

STAFF SUMMARY

DATE 18 March 97

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| TO Commanding General | FROM APVR-RPW-EV |
| SUBJECT Decision Document for a Removal Action at Eagle River Flats Racine Island Pond, Fort Richardson, Alaska | ACTION OFFICER (SIGNATURE) <i>William A. Gossweiler</i> |
| | TYPED NAME, RANK & PHONE William A. Gossweiler, GS-12, 384-3017 |
| SUSPENSE 27 March 97 | |

Reason for Action Obtain Commanding General's signature on Enclosed Document

FACTS/DISCUSSION This decision document describes the time-critical Removal Action for the Eagle River Flats(ERF), Racine Island Pond at Fort Richardson, Alaska. The Racine Island pond is a small, 1.5 acre open pond surrounded by a five acre marsh in the eastern portion of the impact area. It is one of the most highly contaminated White Phosphorus(WP) sites in the ERF impact area contributing to a steady loss of waterfowl. Based on treatability study results at ERF, it has been determined that draining water from areas of the ERF impact area would remove the habitat from feeding ducks and swans and allow the WP in the sediments to degrade and oxidize. The proposed action at ERF is to drain the Racine Island pond thereby immediately breaking the receptor pathway and subsequently removing the WP contamination. Draining the Racine Island pond would be accomplished by using standard 40 LB cratering charges to excavate a series of overlapping craters that will form a ditch 150M in length.

RECOMMENDATIONS Commanding General Sign Attached Document
COORDINATION

| OFFICE | SIGNATURE | CONCUR | NONCONCUR |
|-------------|---|---|-----------|
| APVR-RPW-EV | <i>Cristina Johnson</i> | X | |
| APVR-RPW | <i>Jim David Brown</i> | X | |
| APVR-RJA | <i>Sam Smith</i> | No legal objection | |
| APVR-CS | <i>Charles R. DeWitt</i> | ✓ 9 Apr 97 | |
| APVR-CS-SGS | <i>[Signature]</i> | 8/4 | |
| ENCLOSURES | APPROVED (SIGNATURE) <i>[Signature]</i> 11 APR 1997 | DISAPPROVED (SIGNATURE) | |
| | TYPED NAME & RANK KENNETH W. SIMPSON, CG | TYPED NAME & RANK KENNETH W. SIMPSON, CG | |

USARAK Form 407
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DECISION DOCUMENT
FOR
A REMOVAL ACTION AT EAGLE RIVER FLATS
RACINE ISLAND POND, FORT RICHARDSON, ALASKA

1. PURPOSE OF REMOVAL ACTION

This decision document describes the time-critical Removal Action for the Eagle River Flats (ERF), Racine Island Pond at Fort Richardson, Alaska. This action was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), the National Contingency Plan (NCP), the Resource Conservation and Recovery Act (RCRA), and Army Regulation 200-1, as applicable.

The ERF site is a 2,165 acre estuarine salt marsh used as the primary ordnance impact area for Fort Richardson since the mid-1940s. Past use of smoke obscurants at ERF impact area have contaminated major sections of the site with white phosphorus (WP). The ERF impact area is an important staging ground for waterfowl, including ducks, geese, and swans, during the spring and fall migrations. The WP in the sediments is picked up by bottom-feeding waterfowl and is responsible for a large number of waterfowl deaths during migration and to a lesser extent during nesting. The Racine Island Pond is a small, 1.5 acre open pond surrounded by a five acre marsh in the eastern portion of the impact area. It is one of the most highly contaminated WP sites in the ERF impact area contributing to a steady loss of waterfowl. Based on treatability study results at ERF, it has been determined that draining water from areas of the ERF impact area would remove the habitat from feeding ducks and swans and may allow the WP in the sediments to degrade and oxidize. The proposed action at ERF is to drain the Racine Island pond thereby immediately breaking the receptor pathway and subsequently removing the WP contamination.

This Removal Action is supported by the Remedial Project Managers for the U.S. Environmental Protection Agency (USEPA), Alaska Department of Environmental Conservation (ADEC), and the U.S. Army with the concurrence of Biological and Technical Assistance Group (BTAG) comprised of the Alaska Department of Fish and Game (ADF&G), U.S. Fish and Wildlife Service (USFWS), National Oceanographic and Atmospheric Agency (NOAA), and the U.S. Environmental Protection Agency (USEPA).

2. SUMMARY OF SITE RISK

A baseline risk assessment was performed for ERF with information from previous studies, principally those conducted by U.S. Army Cold Regions Research and Engineering Laboratory (CRREL) and its associates. Considerable research has shown strong evidence that WP from smoke obscurant shells is the primary cause of the waterfowl mortality in ERF. WP exists as particulates in the sediment, and will persist in saturated or inundated sediments where oxygen (or other oxidizers) are absent. The particulate form and spatial heterogeneity of the WP increases the difficulty in identifying area concentrations. Sedimentation may cover these particles and thus render them unavailable to feeding waterfowl or other birds. Particles also may be exposed by water or ice erosion.

Waterfowl ingest the WP particles, perhaps believing them to be food particles, which are about the same size. Dabbling ducks and swans are the primary receptors for the WP-contaminated sediments. Both feed on the bottom of ponded areas. Northern pintail, green-winged teal, and mallard have the highest incidence of mortality in ERF, with almost 97 percent of the recorded bird deaths associated with these three duck species. Plants, macroinvertebrates, fish, shorebirds, and predators have shown detectable levels of WP but account for a minor percentage of overall mortality in ERF. Therefore, dabbling ducks are the target species of concern for remediation efforts.

Results of several investigations at ERF impact area indicate that Racine Island pond is highly attributable to the high mortality of waterfowl. The highest concentrations of WP (over 3000 parts per million) found in ERF are in the Racine Island Pond.

Human health risk from consumption of hunter harvested ducks in Cook Inlet was found to be insignificant based on data analysis by the U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM), the Alaska Division of Public Health, and a subsequent study in which no WP was detected in 305 gizzards collected from ducks shot by hunters in areas near ERF.

3. SUMMARY OF REMEDIAL ALTERNATIVES

Based upon the results of treatability studies and evaluations from The ERF Treatability Study, four alternatives for remediating the Racine Island Pond site along with their respective costs are shown below.

| <u>REMEDIAL ALTERNATIVE</u> | <u>COST(X \$1000)</u> |
|--------------------------------------|-----------------------|
| No Further Action | 0 |
| Dredge pond | 1,500 |
| Cap pond using clay compounds | 60 |
| Drain pond using military explosives | 50 |

The no further action alternative would be cost effective but would not meet the requirements for treatment, reduction of short and long term toxicity. Waterfowl mortality from unabated WP poisoning would continue.

Dredging has been proven to work, but it is extremely slow and difficult, very expensive (1.5 million dollars), and although the dredge is run by remote control and well armored, the possibility of it being damaged from a buried unexploded ordnance (UXO) does exist.

Capping is the least desirable of the three pro-active remedial methodologies because it does not physically remove the contaminant from the site and would require monitoring for years. It is expensive (60,000 dollars) and logistics are difficult.

Based upon the costs of these actions performed during earlier Treatability Studies at ERF Impact Area, draining the pond using military explosives is the most cost-effective remedial approach for achieving the desired results for this site. This alternative has long-term effectiveness, allows natural attenuation of WP from the drying sediment, and should eliminate the need for further remedial action at the treated pond.

Draining the Racine Island pond would be accomplished by using standard 40 LB cratering charges to excavate a series of overlapping craters that will form a 150m ditch. The diameter of crater formed depends on the depth of the emplacement of the charge. To be most effective, the cratering charges need to be placed at some distance below the ground surface. Because digging down into the sediment is not permissible, stand-off shaped charges will be used to explosively excavate pilot holes into the sediment. The 40 lb cratering charges will then be placed in the pilot holes and detonated, forming the final ditch. Pond draining has been shown to be conducive to the natural attenuation of WP.

The following after action sampling and monitoring will continue on a periodic basis for at least five years:

- a. Surface composite sampling for white phosphorus particles.
- b. Aerial waterfowl census for determining general waterfowl use.
- c. Telemetry for determining specific waterfowl use and mortality.
- d. Surveying to determine sample locations, monitoring site locations, remaining pond size and changes with time.
- e. Attenuation of planted white phosphorus particles.

All information will be recorded in the Global Information System (GIS) database.

We propose to initiate the work in April 1997. Conducting the explosive excavation in early Spring prior to breakup holds many advantages, including ease of access to the site, less exposure of personnel to UXOs, and more effective excavation by explosives. Due to more stringent safety requirements established in the Spring of 1996, movement within the ERF Impact Area has been severely curtailed once the ice sheet is off the area. Explosive Ordnance Detachment personnel would not be able to clear the UXOs from the intended area of operation due to standing water, mud, and vegetation in Spring, Summer, or Fall.

Draining the pond would be the least expensive (50,000 dollars), and if done in the winter while an ice sheet is covering the Impact Area, it would be the safest. It is the best option where applicable (in ponds that do not have a continuous water source such as springs).

4. PUBLIC/COMMUNITY INVOLVEMENT

It is the Department of Defense's and the U.S. Army's policy to involve the local community as early as possible and throughout the investigation and removal process. As part of this policy, Fort Richardson has an on-going community relations program.

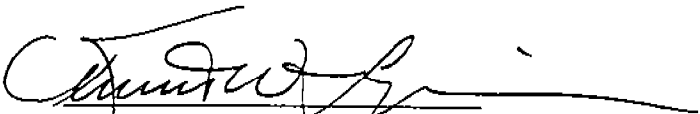
Via this program, USARAK Environmental Department has consistently maintained a close working relationship with State and Federal agencies, first through an ERF Task Force and later, a BTAG. Plans for the 1996 Treatability Study involving the draining of a highly contaminated area called Bread Truck Pond were presented and well received at an official Public Meeting. The representative public felt that the methodology was fast, efficient, and cost effective.

The proposed plan to drain Racine Island Pond with military explosives is discussed in the March 1997 issue of the Environmental Restoration News for U.S. Army Alaska, Fort Richardson. In addition to its distribution throughout the civilian community, there will be a news release sent to the local paper and radio stations explaining the use of explosives to drain Racine Island Pond.

5. DECLARATION

Compliance with the environmental evaluation process is being achieved through The Remedial Investigation (RI), Human Health and Ecological Risk Assessment (RA), and Feasibility Study (FS). The selected remedy for this time critical removal action is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate to this interim removal action, and is cost effective. This remedy satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility or volume as a principal element and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

Due to the fact that this remedy may result in hazardous substance remaining on-site above levels that allow for unlimited use and unrestricted exposure, a review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.



Kenneth W. Simpson
Major General, U.S. Army
Commanding Officer