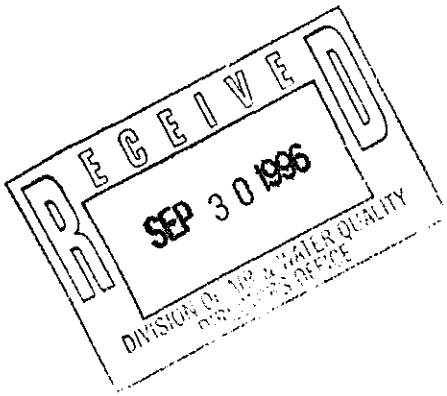
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

SEP 27 1996



Reply To
Attn Of: OW-134

Leonard Verrelli, Director
Division of Air and Water Quality
Alaska Department of Environmental Conservation
410 Willoughby Avenue, Suite 105
Juneau, Alaska 99801

Dear Mr. Verrelli:

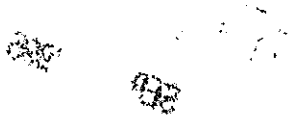
Enclosed for your information is a final Total Maximum Daily Load (TMDL) for Poly-Chlorinated Biphenyl (PCBs) in Garrison Slough, Alaska. The analyses and prescriptions in this document are a product of a coordinated effort between the Superfund and Water Programs at the Environmental Protection Agency, Region 10. This coordination has helped insure that clean-up actions will achieve compliance with water quality standards and thereby maintain beneficial uses.

We will continue to work with your agency to explore opportunities to complete TMDLs in Alaska. Please contact Curry Jones at (206) 553-6912 with any questions about the Garrison Slough project.

Sincerely,

Robert E. McClintock for

Philip G. Millam
Director
Office of Water



United States
Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

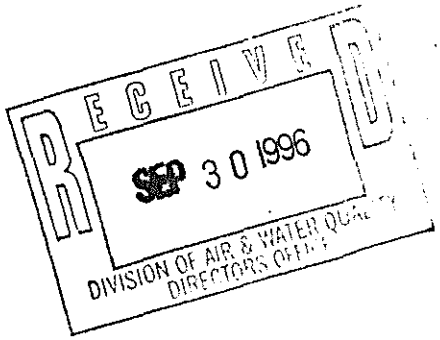
Total Maximum Daily Load (TMDL) For Poly-Chlorinated Biphenyl (PCBs) In Garrison Slough, Alaska

In compliance with the provisions of the Clean Water Act, 33 U.S.C. § 1251 et seq., as amended by the Water Quality Act of 1987,P.L. 100-4, the Environmental Protection Agency is hereby establishing a Total Maximum Daily Load (TMDL) that involves removing contaminated sediments from Garrison Slough to restore its beneficial uses. Subsequent actions must be consistent with this TMDL.

This TMDL shall become effective immediately.

Signed this 27th day of September, 1996.

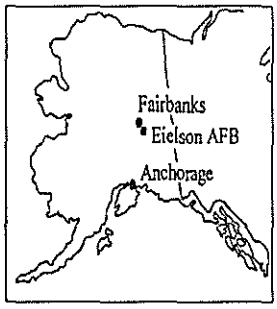
Philip G. Millam
Director
Office of Water



Garrison Slough

TMDL AT A GLANCE:

Water Quality Limited?:	Yes
Segment Identifier:	40506-009
Parameter of Concern:	Polychlorinated Biphenyls (PCBs)
Uses Affected:	Water Contact Recreation
Source:	Eielson AFB
Type of TMDL:	Non-Point Source
Load Reduction:	80% Reduction of Contaminated Sediments



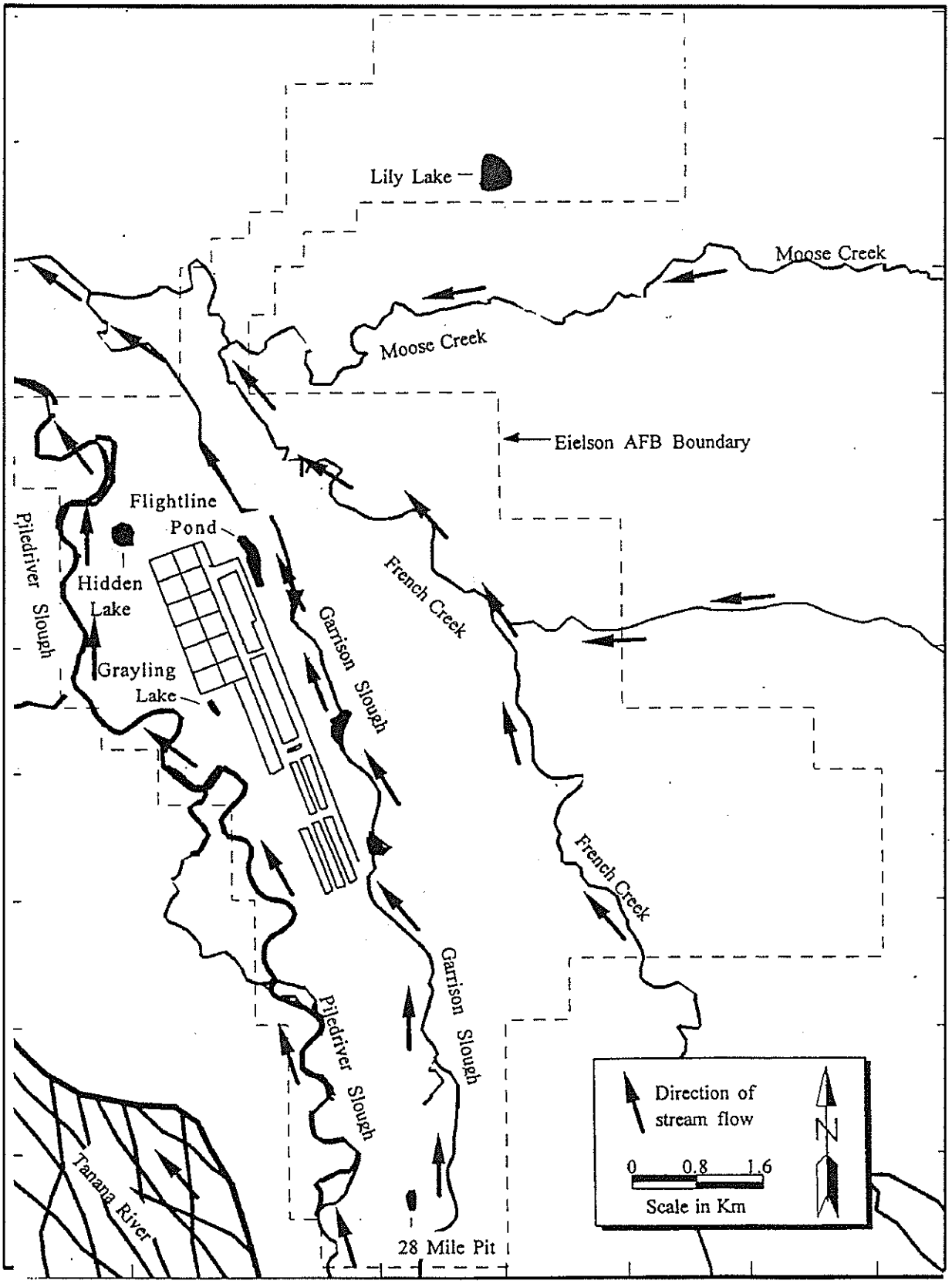
OVERVIEW:

This Total Maximum Daily Load (TMDL), under Section 303(d) of the Federal Clean Water Act (CWA) addresses nonpoint source loading of polychlorinated biphenyls (PCBs) into Garrison Slough. This TMDL is part of the Eielson Air Force Base (EAFB) Record of Decision developed by the U.S. Environmental Protection Agency's (EPA) Office of Environmental Clean-up, the United States Air Force (USAF) and the State of Alaska Department of Environmental Conservation (DEC).

Garrison Slough, a water body which passes directly through the developed portion of EAFB (Figure 1), is currently water quality-limited for PCBs (Aroclor 1260). Designated beneficial uses include freshwater water supply, water contact recreation, and growth and propagation of fish, shellfish, and other aquatic life and wildlife. One "hot spot" of PCB contamination in sediments and fish tissue is in the lower portion of Garrison Slough behind the base civil engineering building. The highest concentration of PCBs found on site was 65 parts per million (ppm). Fish tissue concentrations in this area exceed the Food and Drug Administration (FDA) level of two parts per million.

The final prescription for Garrison Slough will result in an 80 percent removal of PCBs from Garrison Slough. Additional controls measures (i.e., base fishing restriction, grayling catch and release policy) will reduce the risk of human and aquatic animals' exposure to PCBs, and restore the designated beneficial uses. Through a phased TMDL approach, a monitoring plan has been developed which will provide data to ensure that the controls will result in the attainment of water quality standards and protection of the beneficial uses. If monitoring shows water quality improvements are not being made within a reasonable period (e.g., 6-8 years), the controls will be reevaluated. Additional dredging of sediments will take place if needed. Additional follow-up monitoring of fish tissue, instream water, and sediments will be conducted to ensure that water quality standards are being attained.

Figure 1


Lily Lake
Moose Creek
Moose Creek
Eielson AFB Boundary
Flightline
Pond
Hidden
Lake
Grayling
Lake
Piledriver Slough
Garrison Slough
French Creek
French Creek
Garrison Slough
Piledriver Slough
Tanana River
28 Mile Pit
Direction of
stream flow
N
0 0.8 1.6
Scale in Km

PART 1. BACKGROUND

1a. GENERAL WATERSHED/ SITE DESCRIPTION:

EAFB is located in the Fairbanks, North Star Borough (FNSB) of central Alaska, approximately 40 km (24 mi.) southeast of Fairbanks and 16 km (10 mi.) southeast of the city of North Pole along Richardson Highway. The base covers an area of approximately 800 hectares (19,700 acres). Approximately 1500 hectares (3650 acres) are fully or partially developed on the east and south by Fort Wainwright, a U.S. Army installation, and on the west and north by private and public land. Other base facilities that are not contiguous with the main part of EAFB are the Blair Lakes Target Facility, about 72 km (45 mi.) southeast of Fairbanks, and the Birch Lake Recreation Area, about 48 km (30 mi.) south of the base. The base is isolated from major urban areas, with adjacent public and private land zoned for general use.

EAFB contains thirteen lakes totaling 1.3 sq km (0.5 sq.mi.), 54 ponds totaling 1 sq km (0.4 sq. mi.), and 10 designated wetlands totaling about 1 sq. km (0.4 sq. mi.). One lake and six ponds are natural; the remaining are old borrow pits or gravel pits.

Surface water bodies near EAFB include rivers, creeks, sloughs, lakes, ponds, and wetlands. Surface drainage at Eielson is generally north-northwest, parallel to the Tanana River. Several small sloughs and creeks pass through the base and discharge to the Tanana River. Moose Creek is the main receiving stream for small local drainages around the base. Both French Creek, along the eastern edge of the base, and Piledriver Slough, along the western edge, and Garrison Slough discharge to Moose Creek just above its confluence with the Tanana River. Garrison Slough passes directly through the developed portion of the base and is primarily an engineered drainage channel which drains to Moose Creek. Portions of Garrison Slough are enclosed in culverts.

1b. CLIMATOLOGICAL CONDITIONS:

The climate at EAFB is characterized by large diurnal and annual temperature variations and low precipitation. Average summer temperatures range between 16 and 17 degrees Celsius, while winter temperatures range from negative twenty-six to negative thirteen degrees Celsius. Average annual rainfall is 36 cm with 183 cm of snow.

1c. AQUATIC BIOLOGY OF GARRISON SLOUGH:

Seventeen species of fish are found on EAFB, including resident species such as northern pike, rainbow trout, and grayling. Of the seventeen species, northern pike and grayling are found in Garrison Slough. Anadroumous species entering a few streams include chum salmon, coho salmon, and king salmon. Many water bodies on EAFB have few or no fish due to natural winter kills and lack of a connection to areas containing fish, or to unsuitable habitat. Aquatic invertebrate, principally larvae and

snails, are present in most streams and lakes on the base. These organisms are the primary food source for fish.

1d. SOIL TYPE ON EAFB

The base is located in the Tanana River Valley. Most of the base has been constructed on sand gravel fill. The topography in the developed portion of the base is generally flat and featureless with elevation averaging about 168 m (550 ft.) above sea level. Two-thirds of the base (mostly the undeveloped areas) is underlain by soils containing discontinuous permafrost. Half the potential agricultural soil is currently being used for recreation facilities, ammunition storage areas, Arctic Survival Training School, and other Air Force operations.

1e. GROUNDWATER:

The developed portion of the base is underlain by a shallow, unconified aquifer comprising up to 91 m (300 ft) of alluvial sands and gravel with minor clay and silt overlying crystalline bedrock. Groundwater is the only source of potable water at the base and in the communities near the base. Potable water in the main base system is treated to remove iron and sulfate. Groundwater is the principle source for various other industrial, domestic, agricultural, and fire fighting purposes.

1f. LAND USE:

Current and future land use for water bodies on EAFB is recreation.

1e. IMPAIRED WATERBODY LISTING / TMDL DEVELOPMENT:

The CWA § 303(d)(1)(A) requires states to submit to the EPA, every two years, a list of waters which exceed water quality standards after the implementation of technology-based or water quality-based controls. Garrison Slough is on DEC's 1994/1996 303(d) list. The pollutant parameter of concern is PCBs.

A TMDL is a planning and management mechanism to restore water quality. The primary goal of a TMDL is to restore and maintain the designated beneficial uses of an impaired water body. TMDL is based on the relationship between pollutant sources and instream water quality conditions.

The TMDL establishes the allowable loading for a water body and thereby provides a basis for water quality-based controls.

For Garrison Slough, a phased TMDL has been determined appropriate. A phased TMDL is used when existing data are not adequate to determine needed pollutant load reductions from pollutant sources being addressed, or to determine the controls necessary to address impairments. In a phased TMDL, controls are instituted and monitored to determine whether the controls are making adequate progress toward the attainment of water quality standards. If monitoring shows water quality improvements are not being made within a reasonable time frame, the controls will be

reevaluated and strengthened. In Garrison Slough, monitoring of fish tissue, instream water, and sediments will be conducted to ensure that water quality standards are being attained.

Part 2. APPLICABLE STANDARDS:

Within the State of Alaska, water quality standards are published pursuant to Title 46 of the Alaska Statutes (AS). Regulations dealing with water quality (46.03.020 & 46.03.080), are found in Title 18, Chapter 70 of the Alaska Administrative Code (AAC). Through the adoption of water quality standards, Alaska has defined the beneficial uses to be protected in each of its drainage basins and the criteria necessary to protect these uses. See Table 1 for the beneficial uses and criteria applicable to Garrison Slough.

Table 1

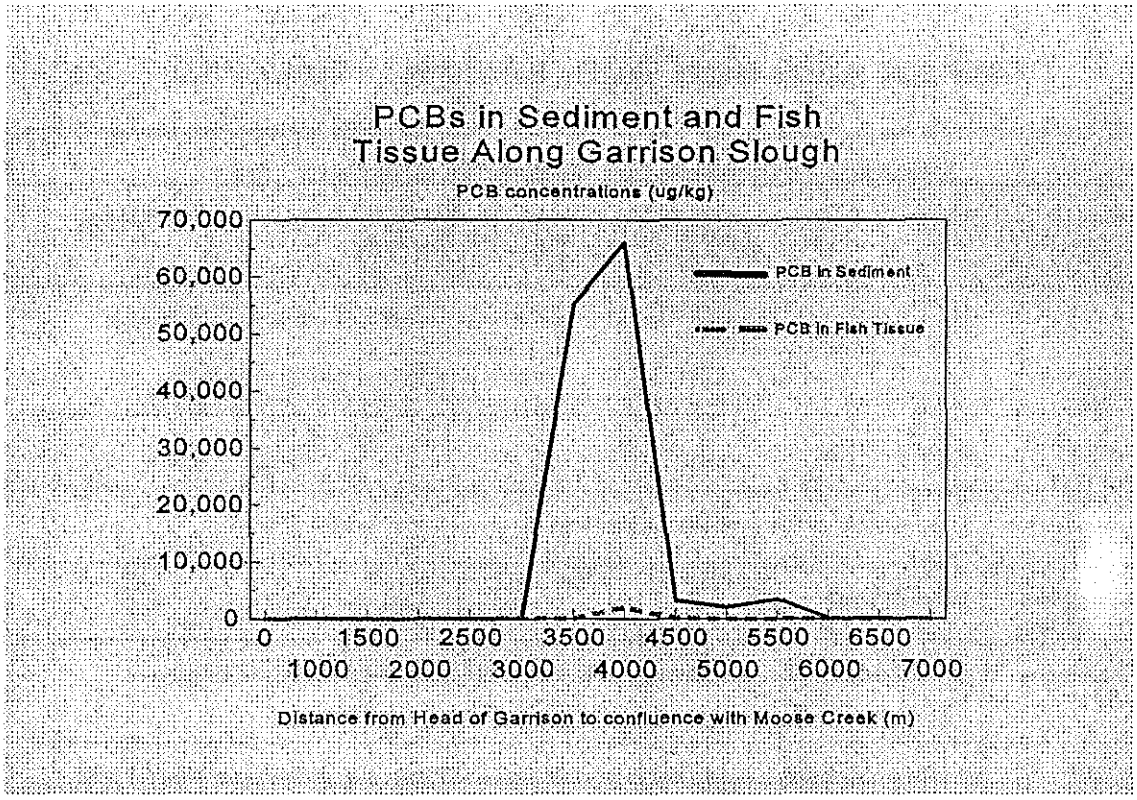
Uses Protected by Alaska's Water Quality Standards 18 AAC Freshwater Uses	
70.020 (1) (A) Water Supply	▸ Drinking, Culinary and Food Processing ▸ Agriculture, including livestock and irrigation ▸ Aquaculture ▸ Industrial
70.020 (1)(B) Water Recreation	▸ Contact Recreation ▸ Secondary Recreation
70.020 (1)(C) Growth and Propagation of fish, shellfish, other aquatic life, and wildlife	

2a. RISK FROM GARRISON SLOUGH PCBs:

Based on the Comprehensive Environmental Response, Compensation Liability Act (CERCLA) risk assessment, the PCB concentrations in sediments and surface water do not pose an unacceptable direct risk to humans or ecological receptors. However, aquatic life bioaccumulate PCBs from contaminated sediments. The consumption of this aquatic life (i.e., fish, shellfish) poses an elevated health risk to humans.

A strong spatial relationship appears between PCB concentrations in sediment and fish. The highest concentrations in sediments were measured in Garrison Slough near Arctic Avenue (lower Garrison Slough); similarly the highest concentrations in fish tissue were measured in fish caught in lower Garrison Slough (Figure 2).

Figure 2



Based on data presented in the Baseline Risk Assessment for Garrison Slough, it appears that a complete exposure pathway exists from the sediment to fish in lower Garrison Slough, and that the high concentrations in fish tissues are a direct result of exposure to the contaminated sediments. The uptake of PCBs by fish may occur through incidental ingestion of contaminated sediment while feeding, and ingestion of contaminated water and prey. Fish that remain in lower Garrison Slough are likely to continue to bioaccumulate PCBs without the controls of the TMDL.

2b. WATER QUALITY STANDARD OF CONCERN FOR GARRISON SLOUGH:

Once a State designates uses, it establishes water quality criteria to protect those uses. Together, the criteria and designated uses constitute the State's water quality standards.

Garrison Slough has been placed on the State of Alaska's 1996 Section 303(d) list for exceeding the narrative water quality standard for toxics found in sediments and the water quality standard for residues found in fish tissue (Table 2(a), Table 2(b)).

Table 2(a): Alaska Water Quality Standards for Toxics

Toxic and Other Deleterious Organic and Inorganic Substances	
(A) Water Supply (I) drinking, culinary and food processing	Substances may not exceed Alaska Drinking Water Standards (18 AAC 80) or, where those standards do not exist, EPA Quality Criteria for water.
(A) Water Supply (ii) agriculture, including irrigation and stock watering	Same as (1)(A)(I) where contact with a product destined for human consumption is present. Same as (1)(C) or Federal Water Pollution Control Administration, Water Quality Criteria (WQC/FWPCA), as applicable to substances for stock waters, concentration for irrigation water may not exceed WQC/FWPCA or WQC 1972
(A) Water Supply (iii) aquaculture	Same as (1)(C)
(A) Water Supply (iv) Industrial	(iv) Substances that pose hazards to worker contact may not be present.
(B)Water Recreation (I) contact recreation	Same as (A)(I)
(B) Water Recreation (ii) secondary recreation	(ii) Substances that pose hazards to incidental human contact may not be present
(C)Growth and Propagation of Fish, Shellfish, other Aquatic Life, and Wildlife	Individual substances may not exceed criteria in EPA Quality Criteria for Water , or if those criteria do not exist, may not exceed the Primary Maximum Contaminant Levels of the Alaska Drinking Water Standards. If those criteria are absent, or if the department find that the criteria are not appropriate for sensitive resident Alaska species, the department will, in its discretion, establish in regulation chronic and acute criteria to protect sensitive and biologically important life stages of resident Alaskan species, using methods approved by EPA or alternate methods approved by the department. There may be no concentrations of toxics substances in water or in shoreline or bottom sediments, that, singly or in combination, cause, or reasonably can be expected to cause, toxic effects on aquatic life, except as authorized by this chapter. Substances may not be present in concentrations that individually or in combination impart undesirable odor or taste to fish or other aquatic organisms, as determined by either bioassay or organoleptic tests.

Table 2(b): Alaska Water Quality Standards for Residues

Residues Floating Scum, Debris, Sludge, Deposits, Foam, Scum, or Other Residues	
(A) Water Supply (I) drinking, culinary and food processing	May not, alone or in combination with other substances or wastes, make the water unfit or unsafe for the use, or cause acute or chronic problem levels as determined by bioassay or other appropriate methods. May not, alone or in combination with other substance, case a film, sheen, or discoloration on the surface of the water or adjoining shoreline, or cause leaching of toxic or deleterious substances, or cause a sludge, solid, or emulsion to be deposited beneath or upon the surface of the water, within the water column, on the bottom, or upon adjoining shorelines
(A)Water Supply (iv) Industrial	May not, alone or in combination with other substances or waste, make the water unfit or unsafe for the use.
(B)Water Recreation (I)contact recreation	Same as (A)(I)
(B) Water Recreation (ii)secondary recreation	Same as (A)(i)
(C)Growth and Propagation of Fish, Shellfish, other Aquatic Life, and Wildlife	May not, alone or in combination with other substances or wastes, make the water unfit or unsafe for the use, or cause acute or chronic problem levels as determined by bioassay or other appropriate methods. May not, alone or in combination with other substance, cause a film, sheen, or discoloration on the surface of the water or adjoining shoreline, or cause leaching of toxic or deleterious substances, or cause a sludge, solid, or emulsion to be deposited beneath or upon the surface of the water, within the water column, on the bottom, or upon adjoining shorelines.

Human Health Risk Level:

For the purpose of this TMDL, EPA has elected to apply a 10^{-5} risk level for consistency with current state and federal regulations. The State of Alaska requested the application of this risk level under the National Toxics Rule (Dec 1992), and the State has selected this level for future water quality standards adoptions (Alaska Water Quality Standards, Jan 1995).

2c. PARAMETER OF CONCERN:

PCB is the parameter of concern addressed in this TMDL. Studies have shown that PCB absorption to sediments is the major nondestructive process affecting PCBs after introduction to the aquatic environment. The combination of the low water solubility and the high octanol-water partition coefficient indicates that PCBs will have a high affinity for suspended solids, especially those in organic carbon. When contamination becomes sufficiently high, sediments may serve as a reservoir for re-solution of polychlorinated biphenyls (Veith and Comstock 1975). This fact has important ramifications for areas where PCBs are spilled; even after the initial degradation in water quality, release of PCBs from sediments can cause long term pollution.

PART 3. SOURCE OF CONTAMINATION:

The PCBs found are believed to have originated from old transformers stored in the EAFB civil engineering building. The principle site of PCB contamination near Garrison Slough is a trench located adjacent to Garrison Slough. The soils from the trench are then transported into Garrison Slough through surface water runoff.

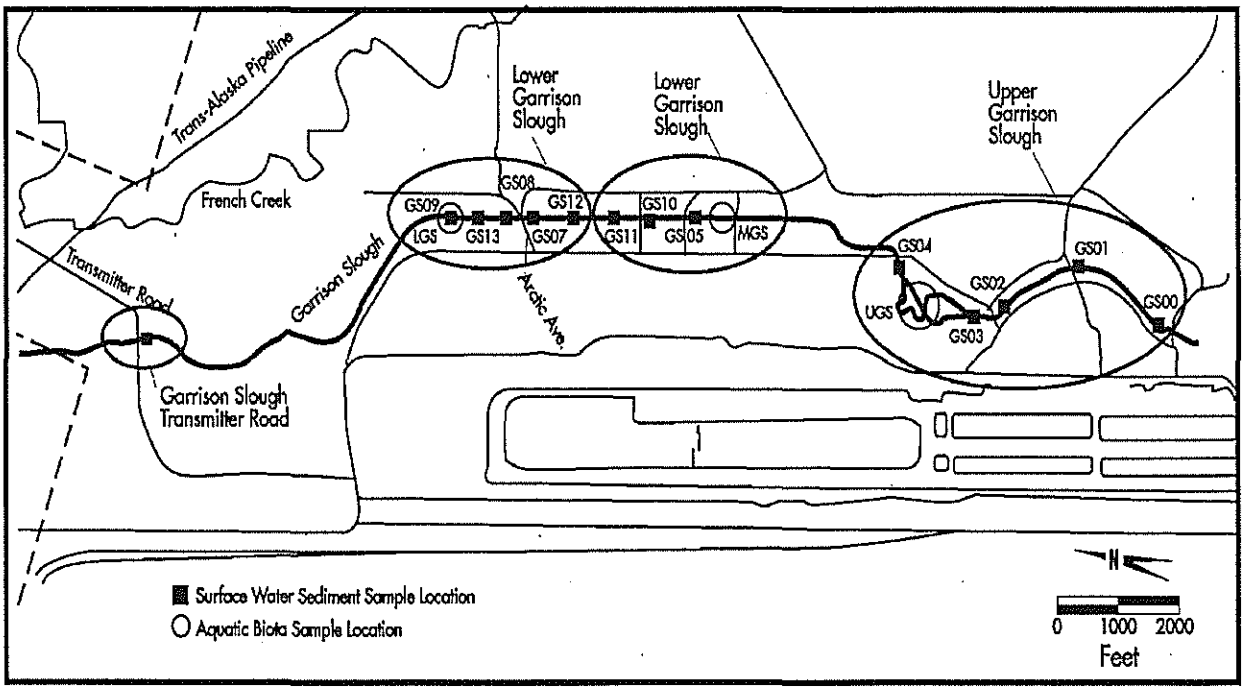
PART 4. AVAILABLE MONITORING DATA:

Data used in for this TMDL were published in the Sitewide Baseline Risk Assessment Report for Eielson AFB. The data were collected by Pacific Northwest Laboratories (PNL) from 1992 to 1994. They include surface water, sediment, groundwater, and fish tissue data (Figure 3).

4a. SEDIMENT AND SURFACE WATER:

Sediment and PCB data were collected in 1993 and 1994. The 1994 data were used where 1) a location had not been sampled in 1993; 2) a specific analyte was not sampled in 1993, and 3) the concentrations detected at a particular site were higher in 1994.

Figure 3



Surface water samples were also collected in 1993 and 1994, typically from the same location each year. Metals data were only collected in 1993. Samples were collected from the same locations as the sediment samples. Both total and dissolved

analyses were performed; however, only total values were used in the risk assessments.

4b. VOLATILE ORGANIC COMPOUNDS (VOCs) AND PESTICIDE SAMPLES:

VOCs were collected in surface water in 1993 and 1994. The 1993 data were preferred because they had lower contract required quantitation limits (CRQLs). The 1994 data were only used where an analyte was detected at a higher concentration, as was true with trichloroethylene at two locations.

Pesticides and PCBs were also sampled in 1993 and 1994. Similar to the sediment data, the 1993 samples were preferred because of lower CRQLs.

4c. FISH TISSUE SAMPLES:

Fish tissue data were collected in 1993 and 1994 (Table 5). Only a limited sampling of data was collected in 1993 as part of the sitewide biological risk assessment, because detecting contaminants in fish tissue was not expected. Six samples were acquired and analyzed for poly-aromatic hydrocarbons (PAHs), pesticides, and PCBs.

Table 5

1993 Fish Tissue Samples			
Sample Location	Detections		
	PAHs	Pesticides	PCBs
Lower French Creek	X	X	X
Upper Garrison Slough	X	X	X
Middle Garrison Slough	X	X	X
Lower Garrison Slough	X	X	X
Flightline Pond	X		

The calculated potential risk to human health was great enough that an extensive sampling event was conducted in 1994. Fifty-six samples, including duplicates and splits, were acquired at 14 sites. Arctic grayling were collected at all sites except Hidden Lake and 28 Mile Pit (Upper Garrison Slough).

The purpose of the 1994 effort was to determine the extent of fish contamination onsite, to evaluate whether the contaminated fish were symptomatic of a sub-regional contamination problem, to determine background contamination levels for fish from undeveloped watersheds, and to determine if the contamination was in edible fish tissue.

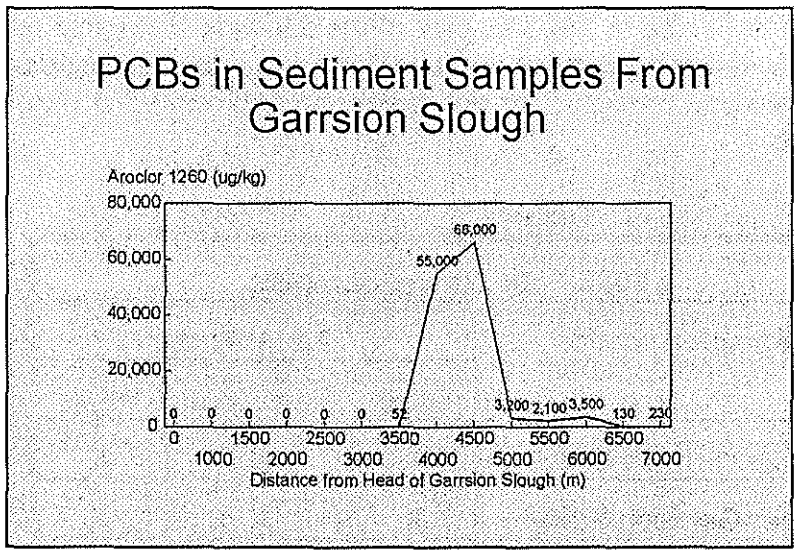
Results from the 1994 data indicated that fish are contaminated with PCBs along Garrison Slough, and all fish have some pesticide contamination, primarily DDT and its metabolites. No PAHs were detected in any of the 1994 samples.

Part 5. TMDL EVALUATION

5a. Current Instream PCB Levels:

In determining the current PCB instream sediment concentrations in Garrison Slough, sediment sample results from Garrison Slough were evaluated (Figure 4). PCBs were measured from just upstream of Arctic Avenue to Transmitter Road.

Figure 4



The highest PCB concentrations found in Garrison Slough sediments were upstream of Arctic Avenue, with a maximum concentration of 66 mg/kg dry weight PCBs (Aroclor 1260) found in a sample collected 15 m (50ft) downstream of Station GS12. A PCB concentration of 55 milligrams per kilograms was also found in sediment at sampling station GS12. The PCB concentrations dropped by an order of magnitude approximately 700 m (2300 ft) downstream (Station GS09). Only one upstream contaminated site was found in a sample 15m (50ft) upstream of Station GS12, with a PCB concentration of 52 mg/kg dry weight. A sample collected 15 m (50 ft) upstream from this point has no detectable PCBs.

5b. Selection of Loading Capacity

When assessing the capacity of a flowing waterbody to assimilate pollutant inputs, water quality agencies can perform a straightforward calculation using the critical design flow for the waterbody and the water quality criteria values for the pollutant of concern. In these cases, loading capacities are expressed as chemical mass per time (such as pounds per day). The Garrison Slough problem, stemming from sediment contamination and not water column contamination, is not amenable to this traditional loading capacity approach. Nevertheless, the goal to achieve and maintain water quality standards can be quantified in terms of a "Load Reduction (LR)." This LR is achieved through the physical removal of contaminated sediments, based on the assumption that the reductions in sediment PCB concentrations will result in reductions in fish tissue PCB concentrations.

As discussed earlier, the ultimate goal of this phased TMDL is to achieve the 10^{-5} risk level to protect human health in and around Garrison Slough. EPA has determined that removing 870 yd^3 (or 80%) of contaminated sediments, in combination with institutional controls, will reduce risks to the 10^{-5} level and therefore meet water quality standards.

5c. Prescriptions:

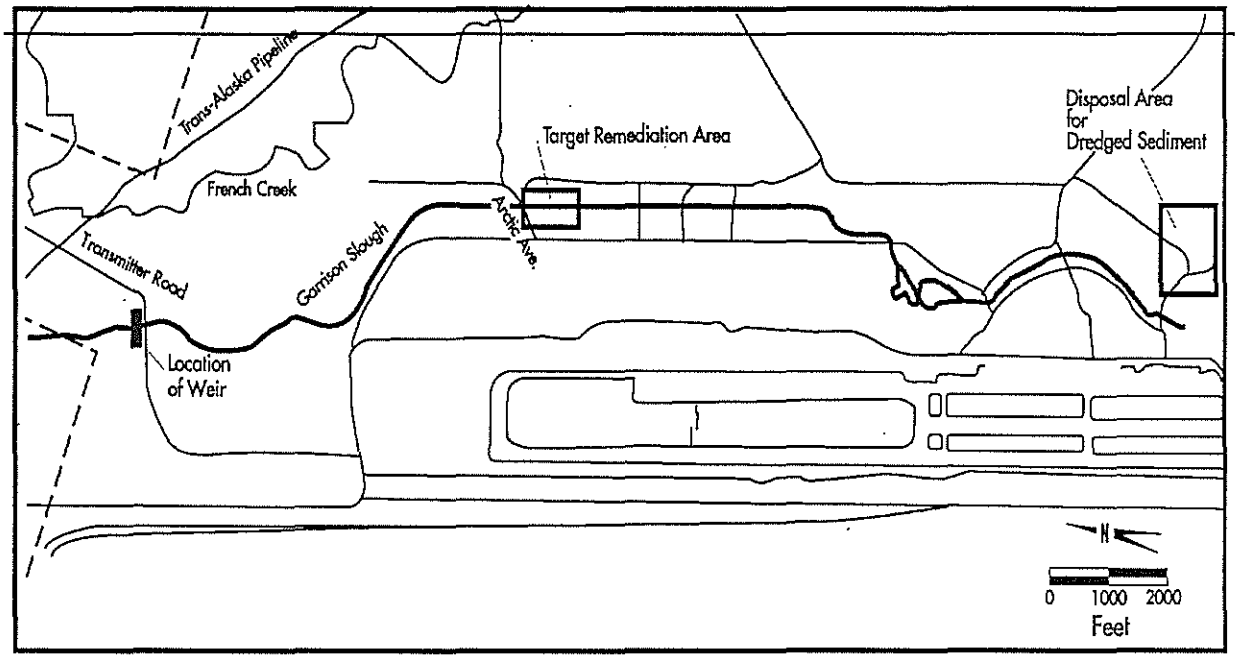
In developing prescriptions for Garrison Slough, the ADEC, USAF, and EPA evaluated a number of alternatives. For sediments and fish, the clean-up objectives are three fold. The first objective, is to reduce the PCB levels in sediments so that concentrations in fish tissue will be reduced to acceptable risk levels. The second objective, is to prevent people from eating PCB contaminated fish until PCB tissue concentrations are lowered to acceptable risk levels. The third objective is to restore and protect the water quality standards for Garrison Slough.

In determining what prescriptions would be feasible for Garrison Slough, five alternatives were evaluated. (Table 6.)

Table 6. Alternatives Evaluated

Alternative Evaluated	Narrative Description of Alternatives
Alternative 1: No Remedial or Removal Action (Monitoring Only)	No action would be taken to reduce contaminate concentrations in either fish or sediment. This alternative includes natural degradation and dispersion to reduce contaminated concentrations in sediment and fish. The cost of 30 years of fish and sediment monitoring is $98,384.
Alternative 2: Limited Action and Monitoring	Institutional controls would be implemented to restrict the amount of fish caught for food and engineering controls to restrict the migration of fish into the contaminated portion of Garrison Slough. The action would then limit human exposure to PCBs by interrupting the ingestion pathway. The controls include the following: 1. Fish Advisories Restrictions 2. Physical Fish Controls (e.g. Dam) The estimated cost of $139,948 includes 30 years of fish and sediment monitoring.
Alternative 3: In Situ Capping	PCB-contaminated sediments in the 300-m stretch upstream of Arctic Avenue would be left in place, but covered with a multi layer cap to isolate it from the ecosystem. Isolating the contaminated sediments would, overtime, lead to a reduction in PCB concentrations in the fish population. Institutional controls would also be implemented as those identified above in Alternative 2. The estimated cost of $290,000 includes 8 years of fish tissue monitoring and 3 years of sediment monitoring.
Alternative 4: Dredge and Disposal	This option would require mechanical dredging of PCB contaminated sediments in the 300-m stretch of Garrison Slough upstream of Arctic Avenue followed by on-site disposal of the dredged material. This dredging would produce 600 m^3 of contaminated sediment. On-site disposal of PCB contaminated sediments would require movement of the dredged material to an inactive base landfill for concentrations less than 50 part per billion. Institutional controls would also be implemented as those identified above in Alternative 2. The estimated cost of $190,979 includes 8 years of fish tissue monitoring and 3 years of sediment monitoring.
Alternative 5: Dredge and Treat	The Dredge and Treat alternative is similar to dredge and dispose, except that the dredged material would be treated to permanently destroy the PCBs. Land farming would degrade the PCBs over several months to years. A biological agent, such as white rot fungus, would be mixed with cellulose/ligin base food source and nutrients to degrade PCBs. Institutional controls would also be implemented as those identified above in Alternative 2. The estimated cost of $216,821 includes 8 years of fish tissue monitoring and 3 years of sediment monitoring.

Figure 5



Final Selected Prescriptions:

The selected prescriptions as described in the ROD for the site, are a combination of Alternative 2 and Alternative 4. Based on the administrative record for the ROD, EPA has determined that this action will result in a 10^{-5} risk level to humans and therefore meet water quality standards. The following activities will take place on Garrison Slough.

- Fishing advisories posted along the slough.
- Installation of a weir near the downstream edge of EAFB to prevent fish movement during dredging (Figure 5).
- Mechanical dredging of PCB contaminated sediments, which is expected to result
  in removal of 80%of PCB volume.
- On-site disposal of PCB contaminated sediments at inactive base landfill.
- Long-term monitoring of surface water, sediment, and fish.

(Note: Before remediation efforts begin, Garrison Slough will be electro-shocked to remove any fish that are present. A weir will then be constructed downstream, to prohibit fish from moving into the slough while remediation is underway. This weir will be removed once remediation is complete.)

PART 6. IMPLEMENTATION SCHEDULE:

Under CERCLA, clean-up activities must commence no later than 15 months after issuance of a ROD for a site. The FFA requires that a clean-up schedule be established within 21 days after issuance of a ROD. Based on the current project status and scope of work, the Garrison Slough clean-up project is expected to be complete before the summer of 1997.

PART 7. ENFORCEMENT OF CONTROLS

The Garrison Slough TMDL is enforceable under CERCLA Regulation as well as the Federal Facilities Agreement (FFA). Under the FFA, if control actions are not instituted within a reasonable time frame, statutory penalties can be imposed.

PART 8. MONITORING PROGRAM:

Follow-up monitoring is one of the critical components of this TMDL, to ensure that adequate progress is made toward attaining the TMDL goal. The indicator that will be used to determine progress in reducing PCBs levels will be the concentrations of PCBs in the adipose tissue of juvenile graylings. If monitoring shows water quality improvements are not being made within a reasonable time frame (5-6 years), the controls will be reevaluated and further mechanical dredging of sediments will be required if necessary.

PART 9. PUBLIC PARTICIPATION PROCESS

EPA conducted a public participation process for the Sitewide Record of Decision for Eielson Air Force Base. This process met the public participation requirements under 40 CFR §25.4 (c). The public comment period on the proposed plan was held from September 1, 1995 through September 30, 1995.

A public meeting was held on September 21, 1995. At this meeting, representatives from the USAF, ADEC, and EPA answered questions about problems at the site and the remedial alternatives under consideration. In addition, a Responsiveness Summary is included in the ROD.