

# Adak Island UPDATE

## SWMU 17, Power Plant Number 3 Area: Proposed Cleanup

### Introduction

August 2006

The Navy has issued the Proposed Plan for Solid Waste Management Unit (SWMU 17), Power Plant Number 3 Area, Former Adak Naval Complex, Adak Island, Alaska (herein referred to as the "Power Plant"), which proposes the preferred cleanup alternative for the site. The public is encouraged to review and comment on

the Proposed Plan, which is available at the Adak Island High School, the University of Alaska at Anchorage, and the Navy site file at Silverdale, Washington. Comments will be accepted on the Proposed Plan from August 1 to August 31, 2006. The Navy, in consultation with the Alaska Department of Environmental

Conservation (DEC), may modify the preferred cleanup alternative based on public comments or new information. The final decision for the Power Plant will be presented in a Decision Document, which will include a responsiveness summary describing how public comments were addressed.

### Site Background

The Power Plant is located west of the downtown area off Amulet Way near the banks of Yakutat Creek (Figure 1). The site consists of an upland portion and a lowland area that comprise about 3 acres (Figure 2). The upland portion includes the Power Plant building, tank farm, and former oil/water separators. The lowland area includes a former waste oil pond (now removed) and a retention pond between the former waste oil pond and Yakutat Creek. The Power Plant became operational in 1950. This facility has been

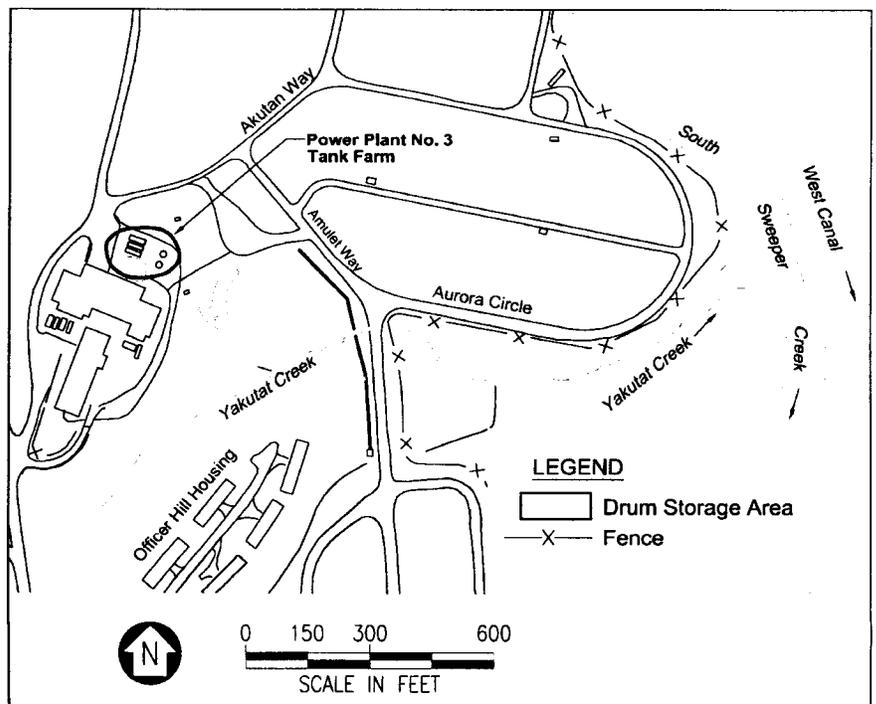
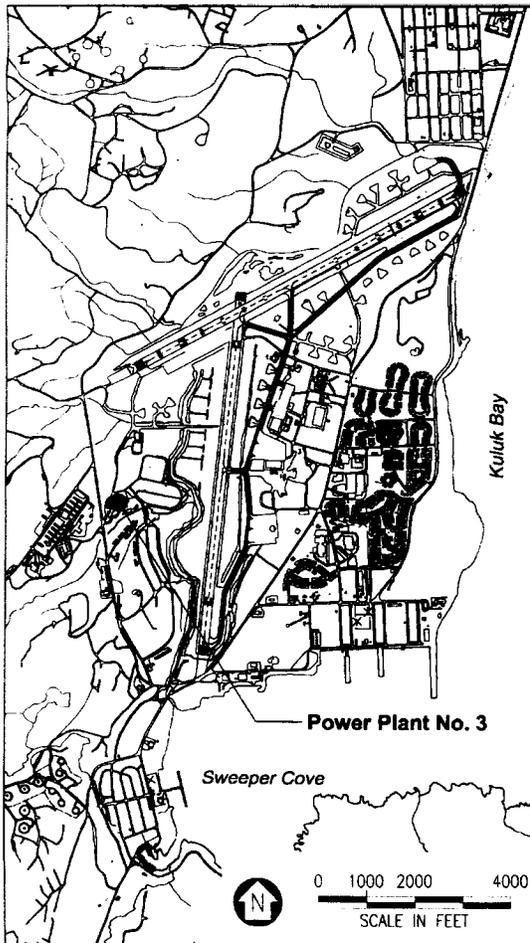
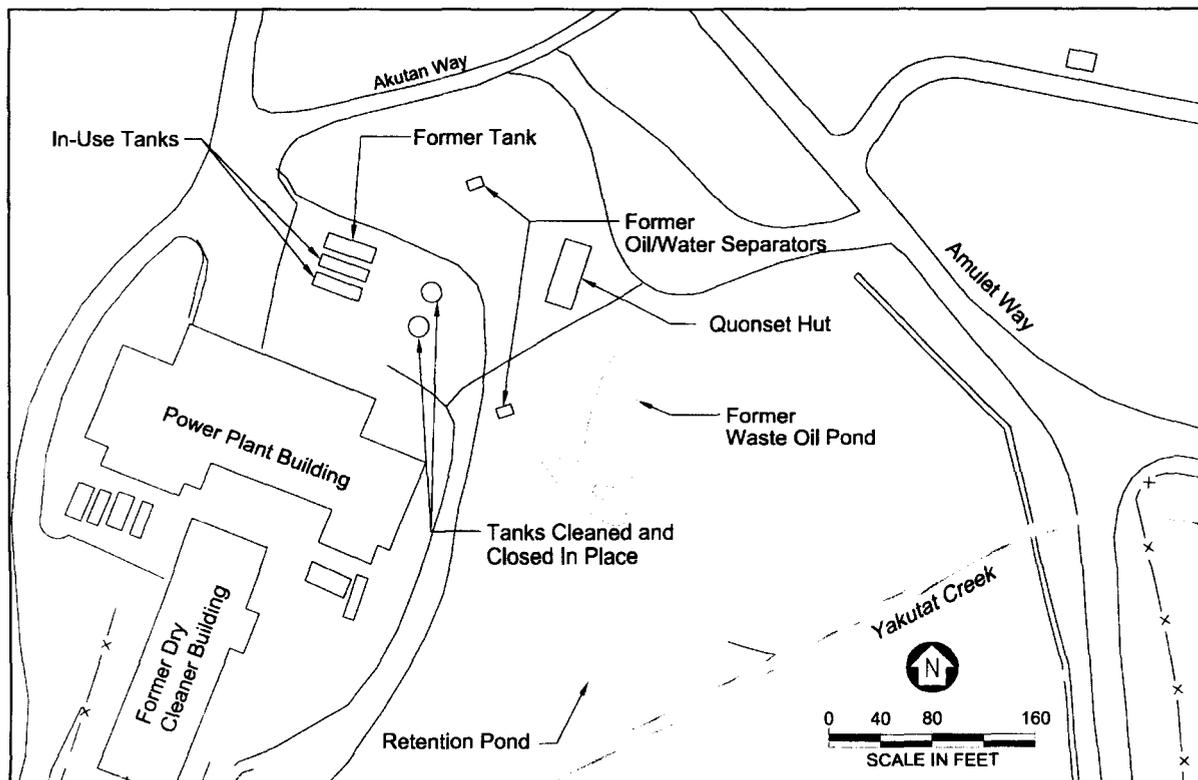


Figure 1. Site Location and Vicinity, SWMU 17



**Figure 2. Potential Petroleum Sources at SWMU 17**

the primary source of electrical power for the downtown area on Adak since that time. The tank farm consisted of five aboveground storage tanks. Two of the five above ground storage tanks installed at the site stored jet petroleum No. 5 (JP-5), one stored waste oil, and the remaining two stored reserve oil supplies. Only the two JP-5 tanks are in current use. Their contents are used to fuel the power plant. The former waste oil pond was constructed in the mid-1960s to contain waste petroleum oil and lubricants generated at the plant. The Quonset hut was used for electric line and transformer repairs, and for auto repair. This structure is no longer in use. The dry cleaning facility, located south of the Power Plant building, operated from 1968 until 1995.

Petroleum hydrocarbons have been identified as the chemicals of concern at the site. Although environmental field investigations did not identify the petro-

leum source, the most likely source is JP-5 released from the Power Plant tank farm, or from the two former oil/water separators. A reported release of "approximately 500 gallons" of JP-5 from the Power Plant tank farm occurred during 1994 as the result of a cracked valve.

Free product was not observed on the groundwater surface prior to the petroleum release from the cracked valve. During the removal of the two oil/water separators, petroleum hydrocarbons were reported in soil at levels above the Alaska DEC soil cleanup criteria. Broken influent and effluent piping as well as overflow of the separators appear to be the causes of the releases. Other possible sources of petroleum releases include overfilling of the tanks and leaking piping located in the tank farm. However, tightness testing of the pipelines to the tanks occurred in October 1996, and the results of the testing indicated that leaks from the piping were very unlikely.

In addition to the cleaning and removal of one tank, cleaning and closure of two tanks (1998) and cleaning and removal of the oil/water separators (1997), a number of other remedial activities have already been conducted at the site and are listed below:

- In 1995, about 110 cubic yards of stained soils were removed from roadside ditches along Akutan Way.
- Over 1,900 gallons of free product were removed between 1996 and 2002.
- Sediment was removed from the waste oil pond and the retention pond in 1999. The waste oil pond was back-filled, capped, and seeded, and the retention pond was allowed to revert to a wetland.
- In 2002, further grading and fill placement near Amulet Way and Akutan Way were conducted to prevent fuel seeps during times of heavy rain.

## Regulatory Background

Investigation and cleanup of petroleum-contaminated sites at the former Adak Naval Complex have been ongoing since 1986. In May 1997, the Navy and Alaska DEC agreed to integrate the cleanup decision process for petroleum sites with the cleanup decision process being conducted for hazardous substance release sites under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA). As a result, the Record of Decision (ROD) for Operable Unit A (OU A) was prepared for both the petroleum sites and the hazardous substance release sites and signed by the Navy, the U.S. Environmental Protection Agency (EPA), and the Alaska DEC during 2000. The ROD is the legal document describing the cleanup actions selected for a site.

The ROD for OU A selected final or interim remedies for each of the 128 petroleum-contaminated sites on Adak Is-

land. An interim remedy, free-product recovery, was selected for 14 sites that contained measurable quantities of free-phase petroleum product. The Power Plant is one of the 14 sites. The ROD for OU A specified that, in addition to some interim actions, these 14 sites would require final remedy selection in the future. Remedies were selected during 2004 for 10 of these 14 free product sites. The sites with selected remedies were sites where petroleum-related chemicals pose no unacceptable risk to human health and the environment, provided that institutional controls remain in effect.

Three of the remaining four sites (the Naval Mobile Construction Battalion [NMCB] Building T-1416 Expanded Area site, SWMU 62 New Housing Fuel Leak site, and the South of Runway 18-36 Area), where petroleum-related chemicals pose a potential risk, are addressed

in separate documents. The Power Plant site was originally included as one of the four sites where petroleum-related chemicals pose a potential risk to human health or the environment above target health goals. Specifically, the risk assessment findings identified exposures to diesel fuel in sediment in Yakutat Creek as a potential unacceptable risk for ecological receptors. However, risks were only slightly above target health goals, the data used to evaluate the ecological risk were more than 6 years old, and samples were collected before the upgradient contaminant sources (primarily the waste oil pond) were remediated. Therefore, the Navy performed additional sediment sampling in Yakutat Creek in June 2005. Risks were recalculated using the additional data. As a result, the revised risk assessment concluded that contaminants in Yakutat Creek are unlikely to pose a significant risk.

## Cleanup Levels at the Free-Product Recovery Petroleum Sites

Cleanup levels are needed as part of the process of selecting the best cleanup remedy. Cleanup levels are used to help determine how much cleanup is required and also establish when the sites can be considered "clean" after remedial actions have been implemented. Chemical-specific cleanup levels for soil and groundwater have been established for petroleum-contaminated sites on Adak in accordance with Alaska DEC regulation 18 Alaska Administrative Code (AAC) 75.

### Soil

Alaska petroleum cleanup regulations establish four methods for determining cleanup levels for soil. Alternative cleanup levels are proposed for remediation of soil following Alaska DEC Method Four (18 AAC 75.340[a][4]), which uses site-specific risk assessments to establish cleanup levels. The risk assessment for this site demonstrated that existing concentrations in soil do not pose

a risk to humans or the environment. Therefore, the existing concentrations at the site are protective of human health and the environment and, by default, are the cleanup levels for the site.

### Groundwater

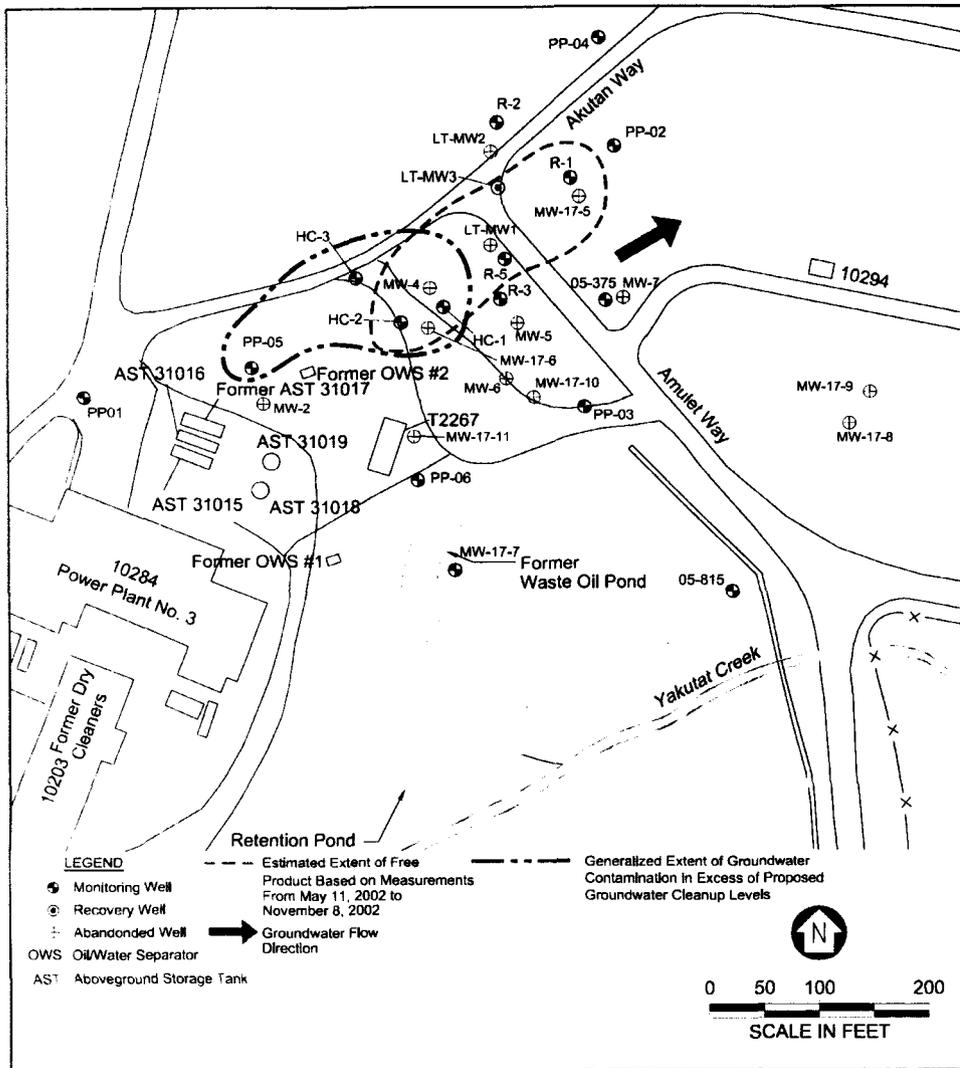
The Alaska regulations establish three methods for determining cleanup of groundwater. Cleanup levels specified for remediation of groundwater at the Power Plant site are based on 10 times the tabulated groundwater cleanup levels [18 AAC 75.345[b][1], Table C]. Ten times these values are used because groundwater is not reasonably expected to be a potential future source of drinking water (18 AAC 75.345[b][2]). Groundwater within the upland portion of the site is intermittent and is unable to yield a quantity of water sufficient to support a water supply well. Groundwater in the lowland portion of the site is shallow (only 2 feet below ground sur-

face) and thus does not provide sufficient distance between the ground surface and the groundwater surface for the placement of a 10 foot-thick watertight seal, as required by Alaska regulation 18 AAC 80.015. Institutional controls are also in place that prevent the future use of any of the downtown groundwater aquifer as a drinking water source. Figure 3 shows the extent of groundwater at the site containing petroleum-related chemicals at concentrations greater than the groundwater cleanup levels.

### Surface Water and Sediment

Alaska regulation 18 AAC 70 establishes water use classes (and subclasses) for the water bodies of the state. Waters of Yakutat Creek fall within the "fresh water" use class, and the downgradient water bodies Sweeper Creek and Sweeper Cove fall within the "marine waters" use class. All three water bod-

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**Figure 3. Estimated Extent of Residual Free-Product and Groundwater Contamination, SWMU 17**

ies fall within the subclasses “water supply aquaculture,” “secondary recreation,” and “growth and propagation of fish, shellfish, other aquatic life, and wildlife.” The water quality standards established for these use classes (and these subclasses) specify that total aqueous hydrocarbons (TAqH) in the water column may not exceed 15 µg/L and the total aromatic hydrocarbons (TAH) in the water column may not exceed 10 µg/L. There may be no concentrations of petroleum hydrocarbons, animal fats, or vegetable oils in shoreline or bottom sediments that cause deleterious effects to aquatic life. Surface waters and adjoining shorelines must be virtually free from floating oil, film, sheen, or discoloration (18 AAC70.020[b][17][A][i], 18 AAC70.020[b][17][B][ii], and 18AAC70.020[b][17][C]). No risk-based cleanup levels were calculated for surface water, because the human health and ecological risk assessments determined that risks resulting from exposure to surface water are acceptable.

Alaska State regulations do not establish chemical-specific cleanup levels for sediment. Therefore, sediment cleanup levels were established based on the results of the ecological risk assessment. Because the ecological risk assessment concluded that significant risks were not present at the site, no cleanup levels are necessary for sediment.

## Remedial Action Objectives

Although health risks at the Power Plant are acceptable, groundwater beneath the site exceeds Alaska DEC cleanup levels. Therefore, remedial action objectives (RAOs) were developed for the site. RAOs are goals that are to be achieved by the final remedy selected to clean up a site. The RAOs are the following:

- Reduce petroleum hydrocarbons in groundwater to concentrations less than or equal to the Alaska DEC groundwater cleanup levels established for groundwater not currently used for, or not reasonably expected to be used for, drinking water

- Minimize exposure to free-phase product

The necessity for RAOs to protect ecological receptors was evaluated on the basis of ecological hazards resulting from exposure to petroleum hydrocarbons released at the site. Ecological hazards were estimated for site soil, surface water in Yakutat Creek, and sediment in Yakutat Creek. Ecological hazards from exposure to soil were found to be below target health goals for all detected petroleum compounds with published toxicity information. Ecological hazards from exposure to surface

water in Yakutat Creek were found to be below target health goals. The ecological hazard from exposure to diesel in sediment was estimated at 1.49, only slightly exceeding the target health goal of 1.0. However, threats to aquatic receptors from exposure to diesel in sediments are very unlikely, because of the source-removal actions that have occurred at the Power Plant and because concentrations are lessening over time as a result of naturally occurring biodegradation.

## **Remedy Selection**

Initially, four different cleanup alternatives were evaluated for the Power Plant in order to select the best remedy to achieve the RAOs. To be selected as the best remedy, a cleanup alternative must meet several strict criteria established by state regulations, in addition to achieving the RAOs. These criteria are: protection of human health and the environment, compliance with Alaska regulations, long-term and short-term effectiveness, cost-effectiveness, and implementability (ease of execution).

**Monitored Natural Attenuation and Institutional Controls** was selected as the preferred remedial alternative. This alternative was selected because groundwater concentrations are above the Alaska DEC cleanup levels. Monitored natural attenuation is needed to reduce concentrations to below the Alaska DEC cleanup levels, and institutional controls are needed as long as concentrations remain above Alaska DEC cleanup levels. Natural attenuation is the process by which the concentration of contaminants in the environment is reduced by natural processes such as volatilization, dispersion, and microbial deg-

radation. The processes will be monitored, by regular sampling, to ensure concentrations are decreasing over time. Institutional controls are controls that prevent human exposure to contaminated material through community education and groundwater use restrictions.

The Alaska DEC concurs with the selection of this remedy as the Preferred Cleanup Alternative. Community acceptance of the proposed cleanup is also required, and the Preferred Cleanup Alternative is currently open for public comment.

## **Additional Information**

More detailed information on the proposed cleanup plan for the Power Plant site can be found in the Proposed Plan, which is available at the Adak Island High School, the University of Alaska at Anchorage, and the Navy site file at Silverdale, Washington.

Public comment period for the proposed cleanup plan is from August 1 to August 31, 2006.

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