -30 percent.
State/Support Agency Acceptance	<ul style="list-style-type: none"> considers whether the State agrees with the Navy and US EPA's analyses and recommendations, as described in the RI/FS and Proposed Plan.
Community Acceptance	<ul style="list-style-type: none"> considers whether the local community agrees with US EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

What proposed Squirrel abatement - the March or the May PP? Confusing

It is noted that a revised-final FS and corresponding Proposed Plan were prepared in May 1999. The revisions were based on comments received on the initial March 1999 FS and Proposed Plan, which had proposed a different Preferred Alternative (i.e., ground squirrel abatement) for mitigating the site risks. However, the revised alternatives were deemed by the regulatory agencies and the Navy as infeasible for effective implementation. Therefore, the original March 1999 FS was adopted as the FS of record for the Site.

REMEDIAL ACTION OBJECTIVES

The Remedial Action Objective (RAO) of this response action is to protect human health by preventing contact with landfill refuse. Since burrowing animals uncover refuse and humans (e.g., players, visitors, and workers at the golf course) could come in direct contact with exposed landfill refuse, the RAO is to eliminate this risk by preventing animals from burrowing into the Site 22 landfill and exposing the refuse. This will be accomplished through the use of physical barriers to permanently limit exposure pathways to landfill refuse. The RAO complies with the NCP and Superfund requirements.

SUMMARY OF REMEDIAL ALTERNATIVES

Remedial alternatives for the Site 22 landfill are presented below. The alternatives are numbered to correspond with the numbers assigned in the March 1999 FS Report. Four alternatives were evaluated as remedies for contamination at the Site 22 landfill. A brief summary of the four remedial alternatives is provided in Table 2.

Common Elements. Many of these alternatives include common elements. Alternatives 1 through 3 include institutional controls, and groundwater and landfill gas monitoring. Institutional controls are restrictions on future land uses (e.g., deed restrictions, such as an easement or covenant) to limit the use of the property. Consistent with expectations set out in the Superfund regulations, none of the remedies rely exclusively on institutional controls to achieve protectiveness. Groundwater will be monitored at the site boundaries. If monitoring shows that groundwater protection standards are exceeded in the future, the need for additional cleanup actions will be evaluated. Landfill gas concentrations at the site boundaries will also be monitored. If methane concentrations approach levels of concern, gas migration will be controlled. It should be noted that cost estimates for all of the alternatives have been updated from those presented in the 1999 FS.